

ANTICIPATING DEMAND

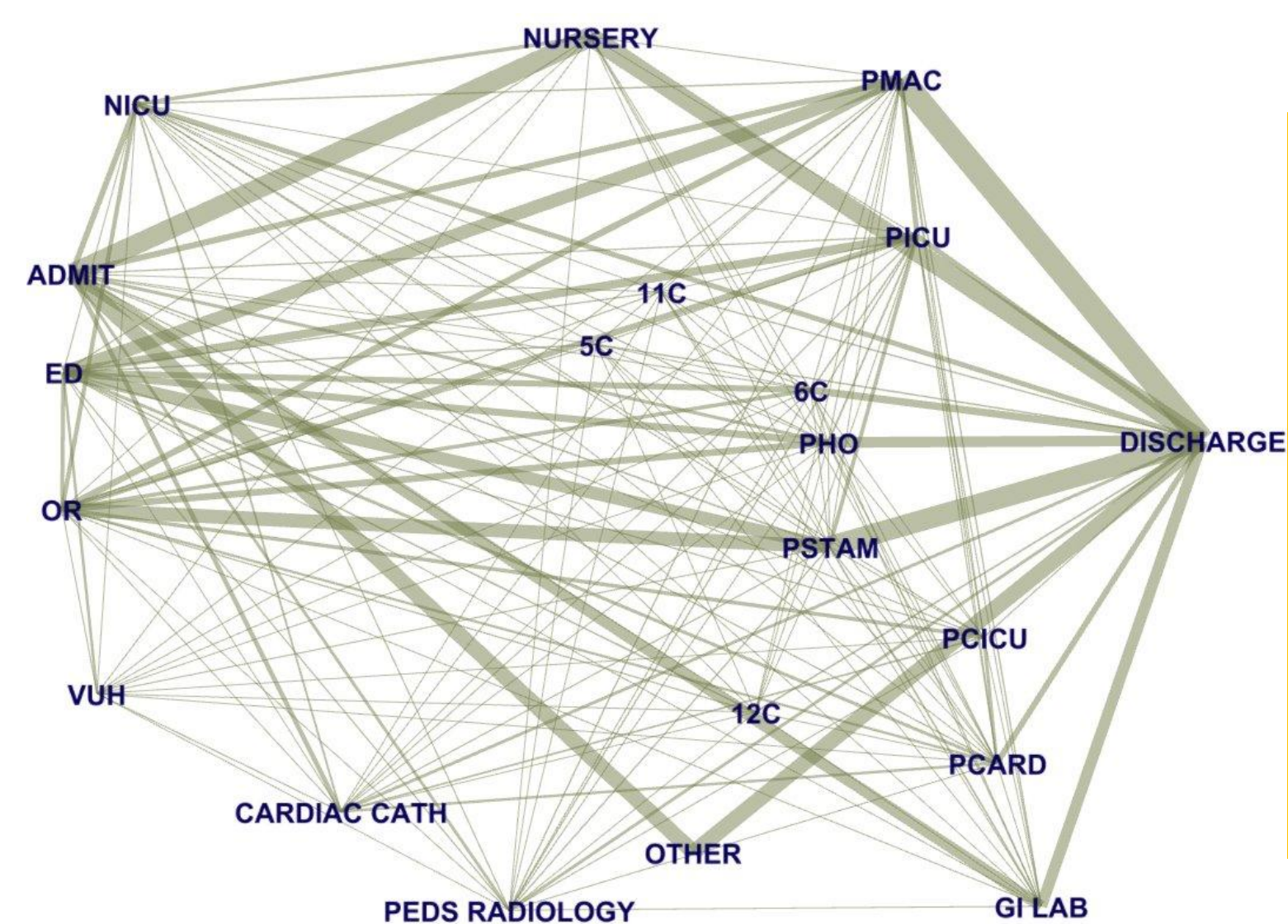
Predicting Hospital Census to Optimize Staffing and Resource Allocation Successful integration into nursing staffing platforms to improve operational readiness

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Background

- Hospitals encounter fluctuating patient volumes due to seasonality and unforeseen scenarios.
- Staffing and resource planning often reactive to census changes.
- Predictive modeling offers proactive approach, allowing hospitals to anticipate demand and optimize resource allocation in advance to improve operational readiness.

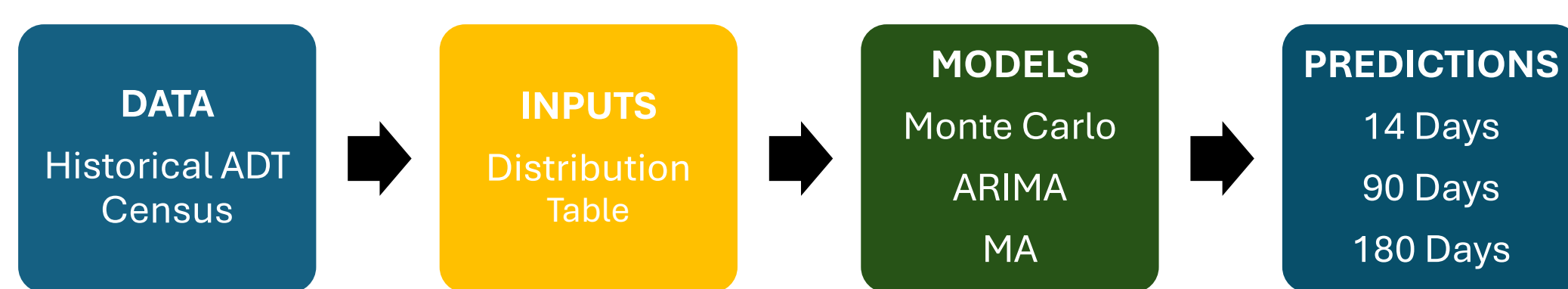
Patient Flow



Patient flow exhibits intricate relationships but follows a discernible, predictive pattern.

Pediatric Data. CY 2023-CY 2025

Methodology



Variables & Data



Application & Integration

VCH Acute Care															
Day Shift	Sun 14-Sep	Mon 15-Sep	Tue 16-Sep	Wed 17-Sep	Thu 18-Sep	Fri 19-Sep	Sat 20-Sep	Sun 21-Sep	Mon 22-Sep	Tue 23-Sep	Wed 24-Sep	Thu 25-Sep	Fri 26-Sep	Sat 27-Sep	
VCH 12C Census Projection	12	12	12	12	12	11	12	12	12	12	12	12	12	12	
VCH 12C Staffing Projection	-0.04	-3	-3	-1	-2	-2	-1		-1	-2	-1	-2	-2	-1	
VCH 12C On-Call								1							
VCH 5C ACUTE Staffing															
VCH 6C PAC Census Projection	12	12	12	12	12	12	12	12	12	12	12	12	12	12	
VCH 6C PAC Staffing Projection	-0.75	-1.75	-0.75	-0.75	-0.75	-0.75	-0.75	-0.75	-0.75	-0.75	0.25	0.25	-0.75	-0.75	
VCH 6C PAC On-Call															1
VCH PCARD Census Projection	14	15	15	15	15	14	14	15	15	15	15	14	14	14	
VCH PCARD Staffing Projection	-1.04	-2.75	-1.75	-1.75	-1.75		-1	-2.75	-0.75	-0.75	-1.75		-2	-2	
VCH PCARD On-Call															1
VCH PHO Census Projection	27	27	28	29	29	29	29	29	28	29	29	29	29	29	
VCH PHO Staffing Projection	-2.94	-1.04	-2	-3	-2	-3	-4	-4	-2	-2	-2	-2	-2	-3	
VCH PHO On-Call							2	2							1
VCH PMAC Census Projection	38	38	40	41	41	41	41	40	39	40	41	41	41	42	
VCH PMAC Staffing Projection	-0.3	1.97	-0.03	-1.03	0.97	0.97	-0.78	-1.78	-1.03	0.97	-0.03	-0.03	-0.03	0.22	
VCH PMAC On-Call		1				1	2	2	1				1		
VCH PSTAM Census Projection	41	41	43	43	43	43	43	42	42	43	43	43	43	43	
VCH PSTAM Staffing Projection	-2.51	-1.97	-3.72	-2.72	-3.72	-3.97	-6.72	-4.72	-2.97	-2.72	-1.72	0.03	-1.97	-2.72	
VCH PSTAM On-Call							3	1							1
Variance without HW Staffing does not include On-Call	-7.58	-8.54	-11.25	-10.25	-9.25	-8.75	-14.25	-14.00	-8.50	-7.25	-6.25	-3.75	-8.75	-9.25	
VCH HW STAFFING ACUTE Staffing		2	4	5	4	2	1		1		2				
VCH HW STAFFING SICU Staffing															
Variance with HW Staffing includes On-Call	-7.58	-5.54	-7.25	-5.25	-5.25	-5.75	-6.25	-8.00	-6.50	-7.25	-4.25	-3.75	-7.75	-5.25	
VCH FP Staffing								1							

Job	Budgeted	Scheduled	Recommended	Adjusted	Reason	Comments
SL	2.00	2.00	2.00	2	Model	
SITTER	0.00	0.00	0.00	1	BHOBS	
QIA	0.00	0.00	0.00		No Reason	
RN	12.00	11.04	11.00	12	Model	
RN-RSC	0.00	0.00	0.78		No Reason	
CP	4.00	4.54	3.00	4	Model	
MHS	0.00	1.00	0.00		No Reason	
MR	2.00	2.00	1.50	2	Model	
Direct HPPD	5.44	5.83	5.59	6.26		

Feedback

Beneficial for "reducing workload" related to identifying needed adjustments after the schedule has been published.

Predictions along with an established algorithm, allow us to make "standardized decisions" regarding incentives.

Allows us to look forward 2 weeks to address any "staffing deficiencies or balancing opportunities".

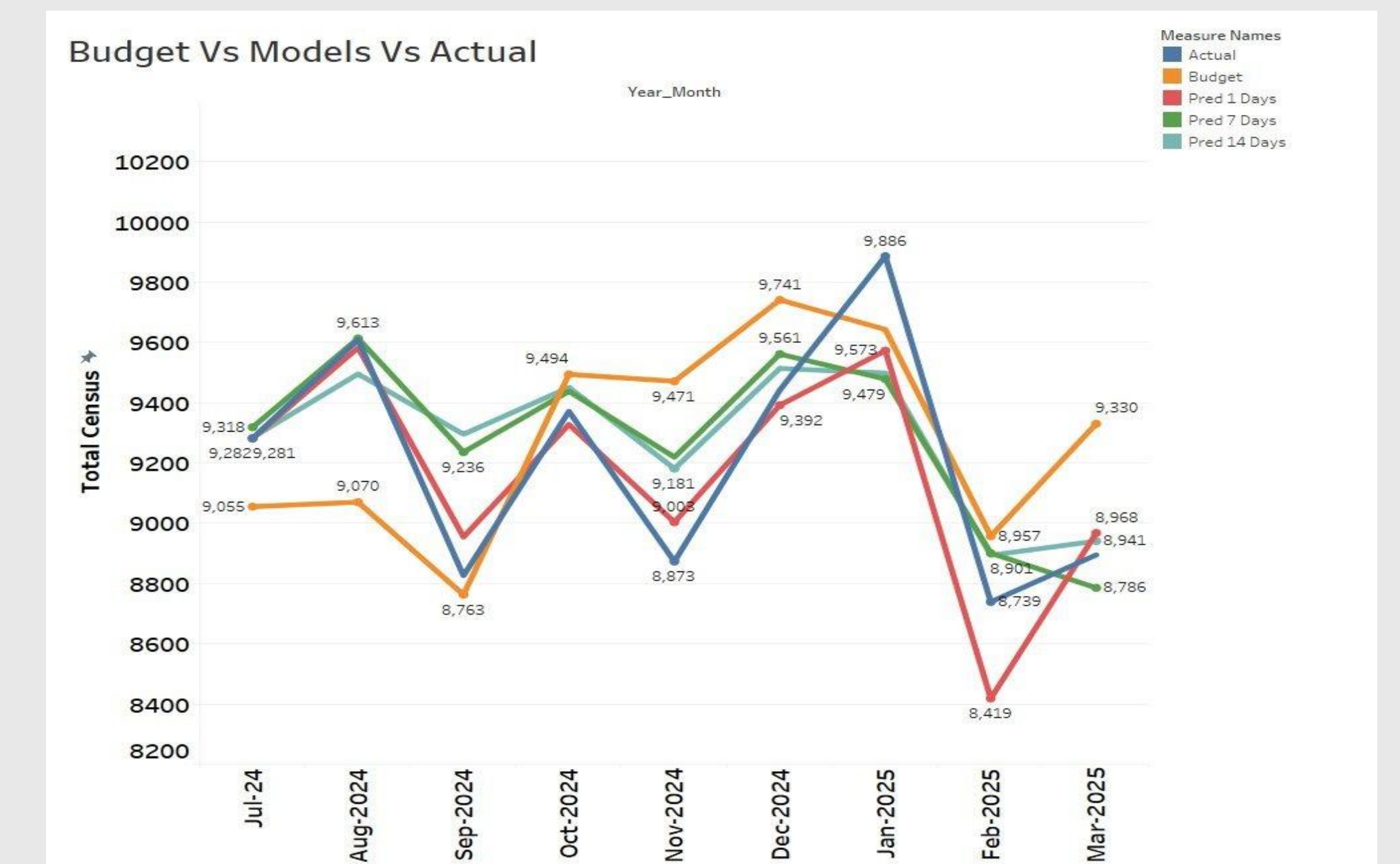
Promotes "transparency and communication" regarding staffing.

Results & Validation



Unit Level Accuracy

Unit	Accuracy		
	Days Out		
	1	7	14
PHO	93.4%	92.1%	91.6%
PMAC	95.0%	94.1%	93.8%
PSTAM	95.1%	94.5%	94.0%
5C	60.5%	51.5%	43.5%
PCARD	90.0%	87.0%	85.8%
PICU	91.3%	86.8%	85.1%
PCICU	91.8%	84.1%	80.6%



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