

# Virtual Rural-ality: Creating A Tele-Hospitalist Program To Reduce Rural Outmigration



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## Background

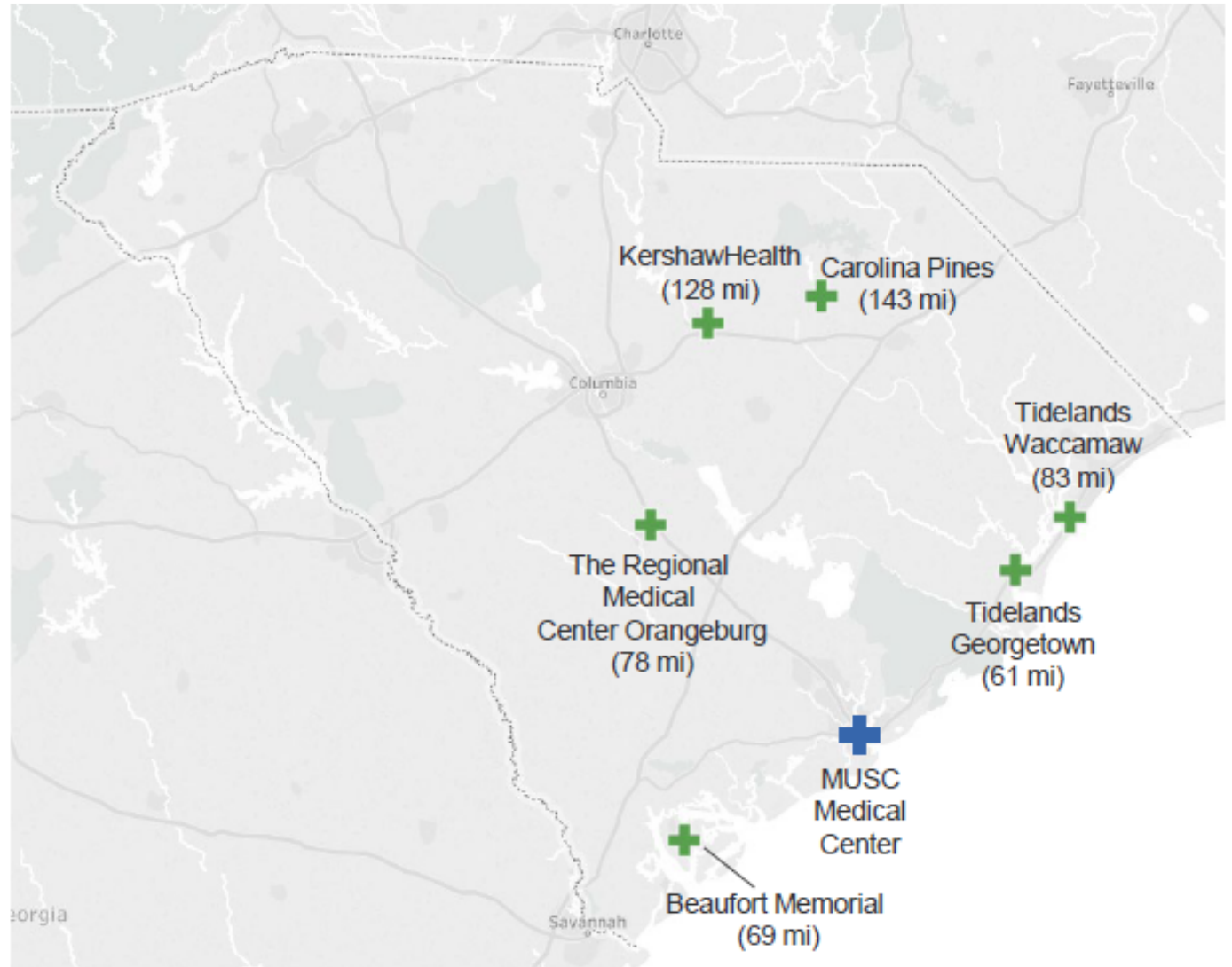
- Rural hospitals are closing
  - Rural Hospitals make up about 35% of all hospitals in the US <sup>1</sup>
  - 10% of physicians practice in rural areas despite 14% of US population<sup>1</sup>
  - 136 rural hospitals closed between 2010-2021<sup>1</sup>
    - 6 in South Carolina<sup>2</sup>
- Outmigration and/or bypassing of the local rural hospitals to bystander hospitals remains problematic and impacts a community's access to healthcare and the long-term business viability of the city<sup>4</sup>
  - In 2020, rural hospitals supported 1 in 12 rural jobs in the US<sup>1</sup>

## MUSC Vision

- Preserve and optimize human life in South Carolina and beyond
- MUSC is the state's only comprehensive academic medical center and has unique abilities and capacity to lead rural health transformation
- ***In SC, 27% of state resident's (1.4 million) live in rural areas <sup>2</sup>***

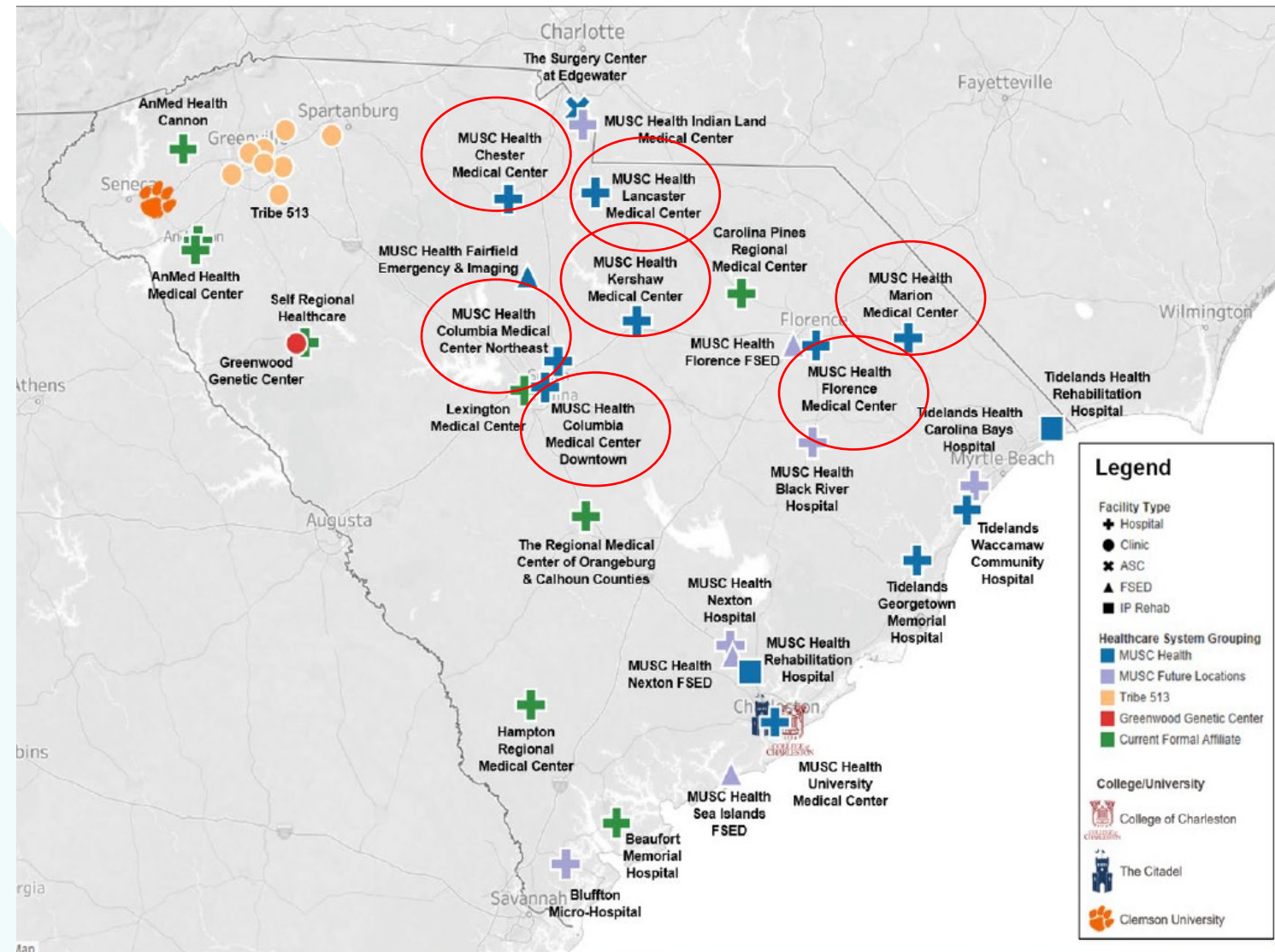
## Background- MUSC Health in 2016

- 1 hospital located in Charleston, SC
- 800-beds
- 6 formal affiliates
- If we are truly the Medical University of South Carolina, as opposed to Charleston, *growth* is absolutely needed to achieve our vision



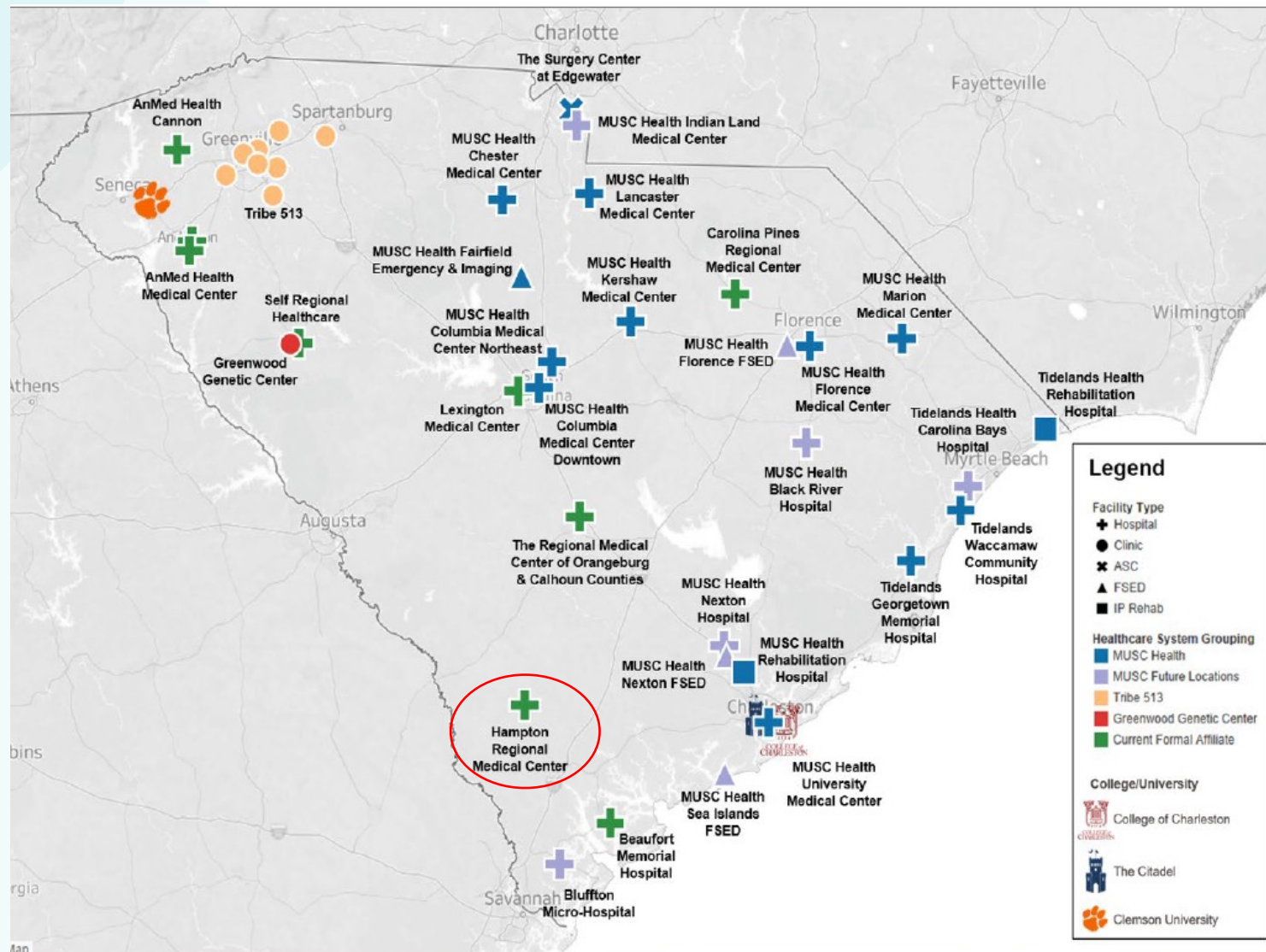
# Growth of MUSC Health- 2022

- MUSC Health: 7 hospitals within 4 regional health networks
- Multiple additional formal affiliates





# 2019 Partnership with Hampton Regional Medical Center



## Hampton Regional Medical Center by the Numbers<sup>3</sup>

- 30 bed, rural, non-for-profit community hospital in Varnville, SC that opened in 2008
- Primarily serves patients of Hampton and Allendale Counties, ranked 37<sup>th</sup> and 43<sup>rd</sup>, respectively, in South Carolina's County Health Outcomes report<sup>5</sup>
- HRMC in close proximity to 2 SC counties, Bamberg and Barnwell, which experienced hospital closures over last decade



## Hampton Regional Medical Center by the Numbers<sup>3</sup>

- 85% of its residents receive their inpatient medical care outside their home facility resulting in occupancy rate of 30-40%
- HRMC is one of the region's largest employers with a significant economic impact that would not easily be replaced if it closed

# MUSC – HRMC Partnership<sup>3</sup>

- Goal: Concerted partnership to provide a sustainable care delivery model for HRMC and ensure important health care is delivered within the community
- SC Department of Health and Human Services Funding



# Tele-Hospitalist Care Delivery Model

- MD/DO hospitalists at our academic medical center partnering with *onsite* advanced practice partners (APPs) to provide coverage of all admitted patients
- Tele-hospitalist requirements:
  - Daily videoconferencing on all new admissions and ICU patients at set contact times
  - 24/7 pager coverage for any acute issues
  - Additional videoconferencing available prn
- Having MUSC provider interactions reassures local community that they are receiving high-quality evidence-based medicine and instills confidence to stay locally at HRMC

# Technology

- HRMC EHR: Meditech
- Video Conferencing Platform: Teladoc
- Video Conference Vehicle: Telehealth Cart



# MUSC Center for Telehealth Overview

## ➤ **Center for Telehealth**

- Over 100 unique telehealth services
- Nearly 350 sites across South Carolina
  - 40+ hospitals, 90+ schools, 100+ community clinics and other facilities
- Most sites are in partially or fully medically underserved areas



## ➤ **National Telehealth Center of Excellence (COE)**

- HRSA designated MUSC as one of two COEs in 2017.
- The goal of the COE is to fill important gaps in the national telehealth landscape through a combination of ongoing regional and national collaborations, as well as proactive dissemination of telehealth resources

## ➤ **South Carolina Telehealth Alliance (SCTA)**

- MUSC oversees the statewide strategy and aligned funding for telehealth expansion in SC.

## Purpose

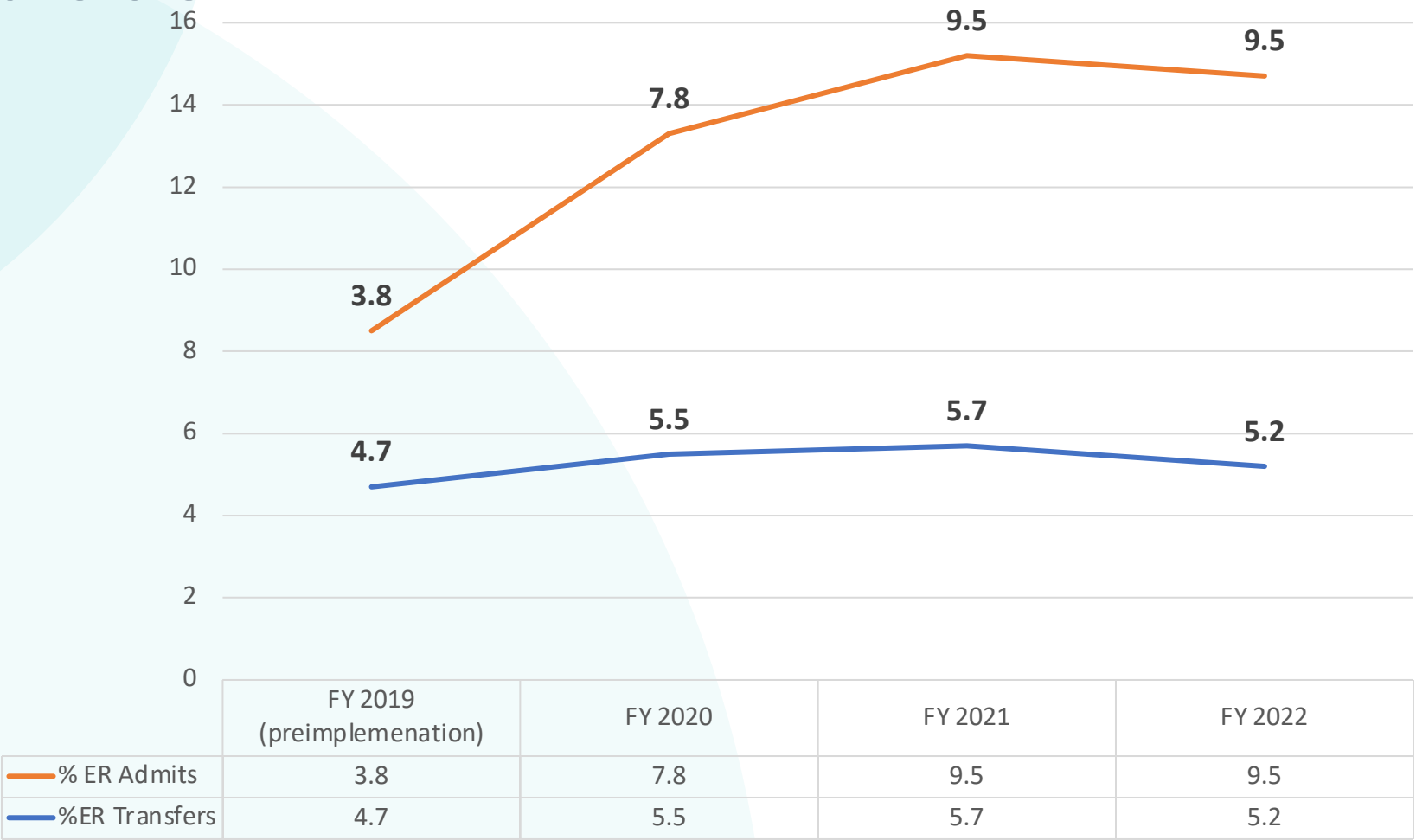
- To evaluate the impact of a tele-hospitalist program on a rural, non-for-profit hospital through reduction of outmigration and improvement in other key performance metrics



## Study Design

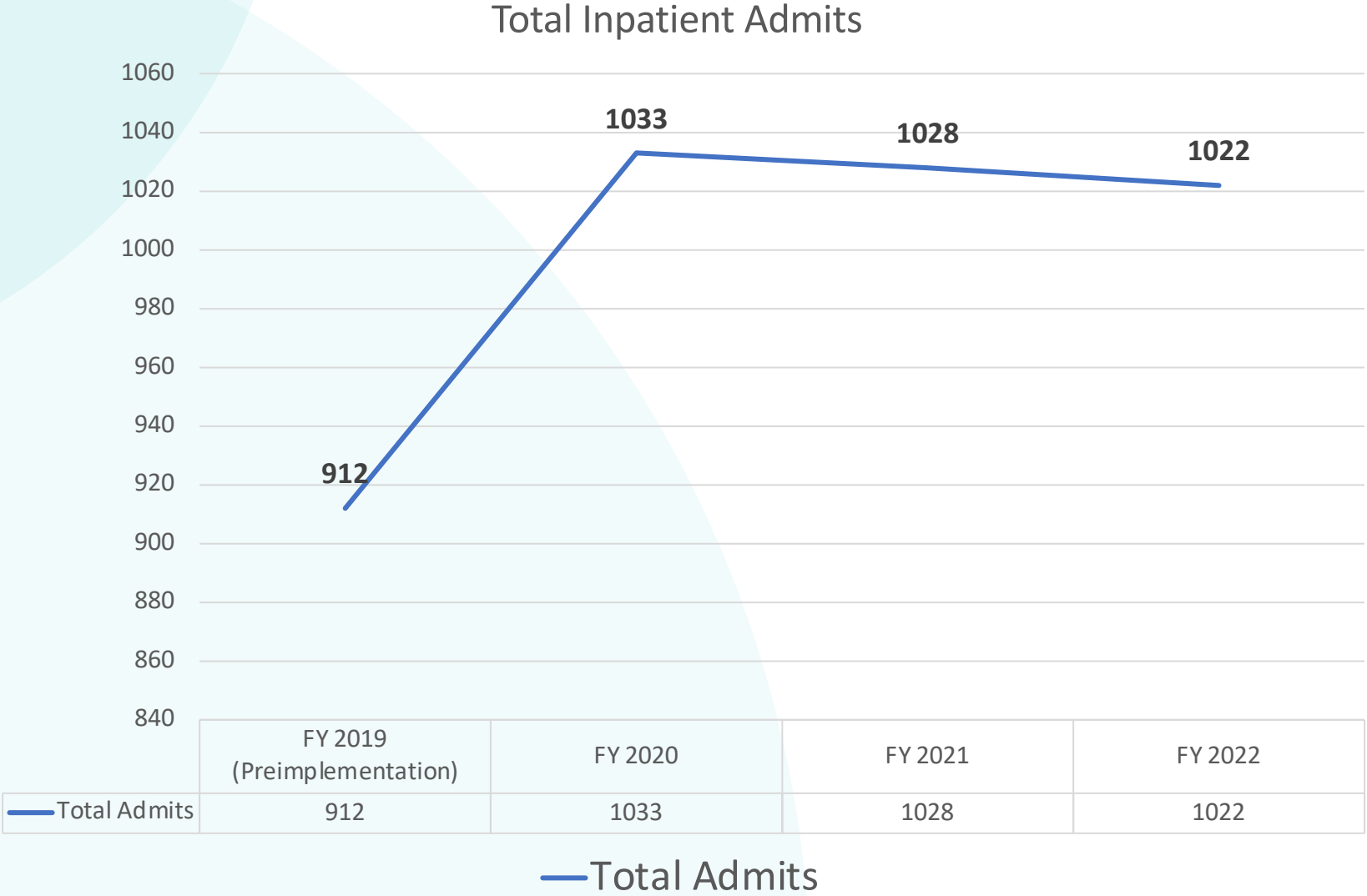
- Pre/Post observational study looking at all admissions at the rural hospital over a 3-year span
- Pre-intervention fiscal year annual data was utilized for baseline data followed by annual reviews for the next 3 fiscal years
- Key performance measures
  - Outmigration
  - Average Daily Census (ADC)
  - Case Mix Index (CMI)
  - Percent of ED patients admitted
  - Percent of Inpatients transferred to an outside hospital
  - 30-day readmission rate

# Performance Measure: ED Admits/Transfers

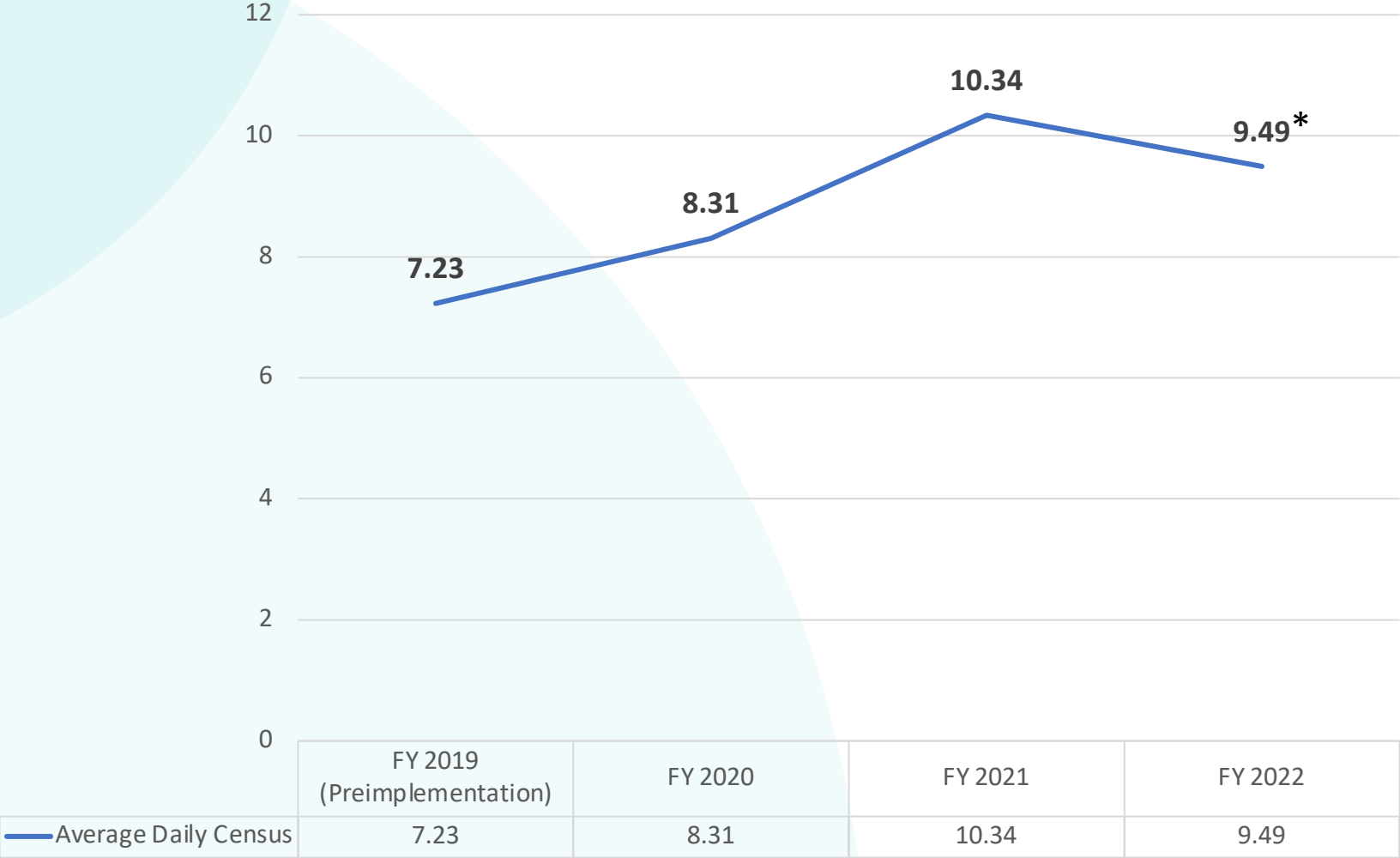


—%ER Transfers    —% ER Admits

# Performance Measure: Total Annual Admissions



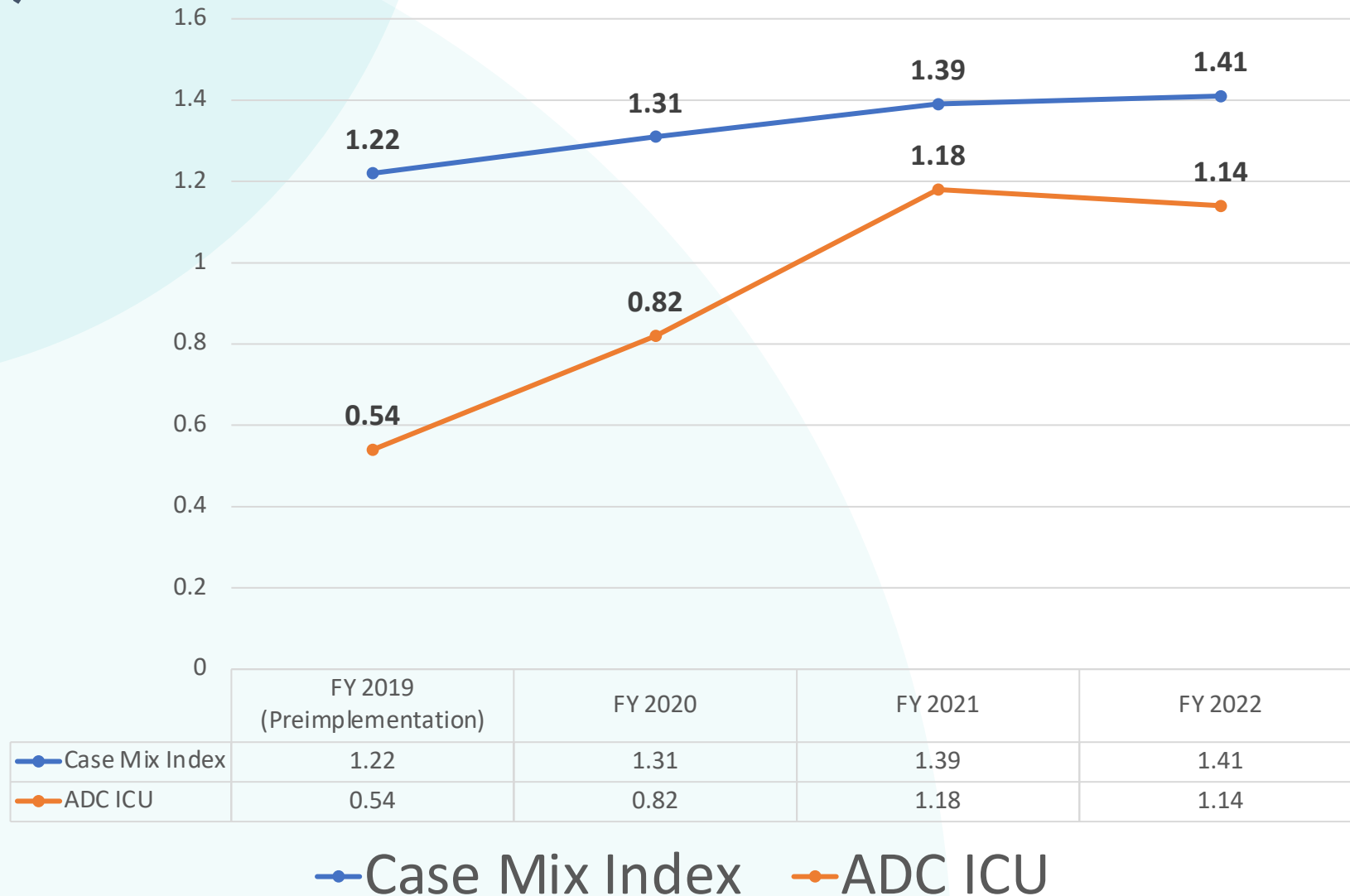
# Performance Measure: Average Daily Census (ADC)



—Average Daily Census

\*Limited by ancillary staff shortages

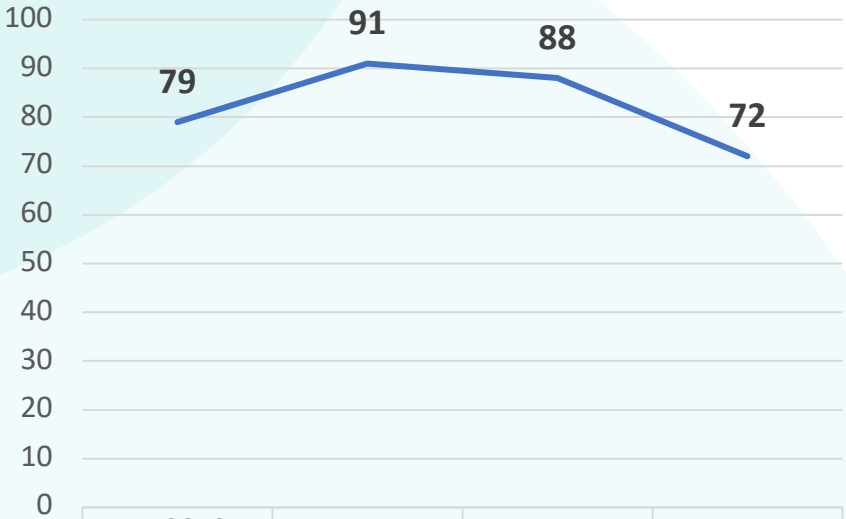
# Performance Measure: Case Mix Index (CMI)



Length Of Stay (Acute + ICU)	
FY 2019 (Pre-implementation)	3.47
FY 2020	3.71
FY 2021	4.56
FY 2022	4.78

# Performance Measure: Inpatient Transfers

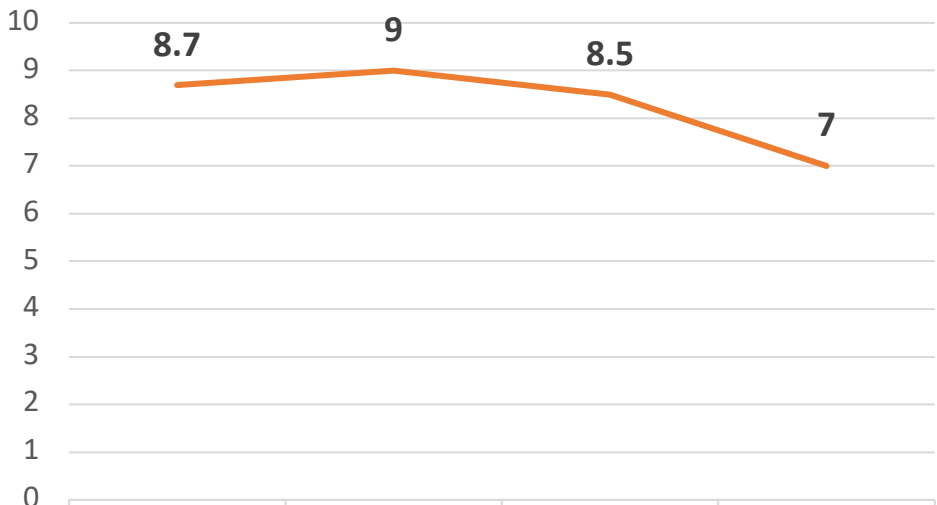
Total Inpatient transfers



	FY 2019 (Preimpleme ntation)	FY 2020	FY 2021	FY 2022
Inpatient transfers	79	91	88	72

— Inpatient transfers

% Inpatient Transfers



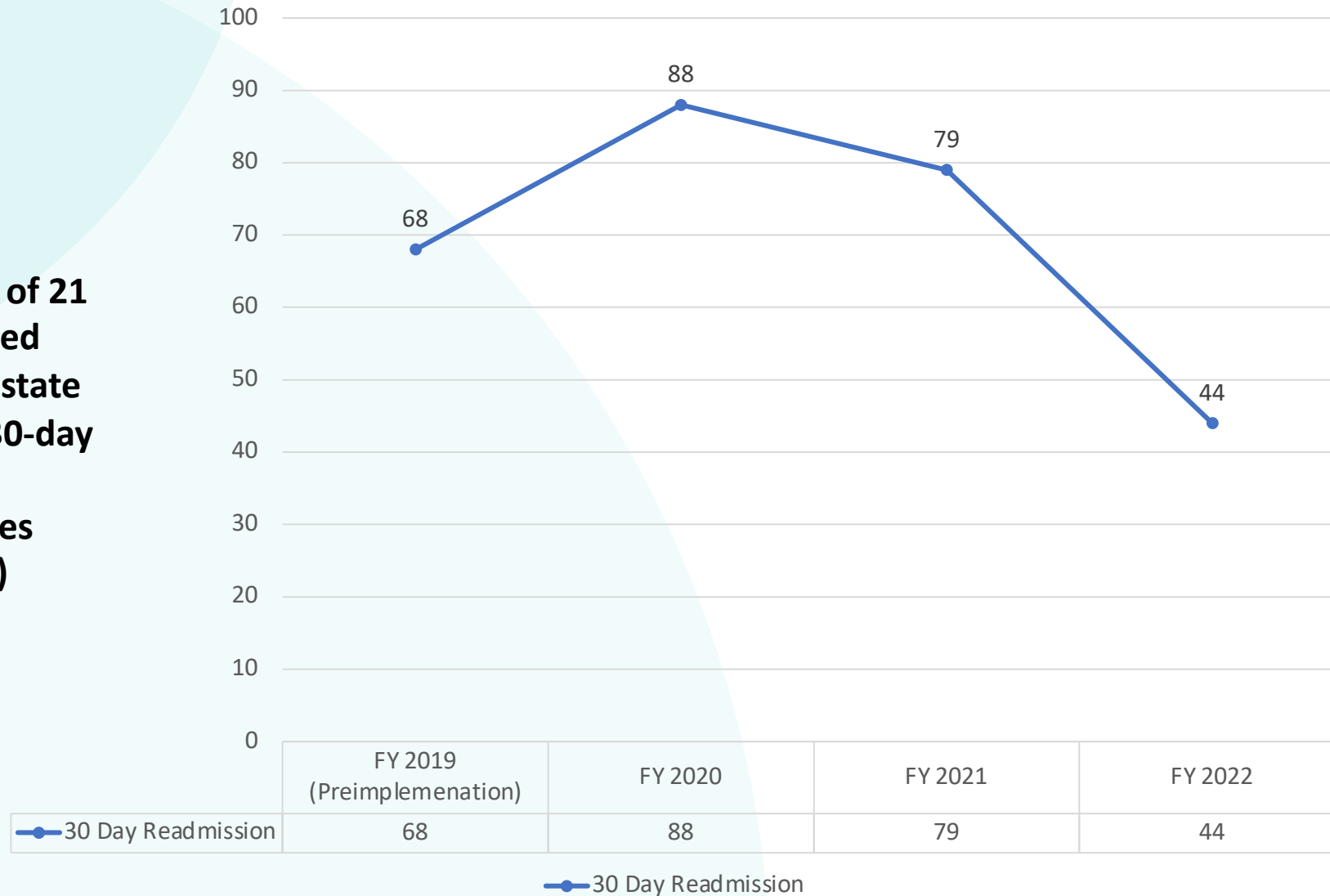
	FY 2019 (Preimpleme ntation)	FY 2020	FY 2021	FY 2022
% Inpatient Transfers	8.7	9	8.5	7

— % Inpatient Transfers

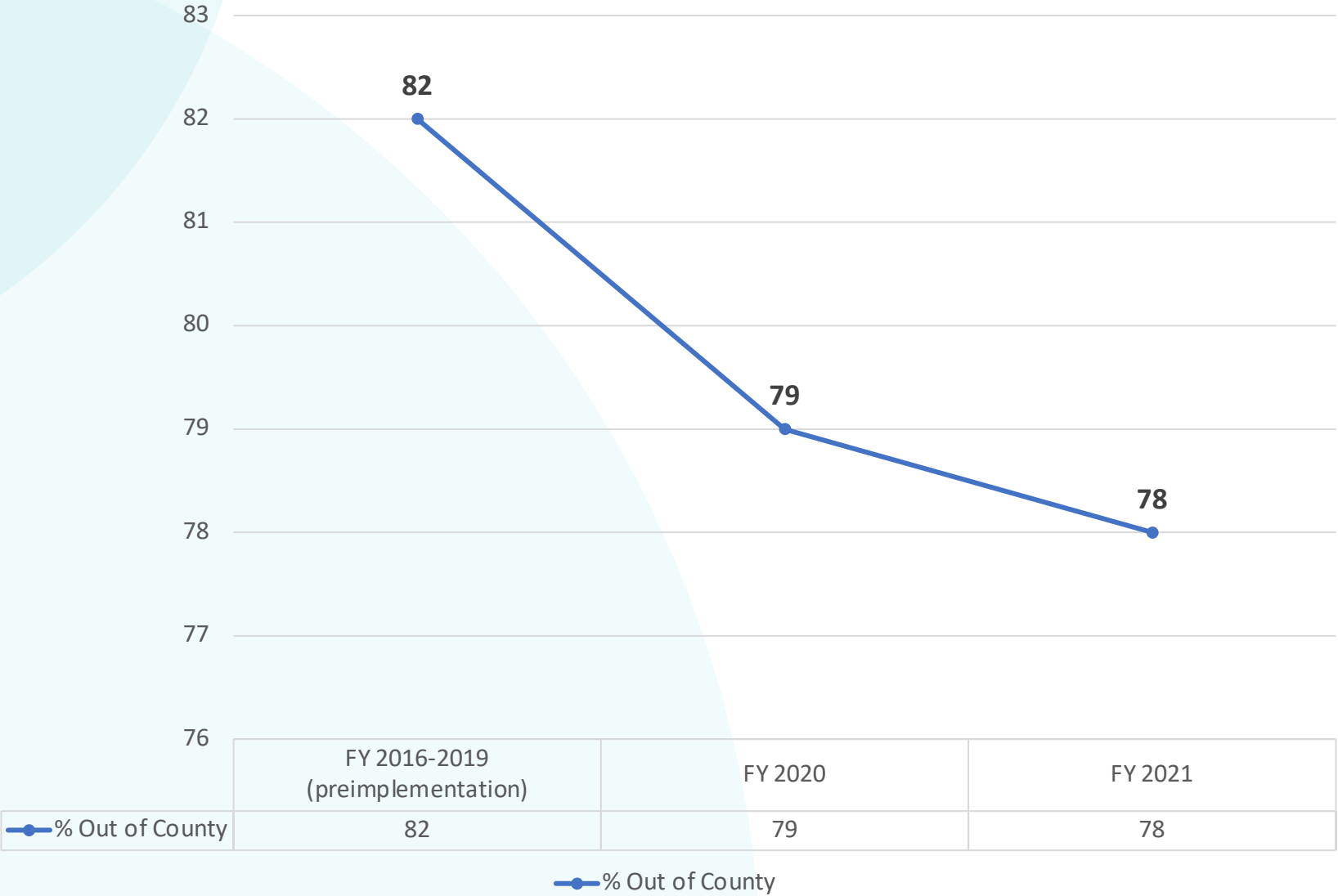


# Performance Measures: 30 Day Readmissions

**\*Ranked #1 out of 21  
other similar sized  
hospitals in the state  
for preventing 30-day  
readmissions  
(\*Health Services  
Advisory Group)**



# Performance Measures: Outmigration



**\*FY2022 data not yet available**

# Summary of Key Outcome Measures

- **~4% reduction in outmigration through FY 2021**
- **Increase in ED patients admitted to the rural hospital**
  - 442 patients per year (4%) in FY19 to 965 patients per year (10%) in FY22
- **24% increase in the average daily census**
- **Ability to keep “sicker” patients locally**
  - Number of ICU days has increased from 198 in FY19 to 415 in FY22
  - % of inpatient transfers to an outside facility has decreased from 10% to 7%
  - CMI has increased from 1.22 to 1.41
- **Decrease in 30-day readmissions**
  - 68 in FY19 to 44 in FY22
- **Able to support the hospital and local residents during the COVID-19 pandemic**

## Limitations

- Generalizability: single center study in southeast
  - State funding
  - Telehealth Center of Excellence
- Daily census limited by ancillary staff shortages
- Scope of services implemented at different times effects transfers

## Conclusions

- Implementation of a tele-hospitalist program to a small, rural, non-for profit hospital has increased the percentage of inpatients managed locally
- Improved access to care in rural communities without sacrificing quality as evidence by various outcome measures
- Successful tele-hospitalist model serves as a template for viability for rural market hospitals and expansion to other critical access locations in the state is already underway.

# Future Directions: MUSC Black River

## A Rural Hospital Opened Jan 16, 2023





## References

1. American Hospital Association. “Rural Hospital Closures Threaten Access”. Sept 2022
2. South Carolina Office of Rural Health: <https://scorh.net/rural-hospitals/>
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4. Ramedani S, George DR, Leslie DL, Kraschnewski J. The bystander effect: Impact of rural hospital closures on the operations and financial well-being of surrounding healthcare institutions. J Hosp Med. 2022;17:901-906. doi:10.1002/jhm.12961
5. University of Wisconsin Population Health Institute, School of Medicine and Public Health; Robert Wood Johnson Foundation. (2018). Retrieved from <http://www.countyhealthrankings.org/app/southcarolina/2018/rankings/allendale/county/outcomes/overall/snapshot>

ANY QUESTIONS?

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	*FY 2019 (Baseline)	FY 2020	FY 2021	FY 2022
Inpatient Acute Days	2148	2308	2836	2228
Inpatient ICU Days	198	298	430	415
Observation Days	299	430	509	822
Average Daily Census (ADC) – Acute	5.88	6.32	7.77	6.10
ADC ICU	0.54	0.82	1.18	1.14
ADC ICU + Acute + Observation	7.23	8.31	10.34	9.49
LOS (Acute + ICU)	3.47	3.71	4.56	4.78
30 day Readmits	68	88	79	44
Total Admits	912	1011	1028	1022
Transfers out Inpatient	79	91	88	72
% of IP Transfers	8.7%	9.0%	8.5%	7%
Case Mix Index	1.22	1.31	1.39	1.41
Total ED Visits	11490	9779	9667	10143
Admits from ED	442	755	914	965
Transfers out ED	538	541	558	525
%ED transfers	4.7%	5.5%	5.7%	5.2%
% ED admits	3.8%	7.8%	9.5%	9.5%

**TABLE 1: Outcome Measures**

\*Fiscal year (FY) is October preceding year to September of listed year