Oregon All Payer All Claims Database (APAC) Data User Guide

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Overview

About this Guide

The purpose of the APAC Data User Guide (DUG) is to help data requesters and analysts understand the structure, function and limitations of APAC data. The DUG includes:

- An overview of what APAC data is and is not
- Information about how to request APAC data
- Details of the data in APAC and their limitations

This DUG is focused on requesters of **Limited Data Sets**, which are customized data extracts from APAC that require an in-depth application process. To receive a limited data set, a requester must demonstrate that:

- The use of the requested APAC data fits into one of the specified request types
- The request only includes minimum necessary data for one specific project
- APAC data disclosure and subsequent use comply with HIPAA
- Security after data transfer meets APAC standards; APAC data is stored privately and securely behind a firewall

New requesters of limited data sets are REQUIRED to complete a consultation with the APAC team prior to submitting an APAC data request. To request a consultation, contact: APAC.Admin@odhsoha.oregon.gov

Background on Oregon Health Authority and APAC

The Oregon Health Authority (OHA) is Oregon's state-level health agency. OHA's mission is "Ensuring all people and communities can achieve optimum physical, mental, and social well-being through partnerships, prevention, and access to quality, affordable health care."

Within OHA, the Office of Health Analytics manages more than a dozen data sources and programs that inform policy and support health system transformation in Oregon. Among these initiatives is the Oregon All Payer All Claims Reporting Program (APAC).

The APAC database includes timely, reliable administrative health care data. State agencies, legislators, researchers and others use APAC to evaluate health care access, utilization, outcomes and costs for Oregonians. This information can help improve quality of care, reduce costs, promotes transparency and informs policy decisions.

The following APAC data files are available for request: medical, pharmacy and dental claims; demographic data; monthly enrollment data; and health care provider information. Data is reported by commercial insurers, Medicaid, and Medicare for 3.3 to 4.2 million people annually.

Summary of 2023 APAC Data

Oregon Population: 4,253,653

People with at least one enrollment record: 4,199,505 (98%)

People with medical coverage: 3,529,435 (83%)

People with pharmacy coverage: 3,812,446 (90%)

People with dental coverage: 3,204,513 (75%)

Around 1% of people in APAC are not Oregon residents

Medical Insurance type	People covered
All	**3,529,435**
Medicare	**959,358**
Advantage	496,076
Fee-for-service	491,076
Medicaid	**1,167,199**

Commercial	**1,378,748**
PEBB and OEBB	268,781
Self-insured	256,782
Other commercial	918,406

Additional Resources

The APAC website provides detailed information to help APAC data requesters:

- Descriptions and guides:
  - The APAC Data Profile provides a high-level description of the APAC program and data.
  - The APAC Data Request Overview (PDF) summarizes Limited Data Sets and provides an overview of the APAC data request process.
  - APAC Frequently Asked Questions
  - APAC Data Dictionary (Excel) provides an overview of all data elements within APAC.
  - The APAC Student Guidance provides helpful tips for students who are interested in using APAC data.
  - Data Review Committee page on the OHA website provides an overview of the Data Review Committee (DRC) and their review process. It is also where applications are posted for public comment prior to DRC review.
  - Insurance and claims data 101 (PDF) is a presentation explaining the types of insurance in APAC data and what is contained in claims data.
- APAC Birth and Death Certificate Linked Data Summary (PDF) is a presentation describing how requests for APAC and Birth and Death Records are streamlined between the APAC team and Oregon Center for Health Statistics.
- Request Birth and Death Certificate Data Linked to APAC Data page on the OHA website that summarizes the two-part process in requesting APAC Data linked to Oregon Birth or Death Record Data.
- Application materials and templates:

- APAC data request applications are based on type of data request: APAC-3 Form for external data requests; APAC Agency Application Form for Oregon state agencies and public health surveillance.
- A Model APAC-3 Application, which shows the level of specificity APAC staff are looking for in the APAC-3 application form.
- APAC Data Elements Workbook (Excel) is part of the application package: data requesters select data elements to include in a Limited Data Set request.
- Data Security Plan, necessary to ensure Data Requester can protect APAC data
- Data Use Agreement Example for Limited Data Sets (PDF)
- Cost waiver request form (PDF) is an application to waive some or all costs associated with an APAC request

Requesting APAC Data

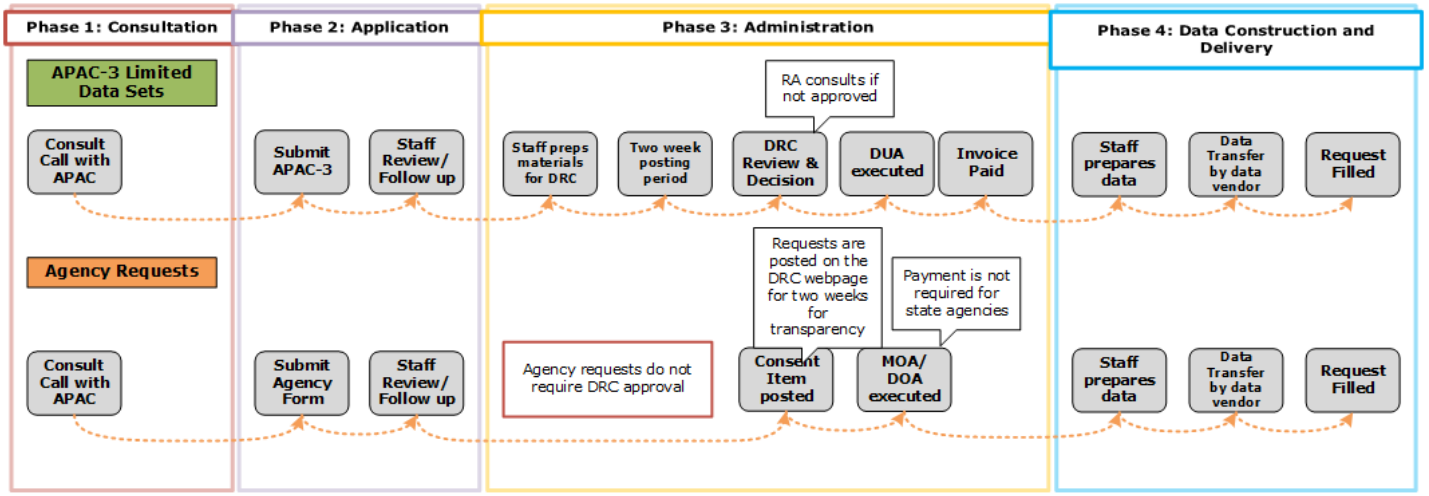
Step-By-Step Process for requesting Limited Data Sets

APAC's administrative rule (OAR 409-025-0160) establishes the process for submitting data requests, including reasons for denial.

1. Requester attends consultation meeting with the APAC team. To request a meeting, please email us at APAC.Admin@odhsoha.oregon.gov. Consultation meetings are required for first-time limited data set requesters.
2. For research requests, the requestor must receive IRB approval prior to the application submission.
3. APAC staff assign project to an APAC analyst.
4. Requester submits APAC-3 application, Data Elements Workbook, IRB application and approval, Security Plan, and Research Protocol to APAC Admin Inbox.
5. APAC staff review APAC-3 application materials.
6. APAC staff and requester refine application materials, if necessary.

7. APAC staff post project on the OHA website for a 2-week public comment period.
8. The Data Review Committee (DRC) reviews the application.
9. Appropriate individuals from the requester's organization and OHA sign data use agreement.
10. Requester pays invoice.
11. APAC staff builds dataset.
12. APAC's data vendor releases data to requester via secure download portal.

Figure 1. APAC Data Request Process



Key Terms:
RA: Research Analyst
DRC: Data Review Committee
MOA: Memorandum of Agreement
DUA: Data Use Agreement
SFTP: Secure File Transfer Protocol

The process under the green box, 'APAC-3 Limited Data Sets,' is for academic researchers and other requesters who are not part of OHA or another state agency. The process under the orange box, 'Agency Requests,' is for requests internal to OHA or from other state agencies.

Documentation required to request a limited data set:

For any questions related to the required documents, please contact apac.admin@odhsoha.oregon.gov with a brief description of the project and data requester contact information. If you have a Data Request Tracking System (DRTS) number, please include it in the subject line of all related emails.

APAC-3 application

The APAC-3 application is required for all limited data set requests. The application contains multiple sections, including:

- Project Information with contact details
- Project Summary
- Project Staff
- Human Subjects Research (for research data requests)
- Data Request Elements and Filter Criteria
- Data Reporting
- Data Linkage
- Cost of Data
- Checklist and signature page
- Optional addendum related to the use of APAC data to eliminate racial injustice

Data Security Plan

This data security plan is required for all limited data set requests. In this document, data requesters will provide a detailed description of plans to manage security of the APAC data.

Data Elements Workbook

The purpose of the data elements workbook is for data requesters to specify APAC data options and data elements requested for their project described in their APAC-3 application. OHA uses the data elements workbook and the APAC-3 data request application to assess HIPAA compliance, risks and to determine if a project meets the APAC data use and release guidelines. Only the minimum necessary data will be approved and provided for a specific project. See below for more information on HIPAA's 'minimum necessary' criteria.

Institutional Review Board (IRB) Documentation

An Institutional Review Board determination is required under HIPAA for research data requests (See Types of Limited Data Set Requests section below for more information about research requests). It is commonly determined that research with APAC data is not human subject research, since it is secondary data. However, an IRB application, research protocol, and the IRB's written determination are still required. Requesters are not allowed to self-determine IRB exemption status.

Signed data use agreement (DUA)

After an application is approved, a data use agreement is required. The DUA establishes terms and conditions required for OHA to release limited data sets to a data requester.

Application Review Criteria:

Appropriate use of the requested APAC data

Limited Data Set requests must align with a permitted use of APAC data. Permitted uses of APAC data are specified in HIPAA (45 CFR Part 164), and include:

- Research
- Public Health Activities by a public health authority
- Health Care Operations of a covered entity
- OHA Business Associate (this is not a separate purpose under HIPAA but is functionally different from other request types for APAC purposes)

Anticipated length of project

Limited data (APAC-3) requests are limited to a single project defined by a specific purpose, questions, hypotheses and study population that can be completed in 1- 2 years.

- The project timeline is set by limitations on data use agreements (DUAs), which can only last up to 2 years, per the Secretary of State. However, an amendment to extend the DUA is possible. For example, a researcher may amend their DUA to extend the project timeline for the purpose of publication.

- In some instances, OHA may work with data requesters in supporting long-term research agendas in phases. A data requester could break up their research agenda into smaller projects to appropriately meet the APAC release requirements.

Minimum necessary data for one specific project

To ensure compliance with HIPAA and ORS 442.373(9), only the minimum necessary data elements and data years will be approved and provided for a specific project. General requests for data will not be approved. APAC staff will also use the following information to discern whether APAC is an appropriate data source to answer the stated research question.

- Data requested must be tied to the research questions and study population.
- A well-defined research question is needed to define what minimum necessary is for each project. An acceptable research question and detailed methodology will include at minimum the following components:
    1. Population of interest (e.g. people with specific diagnosis, procedure, or NDC (national drug codes), along with any exclusion and inclusion criteria)
    2. Diagnosis and/or procedures of interest (defined using procedure codes (HCPCS/CPT, ICD-10-PCS), diagnosis codes (ICD-9 or 10), or clinical groupers (e.g. CCSR, DRG, BETOS)
    3. Independent and dependent variables
    4. Calendar years of interest and justification if multiple years of data are requested
    5. Any geographical components (e.g. zip codes, counties). These may require stronger justification due to privacy and trade secret considerations.
    6. Research design (e.g. descriptive, quasi-experimental)
    7. Project timeline
    8. Any plans to link APAC data to other datasets

Appropriate justification and security measures for requests for PHI and other sensitive information that increases the risk of re-identification

Requests for identified Protected Health Information (PHI) data require detailed justification, higher security measures and is subject to greater scrutiny.

- OHA does not provide actual (direct) identifiers listed in HIPAA Safe Harbor guidelines such as name, date of birth, or address. Appendix H includes the full list of identifiers for the Safe Harbor method of de-identification. Relevant data elements in APAC data are never provided to external data requesters.
- Data requesters interested in names and addresses for linking to other datasets may submit a finder file for APAC to provide file matching.

Data is considered re-identifiable for members when data for low frequency or rare health conditions is requested in combination with geographic data below the state level such as zip code and county and/or in combination with age, gender, race, ethnicity. APAC staff carefully weigh the risk of possible reidentification with the data elements necessary to answer a specific research question.

Recommended	Requires additional justification
Service-related **dates in months and years**, such as: • Service date (YYYYMM) • Hospital admission and discharge dates (YYYYMM) • Prescription fill dates (YYYYMM)	**Full dates** for any of the following: • Service dates • Hospital admission and discharge dates • Prescription fill dates
Age as a **categorical variable** (ex: 20-24, 25-29, 30-34)	Age in years as a **continuous variable**
Diagnoses and procedures rolled up to **categories** using a grouper such as the Clinical Classifications Software Refined (CCSR)	Individual diagnosis and/or procedure **codes**
Only APAC data with no linkages	APAC data **linked to other datasets**
No geographic information below the state level	**County or zip code** – [Note: if these are necessary for linking purposes, we generally require that the requestor send us the linking data, and we link the data via geographic element, then scrub the dataset of the actual geographic element]

Five or fewer years of data [Note: Any additional years of data require justification such as a longitudinal study design]	**More than five years** of data
No provider information (location, name, NPI)	**Provider information**

Populations that require additional justification:

- **Rare diagnoses or procedures** due to increased risk of re-identification
- **Children** as a protected group
- **People over 89** due to increased risk of re-identification with population size (fewer than 4 percent of Oregon population)
- **Substance Use Disorder data** due to special protections under federal and state law

Trade secrets

Trade secrets must be maintained for mandatory and voluntary reporters (payers). APAC is required to honor trade secrets by payers per ORS 442.373 (8)(d). This generally precludes identifying payers in the data.

Data is not shared at a geographic level if only one payer (or predominately one payer) is active in a geographic region. This may require county level data to be withheld, or counties combined to remove identifiability of data at the payer level.

Trade secret protections are time bound: the older the data, the less likely it would provide useful information to competitors.

Data linkage

Some research questions can only be answered by linking APAC data to an external data source, for instance linking patient census tract to American Community Survey neighborhood-level demographic information. Limited data sets may be linked to external data only with written approval by OHA. Data requesters who plan to link APAC data with another data source must contact the APAC team to discuss options. APAC prefers that their vendor links APAC data with external data requester-provided data. This is more likely to be approved in a data request application.

Types of Limited Data Set Requests

OAR 409-025-0160 establishes, in alignment with state and federal law, the purposes for which APAC data may be released in limited data sets. Requests for data that do not align with one of these purposes will not be approved.

Research

- Research is defined as a systematic investigation, including research development, testing and evaluation, designed to develop or contribute to generalized knowledge.
- Research requests require that a requester receives IRB approval prior to the application submission.
- Research data requests are limited to the minimum necessary data elements to fulfill the research aims outlined in the data request application.

Health Care Operations

- Health care operations are certain administrative, financial, legal, and quality improvement activities. These includes quality assessment, improvement activities, provider or health plan performance, business planning and development including cost management.
    - Payment activities, including reimbursement for care, determination of eligibility or coverage, or billing.
    - Treatment activities, such as the provision, coordination, or management of health care by a health care provider organization.
- Requester is or is contracted with a covered entity (requester must be an ‘actor’ in purchasing, developing or delivering health care). Member confidentiality must be maintained in any work products.
- Health care operations requests are limited to the minimum necessary data elements to fulfill the goals outlined in the data request application.

Public Health Activities

- Public health activities are activities for preventing or controlling disease, injury, or disability including, but not limited to, surveillance and interventions by a public health authority. The purpose cannot be research.
- **Requester must be a public health authority** (e.g. OHA, Oregon county or other regional health departments).
- APAC permits release of identified and identifiable PHI data for public health surveillance per HIPAA only for Oregon public health agencies for public health surveillance and operations. Oregon public health agencies that want to use APAC for research must submit an APAC-3 data request form and are subject to approval with the same PHI restrictions as other data requesters.

Available Data for Limited Data Sets

When preparing an APAC application, requesters will select the specific data elements required to answer the research question. See all data elements available for request here: APAC Data Elements Workbook

More details on certain elements are available in the Data Structure section of this document.

Data from mandatory APAC data reporters
Commercial insurers with 5,000 or more covered lives in Oregon
Third party administrators (TPA) with 5,000 or more covered lives
Pharmacy benefit managers (PBM)
Dual special need plans (DSNP)
Oregon Health Exchange plans
Public Employees Benefit Board (PEBB) plans
Oregon Educators Benefit Board (OEBB) plans
Medicare part D plans from commercial insurers
Medicare Advantage plans from commercial insurers
Data from voluntary APAC data reporters
Medicaid data from the Oregon Health Authority
Commercial data from some ERISA entities

Data Structure

Overview and Scope

APAC data is structured in relational data tables or views that can be linked by shared primary keys. The APAC data structure is many-to-many for claims, enrollment, demographics and providers.

The primary data tables include:

- Medical Claims: a data table of medical claims fields at the claim line level.
- Pharmacy Claims: a data table of pharmacy claims fields at the claim level.
- Dental Claims: a data table of dental claims fields at the claim line level.
- Enrollment data: a data table of monthly enrollment fields at the member-month level.
- Provider: a data table of provider fields for both individual and organizational providers.

The entirety of the APAC takes about 12 TBs to store. APAC limited data sets, depending on the type of file, can be as large as 85 GB per year of data.

Appropriate software for importing/analyzing APAC data sets are SAS, SQL Server, R, and SPSS. APAC data sets are too large for Microsoft Excel and Access.

Data Management

APAC Validation and Data Quality Processes

APAC has several levels of validations and other data quality processes that support receipt and use of high-quality, accurate data.

Submission Validations:

At submission, APAC's data vendor checks the data for compliance with field-level requirements (date, numeric or text; length of field and percent missing) and notifies the data reporter of results. Data reporters can replace files with higher quality data or request exemptions to the validation criteria. APAC staff review exemption requests on

a case-by-case basis. Control total files are used to identify any issues with transmission of files (rows reported in each file were received accurately).

Processing Validations:

At ingestion (incorporating separate data files into combined files for processing), additional validations occur. These include cross-references between files, comparisons to past data submissions and comparisons to data from other reporters. For example, are the providers who are present in the medical claims file also present in the provider file? Claim versioning, identifying duplicates and older versions of the same claim, occurs at this stage. This ensures APAC uses the best quality data (current and de-duplicated) for analytic work.

Annual Validation Reports:

As the final validation step, annual validation reports are sent to each data reporter. These reports reflect how the processed data of the specific reporter appears for analytic use on multiple points including member count, total payments, most frequent diagnoses, highest total cost procedures, and others. The purpose of this final validation step is to confirm that the data has been processed correctly and appears for use as the reporter would expect.

Key variables for linking tables

Member identifier

Each person has a member identifier reported to APAC from each of their insurance plans. Member identifiers are present in claims, member months and demographic data. When a person is covered by different insurers at the same time or different times, they will have more than one member ID in APAC. The member ID represents one member per payer per plan. A single person in APAC may have more than one member ID over time and with the same payer.

Unique person identifier

The unique person ID is a constructed ID that, ideally, represents one unique person across time and insurance plans. The unique person identifier is based on the first name, the last name and date of birth. Some member IDs are not assigned to a unique

person ID when data errors or incompleteness prevent a confident assignment. The detailed methodology for assigning a unique person ID is continually reviewed and improved in collaboration between APAC and its data vendor. It can be shared with data requesters upon request.

Claim ID

A single claim ID applies to the entire claim, all claim lines. The claim ID is unique across the database, with no overlap between payers or years.

Provider ID and NPI

Plans submit a variety of identifiers for payers. APAC's data vendor assigns a unique provider identifier across payers, plans and years (dw_provider_ID) for attending, pharmacy, dental, and billing providers. The dw_provider_ID is based on the national provider identifier (NPI), state license number, tax identification number (TIN), address and names reported by payers. A dw_provider_ID can represent an individual provider (e.g. a specific doctor or nurse) or a provider organization employing numerous providers.

Each dw_provider_ID is associated with at most one NPI. (In cases of data errors or incompleteness, there are rare instances where no NPI is clearly associated.) After APAC's data vendor assigns a dw_provider_ID, the information in the primary provider table comes from the central National Plan and Provider Enumeration System (NPPES) database for the associated NPI. Additional information from submitted claims data is also available and can sometimes be more granular.

Claims Data - Types

When a member covered by a health plan receives healthcare services, the service provider sends a bill to the member's health plan. That bill is commonly referred to as a claim. There three types of claims in APAC:

- Medical: These are claims for services from medical providers, such as physicians, clinics, and hospitals. Refer to the Medical Claims section for more details.
- Pharmacy: These are claims for services, such as prescription refills and certain vaccines, from retail pharmacies. Note that certain medications may be billed

through medical claims if they are provided to an individual in a provider's office, so pharmacy claims do not represent the totality of all costs for pharmaceuticals. Refer to the Pharmacy Claims section for more details.

- Dental: These are claims for services from dental providers, such as dentists, dental hygienists, and orthodontists. Refer to the Dental Claims section for more details.

Each claim type is in a separate data file.

Medical Claims

Medical claims represent the single largest data table in APAC. They comprise a record of services provided to individuals with health insurance in many different settings, including hospital inpatient and outpatient facilities, emergency departments, and individual clinics. Claims in APAC include data on the timing, place, and type of service, as well as patient characteristics and diagnoses. Medical claims are for services provided under an individual's medical insurance benefit, as opposed to a plan specific to pharmacy or dental services – although some medications or types of dental procedures may be covered under a medical insurance plan.

Most Commercial insurers reimburse care on a fee-for-service basis, with each service billed and paid separately. On the other hand, most Medicaid and some Medicare Advantage services in Oregon are reimbursed through different types of non-claims payments to providers, for example, through monthly capitation payments to primary care clinics that are meant to cover the cost of caring for an entire patient population. In this case, claim lines may represent a record of the individual service and an estimate of its value rather than the exact amount that was reimbursed for the service in question.

Coordination of Benefits Claims

When a member is covered by more than one health plan, the claims for that member may be paid by both plans. The first, or primary, payer will process and pay the claim and then send it to the second payer. The second, or secondary, payer also process the claim and may make additional payments. These claims are commonly known as Coordination of Benefits Claims, abbreviated COB.

Analysis of COB claims in APAC poses certain challenges. There is no payer-provided variable for COB claims that specifies who the primary payer is or vice versa. Further complicating matters, not all COB claims have a primary claim reported to the APAC, and not all COB claims have been marked as such. Primary claims may be missing because the primary payer does not report data to APAC because they are ERISA, exempt or waived from reporting data or some other error. Medicaid is always the secondary payer in instances where there are multiple payers for a service, but there are numerous Medicaid claims that are not marked as such but for which there are parallel claims for the same person and same service from a different payer.

In many cases, an analysis can be most effectively designed if it excludes COB claims altogether. However, some tips for working with COB claims are included below.

COB claims and utilization

COB claims that can be associated with a primary claim in APAC should not be counted as a unique visit or service, or such services will be counted twice. COB claims not linked to a primary claim can be useful because they may provide utilization and cost information not provided by another payer.

COB claims and costs

When multiple payers pay for the same service, member copay, coinsurance, and deductible amounts on the primary claim may not represent true member liability, since the member liability from the primary payer is often covered in full or in part by the secondary payer. COB claim lines cannot be used in isolation from the primary claim to represent the full cost of the service, as the amount paid by the primary payer will be missing.

COB and line of business

When multiple payer types pay for the same service, that service cannot be cleanly attributed to a single line of business for either utilization or cost calculations. There are a variety of ways to address this challenge, depending on use case and the level of analytic complexity possible. At minimum, analysts should understand disparate effects of coordination of benefits claims by line of business. For example, Medicaid is always the “payer of last resort,” and therefore will have costs most severely underestimated if COB claims are entirely excluded from analysis. They will have

utilization most severely overestimated is COB claims are treated equivalently to primary claims. Commercial plans are typically the first payer and therefore see opposite bias.

Dental Claims

APAC began collecting dental claims starting with the 2019 calendar year. Dental claims and enrollment data are available in a similar format as medical claims and enrollment data. Dental claims are for services covered under an individual's dental benefit. In some cases, the dental benefit is a part of the overall package of benefits from an insurer (e.g., anyone enrolled in Medicaid automatically receives dental benefits in Oregon), and in other cases, the individual has purchased a separate, standalone dental plan.

APAC collects both dental claims and dental enrollment data separately from other claims and enrollment data. As a result, dental data must be requested separately from medical or pharmacy claims. While the structure of dental enrollment data parallels the structure of other enrollment data, dental claim lines have their own format and fields specific to dental services, with dental-specific diagnosis and procedure codes.

Dental claims represent a relatively small amount of costs that can be tracked in APAC. From 2019 to 2022, dental claims accounted for about 3% of the total amount paid in APAC.

Pharmacy Claims

Pharmacy claims are claims submitted by retail pharmacies for reimbursement of the cost of medications and some vaccines. Many insurance plans offer pharmacy coverage as a part of their overall benefit package, but there are also a significant number of plans where pharmacy benefits have been "carved out" and a plan must be purchased separately. Each line in the available enrollment data indicates if a member has medical and pharmacy insurance, but in some cases, especially for individuals with a separate pharmacy plan, there may be separate lines for medical and pharmacy coverage.

A major example of pharmacy benefits that may be carved out is coverage through Medicare Part D. Because the base Medicare premium does not include pharmacy

coverage, to receive pharmacy benefits, Medicare enrollees must either purchase a Medicare Advantage plan that includes Part D retail pharmacy benefits, or a standalone Part D plan to complement their medical benefits. APAC can release data from Part D payers to data requestors, but data on Medicare FFS medical benefits and claims is not available to most requestors. Because of this, there is a large subset of Medicare enrollees for whom pharmacy enrollment and claims are available, but for whom medical benefit and claims data will be missing.

The structure of pharmacy claims is different from medical and dental claims in that each claim contains a single line. As a result, pharmacy claims have no claim line variable. Additionally, pharmacy claims do not contain data on patient diagnoses, so it is not possible to know why a medication was prescribed based on pharmacy claim lines.

An additional aspect to keep in mind when analyzing APAC pharmacy claims is the role of pharmacy benefit managers, which are companies hired by insurance companies to negotiate prices and rebates for drugs and administer the pharmacy portion of their plan. APAC receives data on retail pharmacy claims from both insurance companies and pharmacy benefit managers. APAC does not receive data on pharmacy rebates, so the actual cost of pharmaceuticals for the insurer or pharmacy benefit manager may be less than is reflected in retail pharmacy claim lines.

Claims Data – Across Claim Types

While the three different claim types (medical, pharmacy, and dental) differ in their structure, they also have many characteristics in common. The following subsections describes characteristics across different types of claims data that may be important to consider or address analytically while using APAC data.

Multiple claim lines per claim

Medical and dental claims can include one or more claim lines. In rare instances, the same claim line for the same claim appears more than once in the data with different details. This occurs when different paid amounts were reported over time or different values were reported for other variables in the claim line over time, in ways not expected by the claim consolidation logic implemented by the data vendor.

Orphan Claims

Claims that do not link to a member month are referred to as orphan claims. Orphan claims are identified by the APAC vendor, and an orphan flag is available.

One reason that orphan claims occur is that there is federally required grace period to pay insurance premiums. During the grace period, monthly enrollment is reported to APAC but subsequently reported APAC data excludes member monthly enrollment data when the premium was not paid. Payers may or may not recoup payments for claims during the grace period for excluded members with unpaid premiums.

Member Paid amounts

Payers report how much a member is expected to pay by claim for pharmacy claims and by claim line for medical and dental claims. Payers report different member paid amount variables. Some payers report one variable for member paid amount (mc067a_patient_paid_amt). Some payers report three different member paid amount variables: copayment (mc065_copay_amt), coinsurance (mc066_cosinsurance_amt), and deductible (mc067_deductible_amt). Some payers report all four member paid amounts.

For payers who report all four member paid amounts, the sum of mc065_copay_amt, mc066_cosinsurance_amt and mc067_deductible_amt sometimes equals the mc067a_patient_paid_amt and sometimes does not. To identify the correct amount member paid, APAC recommends comparing the sum of mc065_copay_amt, mc066_cosinsurance_amt and mc067_deductible_amt to mc067a_patient_paid_amt and selecting the larger amount.

Zero dollar paid claims

Payers are required to report all claims including when the payer and member paid amount is zero dollars. Zero dollar paid claims most commonly occur when the insurer pays providers through an alternative payment model rather than a fee for service. For instance, capitated claims and managed care claims often appear in APAC as zero dollar paid claims. Starting in 2022, APAC includes a flag for the payment methodology of the claim (capitation, fee-for-service, or other). This can provide additional context about zero dollar paid claims from 2022 forward.

Zero dollar paid claims are not equally distributed by payer type. Medicaid accounts for more than half of total zero paid claims. Up to a third of all Medicaid claims are paid zero dollars.

Medicaid payments

Claims payments in Medicaid can differ from commercial and Medicare Advantage claims in important ways.

- There is no member cost-sharing in Medicaid. Fields for cost sharing will either be blank or zero.
- Medicaid does not require CCOs with sub-capitation payment arrangements to report the amount paid to a provider. CCOs frequently report paid claims as zero paid.
- Some medical services and pharmaceuticals for CCO members are paid fee-for-service (FFS).

Denied claims

Denied claims are typically not included in limited data sets because they have limited analytic value.

No reason is reported to APAC for denied medical and pharmacy claims. Denial reasons can include an error on the claim, a lack of coverage for the member at the time of the claim, a lack of coverage for the rendered service and other reasons.

Furthermore, denied claims may duplicate paid claims. Providers regularly correct and resubmit denied claims. However, the resubmitted claim can have a different claim identifier than the denied claim. It is not always possible to determine if a paid claim represents the same service as the denied claim.

Claim groupers in APAC

Claim groupers are software analytic tools that organize information within claims into clinically meaningful categories regarding cost, diagnosis, and/or procedures. APAC includes several groupers available by request.

APAC grouper

The APAC grouper was developed by APAC to assist with analyses of healthcare payments from the member's perspective. For example, when a member is hospitalized, the member will receive a bill (facility claim) from the hospital. In addition, the member will receive a bill (professional claim) from providers involved in treating the member, such as hospitalists, radiologists, and surgeons. In this example, the APAC grouper intends to assign the facility claim and the professional claims to the same group (inpatient) to best represent the member's total payments.

CCS/CCSR

The Clinical Classifications Software Refined (CCSR) was developed by the Healthcare Cost and Utilization Project (HCUP) and sponsored by the Agency for Healthcare Research and Quality (AHRQ).

CCSR for ICD-10-CM categorizes ICD-10 diagnoses into clinically meaningful categories. Some diagnosis codes belong to more than one CCSR category. For ICD-10 procedure codes, the Clinical Classifications Software (CCS) beta version categorizes ICD-10 procedures into clinically meaningful categories. ICD-10 procedure codes are primarily used on hospital inpatient claims.

ICD-9 diagnosis and procedure codes were in use prior to October of 2015. For claims coded with ICD-9 codes, the original CCS procedure and diagnosis codes are available.

MS-DRG and MDC

CMS's Diagnosis Related Groups (DRGs) are a classification of inpatient stays based on the principal diagnosis and/or surgery performed during the stay. Inpatient stays are first categorized into 25 Major Diagnostic Categories (MDCs). Stays are further divided into 761 DRGs for which similar consumption of hospital resources can be expected, based on diagnosis and in most cases on the presence of major or non-major complications or comorbidities.

BETOS

The Restructured BETOS Classification System (RBCS) dataset is a taxonomy of Healthcare Common Procedure Coding System (HCPCS) codes, including Current

Procedural Terminology (CPT) codes, into clinically meaningful categories and subcategories. It's updated annually.

Monthly Enrollment Data

APAC contains monthly enrollment data for all members. This data is structured so that each row represents one month of enrollment. Determining the months of enrollment is done by simply counting the number of distinct months in a given year with enrollment for a member. This count is commonly known as "member-months." Note that some individuals may be enrolled in more than one plan in a given month, with the same payer or with different payers.

While most people in APAC are enrolled in medical, pharmacy, and dental coverage simultaneously, some are not. For example, it is common for people in APAC to have pharmacy or dental enrollment, but not medical enrollment. This can occur when a medical plan is exempt from reporting, and does not voluntarily report, but the pharmacy or dental plan is not exempt. This is something to consider when requesting data as people without medical coverage may not be relevant to the planned analyses.

Demographic Data

APAC collects certain demographic fields in the enrollment data, such as race/ethnicity and sex. These are all self-reported. Even though these fields originate in the enrollment data, some have been added to the claims data for analytic convenience. Data on social determinants of health are not currently available but may ultimately be added from the Census or American Community Survey through geographic linkages.

Rarest race ethnicity group

This field represents a single racial-ethnic category for a member_id, consistent over time. Oregon APAC use a "rarest group first" method where you apply an algorithm to assign those with multiple identities to one primary race, typically the least represented in the state.

Member sex

APAC contains a single variable for member sex. APAC does not have information about how data submitters define or populate the member sex field. These data are reported at the member-month level and may change over time.

Geographic elements available

APAC data includes member address. In some cases, member zip code or county may be provided to a data requestor if adequately justified. However, that data is considered identifiable in combination with rare health conditions, payer type, or most demographic breakdowns (age, race, etc.). Thus, APAC staff rarely provide geographic information directly to data requesters.

Oregon residents

APAC data submitters are only required to include members residing in Oregon, plus members enrolled in PEBB or OEBB plans who may live in other states. People living in Oregon will have the value “OR” in the field ME016_Member_State. A small number of members have addresses in other states or countries.

Age and age group

Five-year age group is available in enrollment and claims data files. Age in years will be provided only if warranted by the use case.

Coverage Data

Primary vs secondary insurance

Individuals can hold multiple insurance plans at the same time. For example, an individual could be covered under both a plan offered by their own employer and their spouse’s employer, or under both Medicaid and Medicare. In these instances, the plan with the first responsibility to pay claims is considered the primary coverage. Additional plans may cover amounts the primary plan considers the member responsibility and are considered secondary coverage. As a result, the total patient cost sharing responsibility for an encounter covered by more than one insurance company may not be reflected accurately only using claims data from the primary payer.

While each claim indicates whether the submitting payer considers itself the primary or secondary payer, payers do not submit data to APAC on who the primary payer is for secondary payer claims for the same service, or vice versa.

Members Enrolled in both Medicare and Medicaid

Some members in APAC are simultaneously enrolled in both Medicare and Medicaid coverage. By policy, Medicare is the primary payer and Medicaid is the secondary payer for these members. In addition to covering member liability amounts on claims first paid by Medicare, Medicaid also covers some health services not covered by Medicare.

Approximately 4% of individuals in APAC are covered by both Medicare and Medicaid. That represents 17% of individuals with Medicare coverage and 12% of individuals with Medicaid coverage.

Medicare Advantage

Data requestors may receive Medicare Advantage (Part C) and Medicare Pharmacy (Part D) claims.

A limited data set can include variables to identify Medicare medical and pharmacy member-months and claims. In a minority of instances, a Medicare Pharmacy member-month or claim cannot be linked to Medicare medical coverage.

Subcategories of Commercial Coverage

Fully Insured vs. self-insured

Commercial insurance plans can be fully insured or self-insured. Fully insured plans are offered by health insurance companies, which take on the risk of setting premiums at a rate that covers the cost of all potential purchasers of the product and leaves room for administration and some profit. A self-insured plan is a plan that is administered by a third-party administrator (TPA) and/or pharmacy benefit manager, but where a specific group – usually an employer – takes on the risk of paying members' costs.

Most self-insured plans are regulated by the federal government, under the Employee Retirement Income Security Act of 1974 (ERISA). APAC cannot require submission of claims and enrollment data from ERISA-covered entities due to the Supreme Court

ruling in Gobeille vs. Liberty Mutual Insurance Company in 2016. However, some ERISA-covered entities submit data to APAC, and there are some self-insured plans (e.g. PEBB/OEBB, see below) that are regulated by the state.

APAC contains data elements to indicate if claims and enrollment data are for self-insured plans.

PEBB/OEBB

The Public Employees Benefit Board (PEBB) and Oregon Educators Benefit Board (OEBB) provide coverage for public employees. PEBB and OEBB plans are a subset of commercial insurance plans. Fields are available to identify claims and member months from PEBB and OEBB plans.

Medicaid Data

Unlike other payers, Medicaid members can move from one eligibility category or benefit program to another during the same month. Medicaid members can also change their Coordinated Care Organization (CCO) or move from a CCO to fee-for-service (FFS) and vice versa during the same month. Individuals with CCO enrollment will simultaneously have FFS enrollment data because some of their costs (“carve outs”) are being covered by FFS.

Medicaid member month data is assigned based on the last day of the month.

- Any Medicaid member eligible on the last day of the month is reported to APAC as a full month of enrollment
- Members are assigned to the CCO they are enrolled in on the last day of the month
- If a member is not enrolled in a CCO on the last day of the month they are assigned fee-for-service (FFS)
- The FFS or CCO status reported in Medicaid claims can differ from member month data due to the assignment based on the last day of the month or if the claim is for a service that is always paid FFS (“carve out”)

Provider Data

Providers work in a variety of structures that are not easily captured in claims data. Some providers work as individuals seeing patients on their own. Others work in large health systems that contain hospitals, clinics, labs, and other facilities. Individuals can work for more than one provider organization. Both individual providers and health systems can have multiple practice locations.

There is no central location or standard in Oregon or the United States for fully capturing all this detail on providers. Beyond data submitted on claims, the primary source for provider information in claims data is the NPPES database managed by CMS. Individuals and organizations apply for NPIs through NPPES and the information they supply is made publicly available. While providers are encouraged to keep this information up to date, there is no enforcement mechanism to ensure that this happens. Additionally, NPPES does not contain any information about relationships between providers. For these reasons, requesters and analysts should use additional caution and consideration when using provider data in analyses.

Primary keys for provider data

The main provider table identifies the provider by dw_provider_id. That field serves as a secondary key in multiple locations on claims, since a single claim can involve multiple providers: attending (also known as rendering or servicing), billing, prescribing, and pharmacy providers.

Submitted identifiers

Submitters are required to provide the NPI and tax ID for all submitted provider records. Tax ID is the same as social security number for some individual providers and is therefore not typically releasable. There are also optional provider identification fields that do not apply to all submitters and providers: Medicare Provider ID and Medicaid Provider ID.

Individual vs. organization providers

Both individual and organization providers are listed in claims and in the provider table. Individuals have first and last name fields populated, and organizations have an organization name field populated. While billing providers are more likely to be organizations and attending providers are more likely to be individuals, other combinations are possible and do not represent data errors.

Address (billing vs work location, multiple work or “other” locations for one provider)

Providers in NPPES can have any number of associated addresses. The NPI application requires both a business mailing address and a business practice location address to be listed, which may be the same. Additional “other” addresses can also be listed. The main provider table contains the provider’s primary address. Secondary addresses may be requested if the data requestor needs all addresses associated with the provider in NPPES.

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