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Program for Sustainable
Health Care Costs

Guide to Grouping Outpatient Hospital Claims for Spending Analyses

Analytic Support Resource

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Manatt Health

APRIL 2024

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Executive Summary

This data analytic guide provides direction to state analysts undertaking analyses of hospital outpatient department (HOPD) utilization and spending.

HOPD utilization and spending has increased in recent years, outpacing growth in inpatient hospital spending in many states.[1,2] The goal of these analyses is often to understand the types of services that are driving increased utilization and spending, but there are multiple standards for classifying HOPD claims by service category. This guide provides instruction on how state analysts can use all-payer claims databases (APCDs) and the Centers for Medicare & Medicaid Services' (CMS) Restructured Berenson-Eggers Type of Service (BETOS) Classification System[3] grouping approach to categorize claims into service categories, enabling more meaningful (and comparable) analyses. The BETOS methodology has several advantages over other grouping approaches: it is standardized and maintained by a federal agency; it is straightforward to operationalize; and it provides flexibility for the granularity of categorization, depending on use case.

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1 2023 Sustainable Health Care Cost Growth Target Annual Report. Oregon Health Authority. Published May 9, 2023. Accessed December 5, 2023. Available at: **https://www.oregon.gov/oha/HPA/HP/Cost%20Growth%20Target%20documents/2023-Oregon-Cost-Growth-Target-Annual-Report.pdf**

2 2023 Annual Health Care Cost Trends Report and Policy Recommendations. Massachusetts Health Policy Commission. Published September 2023. Accessed December 15, 2023. Available at: **https://www.mass.gov/doc/2023-health-care-cost-trends-report/download**

3 Some publications refer to the Restructured Berenson-Eggers Type of Service (BETOS) Classification System using the acronym 'RBCS.'

II Background

More and more hospital services are being routinely offered in the outpatient setting, including general preventive care and specialist visits, lab tests and screenings, and minor surgical procedures like appendectomies and colonoscopies.

Hospital outpatient department (HOPD) spending growth has accelerated in recent years, driven by an increase in utilization and rising prices.[4,5] HOPD spending growth has outpaced spending growth for inpatient hospital services in many states[6] Between 2020 and 2021, for example, HOPD spending in Oregon increased by 10.1%, more than six percentage points faster than hospital inpatient spending.[7] Outpatient utilization is expected to continue rising as health systems divert more care to outpatient hospital sites of care.[8]

While analyses examining inpatient hospital service utilization and spending often leverage standard diagnosis-related groups (DRGs) to categorize inpatient services, a standard approach for grouping outpatient services does not exist. The lack of a standard approach makes pursuing related analyses more challenging and limits cross-study analytic comparability. This "how-to" guide aims to provide state analysts with direction and offer a standard approach to undertaking HOPD spending and utilization analyses.

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4 Outpatient visits billed at increasingly higher levels: implications for health costs, Peterson-KFF Health System Tracker. Published February 27, 2023. Accessed December 5, 2023. Available at: **https://www.healthsystemtracker.org/brief/outpatient-visits-are-increasingly-billed-at-higher-levels-implications-for-health-costs/**

5 2021 Health Care Cost and Utilization Report. Health Care Cost Institute. Published April 2023. Accessed December 5, 2023. Available at: **https://healthcostinstitute.org/images/pdfs/HCCI_2021_Health_Care_Cost_and_Utilization_Report.pdf**

6 Performance of the Massachusetts Health Care System, Annual Report March 2023. Center for Health Information and Analysis. Published March 2023. Accessed December 5, 2023. Available at: **https://www.healthsystemtracker.org/brief/outpatient-visits-are-increasingly-billed-at-higher-levels-implications-for-health-costs/**

7 2023 Sustainable Health Care Cost Growth Target Annual Report. Oregon Health Authority. May 9, 2023. Accessed December 5, 2023. Available at **https://www.oregon.gov/oha/HPA/HP/Cost%20Growth%20Target%20documents/2023-Oregon-Cost-Growth-Target-Annual-Report.pdf**

8 2022 Impact of Change Forecast Highlights. Vizient. November 2022. Accessed December 5, 2023. Available at: **https://www.sg2.com/wp-content/uploads/2022/11/2022_IoC_Forecast_Media.pdf**

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HOPD Claims Data Sources

State analysts can utilize administrative claims data to examine trends in HOPD utilization and spending. Administrative claims data consist of billing records that providers submit to payers to receive reimbursement for rendering health care services.

These data are available from a variety of sources, including:

- **All-payer claims databases (APCDs),** which can include public and private payer health care claims and encounter data for a majority of state residents, and are maintained by nearly two dozen state health data organizations (HDOs) nationally. State analysts can work directly with a local state HDO to obtain an APCD extract, the fees for which may vary by state and purpose. Analysts can learn more on **Manatt's website**.
- **Private claims databases**, which can include public and private payer health care claims and encounter data for broader geographies than those of APCDs but may be limited in the populations they include (e.g., national payers only) or the fields they are able to share (e.g., deidentified payers and providers). They are maintained by various private organizations (e.g., Health Care Cost Institute [HCCI], Merative Marketscan, Optum). State analysts often have to pay licensing fees to access these databases, though the data may include useful information not available in state APCDs, such as self-insured data.
- **Medicaid claims data,** for both fee-for-service and Medicaid managed care claims and encounters. These data are maintained by state Medicaid agencies and the Centers for Medicare & Medicaid Services (CMS) (e.g., T-MSIS Analytic Files [TAF] data). State analysts may be able to acquire Medicaid claims data extracts for little to no cost from their state Medicaid agencies, or pay a licensing fee to access TAF data via CMS. Analysts can find more information about the TAF data at **Medicaid.gov**.
- **Medicare claims data,** for fee for service, Medicare Advantage, and Part D claims and encounters, which are maintained by CMS as well as CMS Qualified Entities like FAIR Health. State analysts can pay a licensing fee to access Medicare claims data via CMS. Analysts can find more information about Medicare claims data that are available from **CMS** and from **FAIR Health**.

Accessing claims data of virtually any variety, identifiable or deidentified, frequently requires users to attest to certain data privacy and security standards. Claims data analytics may also be limited by data lag; lack of standardized reporting for non-claims information; lack of reliable provider attribution and identification coding; poor quality of race and ethnicity data; divergent payer versioning processes; and other state-, payer-, and provider-specific data coding anomalies.

This guide will focus on how states may use data from state APCDs to analyze trends in HOPD utilization and spending by service category, though its guidance will likely have crosscutting applicability for other claims data sources. This guide assumes that readers are generally familiar with the structure and content of APCDs; analysts who wish to learn more about these data sources may explore the resources mentioned earlier.

General Tips on Working with APCDs

- APCDs are relational databases that include multiple files (e.g., enrollment files, medical claims, provider files) that can be linked using key fields like patient IDs and/or claim IDs. APCD structure and data fields may vary from state to state.
- Analysts should engage local state staff to understand the process to request and obtain data, including any licensing fees or data use agreements that may be required in order to obtain access, as early in the analytic process as possible.
  - Analysts should obtain data dictionaries, data use guides, and examples of previous reports relevant to the APCD analysis.
- Analysts will likely need to use a data analytic tool like SAS, R, Python, STATA, or SQL to effectively manage and analyze APCD files given their size and complexity.
- APCDs are large and may contain protected health information (PHI) and/or personal identifiable information (PII). Analysts planning to obtain copies of the data will need to consider storage and security requirements prior to application, and whether sensitive fields are required or may be dropped before delivery.
- Despite the many strengths of APCD data, analysts should also consider their limitations prior to use, including incomplete data on ERISA-preempted self-insured populations, lack of uniformity across states, and sometimes lengthy processes for acquiring data.

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IV. HOPD Claims Grouping Approaches

Analysts conducting claims-based analyses of HOPD utilization and spending may consider several approaches for grouping HOPD services into higher-level service categories to more easily assess the types of services that drive trends in HOPD utilization and spending.

Two of the most common grouping approaches are:

- The Restructured Berenson-Eggers Type of Service (BETOS) Classification System, the primary focus of this guide, which was developed by CMS to classify Medicare Part B claims into high-level service categories and more granular subcategories based on Healthcare Common Procedure Coding System (HCPCS) procedure codes.[9]
- Clinical Classification Software (CCS) for Services and Procedures, which was developed by the Agency for Healthcare Research and Quality (AHRQ) to assist researchers with classifying HCPCS procedure codes into detailed clinically relevant service categories.

Additional background information on BETOS and CCS may be found in Table 1 and Appendix A. Depending on analytic needs, state analysts may also consider utilizing a homegrown approach to classify services (see Appendix A).[10]

For most analyses of HOPD spending and utilization, the BETOS service grouping approach provides analysts with the greatest analytic flexibility. BETOS allows analysts to group services into high-level service categories (e.g., tests vs. procedures) as well as more granular subcategories (musculoskeletal procedures vs. cardiovascular procedures) and detailed families (e.g., pacemaker removal vs. percutaneous transcatheterization). Conversely, CCS groups services into 248 categories without guidance on how categories may be grouped to support more aggregate analyses. BETOS is also more straightforward to operationalize than is CCS, and frequently used by states and the federal government, enabling cross-state benchmarking and comparisons. Some states, including Rhode Island and Massachusetts, have modified the BETOS categorization approach to support their analytic and reporting needs. For more information on state examples see **Section VI**.

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9 HCPCS is divided into two levels. HCPCS level I comprises Current Procedural Terminology® (CPT) codes, which are developed and maintained by the American Medical Association. HCPCS level II comprises additional codes that identify products, supplies, and services not captured by CPT codes. Throughout this guide, references to HCPCS include both level I and level II HCPCS codes.

10 Additional background information on each approach, including a high-level overview of these methodologies, the types and number of service categories they identify, key strengths and limitations, and links to code sets and external resources to support implementation, can be found in Appendix A.

TABLE 1. **Comparison of BETOS and CCS Service Grouping Approaches**

Considerations	BETOS	CCS
Stewarding Agency	CMS	AHRQ
HOPD Service Categories	• Service categories include Imaging, Anesthesia, Durable Medical Equipment (DME), Procedures, Tests, Evaluation & Management, Treatment, and Other • Each service category can be further stratified into subcategories, and most subcategories can be further divided into families	• 248 mutually exclusive service categories
Category Flexibility	Each primary category is associated with multiple subcategories	Guidance is not provided on how to aggregate service categories into higher-level groupings
Total HOPD Subcategories (max.)	229	248
Claim Service Category Exclusivity	Claims with multiple procedure codes can be associated with multiple service categories	
Level of Difficulty to Operationalize	Low — requires minimal coding and data manipulation	Medium — requires moderate coding and data manipulation
Strengths	• Category granularity flexibility • DME category includes multiple subcategories, while CCS includes only a single DME category • Frequently used by states and the federal government than is CCS, enabling cross-state comparisons	• More granular categories for some procedure types[11] • Includes categories for all procedure codes
Limitations	• Developed to categorize Medicare Part B services and does not include categories for procedure codes that are not commonly used by Medicare Part B enrollees (e.g., reproductive services)[12]	• Offers limited service-category flexibility • Categories may be too granular for some analytic purposes
Additional Resources	• **CMS Overview of BETOS** • **2023 BETOS Data Dictionary** • **2023 BETOS Final Report**	• **AHRQ Overview of CCS**

Analysts may consider leveraging the CCS service grouping approach rather than the BETOS approach if more granular service categories for select types of procedures are required. For example, while CCS includes a service category specifically for "Appendectomy," BETOS does not. For service category–specific analyses, analysts should consider reviewing the BETOS and CCS classification schema to confirm appropriate subcategorization is available.

11 For example, BETOS includes 944 HCPCS codes in the Digestive/Gastrointestinal Procedure subcategory, but this subcategory is only further divided into five families, and 793 of the HCPCS codes in this subcategory are not included in an BETOS family. CCS stratifies some of these 793 codes into more granular categories like Appendectomy, Colorectal Resection, and Hemorrhoid Procedures.

12 Analysts will likely find a relatively minimal volume of claim lines with procedure codes that are not classified by BETOS. For example, correspondence with the Massachusetts Health Policy Commission revealed that <1% of HOPD claim lines in the Massachusetts APCD in 2021 included a procedure code that was not classified by BETOS.

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V Using BETOS for HOPD Analyses

Analysts undertaking claims-based HOPD utilization and spending analyses can benefit by following a common analytic approach that includes:

1. Defining the analytic scope
2. Identifying claims of interest
3. Classifying HOPD claims by BETOS service category
4. Analyzing BETOS-based service category utilization and spending

This approach, as described below, assumes analysts have:

- An intermediate understanding of claims data (e.g., differences between professional and facility claims, HCPCS coding)
- Hands-on experience curating, managing, and analyzing claims data
- APCD data that is formatted by the Common Data Layout and with access to professional and facility claims fields, such as procedure codes, place of service codes, bill type codes, and allowed amounts
- Access to relevant data dictionaries, user guides, and contacts with the state staff to provide assistance and guidance if needed

1. Defining the Analytic Scope

Before beginning a claims-based HOPD analysis, analysts should carefully consider several components, including:

- The scope of the analysis (e.g., the types of services, claims, and facilities that will be included)
- The intended audience
- Features and limitations of the available data

These issues can have significant impacts on both the analytic approach and how results are framed and communicated. Appendix Table B1 includes an overview of key questions that analysts may consider before embarking on APCD-based HOPD analyses, as well as potential implications associated with each question.

2. Identifying Claims of Interest

Analysts should identify HOPD claims in APCD Medical Claim files in the following manner:[13]

HOPD professional claims can be identified using standardized place-of-service codes, including 19 (off-campus outpatient hospital) and 22 (outpatient hospital).

HOPD facility claims[14] can be identified using the standardized bill type code 013x (hospital outpatient) or by looking for claims that have the same person ID, date of service, and procedure code as a given HOPD professional claim. However, the latter approach may be time-intensive to implement and inadvertently capture some facility claims rendered in non-HOPD service settings.

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13 APCDs may include bespoke fields created by data warehouse vendors that can provide an alternative means for identifying HOPD professional or facility claims (see Appendix B).

14 If analysts are working with an APCD that includes place-of-service codes on facility claims, the same place-of- service codes used to identify HOPD professional claims may also be used to identify HOPD facility claims. However, in most cases, place-of-service codes are recorded only on professional claims.

Analysts may consider excluding some HOPD claims from their analyses to avoid generating misleading results, including:

- Claims that are missing information in key fields (e.g., bill type codes, place of service codes, procedure codes, or allowed amounts)
- Nonfinal claims
- Zero dollar or negative dollar claims
- Emergency department (ED) claims[15]
- Secondary payer (i.e., coordination of benefits or crossover) claims

3. Classifying HOPD Claims by BETOS Service Categories

CMS produces and maintains an Excel-based BETOS crosswalk file. This file can be merged with HOPD claims to identify the BETOS category, subcategory, and family associated with the HCPCS code on each HOPD claim line. Analysts can download the Excel-based crosswalk file as well as an BETOS data dictionary, FAQ, and methodology file from the **CMS website**.

As described in Table 1, a small volume of HCPCS codes that are not routinely used by Medicare beneficiaries are not classified by BETOS. Analysts may consider multiple approaches to address gaps in BETOS, including:

- Leveraging work from groups like the Massachusetts Health Policy Commission (HPC) that have previously assigned BETOS categories for unclassified HCPCS codes[16]
- Identifying the CCS service categories associated with unclassified HCPCS codes and assigning BETOS categories based on the identified CCS categories
- Grouping HCPCS codes without a BETOS assignment into a new "Unclassified" BETOS category or excluding these codes from analyses altogether (with proper reporting transparency)

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15 Given high spending associated with ED care, analysts may consider excluding ED claims from HOPD analyses and, instead, reporting utilization in this setting in a standalone, separate category for conceptual clarity. Utilization and spending in the ED setting may be driven by different factors than utilization in the HOPD setting. Excluding ED claims from HOPD analyses may allow analysts to identify more clearly the unique drivers impacting trends in utilization and spending in the HOPD setting. ED claims may be identified using place-of-service code 23, revenue codes 0450-0459 and 0981, and procedure codes 99281-99289.

16 For HOPD analyses included in the 2022 Cost Trends Report, the HPC worked with a clinical consultant to categorize unclassified HCPCS codes with either a large volume (1,000 claim lines or more in an APCD year) or a large spending impact ($100,000 or more in total spending). The HPC excluded any other unclassified HCPCS codes from their analysis. For more information, see **Technical Appendix 2: Spending and Care Delivery**.

4. Analyzing BETOS-Based Service Category Utilization and Spending

Utilization Analytics: Analysts should consider examining HOPD utilization by BETOS service category to assess the types of services driving trends in HOPD utilization. Calculating and presenting the number of distinct individuals receiving a given service type and/or the number of visits associated with a given service category may provide more meaningful indicators of utilization than do raw claim line counts. Claim line counts alone can be challenging to interpret because one medical visit can result in multiple medical claims, and some providers may bill multiple distinct services on a single claim while other providers bill distinct claims for each service. Analysts can calculate the number of distinct individuals receiving a given service by only counting one claim line per service type per person over a given time period. Analysts can calculate the number of distinct visits by service category by only counting one claim line per service type, per patient, per provider, per day. Analysts may consider investigating key research questions such as:

- *What service categories are driving the overall trends in HOPD utilization?*
- *How has the number of distinct individuals receiving key services changed over time? Is growth driven by new patients or more services per patient?*
- *How has the number of visits per service category changed over time? Are certain services seeing large changes in visit frequency?*

Spending Analytics: Analysts should consider examining HOPD spending by BETOS service category to identify the types of services impacting trends in HOPD spending. Analysts may calculate service category spending trends by summing the total allowed amounts for claim lines associated with each service category over a given time period.[17] Generally, the most accurate approach is to sum the allowed amounts — the sum of the insurance paid amount as well as the patient obligation — as it provides a more complete measure of service spending relative to other financial fields.[18]

Analysts may also calculate spending per person or spending per visit to understand changes over time while adjusting for trends in utilization. For example:

- Calculating spending per person by summing the total allowed amount for a given service category and dividing by the number of distinct individuals with claim lines associated with that service category
- Calculating spending per visit by summing the total allowed amount paid for a given service category by the total number of visits associated with that service category

17 HOPD services may be paid through outpatient prospective payment systems like the Ambulatory Payment Classification system. In these cases, summing allowed amounts at the claim line-level may not accurately reflect true spending.

18 Analysts may consider validating that line-level allowed amounts sum to header-level allowed amounts, and may choose to exclude claims where summed line-level allowed amounts are not consistent with header-level allowed amounts.

Analysts may consider investigating key research questions such as:

- *What service categories are driving overall HOPD spending trends? How have these trends changed over time?*
- *What are the costliest HOPD services categories per person?*
- *How do per person spending trends vary across populations (e.g., by payer)? Have these trends changed over time?*

Analysts should use BETOS to assess HOPD spending by service category only if their available claims data includes line-level payment amounts. In some cases, APCDs may capture allowed amounts only at the claim-header level. Claims with multiple HCPCS codes on different claim lines can be associated with multiple BETOS service categories, preventing analysts from determining the share of the header-level allowed amount attributable to each BETOS service category. If analysts need to assess HOPD spending by service category and their APCD includes only header-level allowed amounts, they may consider leveraging a grouping approach that assigns claims to mutually exclusive service categories, similar to the OHA approach described in Appendix A.

VI State Examples

The Massachusetts Health Policy Commission (HPC) and the Rhode Island Office of the Health Insurance Commissioner (OHIC) have used two distinct approaches to BETOS reporting, with varying levels of detail. The HPC leveraged a modified BETOS approach to assign service categories for HCPCS codes not classified by BETOS, and to parse some BETOS categories into more granular groups, while the OHIC employed the standard BETOS approach. The modified approach utilized by the HPC allows for a more complete and easily interpretable classification of HOPD utilization and spending, which analysts may find more valuable for developing internal and external reports. These examples, among others, provide a resource for peer states to draw on as they define the goal and scope of HOPD analyses.

Massachusetts Health Policy Commission

The HPC's tenth annual Cost Trends Report[19] analyzes excess health care spending in Massachusetts and provides policy recommendations to slow spending growth in the commonwealth. For this report, the HPC separated health care spending and utilization into distinct service categories. To classify HOPD spending, the HPC used a modified BETOS approach. The Technical Appendix[20] associated with this report documents how the HPC assigned BETOS service categories for some HCPCS codes that were not classified by BETOS, as well as several other modifications implemented to make results easier to interpret, including:

- Leveraging Surgery Flags Software from AHRQ to stratify services in the 'Procedures' category into a 'Major surgeries' category and a category capturing 'Colonoscopies, endoscopies, minor surgeries, and other procedures.'
- Reporting several subcategories (e.g., 'chemotherapy and radiation oncology' and 'injections and infusions') within the BETOS 'Treatment' category rather than reporting results for the overall category.
- Adjusting several category names for clarity in reporting (e.g., the 'Tests' category was changed to 'Diagnostic tests and labs').
- Excluding results associated with the 'DME' and 'Other' BETOS categories given that spending on these service categories was much lower than spending on other service categories.

Results from the HPC's HOPD analysis, shown in Figure 1 below, reveal several important findings, including:

- Per person spending on 'Major surgeries' increased nearly 10% from 2019 to 2021, far outpacing spending growth associated with other service categories.
- Per person spending on 'Evaluation & Management' services decreased from 2019 to 2021, and this was the only service category to see a decrease in per capita spending.

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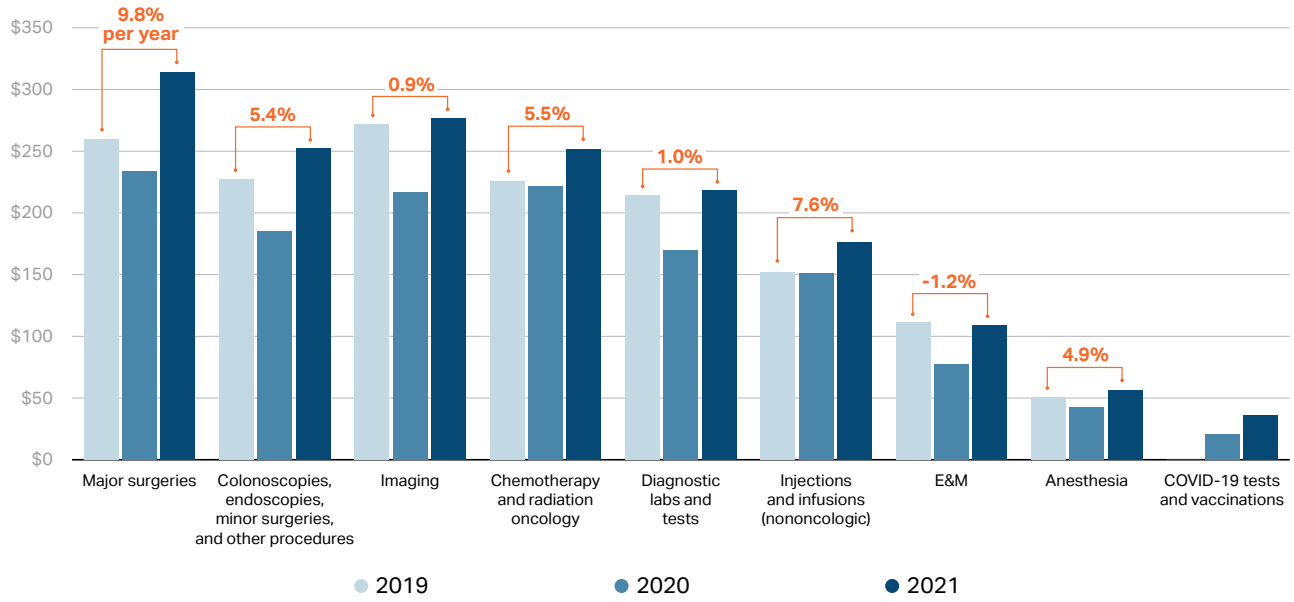
19 2023 Annual Health Care Cost Trends Report and Policy Recommendations. Massachusetts Health Policy Commission. Published September 2023. Accessed February 2, 2024. Available at: **https://www.mass.gov/doc/2023-health-care-cost-trends-report/download**

20 Technical Appendix 2: Trends in Spending and Care Delivery, Addendum to 2023 Cost Trends Report. Massachusetts Health Policy Commission. Published 2023. Accessed January 4, 2023. Available at: **https://www.mass.gov/doc/2-trends-in-spending-and-care-delivery-2023-ctr/download**

FIGURE 1. **HPC 2023 Cost Trends Report, Commercial Spending per Member per Year for HOPD Services, 2019–2021**



Notes: Includes spending from Massachusetts acute hospitals only. Service categories adapted from Restructured BETOS Classification System 2022 and Agency for Health Care Research and Quality Surgery Flags Software. Categories are mutually exclusive, e.g., diagnostic labs and tests category does not include COVID-19 tests. Categories with small spending amounts are omitted (e.g., DME and physical therapy).

Sources: HPC analysis of Center for Health Information and Analysis Massachusetts All-Payer Claims Database, 2019-2021, V2021

Data Source: 2023 Annual Health Care Cost Trends Report and Policy Recommendations. Massachusetts Health Policy Commission. Published September 2023. Accessed February 2, 2024. Available at: **https://www.mass.gov/doc/2023-health-care-cost-trends-report/download**

To help contextualize HOPD spending, the HPC also conducted an **analysis** comparing prices for common ambulatory services (e.g., imaging, clinician-administered drugs, and lab services) rendered in different settings, including HOPDs, physician offices, labs, and other settings. The analysis revealed that commercial payers typically paid more for services provided in the HOPD setting than for services provided at other sites of care. For example, the average cost of a basic lipid panel was $30 when performed in the HOPD setting, compared with $17 in an office and $14 in an independent lab, suggesting a potential need for policies or regulations to promote more equitable service rates.

Rhode Island Office of the Health Insurance Commissioner

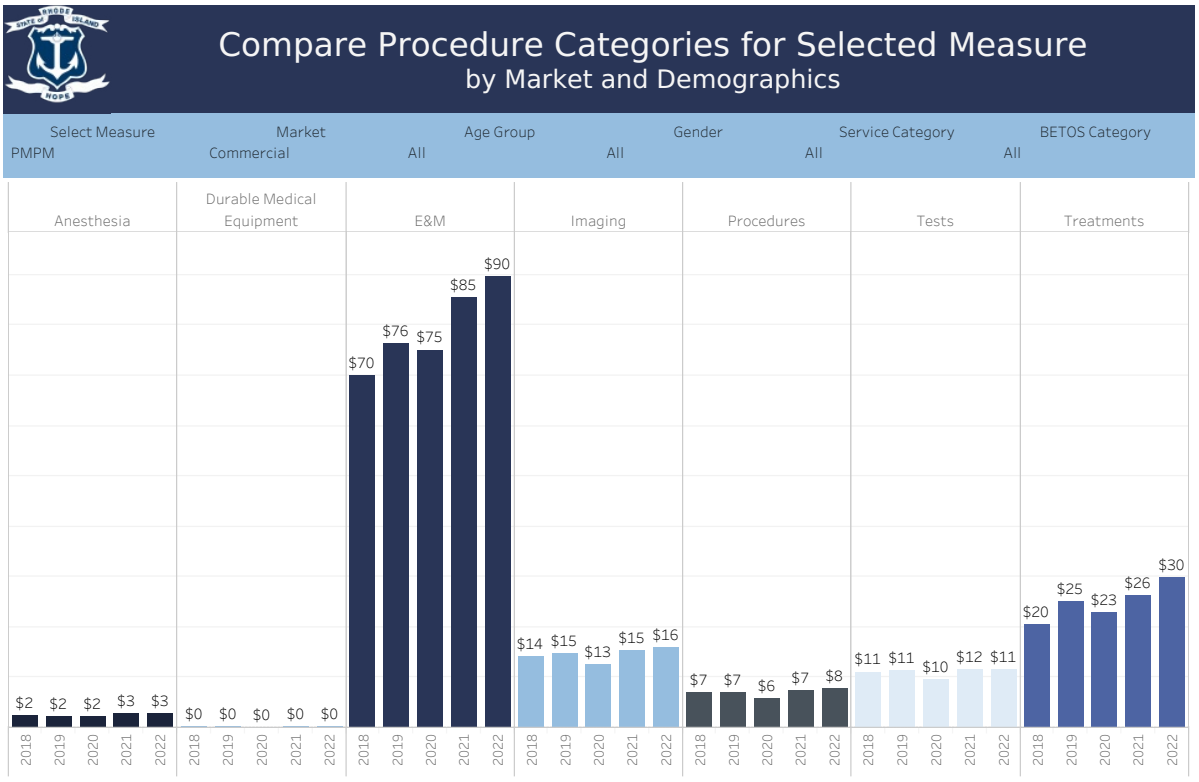
The Health Spending Accountability and Transparency Program, led by OHIC, used APCD data to create a series of **interactive dashboards**. These dashboards offer insight into health care cost and utilization trends in Rhode Island, and aim to promote transparency and improve health care affordability in the state. To assess trends in HOPD utilization and spending, OHIC has historically utilized the standard BETOS approach. The dashboard presents trends in HOPD per member per month spending, price per unit, and units per 1,000 members by BETOS service categories, subcategories, and family groupings.

The publicly available dashboard also allows users to stratify results by market, age group, and gender and includes multiple tabs that present results at different levels of granularity (e.g., a 'Category comparison' tab and a 'Subcategory comparison' tab).

For the most recently available 2022 data, OHIC public dashboard findings included:

- Across all markets, per member per month spending for HOPD services was highest for 'Evaluation & Management' ($90) and 'Treatments' ($30) (See Figure 2).
- Per member per month spending on the BETOS 'Evaluation & Management' and 'Tests' categories was higher among Medicaid beneficiaries relative to commercially insured individuals, but per member per month spending on other BETOS categories was higher among the commercially insured population.
- Drilling down to the subcategory level, the 'Chemotherapy' and 'Dialysis' BETOS subcategories were associated with the highest per member per month spending among all subcategories within the 'Treatments' category.

FIGURE 2. **Rhode Island Office of the Health Insurance Commissioner Public Outpatient and Professional Procedures Dashboard**



This report shows per member per month spending, price per unit, or units per 1,000 members by procedure category for the most recent five years. Use the select measure filter to display data for PMPM, PPU, or UPK measures. Optional filters include market, age group, gender, service category, and BETOS category.
2022 Medicare data is suppressed due to claims lag.

Source: HealthFacts RI, the Rhode Island all-payer claims database, provided by the EOHHS Ecosystem

Data Source: OHIC Data Hub: Outpatient and Professional Procedures. Rhode Island Office of the Insurance Commissioner. Published 2023. Accessed February 2, 2024. Available at: **https://ohic.ri.gov/data-reports/ohic-data-hub**

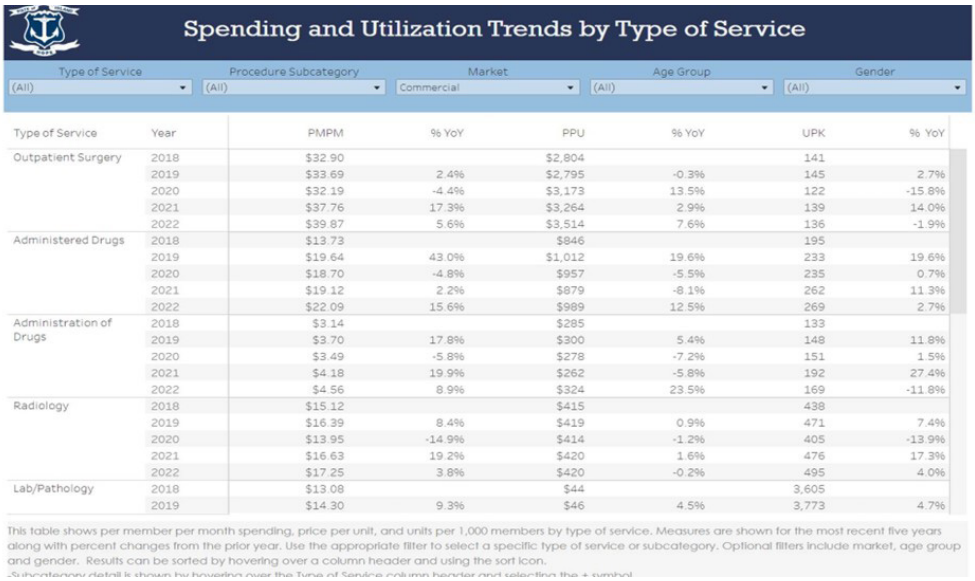
Recently, OHIC developed a new methodology to aggregate data for hospital outpatient and professional services into more intuitive service categories to support analysis and public reporting. Modifications to the BETOS approach include creating separate categories for Administered Drugs, Administration of Drugs, ER Visits, Observation Stays, and Home Health. Some BETOS categories were relabeled to better reflect how providers and patients commonly think and talk about health care services.

A crosswalk maps the BETOS categories and associated HCPCS and CPT codes to the new service category groupings. This mapping is complete, capturing all spending and utilization reflected in BETOS categories. The crosswalk includes over 15,000 HCPCS, CPT, and HIPPS (Health Insurance Prospective Payment System) codes, which capture about 90 percent of all spending on hospital outpatient and professional services. OHIC has leveraged the new service category groupings for internal dashboards capturing trends in HOPD spending. An excerpt of the updated internal-facing dashboard reflecting the revised service category groupings is included below, which presents trends in HOPD per member per month spending, price per unit, and units per 1,000 members.

For the most recently available 2022 data, OHIC's internal dashboard findings included:

- For the commercial market, per member per month spending for HOPD services was highest for 'Outpatient Surgery' ($40) and 'Administered Drugs' ($22) (See Figure 2).
- The administered drugs service category also experienced the highest year-over-year growth in PMPM spending among the HOPD service categories, increasing 15.6% between 2021 and 2022.

FIGURE 3. **Rhode Island Office of the Health Insurance Commissioner Internal Outpatient and Professional Procedures Dashboard**



Spending and Utilization Trends by Type of Service

Type of Service	Procedure Subcategory	Market	Age Group	Gender
(All)	(All)	Commercial	(All)	(All)

Type of Service	Year	PMPM	% YoY	PPU	% YoY	UPK	% YoY
Outpatient Surgery	2018	$32.90		$2,804		141	
	2019	$33.69	2.4%	$2,795	-0.3%	145	2.7%
	2020	$32.19	-4.4%	$3,173	13.5%	122	-15.8%
	2021	$37.76	17.3%	$3,264	2.9%	139	14.0%
	2022	$39.87	5.6%	$3,514	7.6%	136	-1.9%
Administered Drugs	2018	$13.73		$846		195	
	2019	$19.64	43.0%	$1,012	19.6%	233	19.6%
	2020	$18.70	-4.8%	$957	-5.5%	235	0.7%
	2021	$19.12	2.2%	$879	-8.1%	262	11.3%
	2022	$22.09	15.6%	$989	12.5%	269	2.7%
Administration of Drugs	2018	$3.14		$285		133	
	2019	$3.70	17.8%	$300	5.4%	148	11.8%
	2020	$3.49	-5.8%	$278	-7.2%	151	1.5%
	2021	$4.18	19.9%	$262	-5.8%	192	27.4%
	2022	$4.56	8.9%	$324	23.5%	169	-11.8%
Radiology	2018	$15.12		$415		438	
	2019	$16.39	8.4%	$419	0.9%	471	7.4%
	2020	$13.95	-14.9%	$414	-1.2%	405	-13.9%
	2021	$16.63	19.2%	$420	1.6%	476	17.3%
	2022	$17.25	3.8%	$420	-0.2%	495	4.0%
Lab/Pathology	2018	$13.08		$44		3,605	
	2019	$14.30	9.3%	$46	4.5%	3,773	4.7%

This table shows per member per month spending, price per unit, and units per 1,000 members by type of service. Measures are shown for the most recent five years along with percent changes from the prior year. Use the appropriate filter to select a specific type of service or subcategory. Optional filters include market, age group and gender. Results can be sorted by hovering over a column header and using the sort icon.
-Subcategory detail is shown by hovering over the Type of Service column header and selecting the + symbol

Data Source: Dashboard image provided by the Rhode Island Office of the Insurance Commissioner (OHIC).

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Appendices

Appendix A: Additional Information on HOPD Grouping Approaches

Restructured Berenson-Eggers Type of Service (BETOS) Classification System

The BETOS taxonomy system was originally developed by CMS in the 1980s to analyze trends in Medicare Part B spending. The classification system was significantly overhauled in 2019 to capture all HCPCS codes billed on Medicare Part B claims and is now actively updated by CMS on an annual basis. The Restructured BETOS approach assigns HCPCS procedure codes to nested service categories, subcategories, and families.

BETOS categories are:

- Imaging
- Anesthesia
- Durable Medical Equipment (DME)
- Procedures, Tests
- Evaluation & Management
- Treatment
- Other

Each BETOS category includes multiple subcategories. For example, the 'Procedures' category includes subcategories related to:

- Breast
- Cardiovascular
- Eye
- Digestive/gastrointestinal
- Hematology
- Musculoskeletal
- Skin
- Vascular
- Other organ systems

Some BETOS subcategories are further stratified into families that group HCPCS codes based on the similarity of procedural approaches. While BETOS assigns each HCPCS code a category and subcategory, not all codes are assigned to a family. Analysts should note that BETOS categorizes each procedure code recorded on a claim, and one HOPD claim may include multiple procedure codes recorded on different claim lines. With this in mind, each HOPD claim may be associated with one or more BETOS categories, subcategories, and families.

BETOS is relatively straightforward to operationalize. Analysts can download an Excel workbook from the **CMS website** that includes one row for each BETOS-classified HCPCS code and columns detailing the BETOS category, subcategory, and family associated with each code. Analysts can merge this crosswalk file with a dataset that includes line-level HOPD claims data in order to identify the BETOS category, subcategory, and family associated with the HCPCS procedure code on each HOPD claim line.

There are some limitations associated with BETOS. The system was created to classify Medicare Part B claims and is missing some procedure codes that are more commonly used by commercial- and Medicaid-insured populations (e.g., codes for reproductive health services). Some groups, like the Massachusetts HPC and HCCI, have undertaken efforts to assign BETOS categories for procedure codes that are not classified by BETOS. BETOS cannot be used to classify claim lines that are missing procedure codes. BETOS groupings can also change slightly from year to year as the taxonomy is updated, so analysts should be sure to review the latest BETOS report available from CMS. Because BETOS categorizes services at the claim line level, states may not be able to use the grouper to examine trends in HOPD spending by type of service unless they have access to line-level payment information.

Clinical Classification Software (CCS)

CCS for Services and Procedures is part of a family of databases and software tools developed through the Healthcare Cost and Utilization Project (HCUP) sponsored by the Agency for Healthcare Research and Quality (AHRQ). CCS for Services and Procedures was developed to classify HCPCS codes recorded on professional or facility claims into a limited number of clinically meaningful categories.

CCS crosswalks each of the 10,000+ HCPCS codes to one of 248 different service categories. CCS categories are mutually exclusive, so each HCPCS code maps to only a single CCS service category. Examples of CCS categories (non-exhaustive) include:

- Appendectomy
- Anesthesia
- Arthroscopy
- Mastectomy
- MRI
- CT Scan
- Prophylactic vaccinations and inoculations

Similar to BETOS, CCS classifies each procedure code recorded on a claim into a service category, so claims that include multiple procedure codes may be associated with multiple CCS service categories.

CCS is marginally more difficult to operationalize than BETOS. Analysts can download an Excel workbook from the AHRQ website that can be used to crosswalk HCPCS codes to CCS service categories. While the BETOS crosswalk includes one row for each HCPCS code, the CCS crosswalk includes a range of HCPCS codes on each row (e.g., '61000 – 61001') that correspond to a given CCS service category. Analysts may need to parse these ranges into a beginning code and an ending code before they can merge the crosswalk file with a dataset that includes line-level HOPD claims data.

CCS has several notable limitations. Importantly, CCS provides less flexibility than BETOS, which allows analysts to classify services based on high-level service categories, mid-level subcategories, or more granular service families. Other limitations associated with CCS are similar to those associated with BETOS. CCS cannot be used to classify claim lines that are missing procedure codes. Like BETOS, CCS categorizes services at the claim line level, and states may not be able to use the grouper to examine trends in HOPD spending by type of service unless they have access to line-level payment information.

Use Cases for CCS

The state of Illinois utilized CCS to analyze data for the **Illinois Hospital Report Card**. The Report Card is an interactive online tool that allows users to access facility-level data on service costs, quality and safety measures, nurse staffing, and patient satisfaction. The online tool allows users to view median charges for HOPD services for select CCS service categories across facilities. More information on the online tool and the methodology used to develop it can be found **in the Report Card**.

The Massachusetts HPC also utilized CCS in previous analyses prior to their adoption of BETOS. For the **2019 Cost Trends Report**, the HPC used CCS to group outpatient surgical encounters into distinct service groups (e.g., hysterectomies, appendectomies). In the report, the HPC highlighted shifts in these procedures from inpatient to outpatient settings. For example, the percentage of hysterectomies provided in outpatient settings in Massachusetts grew from 57.4% in 2015 to 67.8% in 2019. For more information on the HPC's use of CCS, see the **Technical Appendix**.

Other Tools Developed by AHRQ

AHRQ has developed several additional valuable, publicly available grouping tools that can be leveraged to support analyses of administrative claims data, including:

- **Clinical Classification Software Refined (CCSR) for ICD-10-CM Diagnoses**, which categorizes each of the 74,000+ ICD-10-CM diagnosis codes into a more manageable set of 490 clinically relevant categories (e.g., 'Intestinal infection,' 'Septicemia,' 'Tuberculosis').
- **CCS for ICD-10-PCS Procedures (beta version)**, which categorizes ICD-10 procedure codes into clinically relevant categories. ICD-10 procedure codes are typically used in the inpatient setting while HCPCS codes are typically used in the outpatient setting. This guide profiles CCS for Services and Procedures given the focus on classifying HOPD services. Notably, CCS for ICD-10-PCS leverages the same categories as CCS for Services and Procedures, supporting comparative analyses across the inpatient and outpatient settings.
- **Surgery Flags for Services and Procedures**, which categorizes a subset of HCPCS procedure codes as 'surgical' procedures, and differentiates narrowly vs. broadly defined surgeries. This tool was previously used by the Massachusetts HPC to differentiate services in the BETOS 'Procedures' category as major surgeries vs. other procedures.

Oregon Health Authority (OHA) Cost Growth Target Approach

Some states, like Oregon and Colorado, have developed their own methodologies for categorizing HOPD utilization and spending by type of service. In both Oregon and Colorado, these methodologies were developed by state health data organizations in response to legislative mandates to examine HOPD cost drivers, and in both cases these methodologies were developed prior to the release of the Restructured BETOS approach.

The OHA Cost Growth Target approach was originally developed in 2015 to fulfill a legislative directive (**SB900**) to report on the most common inpatient/outpatient procedures and median amount paid for these services. OHA reports these data in their **Oregon Hospital Payment Report**, which details the median amounts paid by commercial insurance companies for common HOPD services. The report includes statewide trends, both inflation-adjusted and unadjusted, and median payments across facilities.

OHA uses a hierarchical system to classify APCD claims into service categories and subcategories. In total, the OHA grouping methodology includes six primary categories, 22 level 1 subcategories, and 29 level 2 subcategories. The primary service categories include:

- HOPD
- Inpatient hospital
- Emergency department
- Professional services
- Retail pharmacy
- Other

Most service categories can be further stratified into level 1 and level 2 subcategories. OHA's level 1 HOPD subcategories include:

- Surgical
- Radiology and chemotherapy
- Imaging and diagnostics
- Medical
- Lab and pathology
- Other

Categories and subcategories are mutually exclusive at the claim level, so each HOPD claim is associated with only a single category and subcategory even if the claim covers multiple services. For example, if an HOPD claim includes both surgical services and imaging/diagnostic services, the claim will be classified as a surgical claim because this is the dominant hierarchy. Most of OHA's HOPD level 1 subcategories also include level 2 subcategories that differentiate professional claims from facility claims (e.g., the radiology and chemotherapy level 1 subcategory includes a level 2 professional subcategory and a level 2 facility subcategory).

The OHA HOPD grouping methodology uses combinations of HCPCS codes and revenue codes to classify the primary and secondary subcategories associated with each HOPD claim. Analysts interested in replicating the OHA methodology should reach out to OHA directly to obtain detailed documentation on how to operationalize the approach.

There are limitations to utilizing a homegrown approach similar to the methodology developed by OHA. OHA staff need to manually update the approach each year to account for new procedure codes and changes in billing practices. This can be a time- and effort-intensive process. Classifying claims into mutually exclusive categories may also obfuscate some spending trends (e.g., if a claim includes a surgical procedure and an imaging procedure, all costs associated with the claim will be attributed to the surgical procedure because this is the dominant category). There is also less publicly available documentation and support for a homegrown approach relative to other standardized grouping methodologies.

TABLE A1. **Strengths, Limitations, and Key Features of Oregon Health Authority Cost Growth Target HOPD Grouping Approach**

Consideration	Approach OHA Cost Growth Target Approach
Stewarding Agency	Oregon Health Authority (OHA)
HOPD Service Categories	• The OHA HOPD service category includes the following level 1 subcategories: Surgical, Radiology and chemotherapy, Imaging and diagnostics, Medical, Lab and pathology, and Other. • Most OHA HOPD level 1 subcategories can be further stratified into level 2 subcategories that differentiate facility vs. professional claims.
Category Flexibility	Most level 1 HOPD subcategories are associated with level 2 subcategories.
Total HOPD Subcategories (max.)	12
Claim Service Category Exclusivity	Yes – each claim is classified into a mutually exclusive category using a hierarchical approach.
Level of Difficulty to Operationalize	Medium-High – requires moderate coding and data manipulation, and requires analysts to examine both procedure codes and revenue codes.
Strengths	• Flexibility to use high-level categories or more granular subcategories. • Supports analyses of spending by service category using HOPD header-level paid amounts because each claim is classified into a mutually exclusive category. BETOS and CCS can be used to examine spending by service category only if the HOPD data include line-level paid amounts. • Can classify some claims that are missing HCPCS procedure codes using revenue codes, while BETOS and CCS exclude claims that are missing HCPCS codes.
Limitations	• Classifying claims into mutually exclusive categories may obfuscate some spending and utilization trends. • Less publicly available documentation relative to other approaches; however, the OHA team is willing to share materials and guidance to support analysts in other states.
When should analysts use this approach?	• Analysts should use this approach if they want to analyze trends in spending by category of service using high-level service categories and only have access to HOPD claims with header-level paid amounts.
Additional Resources	**OHA Hospital Payment Reports**

Appendix B: Defining Analytic Scope

TABLE B1. **Questions to Consider Before Beginning an Analysis to Classify HOPD Utilization and Spending by Type of Service**

Question	Implications
Considerations for Final Product and Intended Audience	
Will analysis leverage high-level or granular service categories, or a mix of both?	The intended level of analysis has implications for which service grouping approach should be utilized, as each approach varies in the level of granularity in HOPD categories/subcategories: • For high-level service category reporting, such as parsing spending for procedures vs. tests, analysts should consider using the BETOS approach, which allows for services to be rolled up to broad categories. This approach also includes more granular subcategories within each category, providing flexibility for a mix of high-level and detailed reporting if needed. • For more granular service category reporting, such as drilling down to compare spending for colonoscopies vs. mammographies, analysts should consider the Clinical Classification Software (CCS) grouping approach.
What is the most granular reporting unit (e.g., total spending, per capita spending, or per visit spending) for this analysis?	The intended reporting unit has implications for level of analytic difficulty. For example, calculating aggregate spending for a given HOPD service category is easier than calculating per capita spending, but per capita spending is usually a more useful measure when comparing trends over time or spending across service categories.[21]
Will analysis focus on professional claims, facility claims, or both?	The type of claim used for the analysis will impact how HOPD services are identified. For analyses using professional claims, HOPD claims are identified using place of service (POS) codes. For analyses leveraging facility claims, HOPD claims are identified using bill type code or through linkage to the associated HOPD professional claim.
Who is the audience, and what are you trying to communicate to them?	This will have implications for which service grouping approach should be used and the types of analyses conducted to examine HOPD utilization and spending. For example, if the goal of the analysis is to illustrate HOPD spending trends in relation to total health care spending and cost growth intervention for presentation to state legislators, BETOS may be the best option as it allows for broad service category classifications. Alternatively, if the audience is interested in the specific types of HOPD procedures that act as the greatest drivers of per person HOPD spending, a more granular grouping approach like CCS may be more appropriate than BETOS.
What types of facilities will be included in the analysis?	This will have implications for the types of HOPD claims included in the analysis. In most cases, analyses of HOPD spending and utilization are restricted to acute care hospitals and exclude psychiatric and rehabilitation facilities. Some groups, like the Massachusetts HPC, include claims from ambulatory surgical centers (ASCs) when conducting analyses of HOPD spending and utilization. The guidance for identifying HOPD claims presented in Section IV above will allow analysts to identify HOPD claims from acute care hospitals. If analysts need to identify claims from ASCs or other types of hospitals, they will need to consider incorporating alternative place of service codes and/or bill type codes to identify these claims.

21 Note that this guide does not provide an overview of approach for calculating spending per episode of care, which groups together all medical and pharmacy spending associated with a given medical encounter. Analyses examining spending per episode of care can be time- and effort-intensive because they require analysts to link disparate types of claims (e.g., identifying pharmacy claims associated with an HOPD claim).

Question	Implications
Considerations for Features and Limitations of APCD	
Does APCD include data on amounts paid at the claim-line level or the claim-header level?	APCDs usually include header-level payment amounts, which capture costs associated with all services included on a claim. Some state APCDs may also include line-level payment amounts capturing costs associated with each procedure code included on a claim. If analysts have access to line-level payment amounts, they will be able to examine costs associated with different service categories in greater detail. This also has implications for which HOPD service grouping approach should be utilized if analysts are planning to examine HOPD spending by service category. Grouping approaches like BETOS and CCS classify each procedure code recorded on a claim into a service category, so claims that include multiple procedure codes may be associated with multiple BETOS or CCS service categories. If data on amounts paid are available at the claim line level, analysts may utilize BETOS or CCS to analyze spending by service category. However, if amounts paid are available only at the claim header level, BETOS and CCS cannot be used to categorize spending by service category because analysts will not be able to parse spending associated with each claim line (which may correspond to different service categories). In these cases, analysts should consider an approach similar to the OHA cost growth target approach, which classifies each claim into a mutually exclusive category, to analyze spending by category of service. Analysts should also note that APCDs may only be missing line-level data on amounts paid for certain payers or certain types of claims (e.g., Medicare bundled payments). In these cases, analysts may consider excluding claims that are missing line-level paid amounts from analyses of HOPD spending.
Does APCD include bespoke fields to identify facility claims vs. professional claims or HOPD claims?	APCDs may include bespoke fields created by the data warehouse vendor to differentiate professional vs. facility claims or HOPD claims. If these fields are included in the APCD, analysts should rely on these fields to identify facility, professional, and HOPD claims rather than other fields included in the APCD (e.g., place of service codes or bill type codes).
Is the APCD missing data on certain populations or types of services?	Some APCDs are missing data from certain payers or types of claims. For example, APCDs vary in the availability of claims data from Medicaid and/or Medicare payers, which may lead analysts to limit their analysis to commercial payers. APCDs may also be missing claims for certain types of services like substance use disorder treatment services. Analysts should ensure they note any known limitations regarding the types of payers, populations, or services that may not be included in analyses of HOPD spending and utilization.

Appendix C: Interviewees, Reviewers, and Contributors

The following individuals provided invaluable input throughout the development of this guide, from providing lessons learned from previous analyses to reviewing and testing the analytic approach outlined above. We thank them for sharing their time and expertise.

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