



Lean Application to Birkam Health Center

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Abstract

The goal of this project was to examine Birkam Health Center's current processes and apply Lean tools and methods to determine how to reduce the current patient wait time. By utilizing Lean and analyzing all of the collected information, two solutions were proposed to Birkam Health Center.

Introduction

Birkam Health Center has had a known problem of long patient wait times. With the application of Lean, this healthcare organization can receive benefits that will improve the organization as a whole. **Lean** is a method that was first applied in the manufacturing industry and is now growing in popularity within the Healthcare field. This method is utilized to decrease waste, eliminate errors, and improve efficiency within the current processes. This entire process of collecting data, analyzing the data, and coming up with possible resolutions took 2 months.

Process

The director of Birkam gave us one week of time studies that included what times the patients came into the facility, what their appointment time was, how long they waited, and the length of duration at Birkam Health Center. The team analyzed each day of the time study that was provided and calculated the average amount of time that the patients waited.*

In order to see how Birkam was doing in comparison to others, we looked up the contact information for Western Michigan University, Central Michigan University, and Northern Michigan University. We called their health centers and asked them a standard list of questions that we created:

- 1) What is the average amount of patients that your facility sees per day?
- 2) What is the average wait time for the patient? (Time from when patient checks in to when they see the doctor)
- 3) What is the average appointment duration?
- 4) Is the facility appointment only or walk-in as well?
- 5) If the facility is both appointment and walk-in, do you have 2 separate facilities?
- 6) How is your facility funded?
- 7) What is your staff breakdown?

The answers from each health facility as well as the information gathered from Birkam are displayed in Table 1. Figure 1 displays each university in comparison to one another with a concentration on the main three areas that were analyzed: average patients seen per day, average wait time, and average appointment duration. It is made clear by both Table 1 and Figure 1 that Birkam has the longest wait time.

*Outliers with a wait time over 40 minutes were removed as well as outliers with a length of duration over 100 minutes were eliminated.

Method Utilized

The method that was utilized for this Lean process was **DMAIC**. This method is data-driven and is utilized to improve processes. The DMAIC steps are the following:

- Define the problem.** The problem that Birkam Health Center presented us with is long patient wait times.
- Measure key aspects of the process.** The first key aspect that was measured was all of the current data pertaining to Birkam Health Center. The other key aspect of this project was the data that was collected from the 3 different universities.
- Analyze the data.** Table 1 and Figure 1 display the data that was collected. The current data from Birkam as well as the data from the other schools was analyzed and compared to one another.
- Improve the system.** After analyzing the collected data, two solutions were proposed to Birkam Health Center.
- Control and sustain improvement.** Once one of the ideas becomes implemented, leadership at Birkam Health Center will need to ensure that the improvements are followed up upon and that data is continually analyzed to ensure that the improvements are indeed helping the patient wait time problem.

Results and Discussion

As a result to the patient wait problem at Birkam Health Center, two solutions have been created after the collected data was analyzed. The first solution is to **build a second campus health facility**. One facility would be strictly for appointment only and the second facility would be for walk-ins. This would greatly aid in reducing wait times as there would be no extra patients in the appointment-only facility and this would allow the physician, physicians assistant, and RN to stay on track with the schedule.

The second recommended solution is to utilize **block scheduling**. With this block scheduling, there would be a set time each day that walk-ins could come into the facility to be seen by a healthcare provider. The walk-in patients would only be able to come in during this blocked off time. The suggested time would be from 10:30am-12:30pm daily as no students have class at 11am on Tuesdays and Thursdays and would have the opportunity to come into the facility if they needed to.

A few other smaller recommendations that were created for the facility is to provide patients with appointment reminders, put up Youtube videos on the Birkam Health Center website regarding health tips, bring in a health educator on campus and hold different events, and implement telemedicine. In order to ensure a Lean environment, Birkam should be sure to conduct a patient satisfaction survey several months into implementation to measure the success of improvements.

Table 1. Responses from standard list of questions from each university that was interviewed.

Average Data	FSU	CMU	Oakland	NMU	
Average Patients Seen Per Day	40	75	20	23	
Average Wait Time	21	15	10	13	
Average Appointment Duration	44	30	45	45	
Facility					
Appointment	Y	Y	Y	Y	
Walk in	Y	Y	Y	N	
If both Separate Facility?	N	Y	N	N	
Funding		Self Sustaining	University	Self Sustaining	
Self Sustaining					
Staff					
Physicians		1	2	1	0
Physicians Assistant		1	1	0	0
Nurse Practitioner		0	0	4	2
RN		1	3	0	3
LPN		0	1	0	0
Total Students at University					
Current	14,707	27,693	20,169	9,200	

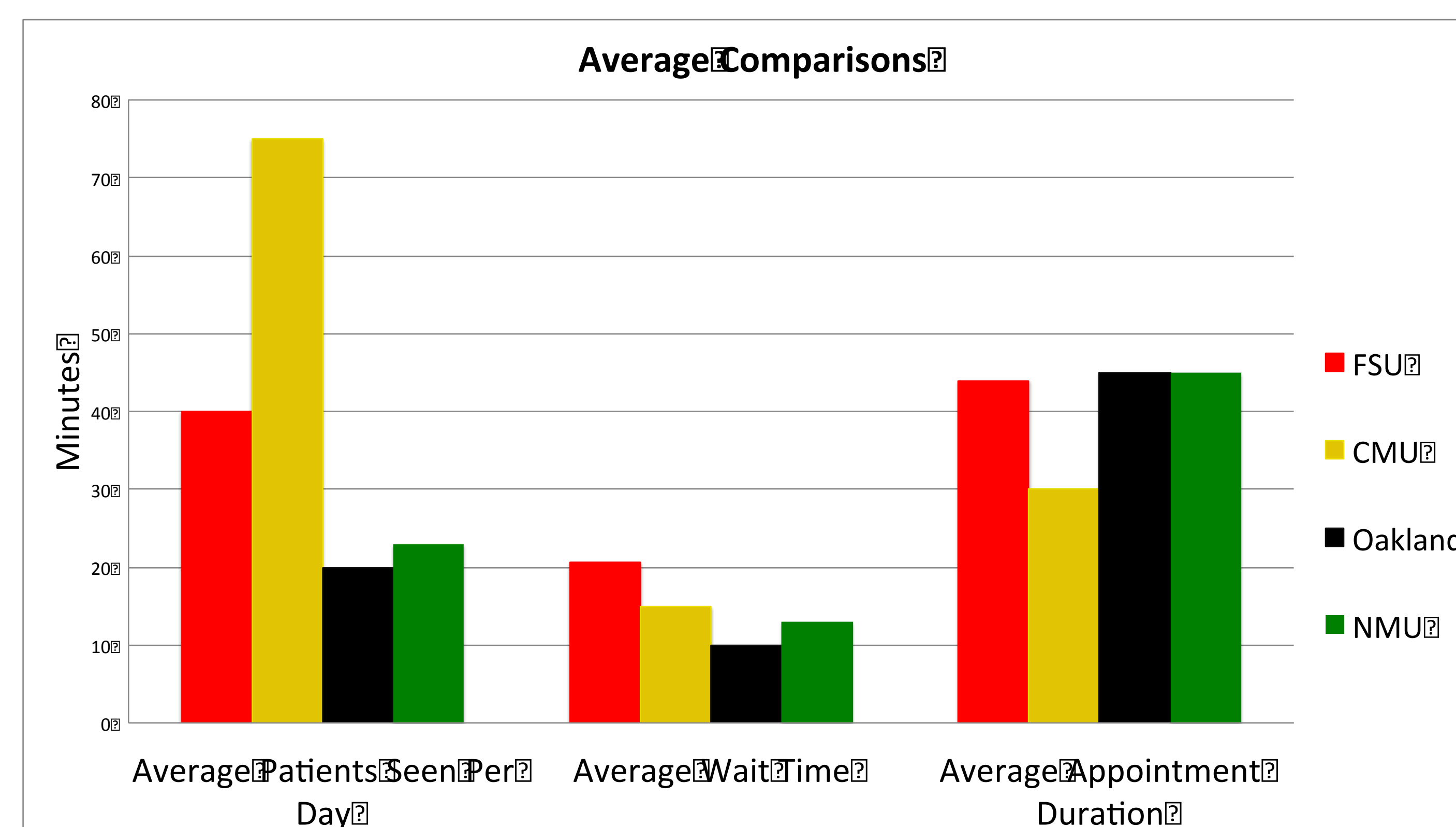


Figure 1. Minutes vs. average patients seen per day, average wait time, and average appointment duration per school.