

Tanning Saloon Simulation

Princeton Tanning Saloon has two tanning beds. One bed serves the company's regular members exclusively. The second bed serves strictly walk-in customers on a first-come-first-served basis (FIFO). The store manager observed several occasions during the busy hours 2:00-5:00pm that potential walk-in customers most walk away from the store if they see one person already waiting for the second bed. He wonders if capturing this lost demand would justify adding a third bed. Leasing and maintaining a tanning bed costs \$600 per month. Price paid per customer varies according to the time in the bed. Average net income for every 10 minutes of tanning time is \$2. Data collected for arrivals during the busy hours and the time spend tanning:

Time between arrival (in mins)	probability	Time in tanning (in mins)	probability
5	.30	10	.20
10	.25	15	.30
15	.20	20	.40
20	.15	25	.10
25	.10		

Assume there is just one person who just entered the bed at 2:00pm for a 20 min tan. Simulate 4 hours of operations starting 2:00pm. Indicate which customers balk at waiting for the bed to become available. Do simulation for 1 day. How many customers were lost over the 4 hours of operations? Store is open on an average of 24 days in a month. Find out how many customers will be lost for 24 days. Will capturing all lost sales justify adding a new tanning bed?