Bisc 102

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# Vaccines Activity

Names of group members:

**Directions:** In a small group, complete the following table by visiting the following website: <https://www.learner.org/wp-content/interactive/envsci/disease/disease.html>

To collect the data that is entered into the table, please do the following:

1. In the lesson drop down menu (top of page), select Pandemic.
2. In the Simulation Parameters Box, set the population density to High. **DO NOT CHANGE ANY OF THE OTHER PARAMETERS** – yet!
3. Run the simulation one time by clicking the green Run button (OR you can click the Step button to advance the simulation one day at a time, but this takes longer).
4. Record the Death Toll (as a percentage) and the number of Sick Days (these are both shown above the plot of the colored dots that show the condition of the individuals) in the first two rows for 0% Degree of Vaccination.
5. Rerun the simulation three more times and record the Death Toll and Sick Days for each simulation. In the column that says Average, add the four data values from each row together and divide the sum by four (use a calculator or your device to do this quickly), then enter that value as the average. Do this for both the Death Toll and Sick Days to create an average for each.
6. To complete the rest of the table, choose the appropriate % of Vaccinated in the dropdown menu to run the updated simulations and then record the data in the table. Be sure to calculate the average for each row after running the simulations.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Degree of Vaccination | Simulation #1 | Simulation #2 | Simulation #3 | Simulation #4 | Average |
| Death Toll | 0% |  |  |  |  |  |
| Sick Days | 0% |  |  |  |  |  |
| Death Toll | 10% |  |  |  |  |  |
| Sick Days | 10% |  |  |  |  |  |
| Death Toll | 50% |  |  |  |  |  |
| Sick Days | 50% |  |  |  |  |  |
| Death Toll | 75% |  |  |  |  |  |
| Sick Days | 75% |  |  |  |  |  |
| Death Toll | 90% |  |  |  |  |  |
| Sick Days | 90% |  |  |  |  |  |
| Death Toll | 100% |  |  |  |  |  |
| Sick Days | 100% |  |  |  |  |  |

Using the spaces below, create two graphs. For the first graph, plot the percentage of vaccination on the horizontal axis and the percentage death toll on the vertical axis. For the second graph, plot the percentage of vaccination on the horizontal axis and the number of sick days on the vertical axis.

Death Toll (%)

Degree of Vaccination (%)

Sick Days (#)

Degree of Vaccination (%)

Follow Up Questions for Discussion

1. At what level of vaccination did you find the greatest change in the amount of sickness and death that was produced (in other words, was there a big change from 0% to 10%, or was there a big change from 10% to 25%?)? Rerun the simulation at that level, but instead of clicking run, use the Step button to watch the daily change that occurs. Discuss what you observe during the simulation as you look at each step, and propose an explanation for why this level of vaccination is effective at preventing great amounts of sickness and death.
2. Visit this page: <https://www.cdc.gov/vaccines/terms/glossary.html#commimmunity> How does this definition relate to what you just discussed? What is the importance of community immunity?
3. Do you consider the websites that you used for this activity to be trustworthy and helpful? Explain why or why not.
4. Choose one of the two discussion options, and summarize your discussion in the space provided.