



Trustworthy and  
useful evidence  
communication to  
decision-makers

*Dr Alex Freeman*

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*“to inform and not persuade”*



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# Inform

vs

# Persuade

# Inform

vs

# Persuade



Informed consent in medicine  
Forensic evidence in court

Marketing  
PR

# Inform

vs

# Persuade



Informed consent

Marketing

Public health?

Inform

vs

Persuade

Understand

vs

Believe

Better informed

vs

Changed behaviour

Information

vs

A message

Be trustworthy

vs

Be trusted

# Trustworthy & useful communication...

To individual and policy decision-makers

# 1) Balanced information...

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# 1) Balanced information...

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**NHS Glos CCG** ✓ @GlosCCG · Jan 21

...

The coronavirus (**COVID-19**) **vaccine** is **safe** and **effective**. It gives you the best protection against coronavirus.

You cannot catch coronavirus from the **vaccine** 💉





# 1) Balanced information...

For 18-64 year olds:

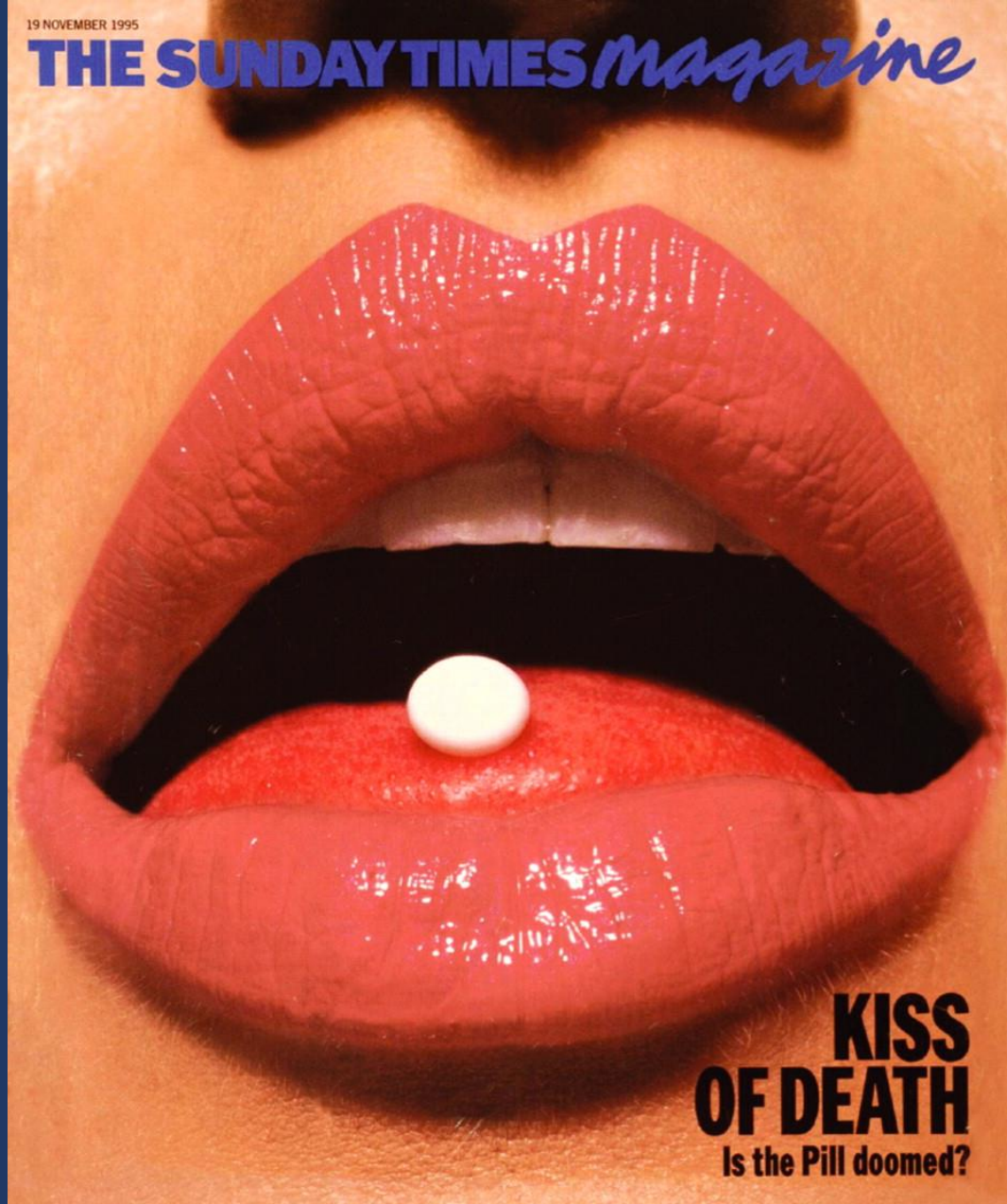
POTENTIAL BENEFITS From 2 weeks after 2 <sup>nd</sup> dose			
	Dummy injection (10,521 people)	Vaccine injection (10,551 people)	What difference did the vaccine make?
Number who developed symptoms confirmed to be COVID-19	156 (1.5%)	7 (less than 0.1%)	149 fewer cases (95.5% reduction in COVID-19 cases)

POTENTIAL HARMS* (usually lasting 2-3 days)		
Number who reported:	Dummy injection (10,315 people)	Vaccine injection (10,357 people)
Pain at the injection site (some also reported redness and swelling)	1,942 (18.8%)	9,335 (90.1%)
Swollen/sore armpit glands	444 (4.3%)	1,654 (16%)
Fever	38 (0.4%)	1,806 (17.4%)
Headache (a similar number reported other 'flu-like symptoms such as fatigue, aching joints, chills)	2,617 (25.4%)	6,500 (62.8%)
Nausea/Vomiting	754 (7.3%)	2,209 (21.3%)

Kerr et al, 2021



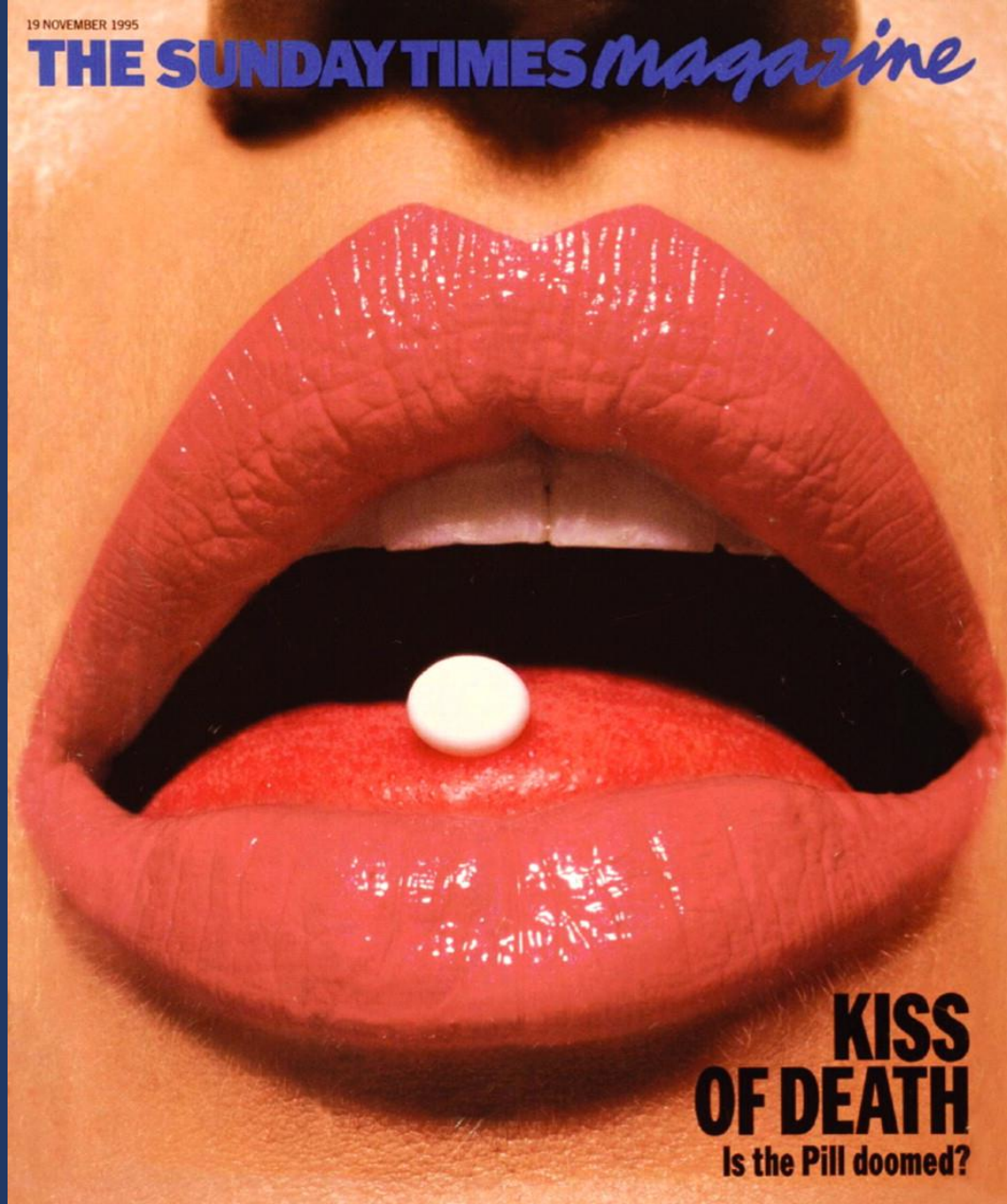
# Numbers need context as well...



The 3<sup>rd</sup> generation oral contraceptive pill 'doubles' the rate of potentially fatal venous thrombosis

UK Committee on Safety of Medicines  
1995





The 3<sup>rd</sup> generation oral contraceptive pill 'doubles' the rate of potentially fatal venous thrombosis

UK Committee on Safety of Medicines  
1995

10,000 extra abortions  
30,000 extra conceptions

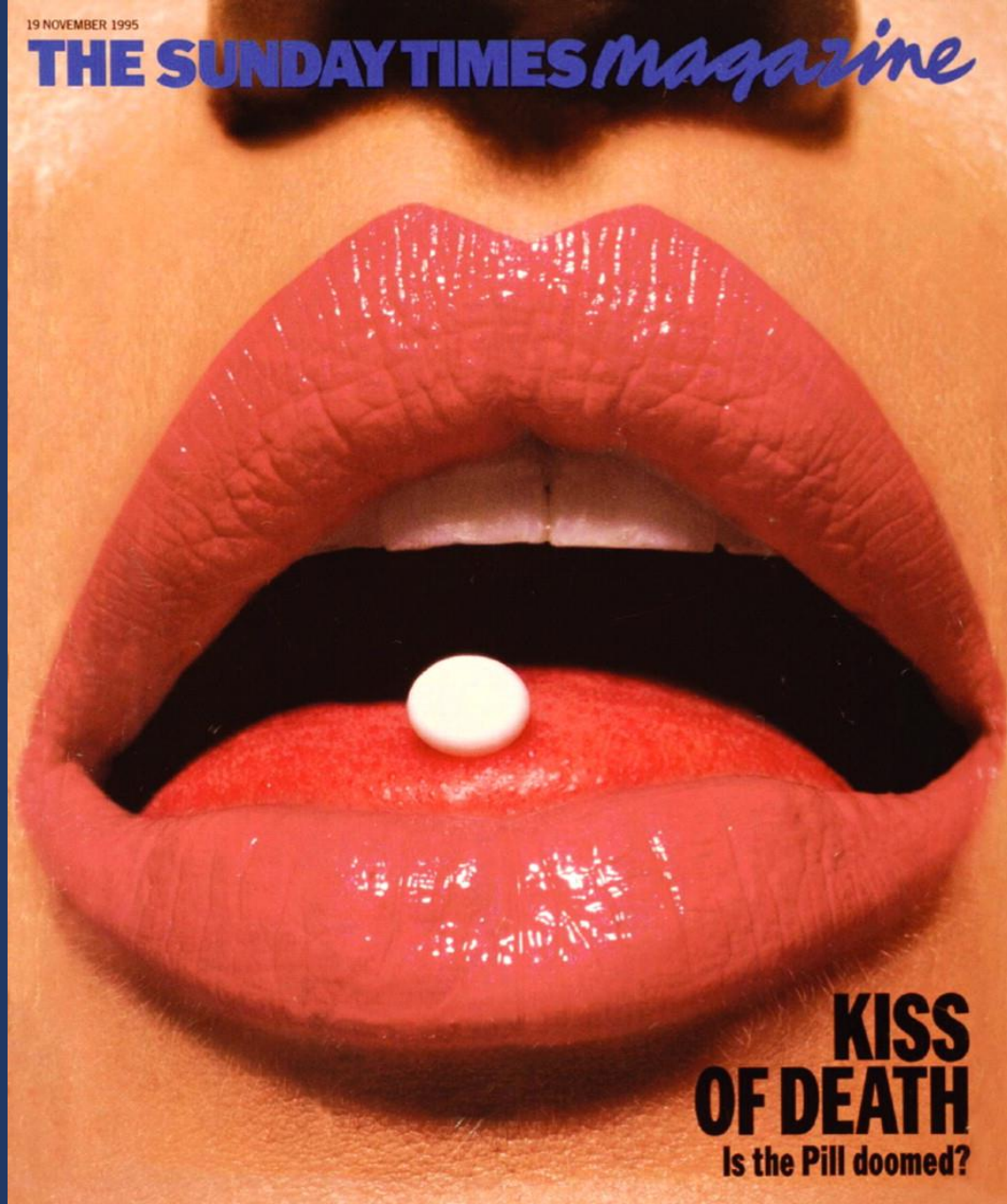


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Absolute risks (actual likelihood):  
1 in 7000 per year for 2<sup>nd</sup> generation pill  
2 in 7000 per year for 3<sup>rd</sup> generation pill

(Barnett & Breakwell, 2003)







# How can we help people understand ‘their risk’ from COVID?

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- Absolute risks (chances for any one person) very low
- Relative risks (context): ‘relative to what’?



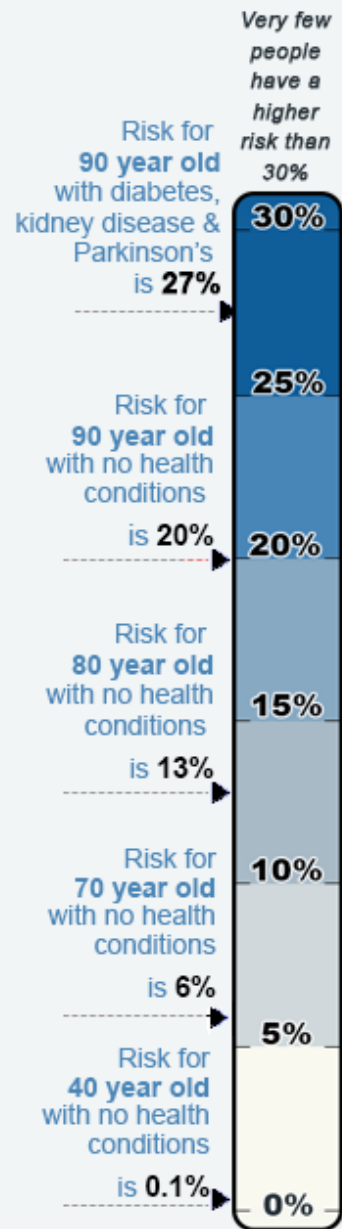
# How can we help people understand ‘their risk’ from COVID?

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- Absolute risks (chances for any one person) very low
- Relative risks (context): ‘relative to what’?
  - Can’t give a chance over time as it’s a new risk – not like earthquakes
  - Relative to other causes of death for that person? Are they helpful?
  - Relative to another person’s COVID risk? Whose?



Please note the numbers on this scale were made up for our study – they weren't known at the time!



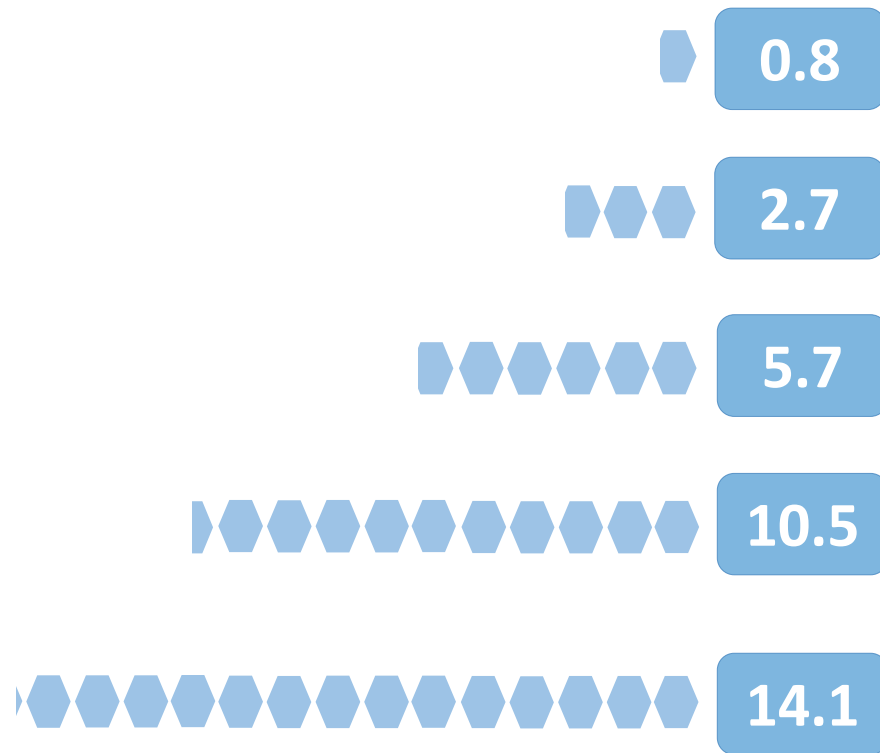


# Weighing up the potential benefits and harms of the Astra-Zeneca COVID-19 vaccine

**For 100,000 people  
with low exposure risk\***

## Potential benefits

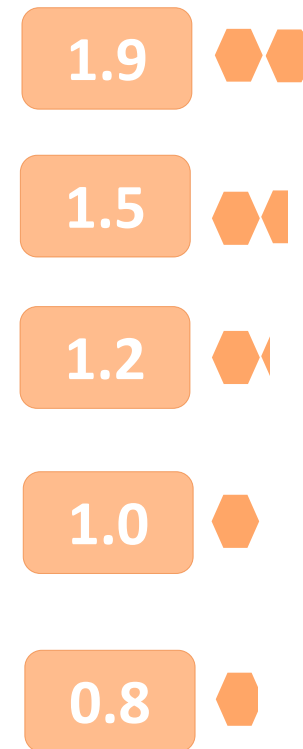
ICU admissions due to COVID-19 prevented  
every 16 weeks:



Other potential benefits not shown include prevention of COVID-19 cases not leading to ICU and reduction of transmission

## Potential harms

Specific blood clots associated with the vaccine:



Other potential harms not shown include short-term side effects  
Data from reactions to first dose only

\* Based on coronavirus incidence of 2 per 10,000 per day (140 per 100,000 per week): roughly UK in March 2021

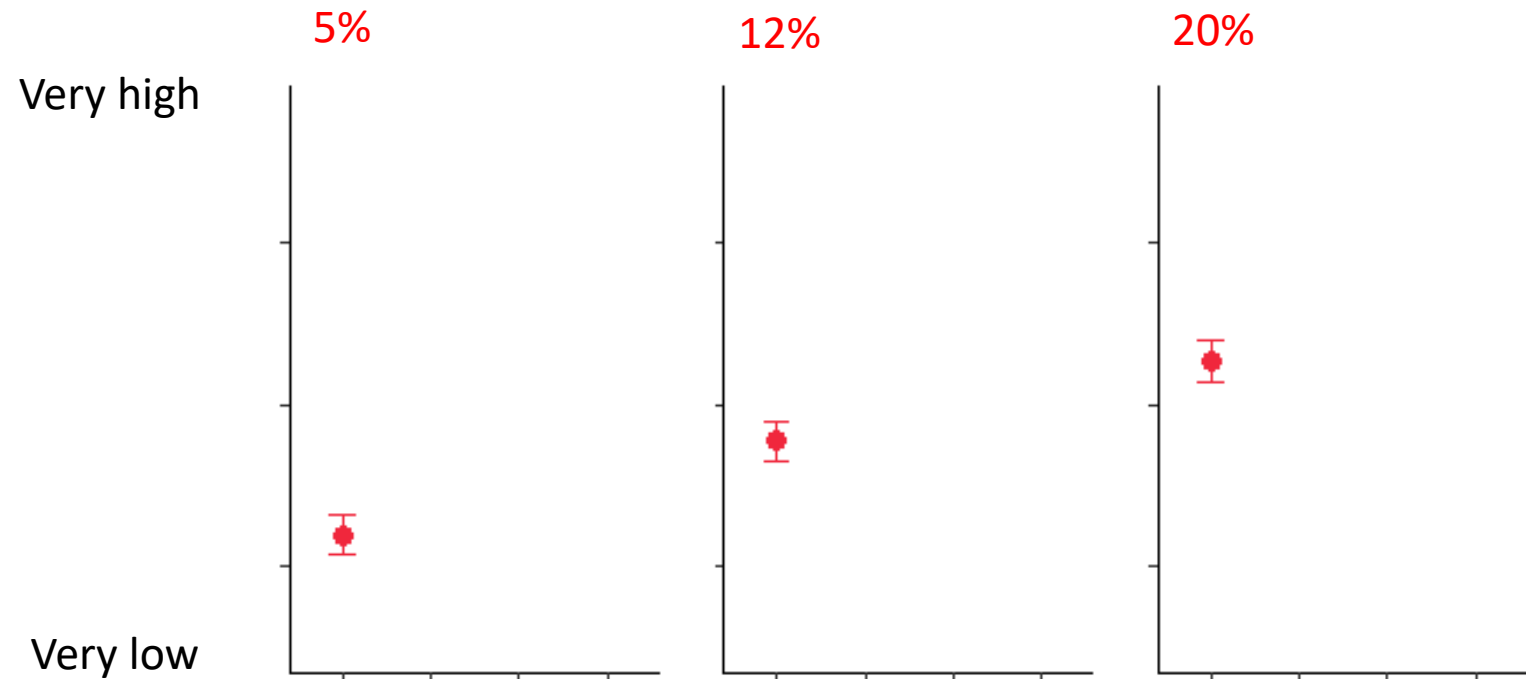
**Data from UK up until 28<sup>th</sup> April 2021**

It's not just what you say, it's the way that you say it...



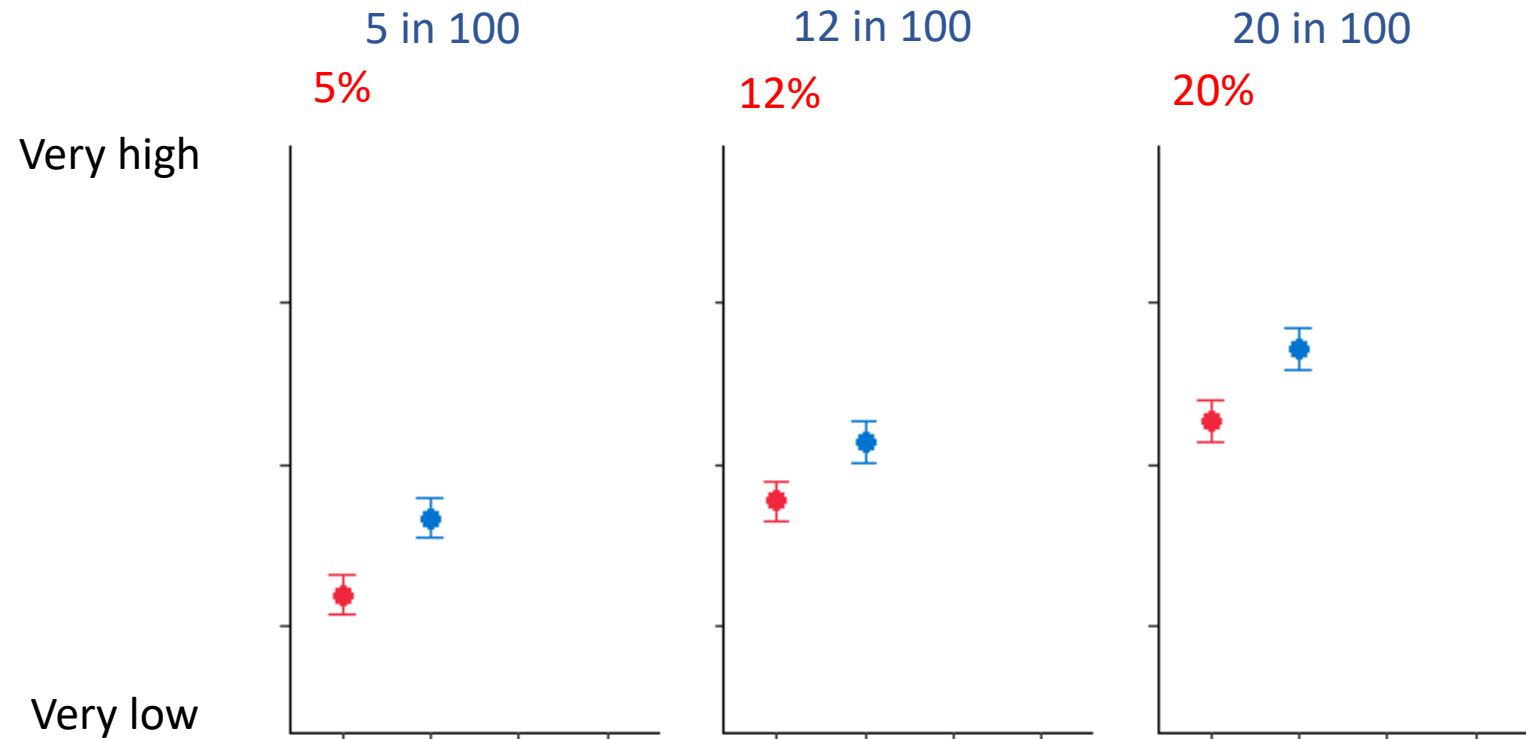
# Even the format of the number makes a difference...

How risky does this chance of dying of COVID-19 feel...



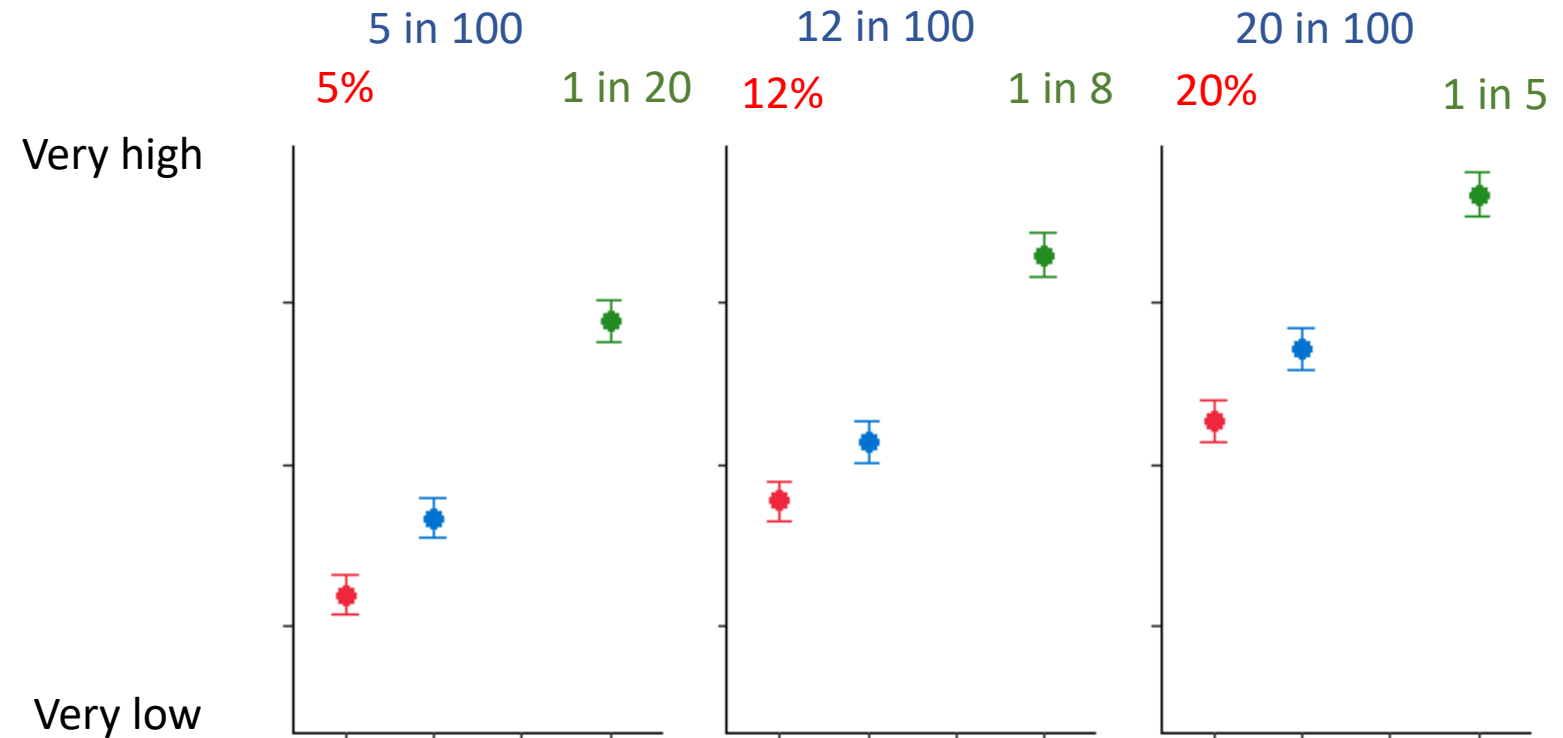
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# Even the format of the number makes a difference...

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## 2) Uncertainty

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### UK unemployment falls to 1.44 million

🕒 24 January 2018 | 📄 1350

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**UK unemployment fell by 3,000 to 1.44 million in the three months to November, official figures show.**

The number of those in work increased sharply and wages rose at their fastest rate in almost a year, the Office for National Statistics said.

## 2) Uncertainty

### UK unemployment falls to 1.44 million

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f t m ✉ Share



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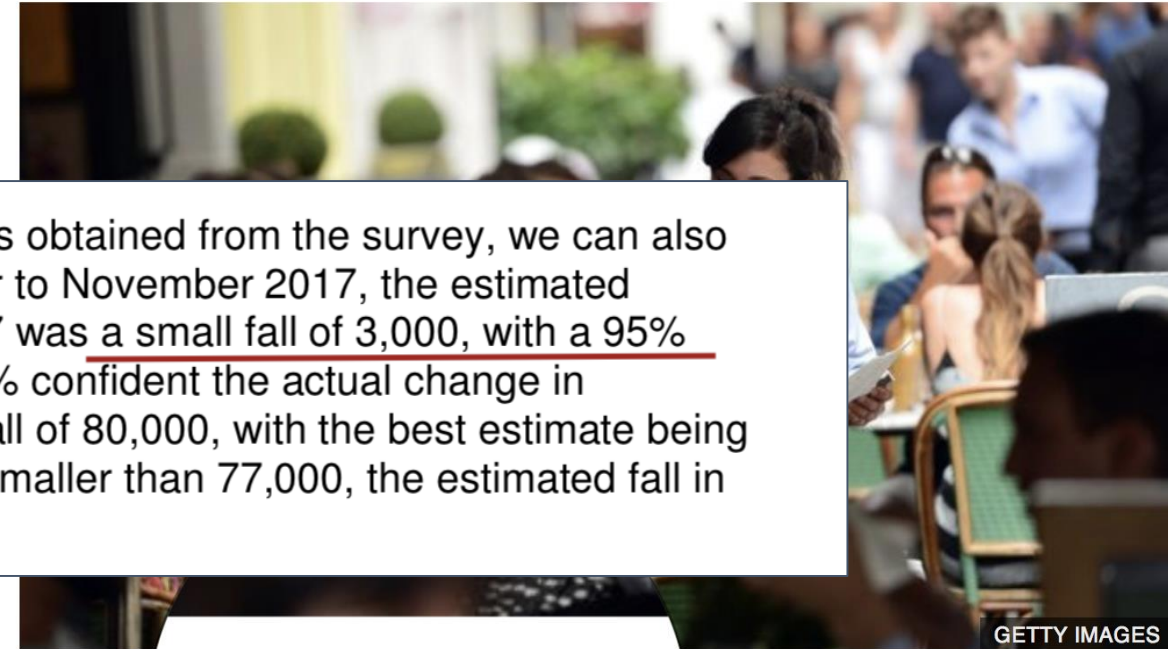
The number of people in work increased sharply in almost a year, and wages rose at their fastest rate in 10 years, the Office for National Statistics said.

## 2) Uncertainty

### UK unemployment falls to 1.44 million

🕒 24 January 2018 📄 1350

f t m ✉️ Share



As well as calculating precision measures around the numbers and rates obtained from the survey, we can also calculate them for changes in the numbers. For example, for September to November 2017, the estimated change in the number of unemployed people since June to August 2017 was a small fall of 3,000, with a 95% confidence interval of plus or minus 77,000. This means that we are 95% confident the actual change in unemployment was somewhere between an increase of 74,000 and a fall of 80,000, with the best estimate being a small fall of 3,000. As the estimated fall in unemployment of 3,000 is smaller than 77,000, the estimated fall in unemployment is said to be “not statistically significant”.

UK unemployment fell by 3,000 to 1.44 million in the three months to November, official figures show.

The number of people in work increased sharply in almost a year, and wages rose at their fastest rate since 2012, the ONS said.



# Uncertainty and trust

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10,707 people

12 countries

5 continents

## No uncertainty condition:

*“Illness due to COVID-19 infection is generally mild, especially for children and young adults. However, it can cause serious illness: for people aged 70-80, about 17% of those who catch it need hospital care.”*

## Numerical uncertainty condition:

*“Illness due to COVID-19 infection is generally mild, especially for children and young adults. However, it can cause serious illness: for people aged 70-80, about 17% (range between 10% and 34%) of those who catch it need hospital care.”*

## Verbal uncertainty condition:

*“Illness due to COVID-19 infection is generally mild, especially for children and young adults. However, it can cause serious illness: for people aged 70-80, about 17% of those who catch it need hospital care. There is some uncertainty about that percentage, it could be somewhat higher or lower”*





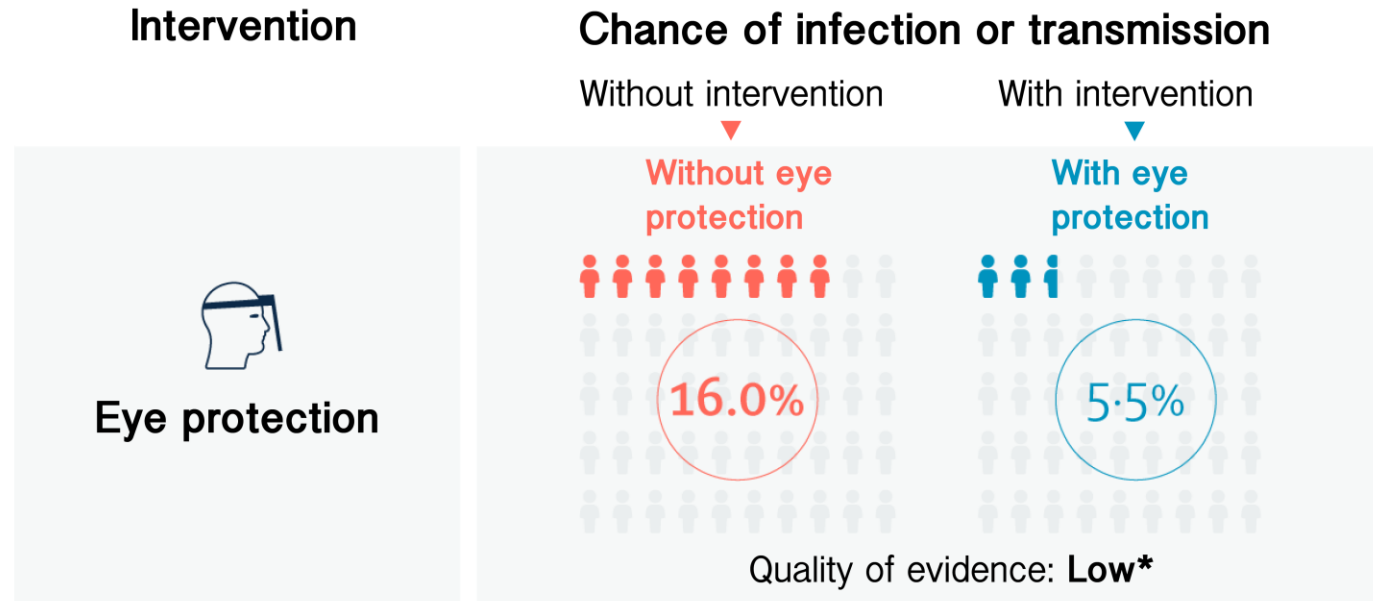
# 3) Quality of the evidence

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### 3) Communicating quality of underlying evidence is different

What protects against COVID-19 infection or transmission?



\* High quality: we are very confident that the true effect lies close to that of the estimate of the effect.  
Low quality: our confidence in the effect estimate is limited; the true effect could be substantially different from the estimate of the effect.

Schneider et al, 2021



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# John Krebs' checklist

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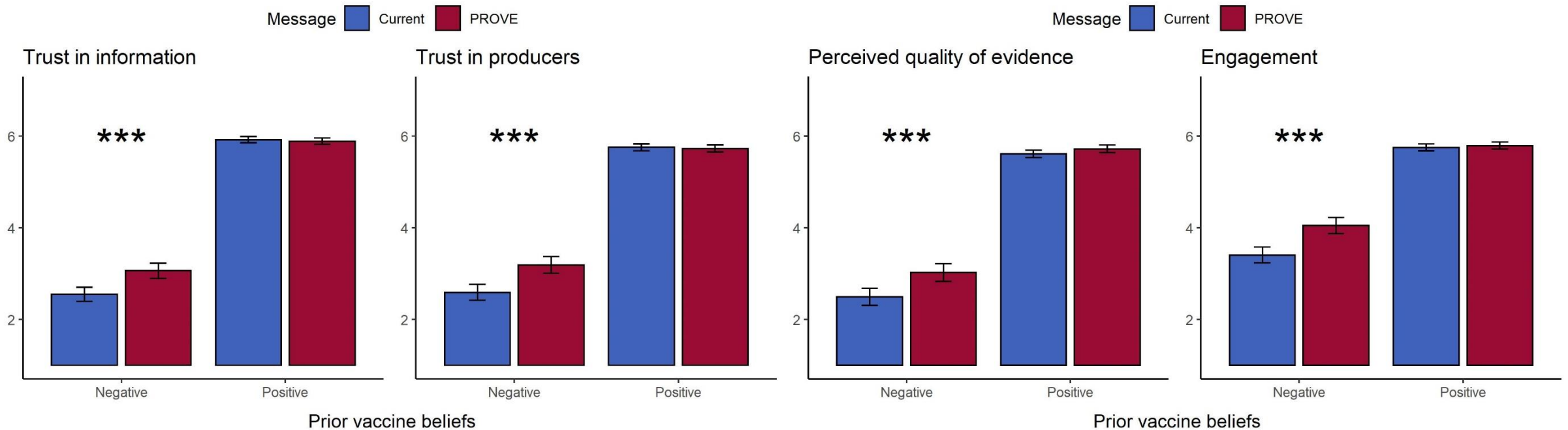
1. What you know
2. What you don't know
3. What you are doing to find out
4. What we can all can do in the meantime to be on the safe side
5. That advice will change (*and when/how you will update it*)



# Trustworthy messages and prior beliefs

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# Trustworthy messages and prior beliefs



Trustworthiness (providing balance, uncertainty, quality of evidence cues, pre-empting misunderstandings) matters most to those who are initially skeptical.



## In summary, to give people information on which to base decisions:

- 1) Listen to your audience: what information do they need, what decision are they making?
- 2) Provide appropriate context and balance – don't ignore inconvenient evidence or cherry-pick.
- 3) Be balanced in the way you present evidence as much as in the information itself – be aware of the effects of different formats, framings etc.
- 4) Be upfront about your uncertainties, and how you are resolving them.
- 5) Communicate the quality of your evidence
- 6) Pre-empt misunderstandings or misinformation.

