

Thanon Wongsammacheep 2012: The Discrete-Event Simulation Model of a Health Screening Center for Improving Patient's Waiting Time. Master of Engineering (Industrial Engineering), Major Field: Industrial Engineering, Department of Industrial Engineering. Thesis Advisor: Assistant Professor Juta Pichitlamken, Ph.D. 83 pages.

The health screening center is the first department that patients come into contact before going to other departments because the objective of this department is to screen patient's health. Many patients come into the health screening center that patients sometimes complain about long waiting times. We develop a discrete-event simulation model of the health screening center by Arena software to support the decision making process of the hospital management. It is designed such that it can readily be used for testing any scenarios inside the health screening center. Input data is collected from electronic records and interviews with staff. The simulation model is validated by considering the average total times in the system. In this work, primary objective is to reduce the total waiting time, and the secondary objective is to reduce total time in the health screening center. We use the simulation model to test our patient's adaptive policies to see if patient's waiting time can be reduced. The first policy is the as-is condition. The second policy is to have the ultrasound test only once for the whole abdomen. The third policy is to assign diagnosis physicians at Station 6 on the first-come, first-serve basis. The fourth policy is to change schedule patients' arrivals throughout the day by the OptQuest tool. The fifth policy is to simultaneously implement all policies. The fifth policy can reduce total waiting time to 23% from 133.90 ± 3.33 minutes to 102.99 ± 1.59 minutes and can reduce total time to 16% from 205.94 ± 3.37 minutes to 173.45 ± 1.74 minutes. The Select-the-Best procedure in Arena software is used to select the best policy to reduce waiting time at 95% confident interval and 5 minutes for error tolerance.

Student's signature

Thesis Advisor's signature