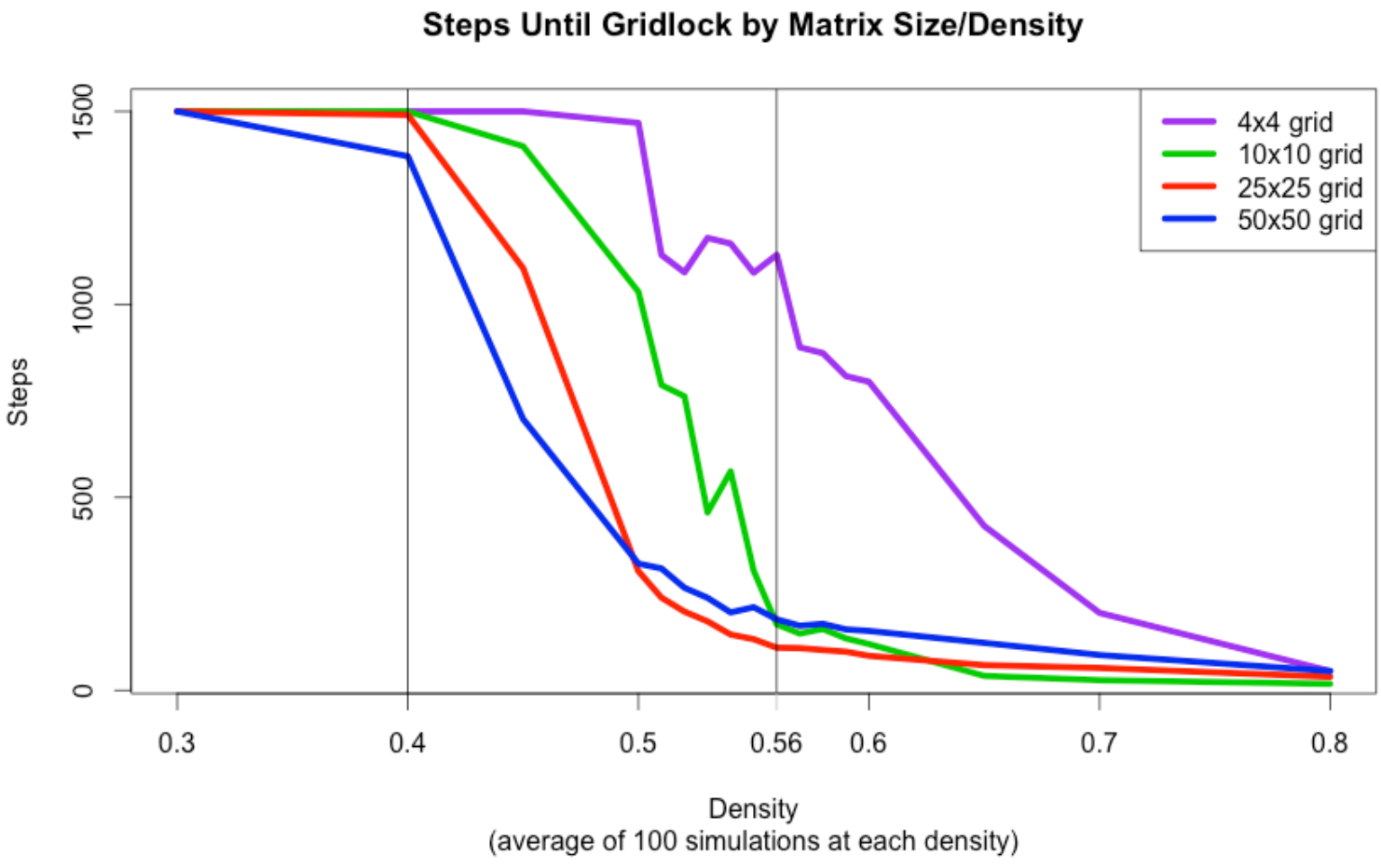
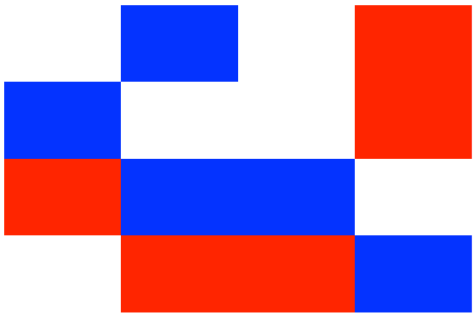
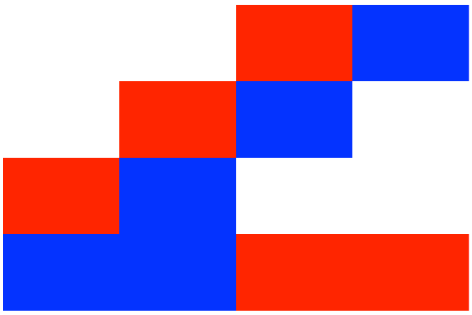
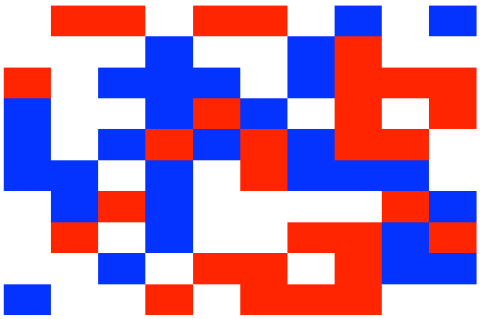
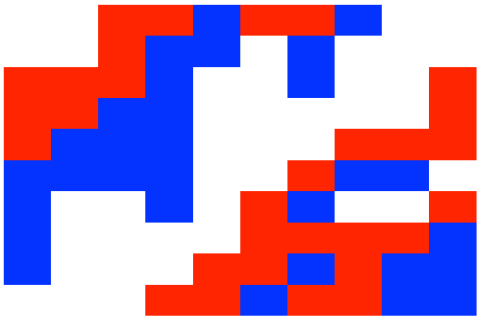
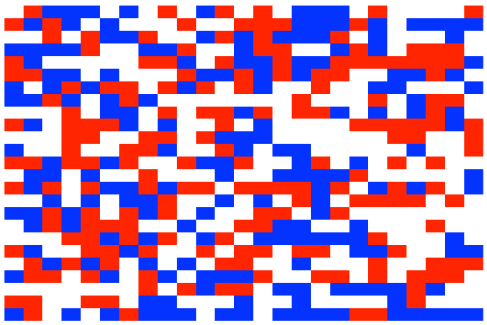
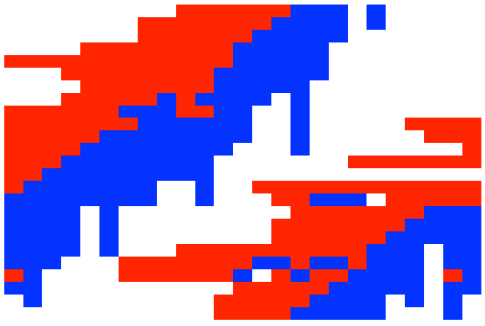
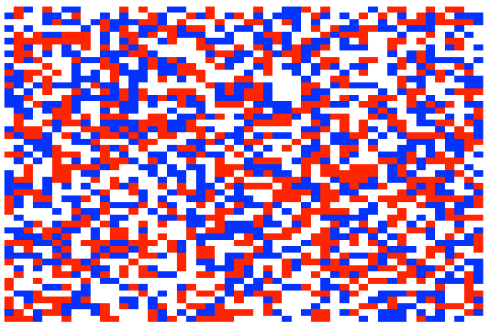
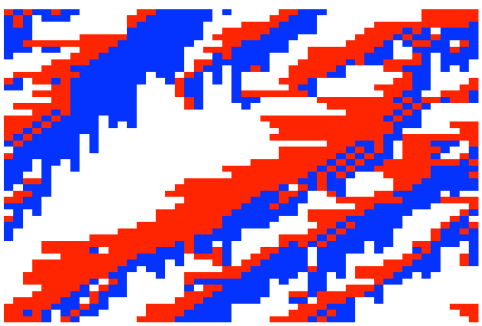
BML Simulation Results

In my simulation model, I concluded that traffic was free-flowing if gridlock did not occur after 1500 steps. Traffic was free-flowing, by my definition, until density exceeded 0.4 with the exception of the 50x50 matrix. The graph below shows that while density was between 0.4 and 0.56 the larger matrices reached gridlock in fewer steps on average, and the smaller matrices had inconsistent behavior. This could be due to the small amount of simulations at each density (100), or that given the small dimensions of the matrix there was more room for error. An interesting observation I made was that when density exceed 0.56, the larger matrices began to become more consistent, and reached gridlock in fewer steps than the smaller matrices with the exception of the 4x4 matrix.

The plots on the next page show each matrix at its initial state and gridlock state along with the number of steps until gridlock at 0.6 density. I chose this density because it was highly likely that each matrix would reach gridlock in a small number of steps while leaving ample room for “white” spaces.



BML Simulation Results

Size	Initial Random Matrix Density = 0.6	Same Matrix At Gridlock	Steps Until Gridlock
4x4 Matrix			11 Steps
10x10 Matrix			53 Steps
25x25 Matrix			76 Steps
50x50 Matrix			126 Steps