Maximizing Return on Travel Nursing Investment

Economic Staffing models can help determine critical staffing metrics required to meet hospitals' financial, clinical and operational goals.

Case Study
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In today's challenging environment of fluctuating census and limited nursing resources, the ability to accurately forecast staffing needs can have a profound effect on a hospital's financial and clinical operations. Nursing staff surpluses mean excess carrying costs, while staff shortages can result in patient diversion and lost revenue opportunities.

Staffing hospitals with the appropriate number of nurses is critical to maintaining high quality of care, optimizing facility utilization, and maximizing net patient revenue. According to a 2006 AMN Healthcare sponsored survey of nurse management, the professionals responsible for staffing decisions often do not have the analytical tools available to anticipate the optimal balance of patient census and staffing. A new class of economic forecasting models may provide those data-driven methods for staffing decision support throughout a facility.

Background

Trends in patient demographics indicate a growing population of aging baby boomers, creating a critical need for more nurses. However, the current level of core nursing staff in healthcare provider organizations is insufficient to meet demand. According to projections from the U.S. Bureau of Labor Statistics[1], published in the February 2004 Monthly Labor Review, more than 1 million new and replacement nurses will be needed by 2012.

Other drivers for increased demand include mandated staffing ratios, a growing number of retiring nurses, and a shortage of nursing school faculty which makes it harder for nursing colleges and universities across the country to expand enrollment levels. According to a September 2004 report by the Health Resources and Services Administration, the nursing shortage is projected to intensify over the next decade and a half, with all 50 states plus the District of Columbia expecting to have RN shortages by the year 2020 under baseline projections. With fewer new nurses entering the profession, the average age of the registered nurse (RN) is climbing, and the total population of RNs is growing at the slowest rate in 20 years.

Effects of Nursing Shortages

Nursing shortages can result in the diversion of patients in the emergency department, bed and department closures, and delays in surgical procedures, all of which negatively impact hospital revenue. Furthermore, in a 2002 nationwide study, inadequate nurse staffing was found to contribute to nurse dissatisfaction and burnout[2]. Excessive overtime, stress and concern for quality of patient care are key factors in nurse dissatisfaction, resulting in high vacancy rates and perpetually high recruitment costs[3]. Since RN turnover costs are estimated at a range of $62,100 - $67,100 per RN[4], the cumulative financial effects of nursing shortages on a given healthcare facility are significant.

Additionally, patient complaints generally increase as a result of inadequate nurse staffing[5]. The direct relationship between patient satisfaction levels, quality of care and the patient's overall health status is

well-recognized. However, for many hospitals, short staffing correlates to declines in patient satisfaction ratings which can lead to decreased revenue for the facility. Press Ganey Associates, a leading independent vendor of satisfaction measurement and improvement services, recognizes health care facilities whose patient satisfaction scores have shown the greatest improvement over the past two years. Favorable results for a given facility have the potential to shape public perception, increase brand value and drive patients and associated revenue to such facilities.

Supplemental Staffing

These pressures are causing hospitals to rely more on supplemental staffing to fill deficits as a result of census swings, capacity expansion, recruitment difficulties, leaves of absence or when certain skill sets are needed. Flexible staffing options include float pools, overtime and nurse travelers; all of which can be used to the hospital's advantage depending on availability of the resources and the length of time they are needed. Internal options, such as overtime and float pools, are commonly leveraged by facilities to fill their needs prior to accessing outside resources. Outside staffing resources, such as per diem agency nurses and longer-term nurse travelers, often become integral to hospitals' flexible-staffing strategies.

Increased Spending

As staffing deficits grow and the need for nursing staff increases, hospitals may choose to invest more of their budgets in per diem and travel nurses. As a result, the increased spending on contract nursing has become a focus of attention for hospital management. A common reaction to sharp increases in labor costs is to cut staff and reduce pay rates. However, staff reductions eliminate the labor necessary to generate revenue, and reductions in pay-rate result in the inability to attract quality nurses in a constrained market. A combination of flexible internal and external staffing resources is a viable option for many organizations, but determining the correct combination of these resources is often a challenge. Economic modeling tools that provide facility specific cost/benefit analyses have been shown to be helpful.

Available Tools

Most hospitals perform some cost/benefit analysis around the use of flexible staffing options since contract labor nearly always represents a line item of the departmental profit and loss statement. However, demand-forecasting sophistication varies considerably among hospitals. The goal of data-driven forecasting tools is to minimize that variation by first focusing on key metrics, including opportunity costs, impact on patient care and satisfaction, a "break-even" point, and the impact of staffing solutions in reducing the core staff attrition rate. Certain qualitative factors often override any cost/benefit analyses such as staffing beds, maintaining nurse-to-patient ratios and the importance of quality of care. While most hospitals acknowledge that there are additional benefits of using flexible options (e.g., reducing attrition and improving quality of care), they seldom quantify these benefits.

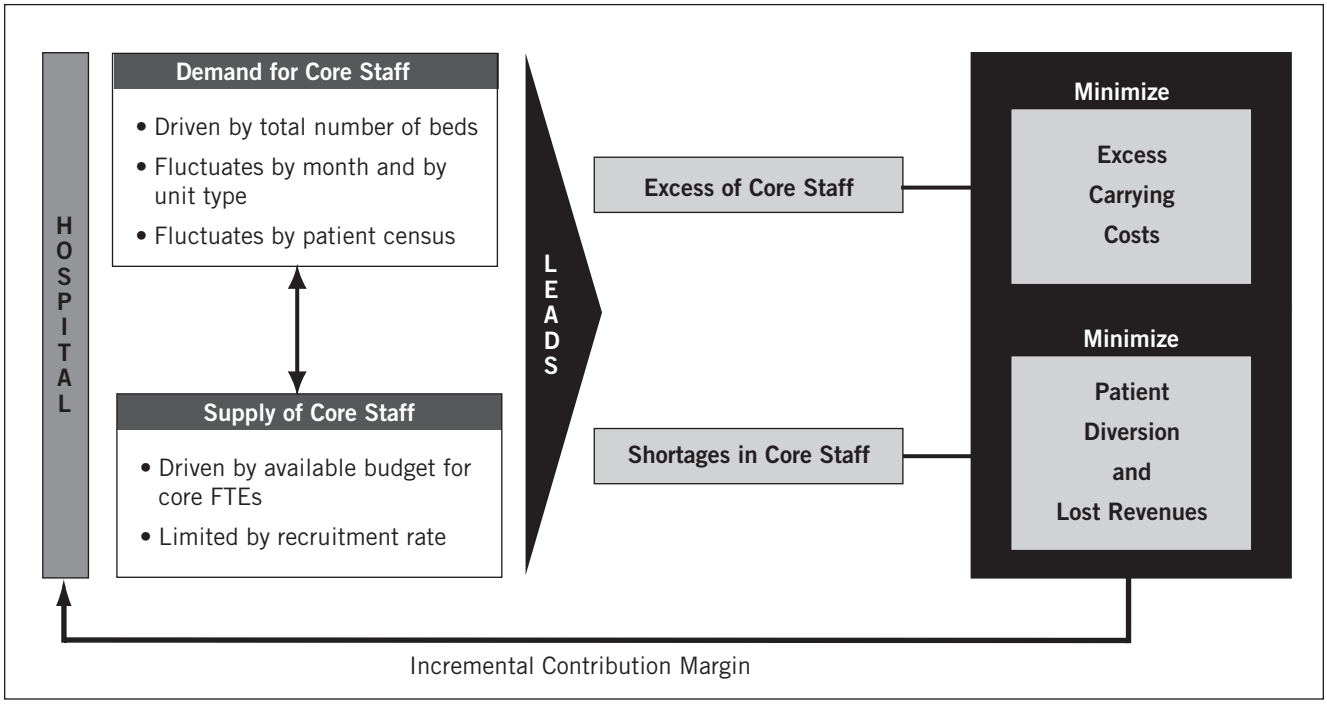
Various demand-forecasting tools are available. In these models, demand is usually forecasted by unit type (i.e., Med Surg vs. ICU vs. CCU) and is updated weekly, monthly or quarterly, depending on the hospital policies. However, the practicality of successfully applying these forecasting tools within the nursing environment is lacking, which is why many facilities still rely on spreadsheets, calculators and in-house tools.

A New Economic Staffing Management and Forecasting Model

A new economic forecasting model can help minimize both revenue losses and excess carrying costs for hospitals through optimal usage of their contract labor resources. Key input variables are considered in the

cost-benefit analyses of travel nurses, while key output metrics are tracked (e.g., opportunity costs, wage rate comparisons, potential for cost savings, break-even point while using travel nurses).

Figure 1: Key Aim of the Model



Case Study

An acute care facility located in the Midwest wanted to determine whether supplemental nursing resources could impact profitability. The facility generated just over $750 million in revenue with more than 40,000 patient discharges. At the time of data collection, the facility employed a total of 141 nurse FTEs, yet experienced a 21 percent nurse turnover rate due to increasing competition. In addition to nurse turnover, the facility experienced census spikes in the fall, winter, and spring, which further contributed to its nursing shortage. With $33,841 per nurse in recruitment fees and an average nurse salary of $39,810, the facility leveraged existing core staff for float pool and overtime to serve patient demand, yet still could not meet seasonal fluctuations in census.

Methodology

AMN Healthcare conducted an analysis of the hospital's data using its Economic Staffing Forecaster financial impact model. The model is designed to determine the most cost-effective mix of full-time nurses and travelers to accommodate regular and peak census periods based on a facility's historical census, financial information, and nursing practices.

Tables 1 through 5 in the appendix detail the information used in the analysis. The data includes the percentage occupancy rate by department by month; core staff coverage (which is the percentage of FTEs available through float pools and overtime); capacity and demand (which includes the number of beds and available permanent staff); nursing data (including vacancy rates, average nurse turnover rates, recruitment rates, salary and recommended staffing ratios); revenue and cost estimates; travel nurse data (which include cost estimates) and financial data, which include overall costs.

Data Analysis

The first step of the analysis involved computing the levels of nurse staffing that were needed in various areas to meet nurse-to-patient ratios based on average daily census throughout the year for which the data was presented. Based on information provided by the facility, the data showed that there were significantly more periods of potential understaffing than overstaffing through the use of core staff, especially in critical-care nursing (Figure 1).

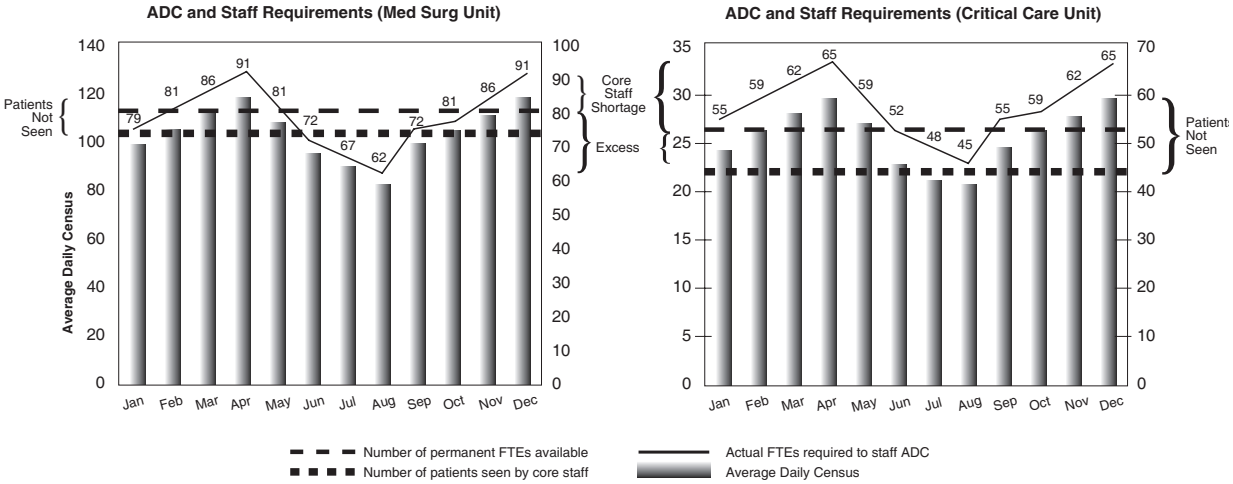
In the Med Surg Unit, the average number of available FTEs was 81, and the need fluctuated from 62 to 91. The nurse-to-patient ratio was 6:1. In Critical Care, the average number of available FTEs was 52, and the need ranged from 45 to 65. The nurse-to-patient ratio was 2:1. (See Figure 3.)

Figure 1: Core Staffing Deficits by Unit by Month

Deficits in FTEs	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Med Surg	(6)	(10)	(15)	(20)	(10)	(1)	**0**	**0**	(6)	(10)	(15)	(20)
Critical Care	(8)	(12)	(15)	(18)	(12)	(5)	(1)	**1**	(8)	(12)	(15)	(18)
All Other	(5)	(7)	(10)	(12)	(7)	(2)	**0**	**0**	(5)	(7)	(10)	(12)
Totals	(19)	(29)	(40)	(50)	(29)	(8)	(1)	**1**	(19)	(29)	(40)	(50)

In Figure 2, fluctuations in average daily census can clearly be seen in light of their relationship to staffing needs and the ability for the organization to meet staffing ratios and adequately serve their patients. Key shortfalls are also apparent in this figure.

Figure 2: Fluctuations Based on Average Daily Census



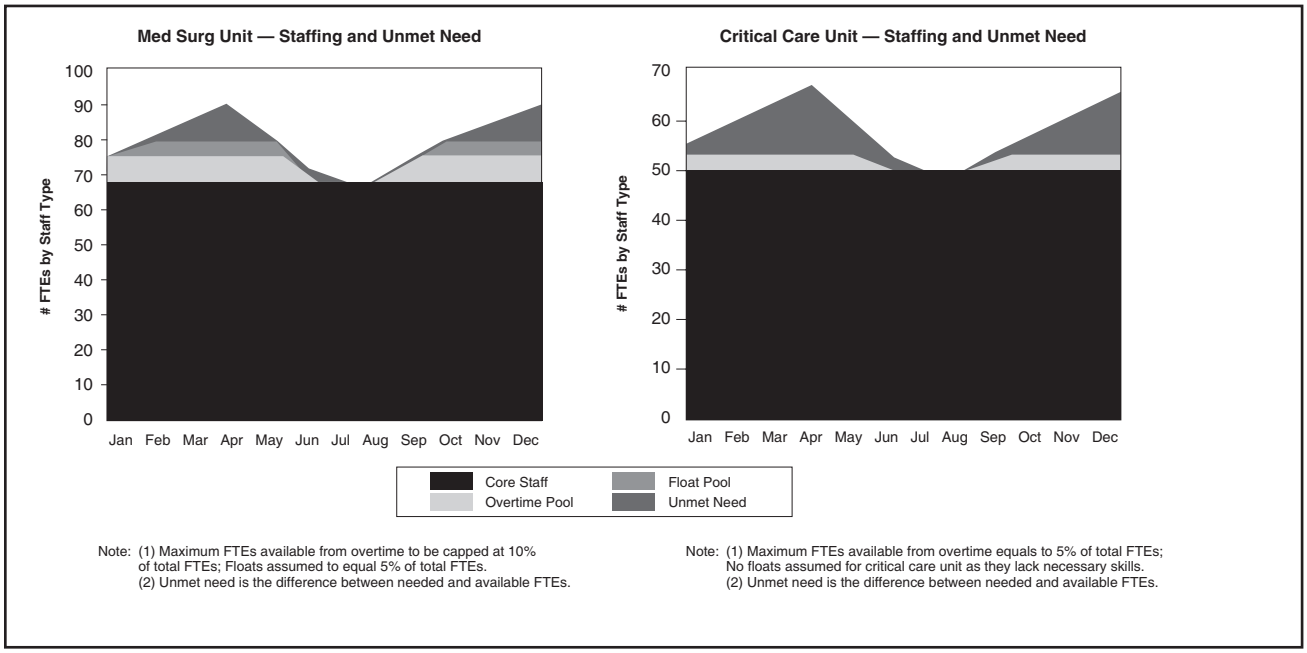
In Med Surg, internal flexible staffing alternatives included overtime and float pools. The maximum percentage of FTEs available for overtime was capped at 10 percent, while the available percentage of FTEs available for float pool coverage was 5 percent. The nurse-to-patient ratio was 6:1.

In Critical Care, float-pool coverage could not be considered because of the skill level needed, and overtime was the only other internal flexible scheduling option using core staff, with only 5 percent of FTEs available for that coverage.

The numbers used in this analysis included both client data as well as overtime and float pool percentages derived from the American Hospital Association's 2002 Acute Care Hospital Survey of RN Turnover and Vacancy Rates.

As is shown in Figure 3, coverage shortfalls were still experienced in both Med Surg and critical care during nearly the entire year, even when the organization used core staff for overtime and float pools. The number of unseen or diverted patients was calculated from the staff shortages and staffing hours per patient by unit type.

Figure 3: Staffing and Unmet Need - 249 Patients Diverted.



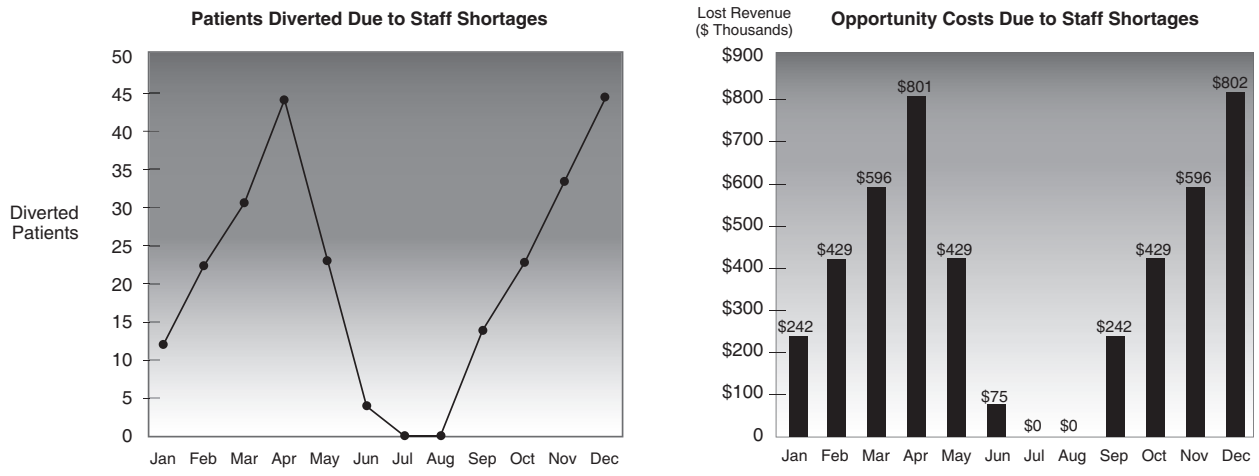
The analysis found shortages were most severe in December and April during cyclical, peak census periods. Based on the analysis, a total of 249 patients would need to be diverted because of the inability to provide adequate nurse staffing using only core staff with overtime and float pools as flexible staffing options (see Figure 3).

Figures 4 and 5 illustrate the hospital's revenue opportunity in recapturing diverted patients. The opportunity costs are based on a net patient revenue of $18,640 per discharged patient and direct costs of $9,275 per patient.

Figure 4: Patient Recapture by Travel Nurses

Patients Seen by Travel Nurse	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Med Surg	6	12	18	24	12	0	0	0	6	12	18	24
Critical Care	3	5	6	8	5	2	0	0	3	5	6	8
All Other	4	6	8	11	6	2	0	0	4	6	8	11
Totals	13	23	32	43	23	4	0	0	13	23	32	43

Figure 5: Diverted Patients and Opportunity Costs



The financial opportunity in recapturing diverted patients is significant. Using the forecasting model, it was found that by using travel nurses during peak census periods, the organization would be able to recapture patients that would have been unseen / diverted because of staffing constraints. In this case study, the economic forecasting model demonstrated that the cumulative opportunity for leveraging the use of travel nurses to optimize staffing levels could add an additional $1.2 million in annual net revenue based on cost assumptions provided, even after accounting for additional cost incurred from travel nurses.

Conclusions

Traditional methods of managing staffing needs based on capacity and demand often result in knee-jerk reactions to the ebb and flow of patient census levels. Additionally, such action often places too much emphasis on internal staffing solutions such as float pools and overtime.

The analysis of the cost of using these options often reduces staffing cost projections to a simple equation of the difference paid for standard hours and overtime hours. However, the costs of turnover and recruitment, which can be a direct result of such ongoing practices, may not be considered. Also, the lost patient revenue that can result from stretching the available pool may be overlooked in the traditional equation.

The use of a more comprehensive economic staffing management and forecasting tool provides a data-driven, standardized method for forecasting staffing needs that minimizes periods of both understaffing and overstaffing. This serves to optimize nurse staffing while maximizing incremental patient revenue that might otherwise be lost.

This model shows that the use of travel nurses as a component of an overall supplemental staffing solution can add value by capturing incremental revenue from patients that might otherwise be lost by relying solely on internal flexible staffing options. This model also demonstrates that reduced reliance on overtime and float pools can have quantifiable effects on recruitment and turnover costs. This analysis, however, does not take into account physicians who might refer elsewhere because of unfavorable nurse-to-patient ratios, which can create a potentially significant negative fiscal impact as well.

Recommendations

Hospitals exploring flexible staffing options need to consider all of the downstream financial impacts of internal staffing alternatives—both positive and negative. This case study shows that relying solely on internal float pools and overtime to balance staffing needs ignores potentially significant cost issues and lost revenue opportunities that can result.

The dynamics of patient census, staffing, nurse ratios, recruitment, turnover costs and revenue are complex and require a more comprehensive data-driven forecasting tool to help maintain an optimal balance of internal and external staffing options. Using such a tool can help hospitals accurately predict supplemental staffing needs while also reducing turnover and recruitment costs and minimizing diverted patient revenue opportunities that might otherwise be lost under the more traditional staffing models.

Appendix

Data Considered in the Analysis

Table 1. Occupancy Rate by Department

Occupancy Rate	Med Surg	Critical Care	All Other
January	80%	80%	80%
February	85%	85%	85%
March	90%	90%	90%
April	95%	95%	95%
May	85%	85%	85%
June	75%	75%	75%
July	70%	70%	70%
August	65%	65%	65%
September	80%	80%	80%
October	85%	85%	85%
November	90%	90%	90%
December	95%	95%	95%

Table 2. Core Staff Coverage

Core Staff Coverage	Med Surg	Critical Care	All Other
FTEs Available Through Overtime	10%	5%	5%
FTEs Available Through Float Pool	5%	0%	5%

Table 3. Capacity and Demand

Total Number of Beds By Bed Type	Count
Medical / Surgical / Post Partum	125
Critical Care Beds (All Types) / Labor and Delivery	30
All Other (Telemetry, Step Down, Etc.)	45
Total Number of Beds at the Facility	200
ADC for Determining # Budgeted FTEs (Permanent Staff Only)	
Medical / Surgical	81
Critical Care Beds (All Types)	20
All Other	29

Table 4. Nursing Data

Metric	Data
Vacancy Rates By Unit (Includes Impacts Due to Shortage, Recruitment Lag, FMLA, Sick Leaves)	
Medical / Surgical	0.00%
Critical Care	0.00%
All Other	0.00%
Average Nurse Turnover Rate (Yearly)	
Medical / Surgical	21.60%
Critical Care	21.60%
All Other	21.60%
Average Nurse Recruitment Rate (Yearly)	
Medical / Surgical	21.60%
Critical Care	21.60%
All Other	21.60%
Annual Nursing Salary (Mean)	$39,810.00
Hourly Wage Rate (Mean)	$19.14
Benefits as a % of Salaries (include FICA, 401(k) Benefits, Paid Time Off, Workers Compensation	29%
Recommended Staffing Ratio (Patients Per Caregiver)	
Medical / Surgical	6
Critical Care	2
All Other	4
Net Service Revenue Per Patient	$18,640
Total Direct Costs Per Patient	$9,275
Replacement Costs Per Nurse	$33,841
Number of Direct Hours Per FTE Per Day	5.7

Table 5. Travel Nurse Data

Metric	Count
"Incremental Cost" of a Travel Nurse per Hour Over a "Permanent Nurse"	$20
Number of Hours Worked per Month	156
Number of Months of Assignment	3
Incremental Cost of a Travel Nurse Over 3 Months	$9,360
Total Cost of Travel Nurse per Month	$3,120

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