All Payer Hospital System Modernization
Payment Models Workgroup

<u>Meeting Agenda</u>

January 21, 2020
10:00 am to 12:00 pm
Health Services Cost Review Commission
Conference Room 100
4160 Patterson Avenue
Baltimore, MD 21215

I   Introductions and Meeting Overview

II   Efficiency ICC Capital Overview

III   Benchmarking

IV   Adjourn

Payment Model Work Group

January 21, 2020

Important Spring Dates for Payment Model & Update Factor Season

▶ **March 3 Workgroup Meeting**

    ▶ Update Factor Table with available draft inputs

▶ **March 31 Workgroup Meeting**

    ▶ Update Factor Table with available draft inputs

    ▶ Discussion on estimated position on Medicare Target and Guardrails

▶ **April 30 Workgroup Meeting**

    ▶ Review of Draft Recommendation

▶ **May 13 Commission Meeting**

    ▶ Draft Recommendation Presentation to the Commission

▶ **May 28 Workgroup Meeting**

    ▶ Review of Comment Letters and Final Recommendation

▶ **June 10 Commission Meeting**

    ▶ Final Recommendation Presentation to the Commission

Balanced Update Model for RY 2021		
Components of Revenue Change Linked to Hospital Cost Drivers/Performance		
		Weighted Allowance
Adjustment for Inflation (this includes 3.10% for compensation)		0.00%
- Rising Cost of Outpatient Oncology Drugs		0.00%
Gross Inflation Allowance	**A**	**0.00%**
Care Coordination/Population Health	**B**	**0.00%**
Adjustment for Volume		
-Demographic /Population		0.00%
-Transfers		
-Drug Population/Utilization		
Total Adjustment for Volume	**C**	**0.00%**
Other adjustments (positive and negative)		
- Set Aside for Unknown Adjustments	D	0.00%
- Low Efficiency Outliers	E	0.00%
- Capital Funding -Adventist White Oak Medical Center	F	0.00%
- Categoricals & Innovation (1%)	G	0.00%
-Reversal of one-time adjustments for drugs	H	0.00%
Net Other Adjustments	**I= Sum of D thru H**	**0.00%**
Quality and PAU Savings		
-PAU Savings	J	0.00%
-Reversal of prior year quality incentives	K	0.00%
-QBR, MHAC, Readmissions		
-Positive incentives & Negative scaling adjustments	L	0.00%
Net Quality and PAU Savings	**M = Sum of J thru L**	**0.00%**
Total Update First Half of Rate Year 20		
Net increase attributable to hospitals	**N =** Sum of A + B + C + I + M	0.00%
Per Capita First Half of Rate Year (July - December)	**O =** (1+N)/(1+0.30%)	0.00%
Adjustments in Second Half of Rate Year 20		
-Oncology Drug Adjustment	P	0.00%
-QBR	Q	0.00%
Total Adjustments in Second Half of Rate Year 20	**R =** P + Q	**0.00%**
Total Update Full Fiscal Year 20		
Net increase attributable to hospital for Rate Year	**S =** N + R	0.00%
Per Capita Fiscal Year	**T =** (1+S)/(1+0.30%)	0.00%
Components of Revenue Offsets with Neutral Impact on Hospital Finanical Statements		
-Uncompensated care, net of differential	U	0.00%
-Deficit Assessment	V	0.00%
Net decreases	**W =** U + V	0.00%
Total Update First Half of Rate Year 20		
Revenue growth, net of offsets	**X =** N + W	0.00%
Per Capita Revenue Growth First Half of Rate Year	**Y =** (1+X)/(1+0.30%)	0.00%
Total Update Full Rate Year 20		
Revenue growth, net of offsets	**Z =** S + W	0.00%
Per Capita Fiscal Year	**AA =** (1+Z)/(1+0.30%)	0.00%
Private Payer Growth Rate, based on Total Update for Full Rate Year		0.00%
Public Payers Growth Rate		0.00%

* Provided Based on proportion of drug cost to total cost (drug index 5.6% X 5.9% national weight)

Efficiency Policies

Efficiency Landscape

Table indicates where and how specific efficiency metrics are currently proposed to be used:

- Relative Rank indicates a metric is used to rank hospitals and actions are taken based on blocks of hospitals based on this ranking
- Absolute Value indicates the metric value feeds directly into the outcome of the calculation

Metric Category	Specific Metric	Integrated Eff. (Scaling Update Factor)	Major Capital Funding	Full Rate Application
Cost/Price per Case	REM (price per case)			
	ICC (cost per case)			Absolute Value
	ICC Volume Adjusted	Relative Rank		Absolute Value???
	ICC, No Productive Adj.		Relative Rank	
TCOC Metrics	TCOC Growth (MPA)			Absolute Value???
	TCOC Growth (Geo)	Relative Rank		Absolute Value
	TCOC Benchmark (MC)	Relative Rank		Absolute Value
	TCOC Benchmark (CO)	Relative Rank		Absolute Value

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Efficiency Landscape (Additional Analyses)

Specific Metric	Integrated Eff. (Scaling Update Factor)	Major Capital Funding	Full Rate Application
Flaw in Methodology proposed by potential GBR enhancement hospital	Absolute Value		
Legitimacy of population health intervention request for potential GBR enhancement hospital	Absolute Value		
Capital Cost Efficiency		Absolute Value	
PAU Opportunity		Absolute Value	
Excess Capacity		Absolute Value	
System Margin Analysis (not explicitly in methodology output)		Absolute Value	
Volume Funding Efficacy			Absolute Value
Cost Growth Analysis			Absolute Value/Relative Rank
System Margin Analysis			Absolute Value
Unregulated Loss Analysis			Absolute Value/Relative Rank

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Capital Policy

Overview

- Capital policy is intended to provide efficient hospitals rate support for "large" capital projects. Other capital projects should be funded through the GBR.
  - Attachment point is 25% of a hospital's permanent revenue and scaled upwards to 50% for hospitals with smaller GBR's.

Permanent Revenue	Threshold for Capital Funding	Threshold Amount
> $300,000,000	25.0%	$105,000,000
$250,000,000	30.0%	$95,000,000
$200,000,000	35.0%	$82,000,000
$150,000,000	40.0%	$66,000,000
$100,000,000	45.0%	$47,000,000
< $50,000,000	50.0%	$25,000,000

- Hospitals will be expected to pay a portion of any interest costs through cash or operating profits. Caps are below:
  - A hospital is eligible to 70% of a project's interest costs (annualized)
  - A hospital is eligible to receive 100% of a project's depreciation costs (annualized)

- The Capital policy aims to address the process by which HSCRC will evaluate capital project requests. Specific considerations are as follows:
  - Capital Cost Efficiency; Hospital Cost Efficiency; Total Cost of Care Growth; PAU Opportunity (or lack thereof); Excess Capacity

- GBR revenue to cover capital costs will be added to rates once a project is completed and operational.

- Hospitals can currently take "the pledge" or "reserve their right" to request capital funding later.
  - If a hospital reserves their right to request capital funding, then Staff will assess the hospital's eligible capital funding based on both the year that the request is made and the year that the project was approved. The lesser amount would be provided.
  - This is meant to clarify how rate requests that include capital related costs will be handled if they later cause margin problems.

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Method to Determine Amount of Eligible Capital Funding

▶ The total amount of funding that will be put into rates to cover capital costs will be determined by the following algorithm:

1. Calculate the cumulative depreciation and interest costs on the hospital's project (Annualize these figures)
2. Calculate the capital share of total costs for the requesting hospital, inclusive of the project's depreciation and interest costs
3. The final amount the hospital is eligible to receive is: 50% of the amount in Step 2; and 50% of the average capital costs across the hospital's peer group less the hospital's current capital costs (Capital Cost Efficiency)

Baseline	Hospital GBR	Project Cost
	$115.4 million annual GBR	Project costs = 50% of the GBR ($57.7 million)
Step 1	**Depreciation**	**Interest**
	Lifetime of 22 yrs with $0 salvage costs results in $2.6 million annually	Interest costs on a 30 year mortgage with a 4.25% interest rate results in $1.5 million annually
Step 2	**Baseline Capital Cost**	**Capital Costs Including Step 1**
	Total costs are $73.4 million. The hospitals baseline capital costs are $6.9 million (9.49%)	The hospitals capital costs inclusive of the additional funding is $11.1 million or 14.29% (i.e. $11.1 million / $77 million total costs)
Step 3	**Peer Group Capital Costs**	**Total Amount of Funding**
	The peer group's average capital costs are 7.61%	The hospital would be approved (prior to efficiency analyses) for a rate increase of 1.46% to increase its capital costs to 10.95% (i.e. 50% x hospital's request of 14.29% + 50% x 7.61% peer group average)

▶ Eligible funding is capped at 70% interest, 100% depreciation of the proposed project after additional analyses are completed (integrated efficiency, PAU opportunity, and excess capacity)

▶ 6

Amount of Eligible Funding that a Hospital will Receive

▶ Hospitals receive a portion of the project's eligible funding based on the efficiency matrix (ICC without Productivity Adjustment & TCOC Growth) through a two part algorithm:

1. Each quintile will receive a base amount of the eligible funding based on their quintile. (Q1 = 80%, Q2 = 60%, Q3 = 40%, Q4 = 20% Q5 = 0%)

2. The hospital will earn an additional amount of the project's eligible funding based on their rank within the quintile. The highest hospital within the quintile earns an extra 20% and the lowest hospital in the quintile earns no additional funding

▶ Example: The 2nd most efficient hospital out of the 9 in the top quintile would receive…

1. The hospital earns 80% of the eligible funds for being in the top quintile

2. The hospital earns 18% for being the second out of nine in the top quintile

3. The hospital earns a total of 98% of their eligible funding

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Credit for low Potentially Avoidable Utilization

▸ Hospitals that have a low PAU percentage cannot fund capital out of retained revenue from PAU savings. Therefore, under the capital policy, hospitals with low PAU will be "credited" for their lack of PAU opportunity.

▸ The PAU Credit will be calculated as follows:

1. Determine the dollar value by which the hospitals PAU revenue is less than the statewide average (Denominator is eligible revenue; credit is capped at one standard deviation)
2. Multiply the PAU amount by the hospitals efficiency adjustment
3. Multiply by a 50% Variable Cost Factor

▸ The PAU Credit will be added to the eligible amount of depreciation and interest.

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Adjustment for Excess Capacity

▸ Any costs associated with excess capacity will be removed from the hospital's eligible interest and deprecation costs.

▸ The Excess Capacity adjustment will be calculated as the product of…
  1. The decline in the number of bed days since 2010
  2. The fixed cost per diem per bed day, which staff have estimated to be $1,200 (2010-2014 are reduced by $360 to recognize the pre-GBR 85% variable cost factor methodology).

▸ Example: A hospital that has one thousand fewer bed days relative to 2010, would receive $1.2 million less in interest and depreciation costs.

▸ The final cost figure once all adjustments are calculated will then be marked up to bring the capital allotment to charges.

Integrated Efficiency Policy

Overview

▶ The principal aim of the Integrated Efficiency Policy is to <u>formulaically</u> penalize and reward hospital efficiency while

  ▸ 1) maintaining the Model's incentive to reduce avoidable utilization and

  ▸ 2) keeping fidelity to the Commission's statutory mandate to ensure costs are reasonable and charges are reasonably related to costs.

▶ The policy will identify outlier hospitals based on the combination of:

  ▸ Their efficiency when compared with a Volume Adjusted ICC standard relative to other hospitals

  ▸ TCOC performance rate relative to other hospitals

    ▹ RY 2020 proposal only included hospitals in the poor performing outlier list if they were in worst quintile of performance based on these two factors.

      ☐ Hospitals would be exempted if ICC performance was better than 1.21 times the ICC standard (one standard deviation of performance)

      ☐ Excellent performing hospitals had to be in best quintile of performance and had to be better than 1.06 times the ICC standard (one standard deviation of performance)

▶ Poor performing outlier hospitals will receive a reduced update factor

  ▸ Withholding this revenue will benefit all payers

  ▸ Apply the same algorithm in future years for outlier hospitals until their revenue is less than 1.21 times the ICC standard

▶ Excellent performing outlier hospitals will not receive additional funding automatically but will be eligible for additional revenue if they have been disadvantaged by a methodology or intend to provide additional population health investments.

ICC Ranking

‣ The hospital's "efficiency relative to the ICC standard" is equal to the ratio of current approved spending per ECMAD to the ICC standard

  ‣ Results are expressed both as a dollar value and a percentage

  ‣ Percentage values are used to compare relative efficiency between hospitals

‣ Hospitals are ranked from lowest to highest efficiency relative to the ICC standard.

  ‣ The most efficient hospital relative to its ICC standard receives a rank of 1. The least efficient hospital receives a rank of 46

  ‣ Regardless of their relative ICC ranking, only hospitals that exceed 1.21 times the ICC standard will be subject to the formulaic efficiency adjustment

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TCOC Ranking

▶ A hospital's TCOC will be calculated based on the beneficiaries who reside within the hospital's PSA-Plus (PSAP) zip-codes

  ▸ Zip codes claimed by more than one hospital are allocated according to the hospital's ECMAD share

  ▸ Zip codes not claimed by any hospital are assigned to the hospital with the plurality of ECMADs in that zip code

▶ Hospitals are ranked from lowest to highest for TCOC (the lowest values have a score of 1 and the highest values have a score of 46)

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RY 2020 Poor Performing Outlier Hospitals as Determined by ICC & Geographic TCOC Rankings

Hospital Name	ICC Result	ICC Rank	2013-2018 TCOC per Capita Growth Rate	TCOC Rank	Total Rank Points (Low Score is Better)
University of Maryland Shore Medical Center at Chestertown	-23.79%	39	7.16%	20	59
University of Maryland Medical Center	-14.16%	24	11.03%	36	60
University of Maryland St. Joseph Medical Center	-14.06%	22	11.16%	39	61
MedStar Good Samaritan Hospital	-18.94%	29	12.93%	44	73
Bon Secours Hospital	-25.54%	42	10.31%	31	73
MedStar Montgomery Medical Center	-23.14%	37	12.57%	42	79
University of Maryland Rehabilitation & Orthopedic Institute	-26.31%	43	11.03%	36	79
Union Hospital of Cecil County	-31.05%	46	10.94%	35	81
University of Maryland Medical Center Midtown Campus	-26.32%	44	12.64%	43	87

▸ Two Hospitals already have preexisting arrangements with the HSCRC to deal with their ICC and TCOC inefficiency:
  ‣ Bon Secours
  ‣ Midtown Hospital

▸ Three Hospitals were removed because they did not exceed 1.21 times the ICC cost standard:
  ‣ University of Maryland Medical Center
  ‣ University of Maryland St. Joseph Medical Center
  ‣ Medstar Good Samaritan Hospital

Calculation for Withholding RY 2020 Medicare Update Factor for Outlier Hospitals

Hospital Name	RY 2019 Permanent Revenue	Utilized Medicare FFS %	Medicare Portion of RY 2019 Permanent Revenue Base	Update Factor	Potential Cap on Withhold per Efficiency Matrix	Mid-Year Implementation
Algebra	A	B	C=A*B	D	E=D*C	F=E/2
University of Maryland Shore Medical Center at Chestertown	$53,535,766	54%	$28,741,656	3.35%	$962,845	$481,423
University of Maryland Rehabilitation & Orthopedic Institute	$120,383,835	32%	$39,032,073	3.35%	$1,307,574	$653,787
Montgomery General Hospital	$176,329,979	46%	$81,160,559	3.35%	$2,718,879	$1,359,439
Union Hospital of Cecil County	$160,537,054	39%	$63,405,655	3.35%	$2,124,089	$1,062,045
Total	$510,786,634	42%	$212,339,943		$7,113,388	$3,556,694

▸ Staff will recommend that this process continue in future rate years with additional total cost of care benchmark analyses (e.g. Commerical) so outlier hospitals can more quickly be brought in line with their peers.

Process for GBR Enhancements

▶ For hospitals to receive a GBR enhancement outside of a full rate review, they must be:

- ▶ In the best quintile of performance as evaluated in the Efficiency Matrix;
- ▶ Better than one standard deviation from average Quality and Volume Adjusted ICC performance (1.06 times the ICC standard) and;
- ▶ Must submit a formal request to the HSCRC that outlines either:
  - ▶ a) how a previous methodology disadvantaged the hospital; or
  - ▶ b) a spending proposal that aligns with the aims of the Total Cost of Care Model.

▶ All revenue enhancements will be capped by the funding made available by the set aside in the Annual Update Factor approved by the Commission each year (.1% or ~$17 million in RY 2020) and the funding derived from withholding inflation from poor performing outliers.

- ▶ This cap does not apply to hospitals that file full rate applications

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Next Steps

▸ Bring Draft Recommendation in March with Medicare and Commercial benchmarks

▸ Bring Draft Recommendation in April for Full Rate Application Methodology

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Appendices

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Example of ICC Calculation

		A1	B1	C1	D1=A1-B1-C1	E1	F1=E1Tot/D1Tot
		Permanent Revenue	Adjustments for Social Goods and Costs Beyond a Hospital's Control	Profit	Adjusted Revenue	ECMADS	Standard Cost Per Case
	Hospital A	$100	$10	$6	$84	10	
	Hospital B	$80	$5	$5	$70	7	
Step 1	Hospital C	$90	$5	$3	$82	10	
	Hospital D	$100	$15	$8	$77	20	
	Peer Group Total	$370	$35	$22	$313	47	$7

		A2=F1	B2=A2*98%	C2	D2=B1	E2=B2*C2+D2	F2=D2/A1-1
		Standard Cost Per Case	Productivity Adjustment (2%)	ECMADS	Adjustments for Social Goods and Costs Beyond a Hospital's Control	Hospital Approved Revenue	Position Relative to ICC Standard
	Hospital A	$7	$6.86	10	$10	$79	-21%
Step 2	Hospital B	$7	$6.86	7	$5	$53	-34%
	Hospital C	$7	$6.86	10	$5	$74	-18%
	Hospital D	$7	$6.86	15	$15	$118	18%

Permanent Revenue — Markup — Profit — Direct Medical Education & Trauma Center Costs

— Labor Market Adjustment — Indirect Medical Education ÷ Equivalent Case Mix Adjusted Discharges = Standard Cost per Case
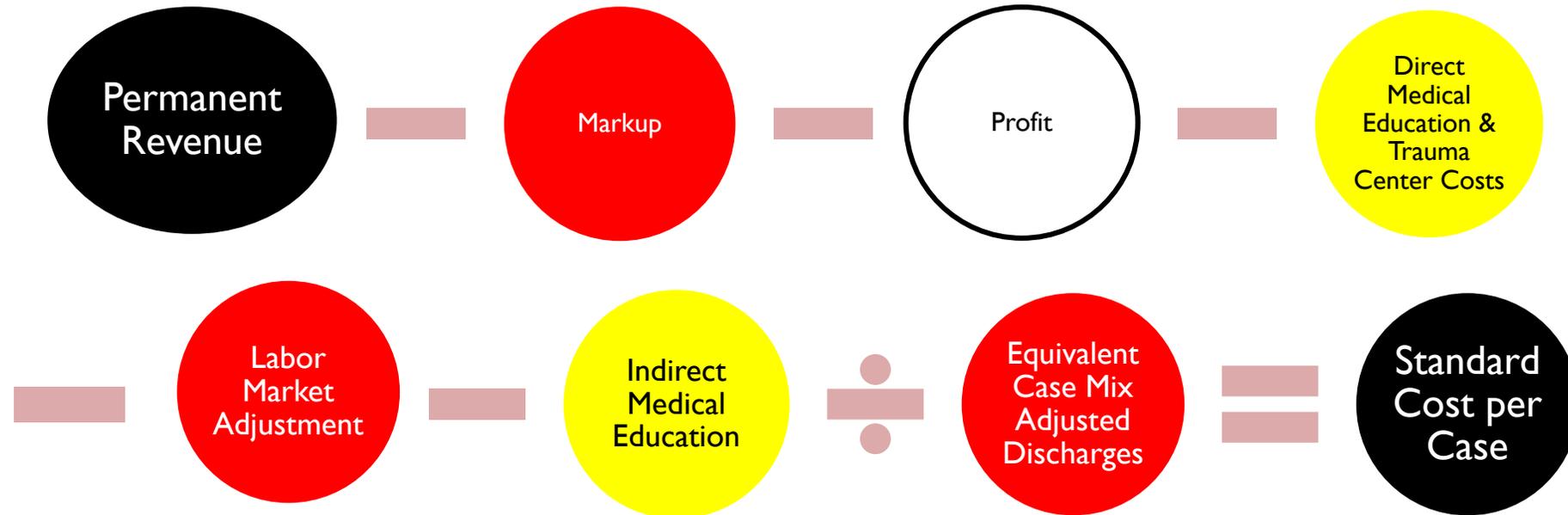
Calculated at hospital level but aggregated by peer group to determine Peer Group Standard Cost per Case

Peer Group Standard Cost per Case − Peer Group Productivity Adjustment (Excess Capacity) × Equivalent Case Mix Adjusted Discharges + Indirect Medical Education

Avoided PAU + Avoided General Utilization or Increased PAU − Increased General Utilization

+ Labor Market Adjustment + Direct Medical Education & Trauma Center Costs + Markup = Hospital Approved Revenue
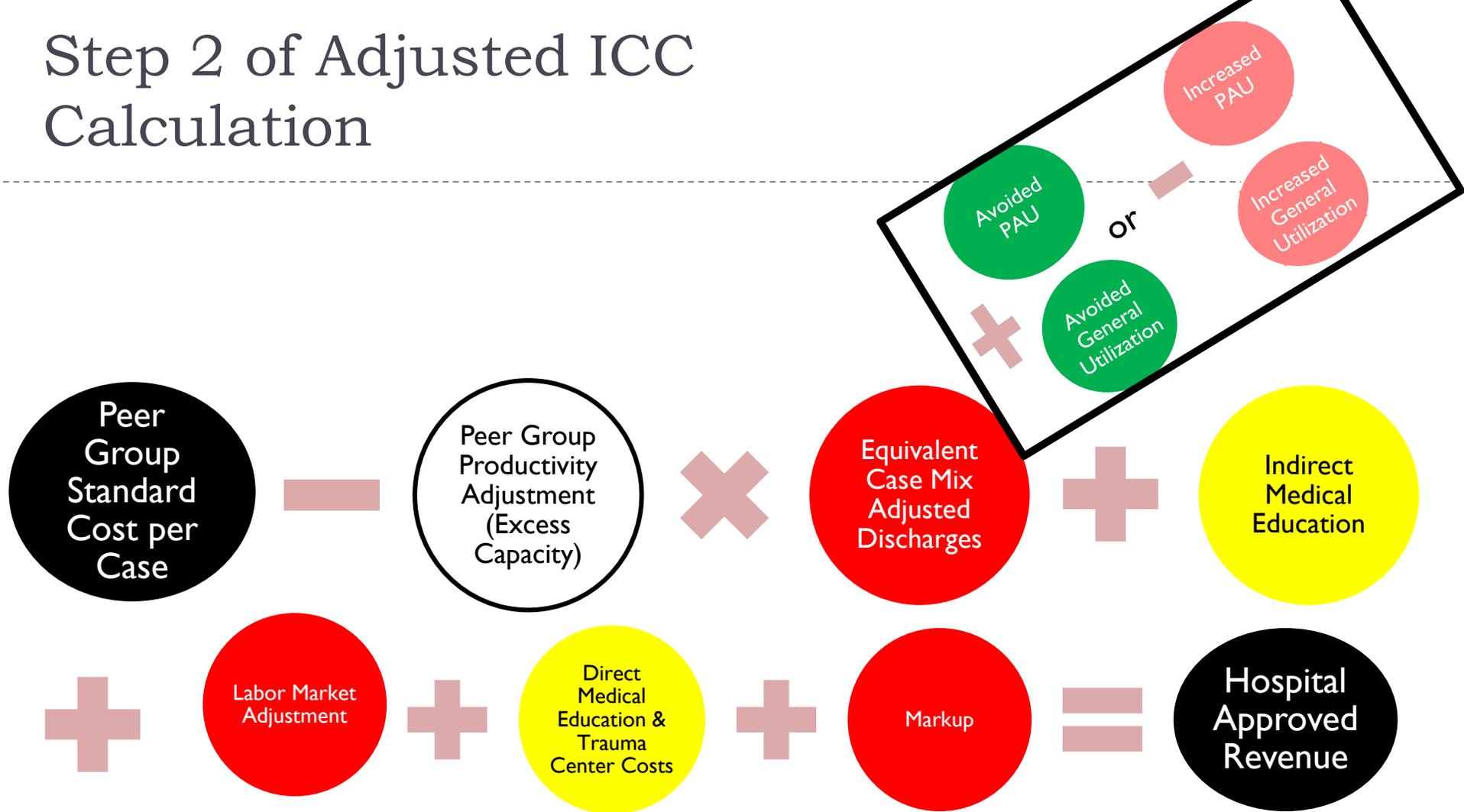
Following the Peer Group Productivity Adjustment, revenue is added back for each individual hospital.

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Update on Benchmarking to Payment Models Workgroup

Outline

1. Benchmarking Overview
2. Process Review
3. Outcomes by County
4. Open Items
5. Sample County Analysis

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Benchmarking Overview

▸ Goal: Create a tool to allow the incorporation of TCOC benchmarks into appropriate methodologies at a granular level and guide the State on areas of strength and weakness in terms of cost and quality

▸ Focus on Medicare FFS and Commercial under 65, will explore Medicaid and other areas but likely to be limited to these two benchmarks in the next year

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Model Goals

▸ In 2019, CMS and Maryland set out to broaden the model to encompass system-wide goals in the new 10-Year Total Cost of Care Model, with objectives to:

  ▸ Demonstrate that Maryland could control growth in spending and improve the health of the population, moving from a hospital per capita model to a system-wide model

  ▸ Create a permanent model that met spending and health improvement goals in per capita model

▸ Achieving these goals requires both

  ▸ Reducing Medicare total spending per capita in line with nearby comparable states to meet savings target

▸ And

  ▸ Creating a per capita all-payer system that is **more** efficient and effective than other national models

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Process Review

Select and Validate Data Source

- **MC**: County Level, 100% Maryland claims, 5% US Sample (A+B)

- **CO**: MSA Level, APCD for Maryland, Milliman CSHD (See appendix 2) for national

- Remove estimated medical education costs from all data

Narrow to relevant comps based on population and density

- Limit to reasonable matches

Match based on demographic characteristics

- **MC**: Median Income, Deep Poverty %, Regional Price Parity, Hierarchical Conditioning Categories (HCC)

- **CO**: Same except add Government payer, share and Health and Human Services (HHS) Platinum risk scores instead of HCC (HCC Medicare only)

Calculate benchmark values

- Simple average of benchmarks at MSA/County level.

- **MC**: 20 comps for 5 large urban counties, 50 for rest

- **CO**: 20 comps for all MSA'S

Normalize benchmark values

IN PROCESS

- Regression analysis to adjust for remaining variation

- Use regression to map benchmarks to hospital level
    - **MC**: County to MPA/PSAP
    - **CO**: MSA to PSAP

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Benchmarking Process – Example, Anne Arundel

Select and Validate Data Source

- **MC**: County Level, 100% Maryland claims, 5% US Sample (A+B)

- **CO**: MSA Level, APCD for Maryland, Milliman CSHD (See Appendix 2) for national

- Remove estimated medical education costs from all data

Narrow to relevant comps based on population and density

- **MC**
  - Anne Arundel is a 1 on the Urban/Rural scale, meaning most urban. There are 432 possible matches nationally.
  - Further sub-divided this bucket by density and size. Anne Arundel is still in the largest, most dense group, as are Montgomery, Prince Georges and Baltimore City and County. There are 78 possible matches nationally.
- **CO**
  - Anne Arundel is included in the Baltimore MSA, which is matched to national MSAs with similar or larger population and density

Match based on demographic characteristics

- **MC**: Anne Arundel will select the 20 counties from the pool of 78 in the prior step that are the closest match to it on the demographic characteristics listed on the prior slide.

- **CO**: Baltimore MSA will select the 20 MSAs from the pool in the prior step that are the closest match to it on the demographic characteristics on the prior slide.

Calculate benchmark values

- **MC**: Benchmark values are the simple average of the 20 best match counties

- **CO**: Benchmark values are the simple average of the 20 best match MSAs.

Normalize benchmark values

IN PROCESS

- Demographic values and TCOC will be calculated for the AAMC PSAP for both MC and CO
- MC Anne Arundel County TCOC Benchmarks and CO Baltimore MSA TCOC Benchmarks will be adjusted to match the AAMC PSAP demographics using a regression analysis.
- AAMC TCOC will be evaluated against the regression adjusted values.

Example: MSAs making up Baltimore CO Benchmark

▶ MSAs matched to Baltimore[1]

MSA	MSA Name	APCD/CHSD Medical Member Months	Platinum Risk Score	MD Normalized Risk Score	Regional Price Parity	Deep Poverty Percent	Median Income	Teaching Days Percent	Benefit Levels Adjustment Factor
Baltimore Area (MD8)		**9,562,063**	**1.38**	**1.02**	**107.16**	**4.8%**	**$81,756**	**46.4%**	**1.01**
29404	Lake County-Kenosha County, IL-WI	1,813,498	1.31	0.97	103.80	4.4%	$77,736	27.5%	1.01
15764	Cambridge-Newton-Framingham, MA	3,340,026	1.34	0.99	111.10	4.3%	$86,515	33.0%	1.03
25540	Hartford-West Hartford-East Hartford, CT	3,007,043	1.35	1.00	101.50	5.0%	$72,945	56.2%	1.00
35300	New Haven-Milford, CT	1,719,964	1.32	0.98	111.40	6.0%	$64,872	73.2%	1.01
14454	Boston, MA	2,311,167	1.33	0.98	111.10	6.2%	$78,637	37.4%	1.03
49340	Worcester, MA-CT	3,576,593	1.39	1.03	103.60	5.0%	$68,469	42.0%	1.02
26420	Houston-The Woodlands-Sugar Land, TX	19,534,495	1.33	0.99	101.60	6.1%	$64,297	18.6%	1.00
23104	Fort Worth-Arlington, TX	6,228,946	1.43	1.06	100.20	5.7%	$62,638	12.1%	1.01
39300	Providence-Warwick, RI-MA	1,357,005	1.37	1.02	99.70	5.7%	$61,493	38.6%	1.01
16974	Chicago-Naperville-Arlington Heights, IL	8,623,183	1.28	0.95	103.80	6.3%	$66,154	35.1%	1.00
33460	Minneapolis-St. Paul-Bloomington, MN-WI	8,824,110	1.22	0.90	102.30	4.3%	$74,430	19.9%	1.01
42644	Seattle-Bellevue-Everett, WA	13,809,792	1.22	0.90	110.50	5.0%	$82,088	15.8%	1.01
15804	Camden, NJ	4,959,924	1.45	1.07	105.90	4.6%	$75,256	37.8%	1.04
19124	Dallas-Plano-Irving, TX	17,981,961	1.31	0.97	100.20	5.5%	$66,548	16.3%	1.00
35084	Newark, NJ-PA	6,396,247	1.39	1.03	122.00	4.6%	$81,851	45.8%	1.01
22744	Fort Lauderdale-Pompano Beach-Deerfield Beach	4,636,612	1.49	1.11	107.60	6.3%	$54,895	8.8%	1.01
37100	Oxnard-Thousand Oaks-Ventura, CA	755,993	1.19	0.88	117.20	4.0%	$81,972	13.7%	1.01
12060	Atlanta-Sandy Springs-Roswell, GA	8,943,814	1.28	0.95	96.30	6.7%	$62,781	12.9%	1.00
14860	Bridgeport-Stamford-Norwalk, CT	2,492,452	1.28	0.95	120.10	4.0%	$89,773	76.4%	1.01
47664	Warren-Troy-Farmington Hills, MI	4,481,543	1.45	1.08	95.90	4.4%	$66,738	60.7%	1.00

1. See Appendix 2 for data use limitations and additional background on commercial analysis. Other MSAs and Medicare counties comparison to be provided in supplemental data file

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Example: Calculation of CO Demographic Adjustment

▸ Table shows demographics for Baltimore MSA and benchmark used in commercial demographic regression adjustment[1]

County/MD Region	County/MD Region Description	APCD/CHSD Medical Member Months [1]	Platinum Risk Score [2]	MD Average Platinum Risk Score [3]	MD Normalized Risk Score [4]=[2]/[3]	Total Population [5]	Population Density [6]	Regional Price Parity [7]	Deep Poverty Percent [8]	Median Income [9]	Benefit Levels Adjustment Factor [11]	Teaching Days Percent [12]
				Regression Estimated Coefficient					1,471.8 (p=0.016)	2.6 (p=0.000)	778.0 (p=0.101)	5.9 (p=0.863)
MD8 (Baltimore Area)	Baltimore, Columbia, Towson + Cecil	9,562,063	1.38	1.35	1.02	2,845,395	1,105	107	4.8%	$81,756	1.01	46.4%
24003	Anne Arundel County, MD	2,152,966	1.32	1.35	0.97	564,600	1,361	107	3.0%	$94,502	1.01	28.1%
24005	Baltimore County, MD	2,577,788	1.45	1.35	1.07	828,637	1,385	107	4.5%	$71,810	1.01	50.7%
24013	Carroll County, MD	726,062	1.29	1.35	0.95	167,319	374	107	2.7%	$90,510	1.02	26.2%
24015	Cecil	264,975	1.36	1.35	1.01	102,416	296	106	4.6%	$70,516	1.01	37.2%
24025	Harford County, MD	991,630	1.33	1.35	0.99	250,132	572	107	4.0%	$83,445	1.02	27.3%
24027	Howard County, MD	1,351,615	1.20	1.35	0.89	312,495	1,246	107	2.5%	$115,576	1.02	28.7%
24510	Baltimore City, MD	1,497,027	1.61	1.35	1.19	619,796	7,657	107	11.5%	$46,641	1.00	66.5%
Benchmark		6,239,718	1.34	1.35	0.99	2,651,428	1,050	106	5.2%	$72,004	1.01	34.1%
Ratio (MD/BM)		1.53	1.03	1.00	1.03	1.07	1.05	1.01	0.92	1.14	1.00	1.36

▸ Similar process will be used to adjust benchmark values for Medicare and for individual hospital PSAs (or MPA on Medicare)

1. See Appendix 2 for data use limitations and additional background on commercial analysis. Other MSAs to be provided in supplemental data file

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Example: Application of CO Demographic Adjustment

▸ Risk adjustment and demographic regression values are applied to create a predicted Total Cost of Care. Maryland and benchmark values are then restated in terms of the average Maryland value[1]

County/MD Region	County/MD Region Description	PMPM Allowed Total Dollars					
		Unadjusted PMPM Allowed Total $ [13]	Risk Score Adjusted PMPM Allowed Total $ [14]=[13]/[4]	Predicted (Regression) PMPM Allowed Total $ [15]	O/E Ratio [16]=[14]/[15]	Avg.MD PMPM Allowed Total $ [17]	Regression Adjusted PMPM Total Allowed $ [18]=[16]X[17]
MD8 (Baltimore Area)	Baltimore, Columbia, Towson + Cecil	$331	$324	$412	0.79	$330	$259
24003	Anne Arundel County, MD	$309	$317	$418	0.76	$330	$250
24005	Baltimore County, MD	$363	$339	$380	0.89	$330	$294
24013	Carroll County, MD	$318	$334	$409	0.81	$330	$269
24015	Cecil	$345	$342	$381	0.90	$330	$296
24025	Harford County, MD	$317	$321	$411	0.78	$330	$258
24027	Howard County, MD	$288	$324	$471	0.69	$330	$227
24510	Baltimore City, MD	$361	$303	$410	0.74	$330	$243
Benchmark		$385	$390	$393	0.99	$330	$327
Ratio (MD/BM)		*0.86*	*0.83*	*1.05*	*0.79*	*1.00*	*0.79*

▸ Similar process will be used to adjust benchmark values for Medicare and for individual hospital PSA (or MPA on Medicare)

1. See Appendix 2 for data use limitations and additional background on commercial analysis. Other MSAs to be provided in supplemental data file

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County Level Outcomes

Preliminary County Level Outcomes[1]

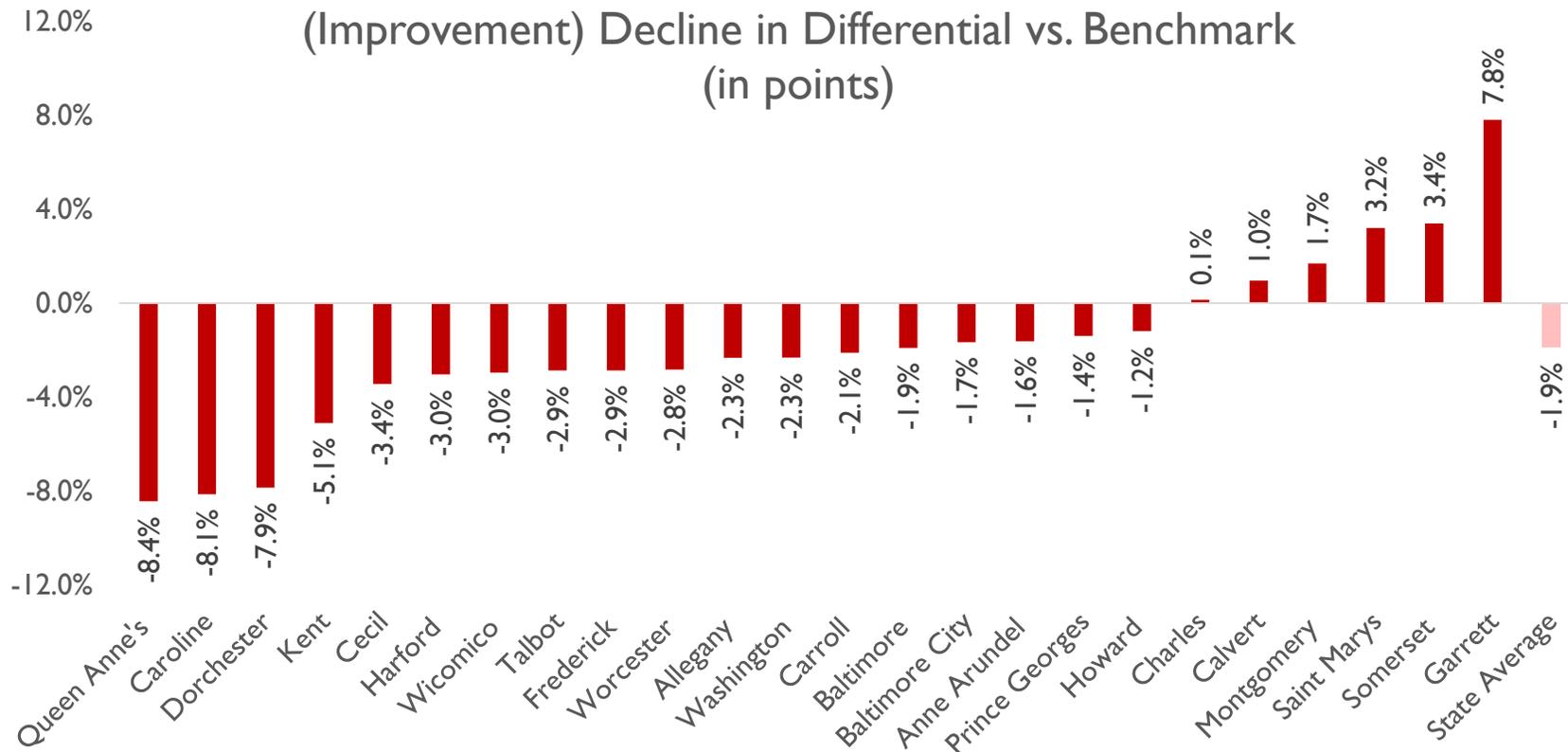|	CY 2017 Commercial % Over (Under) Benchmark Demographic-Adjusted Total Cost of Care	CY2018 Medicare % Over (Under) Benchmark Risk-Adjusted Total Cost of Care	Commercial Relative Rank	Medicare Relative Rank		CY 2017 Commercial % Over (Under) Benchmark Demographic-Adjusted Total Cost of Care	CY2018 Medicare % Over (Under) Benchmark Risk-Adjusted Total Cost of Care	Commercial Relative Rank	Medicare Relative Rank
24027 Howard	-30.7%	8.6%	1 🟢	4 🟢	24045 Wicomico	-22.5%	22.6%	6 🟢	20 🔴
24003 Anne Arundel	-23.6%	8.4%	5 🟢	3 🟢	24013 Carroll	-18.0%	19.0%	11 🟢	17 🟡
24009 Calvert	-25.1%	9.1%	4 🟢	5 🟢	24021 Frederick	-13.5%	12.7%	19 🔴	10 🟢
24031 Montgomery	-20.9%	1.9%	9 🟡	2 🟢	24025 Harford	-21.2%	23.4%	8 🟢	22 🔴
24033 Prince Georges	-17.3%	-0.9%	13 🟡	1 🟢	24043 Washington	-14.9%	15.4%	17 🟡	14 🟡
24035 Queen Anne's	-21.4%	11.4%	7 🟢	7 🟢	24023 Garrett	-0.2%	11.4%	24 🔴	8 🟢
24510 Baltimore City	-25.7%	15.0%	3 🟢	13 🟡	24029 Kent	-12.4%	15.9%	20 🔴	16 🟡
24011 Caroline	-17.3%	10.0%	14 🟡	6 🟢	24001 Allegany	-15.2%	23.3%	16 🟡	21 🔴
24039 Somerset	-29.1%	19.7%	2 🟢	18 🔴	24041 Talbot	-6.3%	15.7%	23 🔴	15 🟡
24019 Dorchester	-17.7%	11.8%	12 🟡	9 🟡	24015 Cecil	-9.7%	19.9%	22 🔴	19 🔴
24017 Charles	-19.8%	13.8%	10 🟡	12 🟡	24047 Worcester	-14.4%	26.0%	18 🟡	24 🔴
24037 Saint Marys	-15.5%	13.3%	15 🟡	11 🟡	24005 Baltimore County	-10.2%	24.8%	21 🔴	23 🔴

▸ Amounts do not reflect:
  ▸ Commercial 2018 data
  ▸ Normalizing Medicare Demographics
  ▸ Updated HCC Scores from CMS and refined Medical Education strip
  ▸ Commercial Medical Education Strip
▸ Anticipate these modifications will collapse the relative range of values but not change the rankings dramatically.

1. See Appendix 2 for data use limitations and additional background on commercial analysis.

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Preliminary County Level Outcomes, Medicare Change '17 to '18

▶ **Maryland generally improved against the Medicare benchmarks from 2017 to 2018, consistent with State results against the nation.**

(Improvement) Decline in Differential vs. Benchmark (in points)

County	Value
Queen Anne's	-8.4%
Caroline	-8.1%
Dorchester	-7.9%
Kent	-5.1%
Cecil	-3.4%
Harford	-3.0%
Wicomico	-3.0%
Talbot	-2.9%
Frederick	-2.9%
Worcester	-2.8%
Allegany	-2.3%
Washington	-2.3%
Carroll	-2.1%
Baltimore	-1.9%
Baltimore City	-1.7%
Anne Arundel	-1.6%
Prince Georges	-1.4%
Howard	-1.2%
Charles	0.1%
Calvert	1.0%
Montgomery	1.7%
Saint Marys	3.2%
Somerset	3.4%
Garrett	7.8%
State Average	-1.9%

▶ For example, Queen Anne's county in 2018 is 11.4% above the benchmark (see prior slide), from 2017 to 2018 this graphic shows an 8.4 point improvement meaning Queen Anne's was 19.8% above benchmark in 2017.

▶ Larger counties have smaller variations.

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MC Sample County Cost Comparison – Anne Arundel[1]

Cost Values

2018	Anne Arundel	Benchmark	Above (Below) Benchmark
Total PBPY IP Cost	$4,183	$3,808	9.8%
Total PBPY OPPS	$2,026	$1,813	11.7%
Total PBPY Post Acute Cost	$1,384	$1,826	-24.2%
Total PBPY Other OP	$363	$413	-12.1%
Total PBPY Professional Cost	$3,816	$3,659	4.3%
Total PBPY Cost	$11,772	$11,519	2.2%
Less: Education Costs	-$218	-$200	9.0%
Net PBPY Costs	$11,555	$11,320	2.1%
Total PBPY Cost, Risk Adj.[1]	$11,555	$10,663	8.4%
Total PBPY Cost, Demographic Adj.[1]	TBD	TBD	

IP and OP Metrics

2018	Anne Arundel	Benchmark	Above (Below) Benchmark
IP Admissions 1000	265	299	-11.4%
LOS	5.5	5.6	-2.8%
Cost per IP Day	$2,895	$2,268	27.6%
SNF Days per 1000	1,560	1,753	-11.0%
ED Visit per 1000	430	396	8.6%
PCP Visits per 1000	5,816	5,471	6.3%
Specialist Visits per 1000	9,524	10,463	-9.0%
Obs Hours per 1000	2,068	1,530	35.2%

‣ **Amounts do not reflect:**

- ‣ Demographic Normalization
- ‣ CMS HCC Scores and refined Medical Education strip

1. Other MSAs to be provided in supplemental data file

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CO Sample County Cost Comparison – Anne Arundel[1]

Commercial benchmarking contractor stated all values using a standard RVU methodology (similar to ECMADs). Therefore unit costs and utilization can be compared across settings on the same basis.

2017	Anne Arundel	Benchmark	Above (Below) Benchmark
Inpatient Cost per RVU	$66.83	$90.43	-26.1%
Inpatient RVUs PMPY	10.81	11.57	-6.6%
Total Inpatient PMPY	$722.29	$1,037.77	-30.4%
Outpatient Cost per RVU	$71.38	$98.19	-27.3%
Outpatient RVUs PMPY	14.45	16.37	-11.7%
Total Outpatient PMPY	$1,031.63	$1,600.32	-35.5%
Professional and Other Cost per RVU	$39.72	$53.02	-25.1%
Professional and Other RVUs PMPY	49.33	37.59	31.2%
Total Professional PMPY	$1,959.59	$1,986.17	-1.3%
Total PMPY	$3,713.51	$4,624.25	-19.7%
Total PMPY Risk Adj.	$3,808.94	$4,685.73	-18.7%
Total PMPY Demographic Adj.	$3,004.18	$3,929.68	-23.6%

▸ Amounts do not reflect:
  ▸ 2018 data
  ▸ Medical Education Strip

1. See Appendix 2 for data use limitations and additional background on commercial analysis. Other MSAs to be provided in supplemental data file

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Next Steps

‣ Data shared as part of this presentation includes only Geography level analytics and not Hospital-Attributed Population analytics.

‣ HSCRC will distribute a file containing county level information as a follow up to this meeting

‣ Open items on Geography analytics

  ‣ Commercial Medical education strip

  ‣ Updates for Medicare calculated HCC scores and refined Medical Education strip

  ‣ Medicare demographic regression

  ‣ Commercial data update to 2018 (data became available in November 2019)

  ‣ Expect these adjustments to collapse variation between high and low cost areas to some degree although overall rankings are unlikely to change materially

‣ Updated Geography analytics and Hospital-Attributed Population analytics available in Feb 2019

‣ Release greater detail on cost variation drivers – Spring 2020

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Appendix 1:
Detail on Benchmark Selection and Calculation

Calculation Detail - Definitions

▸ Geography = County for Medicare, MSA for benchmark commercial

▸ Hospital-Attributed Population = (1) PSAP, Medicare and Commercial or (2) MPA, Medicare only

▸ Medical Education Costs = Costs of medical education as derived from Medicare Cost Report data

▸ Benchmark TCOC = Simple average of the TCOC for all Geographies in the peer group of a Maryland Geography

▸ Risk Adjustment Factor = Hierarchical Condition Category for Medicare, Health and Human Services Platinum Risk Score for Commercial

▸ Risk-Adjusted TCOC Benchmark = benchmark TCOC / benchmark Risk Adjustment Factor x Maryland Risk Adjustment Factor

▸ Demographic-Adjusted Benchmark TCOC = Risk-Adjusted Benchmark TCOC normalized for demographics and benefits (commercial only)

Calculation Process – Geography

(1) Strip out Medical Education Costs from Maryland and Ntational Commercial (APCD) and Medicare (CCW) claims data
- IME calculated using national average IME per intern from ICC converted to per patient day cost using intern counts and total patient days (all payer) on Medicare Cost Report
- DME calculated at a hospital level from cost report data
- Remove IME and DME costs on a per day basis from all Major and Moderate teaching hospitals*

(2) For all Maryland and National Geogrpahies calculate TCOC by excluding Medical Education Costs
- County – Medicare
- MSA - Commercial

(3) Calculate TCOC Benchmark and Benchmark Risk Adjustment Factor
- Simple average of TCOC for selected benchmark Geographies for each Maryland Geography
- Simple average of Risk Adjustment Factor for selected benchmark Geographies for each Maryland Geography

(4) Establish Demographic Regression
- Regression analysis generates adjustment factors to normalize for remaining differences between the demographic values of the Maryland Geography and the demographic values of its benchmark Geographies (see specific factors in Demographic Factors table)
- For Commercial analysis a measure of benefit differentials is also included in the regression

(5) Calculate Benchmark values and Maryland performance
- Calculate Risk-Adjusted TCOC Benchmark for each Maryland Geography
- Calculate Demographic-Adjusted Benchmark TCOC for each Maryland Geography
- Compare Maryland Geography TCOC to Demographic-Adjusted Benchmark TCOC for each payer

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Calculation Process – Hospital-Attributed Population

(1) For all Maryland Hospital Attributed Populations calculate TCOC by excluding Medical Education Costs
- MPA and PSAP for Medicare
- PSAP for Commercial

(2) For all Maryland Hospital Attributed Populations calculate demographic values
- Assign at a beneficiary level where feasible (e.g. risk scores)
- Mapped from relevant geography where not available at a beneficiary level (e.g. everyone in Zip X gets zip's deep poverty)
- See Demographic Factors table for specific mappings

(3) Select a "base" Geography for each hospital
- Geography where hospital is located

(4) Calculate factors to normalize benchmark values for "base" Geography to those of Hospital-Attributed Population
- Use same regression factors determined in Step 4 of Geography process

(5) Calculate Benchmark values and Maryland performance
- Calculate Risk-Adjusted TCOC Benchmark for each Maryland Hospital-Attributed Population
- Calculate Demographic-Adjusted Benchmark TCOC for each Maryland Hospital-Attributed Population
- Compare Maryland Hospital-Attributed Population TCOC to Demographic-Adjusted Benchmark TCOC for each payer

Demographic Factors

	Medicare	Commercial
Factors used in narrowing potential matching populations for each Maryland Geography	Urban/Rural Indicator Population Size Population Density	Population Size Population Density
Factors used in selecting matching national Geographies for each Maryland Geography	HCC Score Deep Poverty % Median Income Regional Price Parity	HHS Platinum Risk Score Deep Poverty % Median Income Regional Price Parity % Spending from Government Payers
Factors used in risk adjusting and normalizing benchmark values to Maryland Geography and Maryland Hospital-Attributed Population (parenthesis indicates level of detail at which value is mapped to a beneficiary)	HCC Score (Beneficiary) Deep Poverty % (Zip) Median Income (Zip) Regional Price Parity (MSA)	HHS Platinum Score (Beneficiary) Deep Poverty % (County) Median Income (County) Benefit Levels (County) % Teaching (County), to be replaced by Medical Education strip

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Appendix 2:
Commercial Data Limitations and Background

2017 Benchmark and Maryland APCD – Milliman Caveats and Limitations

▸ *The 2017 Benchmark and Maryland APCD processed and summarized data have been prepared for the internal use of HSCRC. No portion may be provided to or relied upon by any other party without Milliman's prior written consent. This information is subject to the terms and conditions of the Task Order Agreement (#50209) effective March 1, 2019.*

▸ *This information is intended to be used to benchmark Maryland's CY 2017 commercial cost and utilization for medical services. This information may not be appropriate for other purposes.*

▸ *In preparation of our analysis, we relied upon the accuracy of data and information provided to us by HSCRC, CMS, and our data partners. We have not audited this information, although we have reviewed it for reasonableness. If the underlying data or information is inaccurate or incomplete, the results of our analysis may likewise be inaccurate or incomplete.*

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2017 Commercial Benchmark Data Source

▸ Milliman's 2017 benchmark data is sourced from multiple insurance companies, TPAs, and large employers across the nation. Milliman processes eligibility and detailed claims information and calculate additional metrics such as risk scores and relative value units.

   ▸ Benchmarks are created by the Metropolitan Statistical Area (MSA) of the member.

   ▸ The data used in this analysis is limited to commercially insured members under age 65.

   ▸ Milliman has applied completion factors to the utilization and allowed amounts.

   ▸ This analysis is based on the Milliman 2017 benchmark exhibits dated 11/01/2019.

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Milliman Consolidated Healthcare Services Database (CHSD)

▶ **Milliman CHSD overview:**

  ▸ Approximately 82 million unique lives (102 million including MarketScan)

  ▸ 2010 to 2017

  ▸ One third of employer-sponsored healthcare market

▶ **Value-added fields readily available:**

  ▸ MSA, state

  ▸ Risk scores

  ▸ Service category

  ▸ GlobalRVUs

  ▸ Waste measures

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2017 Maryland Commercial Data Source

▸ **2017 Maryland's All Payer Claims Database (APCD) is used for the 2017 Maryland commercial values. Milliman processed eligibility and detailed claims information and calculated metrics consistent with the 2017 benchmark data.**

  ▸ This data is available at the member county and Metropolitan Statistical Area (MSA).

  ▸ The data used in this analysis is limited to commercial members under age 65.

    ▸ Enrollment and payments were reconciled to each Maryland payers financial reports.

    ▸ Payers with incomplete or invalid APCD submissions were excluded.

  ▸ Milliman calculated and applied completion factors to the allowed amounts.

  ▸ This analysis is based on the Milliman prepared 2017 APCD exhibits dated 08/30/2019.

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GlobalRVUs Overview

Global — All services are assigned RVUs

- Inpatient, outpatient, professional and Rx RVUs
- RVUs are imputed for services that fail to adjudicate

RVUs — Relative Value Units

- Services requiring similar resources have approximately the same RVUs
- RVUs are calibrated to nationwide Medicare

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GlobalRVUs – Utilization Efficiency Analysis

▸ **Risk-adjusted RVUs is a provider efficiency measurement**

   ▸ Risk adjustment accounts for differences in the populations' morbidity

   ▸ RVUs are independent of unit price

▸ **For example:**

	Provider A	Provider B
(1) Risk Score	1.50	1.50
(2) RVUs PMPM (Case-mix & severity adjusted utilization)	45	30
(3) Risk Adjusted RVUs (3) = (2)/(1)	30	20

▸ **Provider B is more efficient than Provider A after normalizing for risk and unit price**

   ▸ Provider B's risk adjusted RVU PMPM is lower value than Provider A.

GlobalRVUs – Separating Efficiency and Unit Price

Primary Care Group	Risk Adjusted Allowed PMPM	Relative to Group A	Risk Adjusted RVUs PMPM	Relative to Group A	Allowed per RVU	Relative to Group A
Area Average	$370.49	1.01	6.16	0.96	$60.11	1.06
Group A	$366.84	1.00	6.44	1.00	$56.95	1.00
Group B	$377.04	1.03	5.87	0.91	$64.18	1.13
Group C	$344.95	0.94	5.90	0.92	$58.45	1.03
Group D	$371.92	1.01	6.04	0.94	$61.56	1.08
Group E	$366.31	1.00	5.91	0.92	$62.00	1.09
Group F	$393.11	1.07	6.44	1.00	$61.05	1.07

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