Convention Simulation

This simulation is designed to model the registration lines at an event. First it brings up a menu with options to choose how many registrants are expected to show up, the number of hours registration will be open, the number of registration windows open, and the average amount of time each registrant will take to register, as well as an option to run the simulation. Registrants will show up and get in the shortest line at random times within the specified number of hours registration is open. At the same time as the registrants are showing up, the patrons at the front of the lines, on average, the specified time the patrons take to register. You can see the number of patrons in line at any given time, as well as how long it will take after registration ends for every patron to finish registering.

After running several simulations with 1000 expected registrants, 10 hours of registration time, and an expected service time of 4 minutes and 30 seconds, and a variable number of windows consisting of either 5, 6, 7, 8, and 9 windows. Five windows were not enough to easily contain all the Registrants. The lines proved far too long; in fact, the last patron did not finish registering until six hours after Entrance into the lines was prohibited. Likewise, six windows presented a similar problem and went almost 4 hours over the time. Seven windows better catered to the Registrants, providing short lines for the duration of the Simulation; however, the last patron still did not finish registering until an almost an hour after the entrances closed. Eight windows seemed to have the best results. The lines hardly exceeded five or six patrons and the last registrant finished about fifteen minutes after the time elapsed. Similarly, nine windows also had good results. Lines tended to be shorter and were commonly empty. The last patron finished registering six minutes after the time, which is only a nine-minute difference from the eight-window simulation. While this means the nine-window finishes sooner, having to pay an extra employee for 10 hours is not worth finishing registration nine minutes sooner. Because of this, the most efficient number of windows was determined to be eight.