



# Case Study: Improving Hospital Efficiency Through Capacity Modeling

One of the nation's top hospitals was in pain. Backlogs in key departments were slowing the process of patient care, leading to a decline in the level of patient service and extending the average patient stay. Those inefficiencies were resulting in unnecessary frustration and cost.

This medical system, like most, services a variety of patients on both an in- and out-patient basis. While some admittances were planned, more than 70 percent arrived through the emergency department—one of the areas that couldn't be planned or scheduled. Compounding the problem, the hospital had limited understanding of its average patient flow patterns. Some times of day and days of week were consistently busier than others. However, staffing remained similar throughout these periods and was not appropriately adjusted to adequately service these patterns.

The Guidon team immediately went to work, immersing itself in the day-to-day operations of the hospital. By using test periods and analyzing typical patient flow, the team found that delay-ridden hot spots included the radiology and pharmacy departments. When doctors ordered MRIs or CAT scans from radiology or medicines from pharmacy, they were often met with delays. These delays created a domino effect, often leading to other delays in reviewing or monitoring outcomes from these services and medicines. In turn, that led to increases in patient stays, sometimes requiring an extra admission day in the facility.

Since extended stays due to preventable service delays often cause both patient frustration and needless cost, something had to be done. The Guidon team built capacity maps to compare typical patient volume patterns to current staffing. What they found was that simple adjustments, such as using runners to get patient files to doctors more quickly, could significantly reduce delays. In some cases, staffing was adequate, but the protocol for dealing with patients could be adjusted to be more efficient, using nursing staff to handle some functions that doctors had previously managed, and redirecting the talent and training of doctors to functions that require their expertise. With a better grasp of high-capacity times, the hospital was also able to adjust its staffing to have more employees working during high-traffic times and fewer during typically slower periods in some departments, leading to further efficiency and reduced delays.

In a second model that was created, the cardiology unit could analyze patient levels on level of service. Until then, the unit had only a rough idea of the maximum number of patients who could be seen and treated without having a detrimental impact on patient care. The model allowed staff to input various patient volumes and review the impact on results and revenue, giving the unit a tool to help it enhance both its patient outcomes and its financial well-being.

By using such models, the medical center was able to fine-tune its staffing and patient intake levels in a virtual setting rather than making immediate and experimental changes that could ultimately be ineffective and costly. The center has used these models with positive returns on cost savings and patient satisfaction, and the financial return from just one of those changes is projected to be nearly a half-million dollars.

**Client:** A leading international medical center with locations in three countries

**Industry:** Healthcare

**Service:** Capacity Modeling

## Challenge:

- Limited understanding of patient flow patterns through the various hospital departments
- Staffing inadequacies and inefficiencies, particularly in the pharmacy and radiology departments
- Backlogs in departments delayed patient services and, in some cases, extended length of stay

## Solutions:

- Worked to track patient flow patterns and compare them with staffing capacity in various departments
- Identified times of day and days of week with the highest traffic, and adjusting staffing or scheduling accordingly

## Results:

- Improved wait times for services, getting patients the attention they needed more quickly
- Cost savings from one staffing change alone is expected to yield more than \$580,000 in savings per year in improved efficiency



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