

LENGTH-OF-STAY AND OPTIMAL PORTFOLIO OF SURGICAL PROCEDURES

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In this study, we provide analytical insights on how to optimally allocate hospital operating capacity between various types of elective surgical procedures. Our focus is on the interaction between two major constraining resources: operating rooms and hospital recovery beds. In our model, each procedure type has an associated revenue, deterministic case duration and stochastic length of stay. Length of stay is the time it takes for patients to recover from the surgery and leave the hospital; we consider discrete, arbitrary distributions of this variable. In this setting, the surgeries performed today affect the availability of hospital beds for the following days. We describe the optimal mix of procedures in the presence of a service-level constraint on hospital beds, an operating room capacity constraint, and procedure demand constraints.