

# Risks at a glance

**Visualisations can make risk information more understandable, particularly for people with low numeracy and reading skills.**

Every day, we make decisions that can affect our health. Ideally, scientific evidence can help us weigh the risks of different decision options – for instance, the benefits and harms of vaccination – and make good decisions for ourselves. A key prerequisite is that the risk information is packaged in comprehensible formats.

### Consequences of poor communication of risks

Poorly packaged risk information can affect how we understand and perceive risks and can negatively affect our decisions. It can lead us to under- or overestimate risks and, in turn, affect how we weigh the benefits and harms of decision alternatives. In terms of medical decisions, for example, we might end up making a decision that leads to unnecessary follow-up examinations or medical treatments, or that we regret later on.

Failing to communicate risk messages in an understandable way can increase health inequalities in societies. The reason is that some people have difficulties in reading texts and understanding numbers. As a result, their risk understanding is lower and they may perceive risks inaccurately. This makes them more vulnerable to poor health choices and can exacerbate existing inequalities in societies.

### How to improve risk communication?

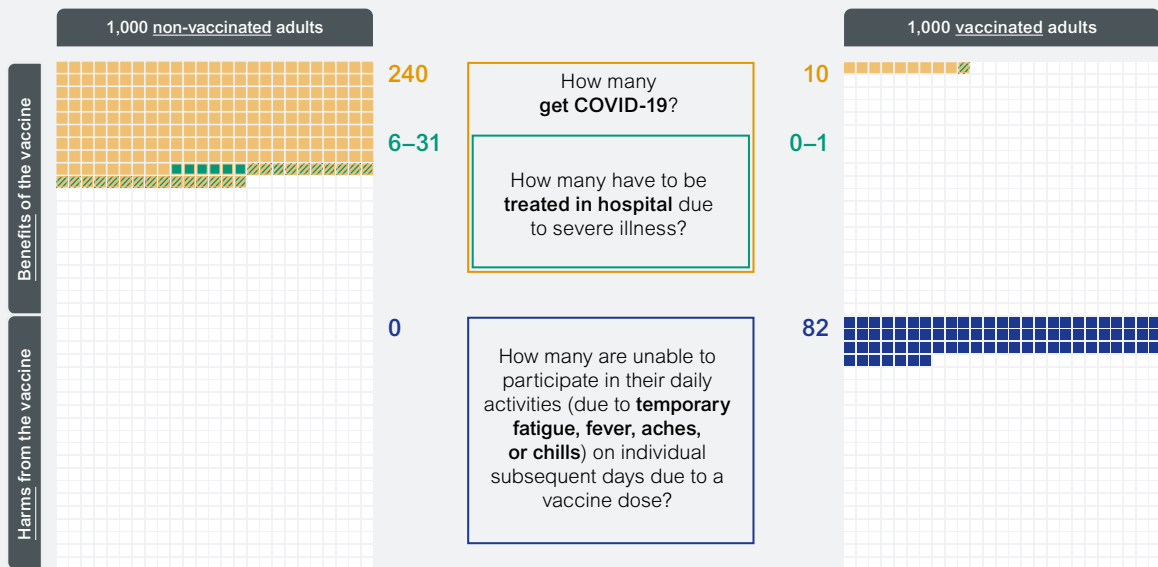
We can better understand risks when, for instance, risk probabilities are communicated numerically instead of verbally (for example, “5 in 100 people will experience a treatment side-effect” can be grasped more concretely than “The risk of treatment side-effects is low”). The reason is that people tend to interpret verbal probability statements differently. Simple frequencies or percentages (for example, 5 in 100 or 5%) are more comprehensible than probabilities or 1-in-x formats (for instance, 1 in 20). By communicating both numerator and denominator, it can be conveyed whether the risk is big or small. Moreover, when comparing risks, the denominator should be kept the same (for example always 100). Relative risk reductions are unclear (“The intervention reduced the number of infections by 20%”), instead, absolute risk reductions are recommended (“The intervention reduced the number of infections from 5 in 100 people without the treatment to 4 in 100 people with the treatment”). The latter illustrate the absolute size of a risk. If there is insufficient information to report numbers, the reason for this should be stated.

### The advantages of visual formats

Visual presentations can be a beneficial supplement or substitute for numerical or verbal information on

### Visualisation example: COVID-19 vaccination

This fact box compares adults under the age of 60 years without vaccination against COVID-19 (left side) with vaccinated adults (right side)



Excerpts from the Icon Array Fact box of the Harding Center for Risk Literacy and the Robert Koch Institute on the benefits and harms of the COVID-19 mRNA vaccines for adults under the age of 60 years.

risks. They can facilitate comprehension, especially for people with low numeracy or reading skills. Visual designs should convey proportions as part-to-whole representations (for example, via the proportional display of numerator and denominator). This allows us to build on our visual processing capacities to make size comparisons, even without the need to make numerical calculations. An example of a well-designed visual is the Icon Array Fact Box on the benefits and harms of COVID-19 mRNA vaccines by the Harding Center for Risk Literacy (see illustration). It was jointly developed with the Robert Koch Institute and translated into nine languages. The fact box results are presented here proportionally as icons in the shape of small boxes, showing the most relevant endpoints for benefits and harms listed for both 1,000 unvaccinated and 1,000 vaccinated adults each. This facilitates comparisons of the magnitude of potential risks both within and between decision options presented. ■

*A guest article by Christin Ellermann, Michelle McDowell, Clara Schirren, and Mirjam Jenny from the Harding Center for Risk Literacy at the University of Potsdam and the Robert Koch Institute in Berlin.*

**More information:**  
[www.hardingcentre.de/en](http://www.hardingcentre.de/en) > Transfer and Impact > Fact Boxes

### Health risks in profile

Via the BfR risk profile, the German Federal Institute for Risk Assessment (BfR) visualises the results of its health risk assessments. Together with the Harding Center for Risk Literacy, the BfR is further developing the risk profile in the VisRisk research project. The aim is to create a numerical and visual presentation that summarises the most important facts of a risk assessment and thus strengthens consumers' understanding of risks and their decision-making competence. Possible courses of action for minimizing a health risk become apparent at a glance.