Tips for printing

- Print all materials on A4 paper.
- For the city map, tape the two sides together.
- If possible, use thick paper for printing the white and yellow chips.
- If you have yellow paper, use it for printing the yellow chips (last page) so that they are yellow on both sides. The paper should be of the same thickness as the paper for the white chips, so you cannot sense the color of the chips by touching.
- Cut out the question cards, “no entry signs” and chips along the dotted lines.
Game Instructions

Virus Alert

IN STRYHOMPON
The story of Stayhompton

It's a beautiful spring day in the town of Stayhompton, population 100. Two of the town's inhabitants have just returned from vacation—but there's something they don't yet know: while away, they were infected with the new YEAN (Yet ANother) virus! They still feel healthy, however, they are symptom-free infected, so they go to town where they can infect other humans. Only after the three-day incubation period do they start feeling sick. At this time, they are taken to the Stayhompton Clinic for treatment and do not go to town anymore. How many people did they unknowingly infect? Can a large virus outbreak still be prevented?

How to play

You will simulate a virus outbreak using a city map and chips to represent inhabitants. You will simulate a virus outbreak using a city map and chips to represent inhabitants. The two versions are played independently. If you want to try both, start with "Simulation" and then continue with "Challenge".

Simulation

You are scientists investigating how fast the YEAN virus can spread in Stayhompton. You are politicians investigating how to take measures to prevent an outbreak without completely paralyzing the city.

Challenge

You are scientists investigating how fast the YEAN virus can spread in Stayhompton. You are politicians investigating how to take measures to prevent an outbreak without completely paralyzing the city.

Important

The game is played in a team of two or three people. You can also play alone, but it will be more challenging. Your opponent is the YEAN virus.

We thank Kathrin Pauser and all other game testers!
mix well. Put the two white chips aside.

With 2 yellow chips (the two inhabitants infected while on vacation) and
replacement 2 white chips (healthy inhabitants) in the residential area bowl.

Team members will be responsible for the chips.

Select a team member to be responsible for filling out the data sheet. Other

The "no entry" signs are not required in the version "Simulation".

You can download all game materials and additional data sheets to print.
Let's go!

Each day is divided into three phases.

Phase 1: The day begins
- The inhabitants of Stayhompton leave the residential area and visit buildings in the city.
- Slide the coin one day forward on the timeline.
- Without looking, take chips from the well-mixed residential bowl into your hand.
- Stack the chips, and use them to fill the buildings of Stayhompton in clockwise order, starting with the concert hall. Start at the concert hall.
- Notice how many people fit into each building. If you need more chips, take more from the bowl.

This number tells you how many people, infected or sick, are in the building.

Stayhompton Clinic is not filled with chips.

Phase 2: The virus spreads
- Check all buildings. Is there an infected person (yellow chip) inside? If so, they will infect all other people in the same building.
- Count how many white chips are in buildings with yellow chips. This is the number of "newly infected" people.
- Enter the value in the counting table, in the row "Newly infected".
- Replace these chips with yellow ones and put the white chips aside.
- White chips that remained in the residential area bowl remain white.

Phase 3: The day ends
- The inhabitants of Stayhompton go back home.
- Return all chips on the city map to the residential area bowl.
- Complete the counting table:
  - From day 2 onwards: Fill in the remaining orange and red fields in the counting table by transferring the numbers from yesterday.
  - From day 2 onwards: Fill in the remaining orange and red fields in the remaining colors.

Complete the counting table:
- Return all chips on the city map to the residential area bowl.
- The inhabitants of Stayhompton go back home.

Track the events in the diagram:
- Count (or calculate) how many healthy, infected, and sick individuals there are in total. Enter the values in the diagram table and mark the values as points on the diagram graph. Connect the days with lines, using a different color for each type of inhabitant (healthy, infected, sick).

Stayhompton goes to sleep. The next day starts again with phase 1!
End of the simulation

• Play until either ten days have passed or all the residents are sick.

• If there are not enough resident chips left in the residential area to fill all open buildings, fill the open buildings clockwise, starting with the concert hall.

Look at the finished diagram and discuss what happened.

Draw three question cards and discuss possible answers together!

If you have ideas how to stop the virus outbreak, try the game variant “Challenge”. If you would like to see how the virus spreads under different conditions, download more scenarios to play at www.ist.ac.at/virusalarm.

If you know that …

… real scientists make mathematical models and – similar to this game – simulations to understand how epidemics develop. Such models use many numbers, called parameters, that describe e.g. how easily a virus is transmitted between people. Some parameters are difficult to measure, but scientists can estimate them from data and use them to make so-called quantitative predictions about the course of an epidemic. These predictions can help determine which interventions can prevent the spread of a virus.

The accuracy of quantitative predictions depends on how well we can use our models’ “parameters” to describe the epidemic’s development. To do this, we need many numbers of residents, how many people are infected and so on.

In this game, you have an advantage over a real city government: at any time, you know how many inhabitants are sick! In reality, this is difficult to know, though it could be learned, for instance, by measuring virus concentration in sewage. 

Politicians can consult with scientists and use their models to estimate the effects of various possible measures. In this way, science can help politicians make better decisions.

Did you know that …

… governments make better decisions. In this way, science can help politicians make better decisions.

End of the simulation

Game version “Challenge”
Let's go!

Each day consists of four game phases.

Phase 0: Deciding on closures
Decide which buildings you want to keep closed today, if any. On the city map, you can see how many penalty points it costs to close each building. For comparison: At the end of the day, you receive 1 point for each healthy inhabitant.

- Mark buildings that you decide to close with a "no entry" sign.
- Mark your penalty points in the upper part of the data sheet by circling them.
- Calculate how many penalty points you receive that day in total.

Phase 1: The day begins
The inhabitants of Stayhompton leave their apartments and go to town.

- Slide the coin one day forward on the timeline.
- Without looking, take chips from the well-mixed residential bowl into your hand.
- Stack the chips, and use them fill the buildings of Stayhompton in clockwise order, starting with the concert hall. Notice how many people fit into each building. If you need more chips, take more from the bowl.

- Close buildings and the Stayhompton Clinic are not filled with chips.

Phase 2: The virus spreads
Check all buildings with people in them. Is there an infected person (yellow chip) among them? If so, they will infect all other people in the same building.

- Count how many white chips are in buildings with yellow chips. This is the number of "newly infected" people.
- Enter the value in the counting table, in the row "Newly infected".
- Replace these chips with yellow ones and put the white chips aside.

- White chips that remained in the residential area bowl remain white.

Phase 3: The day ends
The inhabitants go home again.

- Return all chips on the city map to the residential area bowl.
- Complete the table:
- From day 2 onwards: Fill in the remaining orange and red fields of the data sheet "Challenge" by transferring yesterday's numbers along the arrows.
- Count (or calculate) how many healthy people there are at the end of the day.

Penalty points for building closures
Using circles, mark the buildings you close in the column of the day. Sum up the circled points to calculate your daily total penalty points.

Counting table

<table>
<thead>
<tr>
<th>Day 1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
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<tbody>
<tr>
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<td>Bakery</td>
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</table>

Daily score
Calculate your daily score as the number of today's healthy people minus the total daily penalty points. Your total score is the sum of all daily scores.

Download data sheets:
www.ist.ac.at/virusalarm

Für Evolution Biologie
Calculate your daily score:

- Number of healthy inhabitants – penalty points = daily score

People who were infected three days ago develop symptoms. They get sick and are brought to the Stayhompton Clinic for isolation. There they can no longer infect anybody.

- From day 3 onwards: Patients that fell sick today (the "Newly sick" line in the counting table) are moved to the hospital. Take the same number of yellow chips as newly sick from the residential bowl and move them to the bowl at the Stayhompton Clinic.

Stayhompton goes to sleep. The next day starts again with phase 0!

End of the Challenge

- Play until ten days have passed.
- If at any time all inhabitants are sick, simply enter a daily score of -50 for each remaining day.

Calculate your total score by adding up all the points of all 10 days and compare your results with other teams or the table below:

from 601 points: Pandemic pro
301–600 points: Aspiring health politicians
101–300 points: Not bad! Can you get more points next time?
0–100 points: You can do better, want to try again?
less than 0 points: That didn't go so well. ty again!

Do you have any ideas how to improve your results? Play again and optimize your tactics!

Share your results!
Send us your score with a photo of your data sheets to science.education@ist.ac.at, on facebook to @istaustria or share it on Instagram with the hashtag #ISTAustria and tell us about your findings!

A winner of a small surprise will be drawn from all entries once a month until February 2021.

Small glossary

Symptoms: Noticeable signs of illness, such as coughing or fever.
Symptom-free infected people: People who have been infected by a virus and may already be able to infect others, but do not show any symptoms: Noticeable signs of illness, such as coughing or fever. The strict separation of sick people from the rest of the population is called quarantine. If the people are only suspected of having infections, this separation is called isolation.
Incubation period: The amount of time it takes for symptoms to appear after infection by a virus.

Incubation period: The amount of time it takes for symptoms to appear after infection by a virus.

In April 2021, a winter of a small surprise will be drawn from all entries once a month. A winner of a small surprise will be drawn from all entries once a month. Send us your score with a photo of your data sheets to science.education@ist.ac.at or on facebook to @istaustria or share it on Instagram with the hashtag #ISTAustria and tell us about your findings.

Until February 2021 the bowl at the Stayhompton Clinic will be drawn from the residential bowl and move them to the counting table. People who were infected three days ago develop symptoms. Then they get infected. The number of healthy inhabitants = penalty points = daily score.
For parents and teachers

"Virus alert in Stayhompton" is a game for young people age 12 and up. By simulating the spread of a fictitious virus in a small town, the players learn how the spread of viruses can be contained by limiting contact to others ("social/physical distancing").

The players dive into the role of scientists, who simulate an extreme scenario (game version "Simulation"), or into the role of politicians, who have to weigh the advantages and disadvantages of restrictions on public life (game version "Challenge"). Players become familiar with phenomena such as incubation time, super-spreading or infection by a- or pre-symptomatic carriers ("symptom-free infected people"). In addition, players practice working with data and diagrams as well as their "what if" thinking skills.

Players also gain an understanding of the measures that serve to contain the coronavirus pandemic and learn to argue for their views. It is important to note that the parameters of the game do not correspond 1-to-1 to the reality of the coronavirus pandemic. For example, it is rarely ever the case that all people in a building are infected by the new coronavirus as soon as an infected person enters the building. Discuss this with the children, also to avoid emerging fears, such as fear of going to school.

Playing with chips and a city map is more time-consuming than online simulations or computer games, but has the advantage of giving players time to internalize observations while they place and count chips.

The question cards promote understanding of basic epidemiological mechanisms, and address differences between the game and reality as well as the role of chance in the spread of a virus. Background information on the questions and possible answers can be found at www.ist.ac.at/virusalarm.

The game is particularly suitable for use in the classroom. In order to have more time for discussion, it is advisable to schedule two lessons. The class is divided into small groups of 2 or 3 players. In the first lesson, the teams play either the same or different scenarios of the game version "Simulation" and compare results. In the second lesson, the teams compare answers and discuss possible answers can be found at www.ist.ac.at/virusalarm.

The authors of "Virus alert in Stayhompton" and the IST Austria Science Education Team

P.S.: Have a new rule or question about gameplay or virus outbreaks? Share your story with the children, or post your rule to science.education@ist.ac.at!
Counting table

<table>
<thead>
<tr>
<th>Day</th>
<th>1</th>
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<tbody>
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Diagram

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# Penalty points for building closures

Using circles, mark the buildings you close in the column of the day. Sum up the circled points to calculate your daily total penalty points.

<table>
<thead>
<tr>
<th>Day</th>
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### Counting table

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<tr>
<th>Day</th>
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<tbody>
<tr>
<td><strong>Newly infected</strong></td>
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<td><strong>Healthy</strong></td>
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</tbody>
</table>

### Daily score

Calculate your daily score as the number of today’s healthy people minus the total daily penalty points. Your total score is the sum of all daily scores.

<table>
<thead>
<tr>
<th>Day</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
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Download data sheets: [www.ist.ac.at/virusalarm](http://www.ist.ac.at/virusalarm)
<table>
<thead>
<tr>
<th>Question</th>
<th>Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>What would happen if sick people continued to go to town instead of being isolated in the hospital?</td>
<td>What methods could be used to slow down the spread of a virus?</td>
</tr>
<tr>
<td>Why are large buildings often the first to close during virus outbreaks?</td>
<td>How would an outbreak develop, if the incubation time was just 1 and not 3 days? How could you simulate that in the game?</td>
</tr>
<tr>
<td>Why is a virus particularly difficult to control when there are infected people who do not have symptoms?</td>
<td>On which day would the inhabitants notice that they have a virus problem in their town?</td>
</tr>
<tr>
<td>How does the spread of the YEAN virus in this game differ from the spread of the new coronavirus in the real world? What else is different or missing in the game simulation?</td>
<td>If you replayed the same simulation, do you think you would get exactly the same numbers again? Why or why not?</td>
</tr>
<tr>
<td>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?</td>
<td>How would the outbreak develop if half of all people were vaccinated? How could you simulate that in the game?</td>
</tr>
</tbody>
</table>