University Hospital Uses Simulation to Consolidate and Optimize Its NICU

NICU Optimization

Success Story

Healthcare

MedModel

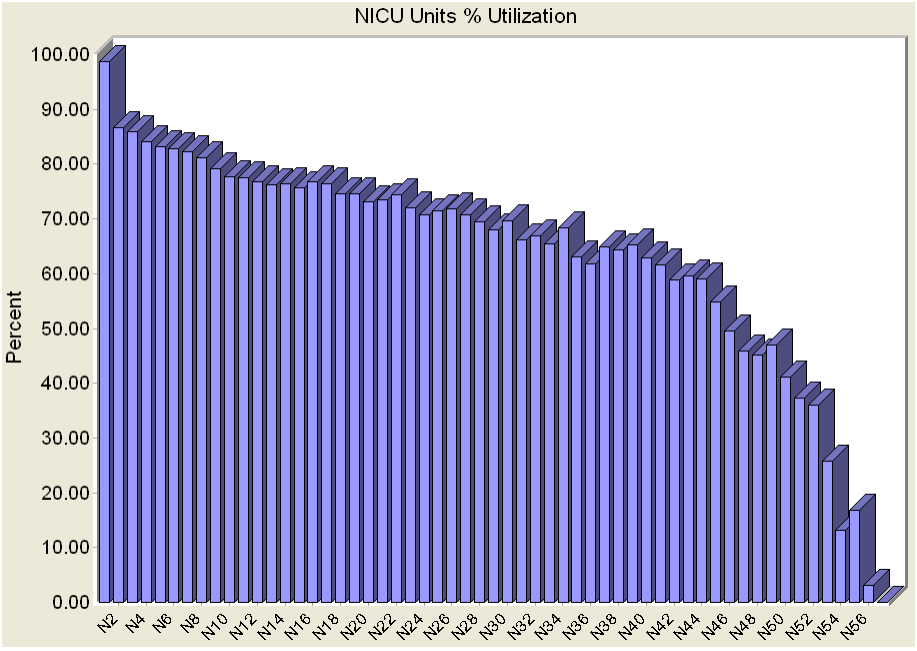
CHALLENGES

A private, not for profit university affiliated health system, comprises eight hospitals and has affiliations with more than 80 outpatient practices throughout Florida. It is one of the most respected health organizations in the Southeast with patients from every county in Florida. This Healthcare organization employs 13,000 people and was operating two hospitals in Florida. One a 75 year old organization that has struggled for many years with annual losses. The organization has tried many things over the years to keep this hospital afloat and with much deliberation decided to close it while still protecting its many employees and the community it serves. This same Healthcare organization has a 700 bed University hospital nearby. In addition they are building a 192 bed cancer center, also nearby, which will absorb patients and employees from the 75 year old, 200 bed facility that is closing.

To help them successfully consolidate these hospitals, they used ProModel's MedModel application. Their first area of concern was the NICU. The hospital administration wanted to determine if it was possible for the larger University hospital to absorb the closing NICU work load. This involved studying the 55 bed NICU unit at this University hospital to see if it could take on the patients from the 8 bed NICU at the closing hospital without an increase in diverts.

OBJECTIVES

- To determine if the University hospital NICU can absorb the workload from the closing hospital without increasing patient diversions
- To analyze what resource requirements and/or process changes need to be made with regard to the additional workload



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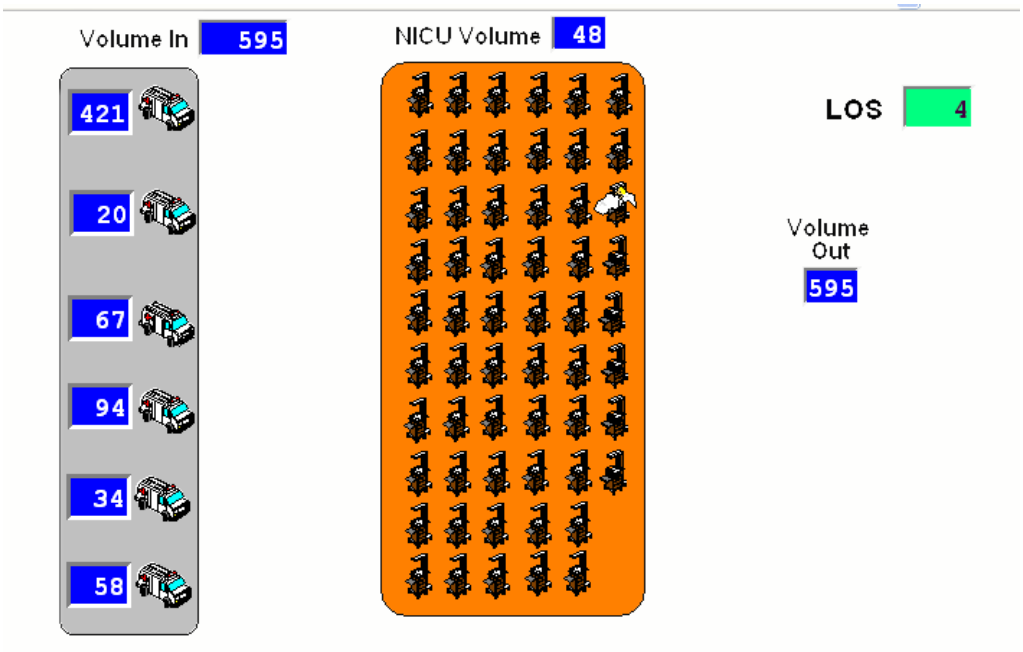
SOLUTION

A Senior Engineer and expert MedModel user working for this Healthcare organization, developed a model that would simulate multiple scenarios and replicate the exact processes of the university NICU with its patient load variability and resource interdependencies.



The model builder had a great deal of excellent historical data to use for the study in various Excel® tables. After talking with ProModel Tech Support and viewing a Solutions Café video, he used an Excel converter to pull dates and times of patient arrivals and convert them to the MedModel format so he could simulate the base conditions in the University NICU. He built a model based on this historical data with exact dates and times and associated patient arrivals to help validate the model's predictions. Once the model was validated, he tried different scenarios to improve NICU operations, until he settled upon one that provided the optimum results. In the NICU adding a single bed was not a practical option, therefore, he needed to determine the correct combination of beds that would be feasible for the hospital, yet provide the desired level of care for the patients.

VALUE PROVIDED

The Healthcare organization was able to save money based on what they learned from their model. Without the model: the combined number of beds from the university hospital with the number of beds from the closing facility would be 63 total.

With the model: they could properly prioritize patient admittance. Simulation revealed that 58 beds in the University hospital would adequately provide for the NICU patient volume they could expect from both hospitals and there would be no additional diverts, saving the cost of five beds and associated staff.

If the area population increases and other variables change, the simulation can be used again to make sure current bed volume will meet future demand, therefore, the organization will continue to maintain their excellent reputation in the region.

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