BML Simulation Report
Statistics 133
Alexander Tran
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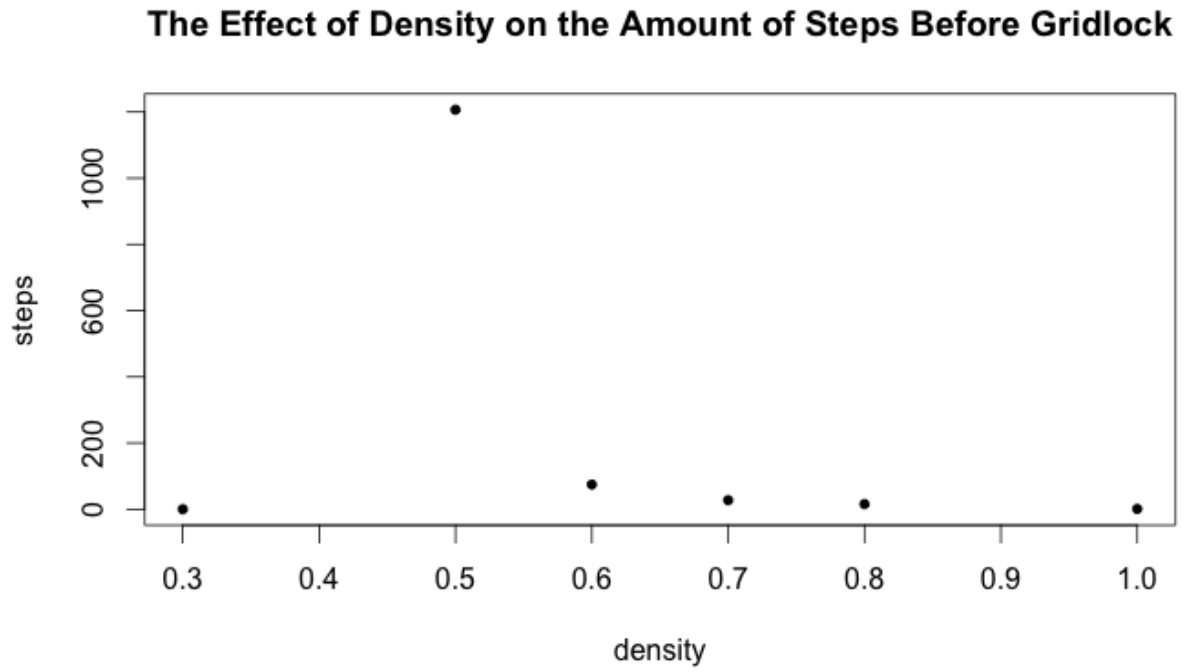
My first test was to see the effect of density on the amount of steps before gridlock. Below is a graph with the average of steps it takes before it hits to gridlock. At 0.3 density and lower, it took more than 10,000 steps to gridlock, but my simulation stops recording anything past 10,000 steps. Therefore, with a density of 0.3 and lower, there will always be free-flowing traffic. However, after 0.3 density, the amount of steps it takes to gridlock exponentially decreases. One can assume that grid density has a negative correlation with steps before gridlock. At 1.0 density, it takes 0 steps to gridlock because it is already gridlocked.



For each density I ran 200 iterations to satisfy the law of large numbers, which allows a more accurate reading with a higher amount of trials. Then, I took the average of the 200 trials to get the steps as seen above. I also ran 200 iterations for the next test on the next page.

The second test I did was to see the effect of grid size on the amount of steps before gridlock. I ran the simulation on different grid sizes as seen below at the constant density of 0.6. At 0.6, one can see that there is a slight positive correlation with the size of the grid and steps. However, the correlation is not as strong as the correlation between grid density and the amount of steps before gridlock.