**The Purpose**

This project was created to provide a way of tracking visitor behavior in the café to help management determine ways to improve the overall experience of the museum.

**Process Summary**

1. Data was collected by hand by use of a timer and inputting the information into an excel document.
2. Analysis of the data collected was done through @Risk an excel add-in.
3. The data was then simulated with Arena Simulation Software.

**The Benefits of Simulation**

The possible benefits that would result in utilizing simulation analytical methods in the museum are listed below.

* A reduction in food waste (This is achieved by making sure the number of items sold will better match the amount of people entering the café.)
* A reduction in cost for paying employees
* An increase in employees to reduce the time people spend waiting
* A possible increase in sales if the time of the serving line was decreased
* Additional analysis could be completed to express the amount of time a food item is unavailable due to a large population of customers.
* A wait time analysis could be beneficial information for visitors and a selling point of the museum to attract more visitors
* Additional analytics can be completed by adding additional variables to test and see how an increase in price or an increase in the number of employees may affect the overwhelming crowds on Thursday and Friday nights.

**The Data**

The data was collected over the span of 6 days. The type of data that was collected over the span of 6 days varied because I was the only person collecting data. The types of data that I collected over the 6 days are listed below.

* Itemized lists from the macro cash register machines
* Times people entered the café
* Whether or not people were going to the grab and go, food service line or barista line
* Times people spent checking out, getting food, sitting down or dinning in the café

An additional note: Distributions of the times were created using @Risk an excel add-in distribution fitting software.

Suggested Improvements to increase accuracy and amount of data are listed below:

* Utilization of our cameras in the café (this would improve data accuracy or allow the data collector to keep better track of timed data as many things occur in the café simultaneously)
* Data collection sheets can be created for the different types of data that were collected above
* Increase the amount of volunteerism or create data collection positions. (This will provide more opportunity for people wishing to pursue this as a career path)

**Additional Notes**

To get a license to use Arena simulation software can be found at the following web address: <https://www.arenasimulation.com/purchasing-options>

The benefits of getting a license would allow an increase of the number of programmable modules in the simulation logic. Note: This simulation was used using the academic version and the number of programmable entities is currently maxed out.

Buying a license would also allow the legal use of the software for business purposes.