Help Me, Doctor!

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Executive Summary

Every year, some pandemic affects the world, causing economic loss for communities large and small alike. The financial burden of these plagues is caused by both the expense of treating the problem as well as the loss of workers in the workforce while they are recovering. Depending on what disease hits, either curative or preventative measures are more cost efficient. Determining which of these two options is more suitable for the disease outbreak is difficult because multiple studies are needed for an accurate solution. There is not enough time to properly study the illness and take action in the most cost efficient way. The computer program that has been written for this project is designed to quickly and accurately simulate the studies needed to determine the proper action for such outbreaks. This program simulates a community affected by a pandemic to help researchers determine whether curative or preventative measures should be taken by providing either option for the study.

Problem Statement

There is not enough time after a pandemic breaks out to gather adequate data to decide whether to cure or prevent the further spread of the disease. The overall cost of these diseases on a community is immense from having less workers at their jobs and the cost of the treatment for the problem.

Objective

The program created for this scenario is meant to simulate the cure or prevention of a disease to help determine which action is more cost efficient. Different options are provided in the program to allow the simulation to be done in either a curative or preventative scenario.

Results

Because of time constraints, completion of the program was not possible. The latest version of the program was still able to test the problem, but still more work is needed to successfully simulate the scenario. The doctors only have the option of moving, which would simulate a curative approach. They can't stay stationary, which is to simulate a preventative method.

Conclusion

With more time, the program would be able to simulate the effectiveness of either curative or preventative actions. The program's current abilities are not able to compare the two methods of disease control. With further development, this program should be able to accurately predict the effectiveness of both methods.

Achievements

A method of counting money throughout time was created for this program. Each tick becomes one step for the modeled people, and each step becomes an amount of money made. The infected only take a step every few ticks, adding less money to the overall count. This was key in comparing the cost efficiency of both curative and preventative methods.

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Software and References

This project was developed using the Zombie Infection 2 program on NetLogo.

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