

# THE APPLICATION OF DISCRETE EVENT SIMULATION (DES) TO ENHANCE WAIT TIMES AND SPACE UTILIZATION of a Multidepartment Clinic

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This study underscores the benefits of Discrete Event Simulation (DES) in healthcare operations, particularly in a multi-department outpatient clinic. The researchers developed a DES model that integrated patient flow, schedules, layout, and staffing information. This model was used to analyze space and staff utilization, wait times, and the impact of proposed changes. The study explored strategies such as pooling registration desks, implementing check-in kiosks, converting underutilized exam rooms to telehealth or consultation spaces, and adding providers during peak hours. The robust and data-driven approach of DES was found to effectively analyze the impacts of these alternative design strategies on operational outcomes, leading to improved resource allocation, streamlined operations, cost reduction, and enhanced patient and staff satisfaction.



## What is the implication, and what should change now?

The key design implications include centralized registration, flexible multi-use spaces, and staffing adjustments based on demand patterns facilitated through data-driven analysis. Implementing these strategies can lead to improved operational efficiency, cost reduction, and enhanced patient and staff satisfaction in healthcare facilities.

## The top 5 patient design takeaways from the article/icon text:



**Pooling decentralized registration desks** into a centralized registration area for departments with similar patient types, such as primary care, improves staff utilization and streamlines patient check-in and check-out processes.



**Integrating self-check-in kiosks**, especially for patient populations receptive to technology, accelerates check-in times and frees up staff for other tasks.



**Converting underutilized exam rooms** into dedicated telehealth rooms allows clinics to meet the increasing demand for virtual care services without affecting in-person visit capacity.



**Optimizing the layout of consultation exam rooms** to accommodate high patient volumes can lead to decreased wait times for patients and enhance overall patient satisfaction.



**Consider implementing dedicated waiting areas** exclusively for pediatric patients, located separately from the main concourse. This approach can create a supportive and engaging environments and alleviate visitor anxiety and improve waiting experience.

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