EXPOSITION

We are modeling a new customer rewards program for restaurants. We will run the simulation for one fictitious business, Sina's Wieners, and assume there are 3k people who know about this business.

We'd like to see what kind of effects this program can have on the amount of money these 3k will spend at the business over the course of 2 years. It's basically a coupon system, however, people will have the ability to sell these assets in addition to simply using them. We will model seasonality and customer acquisition by word of mouth.

MODEL

Please see the associated flowchart.

Customers will get back a sweep of 0% – 10% of any money spent in the form of credit, and in the event of sale of an asset, 80% of the value of the credit will be returned to the customer in the form of regular cash. All purchases will have to be made in multiples of $8, either completely with cash or completely with credit.

Customers will have the following attributes:

Index: customer ID
Salary: tells the model how much expendable income they should receive on the 1st and the 15th, on pay days.
Cash: total expendable amount available, resets every pay day.
Credit: accumulated customer rewards from previous spending
Affinity: how much they like the food, integer 0 – 4. If they get to 0, they will not return, and will sell all credit
Willingness: how likely they are download and use the rewards service

The probability that the dining experience is good or bad will be a low percentage. This is based on the assumption that Sina's Wieners is an established and well-run business.

These initial values will be drawn from closed-form distributions, and updated throughout the simulation. Customers' interest in using or selling assets will be related to their Affinity score.

At the end of the model, we should know how this reward system affects profitability. This should tell us at what kickback percentage this process becomes cost effective for the business, if at all.