

BU 610.615

Simulation for Business Applications

Homework 3

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Part A: Simulation Application Questions

1. The average profit is $436,249.37

It’s lower than the average profit suggested in the table

1. The maximum profit is $500,000.00

It’s equal to the average profit suggested in the table

1. No, based on the model’s result, building a production line with a capacity of 100,000 while assuming the demand is uniformly distributed between 50,000 and 150,000 will yield an average profit of $436,249.37 which is lower than the profit at average demand.
2. Expected winning: 20,999.90
3. Probability that the winnings will be at least $20,000: 47.7%
4. Minimum finish time: 84 weeks

Maximum finish time: 179.2 weeks

1. 
2. Min: 95.340

Avg: 125.067

Max: 160.855

90th percentile: 135.432

1. The chance that project will finish in 112 weeks: 4.1%

Part B: Newspaper article

Emergency management and planning is highly affected by the accuracy of prediction of events, hurricane landfall in this case. By using Monte Carlo simulation, scientists and meteorologists were able to see alternate future path of the hurricane and corresponding probabilities; thus, able to plan and prepare for potential impacts brought by the hurricane. What makes Monte Carlo simulation superior to traditional forecasting is that even though most of the predicted path does not lead to a landfall, those that do derives sufficient probabilities to make people plan ahead for emergency.

According to the case, for the 2012 hurricane Sandy, right when it was just crossing Cuba, meteorologists randomly generated six-hour iterative values for factors that could affect the hurricane’s path with probability distributions calculated with historical data. With these inputs, and while considering 50 different scenarios, meteorologists had simulated astronomical number of possible paths for Sandy. Through statistical analysis on these paths, meteorologists can identify the odds for a landfall.