CONNECTICUT
Health Strategy

CONNECTICUT HOSPITAL DASHBOARD TECHNICAL NOTES

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Introduction

The Connecticut (CT) Hospital Dashboard summarizes hospital utilization and spending in Connecticut, with the goal of helping state policy makers and other interested parties understand hospital health care cost growth drivers.

Mathematica built the Hospital Dashboard on behalf of and in consultation with The CT Office of Health Strategy (OHS) and Bailit Health. The dashboard was built in Power BI.

This document summarizes the data and methods used to create the CT Hospital Dashboard.

Data

The Hospital Dashboard shows key spending and utilization statistics at the hospital level for the commercial market for claims that occurred between 2018 and 2023. The data source for the dashboard is extract 6012 from CT's All-Payer Claims Database (APCD), which includes claims paid through June 30, 2024. Unless otherwise noted, data are reported in the dashboard as they appear in the CT APCD, i.e. without truncation, so outliers might affect results.

Analytic Population

The Hospital Dashboard uses analytic files produced using commercial medical claims and enrollment data from the CT APCD. The commercial market in the CT APCD includes fully insured commercial plans, state employee and the CT Partnership self-insured plans. Self-insured plans are not required to submit data to the APCD because of the Liberty Mutual vs Gobeille Decision. Thus, commercial market data presented in the dashboard are not exhaustive.[1]

Medical claims represent payments for medical services/devices only, they exclude retail pharmacy, vision, and dental service claims.

The following claims are excluded from the Hospital Dashboard's analytic population:

1. Medicare and Medicaid claims and beneficiaries.
2. Denied, reversed, or non-primary claims (header_status not equal to 01, 19, -1, or -2)
3. Orphaned claims (orphaned_header_flag = Y)

[1] For more information about the Gobeille decision on self-insured or Employee Retirement Income Security Act (ERISA) governed plans and how it has impacted APCD please read: https://www.dol.gov/sites/dolgov/files/ebsa/about-ebsa/about-us/state-all-payer-claims-databases-advisory-committee/final-report-and-recommendations-2021.pdf

4. Claims with negative paid (paid_amt) or negative cost sharing (copay_amt + coinsurance_amt + deductible_amt) amounts across all claim lines.

5. Commercial claims paid outside of the runout period. That is, claim header records with a paid date after June 30 of the year following the date of service.

6. Claims without a matching member month record. To match a medical claim, the member month record must have the same member (internal_member_id) and payer (medical_submitter_id) and be active during the month when medical services occurred (year_month contains first_service_dt).

7. [Outpatient Only] Claims where the sum of the claim service line allowed amounts differ by more than $10 from by the allowed amount on the header record.

The following members are excluded from the Hospital Dashboard's analytic population:

1. Members who reside outside of CT (out_of_state_flag = 'Y' or member state not equal to 'CT').

2. Members with missing age or gender.

3. Members for whom the commercial plan is secondary to another plan type, such as a Medicare plan. The member_month_detail table in the APCD defines whether a payer is primary or secondary for a given member month. Member months with primary commercial medical coverage have medical_eligibility_id = med_commercial_eligibility_id.

Additionally, data are aggregated by hospital and records with fewer than 11 units are dropped. For example, if only 5 hospitalizations occurred at a given hospital within a given year, those hospitalizations are excluded.

Service Categories

The Hospital Dashboard shows results by service category (inpatient or outpatient hospital setting). Medical claims categories are defined using claim type, type of setting, and place of setting, as shown in Table 2. Appendix A from the APCD Data Dictionary shows more detail about claim type, type of setting, and place of setting for medical claims.

Table 2. Service Categories

Service Category	Claim Type ID	Type of Setting ID	Place of Setting ID
Inpatient Hospital	1	1	1,6, or 14
Outpatient Hospital	1	2	7

Units of Analysis

Units of analysis, or "Units," are used to calculate Payment Per Unit (PPU) and the utilization statistic, units per 1,000 members (UPK).

Inpatient

The unit of analysis for the inpatient service category is an inpatient discharge (inpatient_discharge_id) that occurred in an inpatient facility hospital setting (type_of_setting_id = 1, place_of_setting_id = 1, 14, or 6). The count of inpatient discharge records serves as the denominator for PPU and the numerator for UPK. A unique Medicare Severity Diagnosis Related Group (DRG) code[2] is assigned to each inpatient discharge.

Outpatient

The unit of analysis for the outpatient service category is a medical claim service line (medical_claim_service_line_id) treated as outpatient (type_of_setting_id= 2) in a hospital (place_of_setting_id = 7). The count of medical claim service lines serves as the denominator for PPU and the numerator for UPK. Outpatient procedures are defined by Current Procedural Terminology (CPT) and Healthcare Common Procedure Coding System (HCPCS) codes.[3]

Some tabs in the dashboard allow users to filter and exclude or include claims for COVID tests and vaccines, i.e. high-volume, low-cost services related to the Public Health Emergency, as these services may distort trends in 2020 and 2021.

Due to disparate billing practices, such as bundled payments, spending reported on individual outpatient service lines might not always represent the true cost of the service, especially when the service line shows $0, but is counted as utilization. This occurs on about 16 percent of commercial outpatient claim lines, particularly in the administrative drugs, durable medical equipment (DME), and observation stay subcategories. Because of this, outpatient PPU calculations might be understated at the service level.

Hospitals

Inpatient and outpatient facility claims are mapped to 30 acute care hospitals, using a crosswalk that OHS developed and updates annually. The crosswalk aligns the internal_provider_id field on claims to the major acute care hospitals in CT. Facility claims that map to out-of-state facilities are grouped in an out-of-state category. Facility claims from in-state facilities other than one of the 30 acute care hospitals are grouped in a "Specialty" category. Most Specialty facility claims are from inpatient behavioral

[2] For more information about Medicare Severity DRG codes, see https://www.cms.gov/medicare/medicare-fee-for-service-payment/acuteinpatientpps/ms-drg-classifications-and-software.
[3] For more information about CPT/HCPCS codes, see https://www.cms.gov/medicare/fraud-and-abuse/physicianselfreferral/list_of_codes.

health or rehabilitation facilities. The “All Hospital” category includes all facility claims, including out-of-state and specialty hospital claims.

Key Measures

The Hospital Dashboard shows five key measures that users can view at multiple levels of aggregation and for multiple segments of the population:

- Total Spending= sum(allowed_amt). Allowed_amt includes insurance payments and member payments. Member payments include deductibles, copays, and coinsurance.
- Total Utilization= count(Units).
- Per member per year (PMPY) spending = sum(allowed_amt)/count(member_equivalents), where the count of member equivalents is defined as the count(member_months) divided by 12 in a given year.
- Payment per unit (PPU) = sum(allowed_amt)/count(units)
- Units per 1,000 members (UPK) = count(Units)/count(Member_equivalents) * 1,000

Procedure Categories

The Hospital Dashboard also breaks down results into inpatient and outpatient subcategories and shows results at the procedure level.

- Outpatient services are grouped into procedure categories, subcategories, and families defined using the Freedman Healthcare Type of Service Categorization Crosswalk for Outpatient and Professional Medical Services. Freedman Healthcare created this crosswalk by mapping procedure codes (CPT/HCPCS) from the Centers for Medicare and Medicaid Services Restructured BETOS Classification System (RBCS)[4] into outpatient categories originally defined by the Health Care Cost Institute[5]. On the Procedure Category Drilldown tab, users can drill down to the CPT/HCPCS code family level.
- Inpatient services are grouped into procedure categories and subcategories, defined using a crosswalk that OHS created. On the Procedure Category Drilldown tab, users can drill down to the Medicare Severity Diagnosis Related Group (MS-DRG) level.

[4] https://data.cms.gov/provider-summary-by-type-of-service/provider-service-classifications/restructured-betos-classification-system

[5] https://healthcostinstitute.org/images/pdfs/HCCI_2018_Methodology_public_v1.pdf

Descriptions

Inpatient. Each DRG code has a description, though codes and descriptions are subject to change when new DRG versions are published annually. In the Hospital Dashboard, DRG codes associated with multiple descriptions use the description for the most recent DRG version.

Outpatient. Each CPT/HCPCS code has both a short and long description. The Hospital Dashboard shows the long description because it tends to be more descriptive and easier to interpret.

Comparison of Cost Drivers Dashboard to the Hospital Tool Dashboard

Any slight differences between the Hospital Dashboard and the Cost Drivers Dashboard in the results for commercial inpatient and outpatient hospital categories are because:

- The Cost Drivers Dashboard includes members of all known and unknown ages and genders, while the Hospital Dashboard is limited to members of a known age and gender. Counts of unknown ages and genders by hospital tend to be low and within the cell suppression requirements.
- The Hospital Dashboard aggregates data by hospital and suppresses records with fewer than 11 units. For example, if only 5 hospitalizations occurred at a hospital within a given year, those hospitalizations are excluded from the Hospital Dashboard. The Cost Driver Tool does not aggregate data by hospital and so these records are included.
- The Cost Drivers tool aggregates data by market and primary payer.[6] Therefore, inpatient stays with two primary payers, such as when the member's insurance coverage changes during the hospitalization, is counted once for each primary payer. These occurrences are rare.
- The Cost Drivers tool aggregates data by month and displays per member per month (PMPM) spending. The Hospital Dashboard aggregates data by year and displays per member per year (PMPY) spending.

[6] To better assess long-term care spending, which is usually paid by Medicaid for members with primary Medicare coverage and secondary Medicaid coverage, the cost driver tool does show the Medicaid secondary market. However, the commercial and Medicare markets are limited to claims paid by the primary payer.

Appendix A. Claim Type, Type of Setting, and Place of Setting Reference Table

claim_ type_id	claim_ type_ desc	type_of_ setting_id	type_of_setting_ desc	place_of_ setting_id	place_of_setting_desc	Notes
1	Facility	1	Inpatient	1	Acute Inpatient or Hospital	First 2 characters of bill type are in (11, 41)
				14	Acute Inpatient or Hospital (Part B)	First 2 characters of bill type are in (12)
				2	Swing Bed	First 2 characters of bill type are in (18, 28, 48, 58)
				3	SNF	First 2 characters of bill type are in (21, 25, 26, 27, 51, 52)
				15	SNF (Part B)	First 2 characters of bill type are in (22)
				4	ICF	First 2 characters of bill type are in (16, 17, 65, 66, 67, 45, 46, 47, 55, 56, 57)
				5	Residential	First 2 characters of bill type are in (86)
				6	Other	Inpatient subcategory that does not fit into one of the above subcategories
		2	Outpatient	7	Hospital	First 2 characters of bill type are in (13, 14, 43, 44, 85)
				8	Free-Standing Ambulatory Surgery	First 2 characters of bill type are in (83)
				9	FQHC	First 2 characters of bill type are in (77)
				10	Rural Health Clinic	First 2 characters of bill type are in (71)
				11	Mental Health Clinic	First 2 characters of bill type are in (76)
				3	SNF	First 2 characters of bill type are in (23, 24)
				4	ICF	First 2 characters of bill type are in (15)
				6	Other	First 2 characters of bill type are in (53, 54, 63, 64, 72, 73, 74, 75, 78, 79, 80, 84, 89) (revenue code not between 550 and 609 and not between 100 and 219 and not between 1000 and 1005)
2	Professional	3	Provider	1	Acute Inpatient or Hospital	Place of service = 21
				3	SNF	Place of service = 31
				4	ICF	Place of service in (32, 33, 54)
				5	Residential	Place of service in (13, 14, 55, 56)
				7	Hospital	Place of service in (19, 22, 23)
				8	Free-Standing Ambulatory Surgery	Place of service = 24
				9	FQHC	Place of service = 50
				10	Rural Health Clinic	Place of service = 72
				11	Mental Health Clinic	Place of service = 53
				13	Office	Place of service = 11
				6	Other	Other not listed above
2	Professional	4	Independent Labs	12	Not Applicable	Based on place of service

claim_ type_id	claim_ type_ desc	type_of_ setting_id	type_of_setting_ desc	place_of_ setting_id	place_of_setting_desc	Notes
2	Professional	5	Ambulance	12	Not Applicable	Based on place of service and HCPCS codes specific to ambulance services
2	Professional	6	Dental	12	Not Applicable	Based on CDT codes
3	Other services	7	Pharmacy	12	Not Applicable	Based on place of service
3	Other services	8	DME (Durable Medical Equipment)	12	Not Applicable	Based on place of service and HCPCS codes for DME services
3	Other services	9	Home Health	12	Not Applicable	Based on type of bill and home health revenue codes - Facility claims only
3	Other services	10	Unclassified/Other	12	Not Applicable	Services that cannot be classified elsewhere
3	Other services	12	Hospice	12	Not Applicable	Based on type of bill - Facility claims only (Hospice professional claims included in Professional/Provider/Other)