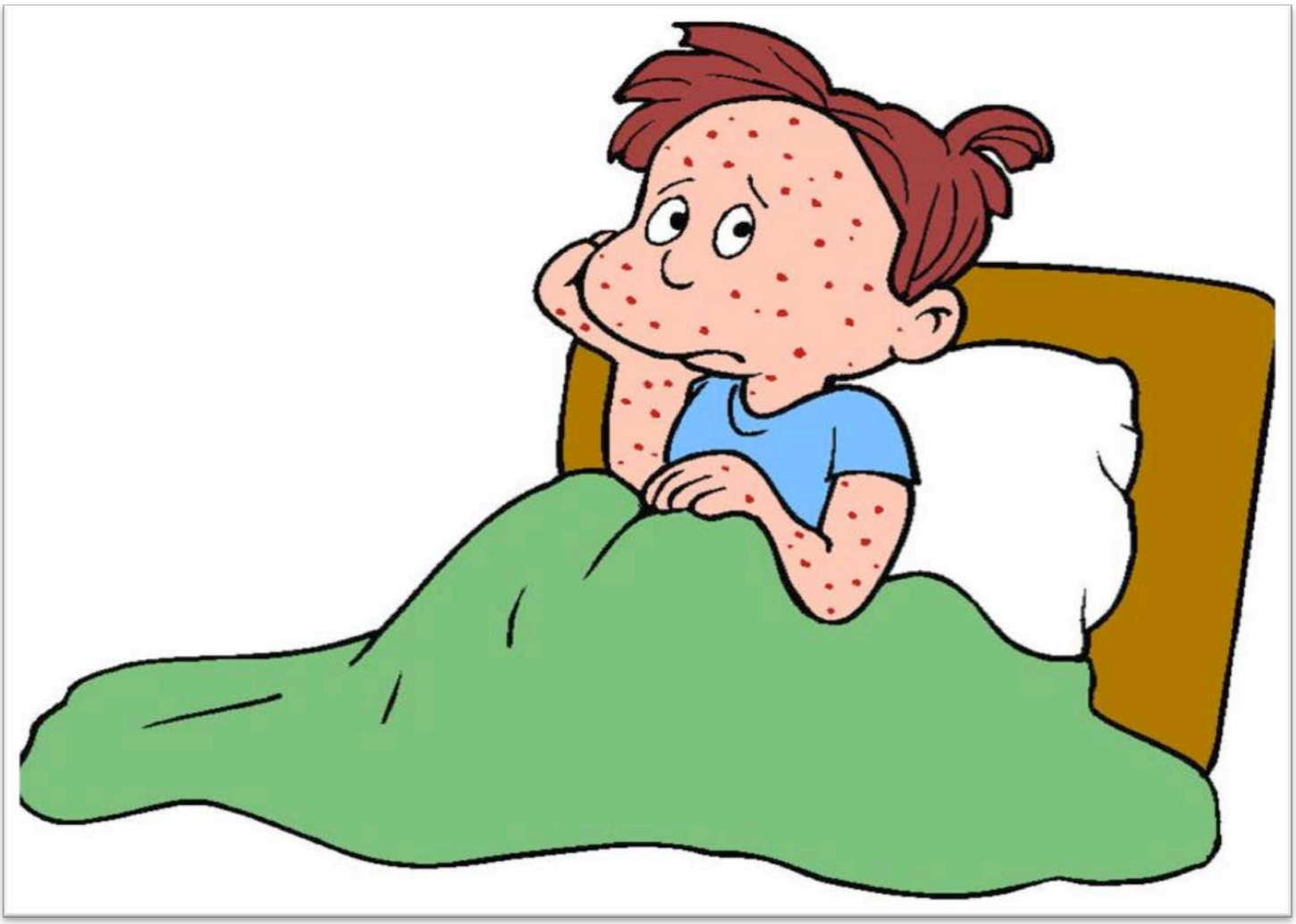
Chicken pox



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Executive Summary:

This project investigated chicken pox transmission in a closed environment, an airplane. The dependent variable measure is the number of people who get infected. I manipulated the number of sick individuals as the program began. Movement within the plane was restricted to bathroom visits for people and servers interacting with each person along the aisles. It is believed that the server will be the main transmitter of the disease because she comes in contact with most people. Randomly, people were chosen to get up and walk to the bathroom based on airplane data.

Statement of Problem:

Chicken Pox is a common disease that spreads easily. When an exposed person is in a contained space, in an airplane, for a long period of time (overseas flight) the virus can be observed as if it is of a controlled part of the population.

Description of Problem:

Chicken pox is an airborne disease caused by the Varicella-Zoster virus. The virus spreads in the air when an infected person coughs or sneezes. It can also be spread by touching or breathing in the virus particles that come from chickenpox blisters. 1 -2 days will pass before the rash appears. Five days later, the rash is fully developed. You can get the disease 10-21 days prior to when the rash first develops. In any population, there will be people who have been vaccinated for chicken pox. There is a small percentage that they can still get chicken pox. A very small percent of the remaining population does not get the shot for religious and personal reasons.

My assumptions for servers are:

1. They are the main point of contact for the infected person(s) because they touch all other people.
2. Servers travel around the plane
3. They transmit the disease

My assumptions for the individual people are:

1. The number of infected people can be changed with a slider.
2. The people only touch people in their row or on their visit to the bathroom

3. Sick people will sneezes when in contact with server and at the bathroom (disease transmission)
4. Slider will vary the number of sick people range (50-100)

I will run 5 trials for each time I restart the program with a different percent of sick people. I will test three things for each condition.

Model progress:

I plan to code how my people get to the bathroom. My people travel to the bathroom on a colored path. I am working on the coding to make that happen. Next, I will be my collision bocks where the people will test if they are sick and if they are, they will spread the sickness to other persons they come in contact with. If they are not sick, they will pass each other in the aisle. In collisions with servers, there will be a test to see if the person is sick and if the percentage that the server will pass it on is right, and then the server will become sick. If they are both true then the disease is not transmitted. Servers can also infect each other. My plan is to add these components:

1. Chose a number of people on the plane
2. I will have a slider of servers on the plane
3. Slider for the number of sick people
4. Monitor of the sick people on the plane

5. B
   etter block for the servers walking pattern
6. P
   eople walk on colored path to bathroom

My terrain is a 2D version of the airplane spaces. The left corner is blue which the area for the rest room is. The red area is where servers are placed in the beginning of the model operation. The aisle paths are magenta. The seating for people is blocked off into green areas.

Results:

My results for the first condition are dependent on the x number of people, the x number of sick, x number of servers, and the percent of the vaccinated people. My results for the second condition are dependent on more of the x number of people, the x number of sick, x number of servers, and the percent of the vaccinated people. My results for the third condition are dependent on a larger value of the x number of people, the x number of sick, x number of serves, and the percent of the vaccinated people is higher than the second time.
X =variables not set yet.

What I learned:

I learned that for me pictures help show what I know and don't know. I learned that sliders lets you change the one thing that you need to test your conditions against. I also learned that you could just put it in a slider and not use a bunch of if then blocks.

What I want to do:

I plan to make my model better. I would like to create my program as a simulation that doctors can look back on and use in small towns because towns are a small controlled area.

Conclusion:

The outcome will show us what would happen in a controlled area of a small population to help the town that experience epidemics. I think that my program could help small towns and populations everywhere.

Most Significant Achievement:

My most significant achievement was I learned more about programming this year than last. I have made progress.

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