maryland
health services
cost review commission

Performance Measurement Workgroup

December 16, 2020

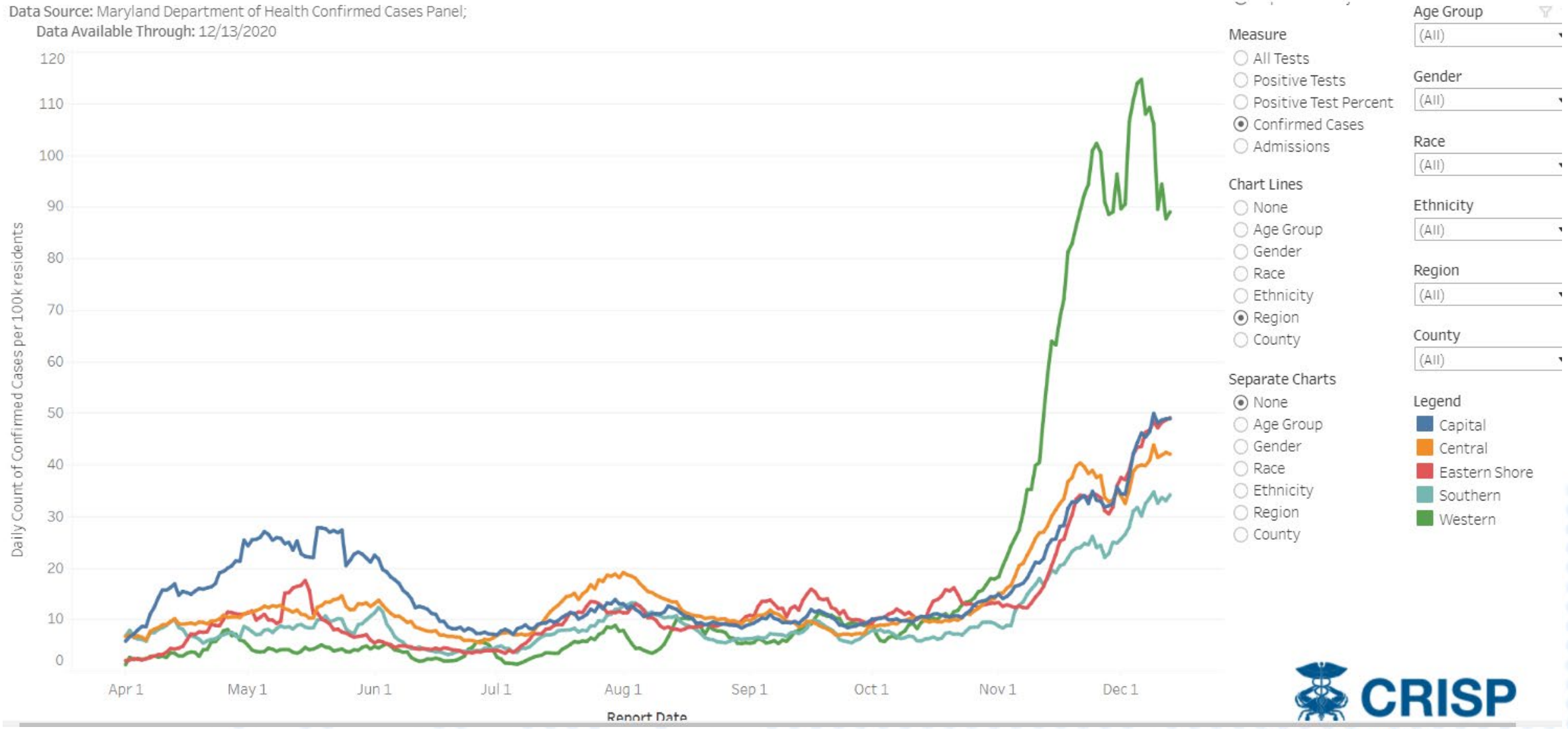
HSCRC Quality Team

Meeting Agenda

1. COVID-19 Public Health Emergency Updates and Potential Analyses (Andi - update data and put in RY22/23 Data Forum slides)
2. Readmission Reduction Incentive Program (RRIP) Program RY 2023
3. Quality Based Reimbursement (QBR) Program Future Development
4. MHAC Palliative Care update
5. Other topics and public comment

COVID-19 PHE Update

Current COVID-19 Confirmed Cases by State Region



Source: CRISP Reporting Services (CRS) COVID-19 Dashboard, as of 11/15/20

RY 2022 and COVID-19 Public Health Emergency

Data Concerns	Options
RY 2022 (CY 2020): Only 6 months of data for CY 2020 may be used: 1. Is 6-months data reliable? Consider fall 2020 surge of COVID-19 cases 1. What about seasonality?	• Use 6-months data, adjust base as needed for seasonality concerns • Merge 2019 and 2020 data together to create 12-month performance period • Use 2019 data or revenue adjustments
Clinical concerns over inclusion of COVID patients (e.g., assignment of respiratory failure as an in-hospital complication)	• Remove COVID patients from all measures of quality in CY 2020 derived from case mix data
Case-mix adjustment concerns: 1. Inclusion of COVID patients when not in normative values 2. Impacts on other DRG/SOI of COVID PHE	• Remove COVID patients from all measures of quality in CY 2020 derived from case mix data • Use 2019 data or revenue adjustments

RY 2023 and COVID-19 Public Health Emergency

Data Concerns	Potential Options
RY 2023 (CY 2021) How do we understand fall/winter 2020/2021 surge of COVID-19 cases and impacts of such issues as: 1. Seasonality 2. Reliability/Validity of smaller volume of eligible discharges? 3. Vaccine and promise of post-COVID?	• Use 6-months data, adjust base as needed for seasonality concerns • Merge pre- or post-COVID time periods together to create 12-month performance period • Use previous revenue adjustments?
Clinical concerns over inclusion of COVID patients – Some have been addressed by 3M; others remain, e.g., increased HAI rates.	• Consider ongoing exclusion in CY 2021 or partial re-integration into quality programs
Case-mix adjustment concerns: 1. Inclusion of COVID patients when not in normative values 2. Impacts on other DRG/SOI of COVID PHE	• Consider applying RY 2022 decision regarding case-mix adjustment

COVID Data Analyses

Data for RY 2022 Revenue Adjustment	Proposed Analyses
Use last six months of CY 2020	Based on historical data (underway with same measurement specifications) ● Assess historical reliability of using 6 month performance assessment as annual proxy ● Assess historical by hospital variance in performance Based on actual CY2020 July-December data ● Assess by hospital variance in last six months of CY 2020 relative to historical variance ● Assess reliability and validity of 6 month final data, e.g. YOY correlation, average performance with/without expected improvement ● Assess whether hospitals with higher proportion of COVID patients or other outliers influence variance or other reliability and validity analyses
Use last 6 months of CY 2020 + prior year 6 month performance period	● Similar analyses as above if 6 months is determined not to be adequate ● May consider improvement factor for COVID time period or revised performance standard
Use historical time period for full 12 month performance period	● Assess historical reliability of performance and revenue adjustments CY16-CY19 ● Consider application of improvement factor to CY 2019 performance or adjustment of performance standards, could involve predictive modeling of 2020 performance based on historical data

Readmission Reduction Incentive Program (RRIP)

Readmission Measure Updates for RY 2023

- No readmission measure changes were proposed in draft policy; CY 2018 will be rerun with APR-DRG grouper version 38

- Commissioner Concern: RY 2022 RRIP policy updated the readmission measure to include unplanned readmissions for cancer patients
  - Adapted logic from NQF endorsed (3188) measure to apply additional clinical logic to determine an unplanned readmission
  - Approved measure restricts to adults (18+) but have applied to all ages because of the all-payer nature of our programs (i.e., the approved cancer measure was for Medicare and thus few pediatric cases)

- Discussion? Thoughts?

RY 2023 RRIP - Proposed Final Recommendations

1. Maintain 30-day, All-Cause Readmission Measure from RY 2022
   a. Update oncology measure per Commissioner Elliott?
2. Maintain **statewide 5-year Improvement target of -7.5 percent from 2018 base period**
   a. **2018-2021 Improvement Target: -4.57%**
3. **Attainment Target - maintain** attainment target methodology as currently exists, whereby hospitals **at or better than the 65th percentile** statewide receive scaled rewards for maintaining low readmission rates
4. For improvement and attainment, set the maximum reward hospitals can receive at 1 percent of inpatient revenue and the maximum penalty at 2 percent of inpatient revenue.
5. Explore **development of an all-payer Excess Days in Acute Care measure** for monitoring

See next section for RRIP disparity recommendations

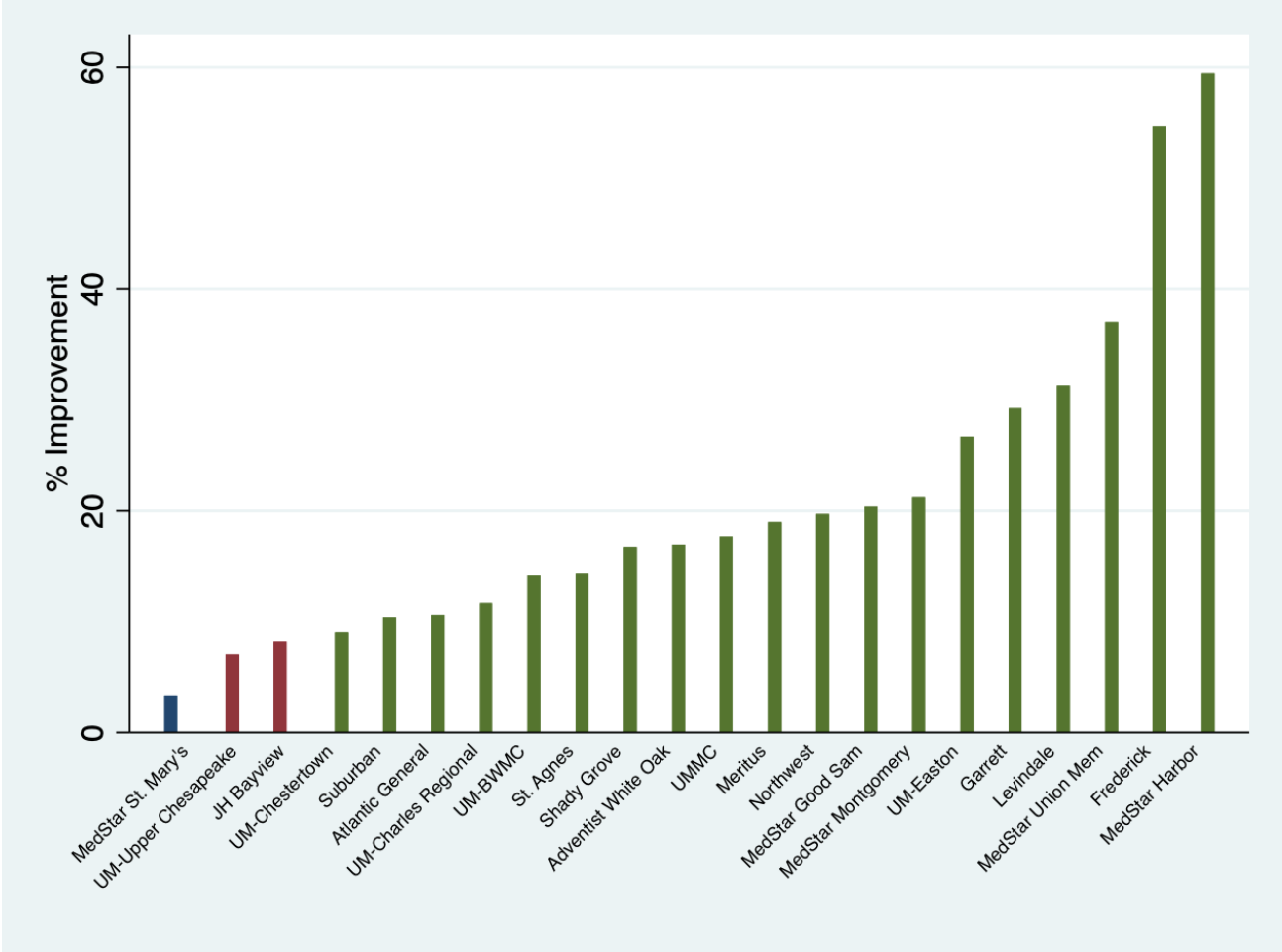
Review: the Disparity (“Gap”) Measure

- Each hospital’s gap is estimated with a multilevel model that accounts for SOI, age, sex, and the hospital’s mean PAI.
- The model estimates the slope of the line connecting readmission rates at various levels of PAI within a hospital.
- A steeper slope means there is a larger disparity between rates for higher-PAI patients and rates for lower-PAI patients
- The model provides appropriate estimates even when a given hospital sees higher- or lower-PAI patients than other hospitals
- Performance = percentage change in gap from base to performance year

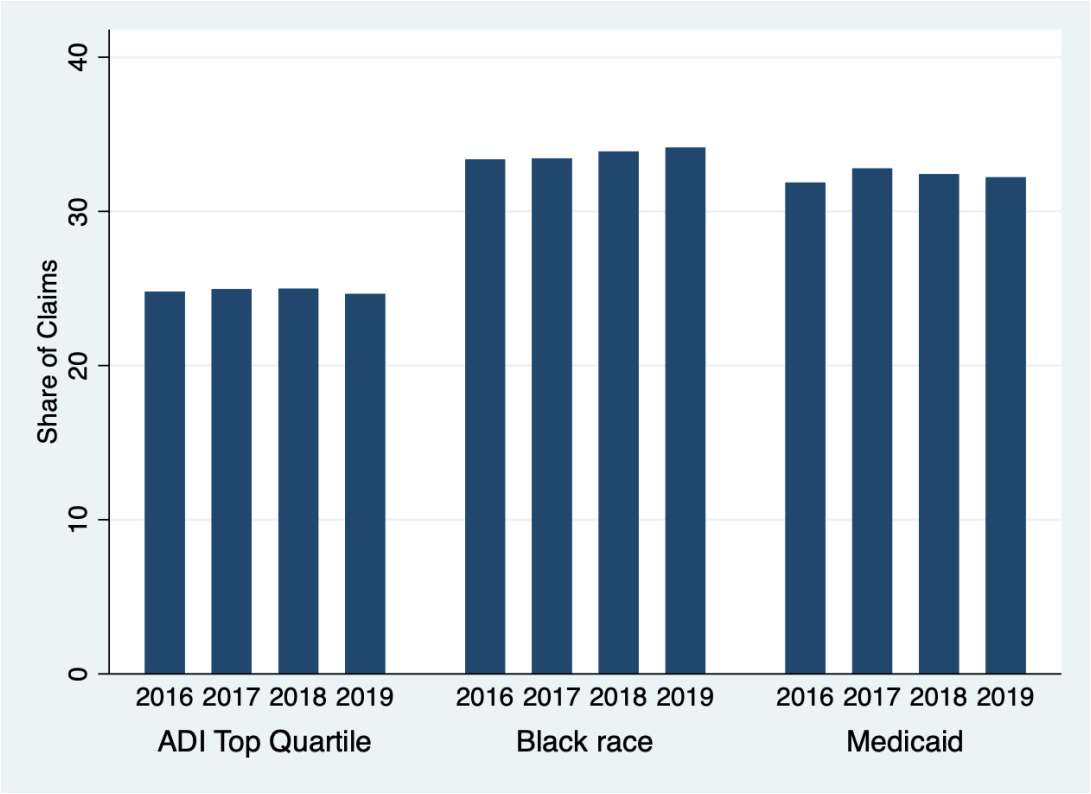
Disparity Measurement

To what degree is improvement on gap measure due to:

- Changes in PAI
- Random variation
- Real progress on disparities

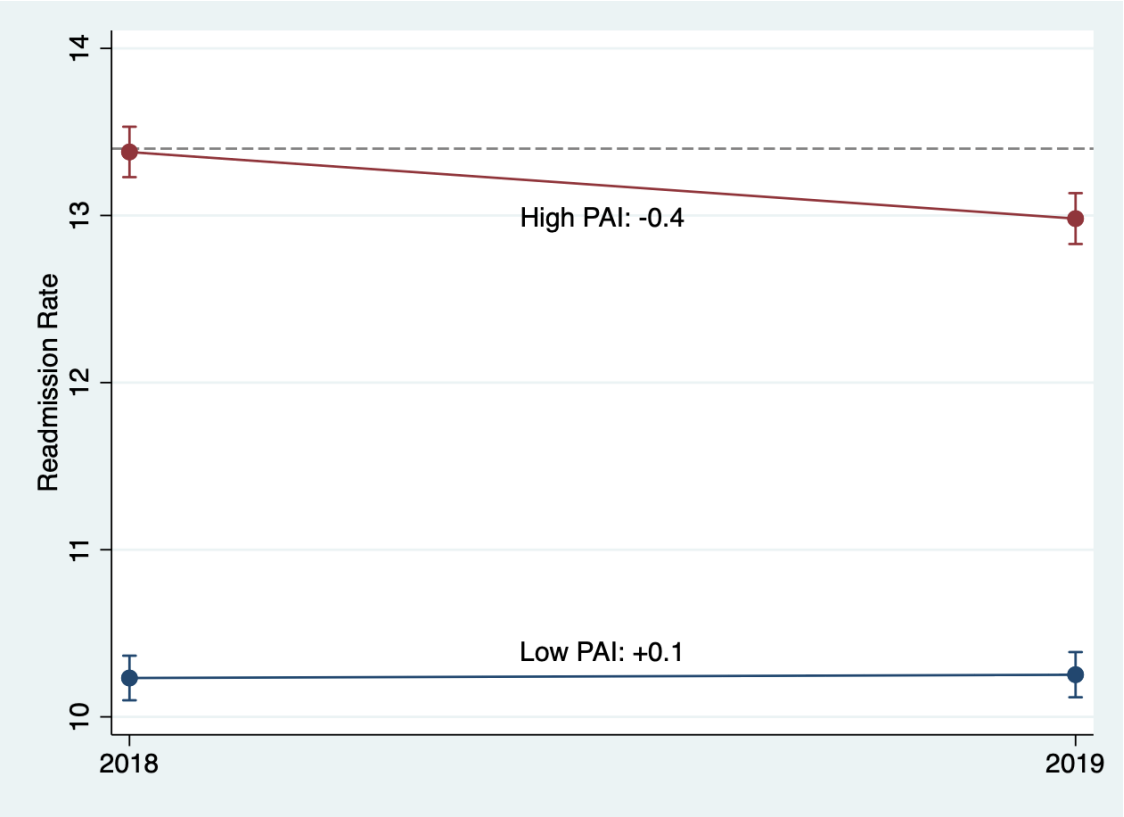


Little Change in PAI Variables, 2016-2019



- PAI is a composite of ADI, Black race, Medicaid status
- Variables are stable over time
- Model adjusts for changes in PAI

State Disparity Trend

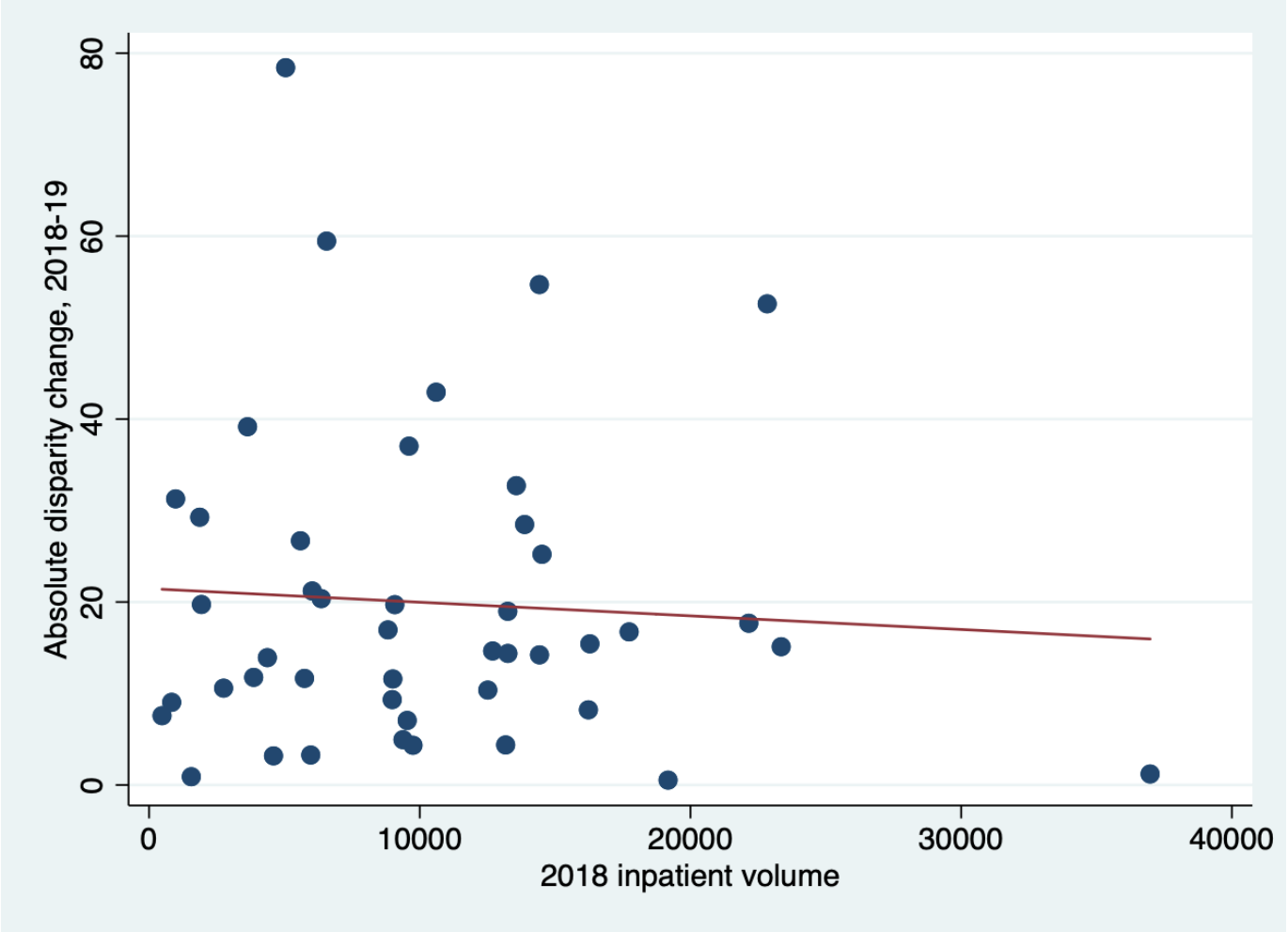


If 2019 improvement for some hospitals was result of noisy data, we might expect to see a flat statewide trend.

Instead, we see a modest but statistically significant reduction in risk for high-PAI patients.

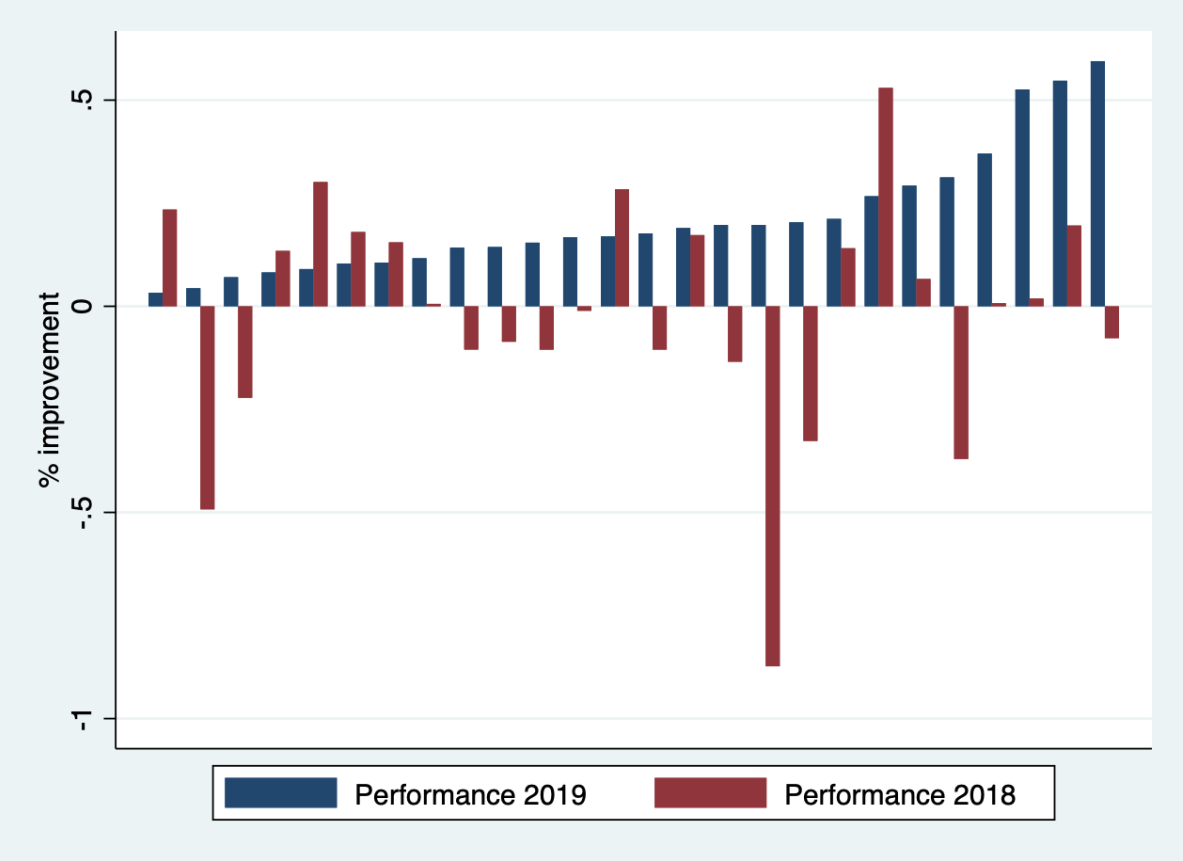
Given the statewide trend, changes at the hospital level are expected, and are likely not the result of noisy data.

Volume and Improvement



Correlation: -.06. Suggests change is not driven by small N.

Multi-year Improvement



- Most hospitals improving in 2019 also improved in 2018
- No evidence of regression to mean
- Overall within-hospital correlation (ICC) is acceptable at ~.65

Disparity Policy Recommendation

- 0.25% annual reward for those on track to achieve **50%** reduction in disparities by model end
  - 22.89% improvement by end of CY21
  - In CY19, 6 hospitals on track to hit this target
- 0.50% annual reward for hospitals on track to achieve **75%** reduction in disparities over the model term
  - 40.54% improvement by end of CY21
  - In CY19, 13 hospitals on track to hit target

Proposed Scaling

IP % Reward	Future Projection	CAGR	Number of Years	CY21 Target
0.25%	-50%	-8.30%	3	-22.89%
0.30%	-55%	-9.50%	3	-25.88%
0.35%	-60%	-10.82%	3	-29.08%
0.40%	-65%	-12.30%	3	-32.54%
0.45%	-70%	-13.97%	3	-36.33%
0.50%	-75%	-15.91%	3	-40.54%

Quality Based Reimbursement (QBR) Program

QBR RY 2023 Final Recommendations

Approved at the November Commission Meeting

1. Continue **Domain Weighting** as follows for determining hospitals' overall performance scores: Person and Community Engagement (PCE) - 50 percent, Safety (NHSN measures) - 35 percent, Clinical Care - 15 percent.
2. Implement the following **measure updates**:
   a. Add an exclusion for academic hospitals or for hospitals with lower case volumes and higher Case Mix Index (CMI) for the hip/knee complication measure.
   b. Add follow-up after acute exacerbations for chronic conditions measure to the PCE Domain.
   c. Add PSI-90 measure to the Safety domain
3. Maintain the **pre-set scale** (0-80 percent with cut-point at 41 percent), and continue to hold 2 percent of inpatient revenue at-risk (rewards and penalties) for the QBR program.
4. Convene a QBR Redesign Work Group in 2021 that targets the CMS concerns and implements identified strategic priorities for quality.
5. Adjust retrospectively the RY 2022 and RY 2023 QBR pay-for-performance program methodology as needed due to COVID-19 Public Health Emergency and report changes to Commissioners.

Mortality Measurement: Potential Future Transition from Inpatient to 30-Day Mortality Measure

Monitor for RY 2023

30-Day Mortality: Presentation of Analytic Findings

December 16, 2020

Overview

- **Goal: develop a 30-day all cause, all payer mortality measure**
  - Capture deaths that occur within 30 days of hospital admission, regardless of where death occurs
- **Use CMS 30-Day Hospital-Wide Mortality Measure as a guide**
  - Currently under development, and not used publicly yet
  - Make necessary adjustments to estimate model on Maryland all-payer data
- **Updates since last month:**
  - Subset analytic file to Medicare FFS population
  - Investigate how maternity cases are handled by measure logic
- **Today's agenda:**
  - Review new output
  - Review reliability and validity testing results

Step 1: Apply inclusion/exclusion criteria

- Apply exclusion criteria

Cases Excluded from Sample	
Transferred in from another acute care facility	Inconsistent vital status (e.g. death date precedes admission date)
Enrolled in hospice during index admission	Left against medical advice
Metastatic cancer	Crush, spinal, brain, or burn injury
Limited ability for survival (based on ICD-10 codes)	Non-Maryland resident (Vital Statistics data not reliable for non-Maryland residents)

- For patients with multiple admissions that qualify for measure inclusion, randomly select one admission for inclusion in sample

Distribution of stays by exclusion criteria (CY 2018)

Initial Sample	Dropped Cases	Resulting Sample
524,373		
Exclusion Criteria	**84,387**	**439,986**
Transferred in from another facility	*11,614*	
Age > 95	*3,634*	
Hospice enrollment at time of admission	*1,174*	
Metastatic cancer	*27,316*	
Limited ability to affect survival	*405*	
Inconsistent vital status	*5*	
AMA	*8,189*	
Crush, spinal, brain, or burn injury	*3,488*	
Non-Maryland resident	*34,529*	
Random Exclusion	**119,092**	**320,894**
Additional Dropped Cases	**62,424**	**258,470**
No service line assigned	*59,159*	
APR-DRG cell size < 20	*3,265*	
Final Sample for Model		**258,470**

Step 2: Assign stays to a service line

- **First, determine if a major surgical procedure was performed**
  - If yes, then assign stay to the "surgical" cohort
  - If no, then assign stay to the "non-surgical" cohort
- **Second, assign stays to a service line within non-surgical and surgical cohorts**
  - Non-surgical cohort: assignment based on principle diagnosis
  - Surgical cohort: assignment based on principle procedure

Non-surgical service lines	
Cancer	Orthopedics
Cardiac	Pulmonary
Gastrointestinal	Renal
Infectious disease	Other conditions
Neurology	

Surgical service lines
Cancer
Cardiothoracic
General
Neurosurgery
Orthopedic
Other

Distribution of stays by service line (CY 2018)

Non-Surgical	# of Stays	# of Deaths	Unadjusted Mortality Rate	CMS Unadjusted Mortality Rate*
Cancer	1,401	141	10.06%	14.60%
Cardiac	18,604	708	3.81%	6.50%
Gastrointestinal	18,901	412	2.18%	4.90%
Infectious Disease	31,490	2,655	8.43%	13.00%
Neurology	14,173	865	6.10%	8.00%
Orthopedics	5807	168	2.89%	4.90%
Pulmonary	25,332	1,365	5.39%	9.50%
Renal	17,440	857	4.91%	8.80%
Other Conditions	34,080	984	2.89%	5.60%
Subtotal	**167,228**	**8,155**	**4.88%**	**8.28%**
Surgical	**# of Stays**	**# of Deaths**	**Unadjusted Mortality Rate**	**CMS Unadjusted Mortality Rate**
Cancer	3,408	28	0.82%	2.30%
Cardiothoracic	4,215	196	4.65%	6.40%
General	16,175	264	1.63%	6.60%
Neurosurgery	1,469	89	6.06%	3.00%
Orthopedic	31,277	222	0.71%	1.50%
Other	34,698	204	0.59%	4.10%
Subtotal	**91,242**	**1,003**	**1.10%**	**3.22%**
GRAND TOTAL	**258,470**	**9,158**	**3.54%**	**6.77%**

Mathematica

*CMS numbers taken from 2019 QualityNet Conference presentation by Yale/CORE

Results for Maryland Medicare FFS population

Non-Surgical	# of Stays	# of Deaths	Unadjusted Mortality Rate	CMS Unadjusted Mortality Rate*
Cancer	495	88	17.78%	14.60%
Cardiac	8,661	461	5.32%	6.50%
Gastrointestinal	7,175	283	3.94%	4.90%
Infectious Disease	13,386	1,774	13.25%	13.00%
Neurology	6,542	605	9.25%	8.00%
Orthopedics	3,171	127	4.01%	4.90%
Pulmonary	11,030	1,015	9.20%	9.50%
Renal	8,999	651	7.23%	8.80%
Other Conditions	10,479	519	4.95%	5.60%
Subtotal	**69,938**	**5,523**	**7.90%**	**8.28%**
Surgical	**# of Stays**	**# of Deaths**	**Unadjusted Mortality Rate**	**CMS Unadjusted Mortality Rate**
Cancer	1,016	18	1.77%	2.30%
Cardiothoracic	1,603	74	4.62%	6.40%
General	3,060	144	4.71%	6.60%
Neurosurgery	378	42	11.11%	3.00%
Orthopedic	12,918	159	1.23%	1.50%
Other	2,396	103	4.30%	4.10%
Subtotal	**21,371**	**540**	**2.53%**	**3.22%**
GRAND TOTAL	**91,309**	**6,063**	**6.64%**	**6.77%**

Mathematica

*CMS numbers taken from 2019 QualityNet Conference presentation by Yale/CORE

Maternity stays and 30-day mortality

- **30-Day mortality very low among maternity cases**
  - Four 30-day deaths out of approximately 60,000 maternity cases
- **Measure logic treats maternity cases inconsistently**
  - Example: C-sections are not on CMS' list of procedures for inclusion in Surgical service line
- **Will need to adjust measure logic regardless of whether maternity stays are included or excluded**
  - If included: identify and assign maternity cases to a new service line
  - If excluded: identify and add a new exclusion criteria

Mathematica

Overview of statistical properties of 30-day mortality measure

Measure Assessment: Three Categories of Criteria

Feasibility Criteria

Evidence that data needed for measurement is available

➡ Not a focus of today's presentation, but we expect measure to pass this step

Validity Criteria

Evidence that the measure is measuring what it is supposed to measure

➡ Multiple steps/checks, but today's presentation will focus on **convergent validity** and **predictive validity**

Reliability Criteria

Evidence that the measure consistently produces the same result, versus measure results being a product of statistical noise

➡ Implemented a **signal-to-noise test** for the 30-day measure

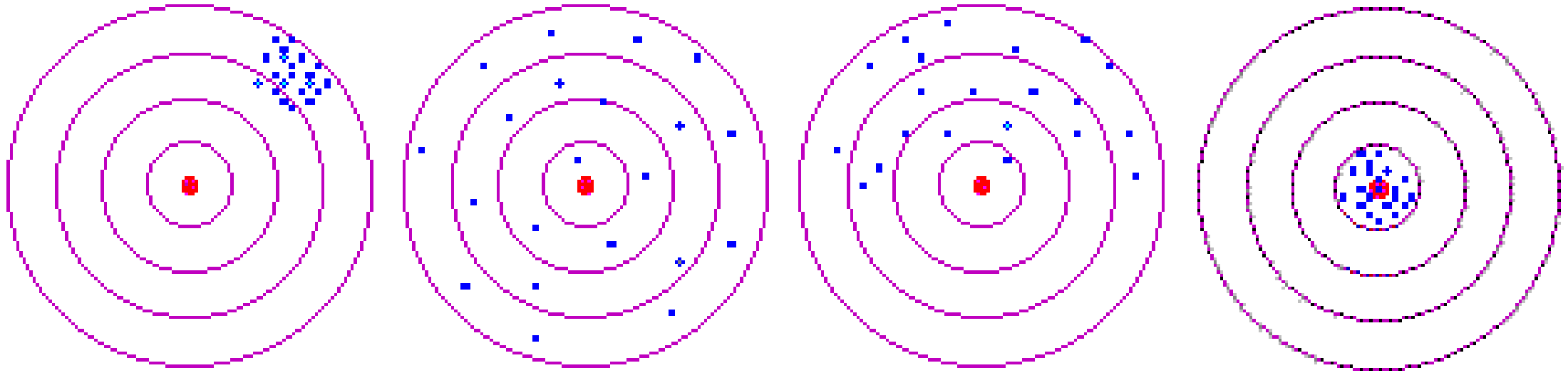
Validity and Reliability Analyses

- **Convergent validity: correlate 30-day measure results with other existing measures of quality**
  - CMS overall star rating
  - CMS diagnosis and procedure-specific 30-day mortality results (July 2015 – June 2018 results)
  - HSCRC Inpatient mortality results from QBR (FY19 Base results; Q32018 – Q22019)
  - Use rank correlations when comparing mortality measure results

- **Predictive validity: correlate 30-day measure results from 2018 with results from 2019**

- **Reliability analysis: calculate signal-to-noise test**
  - Calculated for overall measure reliability, and by hospital

More on Validity and Reliability Analyses



Reliable
Not Valid

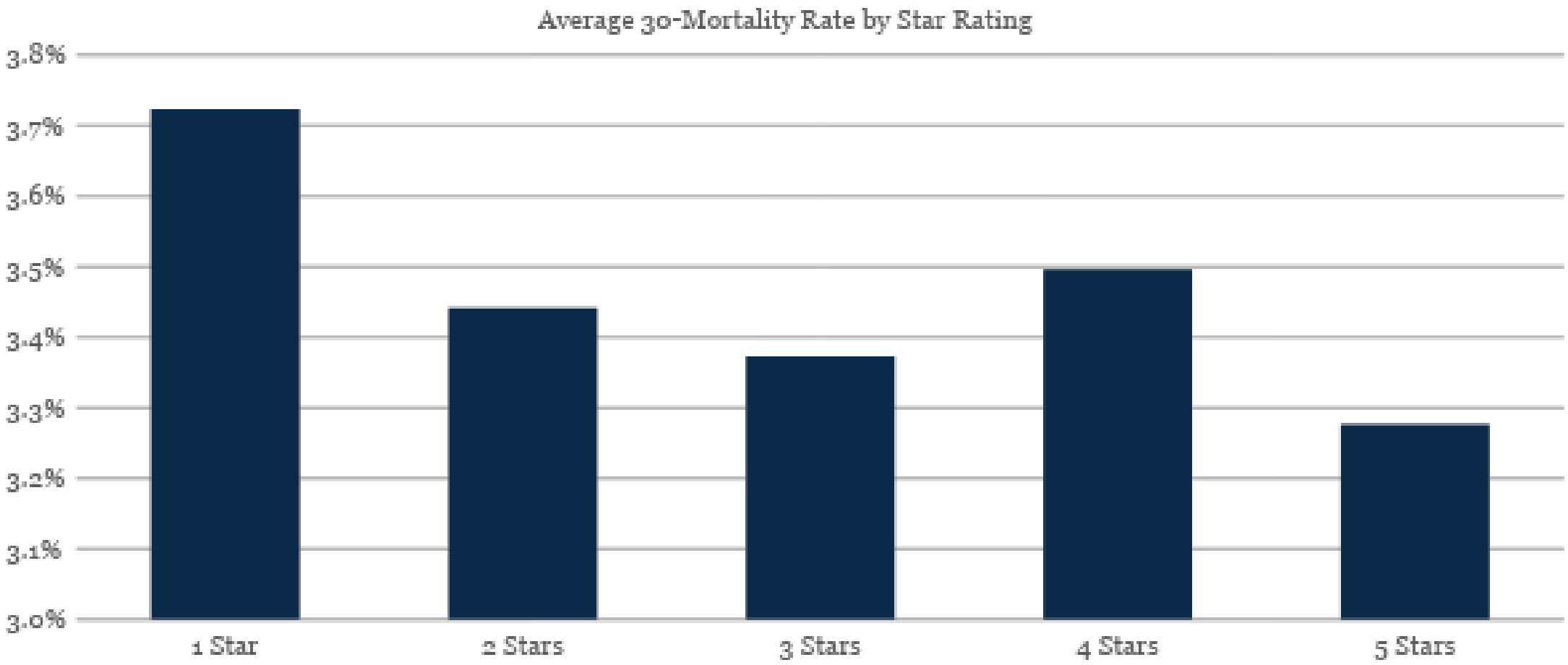
Valid
Not Reliable

Neither Reliable
Nor Valid

Both Reliable
And Valid

Mathematica

Convergent validity: comparison to CMS Star Ratings

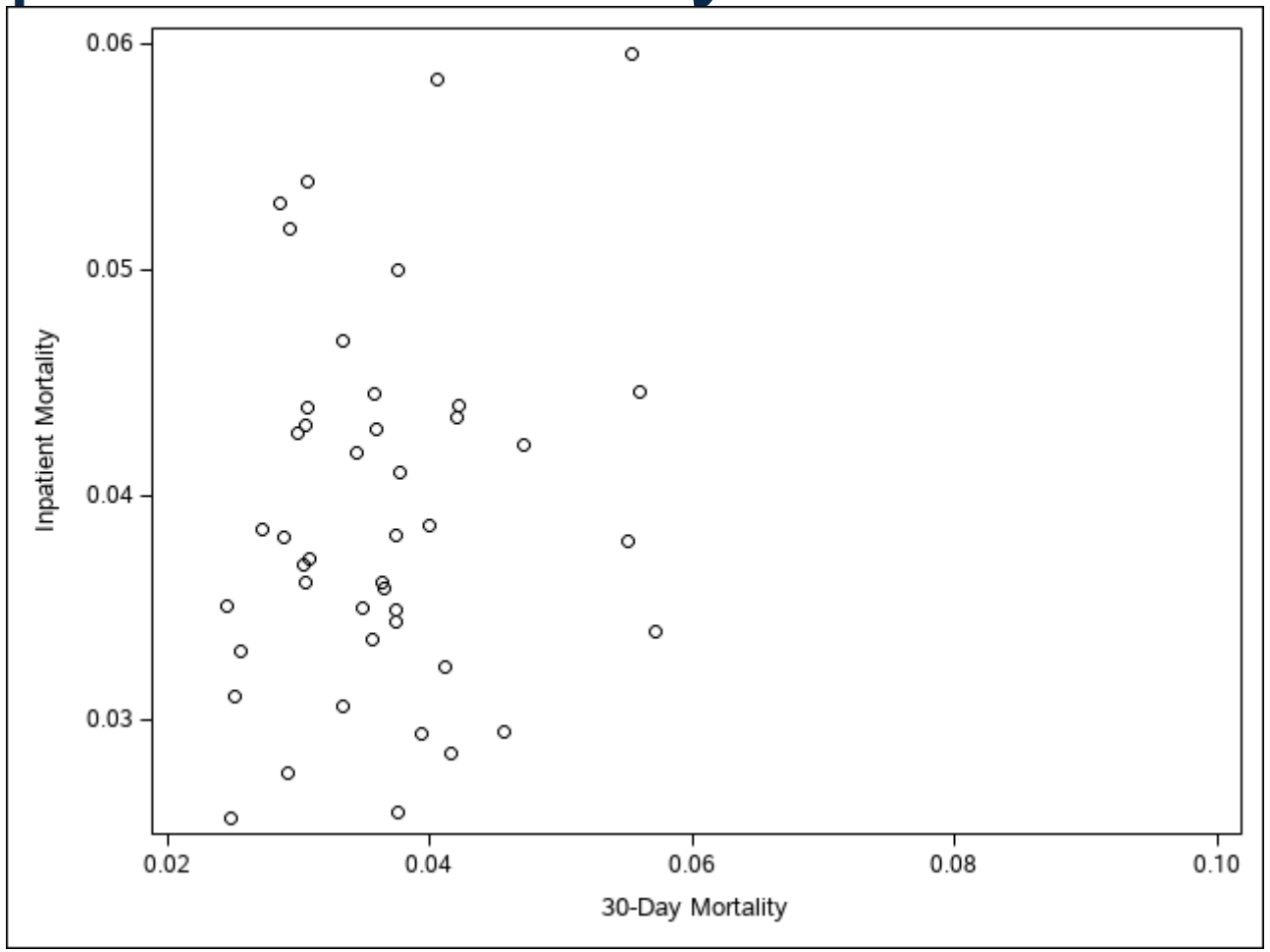


Mathematica

Convergent validity: comparison to CMS 30-day mortality results

CMS 30-Day Mortality Rate for…	Correlation Statistic	p-value
AMI	0.43	0.01
CABG	-0.12	0.75
COPD	-0.07	0.66
Heart Failure	0.25	0.10
Pneumonia	0.15	0.34
Stroke	0.09	0.56

Convergent validity: comparison to HSCRC inpatient mortality results



- Low rank correlation between All-Payer 30-day Mortality results and QBR Inpatient Mortality results
- 2018 correlation = .10 and 2019 correlation = .15

Mathematica

Note: Vertical axis is QBR inpatient mortality results. Horizonal axis is All-Payer 30-Day Mortality results

Predictive validity results

- **CY 2018 and CY 2019 All-Payer 30-Day Mortality results are positively correlated**
  - Correlation coefficient = 0.60 with p-value <.01

Reliability results

- **Strong reliability for All-Payer 30-Day Mortality Measure**
- **Overall reliability = 0.91**
- **Variation in hospital-level reliability estimates**
  - Minimum = .08; Maximum = .97
- **85% of hospitals have reliability of at least 0.70**
- **Hospitals with lower reliability estimates have smaller case sizes**

Questions and discussion

MHAC Palliative Care Update

PPC Grouper and Palliative Care

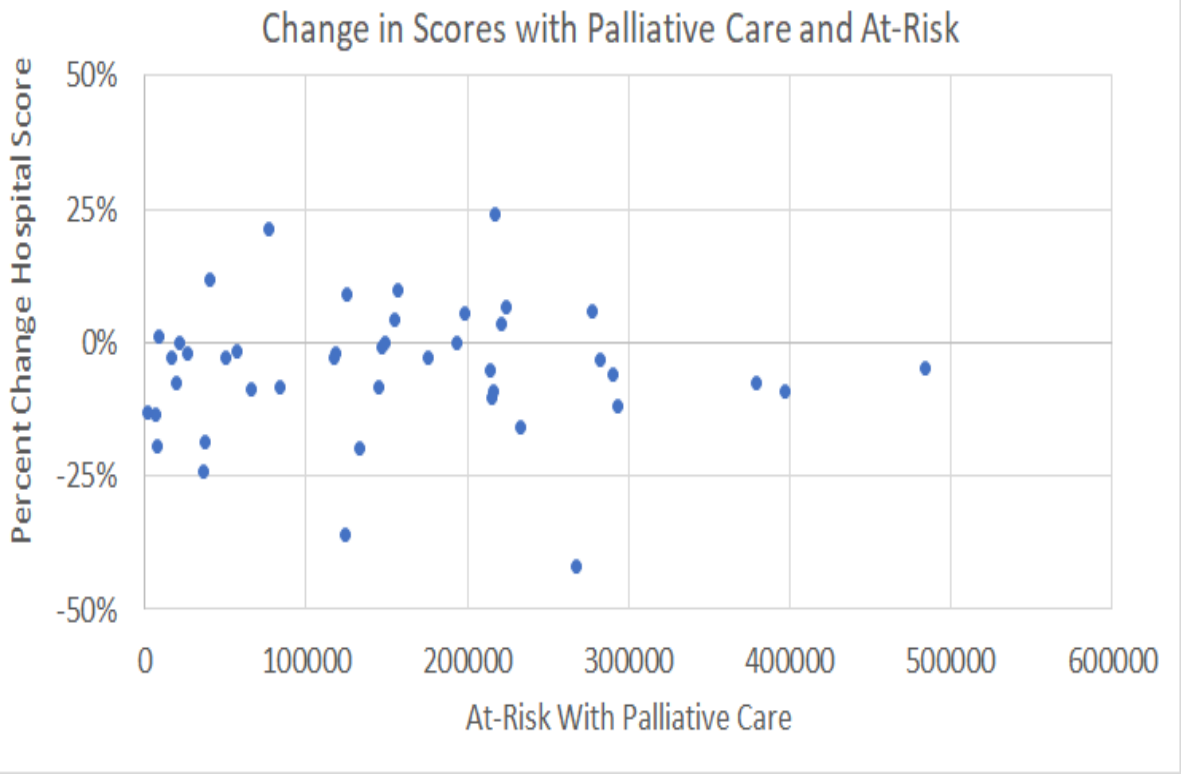
- RY 2022 MHAC policy proposed inclusion of admissions where palliative care is NOT present on admission (POA coding previously had not been required for Z51.5)
  - However, PPC Grouper v37 had Z51.5 as a global exclusion for all but one PPC; such that removal of the out of grouper palliative care exclusion had little impact
- RY 2023 will use PPC Grouper v38, which has removed palliative care as a global exclusion
  - Staff have been concerned that certain PPCs may occur and result in palliative care; HSCRC audits revealed most PPCs occur prior to the palliative care diagnosis
  - Other complication measures do not exclude palliative care patients, but some may exclude hospice
  - The performance standards (norms, benchmarks, and thresholds) would be calculated including palliative care
- Analyzed CY 2018 and CY 2019 base period and brought out to attainment scores
  - Statewide Observed PPCs increased from 5,366 to 7,377
    - Small portion of increase is related to small cell size exclusions; specifically, smaller hospitals now qualifying for additional PPCs and statewide new APR-DRG SOI cells now meeting minimum number of at-risk

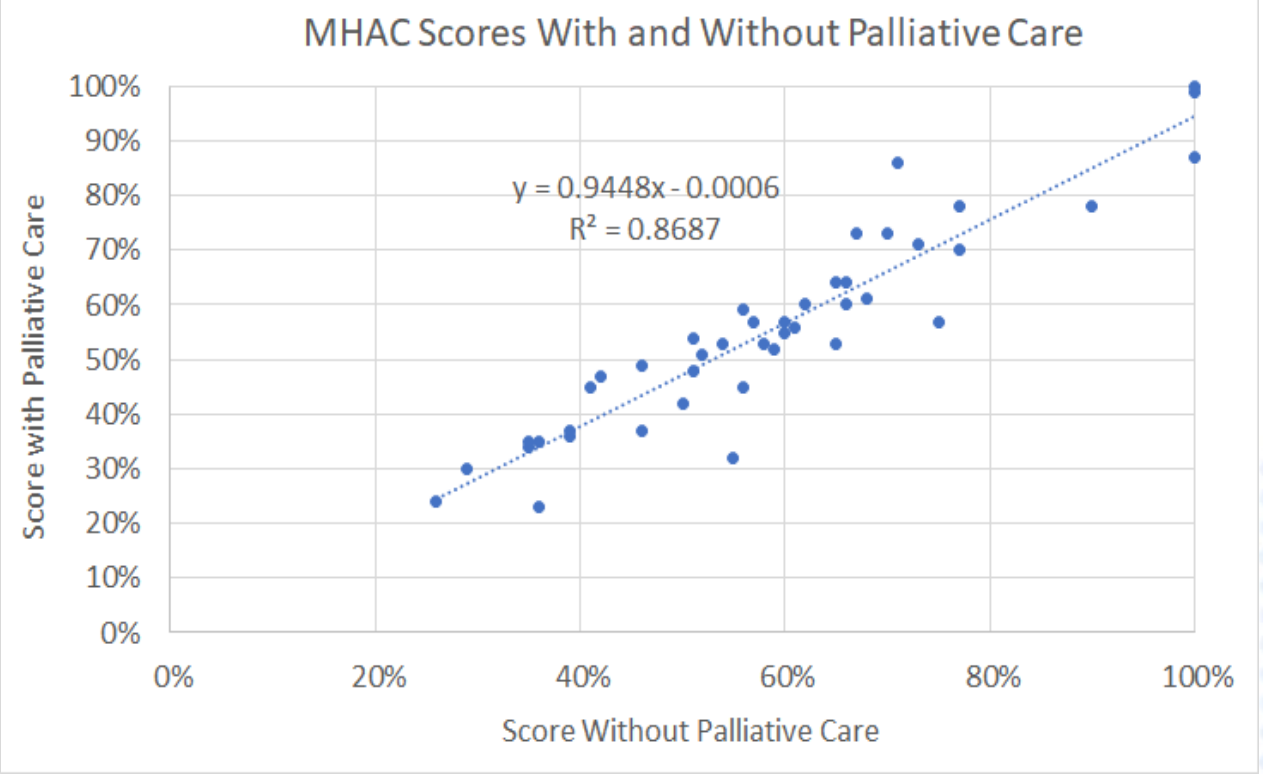
Payment Program PPCs CY18 and CY 19

		With Palliative Care Patients			Without Palliative Care			Simple Difference		
PPC NUMBER	PPC DESCRIPTION	AT RISK	OBSERVED PPCs	Unadj. Rates per 1000	AT RISK	OBSERVED PPCs	Unadj. Rates per 1000	AT RISK	OBSERVED PPCs	% Diff in Rate
3	Acute Pulmonary Edema and Respiratory Failure without Ventilation	645917	1120	1.7340	636573	820	1.2881	9344	300	34.61%
4	Acute Pulmonary Edema and Respiratory Failure with Ventilation	639956	791	1.2360	626798	497	0.7929	13158	294	55.88%
7	Pulmonary Embolism	796883	371	0.4656	777805	315	0.4050	19078	56	14.96%
9	Shock	775908	1457	1.8778	760019	845	1.1118	15889	612	68.90%
16	Venous Thrombosis	448621	267	0.5952	418038	223	0.5334	30583	44	11.57%
28	In-Hospital Trauma and Fractures	727092	100	0.1375	663605	85	0.1281	63487	15	7.37%
35	Septicemia & Severe Infections	282768	948	3.3526	273987	695	2.5366	8781	253	32.17%
37	Post-Operative Infection & Deep Wound Disruption Without Procedure	112890	280	2.4803	111948	269	2.4029	942	11	3.22%
41	Post-Operative Hemorrhage & Hematoma with Hemorrhage Control Procedure or I&D Proc	202437	131	0.6471	197475	122	0.6178	4962	9	4.75%
42	Accidental Puncture/Laceration During Invasive Procedure	813916	326	0.4005	788115	295	0.3743	25801	31	7.01%
49	Iatrogenic Pneumothrax	752907	153	0.2032	675433	107	0.1584	77474	46	28.28%
60	Major Puerperal Infection and Other Major Obstetric Complications	58073	24	0.4133	58073	24	0.4133	0	0	0.00%
61	Other Complications of Obstetrical Surgical & Perineal Wounds	102678	83	0.8084	102677	83	0.8084	1	0	0.00%
67	Combined Pneumonia (PPC 5 and 6)	665239	1326	1.9933	660308	986	1.4932	4931	340	33.49%
	Total	**7025285**	**7377**	**1.0501**	**6750854**	**5366**	**0.7949**	**274431**	**2011**	**32.11%**

Largest Rate Increase

By Hospital CY 2018 and CY 2019 MHAC Scores with Palliative Care





Based on analyses, staff supports inclusion of PC cases as stated in the RY 2022 Policy.

Other Thoughts or Questions?

Next PMWG Meeting: January 20, 9:30 AM-12:00 PM ?

APPENDIX

CMS Quality Data Update

- On September 2, 2020, CMS published an Interim Final Rule (IFR) in response to the COVID-19 PHE. In this IFR, they announced that:
  - CMS will not use CY Q1 or CY Q2 of 2020 quality data for FFY 2022 pay-for-performance programs, even if submitted by hospitals.
  - CMS reserves the right to suspend application of revenue adjustments for FFY 2022 for all hospital pay for performance programs at a future date in CY 2021; changes will be communicated through memos ahead of IPPS rules.
- It is not known if Maryland has flexibility in suspending our RY 2022 pay-for-performance programs
- Maryland's decision must be made prior to CMS making their decision due to the prospective nature of our pay-for-performance programs.
- CMMI has strongly suggested that the State must have quality program adjustments, has suggested that the State pursue alternative strategies to achieve reliable and valid RY 2022 quality measurement, such as reusing some or all of CY 2019 data (as is being done for the Skilled Nursing Facility VBP program).
- **With current COVID-19 trends, we will need to retrospectively determine whether the Jul-Dec 2020 will be usable for the quality programs.**