Oregon All Payer All Claims Database (APAC)

Data User Guide
2011-2018 Claims & Insurance Coverage
Release APAC 2020

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Contents

Websites Referenced Throughout This Document

References to additional information or resources including links to websites occur throughout this document. Links are provided below for data users accessing the APAC Data User Guide offline.

General information on the All Payer All Claims Program including statutes, rules, appendices and submission schedule
https://www.oregon.gov/oha/HPA/ANALYTICS/Pages/All-Payer-All-Claims.aspx

All Payer All Claims Data Request page including Issue log, data dictionary, frequently asked questions and other resources for data users
https://www.oregon.gov/oha/HPA/ANALYTICS/Pages/APAC-Data-Requests.aspx

Gobeille vs. Liberty Mutual
https://www.supremecourt.gov/opinions/15pdf/14-181_5426.pdf

Oregon House Bill 2009 establishing the Oregon Health Authority and All Payers All Claims program
https://olis.leg.state.or.us/liz/2009R1/Downloads/MeasureDocument/HB2009/Enrolled

Data Review Committee
https://www.oregon.gov/oha/HPA/ANALYTICS/Pages/Data-Review-Committee.aspx

All Payer All Claims (APAC) Data User Guide Highlights

The 2011 to 2018 All Payers All Claims (APAC) database contains health services data for up to 98% of the Oregon population annually. APAC has medical and pharmacy claims, demographic data, monthly eligibility data, billed premium data and provider data reported by commercial insurers, Medicaid and Medicare for 5,891,642 people or 3.4 to 3.9 million people annually. About 1% of the people in APAC are not Oregon residents, but are included because they were insured by the Oregon Public Employee or Educator Benefit Board (PEBB or OEBB).

About 80% of the people in APAC had a health care claim annually. Insurers and members together paid $22.2 billion for health care services in 2018 with a growth of 55% from 2011.

Commercial insurers covered more than half of the people in APAC but paid only 31% of claims in 2018. Medicare covered about a quarter of the people and paid 37% of the claims. Medicaid covered about a third of the people and paid about a third of the claims. From 2011 to 2018 claims paid fee-for-service declined 26% and managed care claims grew from 4% to 32% of claims.

Enrollment trends varied by insurance type. By 2018, people with commercial insurance declined 23% to about half of the people in APAC; people with Medicaid grew 33% to about a third of the people; and people with Medicare were about a quarter of the people. People in self-insured plans declined by more than 50% starting in 2016 due to the U.S. Supreme Court decision in *Gobeille v. Liberty Mutual Insurance Company* that prohibited states from requiring ERISA entities to report data.

Year-over-year trends showed that about 90% of the people were in APAC the prior year. Annually, about 10% of the people in APAC had more than one insurance type and about 30% were in more than one plan.

CMS and substance abuse claims account for about 13% of paid claims. About 7% of the people had Medicare data reported only by CMS. Substance abuse claims grew from less than 1% in 2011 to about 3% of claims in 2018.

OHA publishes quarterly Release Notes to give data users an overview of the latest available data available including updates about data format, data reporters and data release policy.

All Payers All Claims (APAC) Background

Purpose and administration. APAC is a large database that houses administrative health care data for Oregon's insured population. APAC includes medical and pharmacy claims, member enrollment data, billed premium information, and provider information for Oregonians who receive coverage through commercial insurers and public payers including Medicaid and Medicare. APAC will begin collecting dental claims, enrollment and provider data in 2020.

The Oregon State Legislature established APAC in 2009 through House Bill 2009 to measure the quality, quantity, and value of health care services in Oregon. This legislation was codified into the Oregon Revised Statutes for Health Care Data Reporting. Administrative Rules provide the guidelines for APAC's data collection, use, and release, and are periodically updated as needed. The database is operated by the Oregon Health Authority (OHA) and is an integral component of the state's ongoing health care improvement efforts and provides access to timely and reliable data that are essential to improving health care quality, reducing costs, and promoting transparency.

Data collection. The APAC program collects health care claims and other administrative data from commercial insurers and public payers. All data submitters follow a standardized method for reporting data to APAC that includes a set of required data elements and file formats that are detailed in the Data Submission Instruction Memo. Data collection for APAC began in March 2011 and takes place quarterly.

Data management. OHA maintains oversight and management of APAC, and contracts with a data vendor to collect and process the data. A critical part of the vendor's role is ensuring that APAC data are reliable and accurate from data submission and inclusion in the database to data release. To ensure reliability and validity, the data vendor performs three levels of data quality tests on data submitted—once upon submission, once after the files are accepted but not yet processed, and once on an annual basis to assess overall trends and accuracy in the data. After each level of data quality testing, the data vendor communicates its findings to each data submitter and works to resolve any data issues identified. When necessary, the payer re-submits files. OHA implements additional data quality tests and compares APAC with other state data sources to identify any large discrepancies.

Data privacy and security. Because APAC contains protected health information (PHI), several layers of protections are implemented to ensure the privacy and security of the data from intake to release. All data are encrypted during transmission and storage and are housed in a secure data center. Access is limited to a select number of authorized and qualified staff.

Requests for APAC data are subject to the standards and regulations of the Health Insurance Portability and Accountability Act of 1996 (HIPAA) to protect the privacy and security of members and their health information. Individuals interested in using APAC data must complete a request and multi-step vetting process through which OHA determines:

- Appropriate use of the data
- That the request is only for the minimum necessary data
- That the use and storage of the data complies with HIPAA and ensures data privacy and security

Brief website orientation. The APAC team encourages potential data users to familiarize themselves with the APAC website and the available information to support APAC data requests.

APAC Summary Data

APAC data from 2011 through 2018 is summarized in Table 1 (people and insurance type) and Table 2 (claims and payments). APAC eligibility and claims data are summarized by commercial, Medicare, and Medicaid insurance types and includes self-insured, commercial Medicare, and CMS Medicare plans. Some people are enrolled in multiple types of insurance and plans simultaneously.

APAC medical and pharmacy claims include paid claims, managed or coordinated care encounters, denied claims, reversed claims, orphan claims and coordination of benefit claims. The percent of substance abuse claims are listed by year. Substance abuse claims data are never released due to federal regulation and access to CMS Medicare claims and eligibility data are restricted due to OHA's data use agreement with CMS.

Some Oregonians not in APAC have insurance and some are uninsured. Some insured people are not in APAC because they are: covered by commercial insurers or a TPA with fewer than 5,000 Oregon lives; insured by payers that are

not required to submit data; Medicaid recipients but data is not submitted; Medicare recipients with residency in a state other than Oregon; insured by a payer granted a waiver from reporting data.

Table 1. APAC Summary Data-People and Insurance Type 2011-2018

	2011	2012	2013	2014	2015	2016	2017	2018
Oregon population*	3,857,625	3,883,735	3,919,020	3,962,710	4,013,845	4,076,350	4,141,100	4,190,713
People in APAC	3,369,197	3,518,357	3,511,970	3,706,282	3,976,195	3,797,706	3,841,584	3,882,503
% Oregon Population in APAC*	86%	89%	89%	93%	98%	92%	92%	92%
Not Oregon residents	1%	1%	1%	1%	1%	1%	1%	1%
Insured full year	72%	78%	79%	81%	77%	75%	73%	76%
Insured 6-11 months	18%	13%	13%	11%	14%	15%	16%	12%
Prior year in APAC	81%	88%	91%	82%	86%	90%	88%	90%
Only pharmacy insurance	8%	12%	11%	7%	8%	8%	8%	10%
Medical insurance months*	34,764,247	37,813,797	37,792,593	40,359,615	42,604,515	40,257,726	39,907,582	40,721,658
Pharmacy insurance months	29,082,977	32,763,448	33,128,050	35,849,265	38,803,223	37,340,959	37,009,555	37,522,497
Type of Health Care Insurance								
Commercial	69%	70%	64%	56%	57%	51%	51%	53%
Medicaid	24%	23%	23%	31%	33%	36%	34%	32%
Medicare	22%	23%	23%	21%	21%	23%	25%	25%
Only Commercial Medicare	1%	2%	2%	1%	1%	1%	2%	2%
Only CMS Medicare*	11%	10%	9%	8%	6%	7%	7%	7%
Self-Insured*	17%	16%	17%	18%	17%	9%	8%	8%
PEBB/OEBB*	8%	8%	8%	7%	7%	8%	7%	7%
Commercial medical months	22,325,370	26,000,822	23,510,015	21,862,276	23,207,712	19,744,655	19,585,220	21,057,183
Medicaid medical months	7,982,532	8,342,963	8,205,483	12,117,319	13,603,051	13,499,097	12,600,108	12,300,856
Medicare medical months	7,726,820	8,418,612	8,977,807	8,709,153	9,105,705	9,671,751	9,940,654	10,191,402
More than one type insurance	14%	16%	11%	8%	11%	10%	9%	10%
More than one plan	34%	44%	37%	30%	32%	28%	29%	31%
Commercial current & prior year		85%	89%	84%	80%	84%	81%	82%
Medicaid current & prior year		85%	87%	59%	80%	87%	87%	87%
Medicare current & prior year		87%	92%	91%	91%	90%	86%	93%

*Notes:
Oregon population data from Portland State University population research center (Census)
APAC unique person is the count of people with at least one month of enrollment/eligibility in the year
% Oregon population in APAC limited to Oregon residents in APAC
Commercial Medicare includes Medicare Advantage and Stand-Alone Part D reported by commercial insurers and is included in Medicare category
Centers for Medicaid and Medicare Services (CMS) provides eligibility and fee-for-service claims data only for Oregonians
Self-insured is a type of commercial insurance and is included in commercial category

Table 2. APAC Summary Data-Claims and Payments 2011-2018

	2011	2012	2013	2014	2015	2016	2017	2018
Total claims	78,091,647	82,170,847	82,385,159	87,824,330	95,765,413	96,374,588	96,792,646	102,665,318
Total paid claims*	72,618,806	76,594,400	77,524,555	86,120,263	93,362,946	94,095,056	94,646,598	100,150,451
People with a paid claim	80%	79%	80%	82%	79%	79%	79%	79%
Paid Medical claims	54%	53%	53%	53%	52%	52%	54%	55%
Paid Pharmacy claims	46%	47%	47%	47%	48%	48%	46%	45%
Paid FFS	89%	89%	90%	78%	75%	73%	72%	66%
Paid MCO/CCO*	4%	5%	4%	20%	23%	25%	26%	32%
Denied claims (whole claim)	7%	7%	6%	2%	3%	2%	2%	2%
Orphan claims*	0.14%	0.15%	0.11%	0.11%	0.11%	0.03%	0.01%	0.02%
Coordination Benefit claims*	1%	1%	2%	4%	3%	2%	2%	2%
Substance abuse claims*	0.1%	0.2%	0.4%	2%	1%	2%	2%	3%
Paid Claims by Type of Health Care Insurance								
Commercial	38%	38%	36%	35%	34%	30%	28%	29%
Medicaid	20%	20%	20%	26%	28%	29%	30%	31%
Medicare	34%	35%	38%	37%	36%	38%	39%	37%
Medicare CMS*	12%	12%	12%	11%	10%	10%	11%	10%
Medicare commercial	22%	23%	26%	26%	26%	28%	29%	27%
PEBB/OEBB	7%	7%	6%	6%	6%	6%	5%	5%
Self-Insured	11%	9%	10%	10%	9%	6%	6%	5%
Total Paid*								
Total	$14.3B	$14.9B	$15.3B	$18.0B	$19.5B	$19.5B	$20.8B	$22.2B
Commercial	$6.6B	$6.9B	$6.9B	$7.7B	$8.0B	$7.1B	$7.3B	$7.9B
Medicaid	$2.3B	$2.1B	$2.3B	$3.3B	$3.8B	$4.1B	$4.3B	$4.7B
Medicare	$5.4B	$5.8B	$6.2B	$7.0B	$7.8B	$8.3B	$9.2B	$9.7B
Total Payer Paid*								
Total	$12.5B	$13.0B	$13.4B	$15.9B	$17.3B	$17.4B	$18.5B	$19.9B
Commercial	$5.5B	$5.7B	$5.7B	$6.5B	$6.7B	$6.1B	$6.2B	$6.7B
Medicaid	$2.3B	$2.1B	$2.3B	$3.3B	$3.8B	$4.1B	$4.3B	$4.7B
Medicare	$4.7B	$5.1B	$5.4B	$6.1B	$6.8B	$7.2B	$8.0B	$8.4B
Total Person Paid (coinsurance, copayment & deductible)								
Total	$1.8B	$1.9B	$2.0B	$2.1B	$2.2B	$2.2B	$2.2B	$2.4B
Commercial	$1.1B	$1.1B	$1.2B	$1.2B	$1.2B	$1.1B	$1.1B	$1.2B
Medicaid*	$506K	$446K	$456K	$1.5M	$1.3M	$1.4M	$0	$0
Medicare	$714M	$751M	$795M	$1.3B	$1.0B	$1.1B	$1.2B	$1.2B
Zero Dollar Paid Claims (Whole claim-not denied, not coordination of benefit)								
Total	1,882,331	2,471,896	2,623,924	2,386,881	2,813,011	3,203,158	3,041,970	2,893,325
Commercial claims	13%	10%	10%	11%	10%	9%	10%	11%
Medicaid claims	82%	86%	86%	84%	85%	83%	81%	85%
Medicare claims	5%	4%	4%	5%	5%	8%	9%	4%
Billed Premiums*								
Total people					1,146,846	1,213,621	1,231,606	1,188,285
Total Paid					$5.1B	$5.4B	$5.6B	$5.8B
Commercial					$4.7B	$4.9B	$5.1B	$5.3B
Medicare commercial					$417M	$450M	$474M	$487M

*Notes:
Claims are not visits; include paid, denied, orphan, reversed and COB claim types; may have one or many claim lines for a single claim
Paid claims exclude denied claims
Some years a few insurers reported all claims FFS when most claims were MCO

No reason provided for denied claims
Orphan claims are claims with no associated monthly eligibility/enrollment
COB claims occur when a secondary insurer pays for part of a visit; Medicaid did not report some years; some payers were outliers
Total and payer paid do not include nonclaims based payments
Medicaid members do not pay coinsurance or deductible-any reported is excluded
Zero paid claims are when the payer and person pay zero for every line of the claim
Billed premiums reported by commercial payers for fully insured, Medicare Advantage and Part D

What APAC Is and What APAC Is Not

What APAC is:

- Medical claims data (paid, managed or coordinated care encounters, denied, orphan, reversed, coordination of benefit)
- Pharmacy claims data (paid, managed or coordinated care encounters, denied, orphan, reversed, coordination of benefit)
- Payments from mandatory reporters and other payers
- Expected payments from members (copayment, coinsurance, deductible)
- Monthly member eligibility data
- Member demographics (gender, date of birth, date of death, race, ethnicity, primary language and address)
- Provider data (attending, pharmacy and billing provider)
- Billed premiums
- A “live” database refreshed quarterly (1 new and 3 updated quarters of data each submission)
- About 160 million rows of claims data per year (claim lines)
- About 1 billion rows of enrollment data total (125 million rows per year)
- Data submitted from the following mandatory reporters:
    - Commercial insurers with 5,000 or more covered lives in Oregon
    - Third party administrators (TPA) with 5,000 or more covered lives in Oregon
    - Pharmacy benefit managers (PBM)
    - Dual special need plans (DSNP)
    - Oregon Health Exchange plans
    - Medicare part D plans
    - Medicare Advantage plans
    - Public Employees Benefit Board (PEBB) plans
    - Oregon Educators Benefit Board (OEBB) plans
    - Medicaid Managed or Coordinated Care Organizations

- Data submitted from other reporters including:
  Medicaid (not all people or claims)
  Medicare (not all people or claims)

What APAC is not:

- Not clinical or electronic health record data (EHR)
- Not prescribed pharmaceuticals (only dispensed)
- Not cost of medical services (only paid and expected paid)
- Not cost of pharmaceuticals (only paid and expected paid)
- Pharmaceutical rebates are not reported
- Member payments to providers including coinsurance, copayment and deductible are expected, but not actual payments
- Billed premium data are expected, but not actual paid premiums. Billed premium data were not submitted to APAC until January 1, 2015. Billed premium data is not provided by all reporters
- APAC does not capture all payments i.e., non-claims or alternative payments to health care providers (capitation, sub-capitation, pay-for-performance, shared savings/risk, episode-based, health information technology and other infrastructure payments)
- Data is not submitted to APAC from the following payers[1]:
  Commercial insurers with fewer than 5,000 covered lives in Oregon
  Third party administrators (TPA) with fewer than 5,000 covered lives in Oregon
  Self-Insured plans exempt from APAC (some reporters voluntarily submit data, but mandatory and voluntarily reported self-insured data are not distinguishable)
  Stop Loss plans
  Student health plans
  Federal Employee Health Benefit plans
  Indian Health Service
  Military Health
  Tricare
  Veteran Affairs
  Corrections (Federal, state, county or city)
  Oregon State Hospital
  Worker compensation

[1] This list is not exhaustive.

Dental plans
Vision plans
Accident plans
Disability plans
Hospital indemnity plans
Disease specific plans
Long term care plans
Oregon Reproductive Health Client Program services
Oregon Cover All Kids plan
Oregon Substance Use and Mental Health Block Grant services
Medicare supplement plans
Medicaid (not all people or claims)
Medicare (not all people or claims)

APAC Data structure

APAC data is structured in relational data tables or views that can be linked by shared or common primary keys. There about 100 reference tables that populate the primary tables. The primary tables include:

Claims (pharmacy & medical by person by payer)
Eligibility (monthly by person by payer)
Demographics (by person by payer)
Provider (attending, pharmacy and billing by payer)
Billed premiums (monthly by person by payer)

Many-to-many data relationship. The APAC data structure is many-to-many for claims, eligibility, demographics, providers and billed premiums.

People in APAC may be enrolled in more than one plan at one time or over time. Primary keys for claims include plan specific claim identifier, unique person identifier, unique member identifier by plan, product key, and dates.

A person has up to 12 monthly eligibility segments per year per plan. For each eligibility segment by plan and person there are four rows of data: one for medical member month, pharmacy member month, behavioral health member month and vision member month. APAC payers do not provide claims data for vision plans, so those member month rows are null. Behavioral health member month are created only for people in specified Medicaid plans and is null for the

remainder. A person enrolled in a single plan for the year will have 48 rows of eligibility data for that year. A person enrolled in two different plans for the year will have 96 rows of data for that year. Primary keys for monthly eligibility include unique person identifier, unique member identifier by plan, product key, eligibility units and dates.

Member demographic variables are submitted by each payer each quarter. Previous demographic data reported by a payer is replaced with the demographic data reported by the payer in the current quarter when the current quarter data differs. A person has a row of demographic data for each of their plans. A person enrolled in a single plan over the APAC years will have one row of demographic data. A person enrolled in two plans over the APAC years will have two rows of demographic data. Primary keys for member demographics include unique person identifier and unique member identifier by plan.

Attending, pharmacy and billing provider demographic variables are submitted by each payer each quarter. Previous demographic data reported by a payer is replaced with the demographic data reported by the payer in the current quarter if the current quarter data differs. Providers appear multiple times in the provider table because they receive payment from multiple payers over time and each payer assigns a unique provider identifier. Primary keys for provider data include unique provider identifier and unique provider identifier by plan.

A person has up to 12 monthly billed premium segments per year per plan. A person enrolled in a single plan for the year will have 12 rows of data for that year. A person enrolled in two different plans for the year will have 24 rows of data for that year. Primary keys for billed premiums include unique person identifier and unique member identifier by plan.

Data Dictionary

The data dictionary lists the data elements in the APAC database and provides brief descriptions and values for each. Data elements reported by payers are marked and all others are created by the vendor. The threshold level that reporters must meet with their quarterly data submission by data element are listed in the corresponding column. Blank threshold values indicate that there is no threshold level requirement.

The data dictionary is organized by the APAC data structure. Data elements available for pharmacy and medical claims are listed first and followed by unique data elements for medical claims; unique data elements for pharmacy claims; demographics; monthly eligibility; provider data and billed premiums. Data elements that require additional detailed justification and data security plans are listed after the above categories. Restricted data elements that are never shared or nearly never shared are listed last and require greater justification, data security plans and are subject to greater Data Review Committee scrutiny and likely Department of Justice legal review.

APAC Data Types

Two types of APAC data are available by request: Public Use and Limited.

Public Use data. There are three different annual Public Use data files (PUF) available by request: medical claims, pharmacy claims and episodes of care which includes both medical and pharmacy claims. PUFs are created using specific inclusion and exclusion criteria. Denied claims, orphan claims and substance abuse claims are excluded from all PUFs. Type of bill is used to identify medical and pharmacy claims. CMS fee-for-service claims are included in PUFs. Users receive all data elements for each requested PUF.

PUFs are limited to the primary diagnosis and procedure code. Monthly eligibility and detailed provider data are not available. An urban/rural flag is provided, but county and zip code data elements are not available in PUFs to ensure compliance with HIPAA. PUFs exclude data that identify members and PUF data may not be linked to external data. PUF requests require approval of only the APAC-2, because member identifiers are excluded and health information is protected in compliance with HIPAA.

Limited data. Limited data offers a higher level of detail than PUF data and may contain PHI. Limited data may be linked to external data only with written approval by OHA.

Limited data requests begin with the submission of the APAC-2 form and after approval is followed by submission of the APAC-3 form provided by APAC staff. To ensure compliance with HIPAA, limited data requesters must provide justification for each data element and years of data requested. Only the minimum necessary data elements and data years will be approved and provided. For example, all pharmacy claims data will not be provided if the plan is to conduct analysis of a specific pharmaceutical only. Enrollment data for all

people in APAC will not be provided if the plan is to conduct limited population analyses such as well-child or prenatal care claims. Multiple years of data will not be provided if there is no plan to conduct longitudinal or year to year analyses.

Limited data requests require approval from the Data Review Committee (DRC) and may require approval from an Institutional Review Board (IRB) and the Oregon Department of Justice (DOJ).

Limited data may be used to inform activities related to health care operations, treatment, payment, public health, or research—with each permitted use defined in HIPAA.[2] Research requests generally require IRB approval prior to submitting an APAC data request if identifiable data is being requested.

Requests for direct identifiers such as date of birth and zip code require detailed justification and security procedures that are subject to greater scrutiny by the DRC. Some data elements such as names and addresses are not available except in special arranged circumstances. These data elements require a higher level of justification, security procedures and approval by the DRC and DOJ.

Oregon Organizations with Public Health Authority. Oregon state and local health departments may request APAC data consistent with HIPAA. HIPAA permits release of identified and identifiable PHI data for public health surveillance, but not for research or publication. Oregon public health entities may contact the APAC team to inquire about data for public health surveillance.

APAC Data Request Guidance

- **Consultation with the APAC team prior to request is highly recommended.**

- Determine the APAC data type to request public use or limited
    - Public use data is limited to the first diagnosis code

[2] Refer to the following sections of the Code of Federal Regulations (CFR) for definitions of permitted uses:

- 45 CFR 164.501 for the definition of health care operations;
- 45 CFR 164.506 (c)(2) for definition of treatment of patient by health care provider;
- 45 CFR 164.506 (c)(3) for definition of payment activities performed by covered entity or health care provider;
- 45 CFR 164.512(b) for definition of health care activities; and
- 45 CFR 164.501 for definition of research.

    - Monthly eligibility data is only available by limited data request
    - Billed premium data is only available by limited data request
    - Provider data is only available by limited data request
    - County and zip code data is only available by limited data request

- Data requesters who plan to link APAC data with another data source using personal identifiers such as name, date of birth or address should contact the APAC team for a discussion about options. **OHA prefers to conduct APAC data linking in-house and share only encrypted identifiers with data requesters**

- Review APAC data structure and dictionary to determine which data elements to request

- Consider minimum necessary APAC data required for project and justification

- Consider your data storage capacity and limitations. A year of APAC claims data is 160 million rows and a year of monthly eligibility data is 125 million rows. There are more than 300 data elements available for request.

Data Request Process Steps

- All requesters must first complete the APAC-2 form and submit it to OHA for review
  Public use data requests require only the APAC-2 form
  Public use data requests do not require DRC review and approval

- Limited data requests require submission of the APAC-3 form and data elements workbook after approval of the APAC-2 request

- Limited data requests require DRC review and approval. DRC ensures:
    - Compliance with HIPAA
    - Minimum necessary data elements and data years
    - Justification for data elements and data years
    - Data security and data destruction plan

- After a data request is approved, requesters must execute a Data Use Agreement (DUA) with OHA before the data request is filled

Issues and Tips to Consider

- Claims data include only people who had a medical visit or pharmaceutical dispensed

- Monthly eligibility data includes people by plan whether or not they received a medical or pharmacy service

- **Claims and visits.** Claims may include one or more lines or rows of data in APAC depending on how the claim is submitted and processed. Claims are specific to a person by payer and are assigned a unique identifier by the payer. When multiple payers make a payment for the same person, for the same service on the same date, there are unique claim identifiers and claim lines for each payer. The data user must aggregate data across claim lines and payers to count unique visits and calculate the total paid for a visit.

- **Denied claims**. Payers report all processed claims including denied claims. The reason for denial is not provided in APAC. Claims are denied for different reasons including: the member was not covered by the payer at the time the service was rendered, there was an error in the claim, or the payer did not cover the rendered service. Updated claims submitted quarterly can generate duplicate claim lines—some with a denied status and some with a paid status. A claim that is denied and resubmitted with different or corrected information will not replace the denied claim in APAC unless the payer assigns the same claim identifier to both claims. If the payer does not assign the same claim identifier, then both the original denied claim and the subsequent paid claim will be in APAC.

- **Orphan claims.** Claims without a linked eligibility month within a year are considered “orphan claims”. Orphan claims include paid and denied claims. Orphan claims peaked at 120,652 in 2012 and declined to a low of 12,670 in 2017. Most of the people with orphan claims were Medicaid prior to 2014 and most were commercially insured in subsequent years.

- **Coordination of benefit claims.** Payers identify claims when they are not the primary payer with a coordination of benefit flag (COB). Payers do not report a COB flag for pharmacy claims. Medicaid did not report a flag for COB claims until 2014. Some commercial/Medicare payers reported an extremely high number of COB claims in some years. Requesters may want to seek guidance from the OHA team for help identifying and flagging COB claims.

- **Submission of zero dollar paid claims.** Payers report all processed claims including claims where the payer and member paid zero dollars. Zero or low dollar paid claims occur for both fee-for-service and managed care payment arrangements. Some reporters who pay providers through managed care arrangements impute a national average as the amount paid for the claim. The number of zero dollar paid claims excluding denied and coordination of benefit claims ranged from 1.9 to 3.2 million claims annually and were not equally distributed by payer type. Medicaid accounted for more than 80% of zero dollar paid claims annually and 8% to 13% of all Medicaid claims were paid zero dollars.

- Requesters need to decide whether they want:
    - Claims for out-of-state residents included or excluded
    - Denied claims included or excluded
    - Orphan claims included or excluded
    - Self-insured claims included or excluded
    - PEBB and OEBB claims included or excluded

- Allowed amount is considered a trade secret and is a restricted data element that is never or nearly never available for request (ORS 442.373). Requesters need to decide if they want to:
    - Request all claims regardless of allowed amount
    - Limit claims to allowed amount greater than zero
    - Limit claims to allowed amount greater than or equal to zero

- Pharmacy claims do not have diagnosis, procedure or modifier codes associated with the claim. Requesters can link pharmacy claims to medical claims using unique person identifier, unique member identifier and dates of service

- CMS reported Medicare claims data are included in APAC but are not available for request as a limitation of OHA's data use agreement with CMS (except for OHA and public health authority data requests). Medicare data reported by commercial insurers is available for request.

- Substance abuse claims are included in APAC but are not available for data request due to federal restrictions. These claims are identified by an algorithm that identifies substance abuse treatment facilities, providers, diagnoses, revenue codes and procedure codes. The algorithm used to identify substance abuse claims is available in the APAC data dictionary. Requesters need to decide if APAC is appropriate for their project given that substance abuse treatment claims data are not available for request.

Demographic Tips:

- Demographics in APAC are not longitudinal and do not have an associated date. Payers submit demographic data for members each quarter that replaces previously reported data by payer. There is no history of demographics in APAC, except age. For example, a person who lived in Clackamas County in 2012 and moved to Multnomah County in 2016 will have Multnomah County for all years in APAC for that payer.

- Race, ethnicity and language data are missing for most people in APAC. Reporters are not required to correct, update, or resubmit quarterly data when race, ethnicity, and language data are mostly missing or unknown. Race is reported missing or unknown for 59% of the people in APAC; ethnicity data is missing or unknown for 72%; and primary spoken language is missing or unknown for 50%. Only 25% of APAC data submitters provided any race or ethnicity data. Data users can query race, ethnicity and language by unique person identifier (across payers) and obtain the small amount of data available across plans.

Payer Information Tips:

- Payer specific identifiers are never shared in combination with amount paid, allowed or billed.

- Payer line of business, payer type and payer product code are the most specific payer-related data available for request.

- Requesters can limit their data request to a specific line of business (except Medicaid), payer types or product codes.

- Data users may consider excluding self-insured data from request and/or analyses given that self-insured data reported to APAC declined by 50% when reporters were no longer required to report all self-insured data.

Provider Data Tips:

- Provider data includes demographics and other detailed data for billing, pharmacy and attending providers.

- Not all providers are individuals. Some providers are clinics or facilities.

- Caution is warranted regarding the vendor generated unique provider identifier. Data users may consider creating their own unique provider identifier based on the detailed provider data in APAC.

Monthly Eligibility Data Tips:

- CMS reported Medicare monthly eligibility data is not available for request as a limitation of OHA's data use agreement with CMS (except for OHA and public health authority data requests).

- Monthly eligibility data from CMS is limited to Oregon residents. Out-of-state residents in Medicare may not have monthly eligibility data in APAC.

- Some Oregon residents who are enrolled in a commercial Medicare Advantage or stand-alone Medicare Part D plan do not have medical monthly and eligibility data in APAC. Data users may consider imputing monthly medical eligibility data for Oregon residents or consider excluding them from analyses.

- Medicaid monthly eligibility is not available for all Medicaid members in APAC. Data users should contact the APAC team to discuss options.

- Most Pharmacy Benefit Manager Plans (PBM) report either pharmacy benefits only or Medicare Part D as the product code for member

eligibility and claims because most PBMs do not have access to member medical plan eligibility data. PBM members may have other coverage and those payers report eligibility and claims data for members independent of PBMs. Medicare Part D is the only stand-alone type pharmacy plan allowed in Oregon. Some reported PBM members may be covered by Medicare, but their Medicare data is not reported to APAC because CMS identifies their residency in a state other than Oregon. Requesters may need to deduplicate monthly eligibility for PBM members to avoid counting them twice.

Medicaid Data Tips:

- Data users may consider limiting or flagging Medicaid data to create equitable Medicaid populations in APAC across time. Data users interested in limiting or flagging Medicaid data should contact the APAC team prior to request.

- Data users may want to consider analyzing FFS and MCO/CCO claims separately and may consider imputing paid amounts for zero or low dollar paid claims bases on national, regional or other available estimates

- Requesters interested in only Medicaid data need to request data from the Medicaid program directly at OHA.HealthAnalyticsRequest@state.or.us.

Medicare Data Tips:

- The relationship data reported by some commercial Medicare reporters is problematic because it includes subscriber, dependent and spouse. Medicare does not enroll dependents and spouses. The relationship variable for Medicare members should not be used in analyses. Data users may consider recoding relationship for Medicare members or counting all Medicare members as self or subscriber.

Inpatient Hospital Claim Tips:

- Data users should consider deduplicating or aggregating inpatient hospitalization data. People can be discharged from one unit and admitted to another unit in the same hospital without any break in time.

Failure to aggregate will result in one hospital visit counting as two visits and the second visit may incorrectly be counted as a rehospitalization.

APAC Data Limitations

APAC is a robust source of administrative health care data but has limitations. APAC does not contain claims or eligibility data for between 2% and 14% of the Oregon population because some people were not insured and because APAC does not have data from all payers for all claims, as described previously in the What APAC is Not section of this guide.

The APAC Issue Log provides information about pending and resolved APAC data issues. The APAC Issue log is 'live' and updated as issues are discovered and resolved. Requesters are encouraged to check the APAC Issue Log regularly.

Medicaid reported data to APAC. Medicaid data in APAC is based on Oregon's Medicaid Management Information System data (MMIS), however not all Medicaid recipients or claims within MMIS are reported to APAC. Some Medicaid recipients with limited health benefits and their claims are included in APAC from 2011 to 2013 and excluded from 2014 to 2018. Additionally, recipients who are not legal residents in the country and their claims are not included in APAC in 2014.

MMIS Medicaid eligibility data is modified for APAC data reporting. Unlike other payers, Medicaid eligibility is not restricted to the first day of the month, to a single eligibility category, to a single benefit program or limited to either fee-for-service or managed care. Medicaid recipients can move from one eligibility category or one benefit program to another during the same month. Medicaid recipients can also change Coordinated Care Organizations (CCOs) or move from a CCO to fee-for-service (FFS) or vice versa during the same month.

MMIS Medicaid eligibility data reported to APAC is assigned by OHA based on the last day of the month. Any recipient eligible on the last day of the month in MMIS is reported to APAC as a full month of eligibility. Recipients are assigned the CCO they are enrolled in on the last day of the month. If a recipient is not enrolled in a CCO on the last day of the month they are assigned FFS.

Medicaid recipients enrolled in a CCO can receive services paid on a FFS basis simultaneously during the same month because some medical services and pharmaceuticals are ‘carved out’ of CCO coverage and paid FFS.

Unlike eligibility data submitted to APAC, Medicaid claims are not assigned based on the last day of the month. Medicaid claims are submitted to APAC with the actual CCO identifier responsible for the claim or FFS.

The APAC data vendor assigns all Medicaid claims in APAC to the CCO or FFS identified in the eligibility data regardless of actual payment arrangement (FFS or CCO) or enrollment with a different CCO during the month. Vendor assignment can result in error (i.e., claims paid FFS are assigned in error to the CCO identified in eligibility and vice versa).

Medicaid recipient eligibility data reported to APAC was based on the MMIS member month table through 2013. Starting in 2014, recipient eligibility was based on the MMIS eligibility table. The MMIS member month table is created quarterly but is not updated and does not capture changes that occurred after the quarter. The MMIS eligibility table is continuously updated and captures all eligibility changes. The change eliminated most orphan claims for Medicaid members and improved demographic reporting because more data was available from the MMIS eligibility table.

Medicaid does not require CCOs with sub-capitation payment arrangements to report the amount paid to a provider. Claims are frequently reported by CCOs to Medicaid as zero or less than a dollar paid and subsequently Medicaid reports these no or low dollar claim payments to APAC. Medicaid policy regarding reporting the amount paid to providers has varied over time.

Medicaid did not report a flag for COB claims until 2014. Medicaid claims with reported coinsurance paid greater than $0 are coordination of benefit claims where Medicaid is the secondary payer.

Caution is warranted for data users regarding Medicaid data in APAC. Data for Medicaid claims and eligibility differs from MMIS and data users may consider contacting the APAC team for consultation.

Complexity of Data. Each APAC data submitter collects and stores its data using varying data systems, collection methods, and definitions. While OHA adopted rules and a standardized APAC data submission process, there is no uniform method for the original data collected by APAC data submitters. There

are exceptions, anomalies, and error in APAC due the breadth and complexity of APAC data submitters' internal data systems and the differences in the original data they collect.

APAC Data Transfer and Administration

- APAC data is transmitted to an approved data requester through a secure file transfer protocol established to ensure data security and adherence to HIPAA
- Data requesters are not allowed to make any copies of APAC data
- Only people who signed the DUA can access the APAC data provided
- People can be added or removed from the DUA through an approved amendment
- A principal investigator can be added or removed from the DUA through an approved amendment
- APAC data can only be used for the approved project specified in the signed DUA and may not be used for exploratory, descriptive or any other purpose
- APAC data must be removed and destroyed by the DUA end date
- Data users must possess a valid and up-to-date IRB approval for research projects. Data users are required to provide valid and up-to-date IRB approval for research throughout the approved project. Data users are not permitted to use or retain APAC data without a valid and up-to-date IRB approval for research projects

APAC Data Submission by Payers

Payers who reported data to APAC are listed in Table 3 by year (grey). In 2018 five payers reported data to APAC for the first time and seven stopped reporting data.

Table 3. APAC Data Reporters

	2010	2011	2012	2013	2014	2015	2016	2017	2018
A & I Benefit Plan Administrators									
Aetna									
AllCare Health Plans									
Argus Health Systems									
Atrio Health Plans									
Care Oregon									
Catamaran PBM of Maryland									

Center for Medicaid & Medicare Services									
	2010	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
CIGNA Health and Life Insurance									
Connecticut General Life Insurance									
Costco EXPIRX									
Coventry Health Care Workers Comp.									
CVS Caremark									
Cypress Benefit Administrators									
Employee Benefit Management Services									
Envision Pharmaceutical Services									
Envolve Pharmacy Solutions									
Express Scripts									
FamilyCare									
First Health Life & Health Insurance									
Great-West Life & Annuity Insurance									
Harrington Health Services									
Health Net									
Healthcare Management Administrators									
Humana									
Kaiser Permanente									
LDI Integrated Pharmacy Services									
Lifewise Health Plan									
Magellan Health									
Marquis Advantage									
Maxor Plus									
Medco Health Solutions									
Medone RX									
Medtrak									
Moda Health Plan									
National Pharmaceutical Services									
Navitus Health Solutions									
One Pont Patient Care									
Optum RX									
Oregon Medicaid data									
Pacific Source Health Plans									
Pennsylvania Life Insurance									
Prime Therapeutics									
Procare Pharmacy Benefit Manager									
Providence Health Plan									
Regence Blue Cross Blue Shield									
RxAmerica									
RXEDO									
RxSense Prescription Management									
Samaritan Health Plans									

Shasta Administrative Services									
	2010	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Time Insurance Company									
Trillium Community Health Plan									
United Health Care									
Well Care									
Welldyne RX									

Data submission schedule. Mandatory and other reporters submit twelve months of data on a quarterly basis to APAC. Submissions occur one month after the close of each calendar quarter. Claims data submissions are based on the date a medical service incurred while billed premium and enrollment data submission are based on the effective date of enrollment. CMS reports claims data based on the paid date. See Appendix A-G and 1 & 2 for detailed information regarding data currently submitted by reporters and the APAC data dictionary for historical data submission information.

OHA uses a "rolling submission" schedule where quarterly submissions include data for the most recent calendar quarter and updated data for the prior three quarters is refreshed. Data are updated for a variety of reasons including: new claims are submitted; denied claims are corrected, resubmitted and then paid; claims are adjudicated and paid a different amount; people who were disenrolled because their premium was not paid, or they did not meet eligibility criteria; or errors are corrected. Updates include data that was not previously available or changed. Updates replace data that changed for the same claim identifier submitted by the payer, but do not replace data that did not change or when the payer reported a different claim identifier for the same service.

To ensure reliability and validity, APAC data are not considered complete and are not released until a year after the last quarter of claims for the year is submitted. For example, claims for calendar year 2018 were released in early 2020. This lag time helps ensure that the data are as complete and reliable as possible.

APAC Vendor Data Processing and Validation

The APAC data vendor processes and validates quarterly data submissions to ensure quality. The vendor compares each payer's current submission to their previously submitted quarterly and annual data. The vendor communicates with

payers and OHA about significant variation from prior submissions to resolve any issues. There are three levels of data quality checks and validation.

Level 1 data validation occurs within 24 hours of quarterly data submission and identifies basic errors to ensure that minimum data quality standards are met. Level 1 validates that files are submitted in the correct format; data elements have valid names, values, and lengths; data meets the threshold requirements for allowable errors or blanks; counts and totals match the summary data provided by the reporter; and files match across common data elements and are logical in relationship to each other. If the data quality does not meet the required standards, data submitters are required to correct the data and resubmit.

Level 2 data validation occurs within 15 days of submissions that pass Level 1 validation and ensures data consistency over time. The current submission is compared to up to 24 months of prior data. Variances are identified for medical and pharmacy enrollment and member months, financial reporting and claims. Data reporters receive a validation summary and are notified about issues that require a response.

Level 3 validation is annual and occurs 60 days after a full calendar year of data is submitted. It provides a snapshot of the data submitted by payer over the past year, year-over-year trends and comparison with APAC benchmarks. Reporters have 30 days to validate the level 3 summary information.

Unique person identifier. The vendor creates a unique person identifier across payers and years of data as part of each quarterly data submission. The unique person identifier is assigned for each person, so that a person's enrollment, claims and billed premiums can be analyzed longitudinally across payers and data years. The unique identifier is truly unique across payers and years for the quarterly submission. However, the unique identifier from the most recent quarterly update is not necessarily the same as the unique identifier for previously created APAC data sets shared with data requesters. About 3%-5% of prior APAC members are assigned a new unique identifier each quarter or about 12%-20% annually.

The unique person identifier is derived from payer reported unique member identifiers, names, dates of birth and gender across payers and years of data. The probability of two people with the same date of birth, first and last name is very small. However, a person may divorce, marry, get adopted, and for other reasons change their names or provide different names to payers over time.

Sometimes names are misspelled. Name changes and errors contribute to error in creating unique person identifiers.

The APAC data vendor applies a multiple step methodology for assigning a unique person identifier with the following assumptions about the data reported by each payer:

- The member identifier assigned to a person by each payer is truly unique to a person and is never assigned to another person. A person can have multiple member identifiers from different payers, but no member identifier is ever assigned to more than one person for that payer

- The most recent name, birth date and gender for a person with a member identifier reported by a payer is assumed correct

Methodology

- The APAC data vendor creates a member table for the current quarterly data submission with names, date of birth, address, gender, race, ethnicity, language and unique member identifier for each person reported by each payer. The vendor compares the current quarterly member table with the member table created in the prior quarter. No longitudinal historical member table exists.
    - The vendor recodes first and last names from the current data submission by payer to remove punctuation, spaces and standardize formatting
    - The vendor transforms commonly abbreviated names to the full name version (i.e., Bob is transformed to Robert)
    - The most recent name, birth date, race, ethnicity, address and gender for a person by payer is assumed correct
    - The vendor links people in the current quarterly member table to the last quarterly member table by name, date of birth and gender and payer unique member identifiers and assigns a person unique identifier
        - Unique person identifiers can change at each quarterly data submission. People with a unique person identifier assigned in a previous quarterly data submission are assigned a new unique person identifier when a new member identifier is reported by a payer that did not previously report a member

identifier for them or the person has a change in name, date of birth or gender.
        - Unique person identifiers are never reused. From 3% to 5% of people with a prior existing unique person identifier are assigned a new unique person identifier at each quarterly refresh
        - Unique person identifiers do not change at each quarterly data submission when a person has the same member identifiers reported by the same payers in the previous quarterly update and the person had no change to their name, date of birth or gender
        - New people identified for the first time in the current quarterly data submission are assigned a unique person identifier. About 1% of people are new to APAC at each quarterly refresh
    - The assigned unique person identifier is an integer value that links all associated member identifiers across payers for that person
    - All claims and enrollment data for the person are assigned the current quarter unique person identifier
    - The process is repeated for each quarterly data submission

Unique Provider Identifier. The unique provider identifier methodology follows the same steps as the unique person identifier method with additional matching data elements. The national provider identifier (NPI), drug enforcement agency identifier (DEA), state license number, tax identification number (TIN) and address are used in the assignment of a unique provider identifier when reported by the payer. However, not all payers report NPI, DEA, state license number or TIN.

Unlike unique person identifiers, some payers do not submit unique provider identifiers. For these cases, the APAC data vendor creates a payer specific provider identifier from provider name, date of birth, NPI, DEA, state license number and TIN for payers that do not submit unique provider identifiers.

The vendor links providers across payers based on name, date of birth, NPI, DEA, state license number, TIN and address and scores potential matches. A score of 15 points is the threshold for a potential match. Unlike the unique person identifier, the next step is the calculation of total paid by payer. Adjustments are made to ensure that the unique provider identifier assigned maps to the payer with the highest paid amount. A provider with multiple NPIs will be assigned multiple unique provider identifiers.

Like the unique person identifier, the unique provider identifier can change at each quarterly data submission. Providers with a unique provider identifier assigned in a previous quarterly data submission will be assigned a new unique provider identifier when a new identifier is reported by a payer that did not previously report a provider identifier for them or the person has a change in name, date of birth or gender. Unique provider identifiers are never reused.

Orphan claims. The vendor links medical and pharmacy claims with monthly enrollment data using the claims service date, eligibility month and plan specific unique member identifier. Claims without a linked eligibility month are linked to the closest eligibility month within a year for the plan specific unique member identifier (gap fill process). Claims without a linked eligibility month within a year are considered “orphan claims”. Orphan claims include paid and denied claims. Orphan claims occur when monthly eligibility data is not reported. Monthly eligibility is not reported by commercial payers when premiums are not paid; by CMS when the person is not an Oregon resident; by Medicaid when the person is not eligible; and in error by all payers.

Vendor generated data elements. The vendor uses the data submitted by reporters to calculate additional data elements including, but not limited to payer line of business, Heath Cost Guideline® MR Line code (HCG),), the Thomson Medstat Medical Episode Grouper (MEG), Metropolitan statistical area (MSA), Urban, MedInsight Medicare Severity Diagnostic Related Group Code (MS DRG), and RX class. Other vendor created data elements are listed in the APAC data dictionary. Brief descriptions of payer line of business, MEG, MSA, Urban, MS DRG and RX class follow.

Payer line of business is assigned based on the APAC product code reported by payers. Payer line of business (payer_lob) is based on the APAC product codes reported in monthly member eligibility data. Claim specific line of business (claim_specific_lob) is based on the APAC product codes reported in claims data. APAC product codes are grouped together into three categories: Commercial, Medicare and Medicaid. Payer-reported product codes PPO, POS, HMO, self-insured and pharmacy only are mapped to commercial; Medicaid FFS, dual Medicaid and Medicare, disabled, low income, and Children’s Health Insurance Program are mapped to Medicaid; and Medicare PPO, Part D, Advantage and Dual Special Need Program are mapped to Medicare. Missing and unknown are assigned commercial for payer_lob. Orphan claims are assigned a null payer_lob. The gap fill process used by the vendor to link claims

with eligibility data can result in the incorrect assignment of payer_lob because it ignores the payer reported APAC product code from claims.

HCG and MEG are vendor proprietary grouping algorithms. The HCG system groups services into five settings: inpatient, outpatient, professional, prescription drug and ancillary. The lowest level of the HCG system groups services into one of 107 categories. MEG creates episodes of care for a patient's complete course of care for a single illness or condition over a specified time and incorporates medical and pharmacy claims.

MSA is derived from reported zip code and the flag indicates that the member resides in a metropolitan area defined by the federal Office of Management and Budget. Urban is a flag that identifies if a member's zip code is associated with a list of Oregon urban ZIP codes provided by OHA.

MS DRG is a Medicare derived grouping system used by the vendor to classify inpatient hospital services into one of approximately 750 groups. RX class is a grouping of pharmaceuticals with the same therapeutic properties as defined by Medi-Span.

APAC Comparison with Other State of Oregon Data Sources

APAC was compared with data from other State of Oregon data sources to provide context and inform users about common and unique features. A brief summary of results is provided. More detailed information is available upon request. APAC was compared with the following:

- Medicaid data from Medicaid Management Information System (MMIS)
- Hospital Discharge Data (HDD)
- Public Employee Benefit Board Data (PEBB)
- Oregon Educators Benefit Board Data (OEBB)
- Birth Certificate Data from the Oregon Center for Health Statistics
- Death Certificate Data from the Oregon Center for Health Statistics
- Date of death reported from CMS for Oregon residents
- Quarterly Health Enrollment data from Department of Consumer & Business Services (DCBS)
- Oregon State Cancer Registry (OSCaR)
- Oregon Prescription Drug Monitoring Program (PDMP)

Medicaid data. The Medicaid Management Information System (MMIS) has data for all Medicaid recipients, claims, encounters, enrollment, provider data and other data elements. MMIS is used for claims submission and payment, federal

reporting, auditing, fraud detection, actuarially established capitation rates, health care utilization evaluation and to support health policy, research and innovations. Approximately 1% to 8% of Medicaid recipients and their claims in MMIS are not submitted to APAC.

Table 4. APAC and Medicaid Comparison Count of People

	2011	2012	2013	2014	2015	2016
MMIS Medicaid	804,367	828,962	833,068	1,234,245	1,386,869	1,410,329
APAC Medicaid	798,544	821,982	815,860	1,136,296	1,331,404	1,354,311
Difference	5,823	6,980	17,208	97,949	55,465	56,018
% Difference	1%	1%	2%	8%	4%	4%

Hospital Discharge data. OHA contracts with the Oregon Hospital Association to provide hospital discharge data (HDD). HDD captures information about all hospital discharges from all Oregon hospitals regardless of payer or uninsured status. HDD includes Oregon residents and out-of-state residents who were hospitalized in an Oregon hospital. HDD includes reported but not actual payment data from payers. The source of expected payment is reported, but the actual payer may differ from the expected payer. While HDD does not include any outpatient, emergency department or professional services data, it does include hospital discharge data for the uninsured, self-insured, Veterans Affairs, Tribal Health and other payers that do not submit data to APAC.

For comparison HDD data was limited to Oregon residents and APAC data was limited to Oregon residents discharged from Oregon hospitals. APAC has from 9% to 22% fewer Oregonians discharged from Oregon hospitals and from 4% to 18% fewer Oregon hospital visits for Oregonians compared to HDD after excluding uninsured from HDD.

Table 5. APAC and HDD Comparison

	2011	2012	2013	2014	2015	2016
All APAC people with a hospital visit	216,200	213,155	213,544	246,269	249,199	245,401
All HDD people	285,723	279,164	275,969	282,308	287,487	286,831
All APAC hospital visits	437,803	436,496	418,343	473,481	488,428	483,154
All HDD hospital visits	372,359	362,161	357,254	365,675	376,326	370,227
APAC Oregonians with an Oregon hospital visit	189,867	186,951	183,317	222,419	224,453	217,419
HDD Oregonians with an Oregon hospital visit	268,184	261,539	258,164	265,162	269,950	268,778
APAC Oregon hospital visits for Oregonians	262,400	258,279	254,812	307,854	311,888	298,862
HDD Oregon hospital visits for Oregonians	350,198	340,157	335,220	344,266	354,857	348,239

% Difference Oregonians with an Oregon hospital visit	-29%	-29%	-29%	-16%	-17%	-19%
% Difference Oregon hospital visits for Oregonians	-25%	-24%	-24%	-11%	-12%	-14%
HDD Oregonians with an Oregon hospital visit exclude other/uninsured	163,943	159,855	140,689	201,244	206,492	198,795
HDD Oregon hospital visits for Oregonians exclude other/uninsured	236,528	228,941	207,302	241,380	249,191	247,349

Public Employee Benefit Board (PEBB) Data. People who work for a PEBB eligible public employer are enrolled in PEBB health plans regardless of Oregon residency. PEBB enrollment data are collected by the PEBB program. APAC has about 1% fewer PEBB enrollees compared to PEBB program data.

Oregon Educators Benefit Board (OEBB) Data. People who work for an OEBB eligible public employer are enrolled in OEBB health plans regardless of Oregon residency. OEBB enrollment data are collected by the OEBB program. APAC has from 1% to 7% more OEBB enrollees compared to OEBB program data. The difference is likely attributable to how people are counted. OEBB counts people by the contracted school year.

Table 6. APAC, PEBB, and OEBB Comparison

	2011	2012	2013	2014	2015	2016
PEBB in APAC	137,956	134,562	137,285	139,771	141,267	149,534
OEBB in APAC	144,041	138,235	140,463	140,771	142,440	143,511
PEBB	139,286	135,713	138,277	140,732	141,990	143,791
OEBB FY	140,659	133,689	137,943	138,712	133,669	134,660
% Difference APAC-PEBB	-1%	-1%	-1%	-1%	-1%	4%
% Difference APAC-OEBB FY	2%	3%	2%	1%	7%	7%

Birth Certificate Data. Oregon birth certificate data are collected by the Oregon Center for Health Statistics. There were from 45,000 to 46,000 Oregon births annually from 2011 to 2017. There were from 34,000 to 40,000 births identified in APAC based on birth diagnosis and procedure codes annually from 2011 to 2017. Diagnosis and procedure codes used to identify births in APAC are available upon request.

Death Data. The Oregon Center for Health Statistics reported a total of 313,299 Oregon death certificates from 2010 to 2018 with a range from 33,000 to 37,000 deaths annually. CMS reported to APAC a total of 249,708 deaths from 2010 to

2018 with a range from 27,000 to 31000 deaths annually. An additional 28,826 deaths were identified from hospital discharge status reported to APAC.

APAC and death certificate data were linked by names, date of birth and date of death. Death certificate data linked to 284k people in APAC. Date of death was available for an additional 23,000 people in APAC (no death certificate link). Hospital discharge death was available for an additional 16,000 people in APAC (no death certificate link and no DOD). About 44,000 death certificates were linked to people who did not have a DOD or hospital death discharge in APAC. Death information is available for 323,000 people in APAC from death certificate, APAC DOD and/or APAC death discharge.

Table 7. APAC and Death Data Comparison

	Death Certificate (DC) Deaths	DC OR Resident Deaths	Deaths in APAC (DOD or Dx)	Deaths in APAC OR residents (DOD or DX)	Match but-death not in APAC	Match but-death not in APAC OR resident
Total People	313,299	303,802	278,534	277,257		
DC-APAC match	284,015	281,666	240,613	240,031	43,774	43,263
% DC-APAC match	91%	93%	86%	87%		
Deaths only DC	29,284	22,136				
Deaths only APAC			38,722	38,019		

Department of Consumer and Business Services (DCBS) Quarterly Health Enrollment data. DCBS collects mandatory quarterly health enrollment data from insurers and third-party administrators. According to DCBS data, from 2.5 to 2.9 million people in Oregon are commercially insured including Medicare Advantage and Medicare Part D. Medicaid and Medicare (CMS) FFS covered lives are not reported to DCBS. Some self-insured plans report covered lives to DCBS and some do not. DCBS covered lives represent from 71% to 78% of the people in APAC.

Table 8. APAC and DCBS Data Comparison

	2011	2012	2013	2014	2015	2016
APAC unique Oregonians	3,337,473	3,490,242	3,489,477	3,744,971	3,913,610	3,795,248
DCBS mean covered lives	2,482,539	2,653,995	2,716,847	2,681,760	2,779,377	2,858,765
% of Oregon population	64%	68%	69%	68%	69%	70%
% of APAC	74%	76%	78%	72%	71%	75%

Oregon State Cancer Registry (OSCaR) data. OSCaR is a statewide, population-based mandatory registry that collects data about Oregon cancer patients. In general, only malignant cancers and benign tumors of the central

nervous system and pineal and pituitary glands are reportable. The date of first diagnosis and first course of treatment are collected for each reportable cancer site which makes OSCaR an incidence-based data system. The ability to identify who is diagnosed and their treatment is important for describing the burden of cancer in Oregon, tracking the effectiveness of interventions and linking cancer patients with researchers to improve the quality of cancer treatment. Unlike OSCaR, APAC is an all payers all claims database and collects information about the diagnosis and treatment of cancer regardless of when or where the cancer was first diagnosed (prevalence).

For comparison purposes OSCaR and APAC cancer cases were limited to Oregon residents. Depending on the type of cancer, there were up to 16 times more cancer cases identified in APAC. Limiting APAC cancer cases to the first year of diagnosis found in APAC reduced the difference by nearly half. Limiting APAC cancer cases to those diagnosed in hospitals produced mixed results.

Table 9. APAC and OSCaR Data Comparison

APAC Oregon Residents Cancer Cases							
	2011	**2012**	**2013**	**2014**	**2015**	**2016**	**Total unique people**
Unique people	95,569	96,704	98,115	103,462	107,123	104,516	245,680
lipOralPharynx	2,453	2,549	2,674	3,217	3,192	3,165	9,348
Esophagus	964	954	1,022	1,111	1,170	1,148	3,709
Stomach	852	855	900	972	946	909	3,566
ColonRectumAnus	8,159	8,064	8,213	8,520	8,644	8,502	23,781
LiverBile	1,401	1,512	1,623	1,788	1,981	2,041	7,026
Pancreas	1,338	1,349	1,318	1,478	1,618	1,552	5,865
Larynx	702	680	699	751	733	743	2,131
Lung	7,430	7,478	7,596	7,853	8,017	8,056	26,075
Skin	5,775	5,840	5,921	6,544	6,562	5,031	24,070
breast	23,556	23,858	24,165	24,925	25,518	24,409	55,150
cervix	1,042	1,074	1,066	1,206	1,252	1,133	4,203
uterus	2,701	2,825	2,892	3,272	3,466	3,572	8,883
ovary	2,123	2,093	2,060	2,172	2,172	2,065	6,178
prostate	24,155	23,982	24,168	24,432	25,221	24,842	49,213
Kidney	3,259	3,449	3,667	4,067	4,130	3,802	10,437
Bladder	6,273	6,444	6,561	6,868	7,074	7,056	15,999
Brain	367	373	348	395	405	451	1,701
Hodgkins	1,062	1,056	1,010	1,160	1,161	987	3,129
NonHodgkins	6,040	6,312	6,372	6,861	7,288	7,267	16,414
Leukemia	4,991	5,093	5,246	5,540	6,283	6,631	13,763
myeloma	1,734	1,851	1,913	1,943	2,505	2,985	5,893
OSCaR Cancer Cases							
	2011	**2012**	**2013**	**2014**	**2015**	**2016***	**Total unique people**
lipOralPharynx	564	596	637	559	611	530	3,497

Esophagus	214	258	260	249	234	222	1,437
Stomach	250	248	295	256	269	199	1,517
ColonRectumAnus	1,898	1,908	2,008	1,940	1,911	1,652	11,317
LiverBile	392	457	442	487	475	325	2,578
Pancreas	560	563	622	667	646	487	3,545
Larynx	115	133	137	127	126	90	728
Lung	2,791	2,706	2,766	2,742	2,512	2,083	15,600
Skin	2,058	2,222	2,485	2,511	2,306	1,296	12,878
breast	3,728	3,849	3,896	3,720	3,595	3,131	21,919
cervix	133	129	142	151	150	114	819
uterus	656	730	657	714	718	749	4,224
ovary	290	301	307	298	301	247	1,744
prostate	2,821	2,142	2,226	2,091	2,239	1,632	13,151
Kidney	691	721	768	808	747	671	4,406
Bladder	1,019	1,049	1,030	1,042	1,016	759	5,915
Brain	359	358	384	361	325	307	2,094
Hodgkins	106	103	83	110	95	68	565
NonHodgkins	861	849	922	925	795	722	5,074
Leukemia	552	564	621	584	540	514	3,375
myeloma	261	248	272	270	230	181	1,462

Oregon Prescription Drug Monitoring Program (PDMP) data. The Prescription Drug Monitoring Program (PDMP) is a tool to help healthcare providers and pharmacists provide patients better care in managing their prescriptions. It contains information provided by Oregon-licensed retail pharmacies. Pharmacies submit prescription data to the PDMP for all Schedules II, III and IV controlled substances dispensed to Oregon residents. The PDMP contains prescription data for uninsured people and insured people not reported to APAC. The PDMP does not contain information about insurance coverage, payment data or prescriptions dispensed out of Oregon. PDMP has prescriptions data for about a million Oregonians annually or from 28% to 43% more Oregonians than APAC. PDMP has roughly six million prescriptions fills annually for Oregonians or from 26% to 40% more than Oregonians in APAC. APAC does not include from about one hundred thousand to over four hundred thousand Oregon residents annually.

Table 10. APAC and PDMP Data Comparison

	2012	2013	2014	2015	2016
PDMP Total People	1,177,782	1,166,057	1,202,418	1,233,257	1,198,504
PDMP Oregonians	1,099,621	1,100,858	1,134,965	1,165,310	1,124,011
PDMP Total pharmacy fills	6,519,414	6,612,387	6,601,806	6,751,735	6,476,207
PDMP Total pharmacy fills Oregonians	6,289,091	6,395,931	6,388,339	6,531,973	6,226,774
APAC Total People with a pharmacy fill	648,300	632,865	758,629	824,508	814,996

APAC Oregonians with a pharmacy fill	643,182	628,615	745,239	817,033	808,729
APAC Total pharmacy fills	3,871,156	3,873,806	4,489,437	4,741,119	4,604,331
APAC Total pharmacy fills Oregonians	3,845,898	3,850,538	4,452,221	4,715,313	4,577,567
Difference Total People	-529,482	-533,192	-443,789	-408,749	-383,508
Difference Oregonians	-456,439	-472,243	-389,726	-348,277	-315,282
Difference Total pharmacy fills	-2,648,258	-2,738,581	-2,112,369	-2,010,616	-1,871,876
Difference Total pharmacy fills Oregonians	-2,443,193	-2,545,393	-1,936,118	-1,816,660	-1,649,207
% Difference Total People	-45%	-46%	-37%	-33%	-32%
% Difference Oregonians	-42%	-43%	-34%	-30%	-28%
% Difference Total pharmacy fills	-41%	-41%	-32%	-30%	-29%
% Difference Total pharmacy fills Oregonians	-39%	-40%	-30%	-28%	-26%
Oregon residents not in APAC	391,363	428,264	217,829	99,418	286,477

APAC Use Case Examples

A list of APAC data uses is available in the APAC Use Case document. There are about 30 state agency and 60 external organization projects. Examples include:

Primary care spending
Evidence based quality measures
Median hospital payments
Outpatient antibiotic prescribing
Prescription drug trends
Antibiotic prescribing
Chronic disease surveillance
Health care expenditures
Quality of contraceptive care in Oregon
Health Effects of Wildfire Smoke on Oregonians
Emergency Department Dental Conditions

For more information about APAC, including data request documents and FAQs, please visit APAC's website: http://www.oregon.gov/oha/HPA/ANALYTICS/Pages/All-Payer-All-Claims.aspx