

In order to accurately assess the results of the simulation, we must take a couple variables into consideration: how many customers are being processed through the store in a given amount of time, and the average wait times of customers based on different combinations of regular checkout lanes and express checkout lanes. In the arrivalMedium.txt file, 452 customers get processed in the time frame of 12.7 hours. I would suggest having 2 regular lanes open and 1 express lane open, as the average wait time per customer is 2.95 minutes. If we open up 1 more regular lane to make 3 regular lanes and 1 express lane, the wait time is reduced to .53 minutes, but the difference of just over 2 minutes probably isn't worth the cost versus reward.

In the larger arrival.txt, 3000 customers get processed in the time frame of 15.2 hours. With this many customers, the most ideal combination is 9 regular lanes and 3 express lanes. This yields an average wait time of 19.23 minutes, while 10 regular lanes and 2 express lanes yields 26.96 minutes.

The optimal ratio of regular lanes to express lanes comes out to be 3:1, except when customer density is low enough to close down an extra regular lane, as seen in the case toward the top of the paper.