Minnesota All Payer Claims Database Primary Diagnoses Public Use File: A User Guide

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MN APCD All Payer Claims Database

DEPARTMENT OF HEALTH

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 June 2022, 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 Primary Diagnoses PUF, illustrates how to interpret PUF records, and includes technical instructions for users who wish to further aggregate PUF records.

Public Use File Overview

The Primary Diagnoses PUF was derived from MN APCD medical claims submitted by insurers for services rendered during the 2013 through 2019 calendar years. Each record in the PUF aggregates claims information by the first three digits of primary diagnosis 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 Primary Diagnoses PUF can be used to study variation of diagnoses 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 Public Use File

Definition of Primary Diagnoses

Diagnoses are reported in medical claims using International Classification of Diseases (ICD) codes. Although multiple diagnoses can be reported on a single claim, only one diagnosis is the primary diagnosis. The primacy diagnosis is the principal condition for which the member required health care. In this PUF, primary diagnoses are limited to their first three digits. The first three digits of an ICD code represent the category of the diagnosis, which is the general type of injury or disease. For example, the full ICD code S52.122A, which is the diagnosis code for "Displaced fracture of head of left radius, initial encounter for closed fracture" would appear in the PUF under the 3-digit ICD code S52, which is the category for "Fracture of forearm".

The PUF includes descriptions of the 3-digit ICD codes as well as an ICD version indicator (i.e., whether the code is ICD-9 or ICD-10). The transition from ICD-9 to ICD-10 took place on October

1, 2015. The 2015 PUF data will contain both ICD-9 and ICD-10 codes, which can be distinguished using the ICD version indicator variable.

Counts of diagnoses and associated spending are based on data at the service line level associated with a given 3-digit ICD code. PUF data may significantly underestimate totals and average payments in instances where a claim service line is billed as part of a larger encounter.

Data Elements

In addition to stratification by 3-digit ICD 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 File

Medical claims submitted to the MN APCD include duplicate and denied claims as wells 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 Primary Diagnoses 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 diagnosis 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, Table 1 and Table 2 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 %
2013	178,660,690	176,828,360	161,054,614	1.0%	9.9%
2014	189,443,603	187,308,778	170,947,245	1.1%	9.8%
2015	197,246,599	196,227,793	171,800,338	0.5%	12.9%
2016	172,461,993	171,734,177	150,819,846	0.4%	12.5%
2017	180,241,392	179,703,336	158,411,739	0.3%	12.1%
2018	201,060,880	200,605,935	176,375,989	0.2%	12.3%
2019	203,209,363	201,990,993	177,426,014	0.6%	12.7%

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

Year	MN APCD	Unredacted PUF	Redacted PUF	Exclusion %	Redaction %
2013	$25,405,685,781	$25,194,242,568	$21,784,862,667	0.8%	14.3%
2014	$26,879,565,438	$26,641,110,078	$23,081,890,372	0.9%	14.1%
2015	$28,123,639,534	$27,919,940,138	$22,793,357,547	0.7%	19.0%
2016	$24,193,217,801	$24,089,761,205	$19,737,987,167	0.4%	18.4%
2017	$25,223,765,834	$25,139,320,728	$20,734,686,241	0.3%	17.8%
2018	$26,908,695,253	$26,822,924,672	$22,148,521,267	0.3%	17.7%
2019	$27,075,514,677	$26,923,274,711	$22,301,228,099	0.6%	17.6%

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 Primary Diagnoses PUF, because its claims data span 2016 and later, will include members whose commercial insurers stopped submitting data early in the year. As a result, the Primary Diagnoses 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.[2] However, estimates of total counts and spending amounts for all Minnesotans will be affected as a result.

Interpreting Public Use File Data

Table 3 includes two records from the Primary Diagnoses PUF for members with a principal diagnosis of Type 2 diabetes mellitus. Both records are for female members residing in Hennepin County who are covered by commercial payers in 2019, the only difference being age group. The first record shows that, among Minnesotans with commercial insurance that reported data to the MN APCD for 2019, there were 625 unique females aged 19–44 years in Hennepin County with a principal diagnosis of Type 2 diabetes mellitus. The total paid amount (sum of insurer and member payments) associated with these diagnoses was $467,421.58. The second record shows that, in the MN APCD, there were 3,126 unique females aged 45–64 years in Hennepin County with commercial coverage and a principal diagnosis of Type 2 diabetes mellitus, resulting in a total paid amount of $2,812,015.88.

Table 3. Sample records with a principal diagnosis of Type 2 diabetes.

Service year	County	Payer	Age group	Sex	Principal diagnosis code	Principal diagnosis description	Total paid sum	Count of Unique members
2019	Hennepin	Commercial	19 – 44 years	F	E11	Type 2 diabetes	$467,421.58	625
2019	Hennepin	Commercial	45 – 64 years	F	E11	Type 2 diabetes	$2,812,015.88	3,126

It should be noted that claims with non-primary diagnoses of Type 2 diabetes mellitus and a non-Type 2 diabetes mellitus principal diagnosis will not be included in these table rows. For example, if an individual had a myocardial infarction, the principal diagnosis for their associated claims would be the myocardial infarction, while the diagnosis of Type 2 diabetes mellitus would be deemed secondary. In this way, these records do not capture all costs for individuals with Type 2 diabetes mellitus.

User Calculations

Using the same example from Table 3 (above), a sample calculation is illustrated in Table 4 (below). Suppose a user was interested in calculating a per member per month cost to compare cost by age group. For such a use case, the appropriate calculation would be to divide the total paid amount by the count of unique members times their months of coverage (member months). The comparison in per member per month cost in this example shows a higher cost for females aged 45–64 years ($77.45) compared to females aged 19–44 years ($65.64). 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 enrolles whose plans have not reported data to the MN APCD.

Table 4. Sample records with a principal diagnosis of Type 2 diabetes, with calculation.

Service year	County	Payer	Age group	Sex	Principal diagnosis	Total paid sum	Member months	Total paid per member per month
2019	Hennepin	Commercial	19 - 44 years	F	E11	$467,421.58	7,121	$65.64
2019	Hennepin	Commercial	45 - 64 years	F	E11	$2,812,015.88	36,308	$77.45

Appendix A: Public Use File Control Totals

Table 5. Claim counts by payer type and age group, 2013–2015.

Payer	Age group (years)	2013	2014	2015
Commercial	<19	10,274,781	10,466,697	9,767,805
Commercial	19 – 44	18,035,978	17,929,892	16,856,376
Commercial	45 – 64	24,483,856	24,445,175	23,273,455
Commercial	65 – 74	1,424,299	1,366,219	1,320,821
Commercial	75+	1,098,065	936,470	892,374
Medicare	19 – 44	2,119,764	2,251,553	2,084,203
Medicare	45 – 64	9,376,452	9,921,281	9,739,188
Medicare	65 – 74	18,152,830	19,513,664	20,411,703
Medicare	75+	27,064,778	28,092,505	28,500,911
MHCP	<19	13,672,293	15,211,361	15,210,143
MHCP	19 – 44	17,253,192	19,816,071	21,336,709
MHCP	45 – 64	15,534,430	18,237,937	19,642,062
MHCP	65 – 74	1,292,815	1,450,370	1,515,118
MHCP	75+	1,271,081	1,308,050	1,249,470

Table 6. Claim counts by payer type and age group, 2016–2019.

Payer	Age group (years)	2016	2017	2018	2019
Commercial	<19	5,480,550	4,784,984	4,914,359	4,799,705
Commercial	19 – 44	9,629,932	8,619,101	9,056,659	9,088,113
Commercial	45 – 64	13,773,812	12,309,644	12,521,271	12,442,153
Commercial	65 – 74	856,397	875,383	934,205	1,201,044
Commercial	75+	489,058	509,098	532,198	738,204
Medicare	19 – 44	1,718,782	1,610,711	1,556,863	1,471,932
Medicare	45 – 64	9,977,769	10,121,186	10,022,982	9,508,584
Medicare	65 – 74	22,580,130	23,927,196	25,550,149	24,534,541
Medicare	75+	30,469,834	32,000,976	33,616,530	32,635,119
MHCP	<19	14,306,054	16,730,547	18,878,536	19,425,385
MHCP	19 – 44	19,605,298	22,738,855	28,190,765	29,131,210
MHCP	45 – 64	18,970,456	21,086,825	26,174,343	27,311,169
MHCP	65 – 74	1,696,191	1,798,489	2,510,386	2,949,925
MHCP	75+	1,265,583	1,298,744	1,916,743	2,188,930

Table 7. Total paid amount by payer type and age group, 2013–2015.

Payer	Age group (years)	2013	2014	2015
Commercial	<19	$1,549,223,712	$1,620,489,187	$1,518,061,305
Commercial	19 – 44	$2,951,411,634	$3,023,750,874	$2,848,253,189
Commercial	45 – 64	$4,741,474,109	$4,937,910,978	$4,716,463,663
Commercial	65 – 74	$216,752,491	$211,963,760	$193,044,029
Commercial	75+	$80,480,927	$71,617,298	$61,737,963
Medicare	19 – 44	$197,475,812	$220,176,979	$197,369,643
Medicare	45 – 64	$1,009,578,221	$1,075,316,878	$1,033,943,394
Medicare	65 – 74	$2,044,189,438	$2,204,788,487	$2,286,513,770
Medicare	75+	$3,549,133,161	$3,687,660,362	$3,718,722,441
MHCP	<19	$1,292,998,352	$1,414,876,518	$1,420,181,497
MHCP	19 – 44	$2,173,194,021	$2,405,847,250	$2,501,466,616
MHCP	45 – 64	$1,739,577,630	$1,945,769,245	$2,029,290,844
MHCP	65 – 74	$111,839,044	$126,275,997	$136,340,856
MHCP	75+	$127,534,115	$135,446,558	$131,968,337

Table 8. Total paid amount by payer type and age group, 2016–2019.

Payer	Age group (years)	2016	2017	2018	2019
Commercial	<19	$880,589,683	$785,947,454	$827,264,435	$791,378,394
Commercial	19 – 44	$1,672,702,375	$1,535,257,634	$1,664,677,800	$1,580,857,161
Commercial	45 – 64	$2,905,363,973	$2,696,635,882	$2,794,018,296	$2,690,096,811
Commercial	65 – 74	$122,324,826	$122,259,672	$137,528,275	$142,468,424
Commercial	75+	$35,634,720	$36,340,447	$39,099,321	$40,988,566
Medicare	19 – 44	$167,333,863	$162,085,980	$164,425,479	$153,080,411
Medicare	45 – 64	$1,112,845,025	$1,155,370,961	$1,204,887,782	$1,171,604,057
Medicare	65 – 74	$2,598,073,193	$2,836,619,989	$3,104,899,686	$3,132,134,040
Medicare	75+	$4,047,128,438	$4,404,147,078	$4,732,169,069	$4,705,214,712
MHCP	<19	$1,368,259,273	$1,592,500,075	$1,678,754,037	$1,793,774,983
MHCP	19 – 44	$2,493,118,268	$2,821,794,832	$3,029,453,478	$3,170,104,921
MHCP	45 – 64	$2,035,995,734	$2,261,997,821	$2,403,343,274	$2,512,981,032
MHCP	65 – 74	$152,770,967	$171,541,695	$202,932,376	$232,656,749
MHCP	75+	$145,846,827	$152,186,720	$165,067,958	$183,887,836

[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] 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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