

On Waiting Time Prediction in Hospital Emergency Departments

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Abstract

Many emergency departments (EDs) have posted the predicted waiting time to see a doctor for workload balancing within their hospital network. Using a data-calibrated simulation model, we investigate the impact of operational factors, including the prediction accuracy, update frequency, and influence proportion, on the effectiveness of workload balancing. We find that with real-time, perfect prediction, the average patient waiting time decreases as the influence proportion increases. However, when the predicted waiting times are not sufficiently accurate or the predictions are not updated frequently enough, the average waiting time first decreases and then increases with the influence proportion.

Keywords

Emergency Department Operations, Waiting Time Prediction, Workload Balancing, Simulation.