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Progress Together

CT Commercial Cost Trends

KeriAnn Wells, Dan Kinber, Marian V. Wrobel

2/22/2021

Overview

Project Background & Purpose

- **Executive Order No 5 calls for OHS to monitor healthcare spending growth across all payers and populations in Connecticut, and to develop annual benchmarks.**
- **On behalf of OHS, Bailit Health and Mathematica are analyzing data from the CT APCD.**
- **Objectives: (1) to provide insight into cost drivers and (2) to support solutions for achieving cost growth benchmarks.**
- **This effort is in its first year.**

Overview of All-Payer Claims Databases

- **APCDs compile enrollment and claims data (including actual payments) submitted by payers**
- **Generally, payers do not report non-claims costs, e.g., shared savings or capitated payments made outside the claims system**
- **Clinical data only if captured in diagnoses coding. Variables such as blood pressure and BMI are not available in APCDs.**
- **Significant lag times from service date to payment date, and from payment data to reporting date**
- **Claims data can be analyzed at a very granular level (by payer, by region, by provider type, by patient segment), etc.**

Overview of Analytic Population and Framework

Sample	• Commercial (fully insured, including State employees) • CT residents under age 65 for most analyses
Types of claims	• Medical (no pharmacy) • Limited to claims paid by primary insurer (secondary payer claims are excluded) • Excludes claims from vision-only plans and some student plans • 2015-2018 dates of service with 6 months of runout per year • Spending includes cost-sharing
Focus areas	• Spending (Total, PMPM, change over time, OOP) • Spending by category of service • Utilization and spending per unit • Chronic conditions
Stratifications and data enrichment	• Payer • Age and gender • Region, including comparisons between areas with higher/lower income and differing racial composition
We include additional notes on analytic populations and methods at the end of the presentation	

Notes on study populations

Domain	Population
Member months PMPM spending Spending by service category Utilization vs. PMPM growth	• Commercial (fully insured and State employees) • CT residents under age 65 • 2015 - 2018 • Excludes secondary payers, vision-only, and some student plans • Excludes people with “Unknown” or “Other” gender • 2018 PMPM: $435.55
Spending within DRG	• Limited to ages 18-64 • 2015 & 2018 only
Chronic conditions, regional variation	• Limited to ages 18-64 with continuous enrollment between 1/1/2017 and 12/31/2018 • 2018 data only: 455,780 people (about 53% of 2018 commercial population) • 2018 PMPM=$512.55

Overview of this document

- **Overview of the study population**
- **Per member per month (PMPM) costs**
- **Spending by category of service**
- **PMPM growth – roles of utilization and spending per unit**
- **Prevalence and costs of chronic conditions**
- **Variation by county, income decile, and community racial composition**
- **Next steps**

Overview of the study population

From 2015 to 2018, Anthem lost market share but remained the largest payer

- Six major commercial payers, of which Anthem is the largest
- UnitedHealthcare is the second largest payer and gained market share
- Remaining 4 payers insured a bit more than a third of the fully insured commercial market in 2018
- State employees covered by Anthem and UHC

Payer	Percentage of Commercial Member Months				
	2015	2016	2017	2018	3 – year change (percentage points)
All commercial payers (#)	9,850,748	9,760,902	10,155,889	9,827,697	**-0.7***
Anthem (commercial)	32.3	29.8	31.1	28.0	-4.3
Anthem (state employees)	15.3	15.3	14.2	14.3	-1.1
UnitedHealthcare (commercial)	12.5	12.1	13.0	16.0	3.5
UnitedHealthcare (state employees)	3.0	3.6	4.4	6.5	3.5
Cigna	14.1	14.8	14.3	14.3	0.2
Aetna	11.9	10.0	8.4	6.7	-5.2
Connecticare	9.6	11.8	10.9	10.7	1.1
Harvard Pilgrim	1.4	2.7	3.5	3.5	2.1

Note: Excludes members 65 and older and non-CT residents.
* Calculated as member weighted average 3-year change

Demographics were fairly stable between 2015 and 2018

- From 2015 to 2018, population aged slightly and trended toward female
- Reduction in share of commercial members in 0-25 age group

Gender, Age group	Percentage of Commercial Members				
	2015	2016	2017	2018	3 – year growth (percentage points)
All <65 (#)	**9,850,532**	**9,760,458**	**10,155,535**	**9,827,541**	**-**
0-25	34.2	33.6	33.0	32.7	-1.5
26-44	25.2	25.3	25.8	26.3	1.1
45-64	40.6	41.1	41.2	41.0	0.4
Female	51.5	51.5	51.6	51.8	0.4
0-25	16.7	16.4	16.2	16.1	-0.6
26-44	13.2	13.3	13.5	13.8	0.6
45-64	21.6	21.9	22.0	21.9	0.3
Male	48.5	48.5	48.4	48.2	-0.4
0-25	17.5	17.2	16.8	16.6	-0.9
26-44	12.0	12.1	12.3	12.5	0.5
45-64	19.0	19.2	19.2	19.0	0.0

PMPM costs

Medical spending PMPM increased 15% from 2015 to 2018

Payer	Spending per member per month (PMPM)				Annual change (%)			Total change (%)
	2015	2016	2017	2018	2016	2017	2018	
All payer	$377.66	$408.23	$421.97	$435.55	8.1	3.4	3.2	15.3

Notes:
1 – Limited to CT residents under age 65.
2 – Spending includes patient cost sharing.
3 – Much higher trend in first year than next two.
4 – From 2015-2018, PMPM spending increased for every payer, and for state employees

Medical spending increased most quickly for children and older men

Women spend more than men, especially during child-bearing years (common pattern due to high cost of maternity care)

** Age-gender adjusted 3-year growth rate: 13.9%

Gender, age group	PMPM				Annual Change (%)			Total change (%)**
	2015	2016	2017	2018	2016	2017	2018	
All	$377.66	$408.23	$421.97	$435.55	8.1	3.4	3.2	15.3
Female	$429.20	$459.94	$474.44	$487.60	7.2	3.2	2.8	13.6
0-17	$190.19	$212.78	$220.40	$227.62	11.9	3.6	3.3	19.7
18-25	$264.74	$279.26	$287.81	$293.78	5.5	3.1	2.1	11.0
26-44	$459.27	$486.17	$495.33	$505.46	5.9	1.9	2.0	10.1
45-64	$574.73	$611.21	$630.32	$649.19	6.3	3.1	3.0	13.0
Male	$322.99	$353.26	$365.95	$379.57	9.4	3.6	3.7	17.5
0-17	$202.84	$234.76	$243.92	$250.07	15.7	3.9	2.5	23.3
18-25	$185.38	$190.73	$200.00	$190.58	2.9	4.9	-4.7	2.8
26-44	$220.57	$236.21	$236.31	$243.45	7.1	0.0	3.0	10.4
45-64	$504.38	$547.14	$569.73	$601.25	8.5	4.1	5.5	19.2

Note: Limited to CT residents under age 65. Spending includes patient cost sharing.

** Adjusted 3-year growth rate controls for differences in age-gender mix over time.

Out-of-pocket spending increased faster than total spending

- From 2015 to 2018, OOP spending increased 26% compared to overall spending which increased 15.3%
- This finding was expected. It reflects changes in employer decisions on plan design, and employee plan selection.

Payer	OOP Spending for insured medical services (PMPM)				Annual OOP change (%)			Annual PMPM change (%)			Total change (%)	
	2015	2016	2017	2018	2016	2017	2018	2016	2017	2018	OOP	PMPM
All payer	$44.21	$47.75	$53.94	$55.70	8.0	13.0	3.3	8.1	3.4	3.2	26.0	15.3

Notes: OOP PMPM is calculated as sum(copays + deductibles + coinsurance)/sum(member months). Percent change in "PMPM" columns is calculated as change in total PMPM, including insurance payments and out-of-pocket payments.

Spending by category of service

In 2018, 99 percent of spending was in four service categories; each contributed to spending growth

- Spending PMPMs for inpatient and outpatient hospital services grew faster than for professional services

Service Category	2015 PMPM	2015 %	2018 PMPM	2018 %	Average annual change (%)	Total change (%)	Change in category as percent of total change
All services	$377.65	100.0	$435.55	100.0	4.9	15.3	**100.0**
Professional	$170.03	45.0	$184.24	42.3	2.7	8.4	24.5
Inpatient acute	$77.58	20.5	$94.34	21.7	6.8	21.6	29.0
Outpatient - not ER	$73.86	19.6	$90.41	20.8	7.0	22.4	28.6
Outpatient – ER	$50.62	13.4	$61.77	14.2	7.0	22.0	19.2
Other	$5.55	1.5	$4.79	1.1	-4.7	-13.7	-1.3

Categories of services derived from the CT APCD Data Dictionary claim type detail. Results are NOT age-gender adjusted
ER = emergency room; PMPM = per member per month

In 2018, more that half of out-of-pocket spending was for professional services

- Cost-sharing varied by type of service
- Patients paid 19 percent of the total cost of professional services and 3 percent of the total cost of inpatient services

Category of service	Total PMPM	OOP PMPM	OOP PMPM in category as percentage of all OOP	OOP PMPM as percentage of total PMPM
All services	$435.55	$55.70	100.0	12.8
Professional	$184.24	$34.04	61.1	18.5
Inpatient acute	$94.34	$2.72	4.9	2.9
Outpatient - not ER	$90.41	$9.77	17.6	10.8
Outpatient – ER	$61.77	$8.64	15.5	14.0
Other	$4.79	$0.53	0.9	11.0

Categories of services derived from the CT APCD Data Dictionary claim type detail. Results are for 2018 and are not age-gender adjusted.
ER = emergency room; PMPM = per member per month

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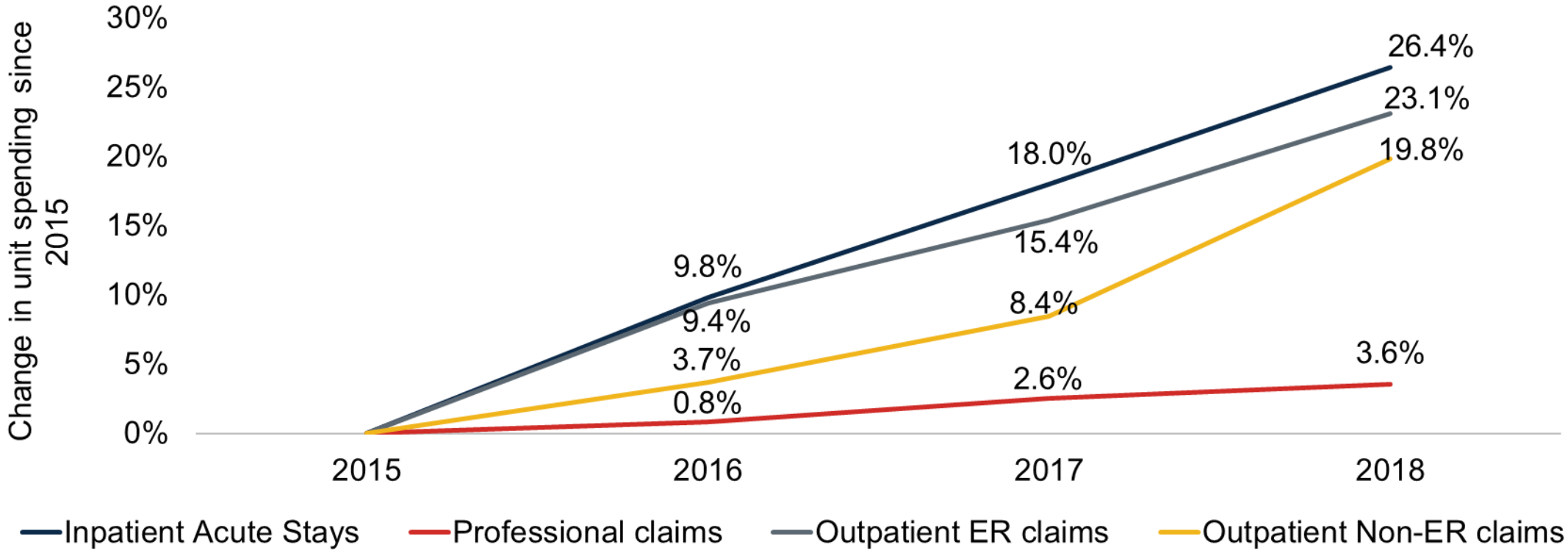
PMPM growth – role of utilization and spending per unit

The driving factor for PMPM growth was spending per unit, not number of units (volume)

Service Category	2018 Volume	2018 Spending per unit	Percent change in spending per unit				3-year percent change in volume
			2016	2017	2018	Total 3-year	
Inpatient acute stay	36,164	$25,636	9.8	7.4	7.2	26.4	-4.1
Outpatient – ER	356,647	$1,702	9.4	5.5	6.7	23.1	-1.1
Outpatient – not ER	688,207	$1,291	3.7	4.6	10.5	19.8	1.9
Professional	8,471,604	$214	0.8	1.7	1.0	3.6	4.4

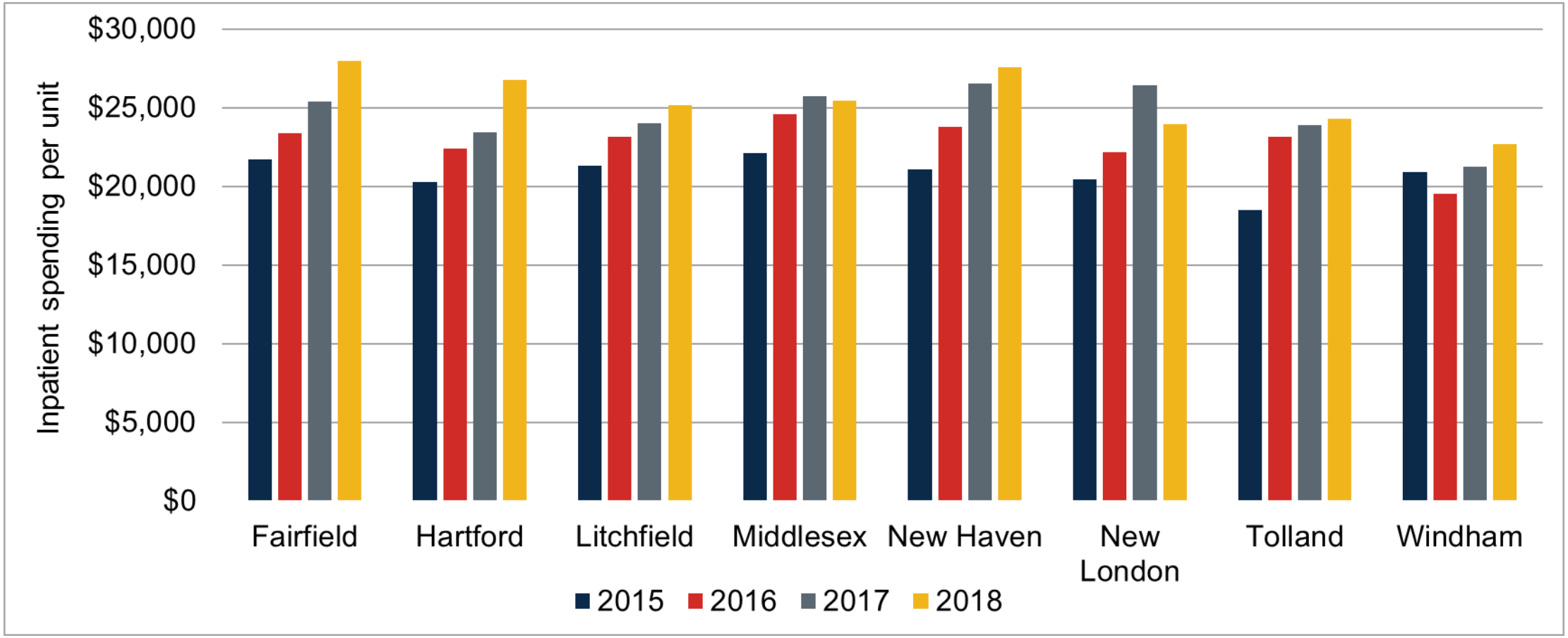
Changes in spending per unit are affected by both changes in service mix and changes in service-level prices.
Categories of services derived from the CT APCD Data Dictionary claim type detail. Includes CT residents under age 65.
Results are not age-gender adjusted. Inpatient stay units defined as discharges, which can include multiple claims.
Other category of service units defined as individual claims.
ER = emergency room; PMPM = per member per month

Inpatient and outpatient unit spending per unit grew considerably faster than professional unit spending



Categories of services derived from the CT APCD Data Dictionary claim type detail. Results are not age-gender adjusted. Inpatient stay units defined as discharges, which can include multiple claims. Other category of service units defined as individual claims.
ER = emergency room

Age-gender adjusted inpatient spending per unit was highest for residents of Fairfield and New Haven, lowest in Windham county



County is based on member residence, which will often differ from the county where care was received. Inpatient stay units defined as discharges, which can include multiple claims. Results are adjusted to control for differences in age-gender mix among counties.

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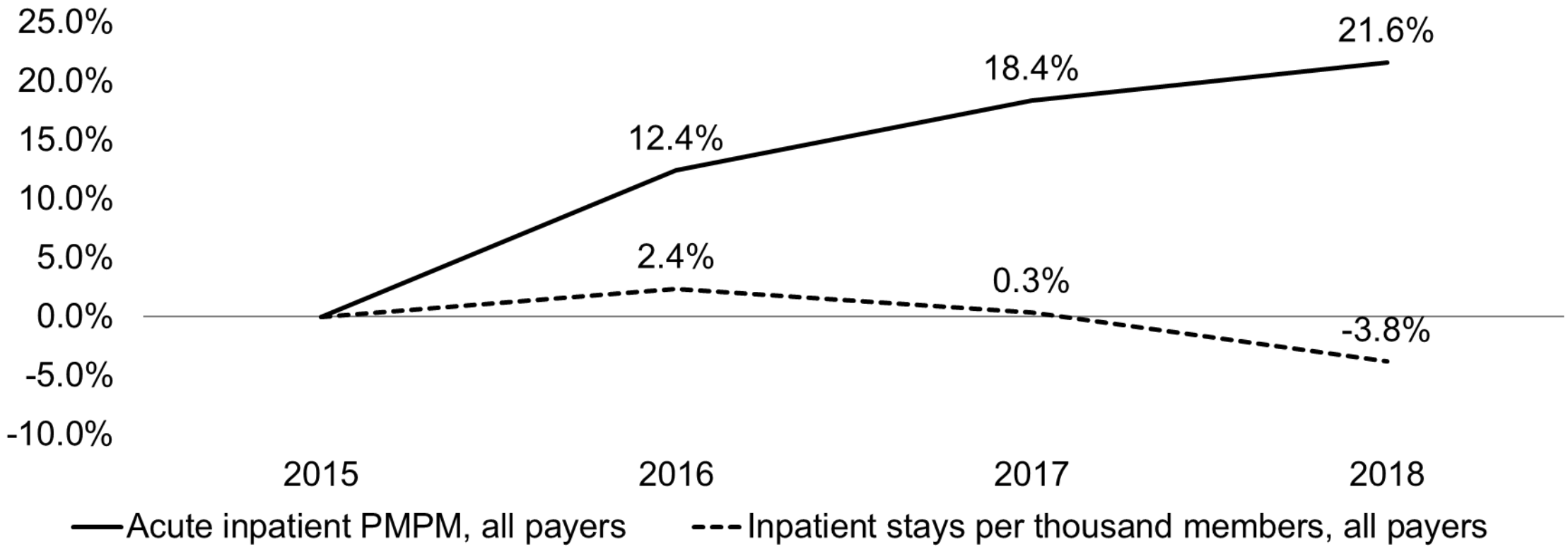
Acute inpatient PMPM spending grew 22 percent while utilization went down



Note: Percent change for all years is relative to 2015.

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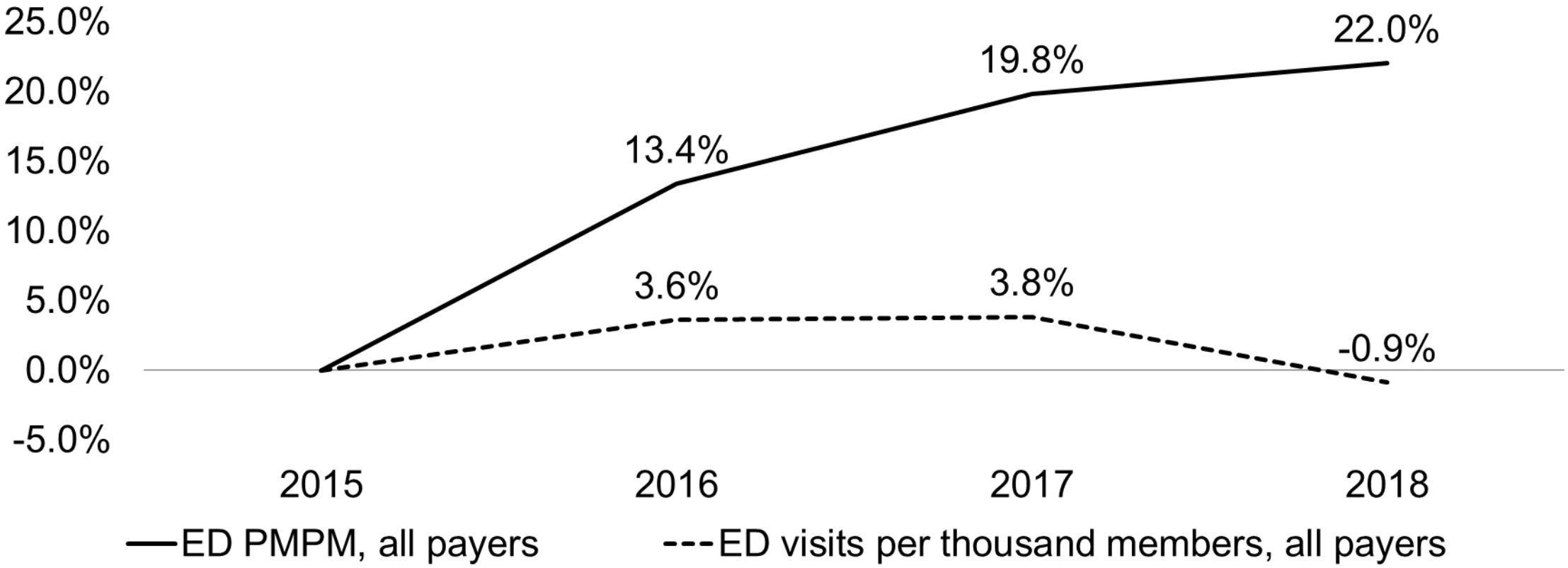
Spending PMPM for emergency department visits grew 22 percent while utilization declined



Note: Percent change for all years is relative to 2015

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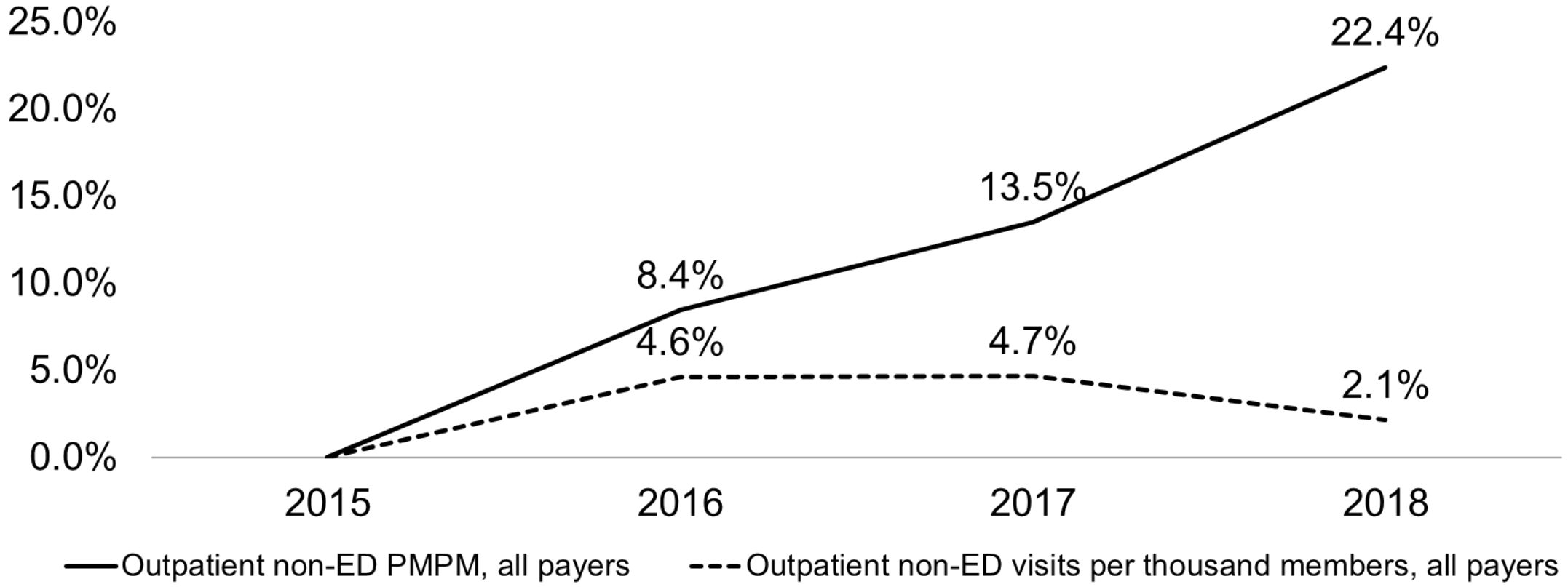
Spending PMPM for outpatient visits (excluding ED) grew 22 percent, while utilization grew 2 percent



Note: Percent change for all years is relative to 2015.

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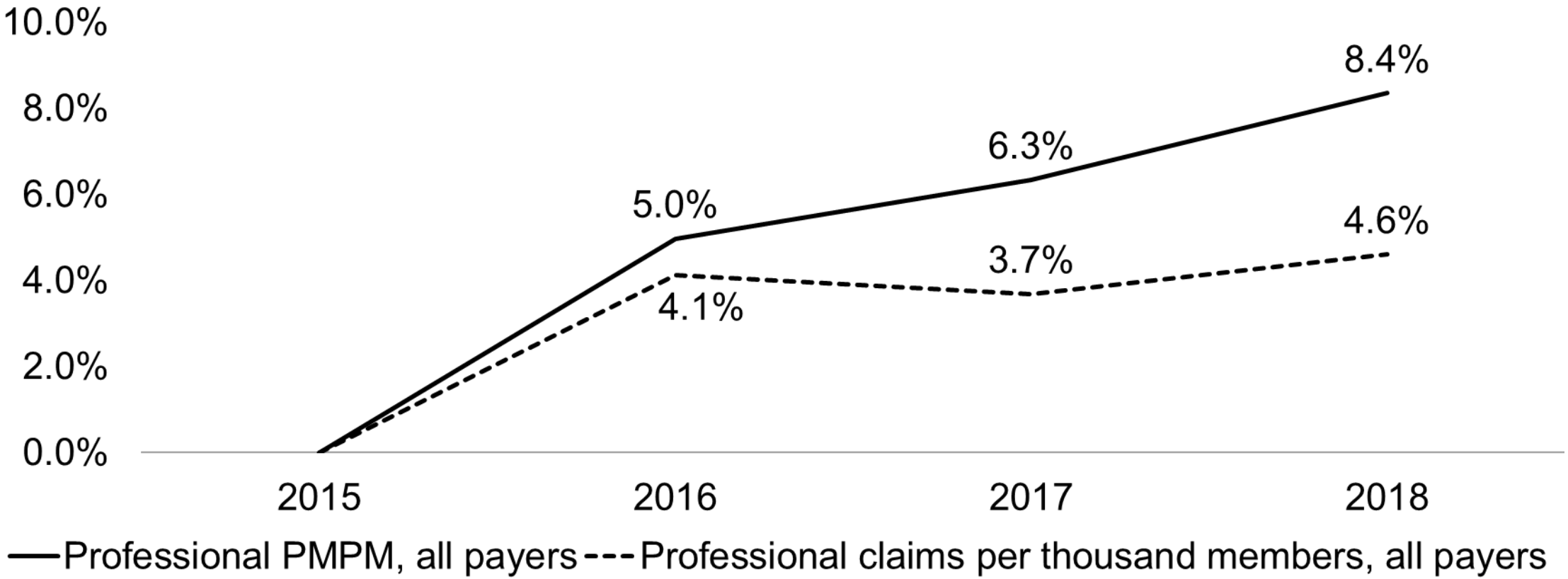
Spending PMPM for professional services grew 8 percent and utilization grew 5 percent



Note: Percent change for all years is relative to 2015.

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Within DRG, the changes in spending per inpatient stay were typically between 11% and 25%, with a median of 15%

All DRGs

Mean of DRG-level changes	18.1
Median of DRG-level changes	15.0
Interquartile range of DRG-level changes	11.1-25.4

		Average spending			Number of stays		
Selected individual DRGs		**2015**	**2018**	**Mean percent change**	**2015**	**2018**	**Stays per thousand members 2018**
460	Spinal Fusion Except Cervical	$50,817	$64,433	26.8	331	238	0.37
470	Major Hip and Knee Joint Replacement	$29,088	$32,319	11.1	1,801	1,863	2.90
775	Vaginal Delivery	$9,070	$10,228	12.8	3,337	2,738	4.27
871	Septicemia or Severe Sepsis	$27,855	$30,533	9.5	365	556	0.87
885	Psychoses	$13,386	$15,352	14.7	963	1,004	1.57

Notes. The statistics reported for "All DRGs" are the weighted mean, weighted median, and weighted IQR of DRG-level changes, with weights equal to the number of cases in 2015. These statistics are not affected by changes in the mix of DRGs (service mix) between years. Individual DRGs were selected for display if they were common, costly, and relatively homogeneous (i.e., cases were similar within the DRG).
Limited to members 18-64 and DRGs with more than 10 cases in both 2015 and 2018. Mean percent change differs from inpatient acute spending change shown on Slide 20, because: (1) the populations are different, and (2) the statistics are different (mean of DRG-level changes vs. mean change when all DRGs are combined.) See methods document for details.
DRG = diagnosis related group; IQR = interquartile range

Prevalence and costs of chronic conditions

High cholesterol, high blood pressure, arthritis, and depression were common and associated with above-average costs

Condition	2018		
	Members with condition	%	PMPY for members with this condition
All members	**455,780**	**100.0**	**$6,151**
Hyperlipidemia	73,081	16.0	$11,842
Hypertension	70,419	15.5	$13,739
Rheumatoid Arthritis/Osteoarthritis	67,943	14.9	$13,866
Depression	50,979	11.2	$13,501
Diabetes	28,608	6.3	$14,197
Anemia	26,723	5.9	$25,355
Acquired Hypothyroidism	25,918	5.7	$12,911
Glaucoma	18,035	4.0	$9,004
Chronic Kidney Disease	17,732	3.9	$24,029
Asthma	17,500	3.8	$16,887
One or more of 27 chronic conditions	218,598	48.0	$10,336
Two or more of 27 chronic conditions	115,855	25.4	$14,379

Notes: This slide shows the 10 most common conditions. PMPY calculated as total costs for members with the condition divided by all members continuously enrolled from January 1, 2017 through December 31, 2018.

People with one chronic condition often had one or more additional conditions

Condition A (Rank)	Condition B (Rank)	Percent of Total Population with A & B	Percent of People with Condition A who had Condition B
Hyperlipidimia (1)	Hypertension (2)	8.2	51.1
Hyperlipidimia (1)	Rheumatoid Arthritis (3)	4.6	28.5
Hyperlipidimia (1)	Depression (4)	2.5	15.7
Hyperlipidimia (1)	Diabetes (6)	3.7	23.3
Hypertension (2)	Rheumatoid Arthritis (3)	4.7	30.2
Hypertension (2)	Depression (4)	2.3	15.2
Hypertension (2)	Diabetes (6)	3.8	24.3
Hypertension (2)	Chronic Kidney Disease (9)	2.2	14.5
Rheumatoid Arthritis (3)	Depression (4)	2.6	17.7
Diabetes (6)	Chronic Kidney Disease (9)	2.4	37.8
Any chronic condition	Any other chronic condition	25.4	53.0

Notes: This slide shows the 10 most common pairs of 25 chronic conditions. Rank indicates the relative prevalence of the condition with 1 being most common.

Cancer, heart disease, and COPD were less common but associated with very high costs

	2018		
Condition	**#**	**%**	**PMPY**
Lung Cancer	475	0.1	$96,691
AMI	481	0.1	$91,615
Stroke/TIA	1,506	0.3	$53,101
Colorectal Cancer	971	0.2	$49,694
Heart Failure	3,441	0.8	$49,252
Endometrial Cancer	438	0.1	$34,448
Atrial Fibrilation	4,121	0.9	$33,418
Breast Cancer	5,470	1.2	$30,027
COPD	4,745	1.0	$29,521

Notes: This slide shows the highest cost conditions with more than 400 cases. Breast cancer includes female and male breast cancer.
AMI = acute myocardial infarction; TIA = transient ischemic attack

About 8 percent of the continuously-enrolled population spent more than $2,500 out-of-pocket, excluding spending on drugs

In 2018, the largest share of patients costing more than $20,000, and with out-of-pocket more than $5,000, had hip/pelvic fractures or AMI.

		2018 Costs per member				2018 Cost sharing per member				
Condition	Total members	<$1,000	$1,000-$5,000	$5,000-$20,000	>$20,000	<$500	$500-$1,000	$1,000-$2,500	$2,500-$5,000	>$5,000
All members	**455,780**	40.4	36.6	17.0	6.0	69.2	11.5	11.5	5.7	2.1
Hip/Pelvic Fracture	90	0.0	0.0	7.8	92.2	34.4	8.9	12.2	24.4	20.0
AMI	481	0.8	1.5	6.4	91.3	27.4	12.3	17.0	17.7	25.6
Lung Cancer	475	1.3	13.7	23.8	61.3	32.4	11.4	24.6	16.2	15.4
Stroke/TIA	1,506	3.3	17.9	34.3	44.5	36.2	15.7	19.5	17.8	10.8
Heart Failure	3,441	7.7	23.3	27.8	41.2	42.6	14.7	19.5	13.2	10.0
Colorectal Cancer	971	3.4	21.2	35.4	40.0	39.2	13.0	20.0	18.0	9.8
Endometrial Cancer	438	4.3	26.5	29.7	39.5	45.0	13.0	16.9	15.1	10.0
Atrial Fibrilation	4,121	7.1	27.7	34.9	30.3	44.9	13.8	19.0	14.1	8.1
Breast Cancer	5,470	3.5	34.7	32.3	29.5	42.1	14.3	21.4	14.1	8.0
COPD	4,745	7.7	30.7	33.1	28.6	46.0	15.6	18.6	12.8	7.1

Conditions selected have largest portion of patients in >$20,000 costs per year category. AMI = acute myocardial infarction; TIA = transient ischemic attack; COPD = chronic obstructive pulmonary disorder.

Variation by county, income decile, and community racial composition

PMPMs varied by county and were highest among residents of New Haven and New London counties

- The lowest total spending PMPM were among residents in Tolland and Windham counties

County	Median family income	Racial distribution					2018 PMPM	2018 OOP PMPM	2018 OOP percent
		Asian	Black	Hispanic/ Latino	Other	White			
All	**$97,310**	4.4	9.8	15.7	2.6	67.5	$512.55	$57.49	11.2
Fairfield	$114,461	5.2	10.5	19.3	2.5	62.4	$527.26	$70.27	13.3
Hartford	$92,383	5.2	12.8	17.6	2.5	61.9	$486.78	$48.53	10.0
Litchfield	$98,146	1.8	1.6	6.0	1.6	89.0	$482.82	$61.45	12.7
Middlesex	$108,334	3.0	4.9	6.0	1.7	84.3	$502.90	$54.74	10.9
New Haven	$88,178	3.9	12.4	17.6	2.5	63.6	$543.92	$56.50	10.4
New London	$89,209	4.1	5.3	10.3	4.4	75.9	$529.84	$56.28	10.6
Tolland	$108,236	4.6	2.8	5.3	2.2	85.0	$468.84	$42.52	9.1
Windham	$80,323	1.3	1.8	11.5	2.4	83.1	$474.68	$42.52	9.0

Limited to enrollees continuously enrolled from January 2017 through December 2018, which accounts for higher PMPM relative to previous slides. PMPM and OOP PMPM are adjusted to control for differences in age-gender mix among counties. Median income and racial distribution from 2018 American Community Survey 2018 5-year estimates.

ED use is higher among residents of lower income communities

- Correlation between median income and ED visits per 1,000 members = -0.93
- Similar trend with inpatient visits, but less variation (correlation coefficient = -0.71)

Income Decile	Decile range	ED visits per 1,000 members	Inpatient stays per 1,000 members
All	**$14,433 - $250,001**	**493.8**	**56.8**
1	$14,433 - $49,699	804.7	65.6
2	$49,816 - $60,044	774.6	66.7
3	$60,056 - $68,919	582.1	70.3
4	$69,026 - $78,125	640.0	60.8
5	$78,165 - $88,054	643.4	56.2
6	$88,086 - $97,542	541.6	57.0
7	$97,585 - $108,227	497.7	55.3
8	$108,250 - $122,422	456.9	54.3
9	$122,565 - $146,506	391.1	52.2
10	$146,794 - $250,001	321.9	55.3

Limited to enrollees continuously enrolled from January 2017 through December 2018. Utilization numbers are age-gender adjusted to control for differences in age-gender mix among deciles. Median income from 2018 American Community Survey 2018 5-year estimates. Income decile 1 includes people living in the lowest 10 percent of zip codes, when ranked by income.

Chronic conditions are more common among residents of lower income communities

- Higher prevalence of conditions among lower-income residents

Income Decile	ED visits per 1,000 members	Percentage with condition							
		One or more conditions	Two or more conditions	Hyper-lipidemia	Hyper-tension	RA	Depression	Diabetes	Asthma
1	804.7	50.3	29.5	17.6	21.1	15.0	10.3	11.4	5.6
2	774.6	52.1	31.1	18.9	21.2	17.8	10.4	10.8	5.4
3	582.1	49.4	28.4	17.4	19.3	14.8	10.7	9.2	4.5
4	640.0	50.1	28.6	17.2	18.5	15.4	11.3	8.3	4.6
5	643.4	50.5	28.1	18.0	18.1	16.0	12.6	7.8	4.4
6	541.6	50.3	28.2	17.5	18.5	16.1	11.9	7.5	4.2
7	497.7	49.4	26.3	16.6	16.1	15.4	12.0	6.2	4.0
8	456.9	47.7	24.9	15.9	15.0	15.1	11.3	5.5	3.5
9	391.1	46.2	23.1	15.0	13.2	14.0	11.2	4.7	3.5
10	321.9	43.1	20.1	13.0	9.3	13.1	9.5	3.5	2.6

Income decile 1 includes people living in the lowest 10 percent of zip codes, when ranked by income. Except asthma, conditions displayed are the most prevalent statewide (asthma is 10th most prevalent). Chronic condition rates derived following Chronic Condition Warehouse algorithms applied to claims, and only include members with 2017 and 2018 claims where diagnosis was present. Rates may therefore be understated. RA = rheumatoid arthritis. ED visits per 1,000 members are adjusted to control for difference in age-gender mix among deciles; chronic condition rates NOT adjusted for age-gender.

ED use is also more common among residents of communities with a lower percentage of white residents, as are some chronic conditions.

Decile	Percentage white	Median family income	PMPM (adj.)	ED visit rate (adj.)	Percentage with condition				
					One or more conditions	Two or more conditions	Hyper-tension	Diabetes	Asthma
All	**0 – 100**	**$97,310**	**$526.69**	**494**	**0.48**	**0.25**	**15.5**	**6.3**	**3.8**
1	0 – 31	$45,663	$545.33	736	0.51	0.30	22.2	11.8	5.6
2	31 – 50	$68,060	$561.26	606	0.49	0.27	18.1	8.6	4.5
3	50 – 61	$82,466	$562.29	591	0.50	0.28	17.3	7.9	4.6
4	61 – 71	$105,442	$494.28	477	0.48	0.26	15.2	6.7	3.7
5	71 – 77	$103,407	$497.68	494	0.48	0.26	16.1	6.6	3.9
6	77 – 82	$122,067	$499.30	434	0.47	0.25	14.1	5.4	3.5
7	83 – 87	$149,181	$506.68	413	0.46	0.23	13.6	5.0	3.5
8	87 – 91	$127,302	$481.19	457	0.47	0.24	14.1	5.0	3.4
9	91 – 94	$118,223	$484.70	493	0.48	0.25	14.7	5.0	3.5
10	94 – 100	$112,875	$526.69	476	0.49	0.26	15.4	5.1	3.7
Ratio of 1st to 10th decile		0.40	1.09	1.55	1.03	1.17	1.44	2.33	1.51

Decile 1 includes people living in the lowest 10 percent of zip codes, when ranked by percent white, i.e., communities with a lower percentage of white residents. Conditions displayed are both prevalent and show pronounced disparities by race. Chronic condition rates derived following Chronic Condition Warehouse algorithms applied to claims, and only include members with 2017 and 2018 claims where diagnosis was present. Rates may therefore be understated. ED visit rate and PMPM are adjusted to control for differences in age-gender mix among deciles; chronic condition rates are NOT adjusted for age-gender.

Next Steps

- **As part of OHS' data strategy, future analysis could include:**
  - Further examination of 2015-2018 commercial data using analytic files from Mathematica
  - 2019 data and pharmacy spending
  - Parallel assessments of public spending
  - Clinical risk adjustment for select analyses
  - Additional analyses of growth in PMPM spending by payer/market, hospital, service category, race/ethnicity, etc.

Mathematica

*These analyses are beyond Mathematica's current scope of work.


Q
A

Contacts

- **KeriAnn Wells kwells@mathematica-mpr.com**
- **Dan Kinber dkinber@mathematica-mpr.com**
- **Marian V. Wrobel mwrobel@mathematica-mpr.com**

Additional notes on methods

- **We used direct standardization to adjust growth rates for age and gender; see technical notes document. Excel tables show additional age-gender adjusted results.**
- **Chronic conditions: the set of chronic conditions and the algorithm to calculate them derive from CMS' chronic condition warehouse**
- **The DRG-level analysis was limited to adults ages 18-64 and to DRGs with more than 10 cases in each 2015 and 2018 to create more accurate measures of spending.**
  - **We reported the weighted median of the percentage changes within DRG**
  - **The weights were based on the 2015 distribution of inpatient stays across DRGs**
- **Regional variation: Data source for race and income is the 2018 American Community Survey 5-year estimates**
  - **Income deciles calculated based on zip-code-level median family incomes**

Additional statistics on changes in spending per inpatient discharge

Sample	Hold distribution across DRGs constant?	Statistic	Result
Adults & children, all DRGs (Shown in slide 20)	No	Mean change in spending per discharge, all DRGs combined	26.4%
Adults only, DRGs with 10+ cases	No	Mean change in spending per discharge, all DRGs combined	28.1%
Adults only, DRGs with 10+ cases	Yes	Mean change in spending per discharge, all DRGs combined	19.8%
Adults only, DRGs with 10+ cases (Shown in slide 27)	Yes	Mean of DRG-level changes Median of DRG-level changes Both weighted by N	18.1% 15.0%