Simulating an Epidemic

Play 2:06 - 2:45. It describes many aspects of modeling.

Question 1

1. R is for Removed, which can include both dead and recovered.

Question 2

1. What if people mostly stay away from each other but still travel to a central location, like a grocery store?
2. What if you can identify and isolate most cases, but some still slip through.
3. How does travel between communities affect transmission?
4. What if people stop social distancing?

Question 3

Sanderson's five key takeaways.

1. Growth rate is sensitive to number of daily interactions, the probability of transnmission of infection, and the duration of the illness.
2. Changes to asymptomatic cases (number of people who don't know they have it) cause large changes to the total number of people infected. Thus, identifying who has the disease is important.
3. Social distancing slows the spread, but small imperfections (a few people who ignore social distancing) prolong it.
4. Reducing transit late in the game has little effect.
5. Shared central locations dramatically speed up the spread of disease.

Question 4

The author is careful to point out that he is not an epidemiologist. He discusses the benefits of modeling but recognizes that more expertise is needed to interpret models for health and decision making. He also is careful to point out that he's not simulating a large population. His simulated environments only have about 1000 people, not hundreds of millions. Thus, he cautions us against making broad conclusions based on these models. In addition, no data was used to determine the values of the parameters he used in his models.