IE3100R Systems Design Project
Department of Industrial & Systems Engineering

Prediction & Improvement of the Waiting Time for New Outpatient Appointment of Clinic X

National University of Singapore

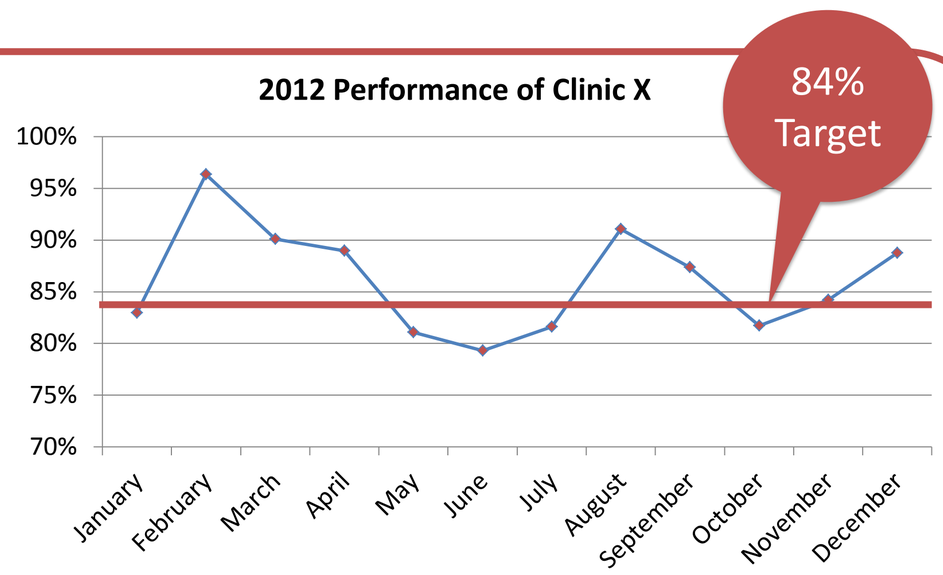
Problem & Objective

Problem:

There is a standard requirement for hospitals in Singapore that at least 84% of the monthly subsidized patients' appointment requests must be arranged within 60 days. Some times Clinic X being studied does not meet the required standard.

Objective:

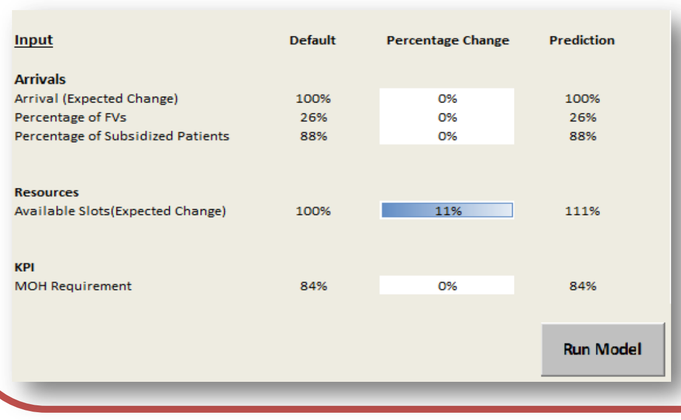
To predict and improve the monthly waiting time performance of subsidized patient appointment-requests through simulation.



Methodology

System Analysis	Potential Factors	Modelling	Output Analysis	Scenario Analysis
• Understand SOP • Understand requirements	• Identify influencing factors from 2010 to 2013 data • E.g. Patient Type, Visit Type, Periodicity and Speciality	• Simulate patient arrivals and appointment scheduling	• Identify sensitive factors	• Test possible scenarios and provide recommendations to improve performance

Deliverables

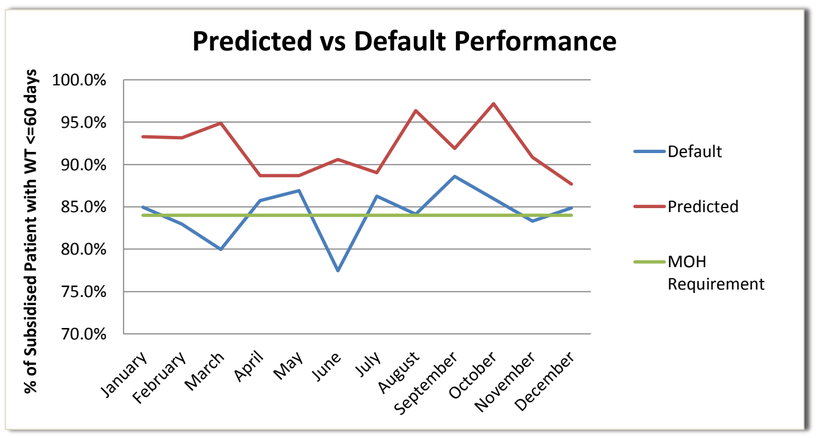


Input	Default	Percentage Change	Prediction
Arrivals			
Arrival (Expected Change)	100%	0%	100%
Percentage of FVs	26%	0%	26%
Percentage of Subsidized Patients	88%	0%	88%
Resources			
Available Slots(Expected Change)	100%	11%	111%
KPI			
MOH Requirement	84%	0%	84%

Run Model

An Excel interface is linked with the simulation model

Client can change input parameters to see predicted performance



11% increase in capacity is required given all input parameters at *status quo*

Scenario Analysis

Scenario	Demand	FVs	SPs	Targeted Standard	Required Change in Capacity
1	+15%				**+22%**
2		+1%			**+13%**
3			+1%		**+11%**
4				+2%	**+11%**
5	+15%	+1%	+1%		**+28%**

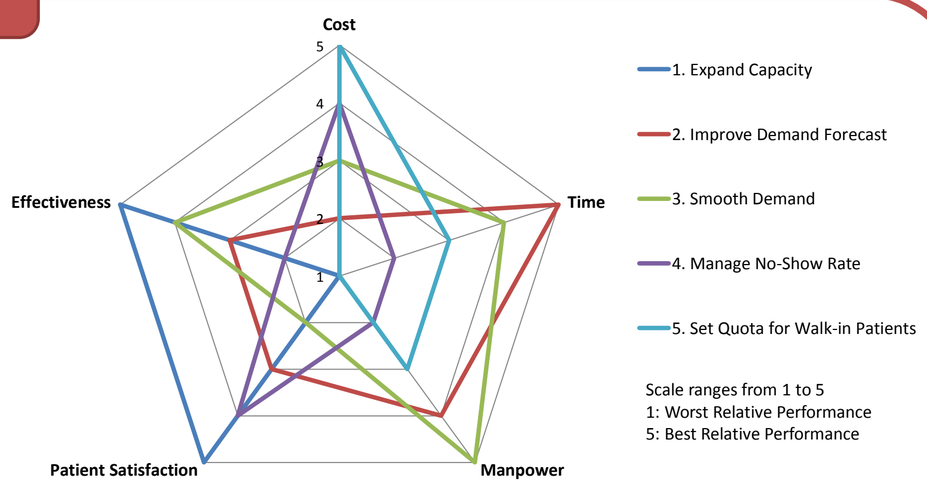
Solutions are generated for Clinic X to reach required standard under various possible scenarios as stated below:

1. A rise in number of patient requests
2. A rise in percentage of first visits (FVs)
3. A rise in percentage of subsidized patients (SPs)
4. A tightening of performance requirement
5. Most likely scenario based on historical trend

Recommendations

Five recommendations are provided to improve the waiting time performance.

Trade-off analysis is conducted. Although there is no one-size-fits-all solution, different solutions can be applied according to the priorities of Clinic X.



Supervisors:
Associate professor Ng Kien Ming
Assistant professor Tan Chin Hon

Team Members:
Chen Xingyi (A0069870R)
Liu Chenwei (A0070985U)
Luo Tianju (A0078065Y)
Zou Yang (A0070179A)