A common practical approach to shift template design is to use average historical patient volumes. This is problematic because historical patient volumes reflect inefficiencies in existing shift templates. We propose using classification and regression trees to understand the effect of staffing levels on patients' length of stay and adjust historical patient volumes to better represent ideal patient volumes under optimal staffing levels. A realistic simulation model based on multiple treatment stages of each individual patient is used to illustrate the effectiveness of our approach. We will also briefly discuss a new multi-class multi-stage queueing network model, also based on multiple treatment stages, as a future research direction.

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Dr. Sir's research has focused on complex scheduling and treatment planning problems arising in health care operations and radiation therapy. In addition, he has developed simulation-based optimization algorithms for streamlining patient flow by optimizing resource levels used at different stages of the care delivery process, from admission through discharge. Dr. Sir is also interested in developing decision support systems to optimally manage workload in dynamically changing health care settings. His research has been funded by the National Science Foundation, Bayer CropScience Corporation, and Missouri Department of Transportation.

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