Simulation rules and assumptions

**Simulation rules**

Customer/order is generated randomly at changeable rate.

The location of the buildings is fixed at start and some of them will be randomly chosen as restaurant.

The rest of the buildings will function as customers’ home.

One customer will only make one order at the same time.

Customer is assigned to one restaurant randomly.

Deliveryman is assigned to deliver the food based on nearest distance policy.

Each deliveryman is pre-assigned to one of the three vehicles (bicycle, motorcycle, car).

Different transportation speed is implemented via assign different moving probability to different types.

Deliveryman can only move to next location with Bernoulli distribution variables remain true.

The deliveryman’s vehicles are fixed once generated.

The size of the region is changeable to mimic the idea of area segmented into different sizes.

**Assumptions**

We want to analysis the average transportation time and average service rate.

We assume by changing the

1. number of deliverymen
2. number of restaurants and the productivity
3. Region size

We can improve the performance of this delivery process.

**State Diagram**

