Qualivis

Harnessing Predictive Analytics and AI for Optimal Healthcare Scheduling

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THE WALL STREET JOURNAL.

Some Hospitals That Spent Big on Nurses During Pandemic Are Now Short on Cash

Distressed institutions are closing unprofitable services, selling assets to avoid default on debts

U.S. Department of Health and Human Services

Enhancing the health and well-being of all Americans

New Surgeon General Advisory Sounds Alarm on Health Worker Burnout and Resignation

During Mental Health Awareness Month, Surgeon General's Advisory Highlights the Impacts of the COVID-19 Pandemic on Health Workers, Who Already Faced Crisis Levels of Burnout Prior to the Pandemic

There is a Projected Shortage of More than 3 Million Essential Low-Wage Health Workers in the Next Five Years and a Projected Shortage of Nearly 140,000 Physicians by 2033

nurse.org

Nursing Shortage May Be Worse By State Than Projected, New Analysis Shows

HEALTHCARE FINANCE

Margins hammered as hospitals faced rough financial year in 2022

Despite an end-of-year upswing, about half of U.S. hospitals finished 2022 with a negative margin, data shows.

Jeff Lagasse, *Associate Editor*

American Hospital Association™

Advancing Health in America

Massive Growth in Expenses & Rising Inflation Fuel Financial Challenges for America's Hospitals & Health Systems

Bloomberg

More Than Half of US Hospitals Expect to Lose Money This Year

- Report predicts 53% of hospitals to lose money in 2022
- Facilities are coping with job vacancies and sicker patients

Today’s top issues, according to hospitals

Workforce Challenges

- ✓ Staff shortages (technicians, nurses, physicians, therapists and APPs)
- ✓ Staff burnout

Financial Challenges

- ✓ Increasing costs for staff, supplies, etc.
- ✓ Commercial insurance payments
- ✓ Medicaid reimbursements
- ✓ Operating costs

<2%

2023 Year-End Operating Margin

Source: Kaufman Hall

3.42%

YoY Wage Increase

Source: Advisory Board

55%

Percentage of Operating Costs Spent on Labor

Which of these issues resonate with what you’re currently facing?

2007

IPHONE

2010

IPAD

2010

INSTAGRAM

2014

AMAZON ALEXA

Why are hospitals hesitant to embrace AI?

"We’re scared of losing control."

"We don't want AI to replace our jobs."

"We don't want to hand over too much control."

"We're nervous about unintended consequences."

Are you currently using AI in your hospital? If so, how?

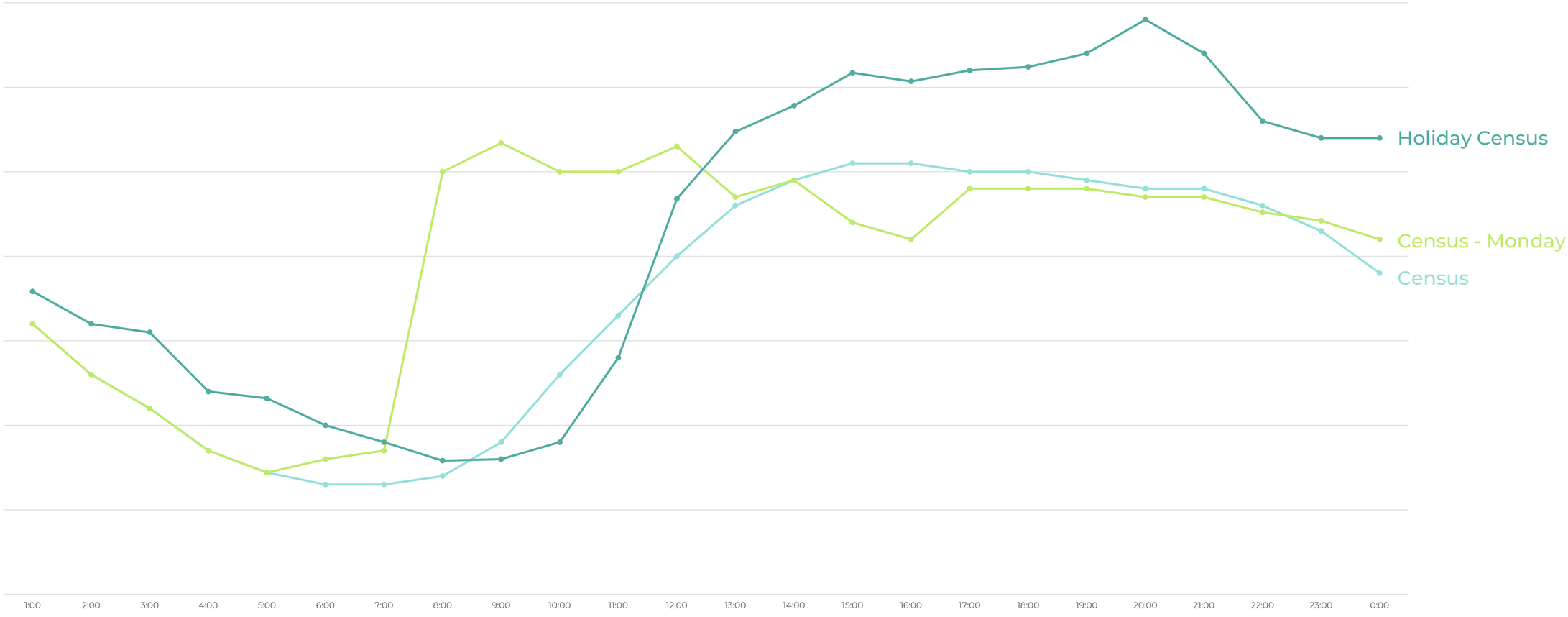
The complexities of healthcare scheduling

Why is staffing a hospital so difficult?

- Unanticipated demand
- Staff Shortages
- Budget
- Labor Laws
- Staff Skillsets
- Staff Availability
- Experience Levels
- Productivity
- Flexibility
- Sick Calls
- Staff Leave
- Work/life balance
- Relief breaks
- Census Variation
- Training
- Employee Preferences
- Preceptorships
- Acuity Levels
- Inefficient Technology
- Central Staffing
- Floating
- Lunch Breaks
- Overtime
- Orientation

The complexity of just-in-time staffing

Department Census by Time of Day



CASE STUDY

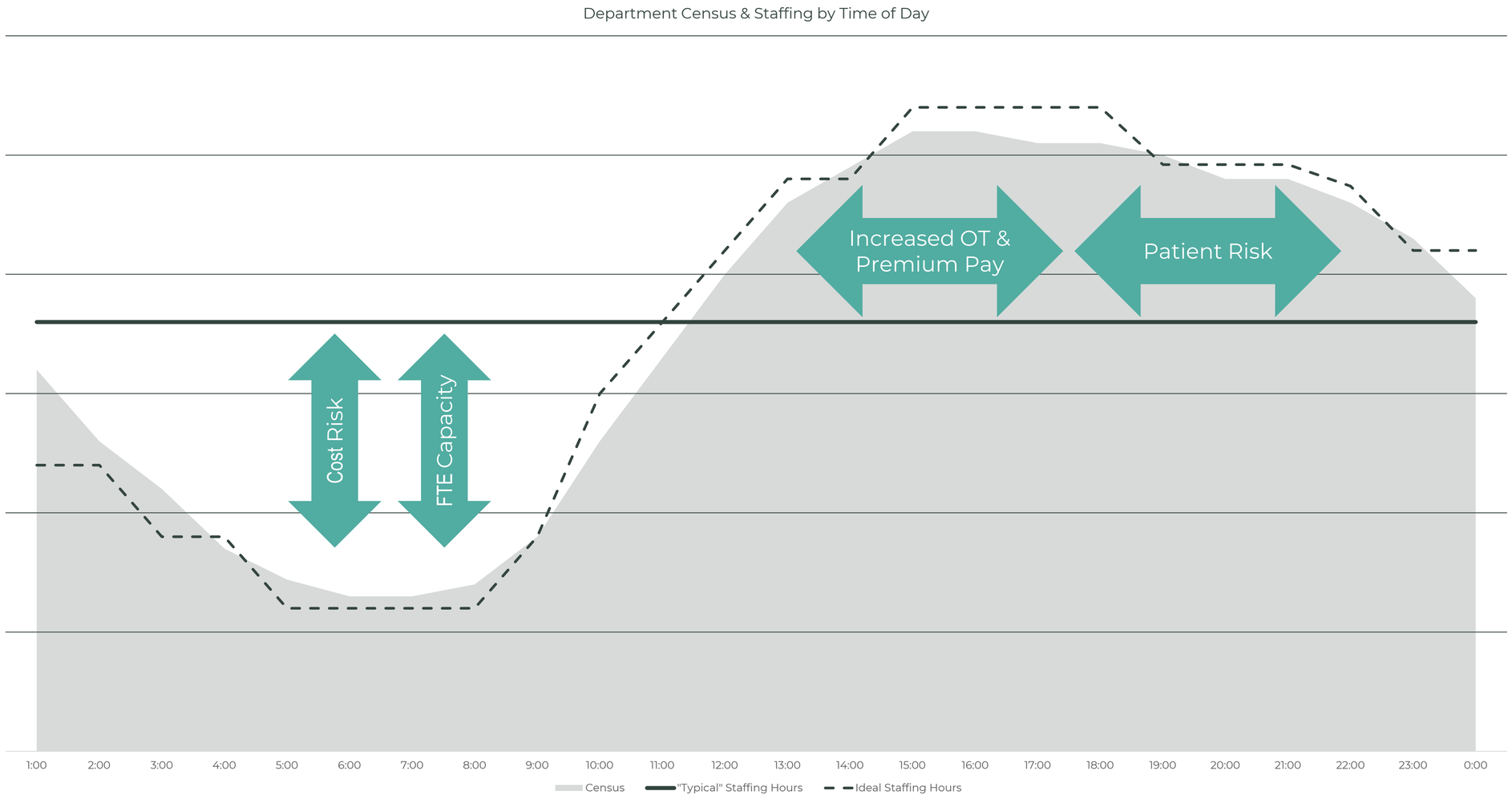
Hospital in Midwest US

2700 staffed beds

170 in-patient units

$305M annual contingent labor spend

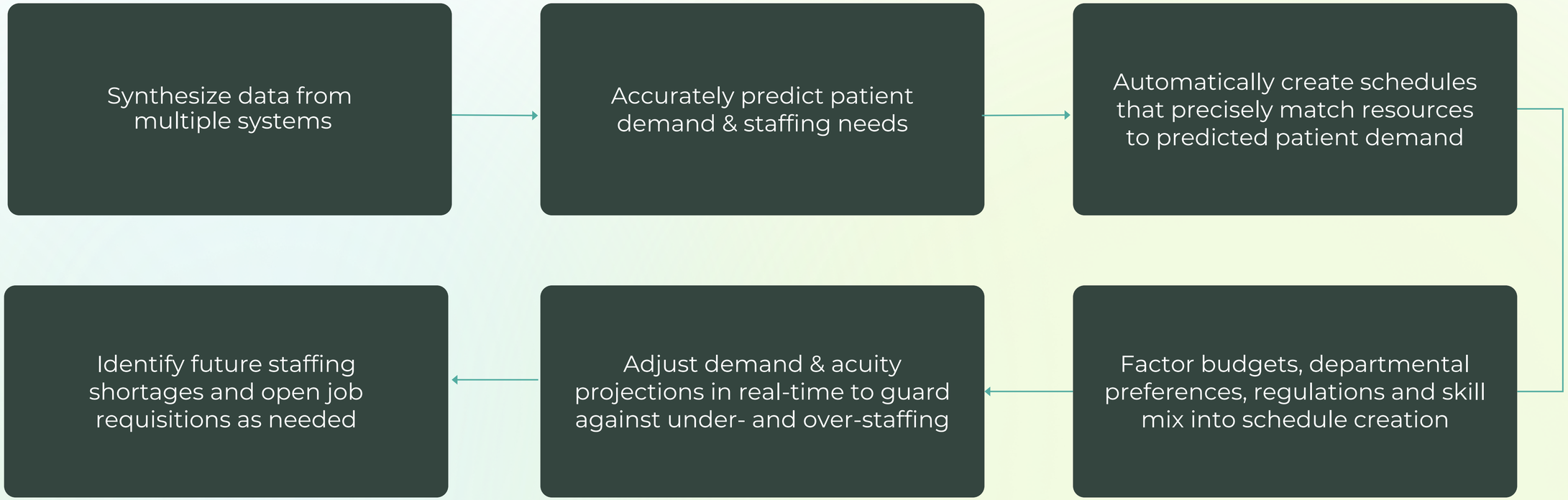
The problem: Flat scheduling is costing this hospital money.



What if you could use AI to get within one resource of a 100% accurate schedule?

Harnessing AI for optimal scheduling

With predictive analytics, you can...



AI can help you put the **right people** in the **right place** at the **right time**.

Let’s discuss the dollars and cents: how AI impacts your bottom line

Outcome: 4-6% annual labor cost savings

What do you need to make great staffing decisions?

- EMR
- Staff scheduling
- Time & attendance
- HRIS
- Historical census
- Local & regional events
- School calendars
- Weather

WORKFORCE AI ENGINE

Forecasted patient demand

Key planning assumptions

- Patient ratios / coverage rules
- Productivity targets

Unit staff rosters

Current schedules

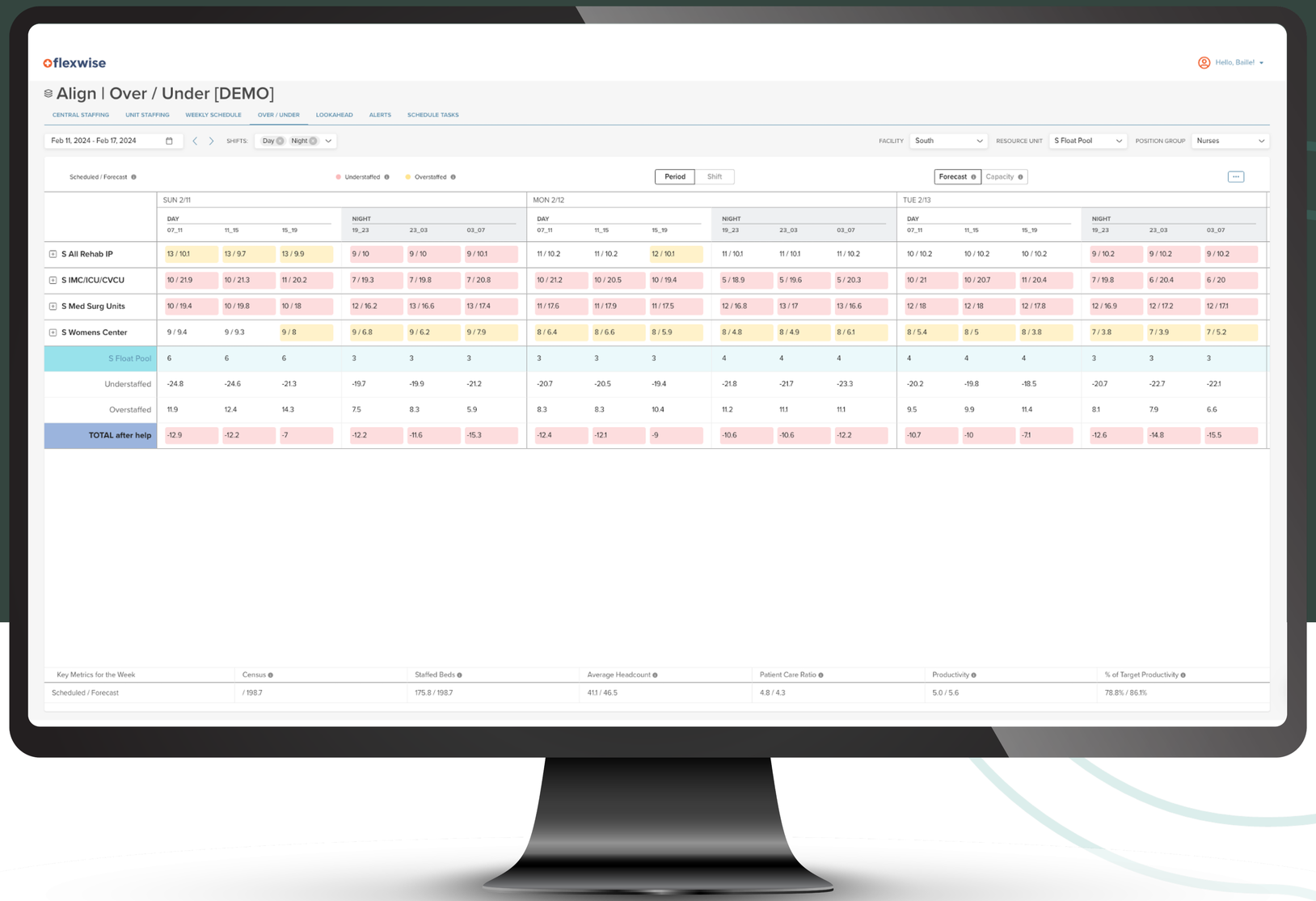
- Labor budgets
- Staffing Requirements
- Hiring Recommendations
- Schedules aligned with demand forecasts

- Maximize FTE utilization
- Reduce OT & burnout
- Reduce premium labor spend
- Increase staff satisfaction

Meeting many needs with flexible Schedules and flexible shifts

DATE	Monday 19, Feb 2024	Tuesday 20, Feb 2024	Wednesday 21, Feb 2024	Thursday 22, Feb 2024	Friday 23, Feb 2024
DAILY DEMAND	21	20	19	21	19
7AM-3PM (8 hours)	R R R R — 4 RNs	R R R R — 4 RNs	R R R R — 4 RNs	R R R R — 4 RNs	R R R R — 4 RNs
9AM-9PM (12 hours)	R RN47 ... — 1 RN	R RN55 ... — 1 RN	R RN43 ... — 1 RN	R RN55 ... — 1 RN	R RN69 ... — 1 RN
10AM-9PM (11 hours)	R RN64 ... — 1 RN	R RN51 ... — 1 RN			
11AM-9PM (10 hours)	R RN48 ... — 1 RN	R R — 2 RNs	R RN48 ... — 1 RN	R R — 2 RNs	R RN43 ... — 1 RN
12PM-9PM (9 hours)			R RN66 ... — 1 RN	R RN61 ... — 1 RN	R RN66 ... — 1 RN
1PM-11PM (10 hours)	R RN65 ... — 1 RN	R RN65 ... — 1 RN	R RN65 ... — 1 RN		
2PM-9PM (7 hours)	R R R R +1 — 5 RNs	R R R R — 4 RNs	R R R R — 4 RNs	R R R R +1 — 5 RNs	R R R R +1 — 5 RNs
8PM-8AM (12 hours)	R R R R +4 — 8 RNs	R R R R +3 — 7 RNs	R R R R +3 — 7 RNs	R R R R +4 — 8 RNs	R R R R +3 — 7 RNs

Source: Polaris Software


flexwise
Hello, Bailie!
Align | Over / Under [DEMO]
CENTRAL STAFFING
UNIT STAFFING
WEEKLY SCHEDULE
OVER / UNDER
LOOKAHEAD
ALERTS
SCHEDULE TASKS
Feb 11, 2024 - Feb 17, 2024
SHIFTS:
Day
Night
FACILITY
South
RESOURCE UNIT
S Float Pool
POSITION GROUP
Nurses
Scheduled / Forecast
Understaffed
Overstaffed
Period
Shift
Forecast
Capacity
SUN 2/11
MON 2/12
TUE 2/13
DAY
NIGHT
07_11
11_15
15_19
19_23
23_03
03_07
S All Rehab IP
13 / 10.1
13 / 9.7
13 / 9.9
9 / 10
9 / 10
9 / 10.1
11 / 10.2
11 / 10.2
12 / 10.1
11 / 10.1
11 / 10.1
11 / 10.2
10 / 10.2
10 / 10.2
10 / 10.2
9 / 10.2
9 / 10.2
9 / 10.2
S IMC/ICU/CVCU
10 / 21.9
10 / 21.3
11 / 20.2
7 / 19.3
7 / 19.8
7 / 20.8
10 / 21.2
10 / 20.5
10 / 19.4
5 / 18.9
5 / 19.6
5 / 20.3
10 / 21
10 / 20.7
11 / 20.4
7 / 19.8
6 / 20.4
6 / 20
S Med Surg Units
10 / 19.4
10 / 19.8
10 / 18
12 / 16.2
13 / 16.6
13 / 17.4
11 / 17.6
11 / 17.9
11 / 17.5
12 / 16.8
13 / 17
13 / 16.6
12 / 18
12 / 18
12 / 17.8
12 / 16.9
12 / 17.2
12 / 17.1
S Womens Center
9 / 9.4
9 / 9.3
9 / 8
9 / 6.8
9 / 6.2
9 / 7.9
8 / 6.4
8 / 6.6
8 / 5.9
8 / 4.8
8 / 4.9
8 / 6.1
8 / 5.4
8 / 5
8 / 3.8
7 / 3.8
7 / 3.9
7 / 5.2
S Float Pool
6
6
6
3
3
3
3
3
3
4
4
4
4
4
4
3
3
3
Understaffed
-24.8
-24.6
-21.3
-19.7
-19.9
-21.2
-20.7
-20.5
-19.4
-21.8
-21.7
-23.3
-20.2
-19.8
-18.5
-20.7
-22.7
-22.1
Overstaffed
11.9
12.4
14.3
7.5
8.3
5.9
8.3
8.3
10.4
11.2
11.1
11.1
9.5
9.9
11.4
8.1
7.9
6.6
TOTAL after help
-12.9
-12.2
-7
-12.2
-11.6
-15.3
-12.4
-12.1
-9
-10.6
-10.6
-12.2
-10.7
-10
-7.1
-12.6
-14.8
-15.5
Key Metrics for the Week
Census
Staffed Beds
Average Headcount
Patient Care Ratio
Productivity
% of Target Productivity
Scheduled / Forecast
/ 198.7
175.8 / 198.7
41.1 / 46.5
4.8 / 4.3
5.0 / 5.6
78.8% / 86.1%

	SUN 2/11					
	DAY			NIGHT		
	07_11	11_15	15_19	19_23	23_03	03_07
⊞ S All Rehab IP	13 / 10.1	13 / 9.7	13 / 9.9	9 / 10	9 / 10	9 / 10.1
⊞ S IMC/ICU/CVCU	10 / 21.9	10 / 21.3	11 / 20.2	7 / 19.3	7 / 19.8	7 / 20.8
⊞ S Med Surg Units	10 / 19.4	10 / 19.8	10 / 18	12 / 16.2	13 / 16.6	13 / 17.4
⊞ S Womens Center	9 / 9.4	9 / 9.3	9 / 8	9 / 6.8	9 / 6.2	9 / 7.9
S Float Pool	6	6	6	3	3	3
Understaffed	-24.8	-24.6	-21.3	-19.7	-19.9	-21.2
Overstaffed	11.9	12.4	14.3	7.5	8.3	5.9
TOTAL after help	-12.9	-12.2	-7	-12.2	-11.6	-15.3

AI magnifies
human potential —
it doesn’t replace it.

AI in action

“[AI-powered scheduling] allows our teams to spend less time on spreadsheets and more time with our patients and their family members as well as help grow and mentor our nursing teams.”

Erica DeBoer
Chief Nursing Officer @ Sanford Health

CASE STUDY

AI vs. Manually Generated Schedules

Metro market anesthesia group

10 hospitals

Goal: Identify labor cost savings potential of aligning staff scheduling with forecasted patient demand vs. average census.

$1.9M
Savings

Workforce AI generated an annual savings opportunity of $1.9M.

92%
Accuracy

Workforce AI reduced staffing by 5.25 CRNA resources per day for the group, with a 92% predictive volume accuracy rate.

21%
More Efficient

Workforce AI was 21% more efficient at meeting volume demand than the traditional model.

*Data sourced from a two-month retrospective analysis of a national anesthesia provider's actual patient volume at 10 client hospitals vs. Workforce AI staffing model

CASE STUDY

Hospital in Southwest US

650 beds

18 in-patient units

Goal: Quantify annualized clinical labor cost savings potential of aligning staff scheduling with forecasted patient demand vs. average census.

	Based on Avg Census		Based on Forecasted Demand	
Labor Category	Shifts Scheduled	Annualized Costs	Shifts Scheduled	Annualized Costs
Nurses	74,202	$34,697,520	67,186	$32,233,200
Techs	35,459	$7,896,636	30,483	$6,798,816
Totals		$42,594,156		$39,032,016
Potential Savings				$3,562,140 (8.36%)

Ethics & Governance

TIPS FROM DUKE HEALTH

- Create a governance framework and oversight committee.
- Implement simple, low-risk use cases.
- Prioritize the human element behind AI.

Questions?

Thank you!

Qualivis

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