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Simulation Analysis

The purpose of this paper is to find the way to decrease the number of unused checkout lanes and increase the customer throughput. This program determines the optimization and the efficiency of customer throughput when being achieved. The given “arrival.txt” file, the average wait times for each of the lanes is 12.861 minutes. Every regular lanes gets approximately the same average wait times per minute in the intervals of 19 minutes. While the express lanes also have the same wait times in the intervals of 3 minutes.

The problem of opening more lanes will lead to more to costs to maintain and the wait time would be concerning if it were to close one lane. It also has the costs will intensify the problem though. The optimal average wait time is 12 minutes and the overall effectiveness of having 8 regular lanes and 3 express lanes would not suffice the efficiency. While the closed lanes can be included, but it would not do the same as mentioned above.

Altogether, the best possible solution to how many lanes should be used for this grocery store. The best efficient solution is to have nine regular lanes, three express lanes, and zero closed lanes. This would result in most optimal lane usage and the best customer efficiency when coming to the store.