



Maryland Model Analytics: Evaluation of Maryland Medicare Spending on Chronic Conditions

Acumen, LLC
March 16, 2023
1-2pm ET

Outline

- Project Introduction
- Methodology
- Findings
- Summary

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Background

- Treatment of chronic conditions is a substantial driver of rising total health expenditures in the U.S.
 - In 2016, \$1.1 trillion was spent on direct treatment of chronic conditions¹
- Maryland's All-Payer Model resulted in a reduction in spending on chronic conditions
 - In the first 4.5 years of the model, total expenditures for beneficiaries with multiple chronic conditions increased 2.7% less than a comparison group²
- Building on this success, the Maryland Total Cost of Care (TCOC) model aims to transform care delivery for Medicare patients, directing resources toward investments in health system innovations that further improve chronic condition care and population health in the state
- This presentation summarizes analyses into spending on chronic conditions in Maryland compared to national spending

¹ “The Costs of Chronic Disease in the U.S.” (Milken Institute): <https://milkeninstitute.org/sites/default/files/reports-pdf/ChronicDiseases-HighRes-FINAL.pdf>

² “Evaluation of the Maryland All-Payer Model” (RTI International): <https://downloads.cms.gov/files/md-allpayer-finalevalrpt.pdf>

Our Research Focuses on Analyzing Cost Performance

- Evaluate Maryland Medicare fee-for-service (FFS) spending for chronic conditions against national results to identify areas of potential improvement in existing state programs

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Data Sources (1 of 2)

- Data sources
 - Chronic Condition Warehouse (CCW) Parts A and B claims
 - CCW Beneficiary Cohort Enrollment Data
- Cost variables
 - Allowed amount
- Claim settings
 - Acute inpatient
 - Hospital outpatient
 - Part B physician/supplier
 - Institutional post-acute care (PAC)
 - Skilled nursing facility (SNF), inpatient rehabilitation facility (IRF), long-term care hospital (LTCH)
 - Home health
 - Durable medical equipment (DME)
 - Hospice

Data Sources (2 of 2)

- Sample
 - Maryland: All Medicare beneficiaries
 - Other states: 5% sample
- Study period
 - 2018 to identify beneficiaries with chronic conditions
 - 2019 to analyze costs
 - 2022 Q1 and Q2 to compare inpatient and PAC usage

Study Cohort Defined Using CCW Chronic Condition Categories (1 of 2)

- CCW algorithms define 30 chronic condition categories with ICD-10 diagnosis codes
- Analyses excluded 5 CCW definitions for acute conditions:
 - Acute myocardial infarction, cataract, hip/pelvic fracture, pneumonia, and stroke/transient ischemic attack

Table: CCW Chronic Condition Categories Included in Analyses

#	Condition	#	Condition
1	Alzheimer's Disease	14	Depression, Bipolar, or Other Depressive Mood Disorders
2	Anemia	15	Diabetes
3	Asthma	16	Glaucoma
4	Atrial Fibrillation and Flutter	17	Heart Failure and Non-Ischemic Heart Disease
5	Benign Prostatic Hyperplasia	18	Hyperlipidemia
6	Cancer, Breast	19	Hypertension
7	Cancer, Colorectal	20	Hypothyroidism
8	Cancer, Endometrial	21	Ischemic Heart Disease
9	Cancer, Lung	22	Non-Alzheimer's Dementia
10	Cancer, Prostate	23	Osteoporosis With or Without Pathological Fracture
11	Cancer, Urologic	24	Parkinson's Disease and Secondary Parkinsonism
12	Chronic Kidney Disease	25	Rheumatoid Arthritis/Osteoarthritis
13	Chronic Obstructive Pulmonary Disease		

Study Cohort Defined Using CCW Chronic Condition Categories (2 of 2)

- CCW category diagnosis codes must present on a defined number and type of claims
- A beneficiary can be included in multiple CCW chronic condition categories

Table: Example of CCW Definition for Asthma

Chronic Condition Category	Number and Type of Claims	ICD-10 Diagnosis Codes
Asthma	At least 1 inpatient, skilled nursing facility, or home health claim OR 2 hospital outpatient or Part B physician/supplier claims	J45.20, J45.21, J45.22, J45.30, J45.31, J45.32, J45.40, J45.41, J45.42, J45.50, J45.51, J45.52, J45.901, J45.902, J45.909, J45.990, J45.991, J45.998

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Findings

1. Prevalence of conditions
2. Annual cost
3. Service utilization
 - a) Spotlight on specific conditions
 - b) Inpatient hospitalization and post-acute care

(1) Maryland has Higher Chronic Condition Prevalence than Other States

- Glaucoma has the biggest difference between Maryland and other states
- Maryland has lower prevalence for 3 conditions: COPD, heart failure & non-ischemic heart disease, and Alzheimer's disease

Table: Number of Beneficiaries per 100,000 Beneficiaries with Chronic Conditions

#	Condition	Maryland	Other States	MD/ Other	#	Condition	Maryland	Other States	MD/ Other
All	Any of the 25 CCW conditions (1 or more)	67,150	59,701	1.12	13	Benign Prostatic Hyperplasia	5,957	5,335	1.12
1	Hypertension	49,154	41,867	1.17	14	Heart Failure and Non-Ischemic Heart Disease	5,926	6,170	0.96
2	Hyperlipidemia	41,278	34,667	1.19	15	Osteoporosis With or Without Pathological Fracture	5,145	4,855	1.06
3	Diabetes	21,069	17,561	1.20	16	Asthma	4,401	3,754	1.17
4	Rheumatoid Arthritis/Osteoarthritis	20,539	18,240	1.13	17	Non-Alzheimer's Dementia	4,255	3,758	1.13
5	Glaucoma	12,652	8,786	1.44	18	Cancer, Breast	3,041	2,468	1.23
6	Ischemic Heart Disease	12,407	11,807	1.05	19	Cancer, Prostate	2,793	2,357	1.18
7	Anemia	12,186	10,035	1.21	20	Alzheimer's Disease	1,309	1,409	0.93
8	Hypothyroidism	11,707	11,663	1.00	21	Parkinson's Disease and Secondary Parkinsonism	1,059	981	1.08
9	Depression, Bipolar, or Other Depressive Mood Disorders	11,024	9,952	1.11	22	Cancer, Lung	765	657	1.16
10	Chronic Kidney Disease	9,764	9,291	1.05	23	Cancer, Colorectal	584	521	1.12
11	Atrial Fibrillation and Flutter	8,002	7,794	1.03	24	Cancer, Urologic	431	416	1.04
12	Chronic Obstructive Pulmonary Disease	7,865	8,153	0.96	25	Cancer, Endometrial	325	266	1.22

(1) Level of Comorbidities is Similar for Maryland and Other States

Table: Comorbidities Amongst Beneficiaries with At least One Chronic Condition

State	# Beneficiaries with at Least 1 Chronic Condition	Mean # of Comorbid Chronic Conditions	Percentiles				
			5th	25th	50th	75th	95th
Maryland	601,696	3.78	1	2	3	5	8
Other states	1,203,552	3.73	1	2	3	5	8

Findings

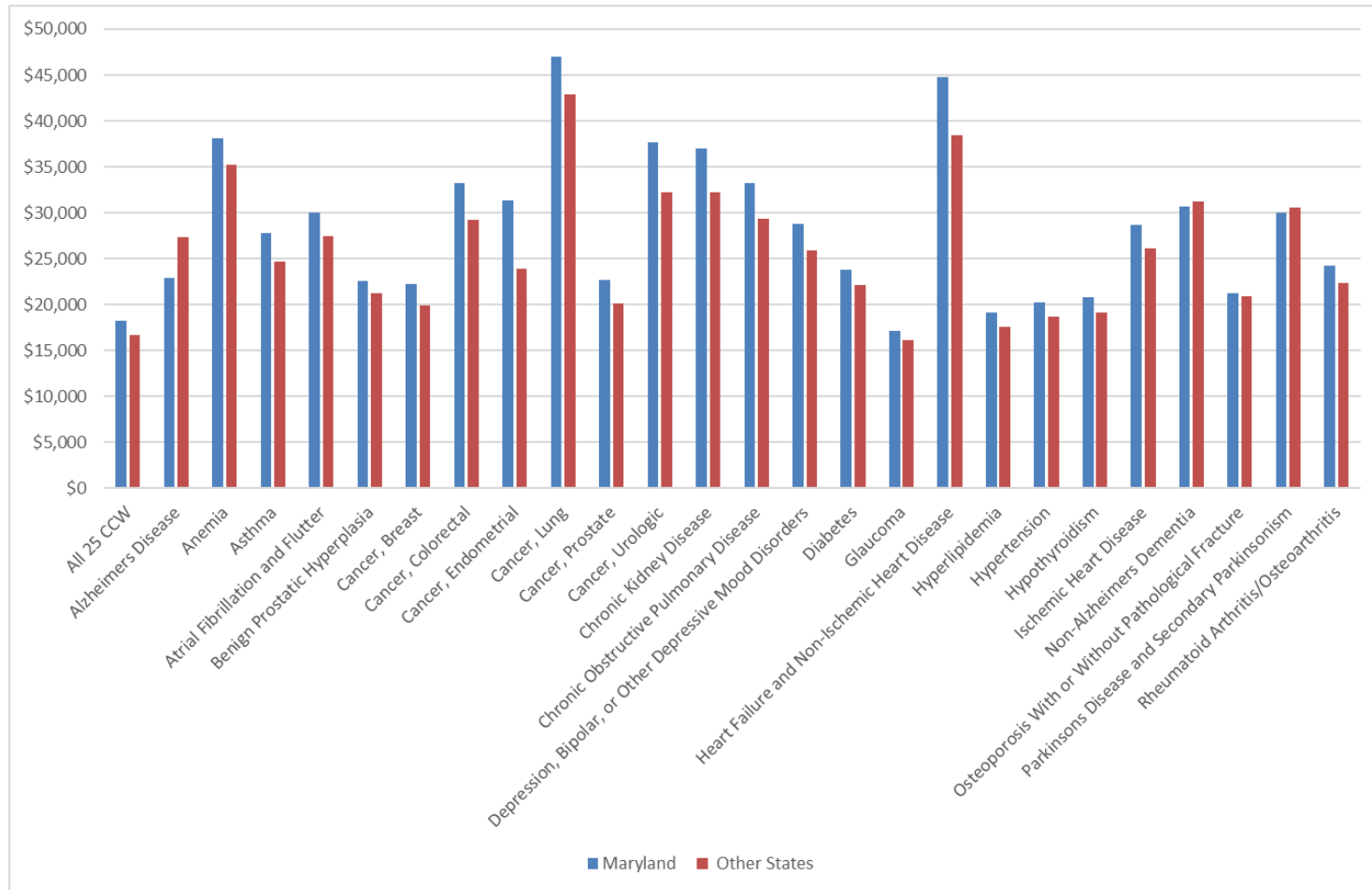
1. Prevalence of conditions
- 2. Annual cost**
3. Service utilization
 - a) Spotlight on specific conditions
 - b) Inpatient hospitalization and post-acute care

(2) On Average, Maryland has Higher Annual Costs Per Beneficiary (1 of 2)

- In aggregate across all 25 conditions, Maryland's mean annual spending is higher than other states by 9%
 - Maryland is 6.6% higher at the median
- The magnitude of difference varies
 - Diabetes and rheumatoid arthritis/osteoarthritis are the 3rd and 4th most common conditions, respectively, and the mean annual costs are very similar
 - Cancer and cardiovascular conditions show the largest differences
- Maryland has lower mean annual allowed amounts for neurodegenerative conditions (e.g., Alzheimer's disease)

(2) On Average, Maryland has Higher Annual Costs Per Beneficiary (2 of 2)

Figure: Mean Annual Allowed Amounts per Beneficiary by Chronic Condition

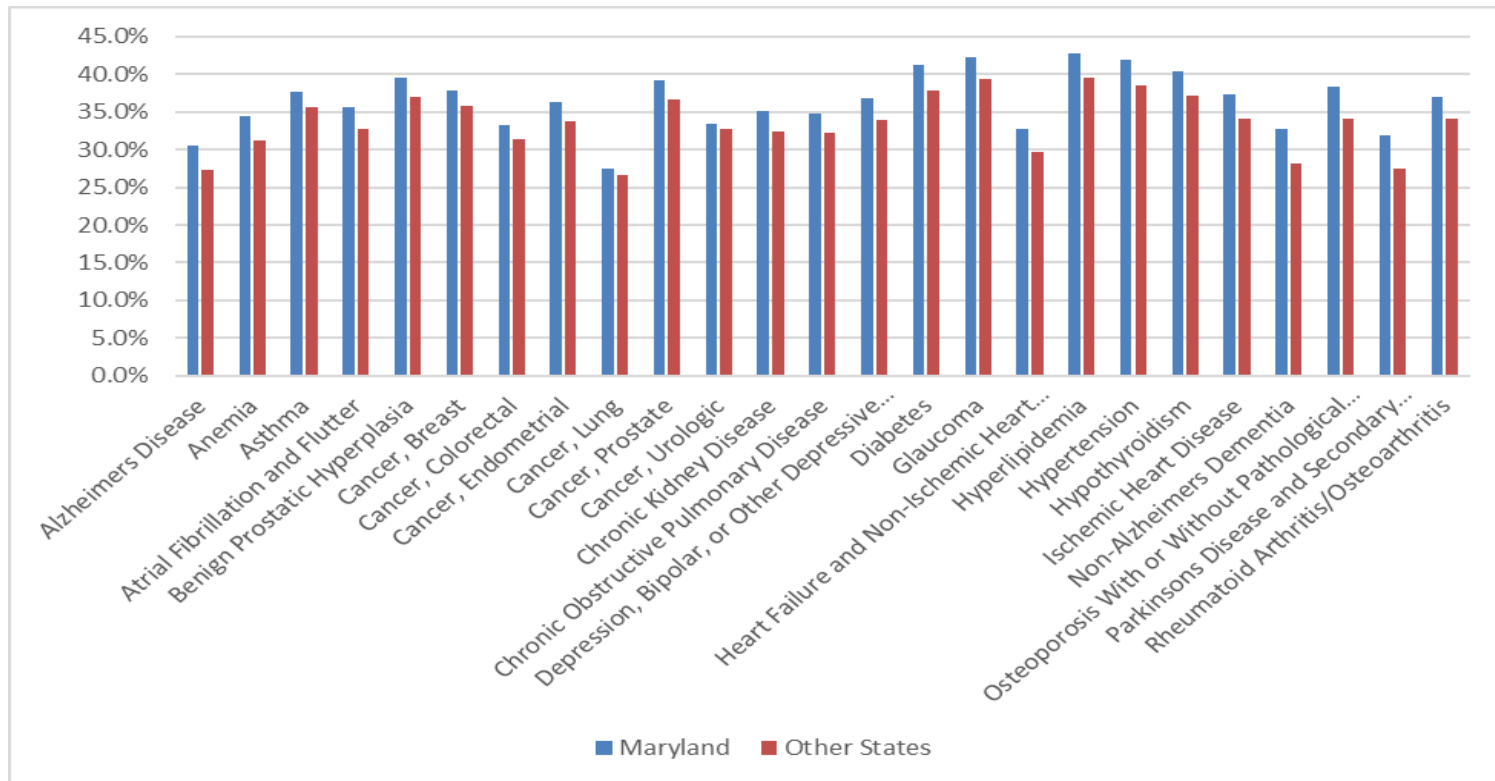


(2) Maryland Spends More on the Costliest Beneficiaries than Other States

Table: Percentage of Total Condition Spending that is Spent on Costliest Beneficiaries

State	Top 10% of Costliest Beneficiaries	Top 5% of Costliest Beneficiaries
Maryland	44.3% to 59.8%	27.5% to 42.7%
Other states	41.8% to 56.7%	26.7% to 39.5%

Figure: Percentage of Total Condition Spending Spent on Top 5% of Costliest Beneficiaries



Findings

1. Prevalence of conditions
2. Annual cost
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(3a) Spending by Setting shows Different Trends Across Conditions

- We examined three clinical topics for the breakdown of spending by setting
- Conditions selected based on prevalence and by magnitude of difference with other states
 - Diabetes
 - Neurodegenerative conditions
 - Maryland has lower mean per beneficiary spending for neurodegenerative conditions than other states
 - Cancer
 - Maryland has higher mean per beneficiary spending for cancers than other states

(3a) Diabetes: Maryland has Lower Utilization Across Most Claim Settings

- Maryland has lower utilization than other states for all settings except Part B physician/supplier than other states
- Mean costs are higher for acute inpatient, outpatient for Maryland, but lower for institutional PAC, home health, and DME

Table: Cost by Claim Settings for Beneficiaries with Diabetes

Claim Setting	Metric	Diabetes	
		Maryland	Other States
Acute inpatient	% of beneficiaries with non-zero cost	18.9%	20.2%
	Mean annual allowed amount	\$39,890	\$29,890
Outpatient	% of beneficiaries with non-zero cost	63.4%	77.3%
	Mean annual allowed amount	\$7,349	\$5,328
Part B physician/ supplier	% of beneficiaries with non-zero cost	93.4%	92.8%
	Mean annual allowed amount	\$6,991	\$5,860
Institutional PAC	% of beneficiaries with non-zero cost	6.6%	7.1%
	Mean annual allowed amount	\$24,959	\$29,136
Home health	% of beneficiaries with non-zero cost	12.2%	14.2%
	Mean annual allowed amount	\$10,981	\$13,620
DME	% of beneficiaries with non-zero cost	49.0%	50.4%
	Mean annual allowed amount	\$1,037	\$1,221

(3a) Neurodegenerative Conditions have Similar Trends to Diabetes by Claim Setting

Table: Cost by Claim Settings for Beneficiaries with Alzheimer’s Disease, Non-Alzheimer’s Dementia, and Parkinson’s Disease and Secondary Parkinsonism

Claim Setting	Metric	Alzheimer’s Disease		Non-Alzheimer’s Dementia		Parkinson’s Disease and Secondary Parkinsonism	
		Maryland	Other States	Maryland	Other States	Maryland	Other States
Acute inpatient	% of beneficiaries with non-zero cost	17.7%	20.1%	22.1%	22.9%	21.7%	23.7%
	Mean annual allowed amount	\$26,190	\$22,252	\$34,043	\$24,863	\$32,299	\$25,400
Outpatient	% of beneficiaries with non-zero cost	56.1%	62.0%	58.4%	64.0%	66.6%	73.8%
	Mean annual allowed amount	\$4,261	\$3,584	\$5,870	\$4,379	\$5,948	\$4,640
Part B physician/supplier	% of beneficiaries with non-zero cost	77.1%	75.2%	76.9%	76.0%	84.7%	84.6%
	Mean annual allowed amount	\$5,462	\$4,933	\$6,513	\$5,686	\$7,744	\$6,430
Institutional PAC	% of beneficiaries with non-zero cost	10.0%	12.5%	13.0%	14.6%	12.7%	14.4%
	Mean annual allowed amount	\$21,179	\$26,920	\$24,315	\$28,312	\$26,794	\$29,633
Home health	% of beneficiaries with non-zero cost	18.8%	22.6%	21.4%	24.3%	22.5%	25.4%
	Mean annual allowed amount	\$11,395	\$15,262	\$12,508	\$15,934	\$13,898	\$17,439
DME	% of beneficiaries with non-zero cost	23.8%	23.8%	27.3%	26.8%	32.2%	33.9%
	Mean annual allowed amount	\$1,024	\$1,282	\$1,279	\$1,487	\$1,652	\$1,877

(3a) Cancer: Maryland's Service Utilization is More Similar to Other States

- Unlike diabetes and neurodegenerative conditions, Maryland's utilization across settings is closer to other states, and higher in some cases

Table: Cost by Claim Settings for Beneficiaries with Endometrial, Urologic, and Lung Cancer

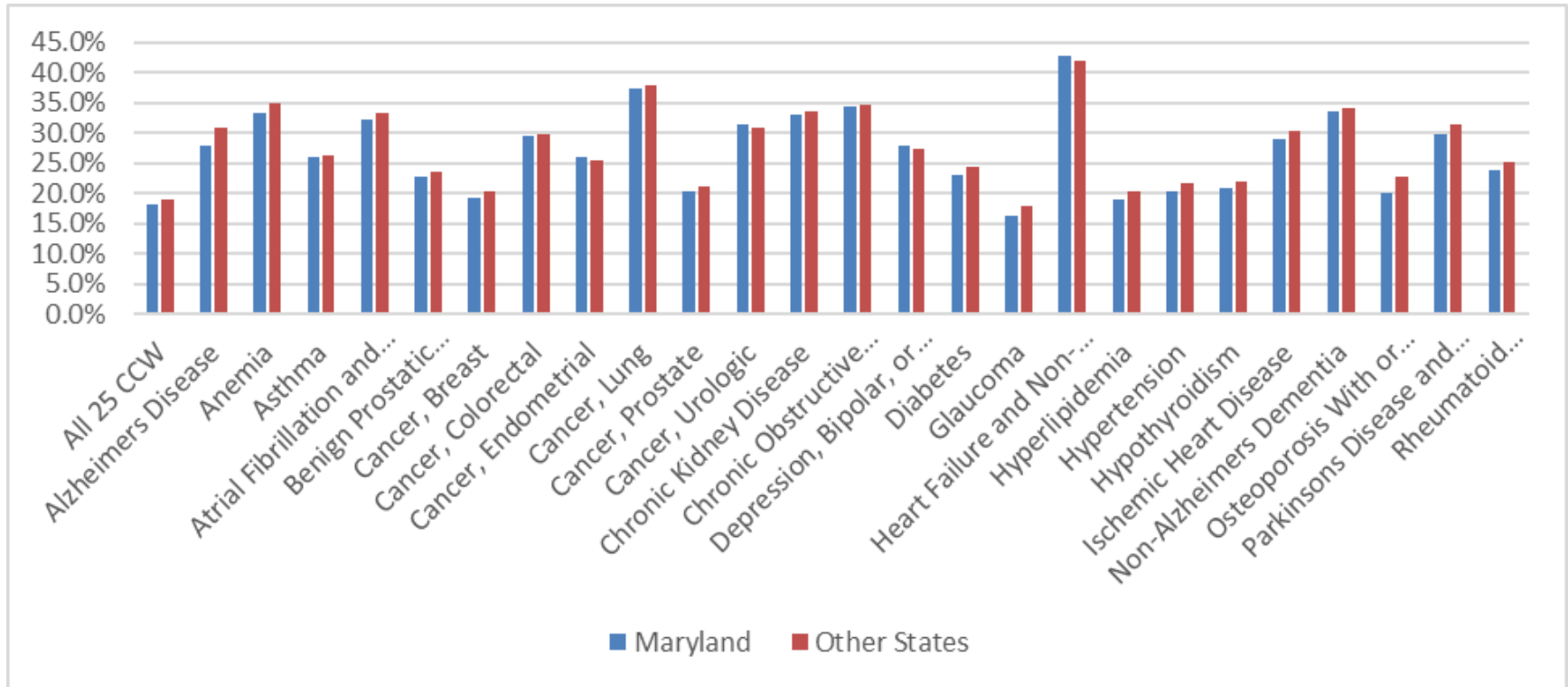
Claim Setting	Metric	Endometrial Cancer		Urologic Cancer		Lung Cancer	
		Maryland	Other States	Maryland	Other States	Maryland	Other States
Acute inpatient	% of beneficiaries with non-zero cost	19.9%	19.7%	23.9%	24.0%	24.2%	23.7%
	Mean annual allowed amount	\$45,223	\$26,724	\$41,786	\$29,535	\$38,364	\$28,710
Outpatient	% of beneficiaries with non-zero cost	73.9%	82.5%	71.0%	81.4%	68.1%	72.5%
	Mean annual allowed amount	\$9,932	\$6,613	\$12,876	\$10,700	\$16,836	\$13,937
Part B physician/ supplier	% of beneficiaries with non-zero cost	91.2%	91.2%	88.9%	89.6%	79.6%	77.8%
	Mean annual allowed amount	\$8,913	\$6,889	\$12,471	\$9,586	\$16,160	\$14,639
Institutional PAC	% of beneficiaries with non-zero cost	7.0%	6.9%	6.3%	6.8%	6.7%	7.2%
	Mean annual allowed amount	\$24,292	\$25,442	\$21,263	\$26,032	\$24,006	\$25,370
Home health	% of beneficiaries with non-zero cost	13.9%	15.1%	14.6%	14.4%	14.7%	15.7%
	Mean annual allowed amount	\$12,765	\$13,183	\$10,007	\$12,677	\$10,170	\$12,404
DME	% of beneficiaries with non-zero cost	32.7%	32.8%	35.8%	36.5%	35.0%	36.3%
	Mean annual allowed amount	\$1,661	\$1,535	\$1,220	\$1,451	\$1,607	\$1,888

(3b) Inpatient & PAC are Cost Drivers, with Maryland having Lower Utilization

- The difference between neurodegenerative and cancer cost breakdowns highlights the need to look at acute inpatient hospital and PAC (especially institutional) in more detail

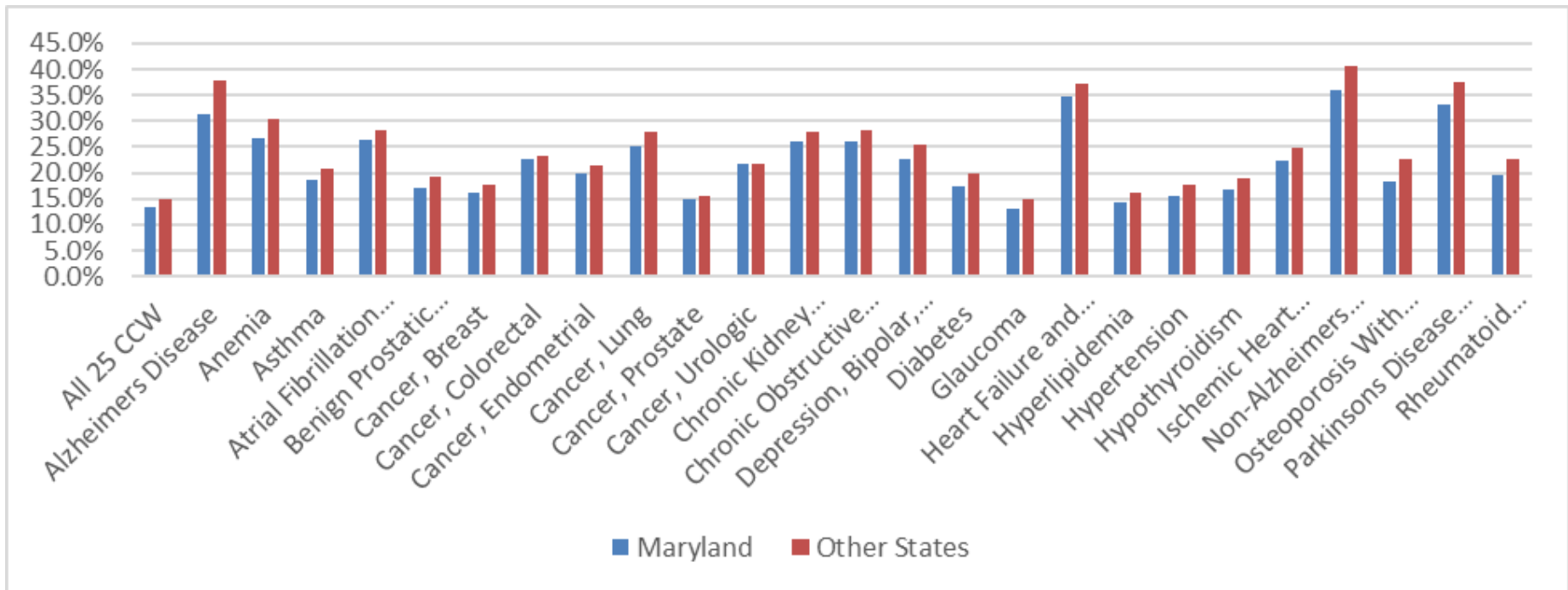
(3b) Maryland has Lower Rates of Acute Hospitalizations

Figure: Percentage of Beneficiaries with any Acute Inpatient Hospitalization



(3b) Maryland Also Has Lower Rates of PAC (Institutional + HH)

Figure: Percentage of Beneficiaries with any PAC Services



(3b) Results Include a Comparison between 2019 and 2022 Data

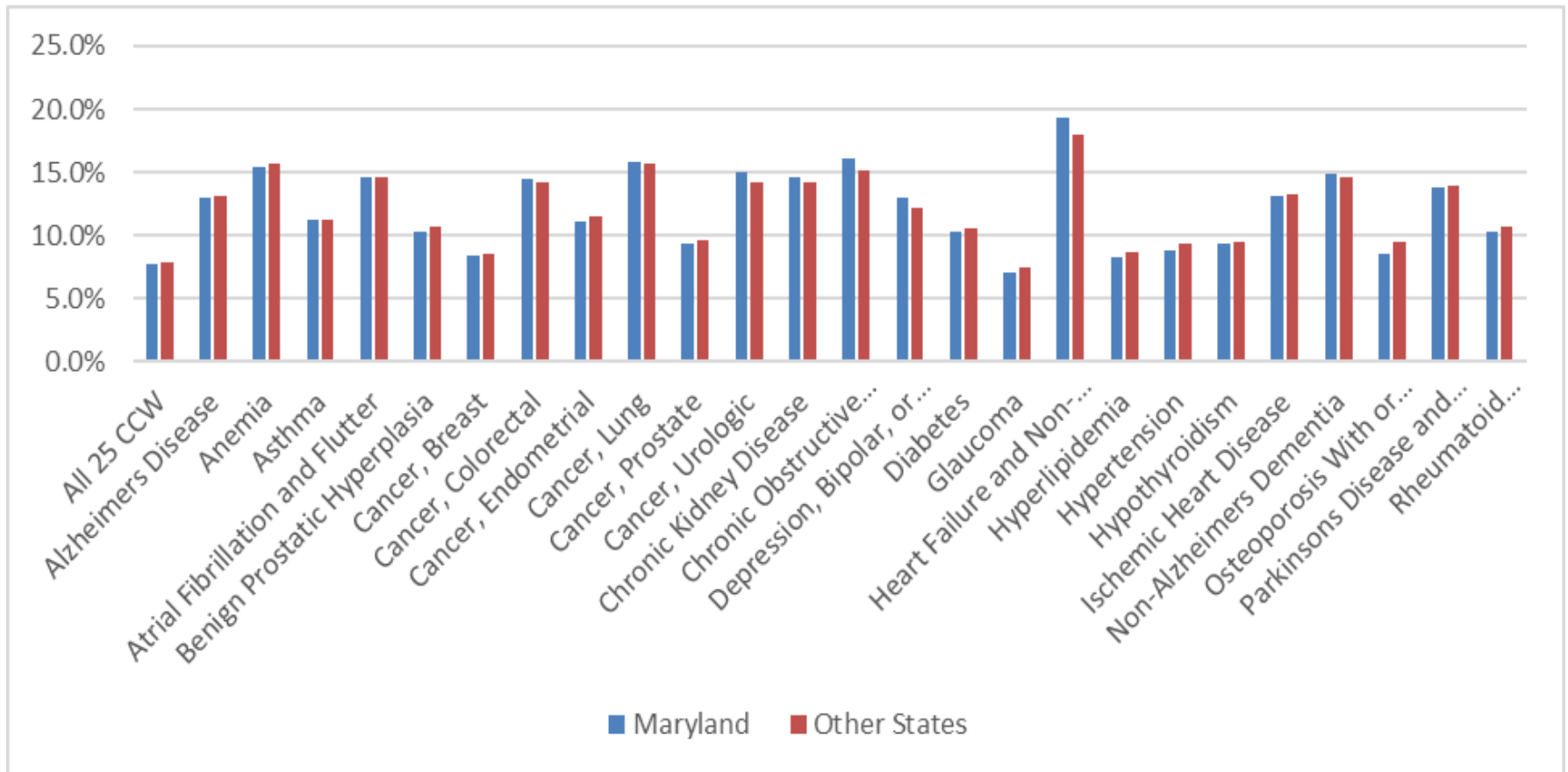
- We added a comparison with 2022 to test whether these differences in utilization (i.e., lower acute inpatient and PAC use) between Maryland and other states continue to hold true or if disruptions to healthcare have erased these differences
- Analyses use 2022 Q1 and Q2 compared to 2019 Q1 and Q2 for comparable study periods

Table: Comparison of Mean Acute inpatient and PAC Utilization Across all 25 Conditions Over Time

Service Utilization	State	2019Q1-Q2	2022Q1-Q2
Acute inpatient	Maryland	11.1%	7.7%
	Other states	11.5%	7.9%
PAC	Maryland	8.8%	6.7%
	Other states	10.1%	7.1%

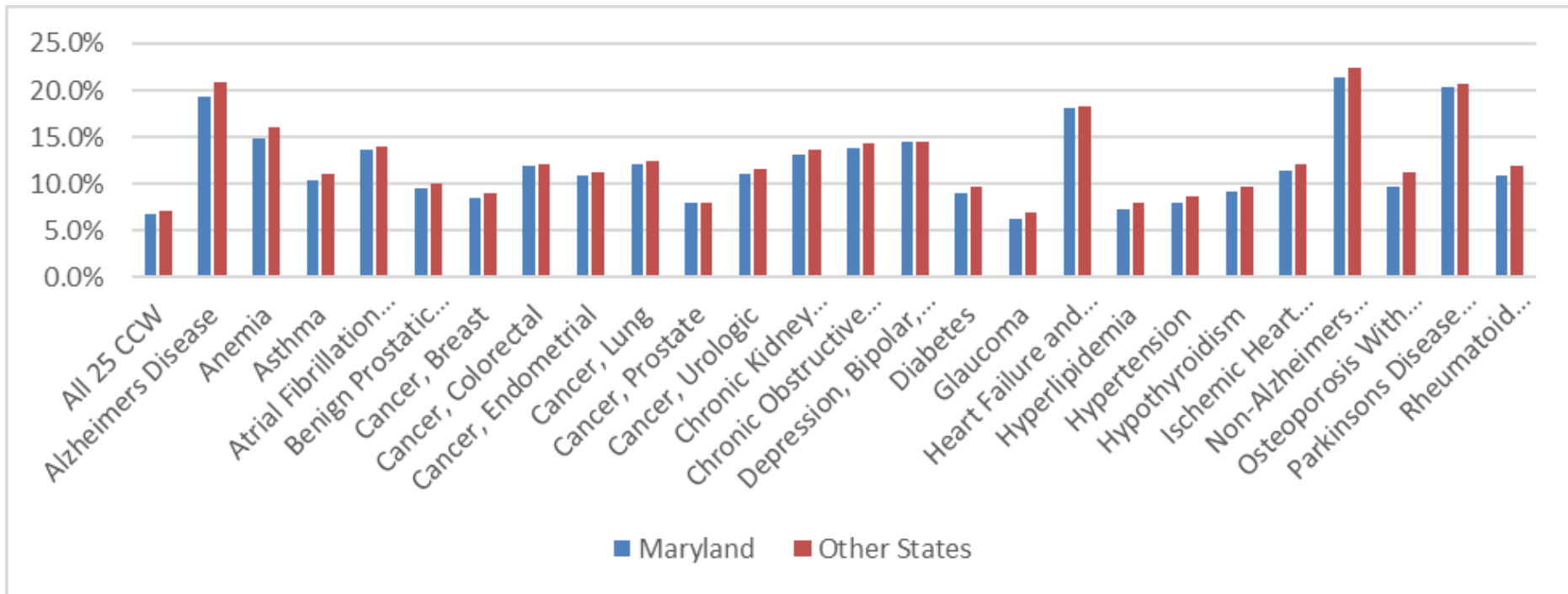
(3b) Differences in Acute Hospitalization Usage have Decreased since 2019

Figure: Percentage of Beneficiaries with any Acute Inpatient Hospitalization (2022Q1-2022Q2)



(3b) Similarly, Differences in PAC Utilization have Decreased in 2022

Figure: Percentage of Beneficiaries with any Post-Acute Care Services (2022Q1-2022Q2)



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Future Research Could Address Study Limitations

- Increase sample size and study additional years
- Use payment standardized costs to remove variation unrelated to care decisions
- Account for the impact of patient complexity and case mix on costs through risk adjustment
- Examine clinically refined cost definitions for more granular information about cost drivers and potential areas for cost improvement

Summary of Findings

- Overall, the mean annual allowed amounts tend to be higher for beneficiaries in Maryland than other states with some notable exceptions for neurodegenerative diseases
- Maryland has lower rates of acute inpatient hospitalizations and PAC usage for most conditions
 - This could suggest that Maryland is able to keep beneficiaries with chronic conditions more stable such that they do not need to be hospitalized as often as in other states
 - The magnitude of this difference has decreased in 2022 relative to 2019
- The mean allowed amounts per beneficiary for acute inpatient hospitalizations are substantially higher in Maryland than other states

Thank You

