Background information on question cards

What would happen if sick people continued to go to town instead of being isolated in the hospital?

These people would infect other people they meet in public places - similarly as they did before, when they were infected without symptoms.

What possible options to slow down the spread of a virus can you think of?

There are many ways. A simple way is to close buildings. You will explore this in the game version “Challenge”. Alternatively, you could limit the number of people present in the building at any given moment, e.g. 2 instead of 8 people in the gym. This lowers the chance that there is an infected person among them, and if there is someone infected in there, they will infect less other people.
In real outbreaks, other powerful ways to limit the spread of an infection are basic hygiene measures like handwashing, keeping distance, or using masks. Also, testing to identify infected people, and contact tracing to find people who might have caught the virus from them, is helpful. Testing & tracing only helps when it is combined with fast isolation of infected people and quarantine of their contacts.

Why are large buildings often closed down first during virus outbreaks?

In large buildings usually more people accumulate and come into close contact with one another. An event organized in a large building may thus become a so-called “super-spreading event”, at which one infected individual may pass on the disease to many others.

How would an outbreak develop, if the incubation time was just 1 and not 3 days? How could you simulate that in the game?

With 1 day incubation time, a much shorter time would pass between getting infected and falling ill (and being isolated). That means that every infected, yet symptom-free individual would have less time to infect other people. This makes big outbreaks less likely.

Why is a virus particularly difficult to control when there are infected people who do not have symptoms?

Symptom-free infected individuals who do not know of their infection behave like everyone else. Doing so, they can infect other people and spread the virus. In this way, the number of infected people grows rapidly. When the first few people develop symptoms and are sent into isolation, many other people are already infected and can again infect others.

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On which day would the inhabitants notice that they have a virus problem in their town?

It depends on how much they know already about the virus. If they recognize the virus as the same one that had already caused rapid epidemics in other cities, the inhabitants would understand the problem immediately when the first ill person is diagnosed with the YEAN virus. In this simulation, it would be at the end of day 3. If the inhabitants do not know anything about this virus, or the virus is new, the virus problem would likely be recognized only when the number of sick people starts rising rapidly.

How does the spread of the YEAN virus in this game differ from the spread of the new coronavirus in the real world? What is missing? What is different?

There are many differences. For example: In reality, some people never develop symptoms from the new coronavirus- they do not fall ill, even if infected. Some people will not transmit the coronavirus, even when they are in close contact with others. Different from the game, the real coronavirus is often passed between people at home. With the real coronavirus, it rarely ever happens that all people in the same building with an infected person become infected. Still, superspreading events, where many become infected, do occur.

If you played through the same simulation again, do you think the exact same numbers would result? Why?

It is unlikely that you would get the same numbers. There is an element of randomness incorporated in the simulation - after mixing the chips in the inhabitant area, the individuals going to town are picked randomly. The exact numbers of newly infected individuals each day depend on how many infected individuals are picked-up and which buildings they go to. At the beginning of an epidemic, the exact numbers of people infected each day may differ a lot. When the numbers are rising, more and more infected people are likely to enter the city and infect others, so later on the numbers are likely to get more similar.

In reality, people very close to an infected person are more likely to get infected than people further away in the same building. How could you simulate that in the game?

You could change the rule that all people present in the same building with an infected individual get infected. For example, only the people represented by white chips right next to a yellow chip could get infected.

How would the outbreak develop if half of all people were vaccinated? How could you simulate that in the game?

Vaccinated people would not catch the virus and would not pass it on. The spread of the virus would therefore be slower. You can try it out by marking half of all white chips with a dot to indicate vaccinated people and playing the simulation again. When enough people are vaccinated, they can break the chains of infection completely and thus protect also people, who are not vaccinated. Researchers use models of infections to estimate what fraction of people needs to be vaccinated to achieve such “herd immunity”. This fraction is called the “herd immunity threshold”.