Chronic Conditions Warehouse Virtual Research Data Center

Original Medicare Claims and Part D Events Maturity — Information and Guidance for CCW Data Users

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Chronic Conditions Warehouse

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Revision Log

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1.0 Background

The Centers for Medicare & Medicaid Services (CMS) collects and maintains large-scale administrative data primarily to support the operation and oversight of its programs. These data are generated through routine transactions such as claims submissions and enrollment updates. Because these data are operational in nature, they are subject to inherent timing and completeness constraints. Records are submitted over time and may be adjusted or resubmitted before reaching a relatively stable, final state. Data maturity refers to the extent to which a dataset reflects its final values at a given point in time. Understanding how CMS data mature is essential for researchers seeking to use these data appropriately. This paper specifically focuses on data maturity for Original Medicare (OM) (previously referred to as Fee-for-Service) claims and Part D Prescription Drug Event data

1.1 Medicare Parts A and B Claims

Healthcare providers must submit bills (called claims) to CMS in order to receive payment for services rendered. Providers have up to one year from the date of service to send these claims to CMS's payment processors called Medicare Administrative Contractors (MACs). Once processed, CMS transfers these claims to the Chronic Conditions Warehouse (CCW) for research purposes.

A single claim can have multiple versions. Providers can update or cancel claims, and MACs can adjust. These changes can happen many times and can occur months after the original service date.

CMS uses specific rules to determine which version of a claim they consider “final” when preparing data for analysis. The final version might change over time and could be a canceled claim, a claim with zero payment, or even a claim with a negative payment amount (such as when correcting an overpayment).

1.2 Prescription Drug Event (PDE) Records

Like medical service claims, Medicare Part D prescription drug event records can have multiple versions. Medicare Part D plans or their pharmacy managers must send these prescription records to CMS at least monthly. Plans can update or remove prescription records until six months after the year ends, when they must confirm all records are correct. CMS includes all these updates in their final records.

1.3 Objectives

This document explains the completeness of Medicare claims and prescription drug records at various time intervals following service delivery.

Records that have not completed the full claims processing cycle may contain incomplete or preliminary information about costs, diagnoses, and service utilization. CCW provides this information to help researchers weigh the trade-offs between data timeliness and completeness when selecting datasets for analysis.

2.0 Examining Claim Maturity

The CCW team used Medicare administrative data to address key questions related to the claims:

- When does CMS initially receive a claim for a service (i.e., when was the first claim record for the service processed by the MAC)?
- When was the last time the MAC processed or updated the claim record? How much time lag was there between the service date and the date the MAC processed the final transactional record of the claim?
- What changes occurred between the initial claim record and the final version of the claim? The CCW team analyzed the extent to which key variables changed (e.g., primary diagnosis code and reason for service or claim payment amounts)

2.1 Sample

The CCW database is the source of all data used in this study. Within the database, 100% of transactional OM and PDE claim records are available, regardless of whether anyone considers them a final-action claim. The CCW team used a one-month sample for all analyses.

2.1.1 Medicare Part A and B Claims

The CCW team reviewed all OM claims for services in July 2023 (using CLM_THRU_DT). We considered the research files finalized after allowing 12 months for claims processing (aka 12 months of runout time). This means we considered July 2023 services complete as of August 2024, with no updates accepted after that date.

When multiple versions of the same claim existed, we tracked all versions from the service month through the following 12 months (through August 2024).

This document groups OM claims into two main categories:

- **Institutional claims** — inpatient (IP), skilled nursing facility (SNF), home health (HH), hospice, and hospital outpatient (OP; a Part B service that Medicare processes using an institutional, Part A, claim type)
- **Non-institutional claims** — physician or supplier-carrier and durable medical equipment (DME)

2.1.2 Part D Events

The CCW team analyzed Medicare prescription drug records from January 2023. We tracked all versions of these records through June 30, 2024 (when health plans must submit their final updates) and included any additional changes made during Medicare's final review process.

The team specifically chose January 2023 records for this analysis because they had more time to mature. December records only have six months for updates since health plans must complete all changes by the end of June in the following year.

2.2 Analyses

We collected all Medicare claims from a single month and tracked each version of these claims. To show how information changes over time, the CCW team measured key data points at monthly intervals. For Medicare Parts A and B claims, we tracked changes for 12 months. For prescription drug records, we tracked changes until the final deadline (six months after the year ended). The CCW team then compared these monthly snapshots to the final data for each type of claim. We measured three different metrics:

2.2.1 Time to Initial Version of the Claim

We first measured the time between the service month (month one, July 2023) and when the MAC processed the first version of the claim for all institutional and non-institutional claim types. We then selected a month mid-way through the calendar year (i.e., July 2023), rather than January 2023, to illustrate that mid to late-year service months would be immature at December 2023, thereby depicting the value of additional months of maturity.

For PDEs, this same analysis used January 2023 as month one.

2.2.2 Time to Final Version of the Claim

We analyzed how often the first submitted claim becomes the final version without changes. When healthcare providers or Medicare contractors updated claims, we measured how long it took from the service date until the final version (within the 13-month tracking period).

For prescription drug records, we conducted the same analysis starting with January 2023 services and compared initial records with their final versions, which were available after the June 2024 submission deadline and the July 2024 processing.

2.2.3 Claims with Diagnosis or Payment Changes

We tracked when providers updated Medicare claims (Parts A and B) and what were the kinds of changes. Since researchers typically focus on certain information, we specifically looked at changes to:

1. The main reason for the medical service (primary diagnosis).
2. How much does Medicare pay for the service?

3.0 Results

When using the information from this paper to make projections about the likely maturity of more recent claims, keep in mind that while this analysis only provides a snapshot of services, the pattern of maturity is very similar over time.

3.1 Time to Initial Claim

Table 1 depicts the time between the service month (July 2023; month number one) and the month the MAC processed the first version of the claim for all institutional and non-institutional claim types.

Table 1. Cumulative number and percent of Medicare claims received by months after service, July 2023 services

Institutional Claims

N and % claims	0 Month*	1 Month†	2 Months	3 Months	4 Months	5 Months	6 Months	7 Months	8 Months	9 Months	10 Months	11 Months	12 Months	13 Months
IP N	n/a	285,630	606,472	630,329	639,496	643,901	646,935	648,963	650,690	651,856	653,004	654,002	654,755	655,201
IP %		43.59%	92.56%	96.20%	97.60%	98.28%	98.74%	99.05%	99.31%	99.49%	99.66%	99.82%	99.93%	100.00%
SNF N	n/a	4,209	219,254	246,041	254,320	257,864	260,204	261,811	262,818	263,591	264,149	264,706	265,051	265,269
SNF %		1.59%	82.65%	92.75%	95.87%	97.21%	98.09%	98.70%	99.08%	99.37%	99.58%	99.79%	99.92%	100.00%
Hospice N	n/a	24,953	457,233	485,231	496,321	501,247	503,817	505,586	506,858	507,735	508,455	509,128	509,566	509,909
Hospice %		4.89%	89.67%	95.16%	97.34%	98.30%	98.81%	99.15%	99.40%	99.57%	99.71%	99.85%	99.93%	100.00%
HH N	n/a	182,648	541,159	618,804	651,533	669,986	679,808	685,934	690,384	693,712	696,384	698,551	700,192	700,941
HH %		26.06%	77.20%	88.28%	92.95%	95.58%	96.99%	97.86%	98.49%	98.97%	99.35%	99.66%	99.89%	100.00%
OP N	n/a	5,030,367	10,901,739	11,354,108	11,536,292	11,656,150	11,729,936	11,785,741	11,832,844	11,863,838	11,893,421	11,922,336	11,941,546	11,951,744
OP %		42.09%	91.21%	95.00%	96.52%	97.53%	98.14%	98.61%	99.01%	99.26%	99.51%	99.75%	99.91%	100.00%

Non-Institutional Claims

N and % claims	0 Month*	1 Month†	2 Months	3 Months	4 Months	5 Months	6 Months	7 Months	8 Months	9 Months	10 Months	11 Months	12 Months	13 Months
Carrier N	n/a	29,263,397	57,326,321	60,310,273	61,645,023	62,365,584	62,830,916	63,213,737	63,444,340	63,613,225	63,779,716	63,918,120	64,048,521	64,125,395
Carrier %		45.63%	89.40%	94.05%	96.13%	97.26%	97.98%	98.58%	98.94%	99.20%	99.46%	99.68%	99.88%	100.00%
DME N	395,029	2,538,022	3,968,876	4,159,691	4,254,292	4,312,039	4,349,626	4,386,109	4,404,627	4,419,164	4,430,856	4,439,798	4,447,159	4,450,495
DME %	8.88%	57.03%	89.18%	93.47%	95.59%	96.89%	97.73%	98.55%	98.97%	99.30%	99.56%	99.76%	99.93%	100.00%

* For DME, zero months could be from 1–11 months before the claim through date.

† Month one is the service month (i.e., claim through date in July 2023).

- Although CMS receives more than 95% of IP claims by the end of the second full month after the service month (reference column for month three; Table 1), four months must elapse after the service month before 95% of the IP claims are in the final, reconciled form (reference column for month five; Table 2)

- For DME, there is a unique claims situation where MACs may process claims before the service date (i.e., MAC processes the claim when the provider orders the equipment — before it is received). The MAC processes approximately 8.8% of DME claims before the service date (Table 1).

3.2 Time to Final Claim

The CCW team documented the amount of time it takes before the final version of the claim is available in the CCW database in Table 2. The percentage of claims considered mature at any time interval differs by claim type.

Table 2. Cumulative number and percent of Medicare claims considered final by months after service, July 2023 services

Institutional Claims

N and % claims	0 Month*	1 Month†	2 Months	3 Months	4 Months	5 Months	6 Months	7 Months	8 Months	9 Months	10 Months	11 Months	12 Months	N and % claims
IP N	n/a	250,967	559,110	593,802	610,931	619,588	625,867	630,593	635,670	639,847	643,037	645,700	648,080	648,937
IP %		38.67%	86.16%	91.50%	94.14%	95.48%	96.44%	97.17%	97.96%	98.60%	99.09%	99.50%	99.87%	100.00%
SNF N	n/a	3,950	210,501	238,724	248,163	252,733	255,589	257,966	259,372	260,469	261,291	262,114	262,775	263,168
SNF %		1.50%	79.99%	90.71%	94.30%	96.03%	97.12%	98.02%	98.56%	98.97%	99.29%	99.60%	99.85%	100.00%
Hospice N	n/a	23,199	438,882	474,497	488,011	494,241	497,794	500,503	502,654	504,346	505,777	507,039	507,898	508,551
Hospice %		4.56%	86.30%	93.30%	95.96%	97.19%	97.88%	98.42%	98.84%	99.17%	99.45%	99.70%	99.87%	100.00%
HH N	n/a	172,096	517,633	597,771	633,845	655,260	666,690	674,154	679,413	684,008	687,526	690,399	692,693	693,670
HH %		24.81%	74.62%	86.18%	91.38%	94.46%	96.11%	97.19%	97.94%	98.61%	99.11%	99.53%	99.86%	100.00%
OP N	n/a	4,807,818	10,477,754	11,005,108	11,234,077	11,389,831	11,481,800	11,599,787	11,686,826	11,769,119	11,816,178	11,865,383	11,895,687	11,907,094
OP %		40.38%	88.00%	92.42%	94.35%	95.66%	96.43%	97.42%	98.15%	98.84%	99.24%	99.65%	99.90%	100.00%

Non-Institutional Claims

N and % claims	0 Month*	1 Month†	2 Months	3 Months	4 Months	5 Months	6 Months	7 Months	8 Months	9 Months	10 Months	11 Months	12 Months	N and % claims
Carrier N	n/a	28,927,387	56,787,292	59,841,166	61,241,233	62,058,499	62,561,686	62,987,879	63,248,708	63,439,491	63,629,046	63,782,963	63,926,206	64,000,067
Carrier %		45.20%	88.73%	93.50%	95.69%	96.97%	97.75%	98.42%	98.83%	99.12%	99.42%	99.66%	99.88%	100.00%
DME N	391,132	2,486,356	3,914,281	4,117,369	4,221,789	4,286,714	4,330,736	4,371,910	4,392,894	4,410,069	4,423,966	4,435,285	4,445,158	4,448,862
DME %	8.79%	55.89%	87.98%	92.55%	94.90%	96.36%	97.34%	98.27%	98.74%	99.13%	99.44%	99.69%	99.92%	100.00%

* For DME, zero months could be from 1–11 months before the claim through date.
† Month one is the service month (i.e., claim through date in July 2023).

- All claim types except for HH have 95% of claims in the final reconciled version four months after the date of service (reference column for month five in Table 2). For HH claims, data users need an additional month of maturity before 95% of the claims are final.

3.3 Changes Between Initial and Final Claim

As providers and CMS adjust claims, they may make updates to diagnoses, payments, and various other fields. We examined the claims to determine whether the values for either the primary diagnosis code (PRNCPAL_DGNS_CD) or the Medicare payment amount (CLM_PMT_AMT) changed between the initial claim and the final claim (at month 13). Reference Table 3.

Table 3. Number of claims and proportions with primary diagnosis code and/or dollar changes * by month, July 2023 services

Institutional Claims

N and % claims	0†	1‡	2	3	4	5	6	7	8	9	10	11	12	13
IP # Initial Claims	n/a	285,630	606,472	630,329	639,496	643,901	646,935	648,963	650,690	651,856	653,004	654,002	654,755	655,201
IP % with primary DX Change		1.08%	0.50%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
IP % with $ Change		5.19%	2.79%	0.14%	0.05%	0.02%	0.01%	0.01%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%
SNF # Initial Claims	n/a	4,209	219,254	246,041	254,320	257,864	260,204	261,811	262,818	263,591	264,149	264,706	265,051	265,269
SNF % with primary DX Change		0.12%	0.06%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
SNF % with $ Change		2.26%	2.84%	0.37%	0.17%	0.06%	0.03%	0.02%	0.01%	0.01%	0.00%	0.00%	0.00%	0.00%
Hospice # Initial Claims	n/a	24,953	457,233	485,231	496,321	501,247	503,817	505,586	506,858	507,735	508,455	509,128	509,566	509,909
Hospice % with primary DX Change		0.02%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Hospice % with $ Change		4.89%	3.70%	0.27%	0.09%	0.04%	0.02%	0.01%	0.02%	0.01%	0.01%	0.00%	0.00%	0.00%
HH # initial Claims	n/a	182,648	541,159	618,804	651,533	669,986	679,808	685,934	690,384	693,712	696,384	698,551	700,192	700,941
HH % with primary DX Change		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
HH % with $ Change		1.50%	1.50%	0.39%	0.19%	0.10%	0.05%	0.04%	0.06%	0.02%	0.01%	0.01%	0.00%	0.00%
OP # Initial Claims	n/a	5,030,367	10,901,739	11,354,108	11,536,292	11,656,150	11,729,936	11,785,741	11,832,844	11,863,838	11,893,421	11,922,336	11,941,546	11,951,744
OP % with primary DX Change		0.84%	0.39%	0.02%	0.01%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
OP % with $ Change		3.31%	2.03%	0.13%	0.05%	0.03%	0.02%	0.01%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%

Non-Institutional Claims

N and % claims	0†	1‡	2	3	4	5	6	7	8	9	10	11	12	13
# Carrier Initial Claims	n/a	29,263,397	57,326,321	60,310,273	61,645,023	62,365,584	62,830,916	63,213,737	63,444,340	63,613,225	63,779,716	63,918,120	64,048,521	64,125,395
% Carrier with primary DX Change		0.01%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
% Carrier with $ Change		0.79%	0.49%	0.06%	0.03%	0.01%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
# DME Initial Claims	395,029	2,538,022	3,968,876	4,159,691	4,254,292	4,312,039	4,349,626	4,386,109	4,404,627	4,419,164	4,430,856	4,439,798	4,447,159	4,450,495
% DME with primary DX Change	0.00%	0.03%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
% DME with $ Change	1.02%	1.83%	0.91%	0.09%	0.04%	0.02%	0.01%	0.01%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%

* As CMS adjusts claims, they may make updates to diagnoses, payments, and a variety of other fields.

† For DME, zero months could be from 1–11 months before the claim through date.
‡ Month one is the service month (i.e., month for the claim through date).

- In the IP care setting, it is much more common for claims adjustments due to payment changes (i.e., the Medicare claim payment amount) rather than primary diagnosis code changes.

3.4 PDE Timing

For the PDEs, CCW explored: 1) when does the CCW first receive a PDE (reference Table 4), and 2) when does the CCW receive the final version of a PDE (reference Table 5). Please note that the January 1, 2026, implementation of the Medicare Drug Price Negotiation Program may impact the historical PDE maturity statistics shown below.

Table 4. Cumulative percent of first PDE received by months after service, January 2023 services

N and % PDEs by month	1†	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
N*	110,128	142,094	142,503	142,588	142,645	142,671	142,688	142,706	142,724	142,749	142,770	142,801	142,813	142,823	142,828	142,840	142,884	142,889
%	77.07%	99.44%	99.73%	99.79%	99.83%	99.85%	99.86%	99.87%	99.88%	99.90%	99.92%	99.94%	99.95%	99.95%	99.96%	99.97%	100.00%	100.00%

† Month one is the service month (i.e., the month the beneficiary filled the prescription).
* Rounded and expressed in millions.

- After a month has elapsed following the service month (i.e., month two), CCW receives a record for 99.4% of PDEs; the proportion rises to 99.7% after two months of maturity beyond the service month (i.e., month three)

Table 5 shows the version of the PDE that is initially available may not be the same as the final version of the PDE; it also shows the proportion of PDEs that are fully mature by month

Table 5. Cumulative percent of PDEs considered final by months after service, January 2023 services

N and % PDEs by month	1†	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Cumulative N*	79,580	108,950	113,504	117,451	118,320	119,231	119,944	121,636	122,363	123,186	124,167	125,179	126,139	126,403	126,679	128,113	135,180	135,606
%	58.69%	80.34%	83.70%	86.61%	87.25%	87.92%	88.45%	89.70%	90.23%	90.84%	91.56%	92.31%	93.02%	93.21%	93.42%	94.47%	99.69%	100.00%

† Month one is the service month (i.e., month the beneficiary filled the prescription).
* Rounded and expressed in millions.

- A month after the service month a final record for 80.3% of PDEs had been received; the proportion rises to 93% one year after the service date (i.e., month 13). The cumulative percentage of PDEs that are final improves until month 18, which is June of the following year. By PDE data processing rules,

the final reconciliation results in late changes in PDEs (for example, in months 16–18 in Table 5). This pattern was not present for other types of OM Part A and B claims