

Assignment4

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To answer the last question of this assignment, I set the travellers amount to 20 and changed the code so that they do not respawn when reaching the goal in order to count the numbers. Given a time limit of 40 seconds, here is the parameters I found to make 75% of them spawned.

[set of parameters](#)

Travel Agent numbers: 20

Obstacle numbers: 4

Wander Agent numbers: 20

Social Agent numbers: 12

The detailed result of how each factor influence the traveller throughput in 40s is shown in the three tables. Each experiment is for how this parameter solely affect the result, i.e. other parameters remain the same.

[Obstacle numbers](#)

obstacles	0	1	2	3	4	5	6	7	8
throughput	14/20	16/20	16/20	18/20	16/20	15/20	13/20	13/20	11/20

As the number of obstacles varying from 0 to 8, the throughput first increases and then lower. This is because if the obstacles are too sparse, most of the wandering agents will crowd near the exits trying to block the way of travellers. There is even case when throughput drops to 11 when there are no obstacles. Also when there are too many obstacles, it will be harder for a travel agent to find its way. If the amount is too high, there would be even no path for them to reach the goal. So the best situation is there are several obstacles blocking the social and wandering agents while not interfere travellers' pathfinding too much.

[Wandering Agent numbers](#)

Wander Agent	16	17	18	19	20	21	22	23	24
throughput	18/20	16/20	17/20	15/20	16/20	15/20	15/20	16/20	14/20

The throughput approximately decreases as the wandering agents grow more as they are keep hindering traveller's path. However, it is notable that due to different obstacle shapes, the measurement has some extent of errors.

Social Agent numbers

Social Agent	8	9	10	11	12	13	14	15	16
throughput	11/20	15/20	16/20	17/20	16/20	15/20	11/20	15/20	18/20

As social agents do not usually interfere travel agents, this parameter does not affect much to the travellers' ability as well as time to reach the goal unless there are too many of them.