Which risk should I fix?

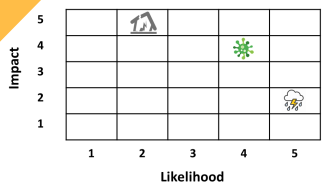
Can *you* use risk matrices to make rational decisions?

The Risk Matrix

Risk matrices are used everywhere, from schools to businesses to governments, to communicate risks. They are supposed to help people understand and compare risks, and to 'improve' decision making.

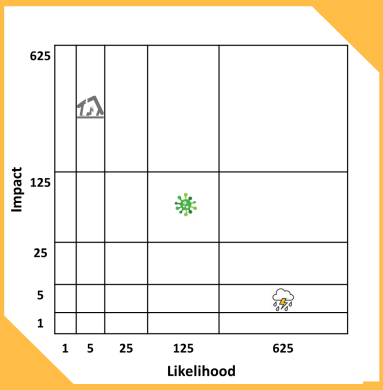
But do they actually work? Can people use them to make rational decisions about risk management?

In a study with the public we found that, when asked to compare risks and decide which one was – according to the numbers - worse, people using this kind of matrix got less than half (7/18) of the comparisons right.



Impact Key	
5	Catastrophic
4	Significant
3	Moderate
2	Minor
1	Limited

Likelihood Key	
5	Less than 0.2%
4	0.2% to 1%
3	1% to 5%
2	5% to 25%
1	Greater than 25%



The Geom-Log Risk Matrix

In the risk matrix we designed (left), the scales better represent the exponential way the risk increases. The cells get bigger as the risk increases, helping users visually.

In a study, we found that this helped people make rational decisions on the risk comparison tasks. People using this matrix got well over half (11/18) of the questions right.

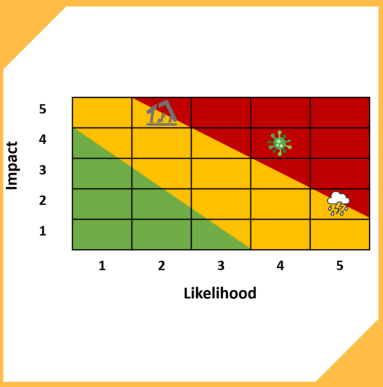
This shape of matrix was used in the UK's 2020 National Risk Register:
(Follow the QR code to see it in action!)

The Colourful Risk Matrix

Colour is often used in risk matrices to categorise risk levels. Usually, each cell is assigned one colour. We tested an alternative design (right) with split-colour cells.

In studies we found that people's decision making was biased towards moving risks from one colour of cell to another. Highly numerate people were the most likely to show this bias – exactly the kind of people who are most likely to use risk matrices.

We recommend people avoid using colour in risk matrices when their aim is to inform, rather than to persuade.



"How people understand risk matrices, and how matrix design can improve their use"

Holly E. A. Sutherland
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@heasutherland

Ruri Protopopescu

Currently under review

"Do coloured cells in risk matrices affect decision making and risk perception?"

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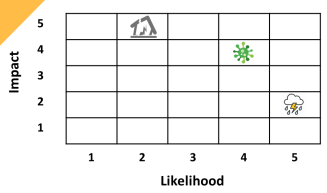

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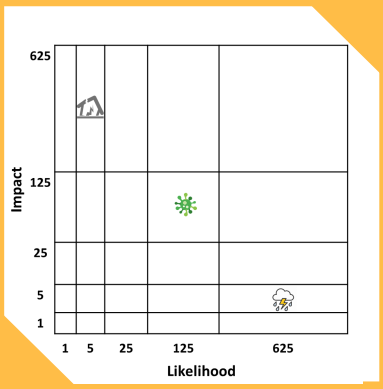

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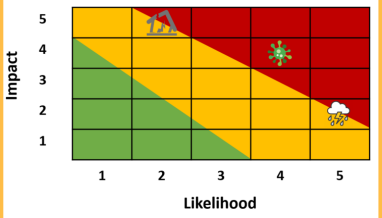

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