

The information gained from the data of my code is fairly interesting, and helps provide clarity to the simulation performed. All of the data in “GroceryStoreSimulationData” was taken from the “arrival medium.txt” file. I tried many different combinations of lanes, from the number of regular checkout lanes to express lanes, to total lanes in general. The only test that couldn’t be run was zero regular lanes, as there always has to be at least one regular lane for the people getting more than 12 items. The two main data points I observed were average wait time, and average customers processed. I examined these numbers from all 12 lanes open, eight lanes, six lanes, and four lanes. I made the assumption that anything under four lanes, would be inefficient for a high-functioning grocery store. Throughout this data, there were not huge discrepancies, however there was obviously one combination that yielded the best result. This was all 12 lanes open, with nine of them being regular and three being express lanes. The average wait time for this scenario was an astounding 0.033 minutes or 1.8 seconds with around 38 customers processed per lane! The least optimal scenario was when four lanes were open, and they were all regular checkout lanes yielding a 0.168 average wait time per minute or 10 seconds with 113 average customers processed per lane. Now obviously these numbers aren’t significantly different, however, these are only the averages and some customers are waiting significantly longer in line. The main takeaway is, however, what option can get very efficient results and customer happiness, while not overspending on workers to keep checkout lanes open. This is where you want to keep your eyes on the six lanes open table. These numbers are not very different at all from the eight lanes being open, but they are a good amount better from most of the four lane options. The best six lane option was the five regular lanes and one express lane yielding a 0.068 average wait time per minute (4 seconds) with around 75 customers processed

per lane. The most optimal situation for four lanes being open was 0.087 (5 seconds) average wait time per minute with 113 customers processed per minute. The final decision would be entirely up to the store operator and the amount of revenue the store is bringing in, but the data suggest the most optimal scenarios when taking customer morale and money being spent, 4-6 lanes being open appears to be the ideal spot, with only one express lane and the rest being regular.