

# MRF Quality Report

s3://talon-storage-private/mrf-feed-uploads/  
2025-10/2025-07-14\_Providence\_Health\_Plan\_c8da3be10143c88ae2c515f8962fd50c\_in-network-rates.json.gz  
Size: 264.59 MB • MD5: 2bcfaf32aueb12c766b8f175d8752994

Payer: **Providence\_Health\_Plan** • File Date: **2025-07-14** • Generated: **2026-04-26 04:39 EDT** • Tool Version: **1.0.0** • Elapsed: **2432.40s**

# 74.0

Limited Reliability

score capped at 74.0 — 1 native JSON parse error(s) require payer re-export (see meta for details)

Errors: 3 • Warnings: 11 • Info: 3 • **1 Raw JSON Error(s)**

## TOC Plan References

TOC: s3://talon-storage-private/mrf-feed-uploads/2025-10/2025-10-15\_Providence-Health-Plan-Master\_combine\_index.json • Providence Health Plan (Health Plan)

Canonical: s3://talon-storage-private/mrf-feed-uploads/2025-10/2025-07-14\_Providence\_Health\_Plan\_c8da3be10143c88ae2c515f8962fd50c\_in-network-rates.json.gz

Plan Name	Plan ID	Issuer / Sponsor	Market
CHOICE	020791912 (EIN)	—	group
CHOICE	030583617 (EIN)	—	group
CHOICE	113663726 (EIN)	—	group
CHOICE	200041705 (EIN)	—	group
CHOICE	200361525 (EIN)	—	group
CHOICE	200525968 (EIN)	—	group
CHOICE	200538594 (EIN)	—	group
CHOICE	201968285 (EIN)	—	group
CHOICE	203553053 (EIN)	—	group
CHOICE	204693675 (EIN)	—	group
CHOICE	204812439 (EIN)	—	group

Plan Name	Plan ID	Issuer / Sponsor	Market
CHOICE	205021417 (EIN)	—	group
CHOICE	205230500 (EIN)	—	group
CHOICE	205241666 (EIN)	—	group
CHOICE	205474073 (EIN)	—	group
CHOICE	205530554 (EIN)	—	group
CHOICE	208036165 (EIN)	—	group
CHOICE	208085084 (EIN)	—	group
CHOICE	208203071 (EIN)	—	group
CHOICE	208913470 (EIN)	—	group
CHOICE	221861862 (EIN)	—	group
CHOICE	260037160 (EIN)	—	group
CHOICE	261398848 (EIN)	—	group
CHOICE	262178504 (EIN)	—	group
CHOICE	262686074 (EIN)	—	group
CHOICE	263123933 (EIN)	—	group
CHOICE	263173863 (EIN)	—	group
CHOICE	264004249 (EIN)	—	group
CHOICE	270059320 (EIN)	—	group
CHOICE	270802364 (EIN)	—	group
CHOICE	271795338 (EIN)	—	group
CHOICE	274189645 (EIN)	—	group
CHOICE	274484961 (EIN)	—	group
CHOICE	274512637 (EIN)	—	group
CHOICE	274798002 (EIN)	—	group
CHOICE	300831016 (EIN)	—	group
CHOICE	300884123 (EIN)	—	group
CHOICE	320185670 (EIN)	—	group
CHOICE	364619551 (EIN)	—	group
CHOICE	371707882 (EIN)	—	group

Plan Name	Plan ID	Issuer / Sponsor	Market
CHOICE	371741105 (EIN)	—	group
CHOICE	383663226 (EIN)	—	group
CHOICE	412074699 (EIN)	—	group
CHOICE	412270458 (EIN)	—	group
CHOICE	450515359 (EIN)	—	group
CHOICE	453063950 (EIN)	—	group
CHOICE	453960543 (EIN)	—	group
CHOICE	454601664 (EIN)	—	group
CHOICE	454911318 (EIN)	—	group
CHOICE	460636881 (EIN)	—	group
CHOICE	460684391 (EIN)	—	group
CHOICE	460831777 (EIN)	—	group
CHOICE	460996880 (EIN)	—	group
CHOICE	461618388 (EIN)	—	group
CHOICE	461674573 (EIN)	—	group
CHOICE	464447754 (EIN)	—	group
CHOICE	464703418 (EIN)	—	group
CHOICE	465647409 (EIN)	—	group
CHOICE	470884955 (EIN)	—	group
CHOICE	471845651 (EIN)	—	group
CHOICE	471919472 (EIN)	—	group
CHOICE	472616205 (EIN)	—	group
CHOICE	472765588 (EIN)	—	group
CHOICE	472858317 (EIN)	—	group
CHOICE	472872351 (EIN)	—	group
CHOICE	473609270 (EIN)	—	group
CHOICE	474040556 (EIN)	—	group
CHOICE	474553014 (EIN)	—	group
CHOICE	474769826 (EIN)	—	group

Plan Name	Plan ID	Issuer / Sponsor	Market
CHOICE	475088390 (EIN)	—	group
CHOICE	550818729 (EIN)	—	group
CHOICE	562403209 (EIN)	—	group
CHOICE	571167207 (EIN)	—	group
CHOICE	611536354 (EIN)	—	group
CHOICE	721598981 (EIN)	—	group
CHOICE	743114084 (EIN)	—	group
CHOICE	743255752 (EIN)	—	group
CHOICE	753066096 (EIN)	—	group
CHOICE	760815628 (EIN)	—	group
CHOICE	800010040 (EIN)	—	group
CHOICE	800961436 (EIN)	—	group
CHOICE	810551680 (EIN)	—	group
CHOICE	813988159 (EIN)	—	group
CHOICE	814700719 (EIN)	—	group
CHOICE	814770640 (EIN)	—	group
CHOICE	814804794 (EIN)	—	group
CHOICE	820663449 (EIN)	—	group
CHOICE	820848517 (EIN)	—	group
CHOICE	821717382 (EIN)	—	group
CHOICE	821981048 (EIN)	—	group
CHOICE	823672628 (EIN)	—	group
CHOICE	823943634 (EIN)	—	group
CHOICE	824013791 (EIN)	—	group
CHOICE	832142821 (EIN)	—	group
CHOICE	833650151 (EIN)	—	group
CHOICE	834652020 (EIN)	—	group
CHOICE	834718503 (EIN)	—	group
CHOICE	842889916 (EIN)	—	group

Plan Name	Plan ID	Issuer / Sponsor	Market
CHOICE	843616587 (EIN)	—	group
CHOICE	843960913 (EIN)	—	group
CHOICE	843993546 (EIN)	—	group
CHOICE	844147306 (EIN)	—	group
CHOICE	844309250 (EIN)	—	group
CHOICE	850857559 (EIN)	—	group
CHOICE	851284377 (EIN)	—	group
CHOICE	852050973 (EIN)	—	group
CHOICE	852477767 (EIN)	—	group
CHOICE	862175493 (EIN)	—	group
CHOICE	863726991 (EIN)	—	group
CHOICE	870941927 (EIN)	—	group
CHOICE	871702555 (EIN)	—	group
CHOICE	871904389 (EIN)	—	group
CHOICE	872532418 (EIN)	—	group
CHOICE	873156541 (EIN)	—	group
CHOICE	873473535 (EIN)	—	group
CHOICE	873536076 (EIN)	—	group
CHOICE	882632422 (EIN)	—	group
CHOICE	883175319 (EIN)	—	group
CHOICE	911763310 (EIN)	—	group
CHOICE	911767064 (EIN)	—	group
CHOICE	911996044 (EIN)	—	group
CHOICE	912078778 (EIN)	—	group
CHOICE	912188319 (EIN)	—	group
CHOICE	920653006 (EIN)	—	group
CHOICE	930386839 (EIN)	—	group
CHOICE	930412591 (EIN)	—	group
CHOICE	930421802 (EIN)	—	group

Plan Name	Plan ID	Issuer / Sponsor	Market
CHOICE	930429749 (EIN)	—	group
CHOICE	930454786 (EIN)	—	group
CHOICE	930504742 (EIN)	—	group
CHOICE	930567187 (EIN)	—	group
CHOICE	930577996 (EIN)	—	group
CHOICE	930579560 (EIN)	—	group
CHOICE	930592325 (EIN)	—	group
CHOICE	930612307 (EIN)	—	group
CHOICE	930625359 (EIN)	—	group
CHOICE	930631398 (EIN)	—	group
CHOICE	930637771 (EIN)	—	group
CHOICE	930652839 (EIN)	—	group
CHOICE	930659412 (EIN)	—	group
CHOICE	930697976 (EIN)	—	group
CHOICE	930704786 (EIN)	—	group
CHOICE	930712853 (EIN)	—	group
CHOICE	930749667 (EIN)	—	group
CHOICE	930752515 (EIN)	—	group
CHOICE	930752928 (EIN)	—	group
CHOICE	930758732 (EIN)	—	group
CHOICE	930764156 (EIN)	—	group
CHOICE	930791104 (EIN)	—	group
CHOICE	930792491 (EIN)	—	group
CHOICE	930796784 (EIN)	—	group
CHOICE	930848098 (EIN)	—	group
CHOICE	930877643 (EIN)	—	group
CHOICE	930887968 (EIN)	—	group
CHOICE	930923173 (EIN)	—	group
CHOICE	930931601 (EIN)	—	group

Plan Name	Plan ID	Issuer / Sponsor	Market
CHOICE	930935419 (EIN)	—	group
CHOICE	930947396 (EIN)	—	group
CHOICE	930954235 (EIN)	—	group
CHOICE	930965789 (EIN)	—	group
CHOICE	930975591 (EIN)	—	group
CHOICE	931004701 (EIN)	—	group
CHOICE	931020939 (EIN)	—	group
CHOICE	931030335 (EIN)	—	group
CHOICE	931046448 (EIN)	—	group
CHOICE	931046715 (EIN)	—	group
CHOICE	931051432 (EIN)	—	group
CHOICE	931054889 (EIN)	—	group
CHOICE	931055248 (EIN)	—	group
CHOICE	931058320 (EIN)	—	group
CHOICE	931072403 (EIN)	—	group
CHOICE	931082420 (EIN)	—	group
CHOICE	931086265 (EIN)	—	group
CHOICE	931119163 (EIN)	—	group
CHOICE	931124806 (EIN)	—	group
CHOICE	931127001 (EIN)	—	group
CHOICE	931129417 (EIN)	—	group
CHOICE	931130576 (EIN)	—	group
CHOICE	931135757 (EIN)	—	group
CHOICE	931141691 (EIN)	—	group
CHOICE	931144930 (EIN)	—	group
CHOICE	931154399 (EIN)	—	group
CHOICE	931162938 (EIN)	—	group
CHOICE	931163998 (EIN)	—	group
CHOICE	931164908 (EIN)	—	group

Plan Name	Plan ID	Issuer / Sponsor	Market
CHOICE	931176385 (EIN)	—	group
CHOICE	931180493 (EIN)	—	group
CHOICE	931192738 (EIN)	—	group
CHOICE	931199997 (EIN)	—	group
CHOICE	931210029 (EIN)	—	group
CHOICE	931210910 (EIN)	—	group
CHOICE	931218471 (EIN)	—	group
CHOICE	931250906 (EIN)	—	group
CHOICE	931252200 (EIN)	—	group
CHOICE	931259453 (EIN)	—	group
CHOICE	931259656 (EIN)	—	group
CHOICE	931272326 (EIN)	—	group
CHOICE	931282936 (EIN)	—	group
CHOICE	931286386 (EIN)	—	group
CHOICE	931286637 (EIN)	—	group
CHOICE	931292224 (EIN)	—	group
CHOICE	931293439 (EIN)	—	group
CHOICE	931294353 (EIN)	—	group
CHOICE	931298256 (EIN)	—	group
CHOICE	931314764 (EIN)	—	group
CHOICE	931316227 (EIN)	—	group
CHOICE	931327268 (EIN)	—	group
CHOICE	932306423 (EIN)	—	group
CHOICE	936002316 (EIN)	—	group
CHOICE	943034161 (EIN)	—	group
CHOICE	991154185 (EIN)	—	group
CHOICE	56707OR1140032-01 (HIOS)	—	group
CHOICE	56707OR1440001-00 (HIOS)	—	group
CHOICE	56707OR1440002-00 (HIOS)	—	group

Plan Name	Plan ID	Issuer / Sponsor	Market
CHOICE	56707OR1440002-01 (HIOS)	—	group
CHOICE	56707OR1440004-00 (HIOS)	—	group
CHOICE	56707OR1440004-01 (HIOS)	—	group
CHOICE	56707OR1440006-00 (HIOS)	—	group
CHOICE	56707OR1440006-01 (HIOS)	—	group
CHOICE	56707OR1440008-00 (HIOS)	—	group
CHOICE	56707OR1440008-01 (HIOS)	—	group
CHOICE	56707OR1440009-01 (HIOS)	—	group
CHOICE	56707OR1440010-00 (HIOS)	—	group
CHOICE	56707OR1440010-01 (HIOS)	—	group
CONNECT	930983772 (EIN)	—	group
HSA_CHOICE	200361525 (EIN)	—	group
HSA_CHOICE	205230500 (EIN)	—	group
HSA_CHOICE	261617237 (EIN)	—	group
HSA_CHOICE	264110171 (EIN)	—	group
HSA_CHOICE	454130541 (EIN)	—	group
HSA_CHOICE	832142821 (EIN)	—	group
HSA_CHOICE	852477767 (EIN)	—	group
HSA_CHOICE	854087681 (EIN)	—	group
HSA_CHOICE	870941927 (EIN)	—	group
HSA_CHOICE	882632422 (EIN)	—	group
HSA_CHOICE	930659412 (EIN)	—	group
HSA_CHOICE	930764156 (EIN)	—	group
HSA_CHOICE	931086298 (EIN)	—	group
HSA_CHOICE	931163998 (EIN)	—	group
HSA_CHOICE	932306423 (EIN)	—	group

## Raw JSON Parse Errors

### ResponseStreamingError

An error occurred while reading from response stream: ('Connection broken: IncompleteRead(277438358 bytes read, 12031127074 more expected)', IncompleteRead(277438358 bytes read, 12031127074 more expected))

Full message:

```
An error occurred while reading from response stream: ('Connection broken: IncompleteRead(277438358 bytes read, 12031127074 more expected)', IncompleteRead(277438358 bytes read, 12031127074 more expected))
```

## Dimension Scores

Dimension	Score	Weight	Findings
Schema Integrity	86.0	30%	4
Provider Mapping	100.0	15%	4
Code Coverage	94.8	15%	1
Pricing Sanity	69.9	40%	8

## Schema Integrity — Findings

---

Score: 86.0

**ERROR** file\_freshness

File is 286 days old (last\_updated\_on exceeds the 90-day threshold)

---

**WARNING** expired\_prices

92010 negotiated\_prices have past expiration dates (8.0%)

---

**ERROR** raw\_json\_error

Native JSON parse error detected in unpatched source file: An error occurred while reading from response stream: ('Connection broken: IncompleteRead(277438358 bytes read, 12031127074 more expected)', IncompleteRead(277438358 bytes read, 12031127074 more expected)). Scoring below reflects auto-patched data only. File must be re-exported by the payer to fully resolve.

---

**ERROR** parse\_crash

single pass crash after 48 items: An error occurred while reading from response stream: ('Connection broken: IncompleteRead(22494298 bytes read, 12286071134 more expected)', IncompleteRead(22494298 bytes read, 12286071134 more expected))

---

## Provider Mapping — Findings

---

Score: 100.0

**WARNING** `npi_validity`

0.00% of NPIs failed Luhn checksum validation (4 of 108862)

- 1336588484
  - 1659650617
- 

**WARNING** `ein_validity`

0.30% of EINs failed IRS prefix validation (192 of 63787)

- 000000001
  - 001625898
  - 003360711
  - 003680161
  - 004829723
  - ... and 5 more
- 

**WARNING** `empty_npi_groups`

43 provider groups contain no NPIs

---

**INFO** `duplicate_npis`

36237 NPIs appear in more than one provider group

---

# Code Coverage — Findings

---

Score: 94.8

**WARNING** `billing_code_format`

5 CPT codes do not match expected format

---

## Pricing Sanity — Findings

---

Score: 69.9

**INFO** `per_diem_rates`

56 per-diem rates (0.0%) — not dollar amounts; excluded from spread analysis

---

**INFO** `percentage_rates`

6208 percentage rates (0.5%) — values represent % of a reference rate, not dollar amounts; excluded from spread analysis

---

**WARNING** `zero_rates`

907 zero-dollar rates (0.08%) — CMS schema requires `negotiated_rate > 0` (`exclusiveMinimum`); may represent unfiled or excluded services

---

**WARNING** `extreme_rates`

1.10% of rates are extreme (12564 above class-specific high threshold, 0 below \$0.01)

---

**WARNING** `high_frequency_rate_value`

37 rate value(s) appear with suspiciously high frequency ( $\geq 0.5\%$  of dollar rates and  $\geq 50$  occurrences) — likely placeholder/sentinel values rather than real negotiated rates.

- `{'rate': 378.0, 'count': 19711, 'pct': 1.72}`
  - `{'rate': 971.0, 'count': 19708, 'pct': 1.72}`
  - `{'rate': 922.5, 'count': 19708, 'pct': 1.72}`
  - `{'rate': 264.0, 'count': 19708, 'pct': 1.72}`
  - `{'rate': 154.0, 'count': 19708, 'pct': 1.72}`
  - ... and 5 more
- 

**WARNING** `rate_spread_by_class`

`billing_class='professional' / negotiated_type='fee schedule':` P95/P50 spread is 11.5x (threshold: 5x, N=1,122,589 (1,000 sampled), high confidence)

---

**WARNING** `rate_spread_by_class`

`billing_class='institutional' / negotiated_type='negotiated':` P95/P50 spread is 1143.4x (threshold: 10x, N=148, moderate confidence)

---

**WARNING** per\_code\_rate\_spread

14 rate contexts have a max/min ratio exceeding the type-specific threshold (20x professional / 50x facility, min 3 occurrences required). Each context is a unique combination of all 10 rate-key dimensions. n= shows how many distinct provider rates exist for that exact context.

Code	Code Type	Neg. Type	Billing Class	Arrangement	Setting	Min	Median	Mean	Max	Ratio	n
86638	CPT	fee schedule	professional	ffs	—	\$9.33	\$17.45	\$2109.69	\$2400000.00	257234.7×	3296
86793	CPT	fee schedule	professional	ffs	—	\$10.16	\$18.99	\$2111.13	\$2400000.00	236220.5×	3296
87531	CPT	fee schedule	professional	ffs	—	\$25.93	\$83.52	\$2170.40	\$2400000.00	92556.9×	3296
87651	CPT	fee schedule	professional	ffs	—	\$27.02	\$50.53	\$2140.49	\$2400000.00	88823.1×	3296
V2100	HCPCS	fee schedule	professional	ffs	—	\$40.35	\$58.84	\$8685.79	\$2400000.00	59479.6×	25752
86828	CPT	fee schedule	professional	ffs	—	\$49.43	\$92.43	\$2179.58	\$2400000.00	48553.5×	3295
B4178	HCPCS	fee schedule	professional	ffs	—	\$64.69	\$81.53	\$8680.07	\$2400000.00	37100.0×	25837
L4100	HCPCS	fee schedule	professional	ffs	—	\$107.14	\$153.01	\$8751.58	\$2400000.00	22400.6×	25837
81274	CPT	fee schedule	professional	ffs	—	\$211.62	\$395.76	\$2460.11	\$2400000.00	11341.1×	3296
J9347	HCPCS	negotiated	institutional	ffs	—	\$138.43	\$600102.44	\$621648.33	\$1286250.00	9291.7×	4

## Recommended Actions

1. **schema** file\_freshness

P1

File is 286 days old (last\_updated\_on exceeds the 90-day threshold)

2. **schema** raw\_json\_error

P1

Native JSON parse error detected in unpatched source file: An error occurred while reading from response stream: ('Connection broken: IncompleteRead(277438358 bytes read, 12031127074 more expected)', IncompleteRead(277438358 bytes read, 12031127074 more expected)). Scoring below reflects auto-patched data only. File must be re-exported by the payer to fully resolve.

3. **schema** parse\_crash

P1

single pass crash after 48 items: An error occurred while reading from response stream: ('Connection broken: IncompleteRead(22494298 bytes read, 12286071134 more expected)', IncompleteRead(22494298 bytes read, 12286071134 more expected))

4. **provider\_mapping** `npi_validity`

P2

0.00% of NPIs failed Luhn checksum validation (4 of 108862)

5. **provider\_mapping** `ein_validity`

P2

0.30% of EINs failed IRS prefix validation (192 of 63787)

6. **provider\_mapping** `empty_npi_groups`

P2

43 provider groups contain no NPIs

7. **pricing** `zero_rates`

P2

907 zero-dollar rates (0.08%) — CMS schema requires `negotiated_rate > 0` (`exclusiveMinimum`); may represent unfiled or excluded services

8. **pricing** `extreme_rates`

P2

1.10% of rates are extreme (12564 above class-specific high threshold, 0 below \$0.01)

9. **pricing** `high_frequency_rate_value`

P2

37 rate value(s) appear with suspiciously high frequency ( $\geq 0.5\%$  of dollar rates and  $\geq 50$  occurrences) — likely placeholder/sentinel values rather than real negotiated rates.

10. **pricing** `rate_spread_by_class`

P2

`billing_class='professional' / negotiated_type='fee schedule'`: P95/P50 spread is 11.5x (threshold: 5x, N=1,122,589 (1,000 sampled), high confidence)

11. **pricing** `rate_spread_by_class`

P2

`billing_class='institutional' / negotiated_type='negotiated'`: P95/P50 spread is 1143.4x (threshold: 10x, N=148, moderate confidence)

12. **pricing** per\_code\_rate\_spread

P2

14 rate contexts have a max/min ratio exceeding the type-specific threshold (20x professional / 50x facility, min 3 occurrences required). Each context is a unique combination of all 10 rate-key dimensions. n= shows how many distinct provider rates exist for that exact context.

13. **schema** expired\_prices

P2

92010 negotiated\_prices have past expiration dates (8.0%)

14. **code\_coverage** billing\_code\_format

P3

5 CPT codes do not match expected format

## Schema Integrity — Metrics

header_missing_fields		
header_conditional_issues		
file_age_days		286
items_total		48
items_missing_required_pct		0.0
items_empty_rates		0
prices_total		1149421
prices_missing_required_pct		0.0
prices_missing_field_breakdown		
prices_missing_service_code		0
prices_invalid_billing_class		0
rates_without_providers		0
negotiation_arrangements	ffs	48
billing_code_types		
	CPT	27
	HCPCS	17
	MS-DRG	2
	RC	1
	APC	1

expired_prices	92010
invalid_expiration_format	0

## Provider Mapping — Metrics

provider_references_in_file	50784
provider_group_ids_referenced	48579
unresolved_references	0
resolution_rate_pct	100.0
npis_validated	108862
invalid_npi_count	4
npi_validity_rate_pct	100.0
invalid_npi_examples	1336588484, 1336588484, 1659650617, 1659650617
eins_validated	63787
invalid_ein_count	192
ein_validity_rate_pct	99.7
invalid_ein_examples	000000001, 000000001, 000000001, 001625898, 001625898, 001625898, 003360711, 003360711, 003360711, 003680161
empty_npi_groups	43
groups_without_tin	0
npis_in_multiple_groups	36237

## Code Coverage — Metrics

unique_codes_total	48										
duplicate_codes	0										
duplicate_pct	0.0										
by_code_type	<table border="1"> <tr> <td>CPT</td> <td>27</td> </tr> <tr> <td>HCPCS</td> <td>17</td> </tr> <tr> <td>MS-DRG</td> <td>2</td> </tr> <tr> <td>RC</td> <td>1</td> </tr> <tr> <td>APC</td> <td>1</td> </tr> </table>	CPT	27	HCPCS	17	MS-DRG	2	RC	1	APC	1
CPT	27										
HCPCS	17										
MS-DRG	2										
RC	1										
APC	1										

unknown_code_types		
format_invalid_by_type	CPT	5
codes_not_in_reference	reference_not_loaded	
most_frequent_codes		
	<b>Type</b>	<b>Code</b>
	CPT	19499
	CPT	87531
	HCPCS	S9439
	HCPCS	L4100
	HCPCS	C7500
	CPT	93582
	CPT	87651
	CPT	86638
	HCPCS	L5822
	HCPCS	M1150
	HCPCS	T2020
	CPT	33967
	CPT	00320
	CPT	4250F
	HCPCS	E1033
	CPT	36596
	HCPCS	Q3031
	CPT	44131
	CPT	3250F
	MS-DRG	251

## Pricing Sanity — Metrics

total_prices_checked	1149421
total_rates	1143157
per_diem_rates	56
percentage_rates	6208
negative_rates	0
zero_rates	907
extreme_high_rates	12564
extreme_low_rates	0

<b>rate_distribution</b>	<b>sample_n</b>	1143157
	<b>sample_k</b>	5000
	<b>confidence</b>	high
	<b>p5</b>	79.46
	<b>p25</b>	294.71
	<b>p50</b>	702.63
	<b>p75</b>	1692.77
	<b>p95</b>	8677.71
	<b>p99</b>	2250000.0

<b>by_billing_class</b>	<b>Class / Type</b>	<b>Count</b>	<b>Median</b>	<b>p25</b>	<b>p75</b>	<b>p95</b>	<b>Confidence</b>
	professional/ fee schedule	1,122,589	756.0	294.7	1727.8	8677.7	high
	institutional/ negotiated	148	1438.8	117.0	40287.5	1645025.5	moderate
	institutional/ fee schedule	18,432	1629.5	277.2	1945.4	7976.9	high
	professional/ negotiated	1,988	399.0	0.0	1434.0	1434.0	high

<b>negotiated_types</b>	<b>fee schedule</b>	1141021
	<b>negotiated</b>	2136

<b>unique_rate_contexts</b>	193
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<b>rate_key_dimension_validity</b>	<b>invalid_negotiated_type</b>	0
	<b>invalid_negotiated_types_seen</b>	{}
	<b>invalid_setting</b>	0
	<b>invalid_settings_seen</b>	{}
	<b>invalid_severity_of_illness</b>	0
	<b>severity_on_non_apr_drg</b>	0
	<b>institutional_with_service_codes</b>	0
	<b>invalid_service_code_format</b>	0
	<b>billing_code_modifier_too_long</b>	0

## Scoring Methodology

Embedded in this report at generation time.

### Overall Score

Weighted sum of four structural dimensions, normalized to a 0–100 scale. Pricing sanity is excluded when the file contains only non-dollar rate types (capitation, per-diem, or percentage) — dollar-amount spread analysis is not applicable in that case.

Normalized Weights		
	Schema Integrity	30%
	Provider Mapping	15%
	Code Coverage	15%
	Pricing Sanity	40%

  

Confidence Bands		
	High	≥90
	Usable With Caution	≥75
	Limited Reliability	≥60
	Not Usable	<60

  

Score Caps		
	Raw Json Errors Only → 74.0	Native JSON syntax errors in the unpatched source file. File must be re-exported by the payer; scoring reflects auto-patched data only.
	Cms Validation Failure Only → 65.0	CMS official schema validator reports the file does not conform to the TIC spec.
	Both Raw Json Errors And Cms Failure → 59.0	Both native JSON syntax errors and CMS schema validation failure present.

### Rate Context Key — 14-Tuple Field Coverage

Every rate in a CMS TIC MRF file is described by a 14-field tuple. Fields 1–10 form the rate-context key used to group and compare rates across the system. Fields 11–12 (provider, expiration date) are validated separately and excluded from the grouping key for analytical reasons. Each of the four scoring dimensions validates a distinct slice of this tuple — together they cover all 14 fields.

Field	Validated by
1 billing_code_type	Schema (required field) + Code Coverage (enum + format validation)
2 billing_code_type_version	Schema (required field)
3 billing_code	Schema (required field) + Code Coverage (format, duplicates, reference lookup)
4 billing_code_modifier	Pricing (modifier length, key normalization)
5 service_code	Pricing (POS format, normalization, institutional-class check)
6 negotiated_type	Pricing (CMS TIC enum validation)
7 billing_class	Schema (CMS TIC enum validation) + Pricing (spread thresholds)

Field	Validated by
8 negotiation_arrangement	Schema (CMS TIC enum validation) + Pricing (FFS vs bundle/capitation gating)
9 severity_of_illness	Pricing (APR-DRG only, valid values 1–4)
10 setting	Pricing (CMS TIC enum validation)
11 provider (NPI/EIN)	Provider Mapping (Luhn checksum, IRS prefix, group resolution) — excluded from grouping key
12 expiration_date	Schema (date validity, far-future sanity) — excluded from grouping key
13 additional_generic_notes	not validated (free-text)
14 negotiated_rate	Pricing (negative/zero/extreme-value checks, spread analysis)

- Fields 1–10 are the grouping key. Each unique combination is a distinct rate context — rates with different modifiers, POS codes, or arrangements land in separate buckets and are never compared against each other.
- Provider (field 11) is excluded from the key: the spread check is cross-provider by design. Partitioning by provider produces singleton buckets and eliminates the spread signal.
- Expiration date (field 12) is excluded because it is a contract lifecycle attribute, not a clinical context. Rates for the same service should be comparable regardless of when they expire.
- service\_code (field 5) arrays are flattened and normalized before keying: '1' → '01', and a rate with ['11','22'] contributes to both the '11' and '22' buckets so rates are compared apples-to-apples by place of service.

## Schema Integrity

Validates required fields, enum values, conditional requirements, and date validity per the CMS TIC in-network-rates schema. Also checks file freshness and expiration date sanity.

**Method:** Penalty-based deductions from 100, capped per category.

per_missing_required_header_field	5
per_header_conditional_issue	2
freshness_warn	5
freshness_error	10
item_missing_fields_pct	×5 (cap 30)
empty_rates_pct	×0.5 (cap 5)
price_missing_fields_pct	×10 (cap 30)
rates_without_providers_rate	×200 (cap 20)
expired_prices_pct	×0.5 (cap 5)
file freshness warn days	45
file freshness error days	90
expiry far future years	3

## Provider Mapping

Verifies that all provider\_group\_id references in in\_network items resolve to an entry in the provider\_references array. Validates NPI integrity via Luhn checksum and EIN integrity via IRS-issued 2-digit prefix.

**Method:** Weighted component sum (not purely penalty-based).

<b>provider_resolution (60%)</b>	$\text{resolution\_rate\%} \times 0.60$
<b>npi_validity (30%)</b>	$(100 - \text{invalid\_npi\_pct} \times 5) \times 0.30$
<b>ein_validity (10%)</b>	$10 - (\text{invalid\_ein\_pct} \times 0.1)$ [0% invalid → 10 pts, 100% invalid → 0 pts, linear]

## Code Coverage

Tracks every (billing\_code\_type, billing\_code) pair and flags unrecognized CMS TIC code types, format violations for CPT/HCPCS/NDC, and duplicates (same code appearing in multiple in\_network items).

**Method:** Penalty-based deductions from 100.

<b>per_unknown_code_type</b>	3 pts each (cap 20)
<b>format_invalid_pct</b>	$\times 0.5$ (cap 10)
<b>duplicate_code_pct</b>	$\times 2$ (cap 20)
<b>codes_not_in_reference_pct</b>	$\times 0.5$ (cap 30) — only when reference set is loaded

## Pricing Sanity

Detects invalid rates (negative, zero, extreme-value) and distribution anomalies (per-class P95/P50 spread, per-code max/min ratio, flat-rate distributions). Exact counts are used for all validity checks (negative, zero, extreme, dimension validity). Percentile-based checks (spread, IQR) use reservoir sampling — k=5 000 global, k=1 000 per (billing\_class, negotiated\_type) bucket — so memory stays bounded on large files. Per-code max/min spread is exact (all rates seen, no sampling).

**Method:** Penalty-based deductions from 100.

<b>negative_rate_pct</b>	$\times 5$ (cap 20)
<b>zero_rate_pct</b>	$\times 3$ (cap 15) — warning (not error)
<b>extreme_rate_pct</b>	$\times 5$ (cap 25) — ffs only
<b>class_spread_excess</b>	$(\text{spread} - \text{threshold}) \times 2$ , max across (billing_class, negotiated_type) buckets (cap 15)
<b>per_code_high_spread_count</b>	$\times 0.1$ (cap 15)
<b>invalid_negotiated_type_pct</b>	$\times 3$ (cap 10) — rates silently dropped
<b>invalid_setting_pct</b>	$\times 1$ (cap 5) — silently defaults to wildcard
<b>invalid_severity_pct</b>	$\times 1$ (cap 5) — silently normalised to ''
<b>institutional_with_service_codes_pct</b>	$\times 1$ (cap 5) — extra key variation
<b>invalid_service_code_pct</b>	$\times 2$ (cap 5) — encode raises ValueError

<b>extreme high by billing class</b>	professional: 25000.0, institutional: 2000000.0, both: 2000000.0, default: 500000.0
<b>extreme low</b>	0.01
<b>spread warn p95 over p50 by class</b>	professional: 5, institutional: 10, both: 10, default: 5
<b>per rate context max min ratio</b>	professional_codes: 20, facility_drg_codes: 50
<b>flat rate iqr p75 threshold pct</b>	5.0
<b>flat rate min rates to check</b>	100
<b>spread min n to flag</b>	50
<b>per code min n to flag</b>	3

## Dashboard: MRF Identity Key

(ingest-time — not stored in report JSON)

The dashboard assigns a persistent `mrf_key` to each MRF so that all validation runs of the same file are grouped together in the score-history view, even if the payer re-exports the file at a new URL.

<b>Tier 1 — entity + plan_id</b>	Used when both <code>reporting_entity_name</code> and <code>plan_id</code> are present. Key input: <code>plan &lt;entity&gt; &lt;plan_id_type&gt; &lt;plan_id&gt;</code> . Stable across monthly re-exports.
<b>Tier 2 — URL hash</b>	Fallback when <code>plan_id</code> is absent. Key input: the raw file location URL/path. Entity name alone is not used — a payer publishes multiple distinct plans under the same entity name and without <code>plan_id</code> they cannot be safely distinguished. A URL change produces a different key.

The key is a 16-character MD5 hex digest of the input string (case-insensitive, whitespace-stripped). **This run:** `mrf_key = e9e5358e77e301e6 · entity = Providence_Health_Plan · tier = 2 (URL hash)`

## Provider Geographic Coverage

(supplemental — does not affect score)

Geographic analysis is a supplemental feature computed on demand after scoring completes. It does not affect any scoring dimension — it is an observational overlay to assess the breadth and distribution of in-network providers.

<b>NPPES</b>	CMS National Plan and Provider Enumeration System — monthly full-replacement CSV. Maps each NPI to its primary registered ZIP code.
<b>ZCTA centroids</b>	GeoNames US postal code file. Maps each 5-digit ZIP to a (latitude, longitude) centroid for map placement.

**Process:** Extract all NPIs from the MRF file → resolve each NPI to its primary practice ZIP via NPPES → aggregate provider count per ZIP → map each ZIP to a lat/lon centroid via ZCTA → render as a weighted heatmap (intensity  $\propto$  provider count per ZIP).

**Limitations:** NPIs absent from NPPES (recently issued, test NPIs, EINs) are excluded and reduce the geocoding match rate. Location reflects the provider's NPPES-registered primary address, not necessarily where they accept this specific plan. Map viewport covers the bounding box of ZIP codes representing 90% of total provider count, dropping sparse geographic outliers.