

Minnesota All Payer Claims Database Health Care Services Public Use File: A User Guide

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Background

The Minnesota Department of Health (MDH) maintains the Minnesota All Payer Claims Database (MN APCD), a repository of health care claims data that supports statewide analyses of health care costs, quality, and utilization. Under legislative mandate, MDH releases publicly available summary information from the MN APCD in the form of public use files (PUFs). PUF data are delivered in spreadsheets with aggregated records that prevent the identification of individual members, providers, and health plans. As of July 2025, currently available MN APCD PUFs, derived from medical and pharmacy claims, contain summary data on health care services, health care utilization, primary diagnoses, provider specialties, members, and prescription drugs.¹ This document introduces the Health Care Services PUF, illustrates how to interpret PUF records, and includes technical instructions for users who wish to further aggregate PUF records.

Overview of the Services PUF

The Health Care Services PUF was derived from MN APCD medical claims submitted by insurers for services rendered during the 2009 through 2022 calendar years. Each record in the PUF aggregates claims information by service code, payer type (commercial, Medicare, or Minnesota Health Care Programs) and an additional set of stratifying variables representing the member's age group, sex, and county of residence. The Health Care Services PUF can be used to study variation of medical services across payer types and within or across combinations of the additional stratifying variables. Expenditure variables include the medical providers' collective charged amounts as well as the separate amounts paid by the insurer and member and their total for medical costs.

MDH developed this PUF in partnership with Onpoint Health Data and welcomes questions and feedback from users at: health.APCD@state.mn.us.

Design of the Services PUF

Definition of Services

Medical services in the Health Care Services PUF, reported at the service line level, are either procedure codes from professional claims or revenue codes from facility claims. Broadly, professional claims capture procedures performed by health care providers (e.g., mammogram), while facility claims capture resource utilization (e.g., private room and board). Procedures codes in the PUF include both Current Procedural Terminology (CPT) and Healthcare Common Procedure Coding System (HCPCS) codes. If both a procedure code and a revenue code were reported on the same claim service line, the procedure code was used for assignment to a PUF record. The PUF includes a variable that allows for filtering between CPT/HCPCS and revenue codes.

Additionally, the Health Care Services PUF includes a variable that aggregates similar services into broader categories. This variable, the service code category, assigns similar revenue codes

to categories based on logic created by Onpoint Health Data. For example, the revenue codes for ‘Oncology room and board’ and ‘Psychiatric room and board’ are both assigned to the service code category ‘Room and board (non-nursery)’. For procedure codes, the service code category variable groups similar services into clinically meaningful categories based on Clinical Classification System (CCS) groupings.² The procedure codes for ‘Colonoscopy with lesion removal’ and ‘Diagnostic colonoscopy’ appear in the ‘Colonoscopy and biopsy’ category, for example. Onpoint Health Data further enhanced the CCS categorization to identify several categories (e.g., office visits, preventive visits, emergency room visits, consultations, behavioral health services) that CCS had aggregated into a single category (227: ‘Consultation, evaluation, and preventative care’).

The spending on services reported in the Health Care Services PUF may significantly underestimate the total and average spending on services that are billed as part of a larger encounter (i.e., the collection of all health care services provided to a member during a single visit or inpatient stay). The combination of services in any given encounter can vary. Encounter level data are not available in the Health Care Services PUF. Data on select encounters can be found in the MN APCD Health Care Utilization PUF.

Data Elements

In addition to stratification by service code and payer type, PUF records are further stratified by:

- Member’s age group
- Member’s sex
- Member’s county of residence

Five age groups (years) are identified in the PUF, based on member age at the time of the medical claim: (1) 18 and younger, (2) 19 to 44, (3) 45-64, (4) 65 to 74, and (5) 75 and older. Member sex (male or female) is similarly based on the information reported at the time of the medical claim. Member county of residence represents the county associated with a member’s ZIP code using information reported on the member’s eligibility data.

Exclusions from the Public Use Files

Medical claims submitted to the MN APCD include duplicate and denied claims as well as other claims with various types of deficiencies that detract from their analytic usefulness. The Minnesota Department of Health (MDH) removes duplicate and denied claims as well as claims that fail a number of tests—including whether the claim was filed on behalf of an in-state resident and reported a positive total amount paid.

The Health Care Services PUF excludes claims for non-Minnesota residents, orphaned claims (i.e., reversal claims that result in negative paid amounts), denied claims, claims with missing or invalid procedure codes and revenue codes, dental codes, claims with a reported sex code of

“U” (unknown), and those that are missing county information based on the member’s reported ZIP code.

After claims were aggregated to produce a preliminary or “full” version of the PUF, records with counts <11 were redacted to prevent identification of individual members, providers, or payers. Starting with the total claims records available in the MN APCD, the following tables summarize the data at each step of processing.

Table 1. Claims counts at each step of PUF processing.

Year	MN APCD	Unredacted PUF	Redacted PUF	Exclusion %	Redaction %
2009	158,024,564	143,809,474	130,661,314	9.0%	9.0%
2010	166,339,561	152,047,817	138,300,048	8.6%	16.9%
2011	171,124,534	158,082,577	144,145,967	7.6%	15.8%
2012	176,598,226	162,907,567	148,748,737	7.8%	15.8%
2013	181,345,073	170,491,666	155,905,247	6.0%	14.0%
2014	192,539,371	180,422,233	165,302,791	6.3%	14.1%
2015	200,690,509	189,767,535	173,851,022	5.4%	13.4%
2016	173,977,611	166,710,060	151,517,246	4.2%	14.8%
2017	189,855,208	184,211,177	167,929,525	3.0%	13.1%
2018	210,912,217	207,657,192	188,802,987	1.5%	11.7%
2019	211,178,959	208,623,855	189,295,808	1.2%	11.6%
2020	193,097,194	189,323,591	170,550,538	2.0%	13.2%
2021	220,364,025	213,442,981	194,011,631	3.1%	13.6%
2022	220,016,435	215,755,355	196,400,529	1.9%	12.0%

Table 2. Total paid amount at each step of PUF processing.

Year	MN APCD	Unredacted PUF	Redacted PUF	Exclusion %	Redaction %
2009	\$21,432,831,791	\$19,625,377,635	\$16,026,824,637	8.4%	8.4%
2010	\$22,449,083,853	\$20,644,239,962	\$16,744,682,227	8.0%	25.4%
2011	\$23,569,709,545	\$21,829,143,006	\$17,893,205,329	7.4%	24.1%
2012	\$24,831,271,322	\$22,952,300,132	\$18,845,361,361	7.6%	24.1%
2013	\$25,758,097,024	\$24,183,643,042	\$19,910,161,601	6.1%	22.7%
2014	\$27,298,096,767	\$25,745,367,365	\$21,249,188,067	5.7%	22.2%
2015	\$28,602,361,877	\$27,187,224,166	\$22,449,684,548	4.9%	21.5%
2016	\$24,801,068,855	\$24,021,636,354	\$19,603,811,153	3.1%	21.0%
2017	\$27,037,058,998	\$26,331,874,274	\$21,510,727,896	2.6%	20.4%
2018	\$28,769,835,872	\$28,205,547,512	\$23,015,021,371	2.0%	20.0%
2019	\$28,843,060,275	\$28,257,386,754	\$22,821,301,213	2.0%	20.9%
2020	\$27,958,263,827	\$27,430,643,893	\$21,702,831,300	1.9%	22.4%
2021	\$31,747,111,524	\$31,129,067,730	\$24,915,838,070	1.9%	21.5%

2022	\$33,294,175,922	\$32,872,999,785	\$26,453,354,059	1.3%	20.5
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Other Important Data Considerations

The MN APCD includes medical claims for Medicare, Minnesota Health Care Programs, and most commercial plans. The MN APCD was not designed to include claims for health care covered by Tricare, Veterans Affairs, the Indian Health Service, Workers' Compensation, or for care provided to Minnesotans without health insurance. It also does not include claims for services provided by plans that do not cover general medical care, such as accident-only, vision, or dental plans. In addition, data from certain low-volume carriers (less than \$3 million in medical claims or less than \$300,000 in pharmacy claims) are exempt from submission to the MN APCD. Lastly, it should be noted that claims data are only as accurate as the coding on submitted claims.

In a decision released on March 1, 2016, the U.S. Supreme Court upheld a lower court's ruling that self-insured health plans could not be required to submit claims data to a state's APCD (*Gobeille v. Liberty Mutual Insurance Co.*). The court found that requiring self-insured plans to submit medical and pharmacy claims was preempted by the Employee Retirement Income Security Act (ERISA). The decision does not prohibit the voluntary submission of self-insured plan data to the MN APCD. The effect of this decision was to substantially reduce the volume of commercial claims and enrollment that ERISA-subject self-insured plans reported to the MN APCD. The Health Care Services PUF, because its claims data are span data from 2016 and later, will include members whose commercial insurers stopped submitting data early in the year. As a result, the Health Care Services PUF will tend to understate counts for the commercial coverage for the population it represents. Estimates of cost distributions within the commercially insured group—means and medians—should not be greatly affected.³ However, estimates of total counts or spending amounts for all Minnesotans will be affected.

Interpreting Public Use File Data

The table below includes two records from the Health Care Services PUF for patients with an office visit procedure code of 99215. Both records are for female patients covered by a commercial submitter in 2022. The only difference between patients in the two records is county of residence. The first record shows that, among Minnesotans with commercial insurance that reported data to the MN APCD for 2022, there were 6,609 unique females aged 45-64 years living in Hennepin County with commercial insurance who had a procedure code for an office visit. The total paid amount (sum) associated with these procedure codes was \$4,754,398.05. The second record shows that, in the MN APCD, there were 69 unique females aged 45-64 years living in Roseau County with commercial insurance who had a procedure code for an office visit in 2022. The total paid amount (sum) associated with these procedures codes was \$23,036.88.

Table 3. Sample records with a 99215 service code office visit in 2022

County	Payer	Age group	Sex	Service code	Code category	Category description	Total paid amount (sum)	Unique members
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Hennepin	Commercial	3	F	99215	300	Office visits	\$4,754,398.05	6,609
Roseau	Commercial	3	F	99215	300	Office visits	\$23,036.88	69

User Calculations

Using the same example from the Table 3 (above), a sample calculation is illustrated in Table 4 (below). We can compare the per member per month (PMPM) cost for the given service between the counties of Hennepin (urban) and Roseau (rural) by dividing the total paid amount by member months (months of insurance coverage among all members in the record) for the members that received the service. The result in the table below shows that Hennepin had a higher PMPM cost (\$61.61) for this service code than Roseau (\$46.45). This calculation is appropriate even considering the unreported data for some commercial members, with the assumption that spending for commercial enrollees with data in the MN APCD is similar to spending for commercial enrollees whose plans have not reported data to the MN APCD.

Table 4. Sample records with a 99215 service code office visit in 2022, with calculation

County	Payer	Age Group	Sex	Service code	Code category	Total paid amount (sum)	Member months	Total paid PMPM
Hennepin	Commercial	3	F	99215	300	\$4,754,398.05	77,043	\$61.61
Roseau	Commercial	3	F	99215	300	\$23,036.88	496	\$46.45

Appendix A: Public Use File Control Totals

Table 5. Claim counts by payer type

Year	Commercial	Medicare	Minnesota Health Care programs
2009	51,000,709	43,781,395	35,879,210
2010	51,165,120	47,056,801	40,078,127
2011	51,215,087	49,771,693	43,159,187
2012	51,925,850	52,145,536	44,677,351
2013	52,595,605	54,909,948	48,399,694
2014	52,442,663	57,776,151	55,083,977
2015	51,684,283	61,948,943	60,217,796
2016	31,518,251	64,447,590	55,551,405
2017	32,291,954	70,156,747	65,480,824
2018	33,682,960	74,671,139	80,448,888
2019	34,273,976	70,874,900	84,146,932
2020	30,157,059	63,432,260	76,961,219
2021	33,821,295	71,389,132	88,801,204
2022	32,664,853	71,626,350	92,109,326

Table 6. Total paid amount by payer type

Year	Commercial	Medicare	Minnesota Health Care programs
2009	\$6,858,734,125	\$5,042,389,181	\$4,125,701,331
2010	\$7,030,337,265	\$5,385,470,148	\$4,328,874,814
2011	\$7,443,171,381	\$5,866,620,550	\$4,583,413,397
2012	\$7,975,163,447	\$6,170,482,369	\$4,699,715,545
2013	\$8,274,621,239	\$6,519,421,753	\$5,116,118,609
2014	\$8,575,119,468	\$6,946,375,536	\$5,727,693,063
2015	\$8,680,402,665	\$7,539,421,378	\$6,229,860,506
2016	\$5,450,472,538	\$8,006,192,443	\$6,147,146,172
2017	\$5,723,300,857	\$8,729,457,886	\$7,057,969,153
2018	\$6,087,863,660	\$9,404,803,178	\$7,522,354,533
2019	\$5,839,967,881	\$9,056,739,765	\$7,924,593,567
2020	\$5,300,426,526	\$8,435,399,107	\$7,967,005,667
2021	\$6,061,125,204	\$9,473,284,513	\$9,381,428,352
2022	\$6,157,976,415	\$9,782,102,845	10,513,274,799

¹ At this time, all PUFs are available free of charge to the user community. PUFs may be downloaded online by completing a survey form: <https://survey.vovici.com/se/56206EE333F13F0F>.

² Agency for Healthcare Research and Quality. Clinical classifications software for services and procedures. 2021. https://www.hcup-us.ahrq.gov/toolssoftware/ccs_svcspc/ccssvcproc.jsp.

³ Note, however, that coverage by self-insured plans will be underrepresented among coverage by all commercial plans. To the extent that the medical expenditures incurred by participants in self-insured plans are different from those of participants in other commercial plans, the expenditure data reported for participants in commercial plans will provide biased estimates of the expenditures of participants in all commercial plans.

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