

Putting numbers into context

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- Numbers mean little to people when stripped of context
- What kinds of context did our research find were helpful when communicating COVID-19 risk?
- What were the effects of providing this context?



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Communicating personalized risks from COVID-19: guidelines from an empirical study

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The challenge

To present personalised information about an individual's estimated risk of dying from COVID-19 if they caught it

- primary audience: the general public
- aim: to inform



Your estimated risk of dying if you get COVID-19 is **12%**

If **100 people** like you got COVID-19,
we would expect around **12** of them to die.

For comparison, the average risk for:

- An **85** year old is **19%**
- A **70** year old is **6%**
- A **50** year old is **0.2%**



“If this was your outcome, this number, 12% risk of dying if you catch COVID-19, would this outcome make you do anything differently from what you are currently doing, or not?”

“I don’t think so, because 12%, that’s quite low in my opinion.”



[Later in interview]

“So based on this, what is the likelihood that this person will die if they catch COVID-19?”

“12%.”

“And what does that mean in terms of 100 people?”

“Every 12 people out of 100.”

“So for you personally, this 12% is a high risk or a low risk?”

“I don’t know, because I did say low risk, but if you actually think about it... it’s quite high. I’d say yeah, I think it’s quite high, but as I said I think I’d just continue as I’m doing.”



“You’d changed your mind, at the beginning you thought it was low, but now that you rethink this 12% it doesn’t sound that low anymore, you think it’s high.”

“Yeah, I think it’s quite high. Because if you look there as well with the 70-year-old, that’s 6%, so that bit’s helpful because now I can say, oh ok, 12%, I am actually quite at risk then. I’m obviously stereotyping massively, because in my mind they might have respiratory stuff going on.”

“That’s interesting, part of the reason that you changed your mind about that 12% is because you saw that the average risk for a 70-year-old is 6%?”

“Exactly.”



What's the right context or comparison to provide?

- Risks for healthy or 'average' people of a specified age?
- Risks for a hypothetical person who is 'like you' but differs in some particular way?
- The type of person (in terms of risk factors such as age, health conditions, etc.) who might be at that level of risk?
- The proportion of the population with a lower risk?
- Risk of dying from influenza? Accidents? Other causes?



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What's the effect of providing this context?

Are there effects on...

- Audience evaluation of the message?
- How large the risks are perceived to be?
- How biased the audience is by aspects of the message that 'should' be irrelevant, such as whether the numbers are communicated as frequencies or percentages?

See also: Weinstein, N. D., & Sandman, P. M. (1993). Some criteria for evaluating risk messages. *Risk Analysis*, 13(1), 103-114.



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Your result: 2%

We'd expect **2%** of people with this result to die if they got COVID-19

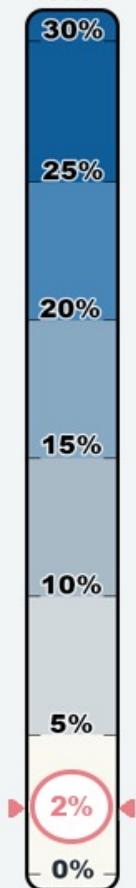
Out of **10,000 people** who entered the same information as you, we would expect around **200** to die if they got COVID-19

Their actual risk of dying could be as low as **1%** or as high as **3%**

This has been calculated based on hospital data and GP records from England.

- ▶ [What can I do to avoid catching COVID-19?](#)
- ▶ [Can I reduce my risk of dying if I catch COVID-19?](#)

Very few people have a higher risk than 30%



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Your result: 2%

We'd expect **2%** of people with this result to die if they got COVID-19

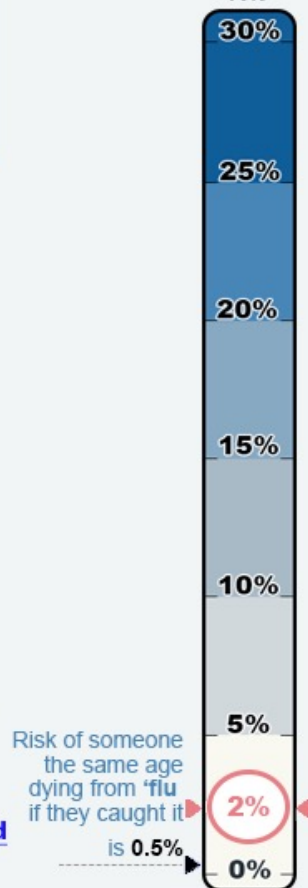
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Risk of someone the same age dying from 'flu if they caught it is 0.5%

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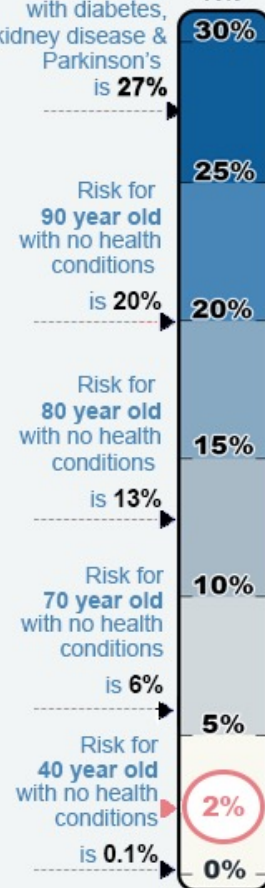
Risk for 90 year old with diabetes, kidney disease & Parkinson's is 27%

Risk for 90 year old with no health conditions is 20%

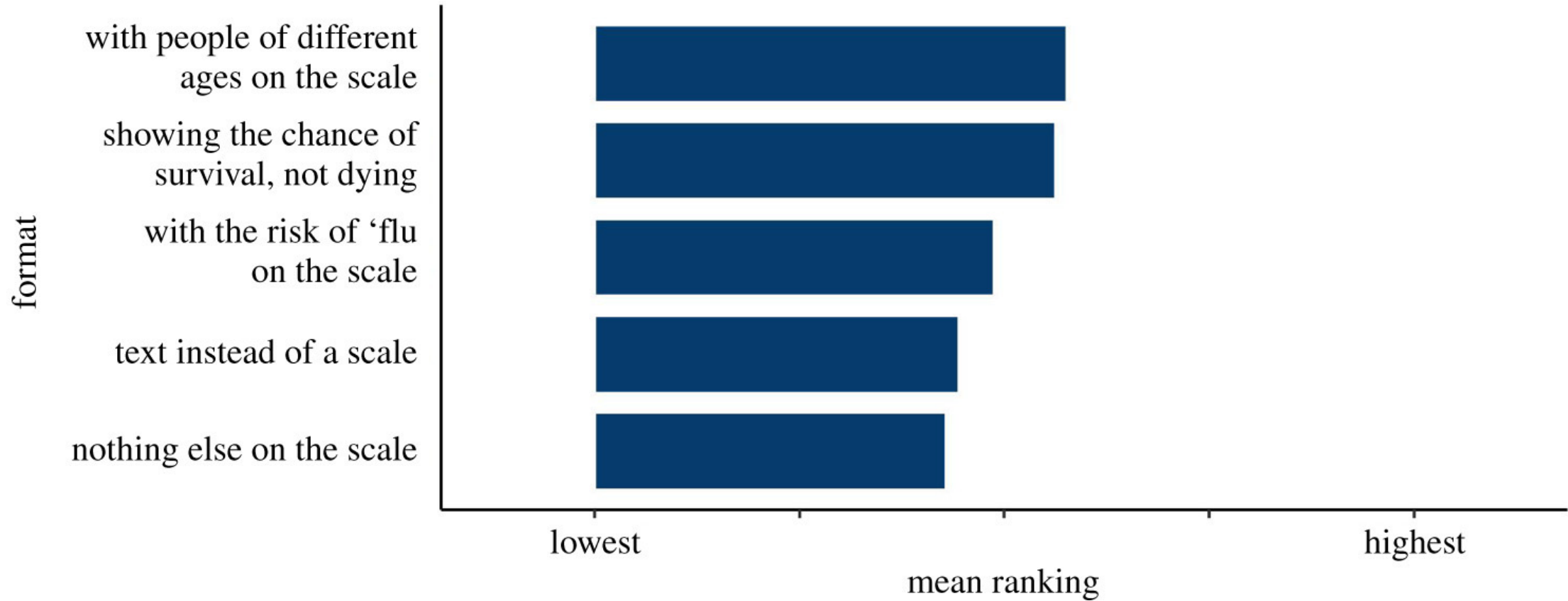
Risk for 80 year old with no health conditions is 13%

Risk for 70 year old with no health conditions is 6%

Risk for 40 year old with no health conditions is 0.1%



Participants' preferences across the five presentation formats tested in Experiment 4.3 when shown all five and asked to rank them ($n = 2500$).

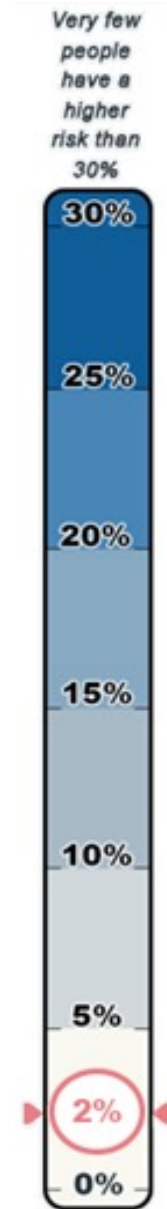


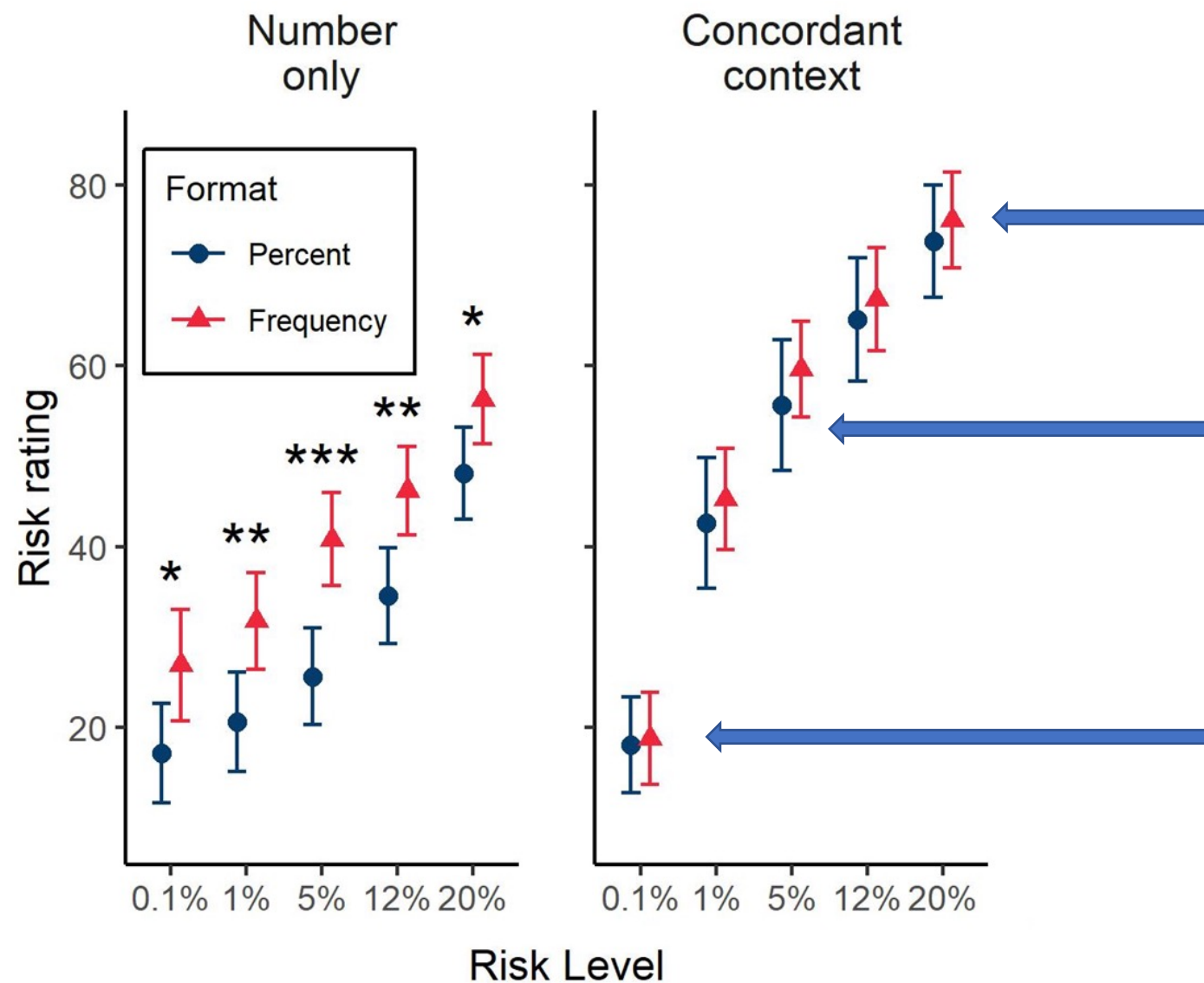
What about...

- How large the risks are perceived to be?
 - Perceived likelihood of death? How worried people said they would be about catching COVID-19 if this was their result? The degree to which people said they would like to see this information? The degree to which people said they would change their behaviour? The degree to which people were more concerned with catching COVID-19 vs. seasonal flu?
- Trust in the information? In the producers of the information?
- Perception in the certainty of the information?



- Audience preferred version with risk ladder to text-only version
- No significant differences on measures of behavioural intentions – except when viewing % surviving rather than % dying (survival framing made people less cautious)
- Caveat: Those viewing a text-only version did appear to perceive the risks as greater than those viewing the risk ladder





"If Sam catches COVID-19, Sam's risk of dying is **20%**. For context: They are an Asian man aged 85 with a heart condition and diabetes"

"If Jo catches COVID-19, Jo's risk of dying is **5%**. For context: They are a white woman aged 40 with a high BMI and undergoing cancer treatment"

"If Mel catches COVID-19, Mel's risk of dying is **0.1%**. For context: They are a white man aged 30 with no underlying health conditions"



Conclusions

- No easy shortcuts: important to find out what kind of context your audience would find useful
- If you can, you may be able both to improve how your audience evaluates the message, and ground their interpretation in something that means more to them than a raw probability

Freeman, A. L., Kerr, J., Recchia, G., Schneider, C. R., Lawrence, A. C., Finikarides, L., ... & Spiegelhalter, D. (2021). Communicating personalized risks from COVID-19: guidelines from an empirical study. *Royal Society Open Science*, 8(4), 201721.



Contributors to the research presented here



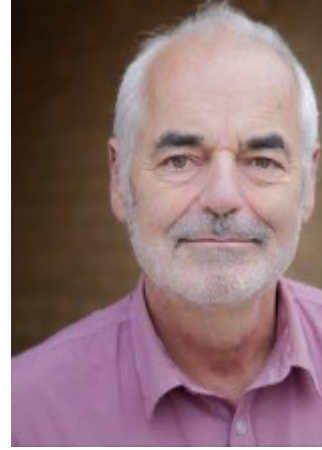
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Alice Lawrence



Claudia Schneider



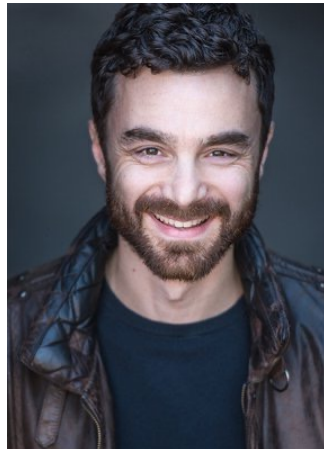
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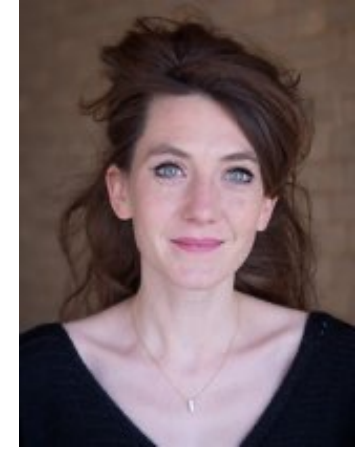
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