SIMULATION SYSTEM FOR OPERATIONAL DECISION SUPPORT IN EMERGENCY UNIT

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Abstract

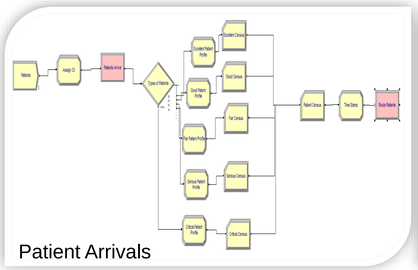
This model simulate the activity of Emergency Room (ER) and **measure the waiting time of patient in two different scenarios** at a typical hospital. Different areas of the hospital are modeled, including triage, reception and beds.

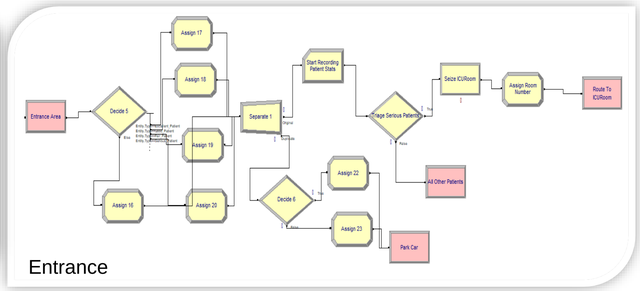
Hypothesis

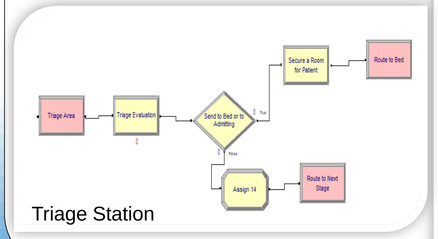
- Reduce the amount of waiting time of patient at a typical hospital ER by increasing the resourses (*Doctor ,Nurses*) number.

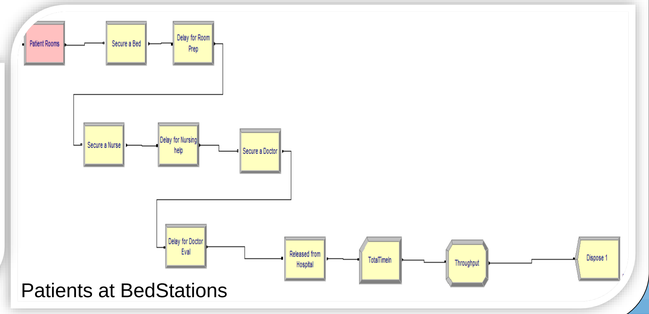
Experiment

We use Arena Simulation Application to demonstrate our model.









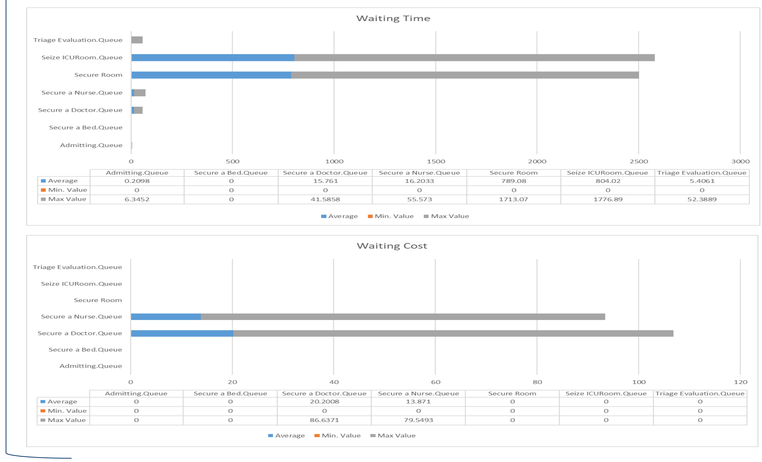
Summary of Findings

Simulation Data:

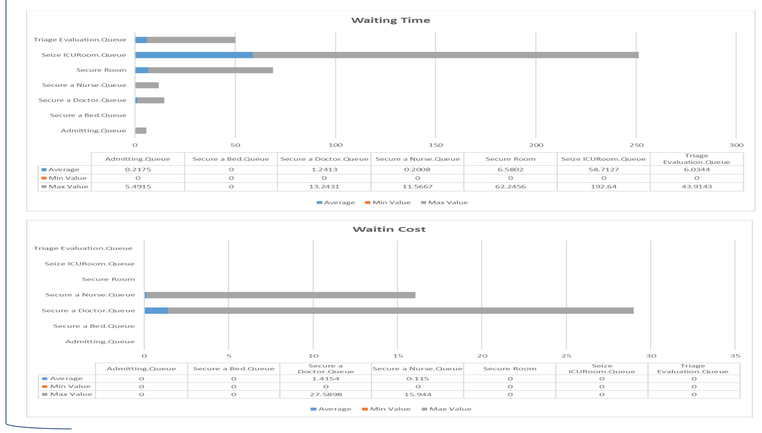
- The user Interval time: EXPO(9)
- The Simulation time: 7 Days
- The time unit: Minute
- In the Base model the Number Out of the system is1,966
- In the Optimized model the Number Out of the system is 2,176

Model	AdmStaff	Bed	Doctor	ICUBed	ICURoom	Nurse	Room	TriageNurse
Base	2	6	2	3	2	4	6	1
Optimized	2	6	3	3	2	5	6	1

1st Scenario/Base Model



2nd Scenario/ Optimized Model



Conclusions

The waiting time of patient reduce with the increscent of Doctors number and the Nurses numbers.

References

[1] Kyriacou, Demetrios N., et al. "A 5-year time study analysis of emergency department patient care efficiency." Annals of emergency medicine 34.3 (1999): 326-335.

[2] QuickStats: Median Emergency Department (ED) Wait and Treatment Times,* by Triage Level† — National Hospital Ambulatory Medical Care Survey, United States, 2010–2011

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