maryland
health services
cost review commission

Emergency Department Wait Time Reduction Commission

Meeting #2

January 22, 2025

Agenda

- Complexity Score Presentation– Jim Scheulen and Heather Blondy
- Hospital & Regional Factors Associated with ED LOS– Geoff Dougherty
- Prioritization Discussion–All
- Legislative Updates–Jon Kromm
- Subcommittee Updates–Tina Simmons
- Next Steps–Tina Simmons

ED Complexity Score Tool – Vizient

The impact of the patient population on ED operations:

Patient Complexity and Throughput

James Scheulen & Heather Blonsky
AAAEM Benchmark Committee
Vizient, Inc

ademic Emergency Medicine

Benchmarking in Emergency Medicine

Complexity of Building a Cohort for ED Operations

“Our patients are sicker…”
“Our patients need more…”



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Introductions

Benchmark Committee: 20 EM Administrators and Physician Leaders

vizient.

Benchmarking in EM

Comparing the activity or operations of one emergency department with others for the purpose of quality or process improvement

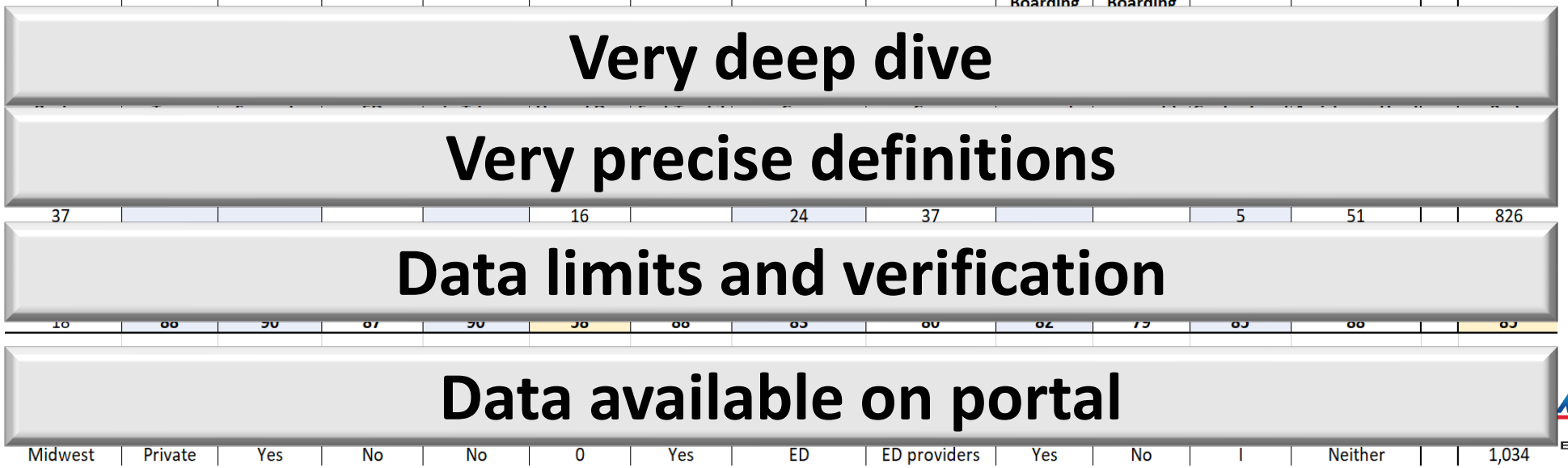
Clinical care, Education, Research, Salary

Very deep dive

Very precise definitions

Data limits and verification

Data available on portal



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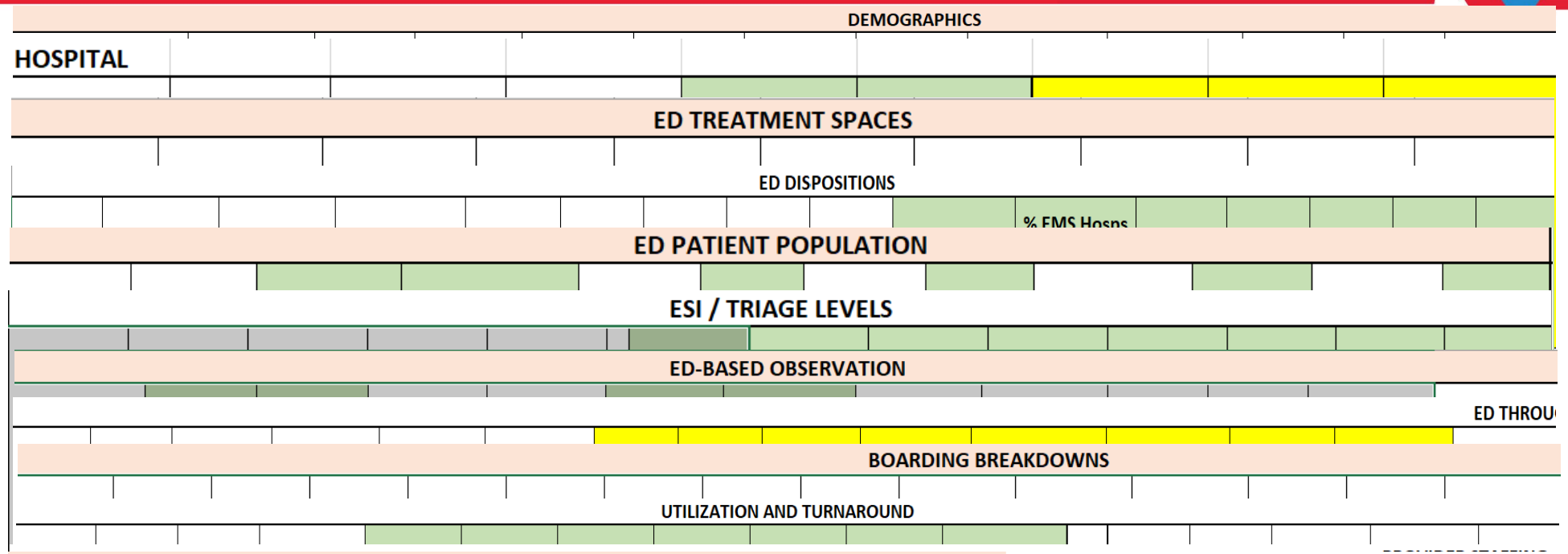
Benchmarking in EM



NURSING AND NURSING SUPPORT															
Patients per RN - Main ED	Patients per RN - Fast Track	Patients per RN - Obs. Unit	Patients per RN - Behavioral Health	Actual RN Hours Worked	Budgeted RN Hours	% Actual vs Budgeted RN Hours	Actual Nursing Support Hours	Budgeted Nursing Support Hours	% Actual vs Budgeted Nursing Support Hours		ED Case Managers?	Weekday CM Hours	Weekend CM Hours	ED Social Workers?	Weekday SW Hours
2	1	2	2	52	52	4.2%	21	13	18.3%			8	0		8
4	4	4	4	142,004	153,586	91.6%	51,239	59,010	85.7%		Yes	12	10	Yes	15
4	5	4	4	180,484	191,464	100.0%	75,505	78,869	99.7%		85%	16	16	91%	24
4	6	5	5	255,101	239,201	109.5%	159,697	160,303	117.9%			24	22		24
7	10	6	6	6,909,229	6,292,922	149.0%	2,797,979	2,362,722	820.8%		No	36	36	No	32
4	5	4	4	439,210	516,134	98.6%	232,786	187,264	121.1%		15%	17	15	9%	19
4	5	4	4	180,484	191,464	100.0%	75,505	78,869	99.7%			16	16		24
61	49	26	35	35	35	35	34	34	34		82	51	48	82	60

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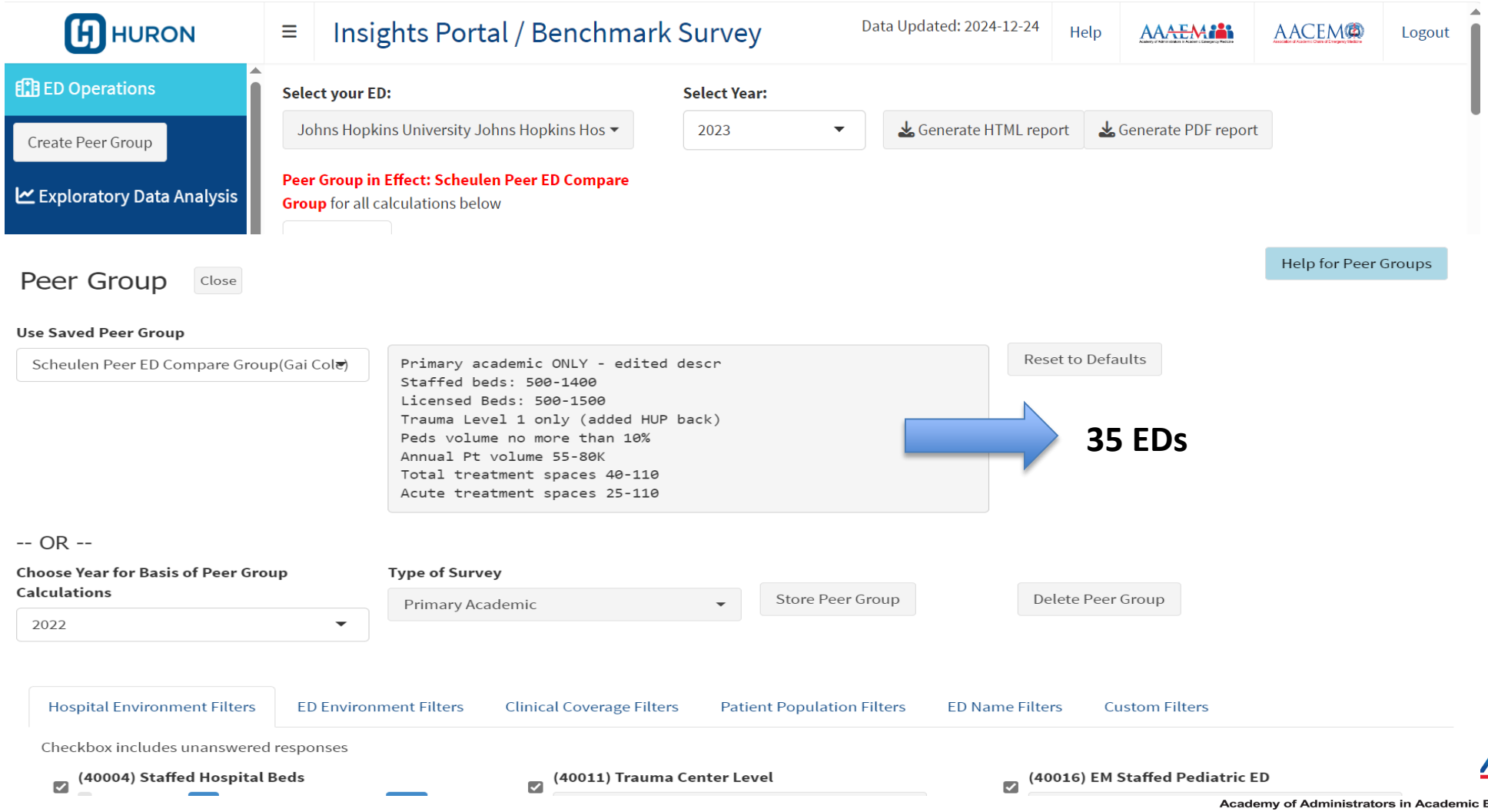
Benchmarking in EM



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The Academic ED

Fiscal Year 2023	Median
Hospital Beds	604
Licensed ED Beds	57
Total Bed Hours	*536,560*
% Bed Hours to MAIN	*69%*
ED Treat & D/C	38,248
ED Admissions	14,803
Hospital Observation	2,854
Total Visits	63,591
Hospitalized Rate (Calc)	27.8%
Unique visits	66.4%

63,591 Visits

Range: 28,011 – 144,710

40,878 Unique visits

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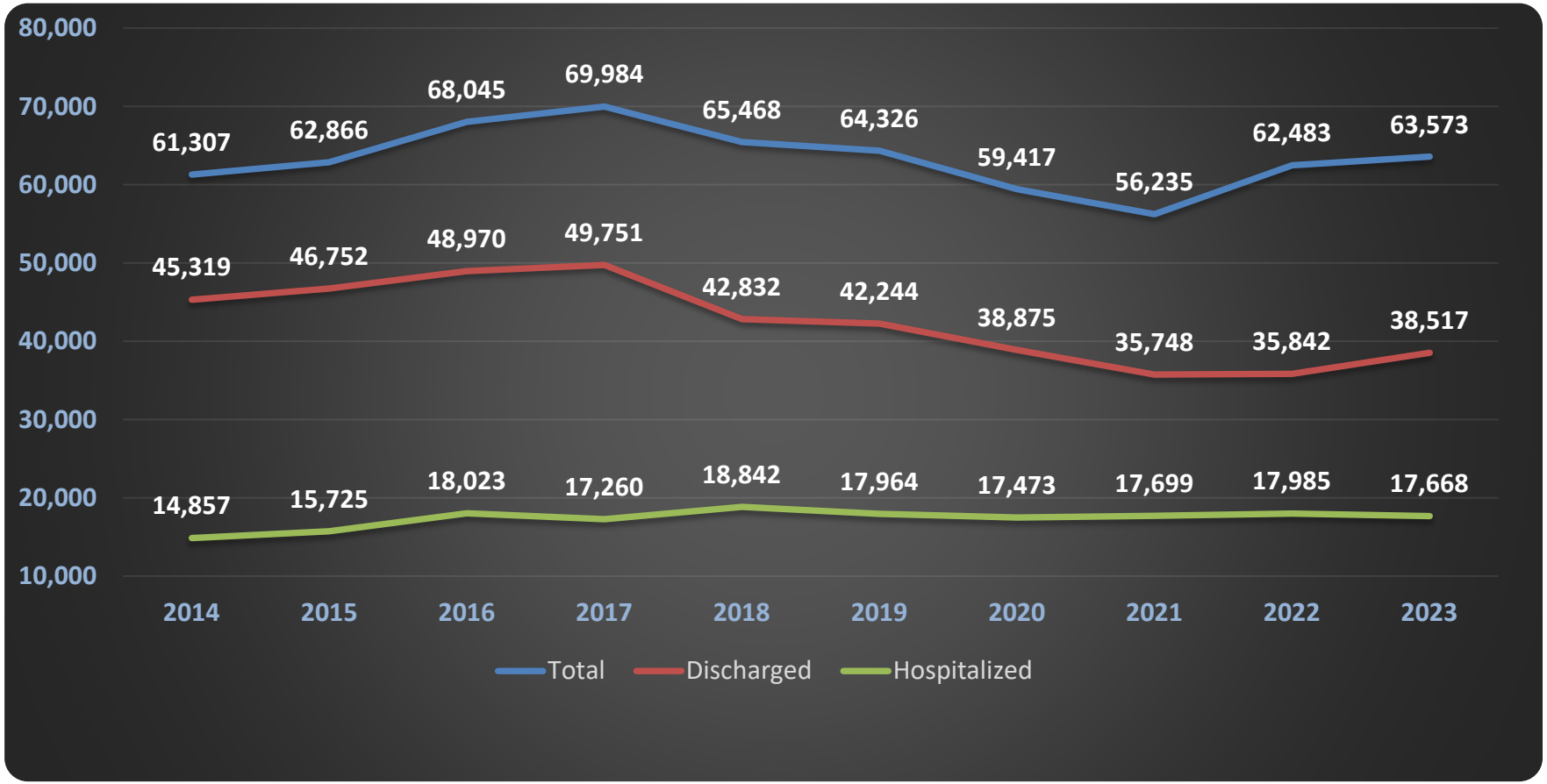
Patient Volume Trend: Median

Patient Volume Trend—All Responders FY 23



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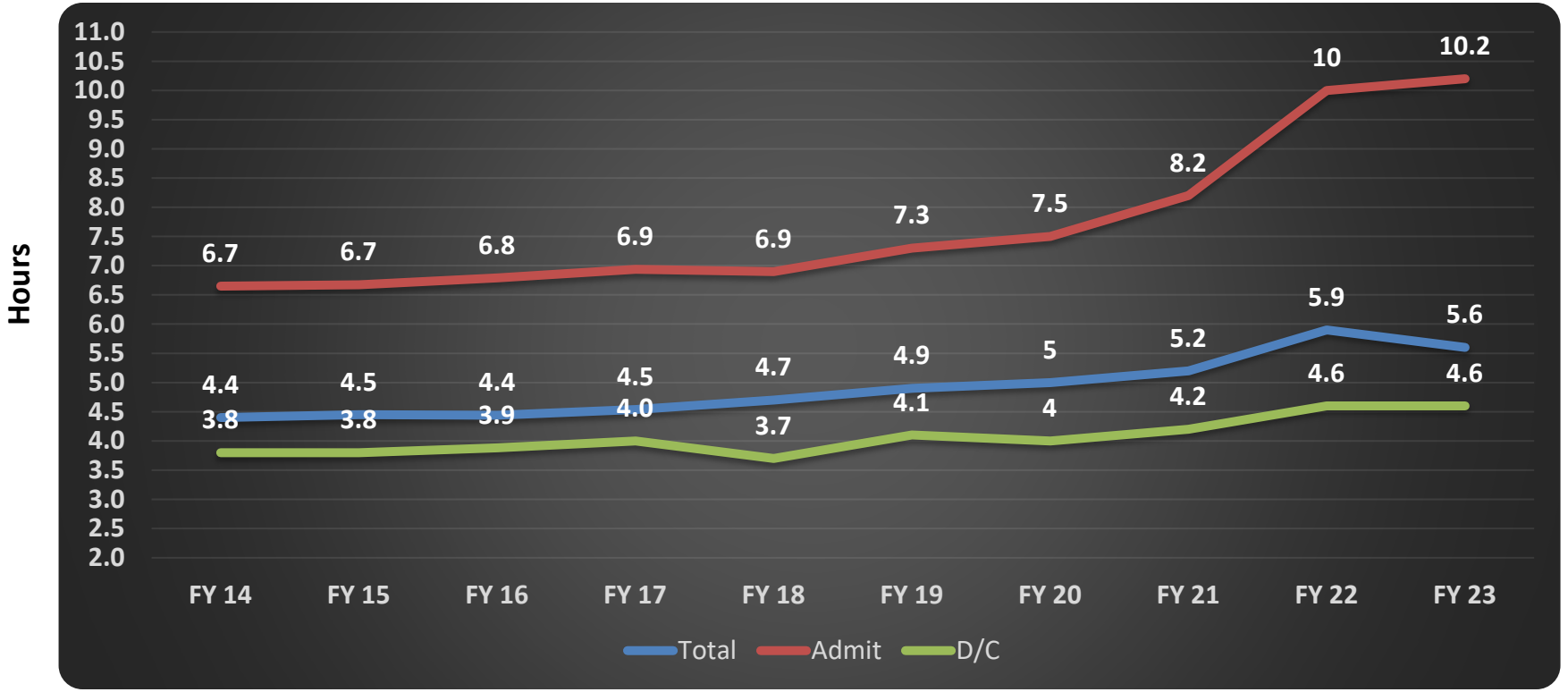
LOS Trend: Median LOS

Median Emergency Department Length of Stay



Median times represented here
Mean times are longer
Distribution with a long right tail

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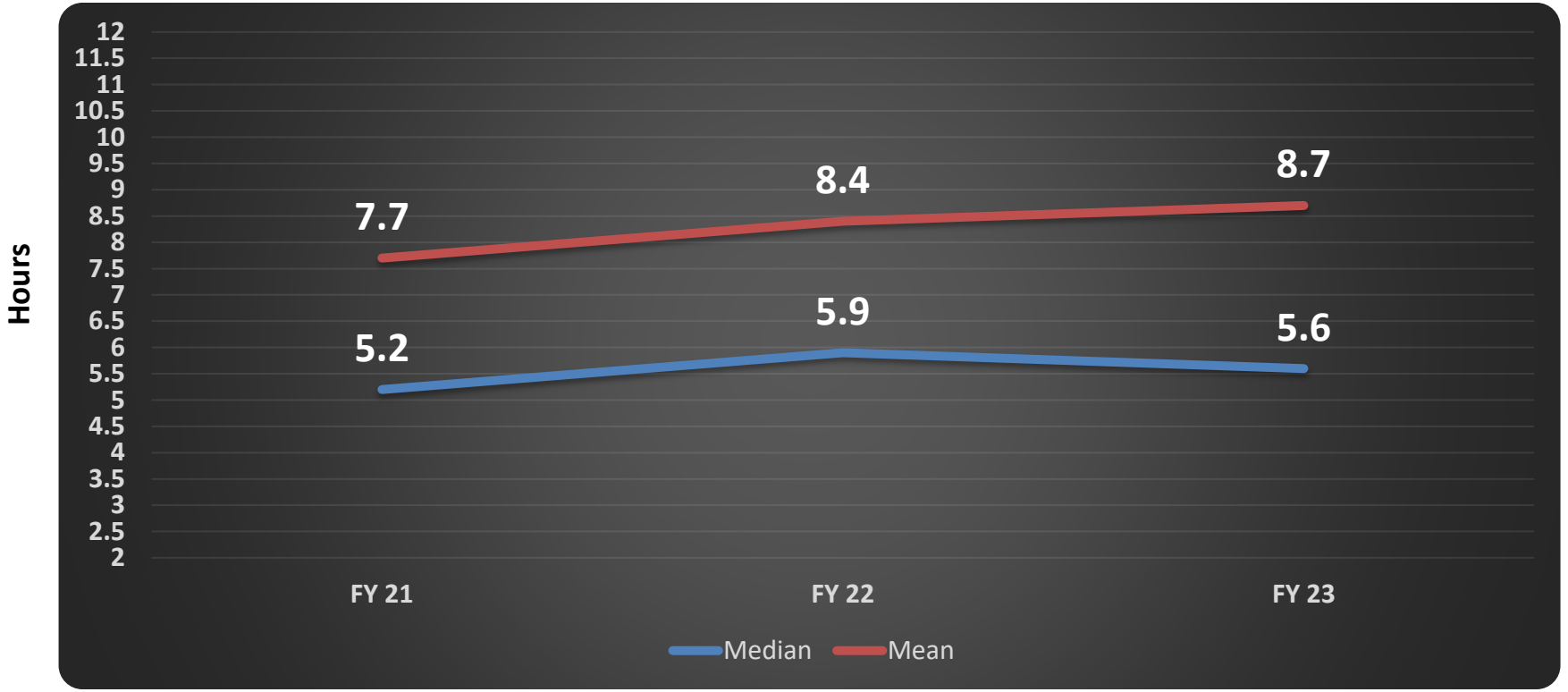
LOS Trend: Median vs Mean LOS

Total ED LOS: Mean vs Median



Mean times represent what staff and patients experience
Data distribution has a long right tail

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Sub-cycle Time

DISCHARGED PATIENTS		ADMITTED PATIENTS	
• *Arrival to Provider:*	1.0 hr	• *Arrival to Provider:*	1.0 hr
• *Provider to Decision:*	3.9 hr	• *Provider to Decision:*	5.5 hr
• *Decision to Depart:*	1.0 hr	• *Decision to Depart:*	8.0 hr

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Ancillary Resource Utilization

Resource	FY 19	FY 20	FY 21	FY 22	FY 23
CT Utilization	25.5%	Mean = 2.3 hours vs 2.8 hours			31.5%
MRI Utilization	2.7%	2.8%	2.8%	2.9%	3.2%

Mean CT Process time has increased by 39%

Mean MR process time has increased by 169%

CT and MR Utilization account for 65,000 hours of process time

If patients are in beds, we now dedicate *AN ADDITIONAL 2 beds* entirely to CT/MR wait: *7 beds* entirely dedicated to process wait time

MRI Turnaround	4.0 hr	Mean = 5.0 hours vs 11.3 hrs			5.5 hr

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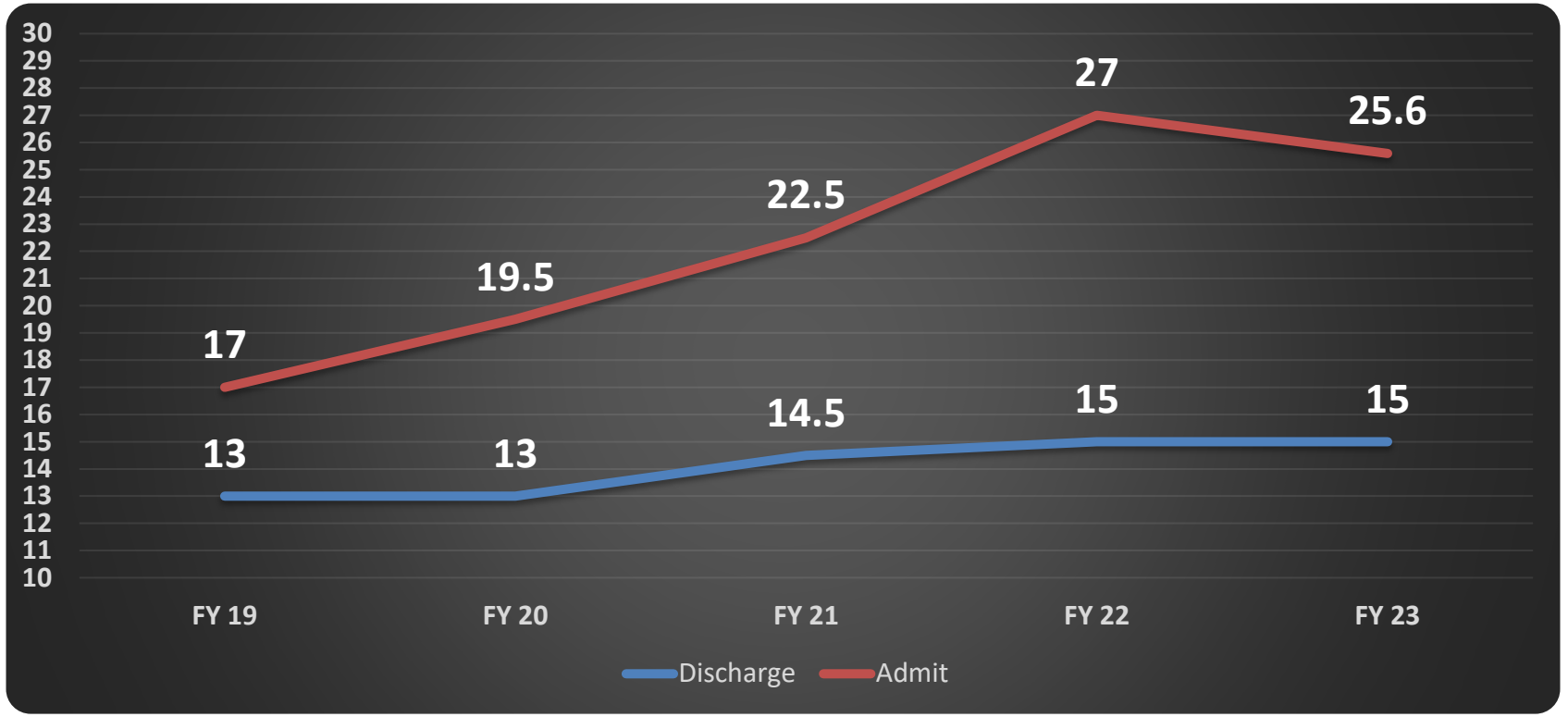
LOS Behavioral Health

Behavioral Health Patients = 5.7% of Arrivals or 3500 patients



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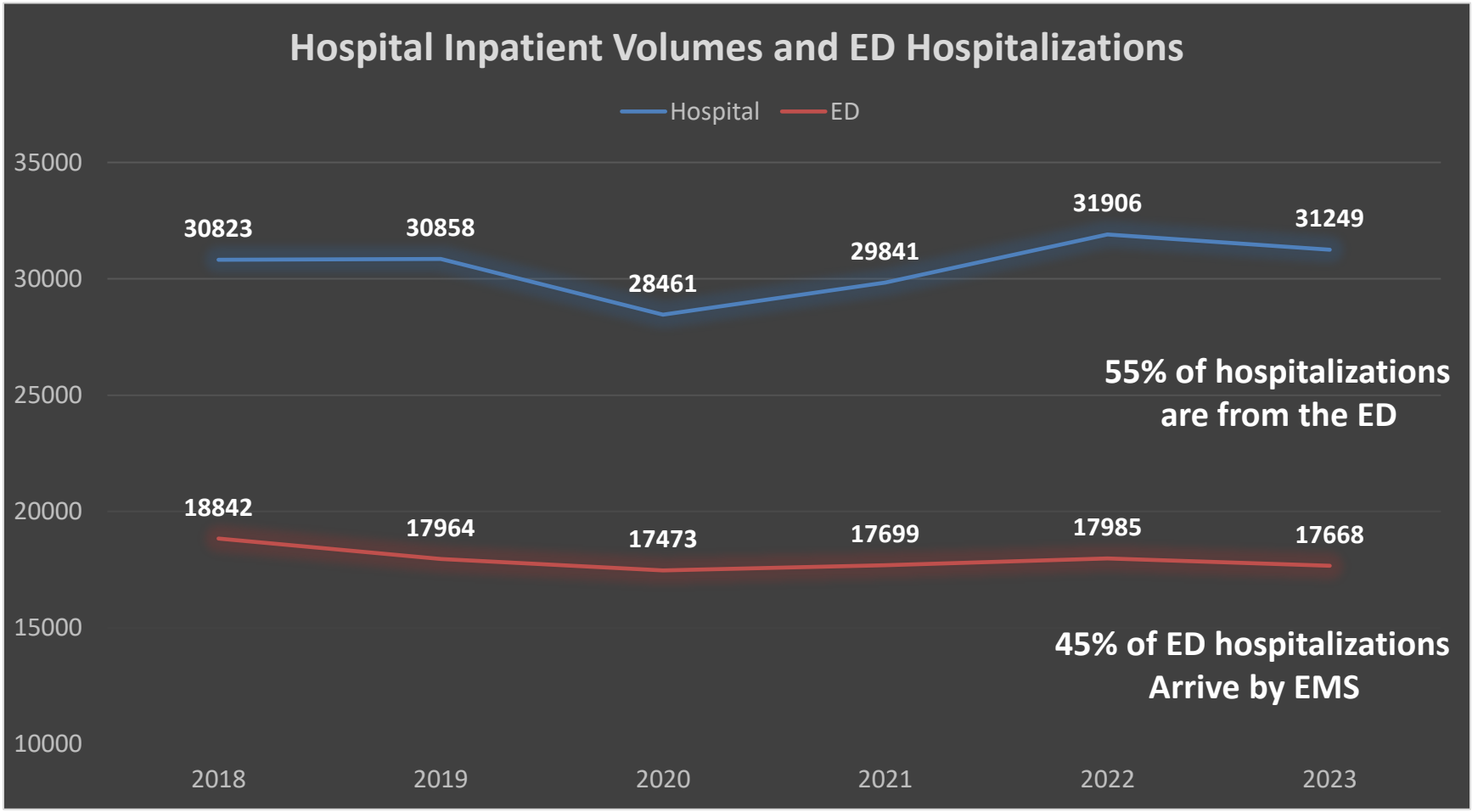
Hospitalization Data



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Inpatient Occupancy

All beds

Academic = 89%

DOM beds

Academic = 91%

DOM beds

Academic = 94%

Approximately 80% of all patients in DOM come from the ED
Approximately 67% of all ED hospitalizations go to DOM

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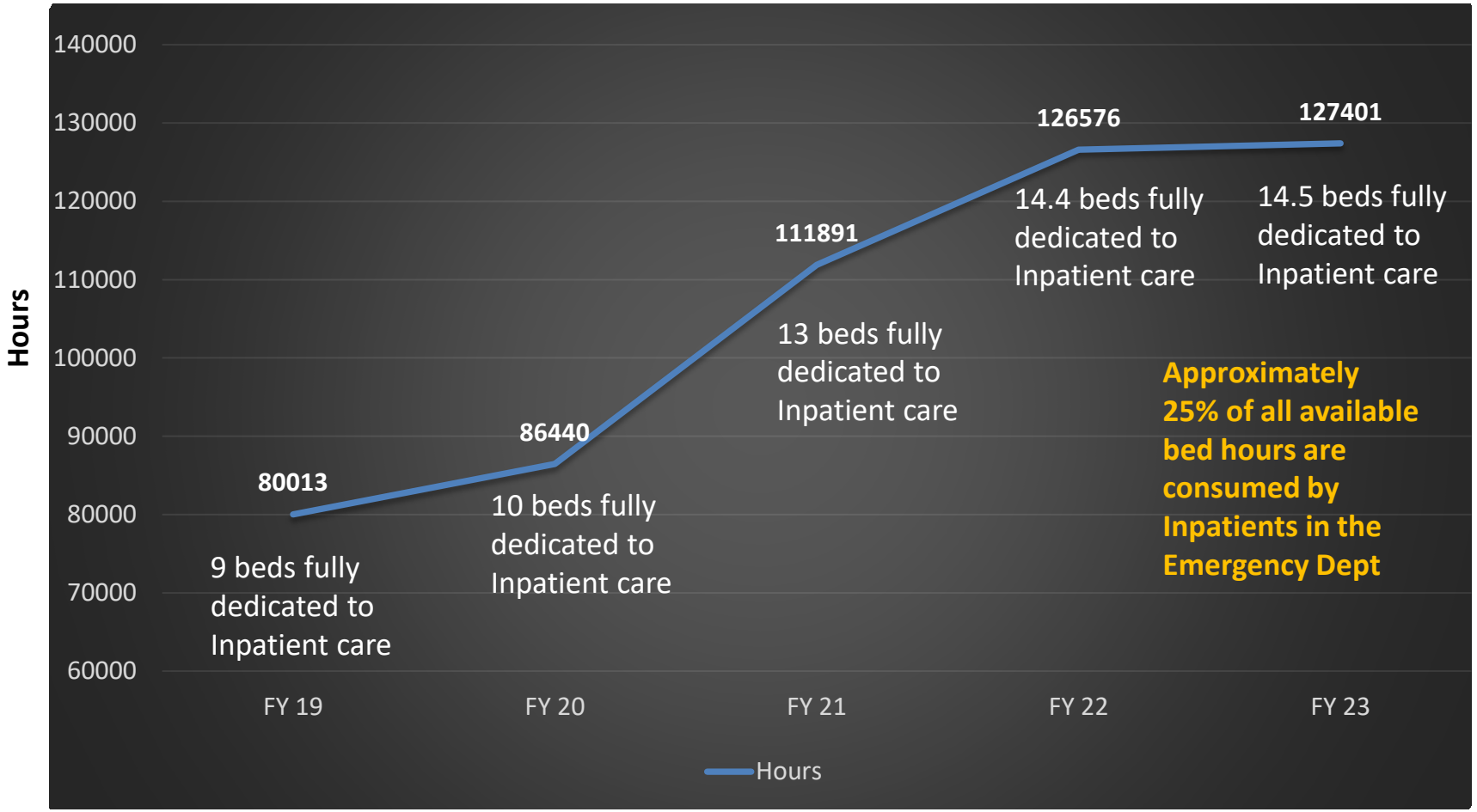
Boarding Time

Total Boarding Hours



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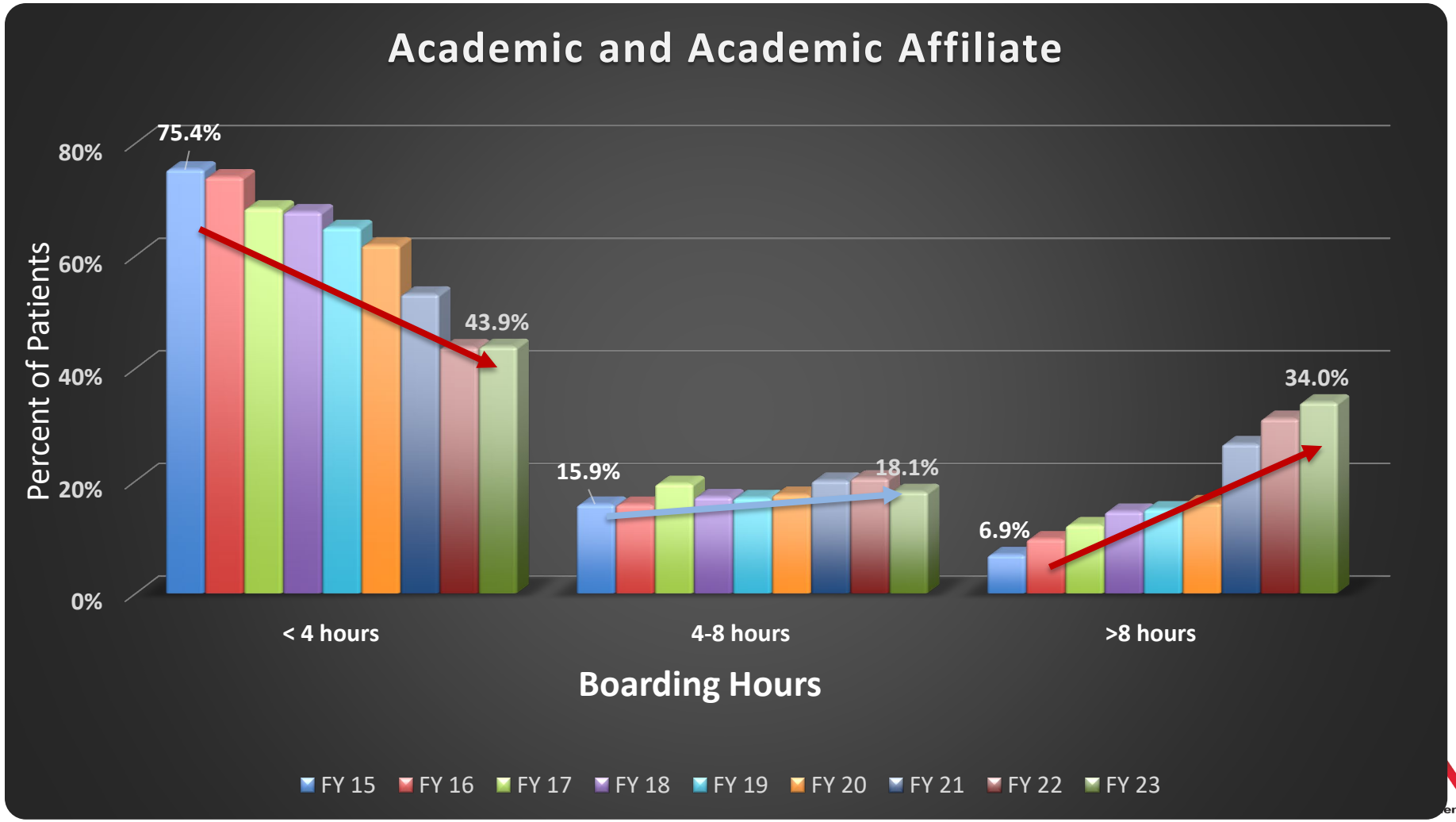
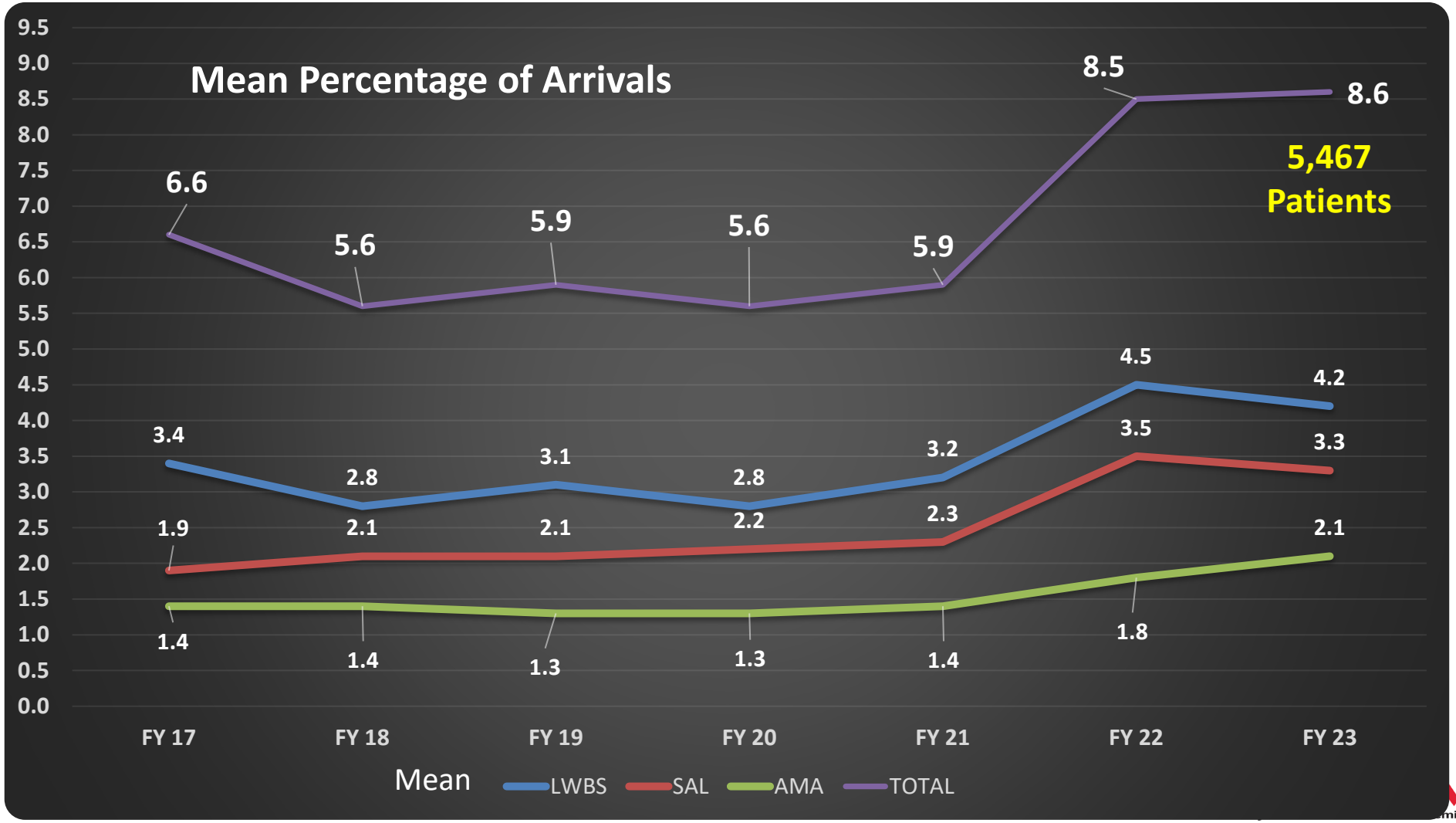
Boarding Distribution

FY 2015 vs FY 2023



Left Before Treatment Complete



Benchmarking in EM

Comparing the activity or operations of one emergency department with others for the purpose of quality or process improvement

Operational data

"Defines" the department

Develop a cohort to compare

Data is not patient level data

Region									Boarding	Boarding				Licensed Hospital Beds
Midwest					0		Inpatient	Inpatient			I	Scribes		105
18	Private	Yes	Yes	Yes	0	Yes	58	39	Yes	Yes	62	5		479
Northeast														655
37														826
South														1,541
20	39	56%	60%	46%	9	22%	1	0	59%	76%	1	24		668
West					9									655
18														85
Northeast	Private	Yes	Yes	Attending only	17	Yes	Inpatient	ED providers	Yes	No	I	Both		656
Northeast	Private	No	No	Attending only	13	No	Inpatient	ED providers	No	No	Not Applicable	Both		247
Midwest	Private	Yes	No	No	0	Yes	ED	ED providers	Yes	No	I	Neither		1,034

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Defining your department

Developing the right cohort
Understanding resource needs

Operational Variables

- Visit volume
- Teaching vs Community
- Hospitalization rate
- EMS arrivals

Patient Population

- Patient history
- Presenting complaint
- Co-morbidities
- Social needs

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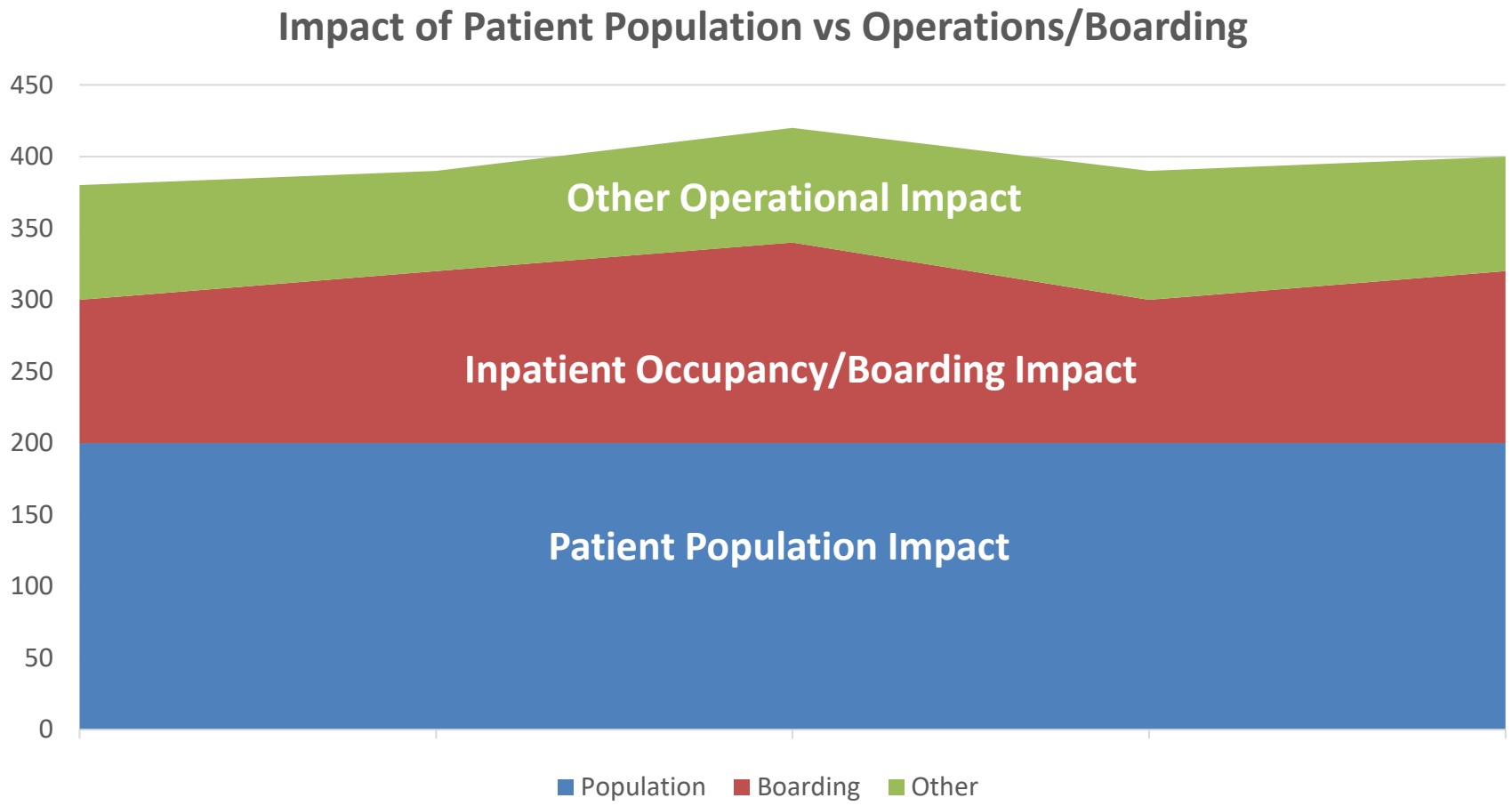
Throughput Impact Layers



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Benchmarking in EM

How does the composition or complexity of the patient population impact operations

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Patient Population Definition

Understanding the ***composition and complexity of the patient population*** in each emergency department as a way to better understand the ***resources required*** to care for that patient population.

- ***Time*** as a proxy for resource demands
- Patient level data
- ***On any given day, what do we face?***
  - Interactions between patient variables

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Social Needs

Multiple Chronic Conditions and Age

Mental Health Issues

Specific Complaints or Diagnoses

Patient Population

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Our Challenge

- **A way to describe a patient population**
- **A way to consider multiple patient based variables**
- **A way to compare among ourselves**
- **A way to compare ourselves to ourselves over time**

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Acuity versus Complexity

Acuity

Severity of illness

Priority setting

Implies ***SPEED*** is required

Complexity

Multiple care needs

Personal, social and clinical needs together

Implies ***TIME*** is required

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Previous Efforts

OPERATIONAL METRICS

CASE MIX INDEX FOR ED ADMISSIONS

COMPLEXITY INDEX DEVELOPMENT

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Inpatient Case-Mix Index

- **Inpatient Case Mix Index: Hospitalized from ED**
  - Resource based index
  - Indicates acuity/complexity but impacted by high cost treatments

	CMI w/o HAC
Primary Academic	1.94
ED Admissions	1.80
Non-ED	2.07
Community	1.45
ED Admissions	1.45
Non-ED	1.49

AMC > Community Hospital

AMC ED > Community ED

Non-ED > ED Hospitalizations

Community ED = Non-ED

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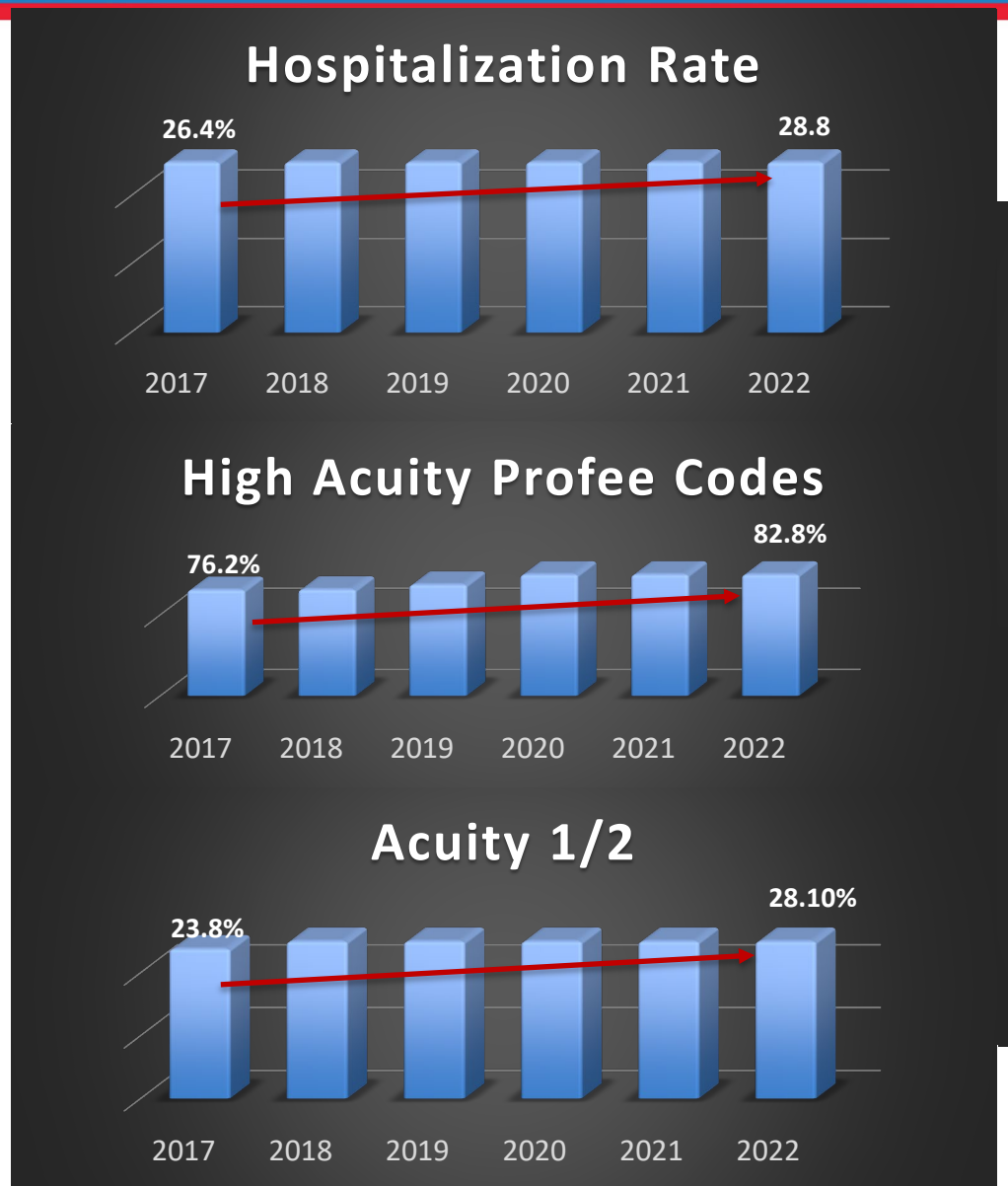
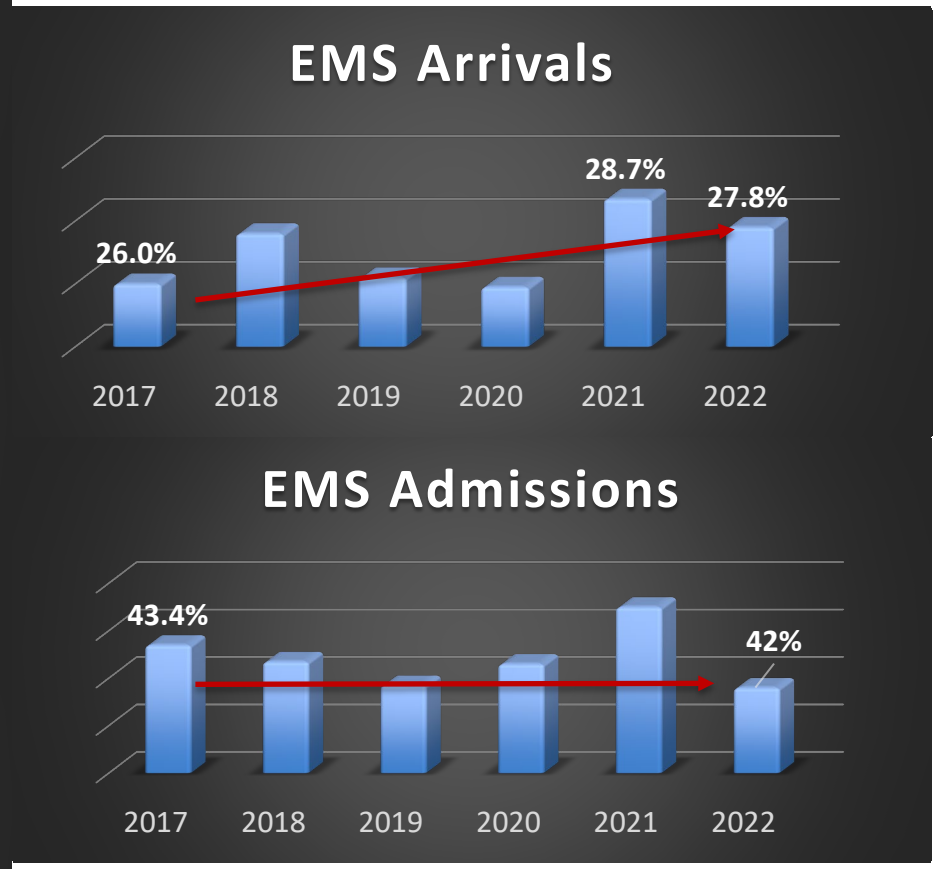
Complexity Metrics: As a group





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Operations Based Complexity Index

Complexity Index: Data Preprocessing and Methodological Comparison

AAAEM/AACEM Benchmark Committee and Roundtable Analytics, Inc.

February 28, 2020

Produce an Index Score and Rank for each Academic Center

- **Number of Arrivals**
- **Ratio of % ESI-1/2 to % ESI-4/5**
- **% ED Arrivals Hospitalized**
- **% Arrivals by EMS**
- **% EMS Arrivals Hospitalized**
- **% Profee 4/5/CC**

4 Versions of Complexity Index
Principal Component Analysis
Blended Versions

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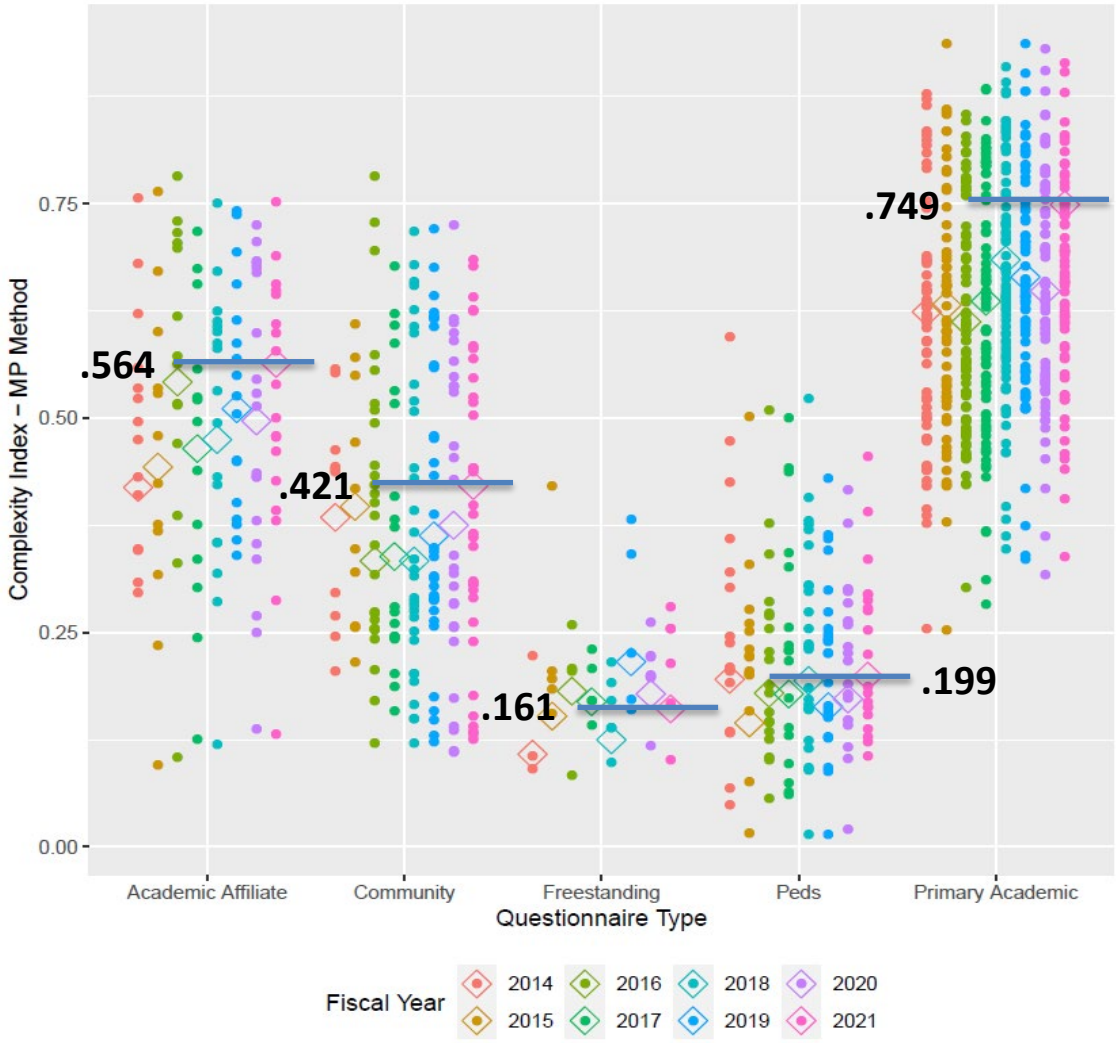
Operations Based Complexity Index

Fiscal Year 2021

- **Hospitalization rate**
- **EMS Arrivals**
- **EMS Admissions**
- **High Acuity Codes**
- **Acuity 1&2 vs 3&4**



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Operations Based Complexity Index

Complexity Index Ranking

University	ED Type	Complexity Index	Overall Ran	ED Type R
University of Massachusetts / Baystate	Primary Academic	0.942708333	1	1
University of Florida, Gainesville	Primary Academic	0.902083333	2	2
The Ohio State University	Primary Academic	0.890625	3	3
Harvard University / Beth Israel Deaconess	Primary Academic	0.88125	4	4
Medical College of Wisconsin	Primary Academic	0.877083333	5	5
University of Kansas School of Medicine	Primary Academic	0.864583333	6	6
Vanderbilt University	Primary Academic	0.855208333	7	7
Virginia Tech University	Primary Academic	0.845833333	8	8
Harvard Medical School	Primary Academic	0.840625	9	9
University of Texas Health Sciences - Houston	Primary Academic	0.817708333	10	10
Washington University @ St. Louis	Primary Academic	0.796875	11	11
University of Texas, Southwestern	Academic Affiliate	0.788541667	12	1
Yale University	Primary Academic	0.7875	13	12
Loma Linda University	Primary Academic	0.780208333	14	13
Penn State University	Primary Academic	0.778125	15	14
University of Michigan	Primary Academic	0.777083333	16	15
University of Rochester	Primary Academic	0.777083333	17	16
Texas A&M University	Primary Academic	0.776041667	18	17
Duke University	Primary Academic	0.772916667	19	18

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Positiv

- Vari
- Data
- We
- Allo

are a

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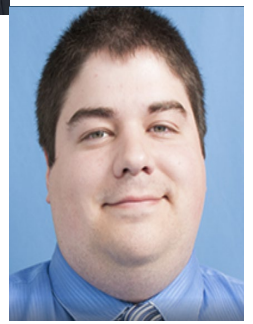
Patient Based Complexity

- **Collaboration with Vizient**
  - Membership PI Organization
  - **Most AMCs (*95% of our members*)**
  - Clinical Data Base from members
- **Patient Based Complexity Measure**
  - Patient level data
  - ***Encounter specific metrics: Hospital Coding***
    - Demographics (Age)
    - Presentations
    - Diagnoses
    - Co-morbidities
    - Social needs
  - ***Impact on Throughput***

vizient®

Heather Blonsky

Jaie Lavoie



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Patient Based Complexity

Quantify differences in the complexity of cases or definition of the patient population seen in different EDs or one ED over time

- Provide context to understanding variables impacting throughput
  - ***Patient Clinical Data***
  - ***Social Needs***
  - ***Variability (Operations)***

Hypothesis:

An emergency department that sees patients with more clinical needs and patients with more social needs will have longer throughput times.

Patient Based Complexity Model

Creating the Model

Initial Data Set: 4 Hospitals
Vizient Clinical Data Base
280 patient level variables

Small sample size for model

Provided throughput data points
2 years of daily patient level data

Principal Component Analysis
Streamlined variables

On this day in the ED

- **Age and co-morbidities**
- **Current diagnoses**
  - **Psychosis**
  - **Alcohol and/or drugs/depression**
  - **Trauma**
- **Complex history**
- **PCP desert and 7 day returns**
- **Patients from neighborhoods with high social needs (transportation domain)**

Patient Based Complexity Model

- **Expanded the number and type of hospitals**
  - **10 Health Systems**
    - JHHS, UC Health, Northwestern, Mass General Brigham, UMass, Michigan, Cincinnati, OSU, Jefferson, U Virginia
  - **27 Hospitals**
    - 11 Academic Medical Centers
    - 7 Large Community Hospitals (Affiliates)
    - 7 Small Community Hospitals
    - 2 Critical Access Hospitals

52 Hospitals

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Summary Patient Based Model

Population most impacting operations:

- **More patients**
- **Higher proportion of patients with chronic effects of ETOH**
- **Higher proportion of patients with mental health issues (Psychosis)**
- **Higher proportion of elderly and/or complex patients**
  - **More than 4 Elixhauser comorbidities**
- **Higher proportion of patients with oncology Dx**
- **Higher proportion of patients from neighborhoods with high social needs**
  - **Transportation challenges**
  - **Access to health care/PCP desert**

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Patient Based Complexity Model

Variables provide a good fit ($r^2 = 0.71$)

- More patients
- More patients with chronic ETOH
- More patients with psychosis
- More elderly and/or with comorbidities
- More patients with oncology Dx
- Patients from neighborhoods with high social needs/PCP desert
- Reduced time = more patients with:
  - Current drug or alcohol overdose
  - History of 7-day returns to the ED
  - Severe trauma

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|	Variance Inflation
Intercept	1	1.72420	0.00844	204.39	<.0001	0
logcountEncounters	1	0.26441	0.00332	79.66	<.0001	1.80271
elderlycomplex_pct	1	0.54292	0.03768	14.41	<.0001	3.61055
elderlyorcomplex_pct	1	0.13184	0.01351	9.76	<.0001	1.98338
depression_pct	1	0.30474	0.02607	11.69	<.0001	2.98850
psychosis_pct	1	0.73521	0.05640	13.04	<.0001	2.17136
drugs_pct	1	-0.65709	0.01535	-42.81	<.0001	2.01709
alcohol_chronic_pct	1	1.38677	0.09917	13.98	<.0001	1.08316
hf_pct	1	0.42824	0.04181	10.24	<.0001	2.38631
ami_pct	1	1.39015	0.12972	10.72	<.0001	1.05410
oncology_pct	1	0.53311	0.02819	18.91	<.0001	2.10574
stroke_pct	1	0.49120	0.09667	5.08	<.0001	1.38436
covid_pct	1	0.17618	0.01594	11.06	<.0001	1.02545
trauma_pct	1	0.56129	0.02515	22.31	<.0001	2.20454
trauma_severe_pct	1	-0.77730	0.02538	-30.62	<.0001	2.58417
vvi_pct	1	0.23934	0.00489	48.99	<.0001	2.41054
transportation_pct	1	0.14704	0.00366	40.22	<.0001	1.62815
access_pct	1	1.39098	0.08132	17.10	<.0001	1.11890
pcp_pct	1	0.06822	0.00504	13.54	<.0001	1.58394
ed7day_pct	1	-0.15454	0.01771	-8.72	<.0001	1.61210

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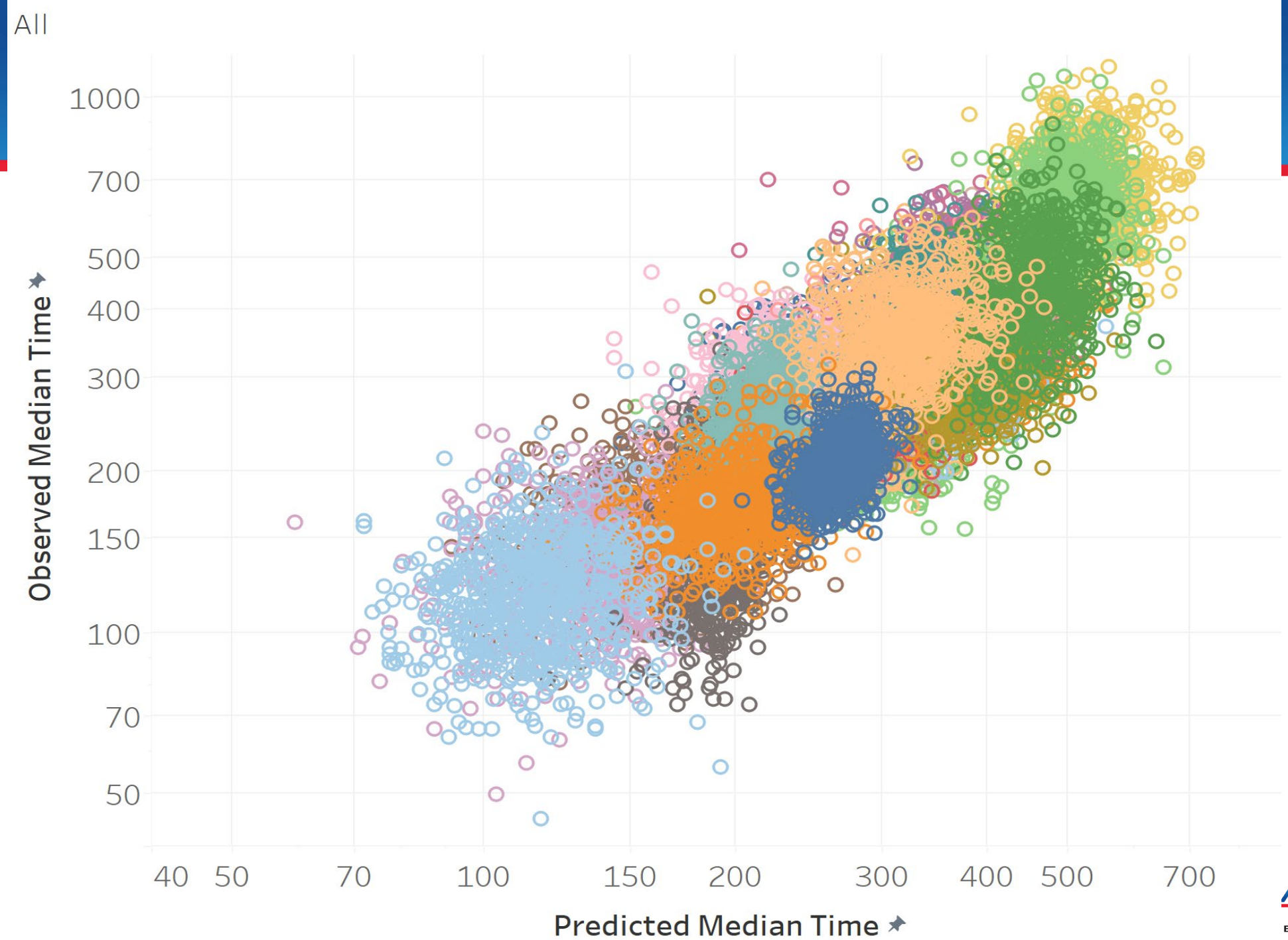
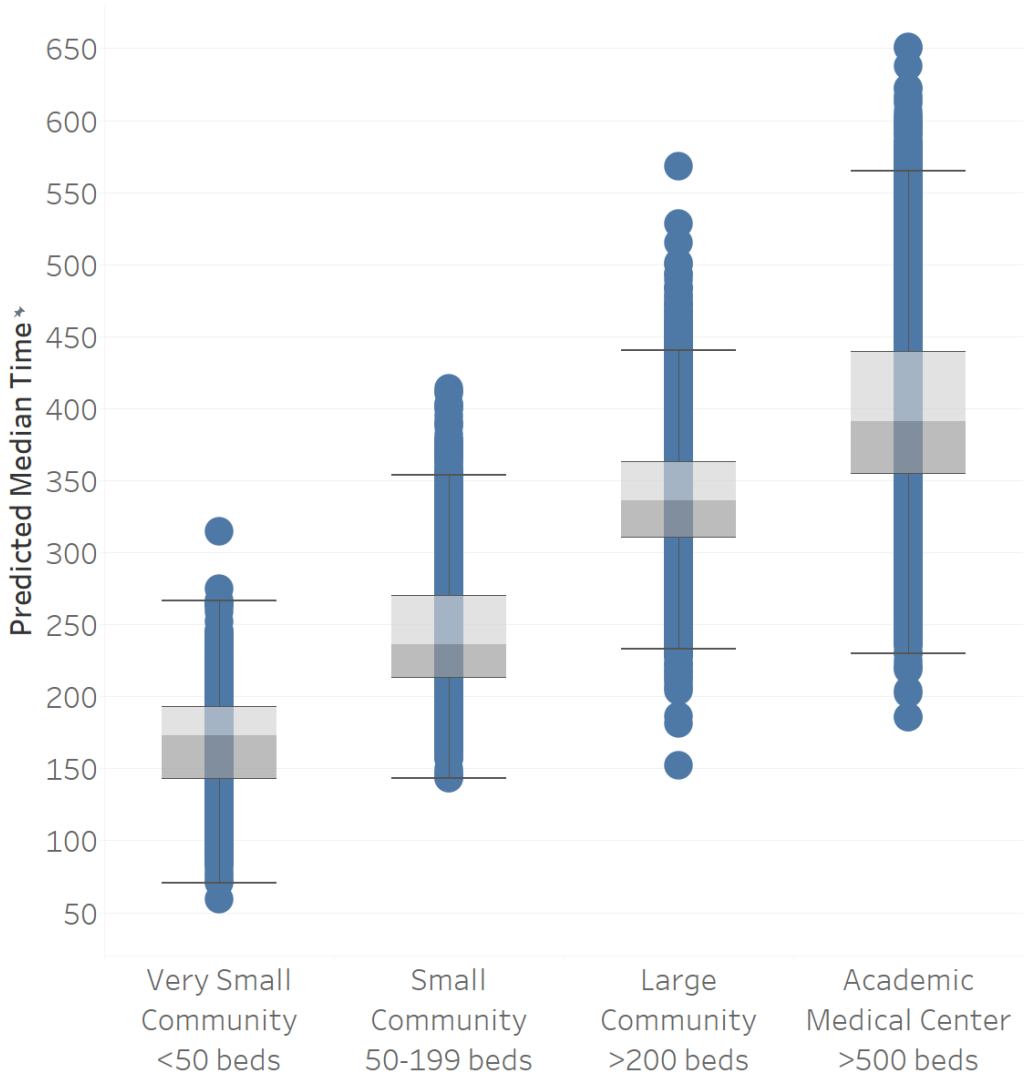

All
Observed Median Time
1000
700
500
400
300
200
150
100
70
50
40
50
70
100
150
200
300
400
500
700
Predicted Median Time

Patient Based Complexity Model



Higher complexity for AMCs than for any other cohort

Highest complexity within any one cohort tends to include higher numbers of patients with increased social needs

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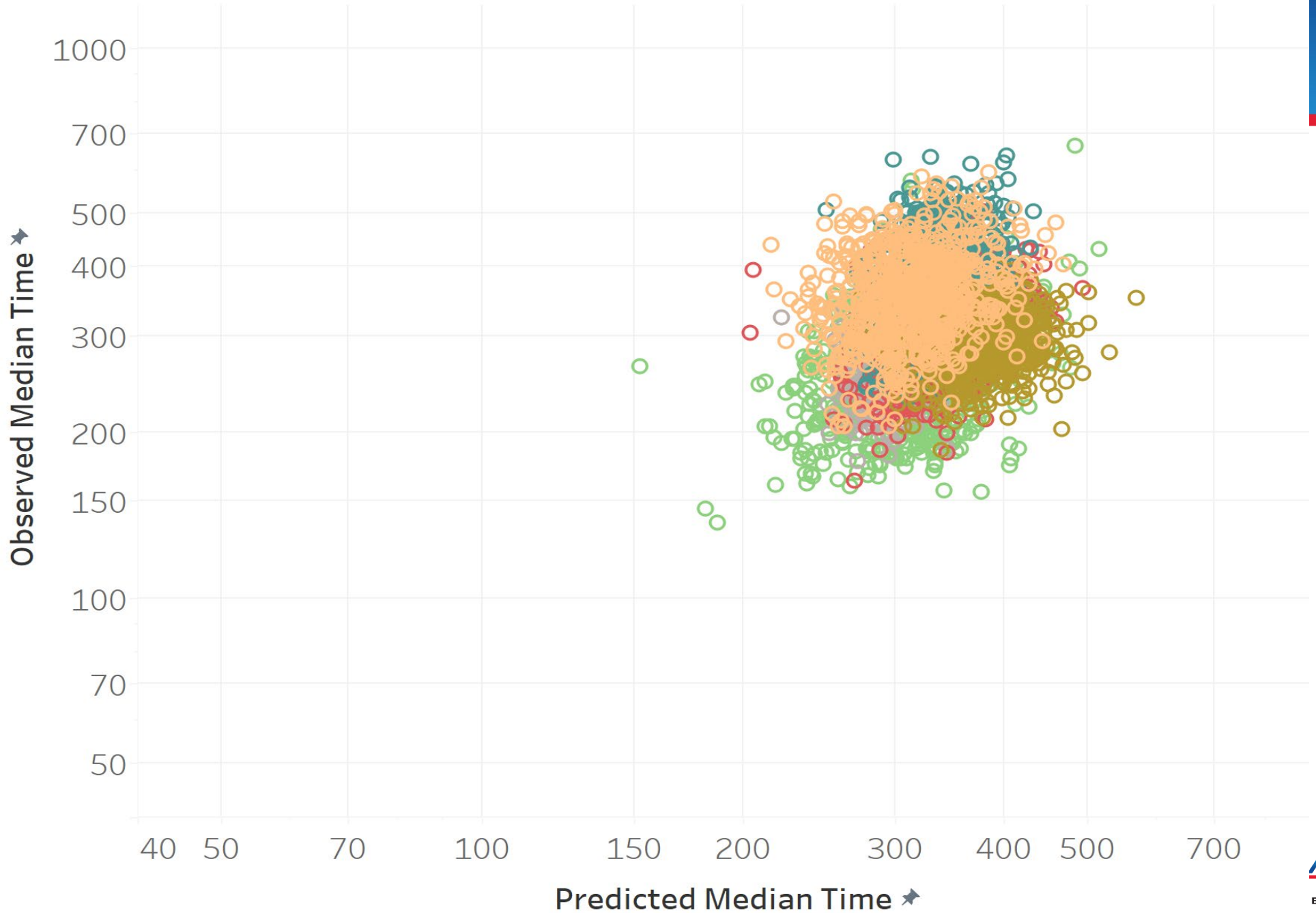
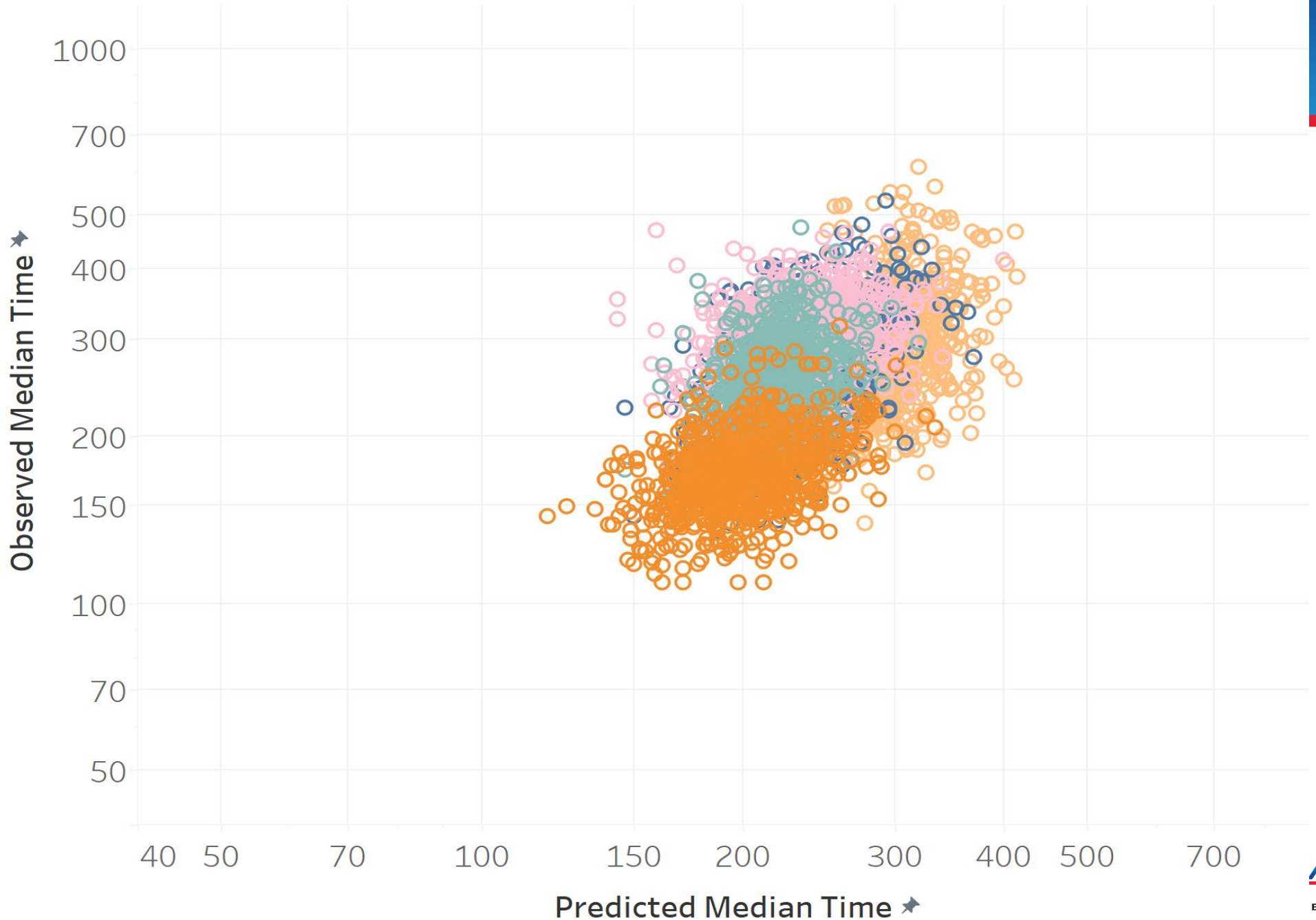
Academic Medical Center

Emergency Medicine

Large Community



Small Community



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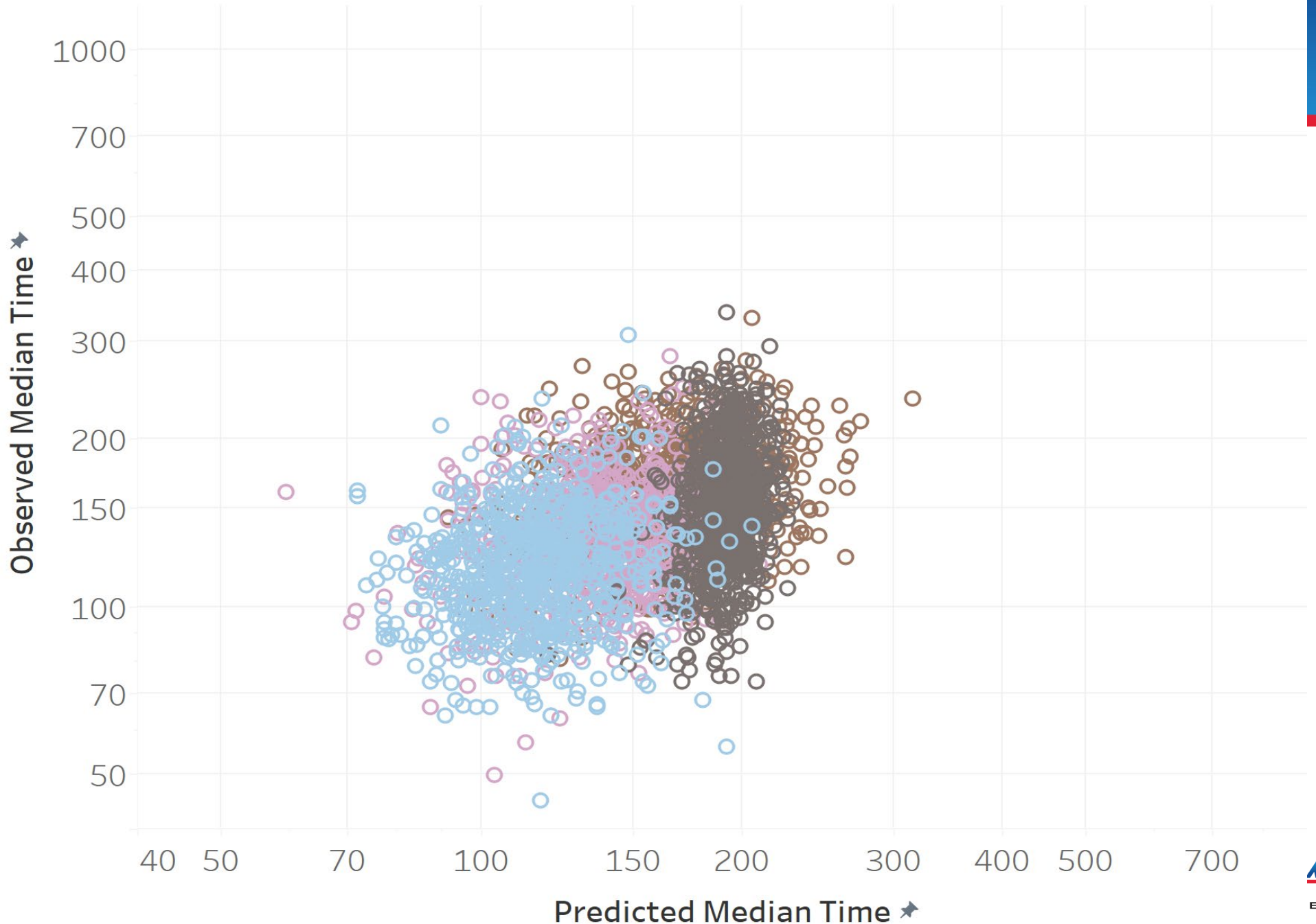
Very Small Community



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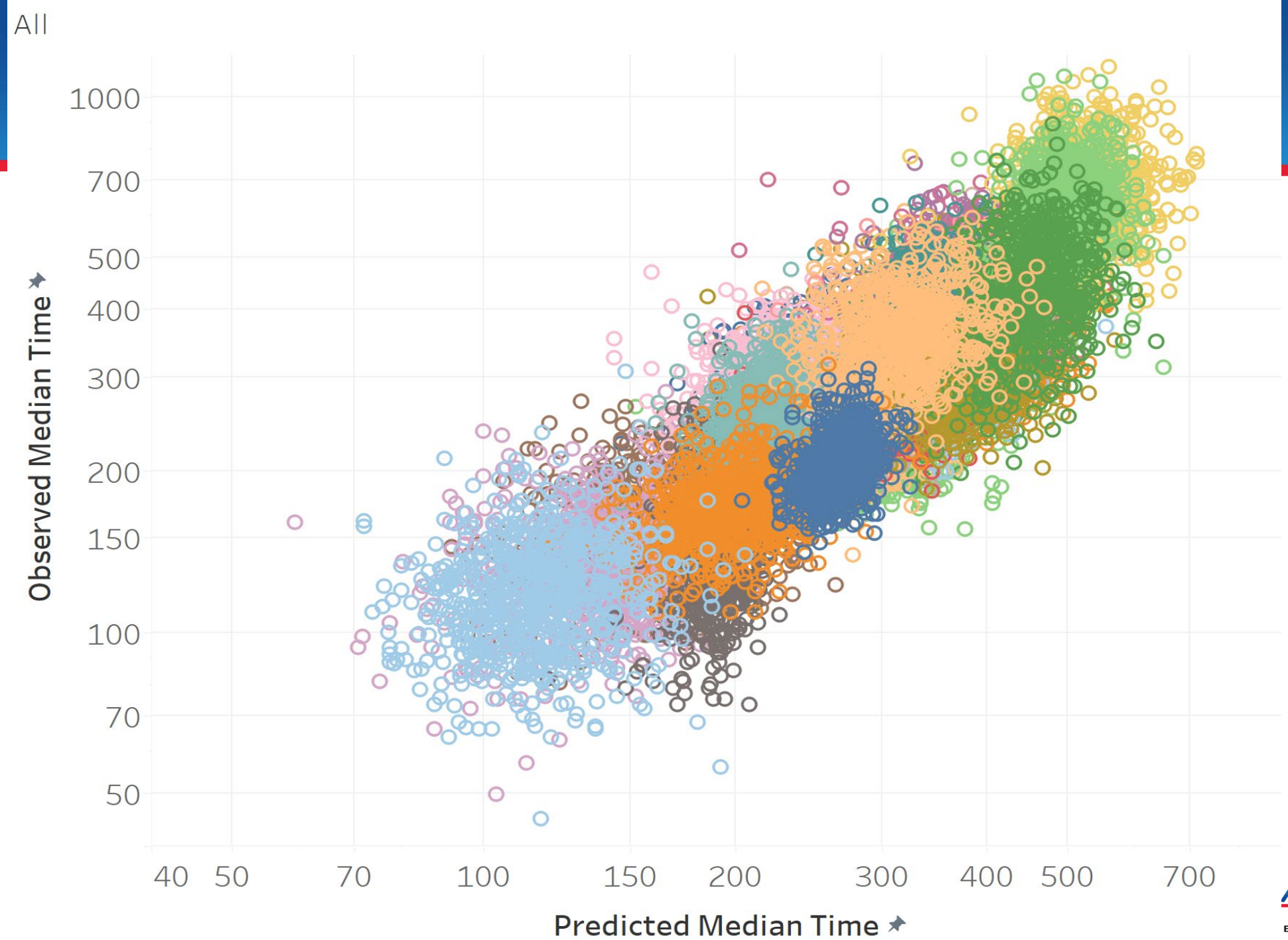
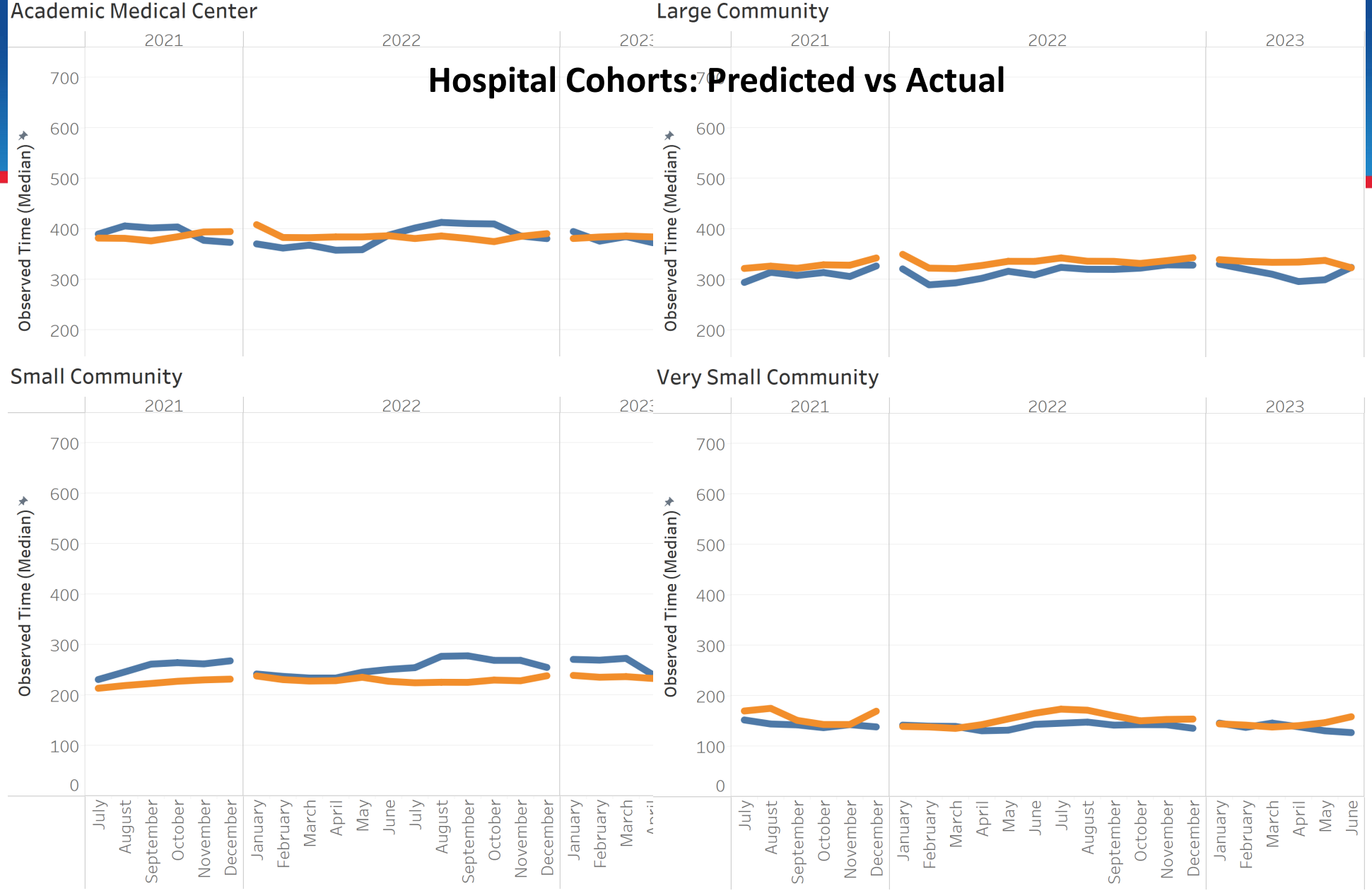

All
Observed Median Time
1000
700
500
400
300
200
150
100
70
50
40
50
70
100
150
200
300
400
500
700
Predicted Median Time

Hospital Cohorts: Predicted vs Actual



Low variability at the cohort level

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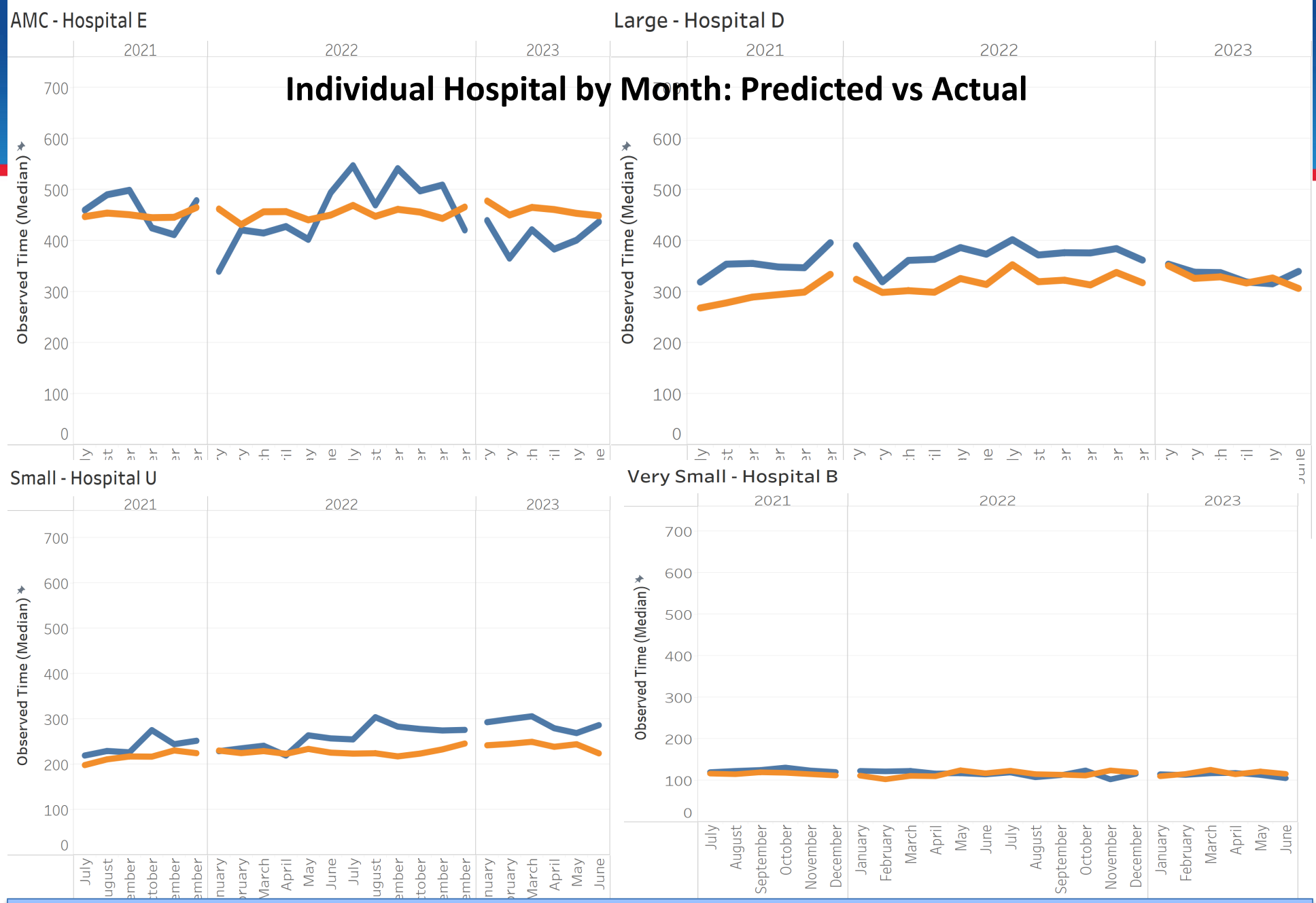
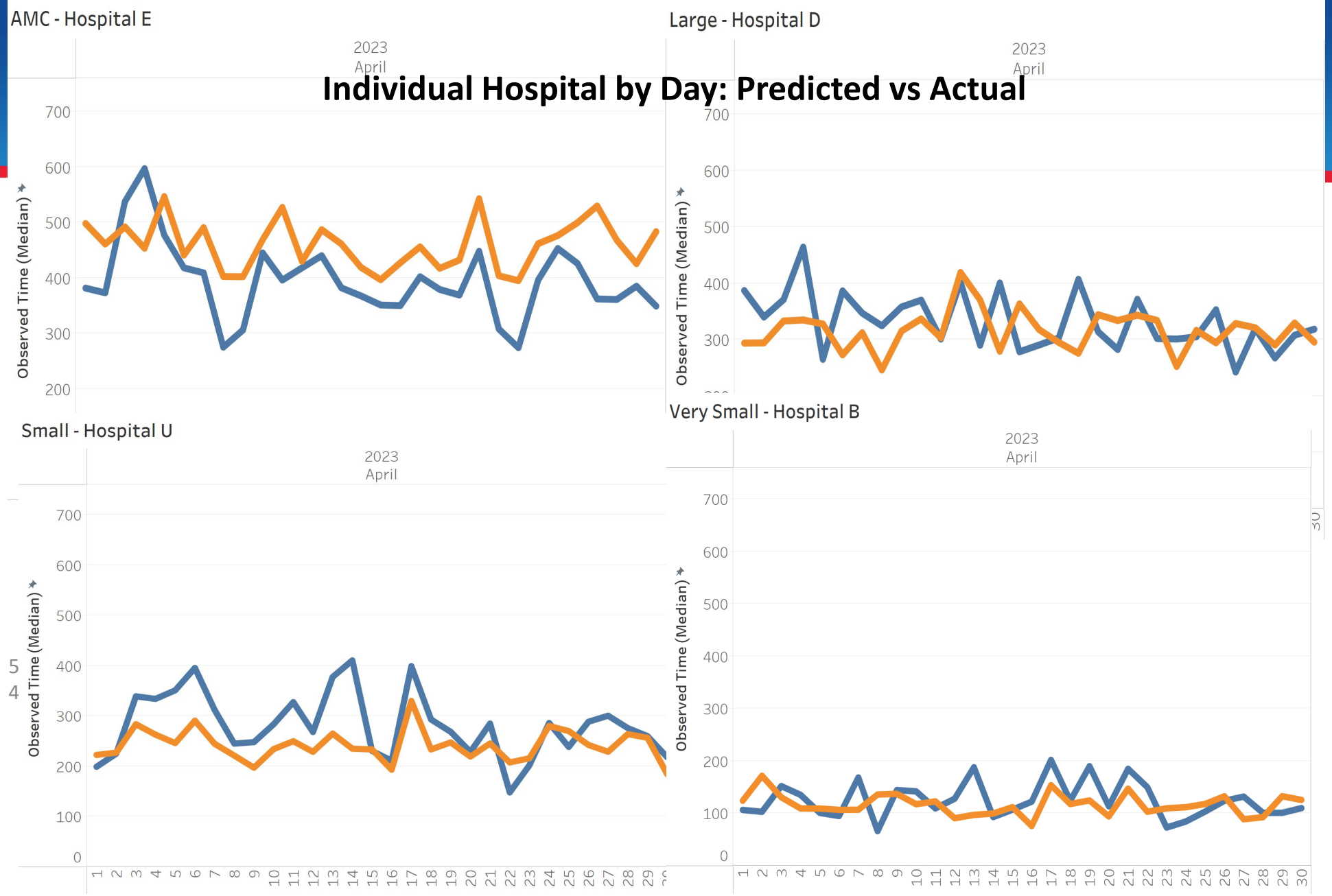
Individual Hospital by Month: Predicted vs Actual



Low variability at the hospital level (Monthly)

Emergency Medicine

Individual Hospital by Day: Predicted vs Actual



Expected variability at the hospital level BY DAY

Emergency Medicine

Conclusion

Emergency Departments that care for patients with *more clinical and social needs* can expect *longer throughput times* than those who care for a population with fewer clinical and social needs.

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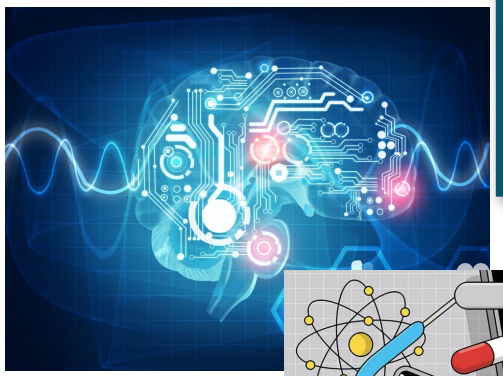
Patient Based Complexity Model

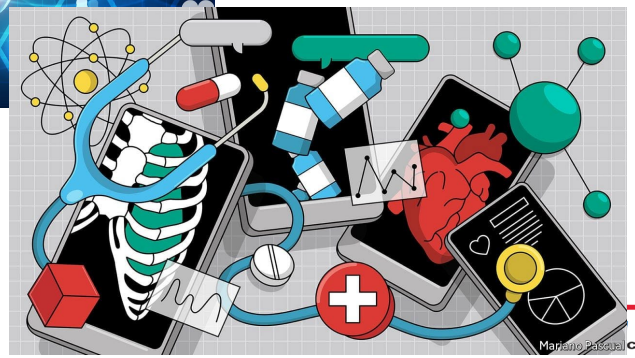
Use Case:

- Build a cohort
- Demonstrate comparison
- Observed over Expected

Next Steps:

- Finalize model
- *Add impact of boarding*
- Data access/Rollout





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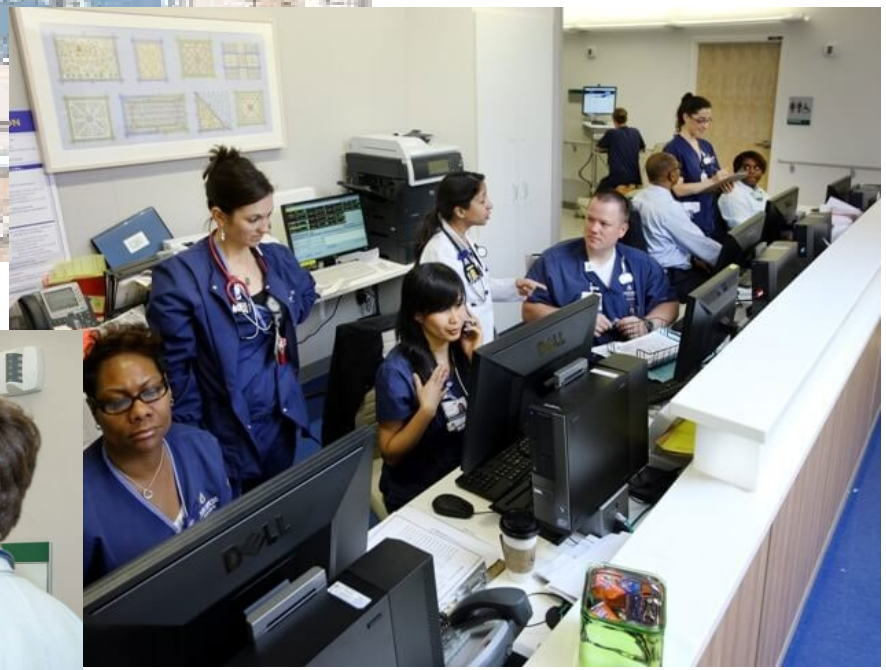
Implications



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THANK YOU

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Hospital & Regional Factors Affecting ED LOS

maryland
health services
cost review commission

Hospital and Regional Factors Associated with ED Length of Stay

Geoff Dougherty, PhD, MPH
Deputy Director, Population Health

Motivating Questions for Today's Presentation

- How does Maryland performance on ED Length of Stay (LOS) compare to nation prior to and during the TCOC Model?
- What is the relative contribution of regional and hospital-specific determinants of ED Length of Stay on a national level?
- What kinds of improvements in ED Length of Stay can we expect from specific interventions on these determinants?
- What policies/programs are suggested by these analytic results?

Statistical Modeling Approach

- We modeled
  - Hospital Referral Region (N=306)
  - Individual Hospital (N=3019)
- The model assesses the degree to which each determinant is associated with added ED Length of Stay
  - e.g.,: “A change of one year in median population age is associated with an increase of 10 minutes ED Length of Stay”
- The model also provides guidance on what proportion of variation in ED Length of Stay is driven by HRR and hospital-specific factors
- Finally, we evaluated factors underlying one particular determinant of ED Length of Stay: inpatient occupancy rate

Data Sources

Hospital Referral Region

- *US Census*: Population size, age, density
- *CDC*: Social Vulnerability Index
- *AHA Survey*: IP Beds per capita
- *CMS:* PCPs and SNFS per capita
- *Dartmouth Atlas*: Primary care access and surgical volume for Medicare population

2019 AHA Survey: ED visits, IP visits, services provided, teaching status, hospital staffing, IP occupancy

CMS Hospital Compare

- 2019 ED1 and OP18

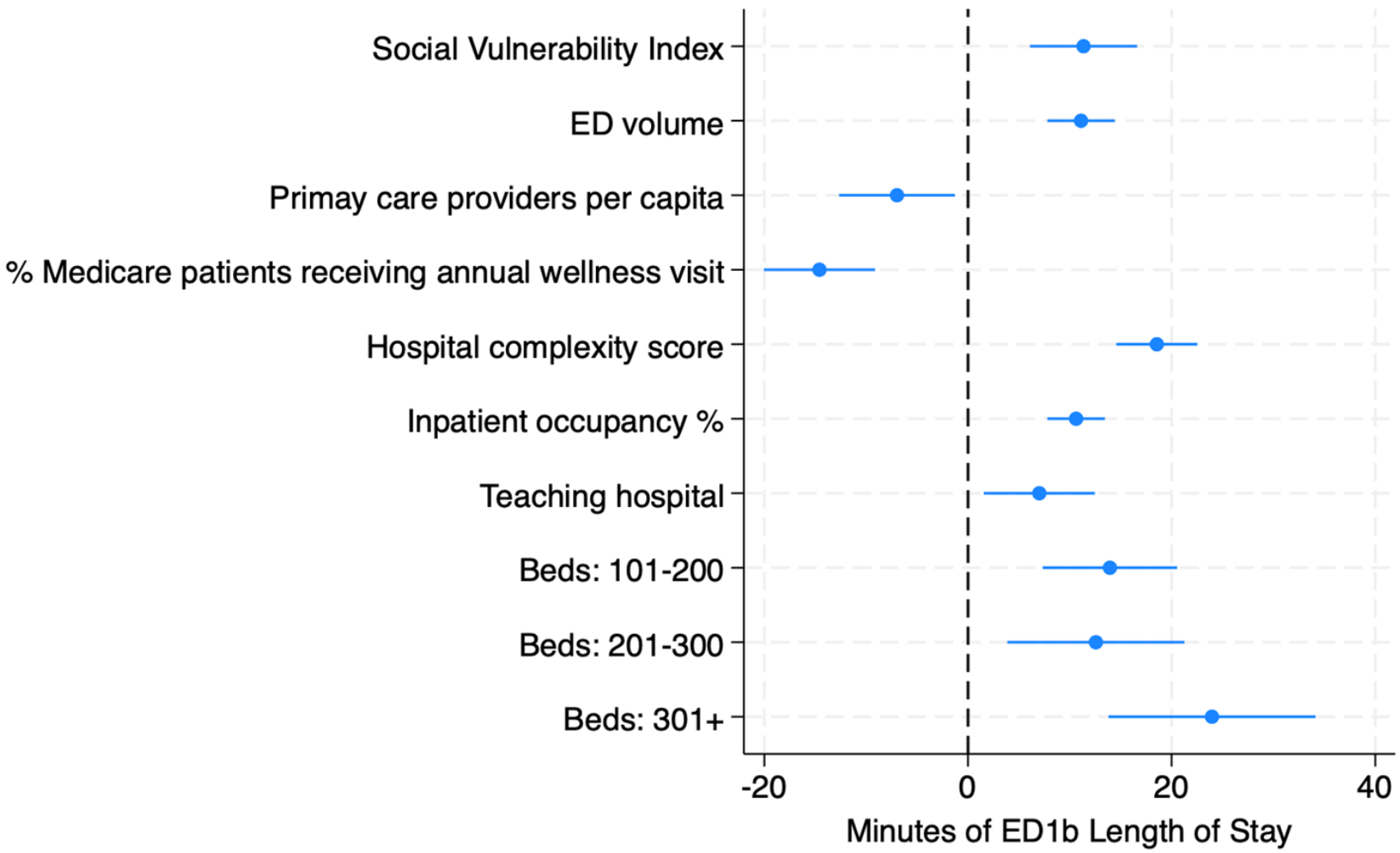
Additional Details

- Presentation focuses on ED1, but takeaways for OP18 and composite measure are similar
- Data that would have been helpful but weren't obtainable
  - ED-specific hospital staffing and resources (AHA mostly provides hospital-wide numbers)
  - Patient acuity
- Because of data limitations and policy interest, this work focuses on impact of factors related to ED inflow and output, rather than movement of patients within the ED
- Our model does not account for interactions and non-linear relationships. More on this later
- Data are mostly self-reported and cross-sectional

Summary of Analytic Findings

- Differences between Hospital Referral Regions account for 37% of variation in Median Time from ED Arrival to ED Departure for Admitted ED Patients (ED1b)
- Differences between hospitals within Hospital Referral Regions account for 63% variation in ED1b performance
  - This indicates that hospital factors (e.g. staffing, bed management, organizational structure) are likely driving ED performance
  - HRR/regional factors (IP Beds per capita, SNF beds) are less important
- Primary care access is an important and modifiable determinant of ED length of stay
- Addressing social determinants may also improve ED length of stay performance
- Structural hospital factors (Bed size, complexity, teaching status, ED size) that are not as easily modifiable have a large effect on ED performance)

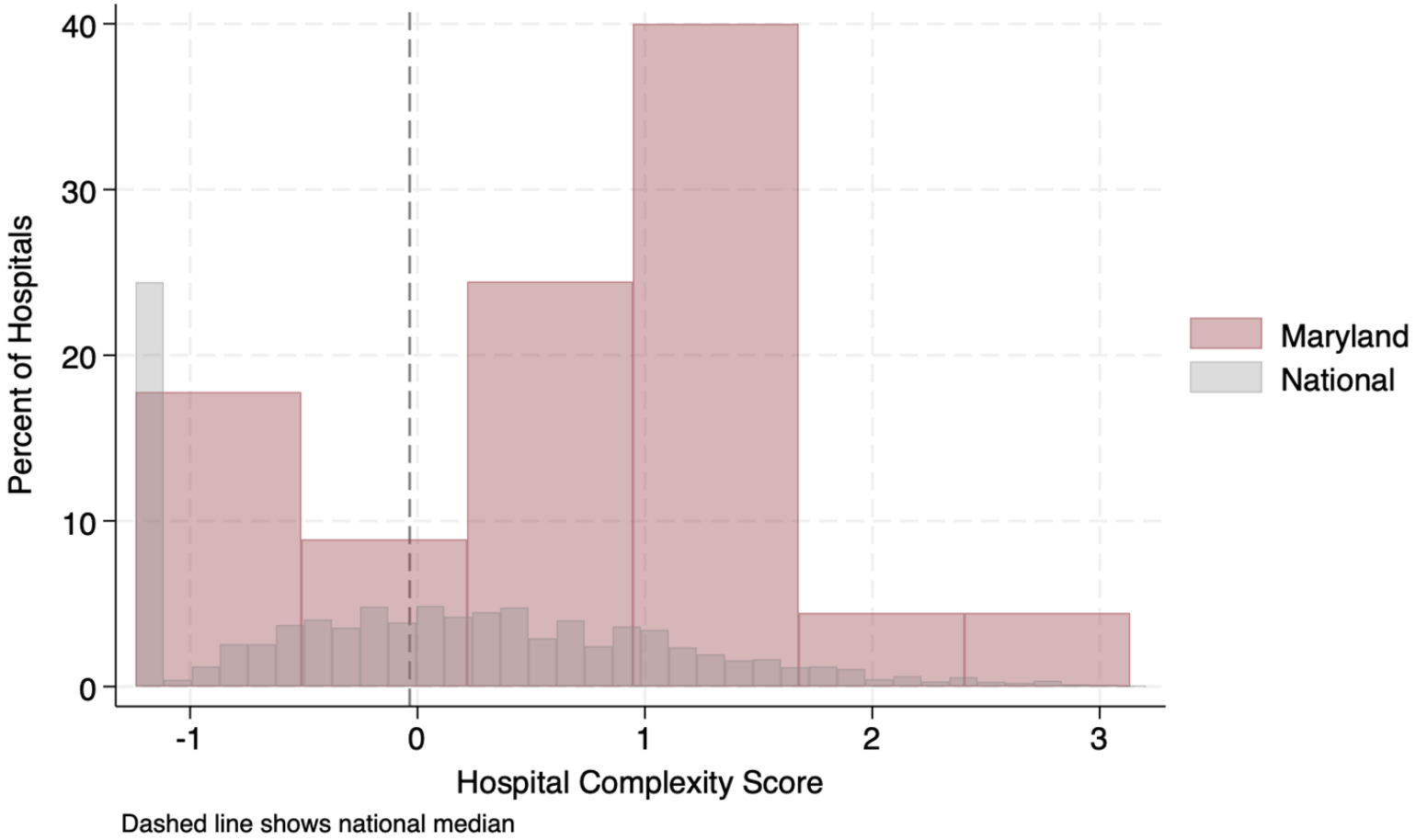
Relative Strength of Association with ED Length of Stay



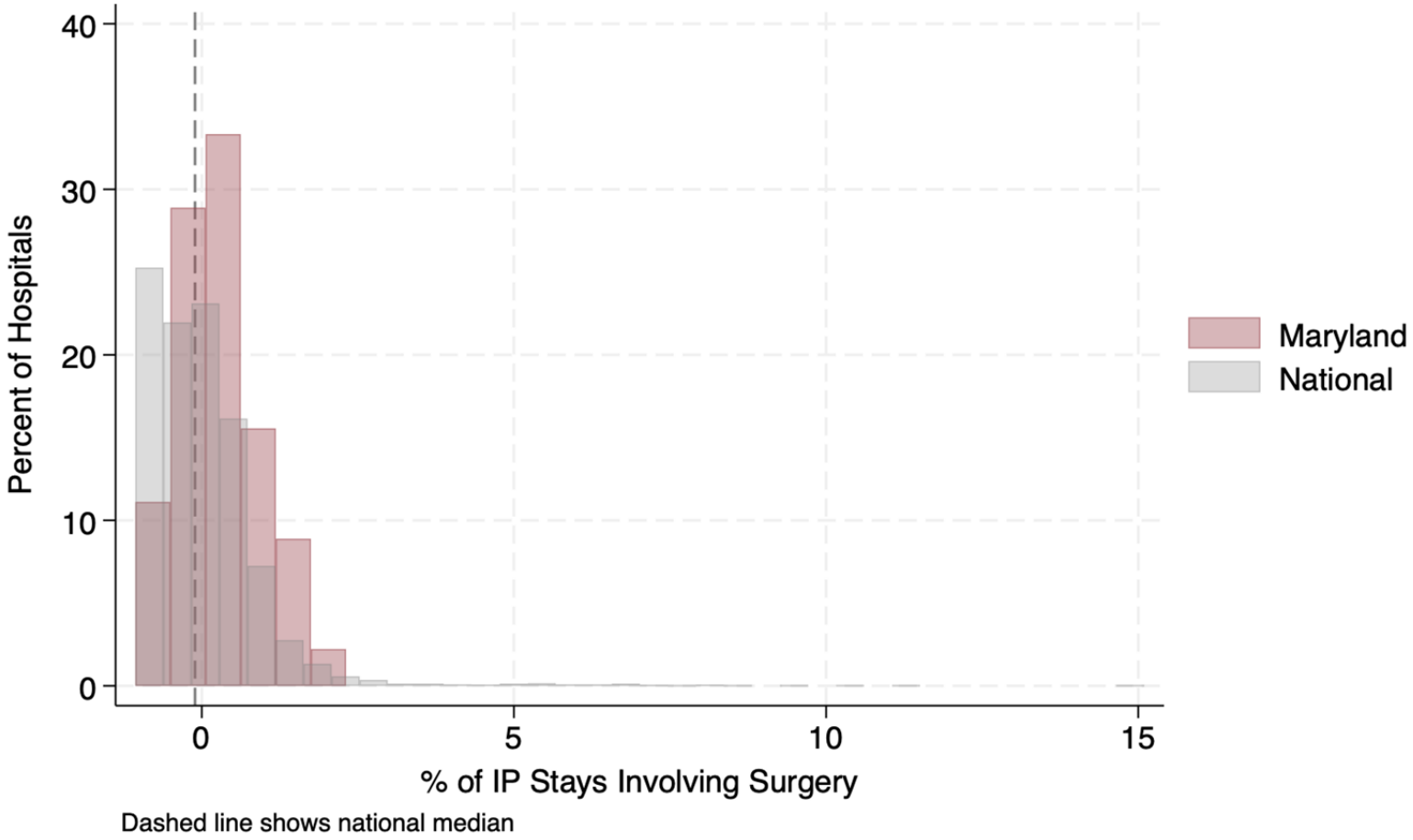
Comparative ED Length of Stay effect size of all statistically significant variables in national model

Model accounts for 67% of variation in ED1b performance across hospitals

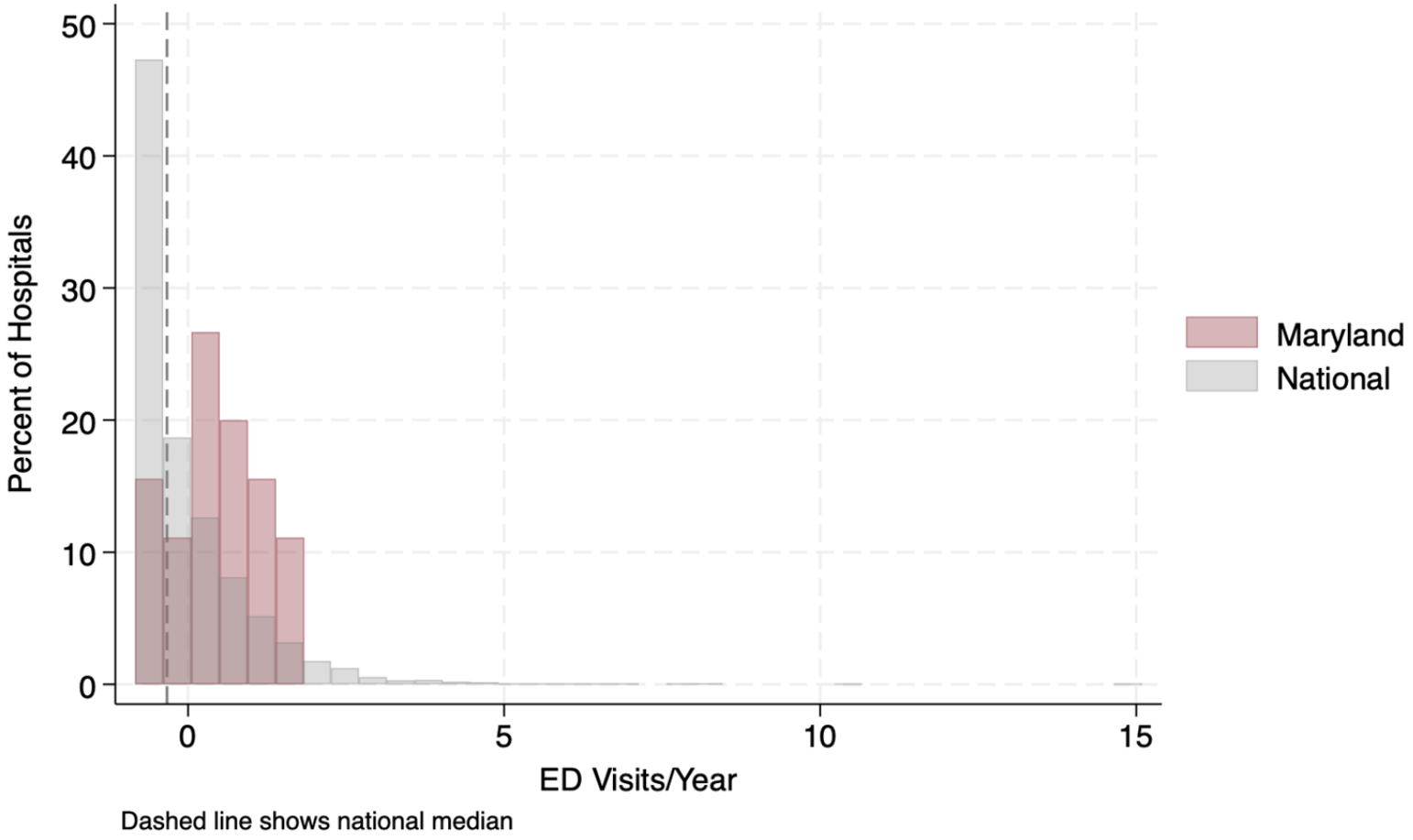
MD Hospitals Are More Complex Than Others



MD Hospitals Have High Surgical Volume

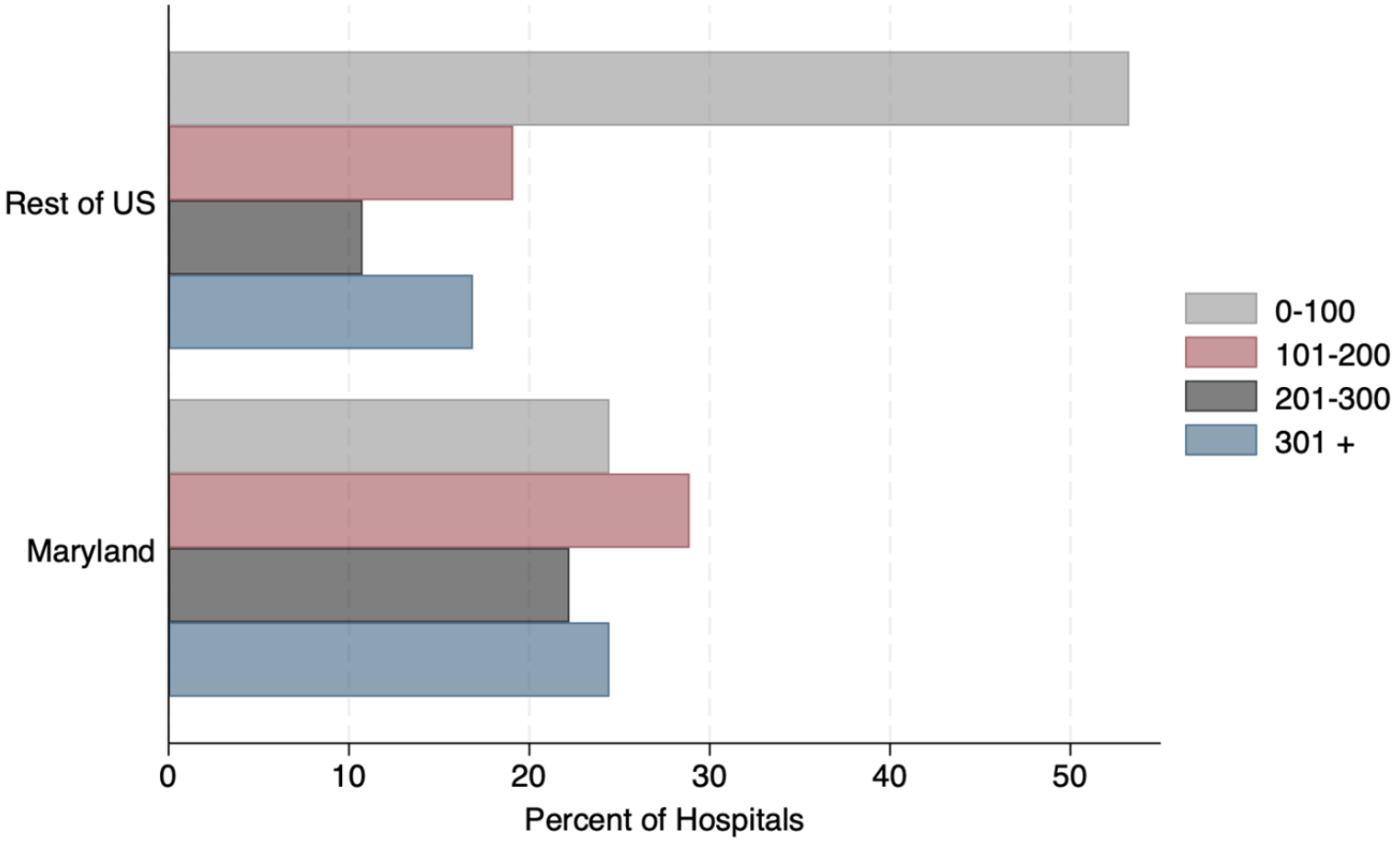


MD Hospitals Have Larger ED's

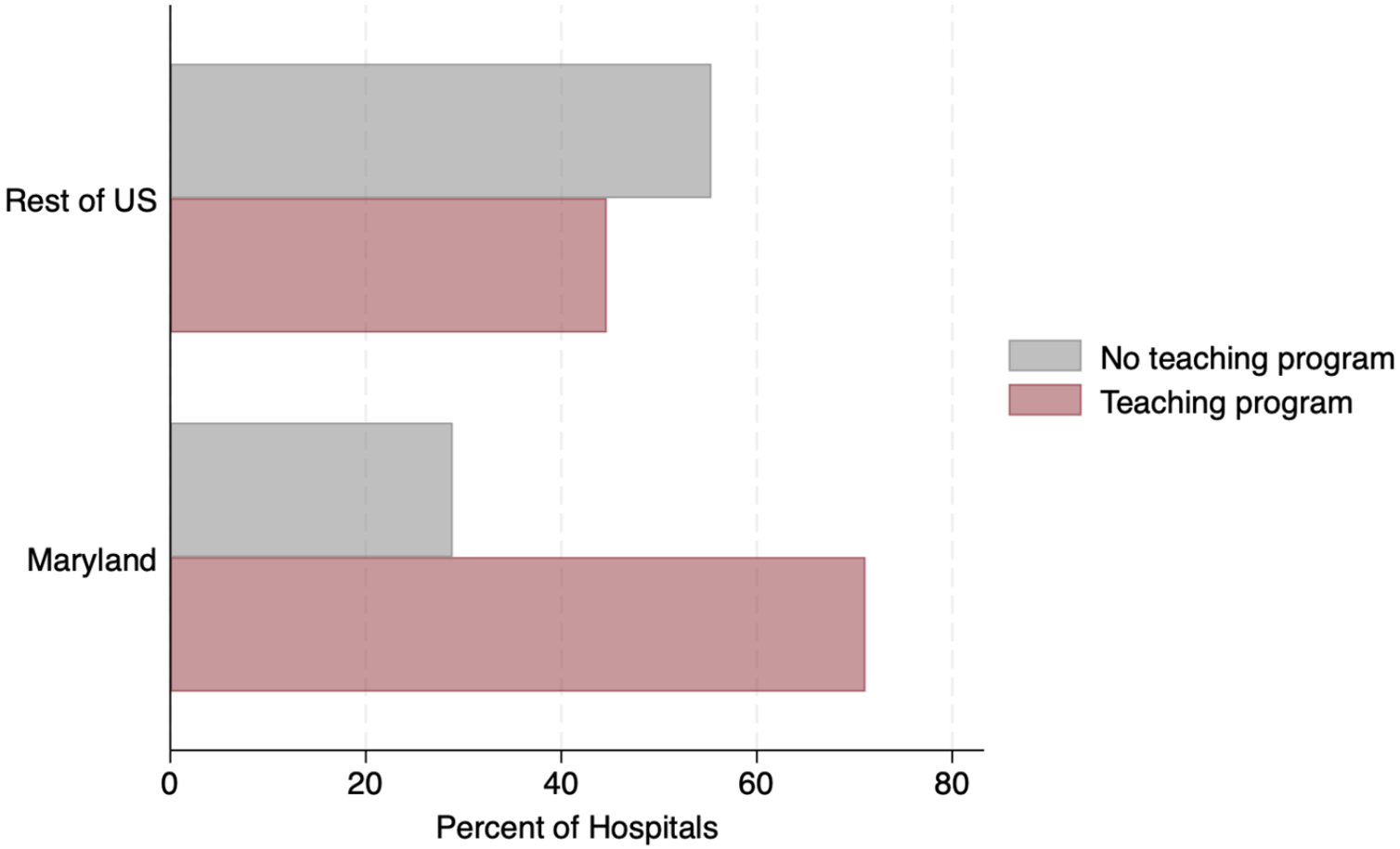


- Note than while ED volume is higher in MD, volume per capita is lower
- Maryland has fewer ED's than elsewhere, but they see more volume

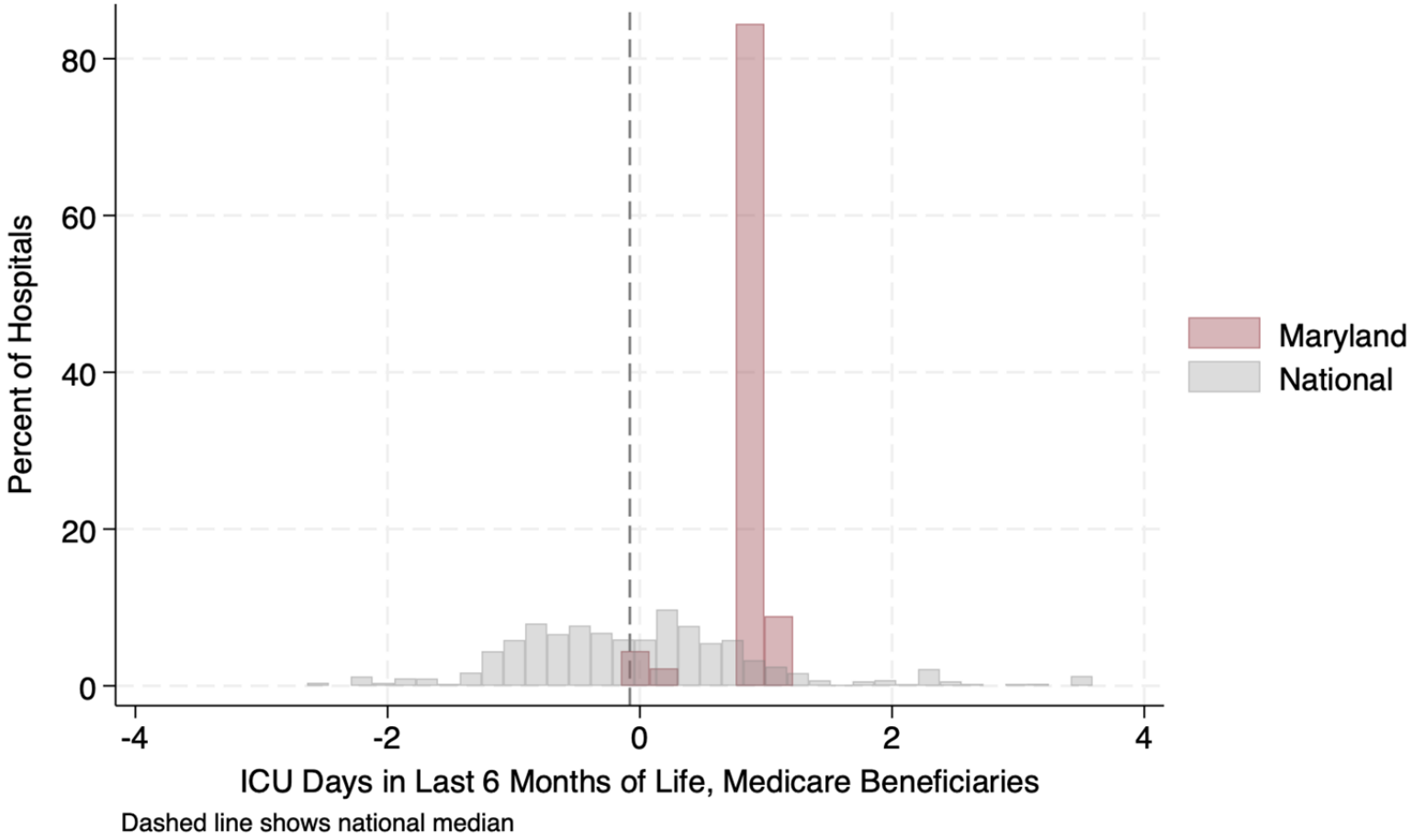
MD Hospitals Are Larger Than Those Elsewhere



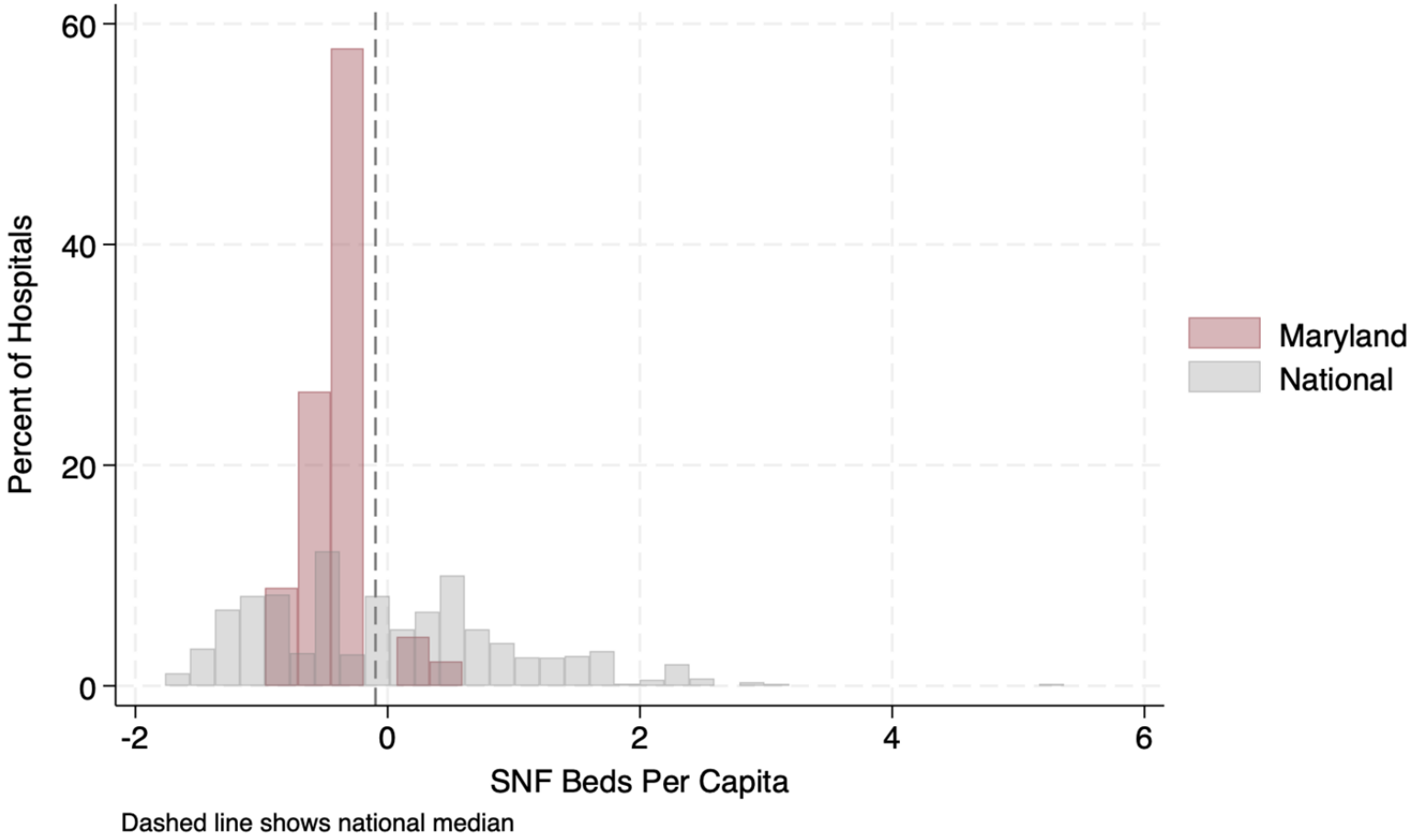
MD Hospitals Are More Likely to Have Teaching Programs



MD Hospitals Provide More End of Life ICU



MD Hospital Regions Have Fewer SNF Beds



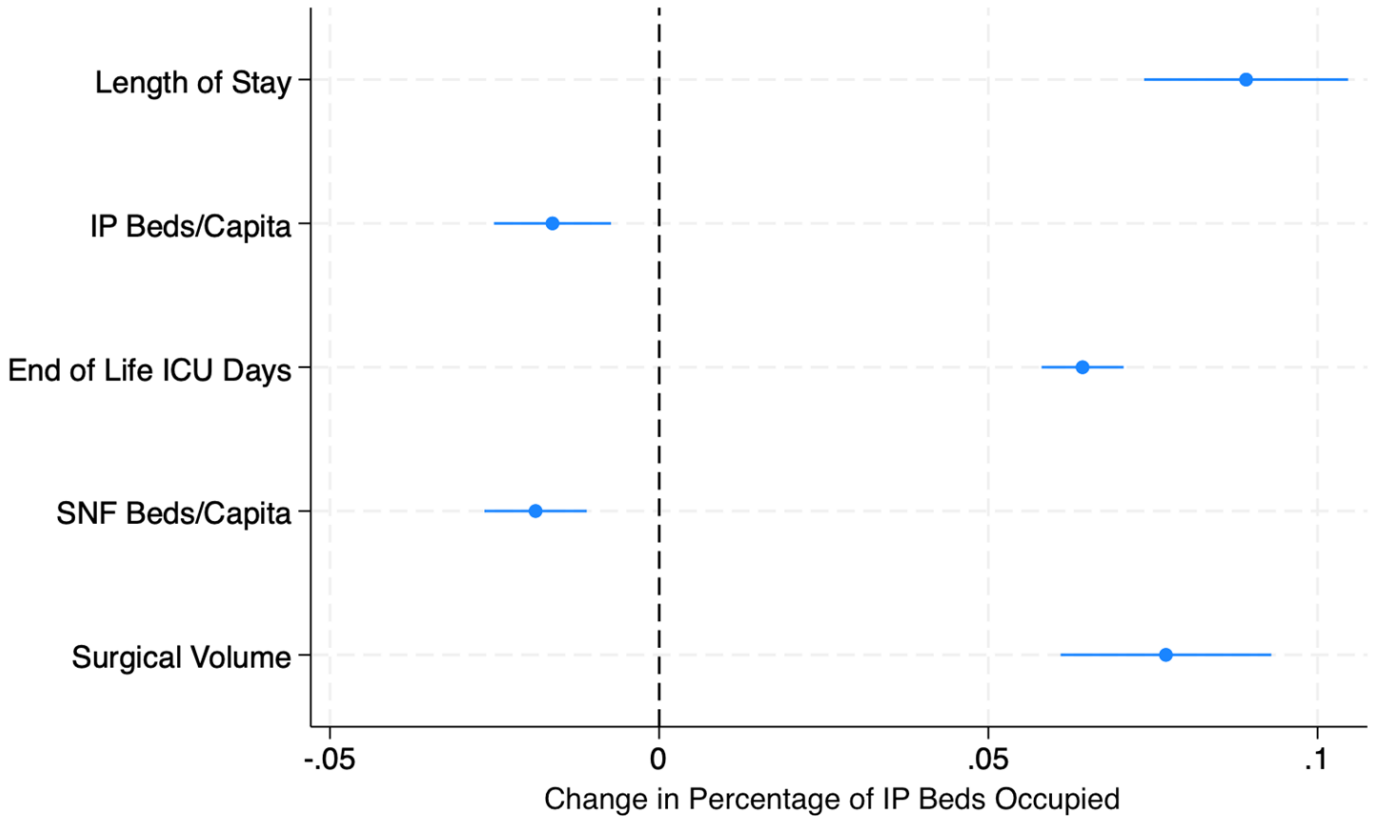
Performance of MD Hospitals vs. Nation

- Maryland hospitals are larger,more complex, and more likely to be teaching facilities. All of these factors are associated with longer ED Length of Stay
- This is a blessing and a curse. Larger, higher-volume and more complex hospitals typically provide better outcomes in terms of risk-adjusted mortality, readmission and inpatient length of stay
- After accounting for structural differences, Maryland hospitals are not doing as poorly as reported
  - However, some big, complicated hospitals nationally still perform well in ED Length of Stay (See Appendix B), so Maryland has significant room for improvement
- Can we provide both excellent IP results and better streamlined ED experience by finding ways to make big hospitals feel more like small ones (or high performing hospitals elsewhere in the nation that are big and complicated)?

What About Occupancy?

- Hospital occupancy is an important determinant of ED Length of Stay, and a complex topic in its own right
- We evaluated the independent association of multiple variables with inpatient occupancy
  - Staffed IP beds per capita
  - Length of Stay
  - End of Life Care
  - SNF beds per capita
  - Surgical volume
- Occupancy = AHA IP bed days / (365* IP beds staffed EOY)

Relative Strength of Association with IP Occupancy



- Surgical volume, LOS, end of life ICU days, and SNF availability are significant determinants of occupancy
- MD differs from the nation unfavorably on all measures
- Increasing MD staffed IP beds to national average would change occupancy by 0.5%
- MD staffed beds per capita (exclusive of beds in nearby regions, e.g., DC) are lower than national average due to reduced demand under TCOC model

What Does Analysis Tell Us About Policy/Program Directions?

- Policies addressing primary care may result in improved ED Length of Stay
  - Reimbursement Enhancements: Maryland Primary Care Program (MDPCP)
  - Investments in additional primary care supply
- Policies addressing social determinants may also result in improved ED Length of Stay
- Policies addressing IP occupancy may result in improved ED Length of Stay
  - Improved hospice access
  - Improved SNF access
  - Planning elective surgery and medical admissions to avoid constraining ED admissions
- Increasing inpatient bed capacity is not likely to be a viable and sustainable solution to ED Length of Stay in Maryland
  - Stacking more beds in institutions that have structural impediments to low ED throughput may worsen the problem
  - Expanding IP capacity would likely be a costly, long-range solution that has negative implications for TCOC model performance
- Other interventions discussed above may provide similar or better outcomes with limited cost and downside

Testing Interventions

Developing a Testing Platform

- Because conventional statistical modeling (i.e., regression) does not account for nonlinearities, bidirectional causation, etc., it does not always provide a clear picture of the impact of future interventions
- Simulation exercises are a standard way to address this blind spot
  - If SimCity had an emergency room …
- Long history of this type of work in operations science and hospital performance literature
- Most straightforward modeling approach divides hospital areas of interest into buckets or “stocks”, and moves patients between them with flow rates

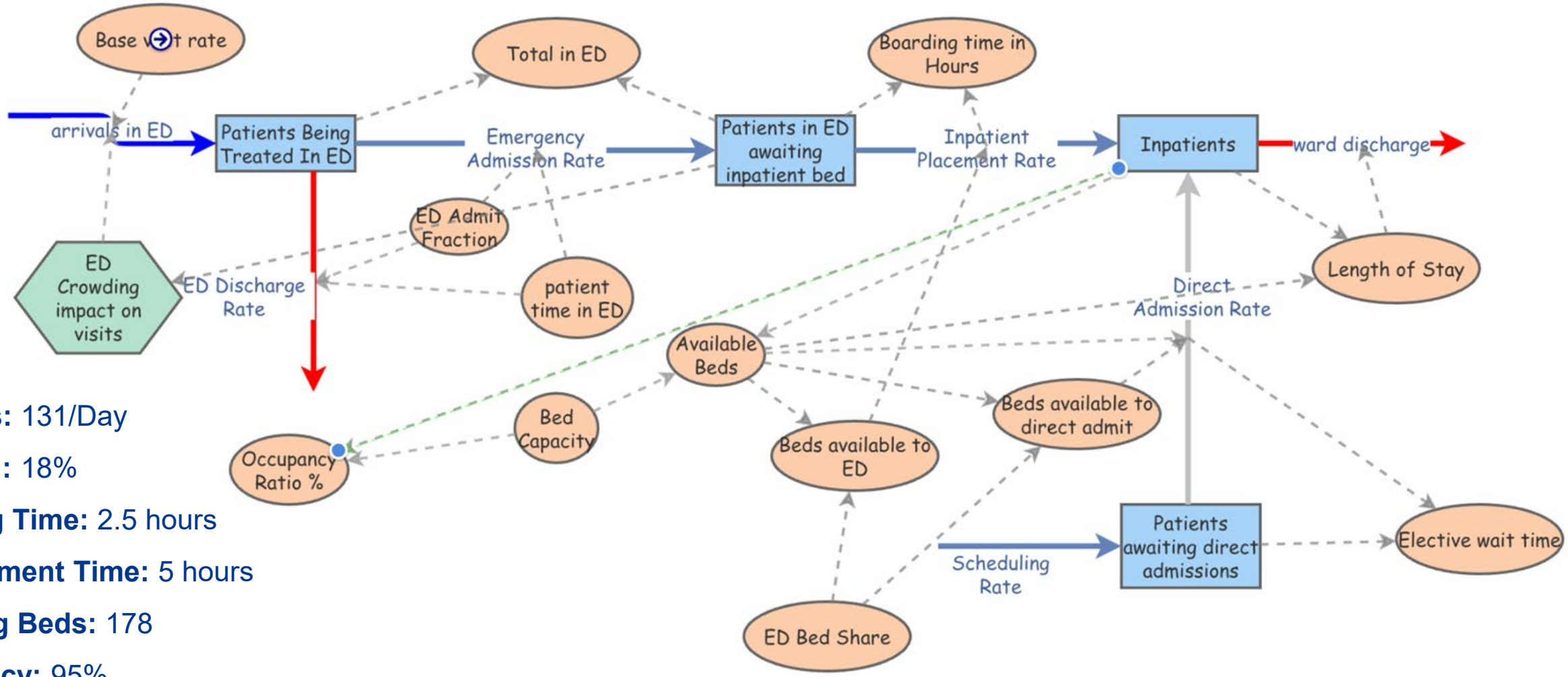
Simulation Process Overview

- Identify the setting for the model's base case
- Identify variables that are to be reflected in model
- Obtain real-world values for these variables
- Build the base case model using Models are be populated with real-world data and tested to ensure they reproduce real-world conditions prior to testing hypotheses

Our Model

- Hospital: Suburban Baltimore community hospital with ED LOS, bed count and ED volume close to the state average in 2019
- Key stocks
  - Patients being treated in ED
  - Patients admitted and awaiting a bed
  - Patients on inpatient service, patients awaiting direct/elective admission
- Key flows
  - ED visit volume
  - Admission rate from ED and direct admit
  - IP discharge rate (linked to LOS)
- System Dynamics
  - Bottlenecks
  - Thresholds
  - See Lane et al. (2000) ‘Looking in the wrong place for healthcare improvements: A system dynamics study of an accident and emergency department’, The Journal of the Operational Research Society.

Baseline Model



ED Visits: 131/Day

Admitted: 18%

Boarding Time: 2.5 hours

ED Treatment Time: 5 hours

Med/Surg Beds: 178

Occupancy: 95%

LOS: 5.3 days

Source: HSCRC casemix, CMS Hospital Compare

Interventions Tested

- Reduce ED volume by 5%, reflecting modest cut in volume from multi-visit patients (more on this later)
- Reduce LOS by 5%, reflecting modest increase in SNF/behavioral beds
- Reduce daily elective/direct admit volume by 1 patient/day

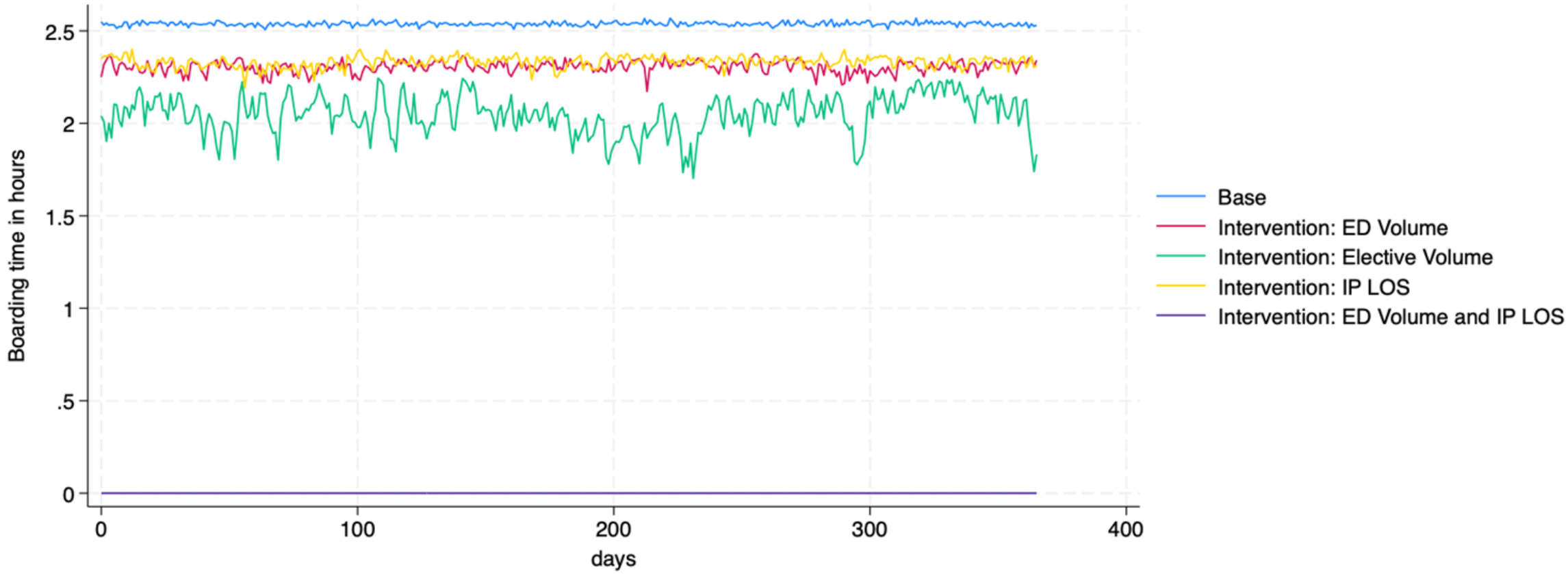
How to measure impact of interventions?

- Boarding time
- Elective admit wait time
- Total # of patients in ED

How to interpret results?

- Model provides evidence of plausible effect of system changes
- Best viewed as qualitative/directional, rather than as precise estimates

Small Interventions Yielded Large Improvements in Performance



Base case boarding time is ~2.5 hours. Small changes in ED volume, elective volume and LOS result in modest improvement. Combined intervention eliminates boarding time.

Key takeaways

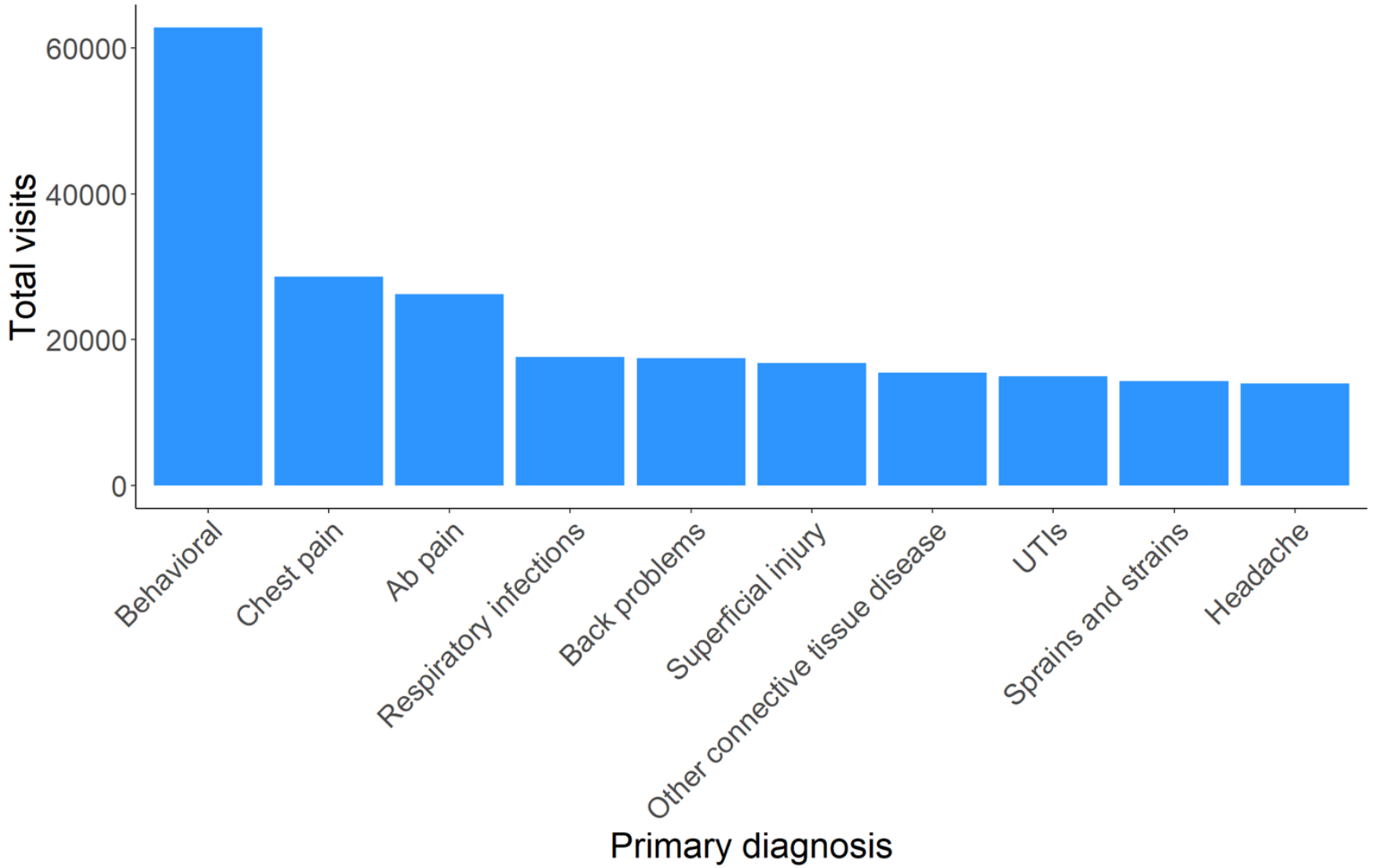
- Findings are consistent with our understanding of complex systems - chaotic systems can be tamed with seemingly small, but carefully selected changes
  - By contrast, other changes, such as reducing patient treatment times in ED, may have unexpected consequences
- Interventions that are cheaper and/or quicker than adding physical beds may significantly improve patient experience and outcomes
- There are a wide variety of programs and policies that could achieve results similar to those shown here
- Simulation results are consistent with those from regression models
  - Hospital-level interventions can be effective
  - Reducing IP occupancy through better SNF/behavioral/hospice access and reducing ED volume through hospice and care management are important areas for further exploration

Caveats

- There are likely many ways to build a model that uses real-world data and reproduces conditions on the ground
- There's no guarantee that our interventions, tested within a different but equally plausible model, would yield the same results
- However, our results are consistent with those from regression modeling, and also with principles developed over decades of research into complex systems theory
- The model does not address some important dynamics
  - Hour-by-hour fluctuation in ED arrival and IP departure volume
  - Specific actions to reduce LOS or ED volume

HSCRC Opportunities

The Multi-Visit Patient Opportunity



- MVP: Patient w/ >=4 ED visits in year
- Accounted for 29% of 2019 ED visits
- 18% were admitted
- Of outpatient visits by MVPs, 62% are for low-acuity principal diagnoses
- Wide variation in MVP ED visit and admission rates between hospitals

IP LOS Opportunity

- IP LOS has increased since the confounding effects of the COVID-19 pandemic
- However, after accounting for acuity change and mix change (e.g., shift of surgeries to Outpatient and Ambulatory Surgery Centers), there still appears to be a statewide IP LOS increase of 4.26% from 2019 to 2022
  - Unadjusted LOS increased by ~16%
  - Variance of 4.26% between risk and mix adjusted LOS statistics suggests operational inefficiency opportunity
- If investments were made to make Maryland's risk adjusted LOS equivalent to 2019 experience, staffed bed capacity would increase by 246 beds
  - Would effectively add a new hospital; Average licensed bed size is 220 in FY 2024

Type of Bed Day	2022 Bed Days	Added Days (Current Bed Days X 4.26%)	Bed days if Risk Adjusted LOS Increase was Eliminated
Medical Surgical Acute	1,665,578	70,876	1,594,702
Medical Surgical Intensive Care	245,980	10,467	235,513
Oncology	45,511	1,937	43,574
Definite Observation	60,499	2,574	57,925
Shock Trauma	34,391	1,463	32,928
Pedatrics Acute	34,002	1,447	32,555
Pediatric Intensive Care	17,831	759	17,072
Burn Care	1,755	75	1,680
Coronary Care	5,070	216	4,854
Total	2,110,617	89,813	2,020,804
Bed Count (Total/365)	5,783	246	5,536

Summary of ED-related Policy Recommendations

Recommendations for ongoing measurement and engagement

- EDDIE - Continue to steward rapid cycle improvement in ED performance
- Other Efforts Coordinated with Maryland Hospital Association

Recommendations for payment policy

- Quality-Based Reimbursement (QBR) policy – Staff proposal provides new incentive for improvement on CMS ED-1 measure
- Multi-Visit Patient policy – Financial reward for reduction in percentage of ED visits accounted for by patients with 4 or more visits per year
- Workgroup to monitor impact of policies on ED performance, propose payment policy changes and provide periodic reporting to General Assembly
    - Potentially establish a stand-alone pay-for-performance program weighted at 1% of inpatient revenue that incents improvements in ED LOS root causes and continued improvement in EDDIE.

Priorities Discussion

Goal: Leave the meeting with 3 top priorities to align and focus efforts of the subgroups.

**See next slide for key priority suggestions based on stakeholder feedback.*

Priorities Discussion

Key Priorities

- **Key Priority Identified: Hospital Throughput & ED Boarding**
- Staff recommend focusing on the following key drivers impacting hospital throughput & ED boarding:
  - **Optimize capacity across the continuum of care (ambulatory, acute, post-acute, and community resources)**
    - Utilize Access Study Analysis to prioritize regional capacity needs
    - Distribution of inpatient beds
  - **Care transitions within the hospital that impact throughput (best practice subgroup focused on these efforts)**
    - Incentivize health systems to make operational changes that reduce Inpatient Length of Stay, reduce ED boarding and improve overall hospital throughput
  - **Care transitions to post-acute levels of care, inclusive of skilled nursing, palliative care, and home health**
    - Improve discharge processes and address transitions delays to post-acute care

2025 Legislative Session

Subcommittee Updates

Commission Subcomittees

Access to Non-Hospital Care

- Integrate and optimize best practices and data analytics for advanced primary care, specialty care, home health, post-acute care, and ancillary services in an effort to reduce avoidable ED and hospital utilization and improve care transition workflows throughout the continuum of care.
- Meetings every six to eight weeks.

Data Subcommittee

- Identify different data sources across healthcare platforms to include ambulatory, acute care, post-acute care, and third-party data.
- Meetings every six to eight weeks.

ED Hospital "Throughput" Incentives

- Develop a set of hospital best practices and scoring criteria to improve overall hospital throughput and reduce ED length of stay, advise on revenue at-risk and scaled financial incentives, and provide input on data collection and auditing.
- Meetings every four weeks.

Hospital Capacity, Operations & Staffing

- Subgroup will convene in April 2025.
- Planned focus of the subgroup is to assess access and capacity across the State, collaborate with commercial payers, Medicare, and Medicaid, and optimize workforce development opportunities.
- Meetings every four to six weeks.

Subcommittee Updates

- Access to Non-Hospital Care
  - Top priorities identified are advanced primary care and post-acute (discharge barriers to post-acute and post-acute capacity).
  - Consider engagement with PointClickCare for focused discussions on post-acute care transitions and capacity opportunities
  - Next Meeting: February 6th
- ED Hospital " Throughput" Best Practices
  - Best Practices Policy Draft presented to HSCRC Commission on 1/8. Final policy will be presented in March. *Discussed on next slide.*
- Data Subcommittee
  - 1st meeting scheduled for February 5th
- Hospital, Capacity, Operations & Staffing
  - Plans to convene April 2025

ED Hospital Throughput Best Practices Subgroup Activities

April

- Examined CMS ED LOS of MD vs. Nation Performance
- Evaluated ED 1 measures, and decided ED 1b stratification (non-Psych patients)
- Introduced Incentive structures and risk adjustment for occupancy and discharge disposition

July

- Discussed that the measure nomenclature focuses on the ED and not other stakeholders
- Explored the impact of observation status being included in the measure
- Conducted ED LOS improvement literature review
- Explore improvement modeling scenarios

September

- Discussed alignment with Maryland ED Wait Time Reduction Commission
- Identified six ED best practices from data collection and members ranked the top recommendations
- Established a sample measure scoring example based on a best practice

October

- Attended the AHRQ Webinar on ED Boarding to inform work
- Finalized 4 of 6 ED best practice interventions

November

- Evaluated remaining 2 of 6 ED best practice interventions
- Introduced a tier system that weighted associated KPIs
- Drafted policy

December

- Finalized all 6 ED best practice interventions
- Policy submitted for review on 12/27

January

- Policy presented to HSCRC Commission on 1/8
- Policy comment period 1/8 to 2/19 and prepare to present final policy to HSCRC in March
- Develop tier and measure development

Best Practices Subcommittee Update

Final Policy
March 2025

Draft Recommendation for RY 2027 (CY 2025 Performance Period)

1. Building upon the ongoing work of staff and key stakeholders, refine the specifications developed by the Best Practice subgroup on a set of up to six Hospital Best Practices that are designed to improve emergency department (ED) and hospital throughput and reduce ED length of stay (LOS).
    - For each best practice identified, develop three weighted tiers with corresponding measures that reflect the fidelity and intensity of each best practice.
2. Require hospitals to select two Best Practices to implement and report data on for RY 2027
    - Failure to implement and report data to the Commission by October 2025 will result in a 0.1 percent penalty on all-payer, inpatient revenue to be assessed in January 2026.
3. We propose that subsequent rate years will have 0.25 percent inpatient hospital revenue at risk tied to performance on these best practice metrics but intend to evaluate the impact of the best practices and make a final recommendation for subsequent rate years after the Year 1 Best Practice program impact is assessed.

Final Six Best Practices Selected

Each hospital will select 2 interventions from the 6 interventions below:

- Interdisciplinary Rounds
- Bed capacity Alert Process
- Standard Daily/Shift Huddles
- Expedited Care Bucket (inclusive of expediting team, rapid medical evaluation team, rapid medical evaluation unit and patient observation management)
- Patient Flow Throughput PI Council
- Establishing Clinical Pathways

Benefits of Best Practices Proposal

- Increased focus on ED & Hospital Throughput
- Significant collaboration within and across hospitals
- Foundation for Quality Improvement Partnership

Best Practices Next Steps

- Continue development of measure definition, tiers, and targets with hospital groups
- Comment period through 2/19
- Final policy presented to HSCRC Commission at March Commission meeting

Next Steps

- Next Meeting: March 26, 2025
- Please visit the ED Wait Time Reduction Commission Webpage for all materials.

Appendix

Appendix I.

- MHA Report: https://mhaonline.org/caring-for-communities/quality-safety/hospital-throughput/general-assembly-hospital-throughput-work-group/
- The ED Capacity Crisis: Hard Truths and Real Solutions from NYC's Mount Sinai (February 4th, 2025 | 12:00 PM - 1:00 PM CT)