CMS Payment Standardization Methodology
for Part D v.3

For Services Provided During 2015 - 2023
(Updated December 2023)

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INTRODUCTION

Payment standardization is the process of calculating estimated payment amounts that are nationally representative of payments for services, drugs, and conditions under specific payment policies for Medicare fee-for-service. These standardized claim payment amounts allow for the measurement and analysis of provider resource use by the Centers for Medicare & Medicaid Services (CMS). Specifically, standardized amounts are intended for use in a variety of CMS performance programs to evaluate and compare resources needed to furnish services and drugs covered by Medicare Part A, Part B, and Part D programs.[1] Development of standardized payment amounts for Medicare Parts A and B is based on payment rates established by CMS for services and conditions under Medicare fee-for-service through annual notice and comment rulemaking. Part D standardized payments, in contrast, are based on payments by Part D plans for drug products.

Part D data differ from Parts A and B claims data in both their procedural role and the information contained within them. Part D data include claims under the Medicare prescription drug plan for both Prescription Drug Plans (PDPs) and Medicare Advantage Prescription Drug Plans (MA-PDs). Every time a beneficiary fills a prescription covered under Part D, plans must submit a summary record called the prescription drug event (PDE) record to CMS. The PDE record contains prescription drug cost and payment data that will enable CMS to reconcile payments to plans and otherwise administer the Part D benefit. Part D plan sponsors pay

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[1] For basic and detailed versions of the Parts A and B payment standardization methodologies, please see the CMS Price (Payment) Standardization documents available on the CMS Research Data Assistance Center (ResDAC), available here: **https://resdac.org/articles/cms-price-payment-standardization-overview**.

pharmacies for the drugs dispensed to enrollees, and Medicare provides reimbursement via prospective subsidy payments and retrospective reconciliation processes. This is different from Parts A and B claims, where the provider submits the claim to the Medicare Administrative Contractors (MACs), who then pay it and request reimbursement from Medicare. PDE data, therefore, represent transactions between insurers and drug manufacturers/pharmacies. As such, the price of a drug is the cost of the drug to the insurer. Standardization of these claims, i.e., of payments, minimizes geographic and other types of variation that affect drug payments, including beneficiary cost sharing.

Part D payment standardization has one methodology that applies to all drugs purchased and paid for under the benefit. Generic and brand-name drugs, prescription and non-prescription drugs, and small- and large-molecule drugs (biologics and biosimilars) are all included in standardization, though brand-generic cost variation is preserved in the standardized amounts. Payments for drugs that do not have a National Drug Code (NDC) mapped in RxNorm are also standardized so long as they are covered under Part D. In these cases, rather than grouping NDCs of the same drugs in RxNorm, an NDC not in RxNorm counts as its own drug.

As indicated above, Part D payment standardization is intended to facilitate analysis of prescription drug spending for beneficiaries receiving the same or similar prescription drugs across different geographic areas. This is particularly important given the substantial variation in Part D drug prices both between and within Part D plans, due largely to the fact that Part D plan sponsors negotiate drug prices directly with pharmaceutical companies and pharmacies. For example, Part D standardized amounts are used along with Parts A and B standardized claims to assess cost of care for a number of episode-based cost measures, such as for end-stage renal disease (ESRD) and heart failure. The standardized Part D costs of treatment attributed to a provider for one of these episode-based cost measures will be the same even if the drug products are covered under varying Part D plans, produced by different manufacturers, or dispensed by separate pharmacies. Part D standardization therefore allows prescription drugs to be incorporated into performance programs and enables the development of cost measures that more accurately represent comprehensive episodes of care. In short, Part D standardized amounts facilitate comparison based on resource use by removing variation in drug prices due to non-clinical factors such as price differences associated with geography or Part D plans.

As with Parts A and B payment standardization, CMS updates the Part D standardization algorithms regularly to account for changes in Part D program policies, such as Medicare allowed coverage determinations or pricing requirements. Occasionally, CMS modifies the Part D methodology to address evolving needs of CMS performance programs and stakeholders. While routine and ongoing updates to the standardization algorithms and processes are not typically reflected in this methodology document, changes to the overall methodology and approach are documented in the annual update.

The remainder of this document provides a comprehensive overview of the Part D standardization methods in 2 parts. Section I presents a conceptual overview of the Part D standardization methodology, along with rationale for key methodological steps. Section II includes detailed technical steps for implementation of Part D standardization using PDE record data. For additional questions about the Part D payment standardization methodology, please email **CMS-PaymentStandardizationSupport@cms.hhs.gov**.

I. OVERVIEW OF PART D PAYMENT STANDARDIZATION

The Part D standardization methodology is designed to produce standardized amounts that can facilitate meaningful comparisons of payments by Part D plans for prescription drugs, despite the high variation in drug prices observed within the market-based Medicare Part D program. Standardization is applied the same way to all PDE records, including both stand-alone/Prescription Drug Plans (PDPs) and Medicare Advantage Prescription Drug Plans (MA-PDPs). The methodology implements a monthly price index with a standard price per unit for each drug, calculated from observed drug costs. The following section contains an overview of how this price index is constructed and used in the standardization of PDE records.

As the basis for the drug price index, clinically substitutable drug products (identified by national drug code [NDC]) are grouped into drug groups based on active ingredient, strength, route of administration, dosage form, and brand/generic designation. Non-clinical drug characteristics such as drug packager, labeler, and manufacturer are not considered so that products with identical clinical characteristics, but with different packaging, are classified under the same drug group. Based on these groupings, 2 drug products that are clinically substitutable (e.g., both are 500 mg oral tablets of the same active ingredient) will have the same standard price according to the price index even if one drug comes in a blister pack and another comes in a bottle. This methodological design allows standardized amounts to capture variation in Part D cost due to clinical or treatment factors, while excluding cost variation unrelated to care (e.g., due to packaging or labeling of drug products). As an illustrative example, standardization would exclude cost variation based on packaging differences among the following 3 products of 2 mg warfarin oral tablets: regular tablets at $2.17 per tablet, 50-tablet blister packs at $2.05 per tablet, and 28-tablet blister packs at $2.30 per tablet.[2]

To determine a standard price for each drug group, the median per-unit Actual Claim Cost is calculated for each drug on a monthly basis, using 3 months of PDE records with service dates in the standardization month (i.e., the month for which claims are being standardized) and 2 prior months. Actual Claim Cost is the amount paid in the actual transaction, as indicated on

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2 Prices listed do not reflect actual costs; they are for illustrative use only.

the claim; it is what is paid by the insurance and the beneficiary, which means this value is inclusive of cost-sharing. It includes the ingredient cost, dispensing fee, and vaccine administration fee (where applicable).[3] Claims with relevant service dates are pulled one month after the end of the standardization month, resulting in a runout period to allow one month of claims with relevant service dates to be submitted and processed. As an example, standardized prices for January 2023 are calculated using claims with November 2022, December 2022, and January 2023 service dates, with process dates through the end of February 2023. Calculating the median per-unit price across 3 months of data helps increase the number of claims, or sample size, available to accurately calculate the median per-unit drug cost and helps stabilize median drug prices over time, even if Part D prices fluctuate significantly from one month to another due to sudden pricing changes. These data procedures and the calculation of median per-unit costs result in a price index for the standardization month where each drug is assigned a standard price, referred to as the Median Unit Price.

After constructing the price index, an initial standardized amount is assigned to each PDE record by multiplying the Quantity Dispensed (the number of drug units noted on the claim) by the Median Unit Price for the relevant drug:

$$\text{Standardized Cost} = \text{Median Unit Price} \bullet \text{Quantity Dispensed}$$

where the Quantity Dispensed variable is used as an indicator of resource use to calculate standardized amounts that exclude drug price variation captured in Actual Claim Cost. This approach is intended to produce standardized costs that can represent resource use within performance programs.

After standardized amounts are calculated across claims, outliers are identified for winsorization, a statistical method used to replace extreme outliers with values that are more consistent with other, similar claims. Claims are determined to be outliers if the Quantity Dispensed value is extremely low or extremely high compared to Actual Claim Cost and Days Supply, and they're identified based on extreme Unit Price values (calculated as Actual Claim Cost / Quantity Dispensed) and extreme Daily Quantity Dispensed values (calculated as Quantity Dispensed / Days Supply) within each drug distribution. Given that standardized amounts are calculated as the product of Median Unit Price and Quantity Dispensed, claims with extreme Quantity Dispensed values would likely be assigned extreme standardized values. To prevent extreme standardized amounts, the Unit Price values on outlier claims are winsorized to ensure that the Unit Price of a claim does not exceed pre-defined upper and lower bounds of Unit Price, set for each drug. Based on the winsorized Unit Price values, claim Quantity Dispensed values

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3 Sales tax is not included in Actual Claim Cost because it varies by state.

are adjusted and then used to recalculate standardized cost. Further details of this winsorization methodology can be found in Step 3.2 in Section II below.

$$\text{Standardized Cost for Outlier Claims} =$$
$$\text{Median Unit Price} \bullet \text{Adjusted Quantity Dispensed}$$

To summarize the Part D standardization methodology, Acumen calculates and assigns standardized amounts to each PDE record using the following steps:

1. Classify drug products (i.e., NDCs) into clinically substitutable drug groups with the same strength, route of administration, dosage form, active ingredient, and brand/generic status

2. For each drug group, set a standard price, calculated as the median cost per unit (Median Unit Price) of claims with service dates in the standardization month and the prior 2 months (with a one-month claim runout from the end of the standardization month)

3. Calculate and assign PDE standardized amounts using the following formula:

$$\text{Standardized Cost} = \text{Median Unit Price} \bullet \text{Quantity Dispensed}$$

applying winsorization for outlier claims

These steps are repeated on a monthly basis, for each monthly production run. The next section includes technical details for implementing these methodological steps.

II.   DETAILED PAYMENT STANDARDIZATION METHODOLOGY

The following sections describe the 3 steps of Part D payment standardization in more detail. To prepare for the development of standardized Part D amounts, a preliminary step is to extract prescription drug event (PDE) records based on the service dates and process dates. Claims are pulled based on the date of service using a one-month claim run-out, allowing claim process dates up to the end of the month after the standardization month. In addition, PDE records are obtained for service dates occurring up to 2 months prior to the standardization month. Combining 3 months of data allows for increased sample size and stability of the standardized amounts. Once the claims have been extracted as described above, the initial two steps are to construct a Drug Price Index by first creating a drug classification and then calculating median unit price. After this, standardization is performed by identifying and winsorizing outliers.

The fields from PDE records used in developing standardized payments are available in Appendix C.

1. Create Drug Classification (Part 1 of Drug Price Index)

As noted above, the methodology for developing monthly standardized payments for Part D drugs requires construction of a monthly price index with a standard price per unit for each drug group. Drugs are grouped according to mappings from the National Library of Medicine's (NLM) **RxNorm database**. The drug price index is based on the median Actual Claim Cost of all drugs in the same drug group (separately for brand and generic) over a 3-month time period. This process is described in detail below.

a. NDC Classification

As a first step to constructing the drug price index, drugs in the price index are defined based on groupings of clinically substitutable NDCs. These groupings are formed using RxNorm, a classification system produced and maintained by the NLM, which is updated continuously. To form the groupings for the price index, NDCs in the queried data are mapped to their **RxNorm database** descriptions which contain clinical information on each drug product. After cleaning and processing steps, RxNorm descriptions, along with brand/generic drug classifications from the FDA drug database, can be used to aggregate NDCs into drug groupings based on clinical characteristics.[4]

The process of classifying NDCs and grouping them involves the following steps:

(i) *Map NDC to RxNorm description* – Each month, download RxNorm database descriptions for all NDCs found in the queried data

(ii) *Clean/Process NDC descriptions* – Create a clinical description for each NDC by removing non-clinical details (e.g., brand-name, drug packager, labeler, manufacturer) from the original RxNorm descriptions, while retaining clinical information for active ingredient, strength, route of administration, and dosage form

(iii) *Assign Drug IDs based on the cleaned descriptions* – All NDCs that share the same clinical description are assigned the same Drug ID

(iv) *Obtain brand/generic drug classifications* – Using the RxNorm and FDA/SPL drug databases, obtain brand/generic classifications for all NDCs found in the queried data[5]

(v) *Create final drug classifications* – Stratify Drug IDs based on brand/generic status to create final drug classifications

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[4] The FDA's drug database uses Structured Product Labeling (SPL) as a standard for exchanging product and facility information. For additional information about the use of SPL by the FDA, please see: **https://www.fda.gov/industry/fda-data-standards-advisory-board/structured-product-labeling-resources**. FDA data are the main upstream source for NDCs, which feed into both RxNorm and Medi-Span GPI. FDA data are used here to assign brand/generic labels to the NDCs in RxNorm.

[5] RxNorm data are continuously updated by the NLM, as NDCs are being added and/or removed. For standardization, the latest RxNorm data are downloaded as required for standardizing a month of PDE records. FDA data are also downloaded as needed for each run, such that the data run through the end of the month for the service dates for which PDE records are being standardized.

2. Calculation of Median Unit Price for Each Drug (Part 2 of Drug Price Index)

To set a standard price for each drug in the price index, calculate the Median Unit Price for each drug using queried claims:

(i) *Calculate claim unit prices* - For each queried PDE record, calculate the Unit Price for the claim using the following formula:

$$\text{Unit Price} = \frac{\text{Actual Claim Cost}}{\text{Quantity Dispensed}}$$

(ii) *Calculate the Median Unit Price for each drug* – For each drug group, identify relevant PDE records (i.e., claims with NDCs that map to the given drug group) from the queried data and calculate the Median Unit Price based on identified claims.

This step results in a price index for the standardization month containing a list of drugs (identified in the queried data), each with a standard price (Median Unit Price).

3. Standardization of PDE records/Assign Median Prices

The next step in the process is to assign preliminary standardized amounts to each PDE record based on the Median Unit Price from the price index. For the majority of medium-to-high cost drug claims, this step will result in final standardized values. However, as discussed in steps (a) and (b) below, a minority of claims with outlier Unit Price values are re-standardized using a winsorization methodology. For these claims, winsorization is considered as part of their standardization methodology, and the winsorized standardized amount is what is used as the final standardized amount.

Standardized amounts are calculated for each PDE record based on the following general formula:

$$\text{Standardized Cost} = \text{Median Unit Price} \bullet \text{Quantity Dispensed}$$

where the Median Unit Price is the standard price for the relevant drug (identified by the NDC listed on the claim) in the price index for the standardization month, and the Quantity Dispensed value is taken from the claim.

a. Identification of Outliers and Winsorization

Once standardized amounts are calculated for all PDE records, claims with outlier Unit Price values and Daily Quantity values are identified for winsorization to prevent extreme standardized amounts caused by extreme Quantity Dispensed values.[6]

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[6] Winsorization is a statistical method of adjusting a dataset to account for extreme values, or outliers, which may be skewing the data. This is done by replacing extreme values with less extreme values, typically by replacing values beyond a certain threshold with that of a pre-determined value that is less extreme.

i. Identifying Outliers

To implement the winsorization methodology, outlier thresholds are first determined for each drug group to limit the variation between the standardized cost of a claim and its Actual Claim Cost, based on analysis of historical drug price variation.[7] Specifically, drug price distributions are used to establish lower and upper bounds for the following ratio:

$$\text{Standardized to Actual Cost Ratio} = \frac{\text{Standardized Cost}}{\text{Actual Claim Cost}}$$

Ratio limits are set for each drug according to Table 1 based on each drug's Median Ingredient Cost (Actual Claim Cost without dispensing fee and vaccine administration fee where applicable) in combination with the Median Unit Price.[8]

Table 1. Schedule for Standardized to Actual Cost Ratio Limits

Median Ingredient Cost	Median Unit Price	Standardized to Actual Ratio	
		Maximum	Minimum
$0-$20	$0-$2	1.00	1.00
$0-$20	$2+	5.00	0.25
$20-$40	N/A	5.00	0.25
$40-$60	N/A	4.00	0.30
$60-$80	N/A	3.00	0.35
$80-$100	N/A	2.50	0.40
$100-$200	N/A	2.00	0.50
$200-$500	N/A	1.70	0.60
$500-$1,000	N/A	1.50	0.65
$1,000-$2,000	N/A	1.40	0.70
$2,000+	N/A	1.30	0.75

These upper and lower bounds serve as thresholds for winsorizing outlier claims, where outlier claims are those falling above or below the maximum and minimum standardized to actual cost ratio limits, respectively. For example, a drug with median claim cost of $45, would have 4.00 and 0.30 as the maximum and minimum ratio of standardized to actual limits. Based on these limits, an example claims for that drug with an extreme Daily Quantity and a standardized to actual cost ratio of 10.00 would be identified as requiring winsorization for this drug. To ensure that these limits are precise to the unique cost variation of drugs and reflect changes in drug costs over time, thresholds will be calculated using the most recent drug pricing data at the time of update.

ii. Winsorization

Once claims are identified as outliers using this method, the Unit Price values for these outlier claims are winsorized. Winsorized Unit Price values are then used to adjust Quantity Dispensed

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[7] Periodic analyses using historical pricing data are used to empirically assign cost bins/upper and lower thresholds for each drug in the price index.

[8] Compounded drugs also have a Standardized to Actual ratio of 1. Drug compounding may involve the combining of 2 or more drugs. Since the NDC field on PDE records does not allow for multiple NDCs, Median Unit Price cannot be calculated reliably.

values for recalculation of standardized amounts. Steps to implement this winsorization methodology are outlined below:

(i) ***Determine outlier thresholds for each drug*** – Determine the Standardized to Actual Cost Ratio thresholds for each drug in the price index, setting upper and lower thresholds based on historical drug price distributions.

(ii) ***Identify outlier claims*** – Identity outlier claims as claims that both fall outside 25th-75th Daily Quantity range <u>and</u> outside the Standardized to Actual Cost Ratio thresholds for each drug using the following steps:

(a) Calculate the Standardized to Actual Cost Ratio for each claim using the formula:

$$\text{Standardized to Actual Cost Ratio} = \frac{\text{Standardized Cost}}{\text{Actual Claim Cost}}$$

(b) For each claim, compare the claim Standardized to Actual Cost Ratio with the upper and lower ratio thresholds for the relevant drug based on its cost bin.

(c) For each claim, also compare the claim quantity with the Daily Quantity range for that drug.

(d) <u>Only if both (b) and (c) are outside of the established ranges is a claim an outlier.</u>

b. Re-Standardize Outlier Claims

For all outlier claims, winsorize Unit Price values and recalculate standardized amounts based on the winsorized values, using the following steps:

(a) Winsorize Unit Price values

    i. For claims above the maximum Standardized to Actual Cost Ratio, set Unit Price equal to the Unit Price of the lowest percentile claim in the Unit Price distribution that falls below the maximum Standardized to Actual Cost Ratio threshold

    ii. Conversely, for claims that fall below the minimum Standardized to Actual Cost Ratio threshold, set the Unit Price equal to the Unit Price of the highest percentile claim in the Unit Price distribution that falls above the minimum Standardized to Actual Cost Ratio threshold

Example – Standardized to Actual Cost Ratio Range: [0.50-4.00]

Metric/Percentile	1st Percentile	2nd Percentile	50th Percentile	98th Percentile	99th Percentile
Actual Unit Price	0.25	1.00	2.00	3.00	3.00
Standardized to Actual Cost Ratio	8.00	2.00	1.00	0.66	0.66

- Note there is an inverse relationship between Unit Price percentile and Standardized to Actual Ratio.

- In this example, a claim at the 1st percentile has an outlier Actual Unit Price, such that the Standardized to Actual Ratio is above the established threshold of 4.00.

- The 2nd percentile is the lowest percentile claim with a Standardized to Actual Cost Ratio below the threshold of 4.00.

- Thus, for winsorization, set the winsorized Unit Price of the outlier claim to that of the 2nd percentile.

(b) Adjust Quantity Dispensed values using winsorized Unit Price values according to the following formula:

$$\text{Adjusted Quantity Dispensed} = \frac{\text{Actual Claim Cost}}{\text{Winsorized Unit Price}}$$

(c) Recalculate standardized costs using Adjusted Quantity Dispensed values:

Standardized Cost for Outlier Claims =

Median Unit Price • Adjusted Quantity Dispensed

APPENDIX A: METHODOLOGY CHANGE LOG

The appendix notes the differences between the current Part D payment standardization methodology presented in this document and previous versions.

A.1   Changes in v.2

- Section 3(a)(i): Added table with thresholds.

Non-methodological changes were made for presentation and clarity.

A.2   Changes in v.3

- Added Appendix B to provide examples of standardization for various scenarios.
- Added Appendix C to share information on the variables and fields from PDE data used in standardization.

Non-methodological changes were made for presentation and clarity.

APPENDIX B: EXAMPLES (COVERING ALL SCENARIOS)

B.1   Standardization Steps

(1) Construct NDC Classifications

Group NDCs into Drug IDs based on drug characteristics and brand/generic distinction.

EXAMPLE:

- levothyroxine sodium 0.05 mg Oral Tablet

(a) NDC to Drug Product Mapping

NDC	NDC Description	Brand/Generic	Drug ID
43063095190	Levothyroxine sodium 0.05 mg Oral Tablet	B	EXAMPLE1B
43602041810	Levothyroxine sodium 0.05 mg Oral Tablet	G	EXAMPLE1G
47781064390	Levothyroxine sodium 0.05 mg Oral Tablet	B	EXAMPLE1B
49999079200	Levothyroxine sodium 0.05 mg Oral Tablet	G	EXAMPLE1G

Note: As the basis for the drug price index, clinically substitutable drug products (identified by NDC) are grouped into Drug IDs for standardization, basing groupings on:

- Active ingredient
- Strength
- Route of administration
- Dosage form
- Brand/generic designation

(2) Calculate Median Unit Price

For each Drug ID, the distribution of unit price is used to find the median unit price. This is the standardized unit price that is used to calculate standardized amounts.

Drug ID	Description	Brand/ Generic	Service Year Month	Unit Drug Price Distribution P50 (Standardization Drug Price)	Claim Counts – Rolling 3-month average	Ingredient Cost - Median
EXAMPLE1B	Levothyroxine sodium 0.05 mg Oral Tablet	B	2023-03	0.26	297,621	13.30
EXAMPLE1G	Levothyroxine sodium 0.05 mg Oral Tablet	G	2023-03	0.23	352,146	10.96

Note: The Median Ingredient Cost (Actual Claim Cost without dispensing fee and vaccine administration fee, where applicable) for a drug is used to determine which cost bin a drug belongs in. Cost bins indicate the acceptable range of the ratio of standardized amounts to Actual Claim Cost (Standardized / Actual) for a drug.

(3) Standardize Claims and Winsorize Outliers

(i) Identify Outlier Thresholds

For each claim, use the drug ID's Median Ingredient Cost to establish the acceptable range of the ratio of standardized amounts to Actual Claim Cost (Standardized / Actual).

EXAMPLE:

Note: The example below uses the following drugs' real standardized amounts from March 2023 but features made-up claims and amounts for informational purposes only.

TABLE

Drug Product	Median Ingredient Cost	Standardized / Actual Ratio Range (Outlier Thresholds)
Cholestyramine resin 4000 mg Powder for Oral Suspension	60.00-80.00	0.35-3.00
Pyridostigmine bromide 60 mg Oral Tablet	60.00-80.00	0.35-3.00

(ii) Identify Outlier Claims

Use claim daily quantities and pre-winsorization Standardized / Actual ratios to determine if a claim requires winsorization.

EXAMPLE:[9]

No Winsorization:

Claim Line Information					Daily Quantity Check		Standardized / Actual Check			Standardization	
Claim #	Drug Name	Brand / Generic	Unit Price	Ingredient Cost	Daily Quantity	Daily Quantity P25-P75 Range	Median Ingredient Cost	Standardized / Actual Ratio Range	Standardized / Actual	Standardized Unit Price	Standardized Ingredient Cost
1	Cholestyramine resin 4000 mg Powder for Oral Suspension	G	0.09	90.00	8.00	1.00-8.04	60.00-80.00	0.35-3.00	1.00	1.44	90.00
2	Cholestyramine resin 4000 mg Powder for Oral Suspension	G	0.09	90.00	8.00	1.00-8.05	60.00-80.00	0.35-3.00	3.11	1.44	280.00
3	Cholestyramine resin 4000 mg Powder for Oral Suspension	G	0.09	90.00	10.00	1.00-8.06	60.00-80.00	0.35-3.00	1.00	1.44	90.00

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[9] Note that for these examples, we round to the nearest hundredth at each step.

For winsorization to occur, the claim's:

- daily quantity must be outside the Daily Quantity P25-P75 range, **and**

- pre-winsorization standardized / actual ingredient cost must be outside the Standardized / Actual range for the Drug ID.

Both must be true (both must be outside the established ranges) for winsorization to occur. That is, a claim is not an outlier if only one criterion or if neither criterion is true.

In Claim 1, both the daily quantity and the standardized / actual ratio are within the established ranges.

In Claim 2, even though the standardized / actual ratio for the claim is above the outlier threshold, the daily quantity is within the established range.

In Claim 3, even though the daily quantity for the claim is above the outlier threshold, the standardized / actual ratio is within the established range.

Low Quantity Winsorization:

	Claim Line Information				Daily Quantity Check		Standardized / Actual Check			Standardization		
Claim #	Drug Name	Brand / Generic	Unit Price	Ingredient Cost	Daily Quantity	Daily Quantity P25-P75 Range	Median Ingredient Cost	Standardized / Actual Ratio Range	Pre-Winsorization Standardized / Actual	Post-Winsorization Standardized / Actual	Standardized Unit Price (P50)	Post-Winsorization Standardized Ingredient Cost
4	Pyridostigmine bromide 60 mg Oral Tablet	B	21.29	42.58	1.00	2.22-4.00	60.00-80.00	0.35-3.00	0.20	0.40	4.29	17.03

For low quantity winsorization, the claim's payment is an outlier based on the low quantity dispensed, given the claim's relationship between daily quantity and the ingredient cost. In Claim 4, the daily quantity is below its established range and the pre-winsorization standardized/actual ratio is below its established range, so both are outliers, and the claim is winsorized.

STEPS:

- Assume the highest percentile above the minimum ratio threshold of 0.35 has a ratio of 0.40.

- This means that the highest percentile above the ratio threshold has Unit Price of 10.73.

- Using this as winsorization Unit Price, calculate adjusted quantity dispensed (Ingredient Cost / winsorization Unit Price).

- Multiply adjusted quantity dispensed by Standardized Unit Price to calculate Standardized Ingredient Cost.

High Quantity Winsorization:

Claim Line Information					Daily Quantity Check		Standardized / Actual Check			Standardization		
Claim #	Drug Name	Brand / Generic	Unit Price	Ingredient Cost	Daily Quantity	Daily Quantity P25-P75 Range	Median Ingredient Cost	Standardized / Actual Ratio Range	Pre-Winsorization Standardized / Actual	Post-Winsorization Standardized / Actual	Standardized Unit Price (P50)	Post-Winsorization Standardized Ingredient Cost
5	Cholestyramine resin 4000 mg Powder for Oral Suspension	G	0.09	225.00	10.00	1.00-8.06	60.00-80.00	0.35-3.00	16.00	2.80	1.44	635.29

For high quantity winsorization, the claim's payment is an outlier based on the high quantity dispensed, given the claim's relationship between daily quantity and the ingredient cost. In Claim 5, the daily quantity is above its established range and the pre-winsorization standardized/actual ratio is above its established range, so both are outliers, and the claim is winsorized.

STEPS:

- Assume the lowest percentile below the maximum ratio threshold of 3.00 has a ratio of 2.80.

- This means that the lowest percentile below the ratio threshold has Unit Price of 0.51.

- Using this as winsorization Unit Price, calculate adjusted quantity dispensed (Ingredient Cost / winsorization Unit Price).

- Multiply adjusted quantity dispensed by Standardized Unit Price to calculate Standardized Ingredient Cost.

APPENDIX C: VARIABLES AND FIELDS FROM PDE DATA USED IN STANDARDIZATION

C.1   Calculating Standardized Amounts

Variable	Description	PDE Field Name
PROD_SERVICE_ID	National Drug Code	PRODUCT SERVICE ID
INGRDNT_COST_PD	Ingredient cost	INGREDIENT COST PAID
DSPNSNG_FEE_PD	Dispensing fee	DISPENSING FEE PAID
VAC_ADMIN_FEE	Vaccine administration fee	VACCINE ADMINISTRATION FEE
QUANTITY_DISPENSED	Quantity dispensed	QUANTITY DISPENSED
DAYS_SUPPLY	Days supply	DAYS SUPPLY
RX_DOS_DT	Date prescription is filled	DATE OF SERVICE (DOS)

C.2   Variables that Uniquely Identify a PDE Record

Variable	Description
FILL_NUM	Fill number, defaults to zero.
RX_SERV_REF_NUM	The pharmacy's internal invoice number on pharmaceutical claims.
RX_DOS_DT	The first day on the billing statement covering services rendered to the beneficiary (also known as 'Statement Covers From Date'). (NCH)
SRVC_PROVIDER_ID_QUAL	The type of number used to identify a service provider. For example: 01 = NPI 06 = UPIN 07 = NCPDP Number 08 = State License Number 11 = Federal Tax Number 99 = Other mandatory for Standard Data Format Values of '06', '08', '11', or '99' only acceptable if non-Standard Format = 'B', 'X', or 'P'
SRVC_PROVIDER_ID	A number used to identify a service provider.
PKG_AUDT_KEY_ID	An IDR assigned surrogate key for a package identifier.