

Census Forecast Model for Nursing Strike

UC San Diego Health System

Overview

Due to a planned nursing strike, I created census forecasting models to aid decision makers on the best way to decrease the hospital census to a safe operating level.

Problem

The nursing strike resulted in a significant drop in nursing staff available to take care of patients. As a result, the hospital census had to be decreased to a safe operating level based on the nursing staff available. The available staff was a combination of temporary replacement nurses and career nurses not participating in the strike.

Other considerations included which input streams (ED, OR, Transfers) to decrease at what time to meet the census requirement while ensuring patient care was still available.

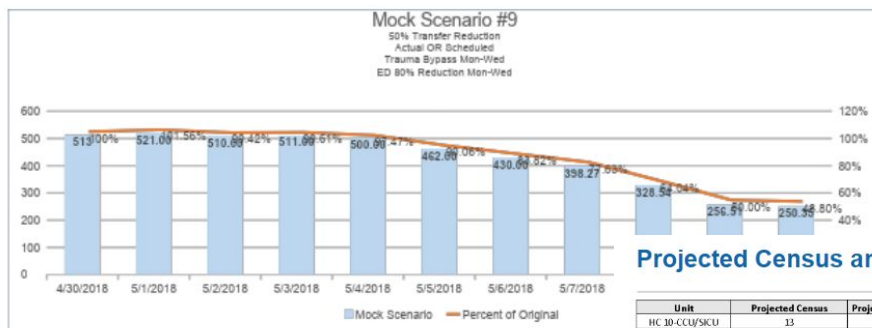
Process

The first step in the process was calculating a safe hospital census due to the shortage of nursing staff. Replacement staff numbers were known, but there was a degree of uncertainty around nurses deciding not to participate in the strike. A conservative estimate was formulated based on this uncertainty to arrive at a census goal.

With known dates for the nursing strike, I created census forecasting models to model different scenarios to arrive at a safe operating level by the time the strike began. The scenarios were used by decision makers to make crucial decisions such as which elective surgeries to postpone, when to go on ED bypass, and when to stop accepting transfers from other facilities.

Solution

The model was used to successfully decrease the census to a safe operating level by the time the strike began. With accurate data to support decisions, the OR was able to successfully complete certain procedures in the days leading up to the strike. The ED bypass was postponed for two days, keeping a critical source of care for our community available for as long as possible. Illustrative examples of model are shown below :



Projected Census and Staffing Model Tonight

Unit	Projected Census	Projected Census with Transfer Center	Total Staff Per Shift	Target Census Based on Staff Per Shift	Census Variance	Staff Variance
HC 10 CCU/SCU	13	17	15	22.50	6	4
HC 5-BURN ICU	5	5	2	3.00	(2)	(1)
JMC 3FGH	16	19	12	18.00	(1)	(1)
SC 3A-ICU	0	0	1	1.50	2	1
TH 2-CVICU	11	14	10	15.00	1	1
HC 11-EAST	13	14	14	56.00	42	9
HC 5W/Burn Sp Care	16	16	4	16.00	0	(1)
HC 2-WEST	0	0	1	4.00	4	1
JM 4FGH	26	28	9	36.00	8	(0)
JM 5FG	16	16	6	24.00	8	5
JM SH	6	6	7	28.00	22	5
JM 6FGH	29	29	8	32.00	3	(2)
SC 1B-PCU	10	10	4	16.00	6	1
SC 4AB	20	22	6	24.00	2	(1)
TH 2-EAST	20	20	6	24.00	4	(1)
TH 2-WEST	19	19	5	20.00	1	(1)
HC 10-EAST	18	20	8	32.00	12	3
HC 11-WEST	10	10	7	35.00	25	5
HC 6-EAST	16	19	5	25.00	6	1
HC 6-WEST	21	21	5	25.00	4	1
HC 8th Floor	0	0	6	30.00	30	6
TH 3L/3W	18	18	6	30.00	12	2
Total	303	323	147	517.00	194	32