Performance Measurement Workgroup

March 2, 2022

HSCRC Quality Team

Agenda

- COVID analyses update
  - Guiding Principles
  - MHAC program PPCs
  - Readmissions

Overview of COVID Analysis and Adjustment Updates

Guiding Principles for COVID PHE Quality Measurement

- Must have Quality Adjustments in RY 2023
- Measures should be as inclusive as possible
- Scores and revenue adjustments should have face validity
- Adjustments to policies should be uniformly applied, when possible
- Because we don't have a reasonable counterfactual (without COVID in the base period),
  - Risk adjustment must be updated to account for COVID influence, e.g., concurrent norms
  - Relative ranking approaches, such as those used by CMS, may be advantageous under these conditions
- Quality adjustments must be reasonable to gain approval from CMMI and the Commissioners

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HSCRC Case-Mix Measures: COVID Analytics

- Main analyses have focused on use of **concurrent norms** for:
  - MHAC program PPCs
  - Readmissions measure
  - QBR Inpatient mortality (10 percent of total score)

- Analyses use FY 2021 as performance period for testing; final revenue adjustments for RY 2023 will be based on CY 2021.

- Concurrent norms:
  - Use of the performance period data to generate the statewide norms that are used to calculate hospital expected rates
  - Use performance period data for establishing performance standards
  - Should account for changes in outcomes that occurred during CY2021 due to COVID
  - Test applying CY2021 concurrent norms to base period to calculate improvement

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Example: Readmit Concurrent Norms (1 of 2)

Model 1: CY 2018

APR-DRG_SOI	Eligible Discharges	Readmissions	Norms
720_1	1153	55	4.77%
720_2	7251	735	10.14%
720_3	9732	1664	17.10%
720_4	6253	1225	19.59%

Model 2: FY 2021

APR-DRG_SOI	Eligible Discharges	Readmissions	Norms
720_1	852	39	4.58%
720_2	5839	580	9.93%
720_3	9709	1602	16.50%
720_4	9713	1540	15.86%

Statewide readmission data for sepsis

- CY 2018 has slightly higher readmission rate/norms than FY 2021

- FY 2021 has higher number of discharges in severity of illness (SOI) level 4 but overall readmission rate is lower
  - May reflect lower readmission rate seen for COVID patients or other clinical/behavioral changes during PHE

Example: Readmit Concurrent Norms (2 of 2)

Hospital A: FY 2021 Data			
APR-DRG_SOI	Eligible Discharges	Readmissions	Unadjusted Readmission Rate
720_1	128	5	3.91%
720_2	725	71	9.79%
720_3	1022	160	15.66%
720_4	1079	201	18.63%
Total	2954	437	14.79%

APR-DRG_SOI	Model 1				Model 2			
	Norms	Expected	O/E Ratio	Case-Mix Adjusted Readmission Rate	Norms	Expected	O/E Ratio	Case-Mix Adjusted Readmission Rate
720_1	4.77%	6.11	0.82	12.11%	4.58%	5.86	0.85	12.62%
720_2	10.14%	73.49	0.97	14.29%	9.93%	72.02	0.99	14.58%
720_3	17.10%	174.74	0.92	13.55%	16.50%	168.63	0.95	14.04%
720_4	19.59%	211.38	0.95	14.07%	15.86%	171.08	1.17	17.38%
Total		465.72	0.94	13.88%		417.58	1.05	15.48%

Models Under Evaluation for Comparison for Quality Programs

Model	Model 1 *original baseline period*	Model 2 *concurrent norms with COVID-19 cases*	Model 3 *concurrent norms without COVID-19 cases*
Description	Original base period norms	Concurrent norms including COVID-19 cases	Concurrent norms excluding COVID-19 cases from normative values and performance period calculations

Staff generally prefers including COVID cases to align with guiding principle of inclusivity - most assessments suggest little difference in performance with and without COVID

Specific quality programs/measures had additional models run (e.g., adding COVID variable to mortality regression model, testing relative ranking for MHAC revenue adjustments similar to CMS quality programs).

Overview of MHAC

RY 2023 MHAC Program Overview

Potentially Preventable Complication Measures

List of 14 clinically significant PPC included in payment program.

Acute Pulmonary Edema & Respiratory Failure w/o Ventilation	Post-Operative Infection & Deep Wound Disruption Without Procedure
Acute Pulmonary Edema & Respiratory Failure w/ Ventilation	Post-Operative Hemorrhage & Hematoma w/ Hemorrhage Control Procedure or I&D Proc
Pulmonary Embolism	Accidental Puncture/Laceration During Invasive Procedure
Shock	Iatrogenic Pneumothorax
Venous Thrombosis	Major Puerperal Infection & Other Major Obstetric Complications
In-Hospital Trauma & Fractures	Other Complications of Obstetrical Surgical & Perineal Wounds
Septicemia & Severe Infections	Pneumonia Combo

Global Exclusions:
- Discharges >6 PPCs
- APR-DRG SOI cells with less than 31 at-risk discharges

Hospital PPC Exclusions:
- <20 at-risk discharges
- <2 expected PPC

Case-Mix Adjustment and Standardized Scores

Performance Measure: CY 2021* Observed to Expected PPC Ratio.

Expected calculated by applying statewide average PPC rates by diagnosis and severity of illness level to hospitals' patient mix (i.e., indirect standardization).

Attainment only score (0-100 points) calculated by comparing hospital performance to a statewide threshold and benchmark.

Attainment Points

Threshold					Benchmark
10th Percentile					90th Percentile

0   20   40   60   80   100
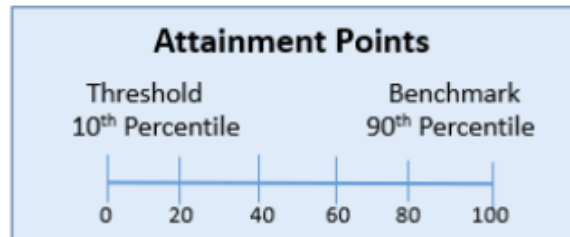
CY2018 & CY2019 used to calculate statewide averages (norms) and thresholds, benchmarks.

*Small hospitals will be assessed on CY19 &21

Hospital MHAC Score & Revenue Adjustments

Hospital MHAC Score is Sum of Earned Points / Possible Points with PPC Cost Weights Applied.

Scores Range from 0-100% Revenue neutral zone 60-70%

Max Penalty -2% & Reward +2%

MHAC Score	Revenue Adjustment
0%	-2.00%
10%	-1.67%
20%	-1.33%
30%	-1.00%
40%	-0.67%
50%	-0.33%
60% to 70% Hold Harmless	0.00%
80%	0.67%
90%	1.33%
100%	2.00%

MHAC Payment PPC Rates 2019 vs. 2021 (Model 1)

PPC NUMBER	PPC DESCRIPTION	CY 2019 YTD October		CY 2021 YTD October		Simple Difference	
	Change in Payment PPCs CYTD October 2019 vs 2021	OBSERVED PPC	Case-Mix Adjusted Rate per 1,000	OBSERVED PPC	Case-Mix Adjusted Rate per 1,000	OBSERVED PPC	Case-Mix Adjusted Rate per 1,000
3	Acute Pulmonary Edema and Respiratory Failure without Ventilation	374	1.64	346	1.67	-28	0.03
4	Acute Pulmonary Edema and Respiratory Failure with Ventilation	270	1.18	200	0.90	-70	-0.28
7	Pulmonary Embolism	123	0.43	134	0.53	11	0.09
9	Shock	472	1.68	371	1.37	-101	-0.32
16	Venous Thrombosis	102	0.64	65	0.45	-37	-0.18
28	In-Hospital Trauma and Fractures	34	0.13	34	0.16	0	0.02
35	Septicemia & Severe Infections	322	3.21	307	3.30	-15	0.09
37	Post-Operative Infection & Deep Wound Disruption Without Procedure	117	2.84	66	1.76	-51	-1.07
41	Post-Operative Hemorrhage & Hematoma with Hemorrhage Control Procedure or I&D Proc	39	0.54	36	0.55	-3	0.01
42	Accidental Puncture/Laceration During Invasive Procedure	106	0.37	101	0.39	-5	0.02
49	Iatrogenic Pneumothrax	61	0.22	44	0.08	-17	-0.14
60	Major Puerperal Infection and Other Major Obstetric Complications	1	0.06	7	0.36	6	0.30
61	Other Complications of Obstetrical Surgical & Perineal Wounds	27	0.84	24	0.76	-3	-0.08
67	Combined Pneumonia (PPC 5 and 6)	420	1.77	327	1.48	-93	-0.29

PPC Grouper V38 COVID Exclusion Group for Payment PPCs

PPC #	PPC Description	Grouper V.38 COVID Status	PPC #	PPC Description	Grouper V38 COVID Status
3	Acute Pulmonary Edema and Respiratory Failure without Ventilation	Exclude	37	Post-Operative Infection & Deep Wound Disruption Without Procedure	Include
4	Acute Pulmonary Edema and Respiratory Failure with Ventilation	Exclude	41	Post-Operative Hemorrhage & Hematoma with Hemorrhage Control Procedure or I&D Proc	Exclude
7	Pulmonary Embolism	Exclude	42	Accidental Puncture/Laceration During Invasive Procedure	Include
9	Shock	Exclude	49	Iatrogenic Pneumothrax	Include
16	Venous Thrombosis	Exclude	60	Major Puerperal Infection and Other Major Obstetric Complications	Include
28	In-Hospital Trauma and Fractures	Include	61	Other Complications of Obstetrical Surgical & Perineal Wounds	Exclude
35	Septicemia & Severe Infections	Exclude	67	Combined Pneumonia (PPC 5 and 6)	Exclude

Performance Standards

PPC NUMBER	PPC DESCRIPTION	Model 1		Model 2		Model 3	
		Threshold	Benchmark	Threshold	Benchmark	Threshold	Benchmark
3	Acute Pulmonary Edema and Respiratory Failure without Ventilation	1.524	0.541	1.849	0.549	1.849	0.549
4	Acute Pulmonary Edema and Respiratory Failure with Ventilation	1.528	0.321	1.497	0.546	1.497	0.546
7	Pulmonary Embolism	1.390	0.473	1.781	0.323	1.781	0.323
9	Shock	1.528	0.427	1.403	0.503	1.403	0.503
16	Venous Thrombosis	1.656	0.189	1.668	0.263	1.668	0.263
28	In-Hospital Trauma and Fractures	1.765	0.387	1.936	0.363	1.921	0.379
35	Septicemia & Severe Infections	1.482	0.532	1.538	0.524	1.538	0.524
37	Post-Operative Infection & Deep Wound Disruption Without Procedure	1.613	0.452	1.778	0.498	1.787	0.503
41	Post-Operative Hemorrhage & Hematoma with Hemorrhage Control Procedure or I&D Proc	1.454	0.447	1.590	0.260	1.590	0.260
42	Accidental Puncture/Laceration During Invasive Procedure	1.941	0.312	1.275	0.410	1.295	0.415
49	Iatrogenic Pneumothrax	1.622	0.257	1.870	0.118	1.982	0.244
60	Major Puerperal Infection and Other Major Obstetric Complications	1.841	0.288	1.776	0.000	1.776	0.000
61	Other Complications of Obstetrical Surgical & Perineal Wounds	2.016	0.000	1.936	0.303	1.936	0.303
67	Combined Pneumonia (PPC 5 and 6)	1.563	0.536	1.584	0.465	1.584	0.465

Descriptive Statistics of MHAC Scores

	Model 1 (Base period norms)	Model 2 (Concurrent norms w/ COVID pts)	Model 3 (Concurrent norms w/o COVID pts)
Average	67%	62%	62%
Median	64%	61%	61%
Minimum	30%	26%	26%
Maximum	100%	100%	100%
25th Percentile	55%	51%	51%
75th Percentile	80%	77%	77%

Staff believes that concurrent norms are necessary because clinical care and patient behavior were significantly altered during the PHE, which will be accounted for with concurrent norms

Staff believes that including COVID patients aligns with inclusivity principle and does not note any degradation in performance due to including COVID patients

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Thoughts?

By Hospital MHAC Scores
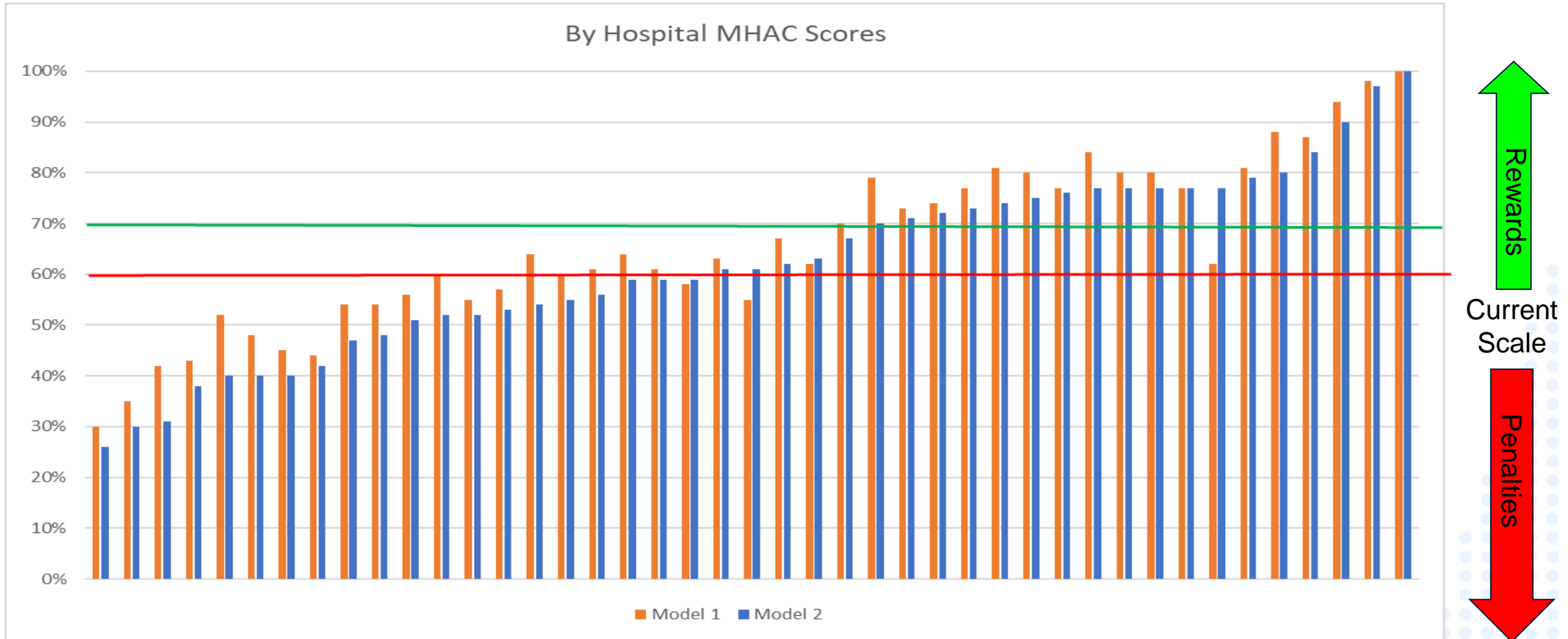
Generally, hospitals perform better under Model 1 so should different revenue adjustments scales be considered?

Revenue Adjustments

Current Scale	
Final MHAC Score	**Revenue Adjustment**
15%	-1.50%
20%	-1.33%
25%	-1.17%
30%	-1.00%
35%	-0.83%
40%	-0.67%
45%	-0.50%
50%	-0.33%
55%	-0.17%
60%	0.00%
65%	0.00%
70%	0.00%
75%	0.33%
80%	0.67%
85%	1.00%
90%	1.33%
95%	1.67%
100%	2.00%
Penalty Cut-point	60%
Reward Cut-point	70%

Revenue Adjustment Options:

- Current Scale
  - Cut points determine by base period data/modeling
- Revised cut point based on performance data for CY 2021
  - Cut points centered around median hospital score in performance period
- CMS relative ranking with adjustments
  - Penalize and reward top quartile full 2%
- Revenue adjustment modeling used average IP revenue of $180M for all hospitals

	Model 1		
	Current Scale Cut Point 60-70%	**Median Score 64% Cut Point 59-69%**	**CMS Relative Ranking Cut Point 55-80%**
Average	$447,273	$223,535	$0
Median	$0	$0	$0
Minimum	-$1,800,000	-$2,013,559	-$3,600,000
Maximum	$3,600,000	$3,600,000	$3,600,000
25th Percentile	-$300,000	-$472,882	-$3,600,000
75th Percentile	$1,200,000	$929,032	$3,600,000
	Model 2		
	Current Scale Cut Point 60-70%	**Median Score 61% Cut Point 56-66%**	**CMS Relative Ranking Cut Point 51-77%**
Average	$169,091	$369,127	$0
Median	$0	$0	$0
Minimum	-$2,040,000	-$1,928,571	-$3,600,000
Maximum	$3,600,000	$3,600,000	$3,600,000
25th Percentile	-$525,000	-$305,358	-$3,600,000
75th Percentile	$840,000	$1,164,706	$3,600,000

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MHAC Next steps

- Review retrospective adjustments with Commissioners and CMMI

- Repeat analysis of concurrent norms using whole CY 2021

- Analyze final scores to determine cut point

  - Based on which scaling option is selected

- Other suggestions?

Overview of RRIP

Readmission Reduction Incentive Program (RRIP)

- Main program measures all-payer, all cause, case-mix adjusted readmission rates
- Redesign in 2019 focused on:
  - Developing 5 year improvement target
  - Assessing attainment target
  - Developing and implementing a methodology to address within hospital disparities
- Hospitals earn the revenue adjustment that is the better of improvement or attainment (2% max reward/penalty)
- Disparity gap improvement is separate positive incentive within the RRIP policy

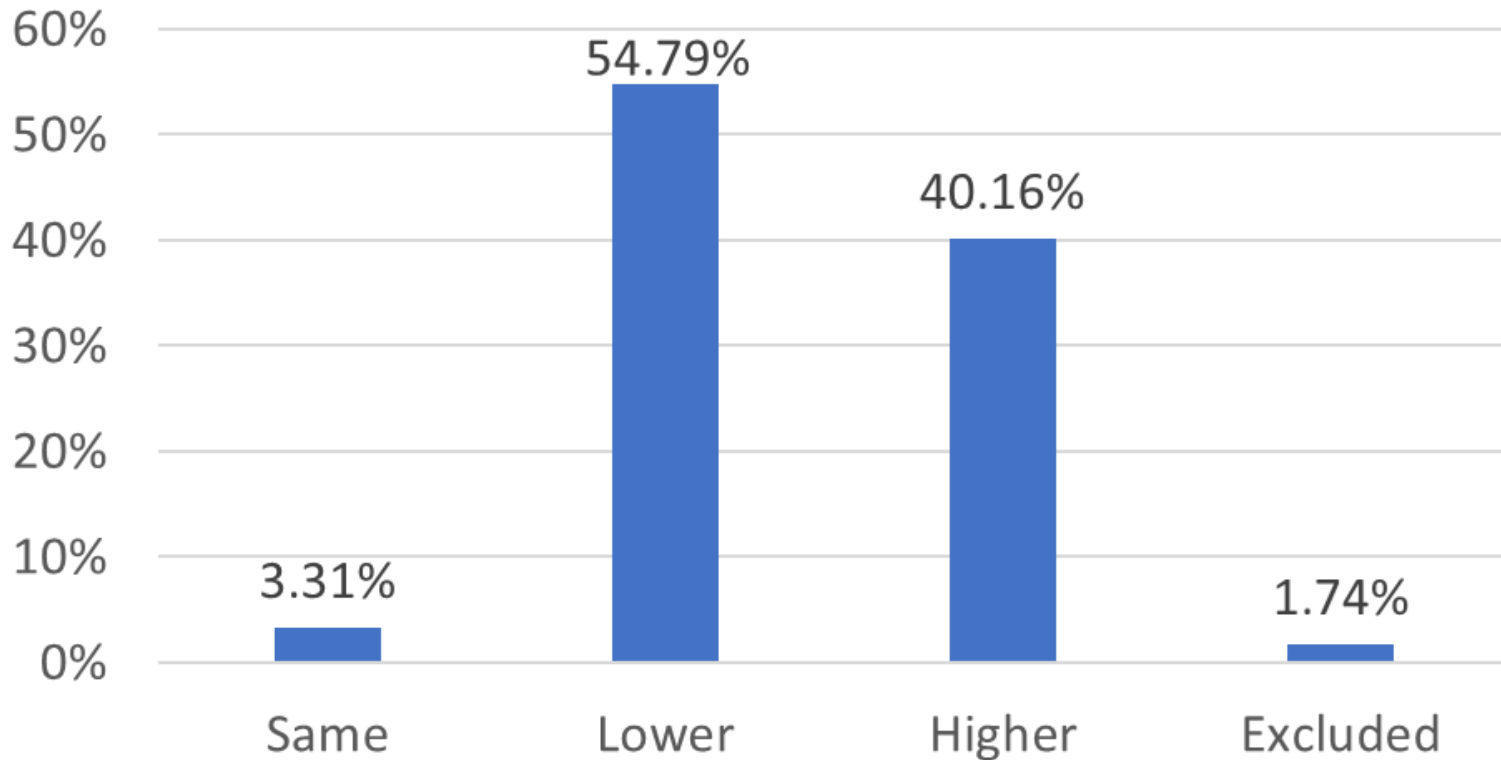# Descriptive Statistics of Case-Mix Adjusted Readmission Rates

	Model 1: CY18 Norms			Model 2: FY21 Norms w/ COVID		
	CY 2018	FY 2021 Model 1	% Change (CY18-FY21)	CY18	Model 2	% Change (CY18-FY21)
Average	11.37%	10.37%	-8.51%	11.82%	11.15%	-5.15%
Median	11.34%	10.52%	-9.12%	11.83%	11.27%	-6.07%
Minimum	7.04%	4.63%	-34.23%	7.25%	5.10%	-29.66%
Maximum	15.66%	13.16%	28.75%	16.66%	14.14%	33.49%
25th Percentile	10.51%	9.46%	-14.17%	10.95%	10.35%	-10.56%
75th Percentile	12.09%	11.42%	-4.62%	12.55%	12.18%	-1.23%

CY2021 improvement appears driven by lower utilization

Staff believes that including COVID patients aligns with inclusivity principle

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Readmission Norms (N=1148)

Model 2 Compared to Model 1 Norms

	Same	Lower	Higher	Excluded
Percent	3.31%	54.79%	40.16%	1.74%

Model 2 Compared to Model 1	Count APR-DRG/SOIs	Average Difference
Same	38	-
Lower	629	-6.16%
Higher	461	5.59%
Excluded	20	-

RRIP: Improvement and Attainment

- Improvement is calculated from 2018 to FY 2021 (will be full CY 2021 in final results)
  - RY 2023 Improvement goal was 4.57%
  - Improvement target was proposed during RRIP redesign pre-COVID
  - Model 2 and 3 apply concurrent norms back to 2018 to calculate improvement

- Attainment is calculated using the 35th percentile of hospital performance as threshold (start of earning rewards)
  - Model 1 uses the 35th percentile from 2018 and applies the -4.57% improvement target
  - Model 2 uses concurrent norms for the 35th percentile from the performance period w/o additional improvement

	Improvement Target (Start of Rewards)	Attainment Threshold (Start of Rewards)	Attainment Benchmark (Full 2% Reward)
Model 1 (Base period norms)	- 4.57%	11.30%	9.01%
Model 2 (Concurrent norms w/ COVID)	TBD	11.62%	8.67%

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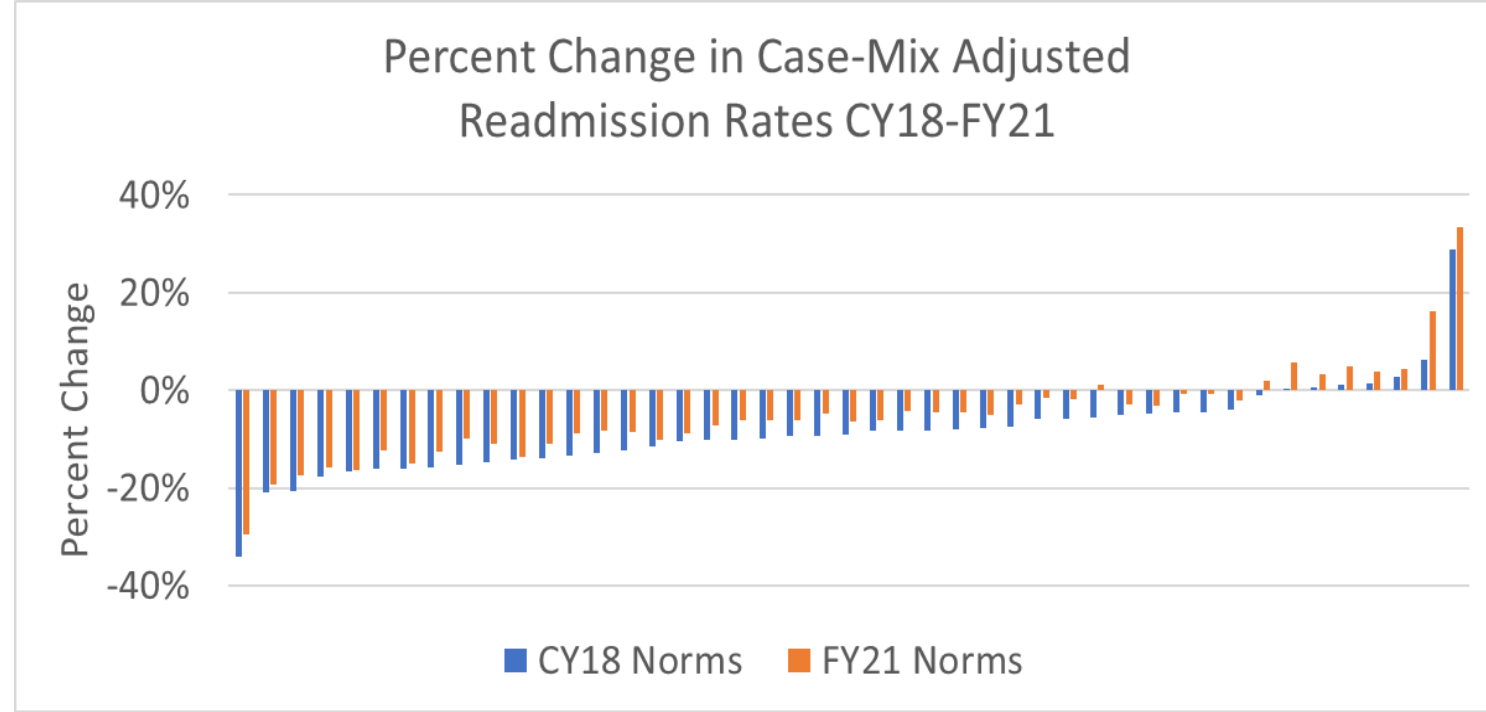Model 2 has a lower benchmark despite higher overall statewide readmissions rate

Performance Standards: Improvement and Attainment

	Improvement Target (Start of Rewards)	Attainment Threshold (Start of Rewards)	Attainment Benchmark (Full 2% Reward)
Model 1 (Base period norms)	- 4.57%	11.30%	9.01%
Model 2 (Concurrent norms w/ COVID)	TBD	11.62%	8.67%

Model 2 has a lower benchmark despite higher overall statewide readmissions rate

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By Hospital Performance

Slightly Less Improvement →

Percent Change in Case-Mix Adjusted Readmission Rates CY18-FY21

■ CY18 Norms   ■ FY21 Norms

FY21 Case-Mix Adjusted Readmission Rates
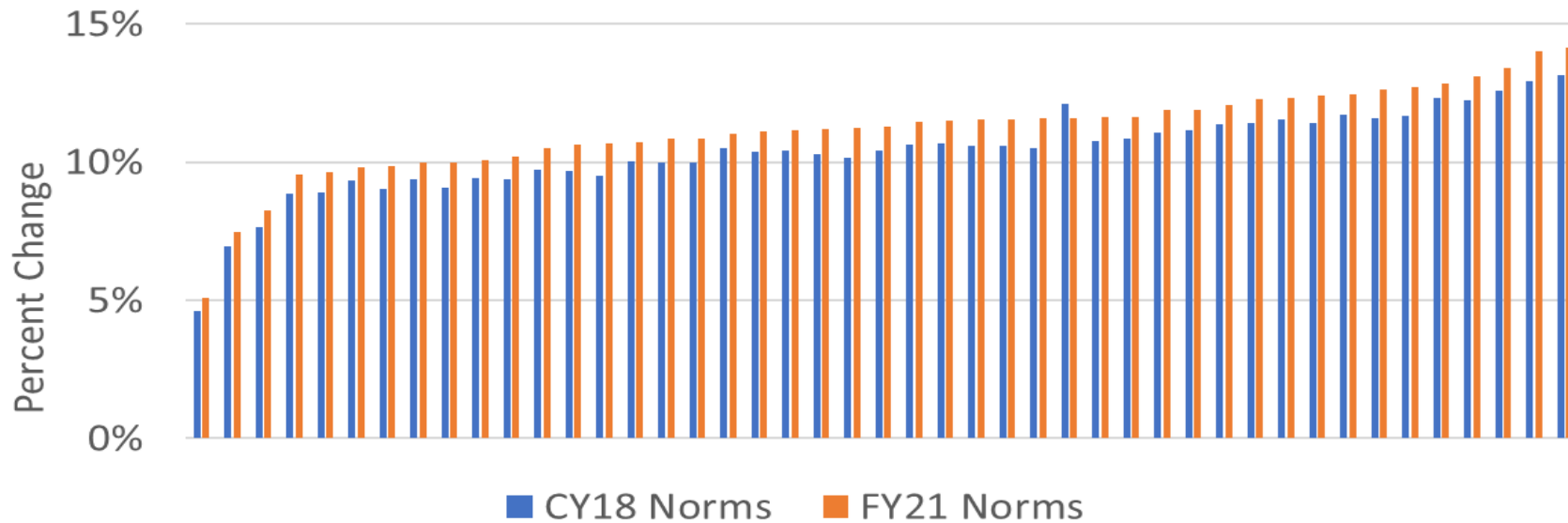
← Slightly High Readmission Rates

■ CY18 Norms   ■ FY21 Norms

Readmission Revenue Adjustments ($180M used for all hospitals)

	Revenue Adjustments: Better of Improvement and Attainment	
	Model 1 CY 2018 Norms	**Model 2** FY 2021 Norms
Average	$926,362	$416,864
Median	$792,000	$261,000
Minimum	-$1,422,000	-$3,474,000
Maximum	$3,600,000	$3,600,000
25th Percentile	$220,500	-$297,000
75th Percentile	$1,660,500	-$297,000

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RRIP Next steps

- Review retrospective adjustments with Commissioners and CMMI
- Repeat analysis of concurrent norms using whole 2021
- Analyze final scores to determine if improvement is valid (i.e., whether we should only include attainment) or if any change to improvement target is warranted
  - Would need to consider whether SES adjustment is needed
- Consider change to disparity gap methodology
  - Rerun without COVID patients
  - Consider if disparity gap improvement goal is reasonable
- Other suggestions?

Conclusion

- HSCRC staff plans to have a decision on Covid-related program changes by end of March
- March 16th meeting will present analyses for QBR and any additional analyses for MHAC and RRIP

Thank You!

Next Meeting: March 16, 2022

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