The Challenges of Communicating Statistics in the Time of Covid
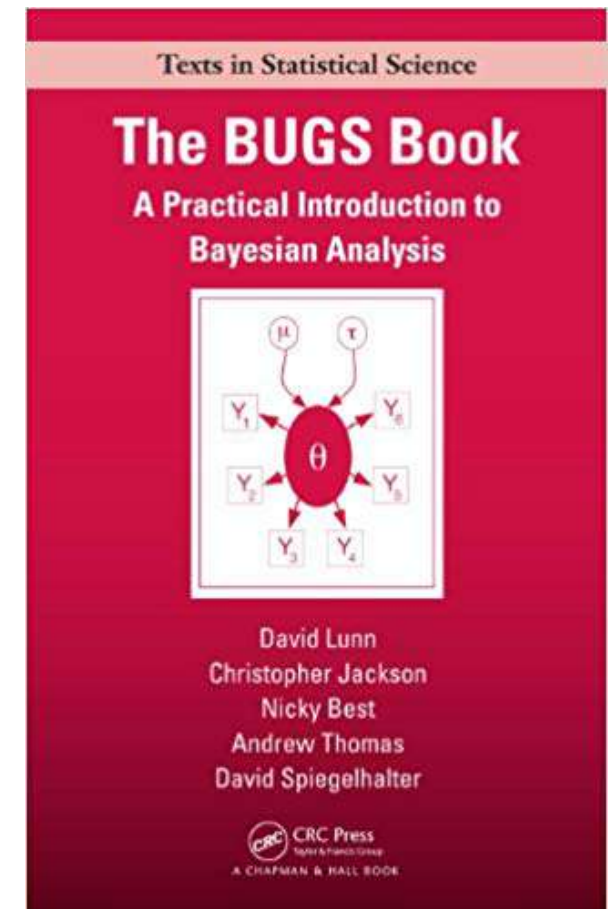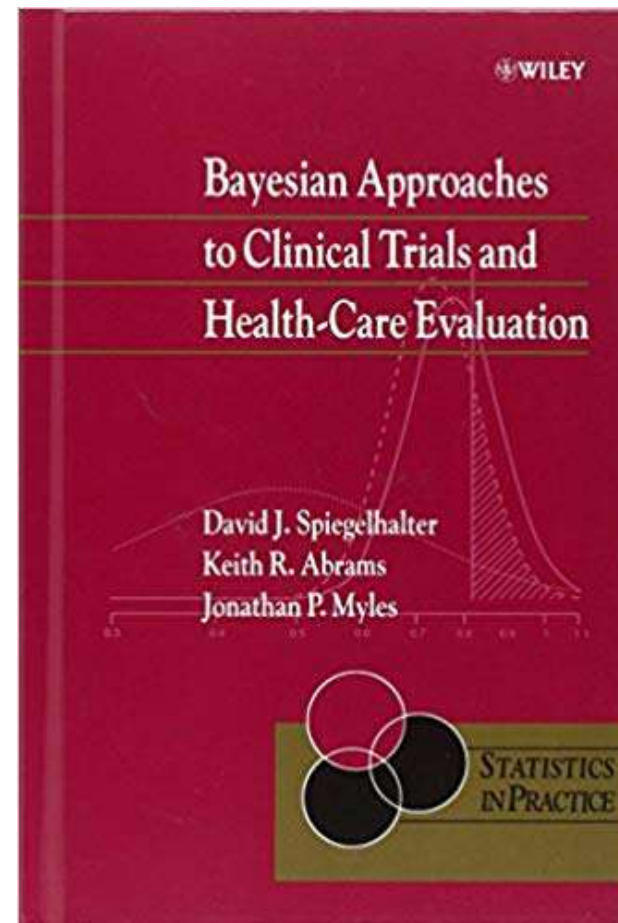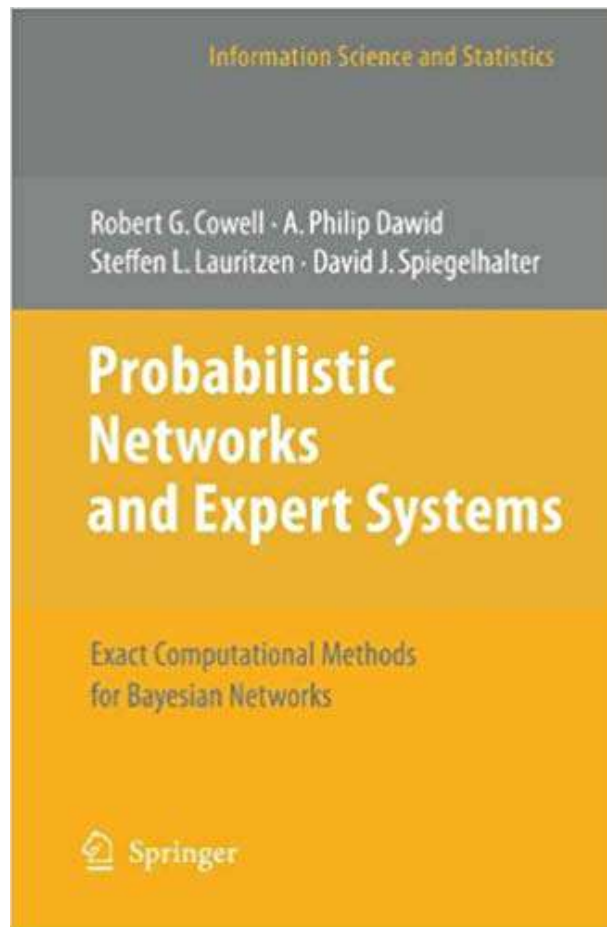
David Spiegelhalter

Chair of the Winton Centre for Risk & Evidence Communication,

Centre for Mathematical Sciences, University of Cambridge

Non-Executive Director, UK Statistics Authority

President, Royal Statistical Society 2017-2018

`@d_spiegel`

Data Users Group Conference 2021

I used to do statistical methodology....

until I was philanthropically funded in 2007.....

FOUR Climate Change by Numbers

Home   Clips

Last on

Thu 5 Mar 2015
22:00
BBC FOUR

This programme is not currently available on BBC iP

At the heart of the climate change debate is a paradox - we'
more information about our changing climate, yet surveys sh
public are, if anything, getting less sure they understand wh

FOUR Tails You Win: The Science of Chance

Home   Clips

DURATION: 1 HOUR
Smart and witty, jam-packed with augmented-reality
graphics and fascinating history, this film, presented by
Professor David Spiegelhalter, tries to pin down what
chance is and how it works in the real world. For...
> SHOW MORE

78   Share   f y ▣

Next on

Next Thursday
21:00
BBC Four

Why statistics should make you suspicious

Amanpour

Renowned statistician and author of
"The Art of Statistics" Sir David
Spiegelhalter breaks down some
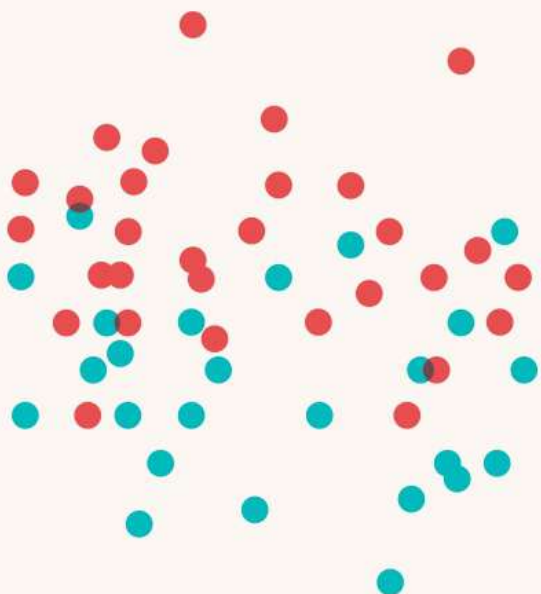common numerical
misconceptions. Source: CNN

A PELICAN BOOK

The Art of Statistics
Learning from Data
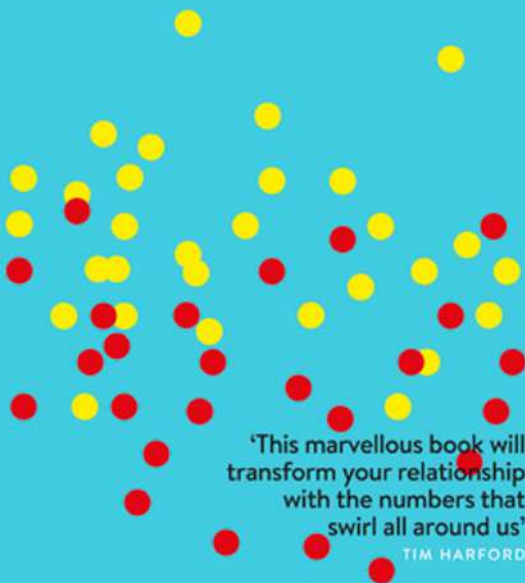### David Spiegelhalter

---

A PELICAN BOOK

The Art of Statistics
Learning from Data
David Spiegelhalter
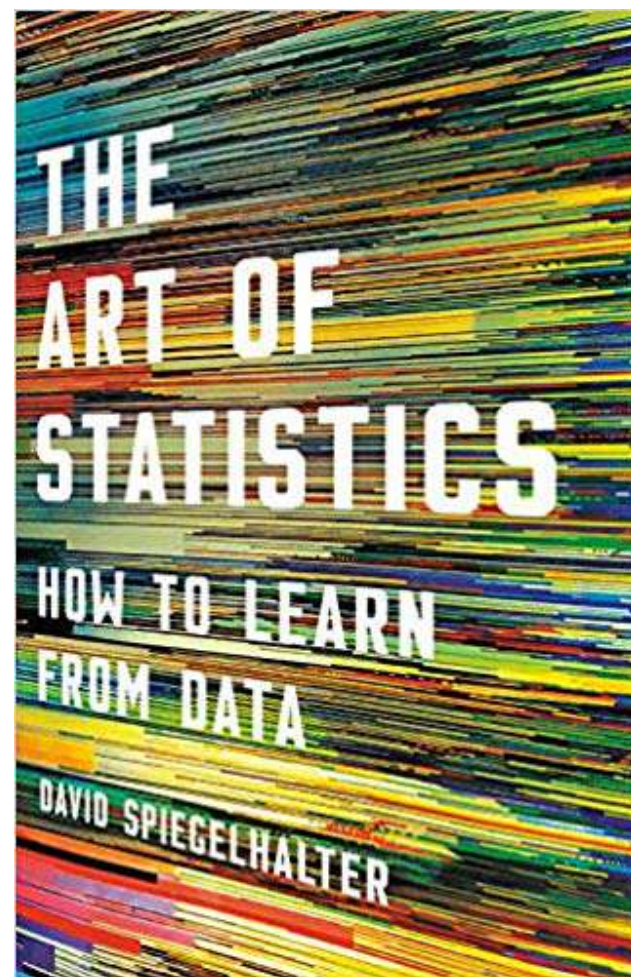
'This marvellous book will transform your relationship with the numbers that swirl all around us'
TIM HARFORD

THE ART OF STATISTICS
HOW TO LEARN FROM DATA
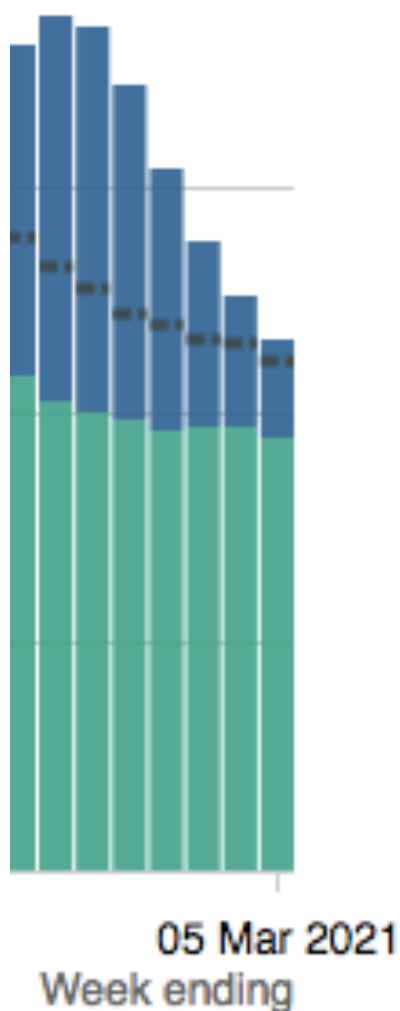### DAVID SPIEGELHALTER

Data does not speak for itself

INTRODUCTION

The numbers have no way of speaking for themselves. We speak for them. We imbue them with meaning.
— Nate Silver, *The Signal and the Noise*[1]

Non-covid deaths are below average

Figure 3: Deaths not involving COVID-19 were below the five-year average in Week 9

Number of deaths registered by week, England and Wales, 28 December 2019 to 5 March 2021

- **-** All deaths - Five-year average   ■ Deaths not involving COVID-19   ■ Deaths involving COVID-19

Weekly deaths

Bank holidays affected registrations

05 Mar 2021
Week ending
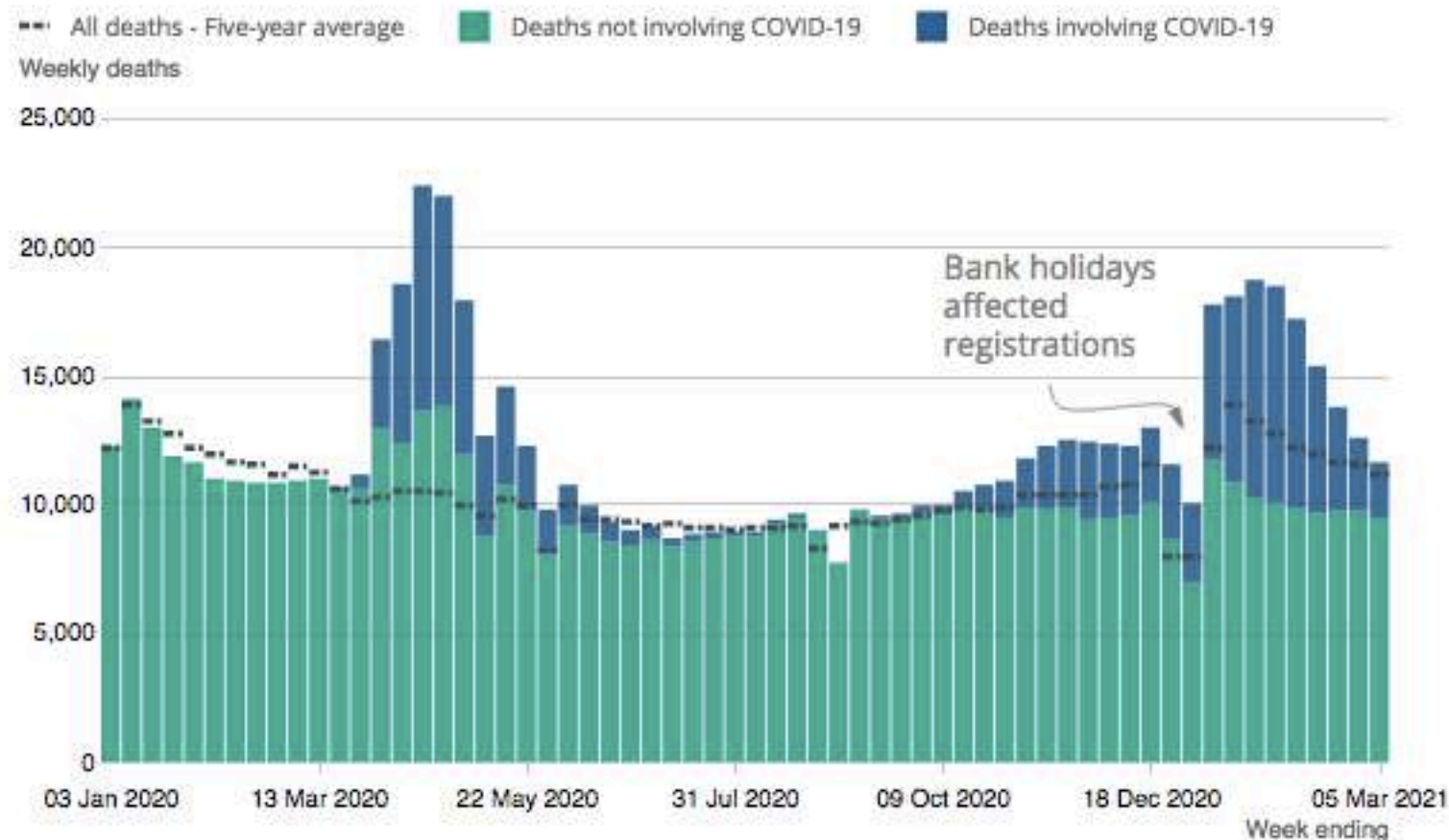
Source: Office for National Statistics – Deaths registered weekly in England and Wales

But let's drill down

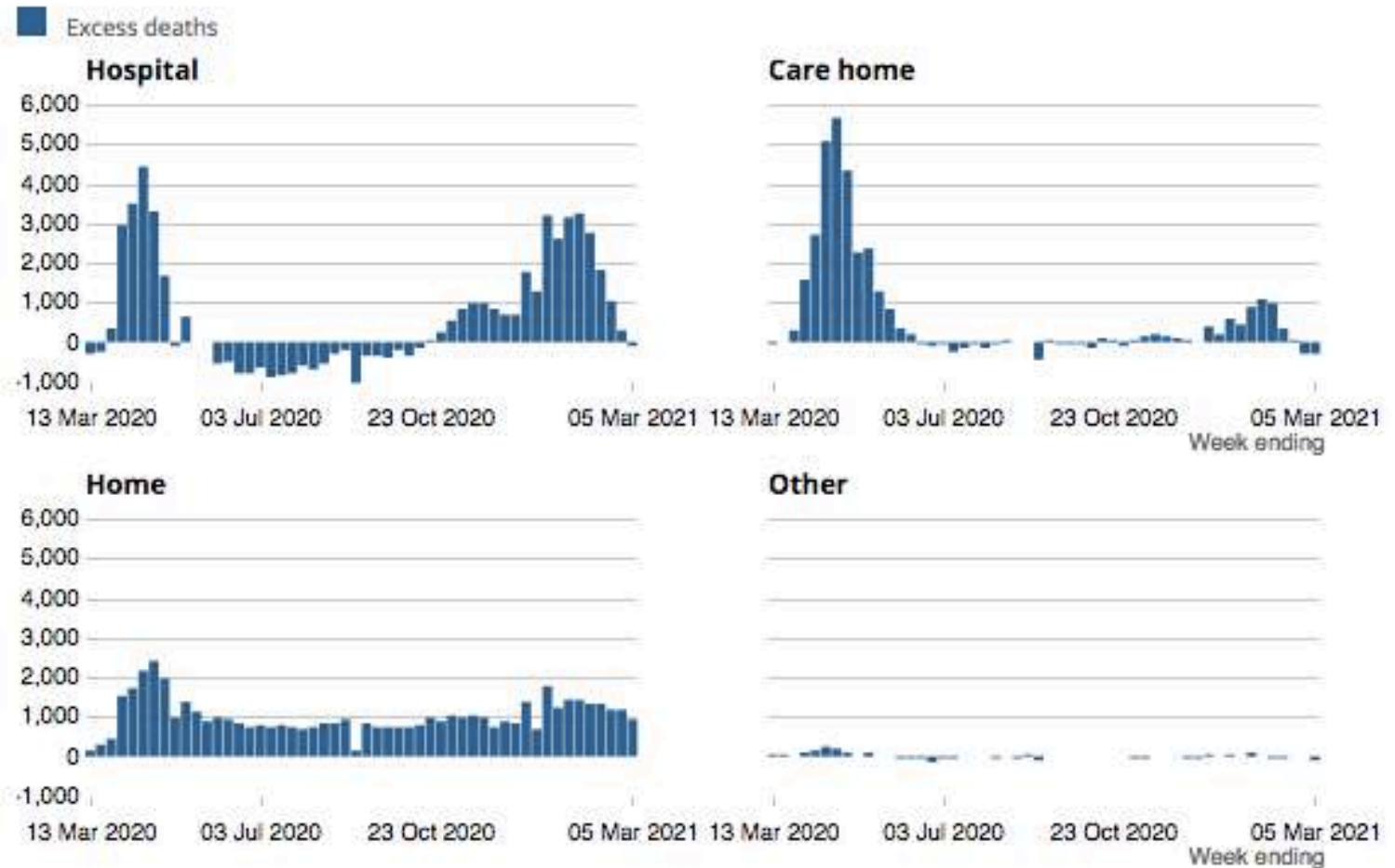- 48% extra deaths at home continue
- Two-thirds are not Covid
- What is the quality of these deaths?

Figure 6: Deaths in Week 9 were above the five-year average in private homes but below the five-year average in care homes, hospitals and other settings

Number of excess deaths by place of occurrence, England and Wales, registered between 7 March 2020 and 5 March 2021

Source: Office for National Statistics – Deaths registered weekly in England and Wales

It's been a busy time…

- National statistics and public health organisations have (mainly) done an amazing job in getting stats out!
- Huge demand from media for comments from 'experts'
- I've been part of weekly press briefings run by UK Science Media Centre
- Most journalists have acted well
- But tricky to remain 'non-aligned'
- Constant need to say 'not what I know about'

The McConway and Spiegelhalter guide for statisticians talking to the media about Covid

1. Get media training
2. Don't be lured out of your comfort zone
3. Beware of 'just a chat'
4. Beware of being set up for a pre-selected quote
5. Make friends with journalists
6. Don't be pulled into someone else's argument
7. Being a statistician is assumed to mean that you know every number...
8. Stick to explaining
9. Control the nit-picking
10. Sound human
11. Keep off the (statistical) jargon
12. Get a 'critical friend'
13. You'll get things wrong. Don't agonise about that
14. Don't be shy about complaining

Learning the hard way through repeated mistakes…

Too much attention...

This article is more than **2 months old**

Coronavirus deaths: how does Britain compare with other countries?
David Spiegelhalter

It's tempting to try to construct a league table, but we'll have to wait months, if not years, for the true picture

May 6th: Boris Johnson in PMQs
I would echo what we have heard from Professor David Spiegelhalter and others: at this stage I do not think that the international comparisons and the data are yet there to draw the conclusions that we want.

Later that day...

May 13 Keir Starmer in PMQs
This is what Professor Spiegelhalter said at the weekend, and we need to think about it:
"we should...use other countries to try and learn why our numbers are high"

David Spiegelhalter
@d_spiegel

Polite request to PM and others: please stop using my Guardian article to claim we cannot make any international comparisons yet. I refer only to detailed league tables-of course we should now use other countries to try and learn why our numbers are high
theguardian.com/commentisfree/...

Coronavirus deaths: how does Britain compare with other countries? | David Spie...
theguardian.com

6:33pm · 6 May 2020 · TweetDeck

View Tweet Activity

536 Replies **10,151** Retweets **23,608** Likes

Some attempts at communication

[1] Winton Centre for Risk and Evidence Communication, Statistical Laboratory Centre for Mathematical Sciences, Cambridge, UK

david@statslab.cam.ac.uk

Use of "normal" risk to improve understanding of dangers of covid-19

Accumulating data on deaths from covid-19 show an association with age that closely matches the "normal" risk we all face. Explaining risk in this way could help people understand and manage their response, says **David Spiegelhalter**

David Spiegelhalter *chair*[1]

In the first wave, what have been the death rates in the population (ie catching it and then dying)?

Very strong age-gradient

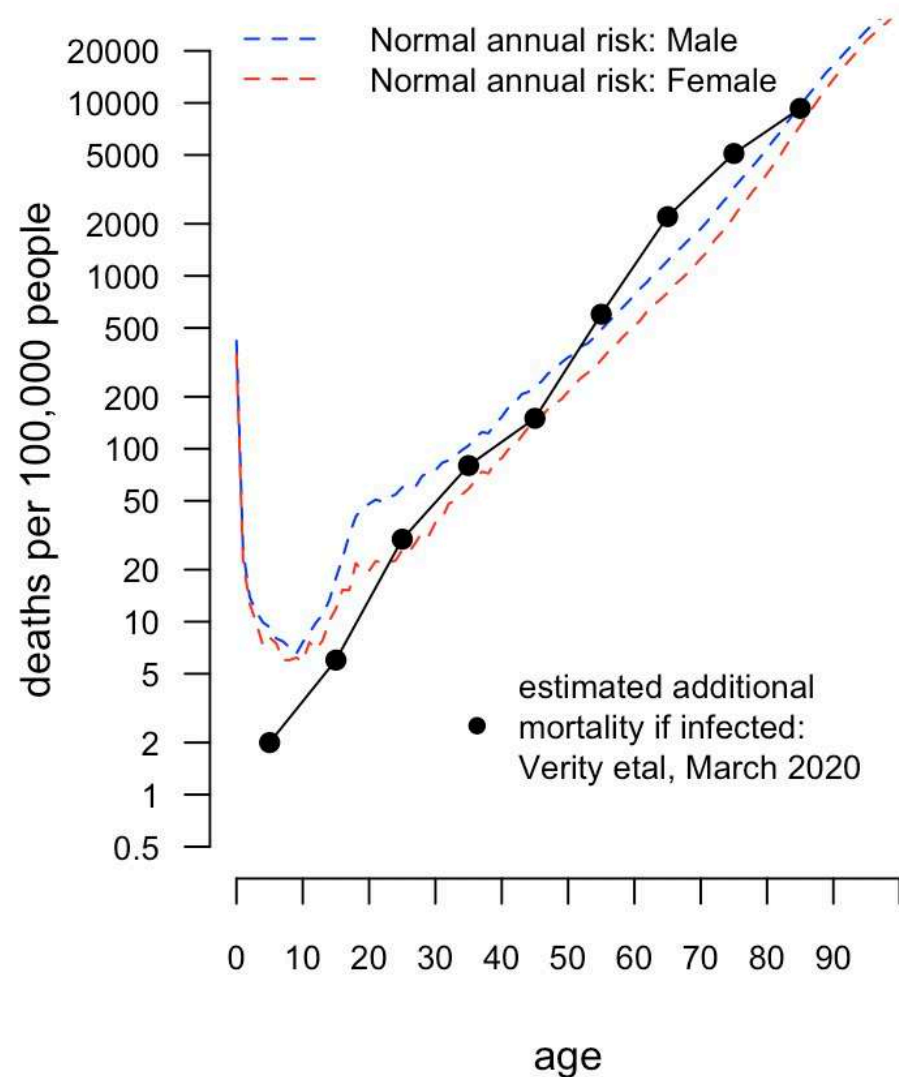In first wave, those over 50 on average experienced extra risk roughly equivalent to 5 extra weeks of normal life
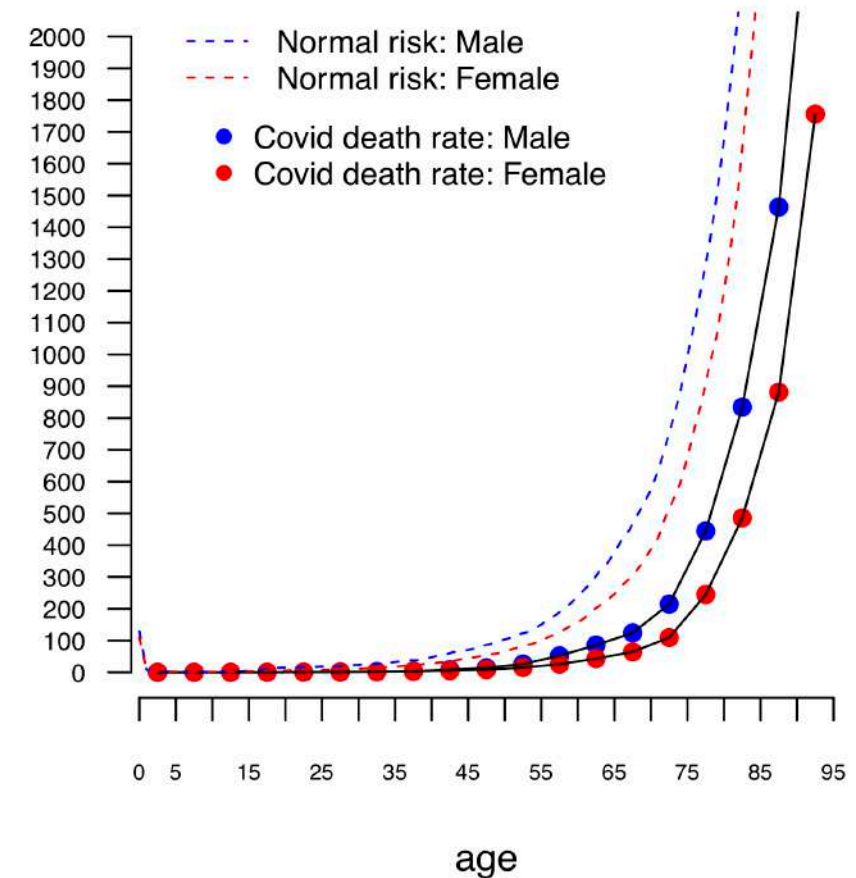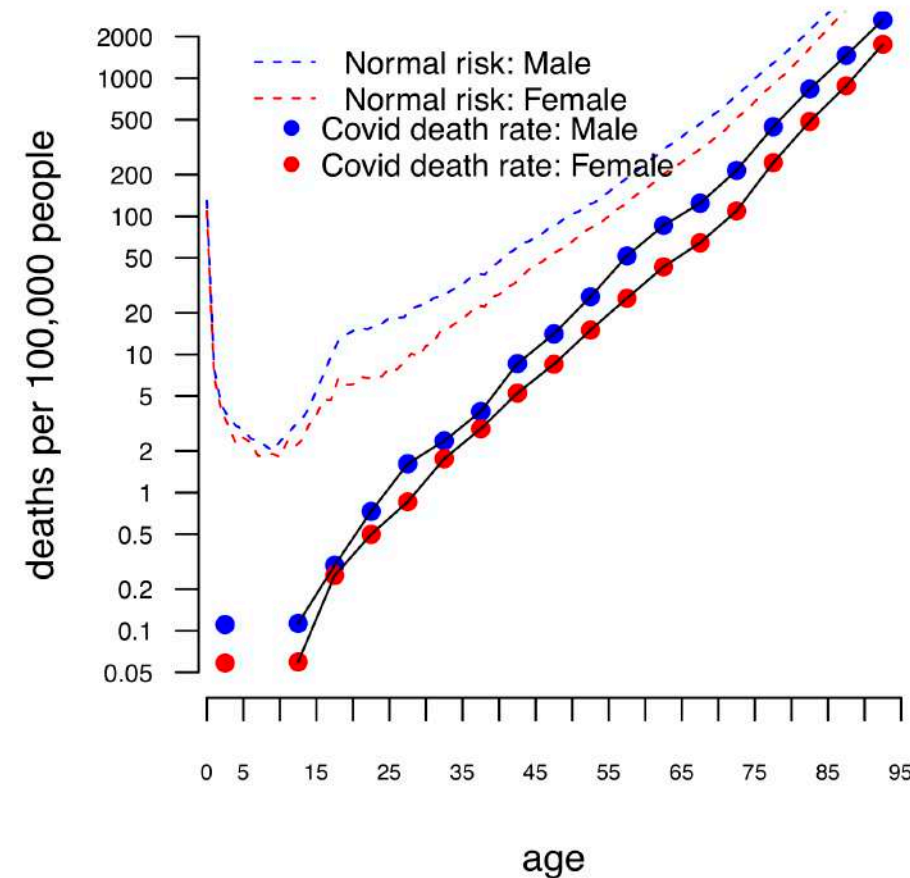
(Deaths registered E+W Weeks 11 to 26: 7 Mar– 26 Jun)

What about the chance of dying IF you catch it? (IFR)

- Back in March I said that the risk, if you caught Covid, was similar to the risk of dying this year from other causes
- This was misinterpreted!

Katie Hopkins ✔
@KTHopkins

Keeping perspective. Fact based tweet.

Corona deaths are NOT outpacing what is normal or usual.

Graph from Prof Sir David Spiegelhalter, at the University of Cambridge

Chances of dying from coronavirus v normal annual risk

Risk of dying each year by age (GB)

Normal male death rate

Normal female death rate

Coronavirus death rate

10%
1%
0.1%
0.01%

0 10 20 30 40 50 60 70 80 90 100
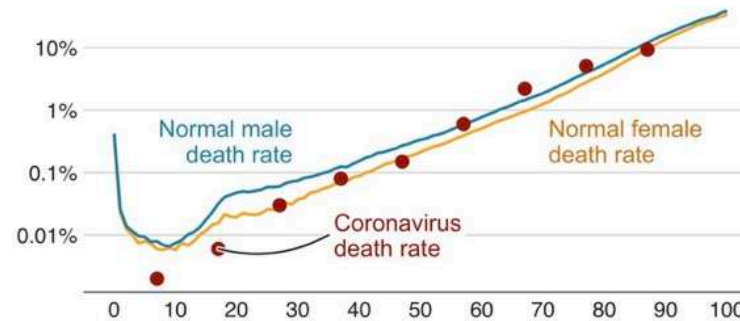
Log scale used to see differences in rates at younger ages

Source: Prof. Sir David Spiegelhalter, ONS, Imperial College London

BBC

8:10am · 5 Apr 2020 · Twitter for iPhone

100 Replies **269** Retweets **547** Likes

CALMING FEARS Your risk of dying is NO different this year – despite coronavirus pandemic, says expert

Lucy Jones, Digital Health & Fitness Reporter
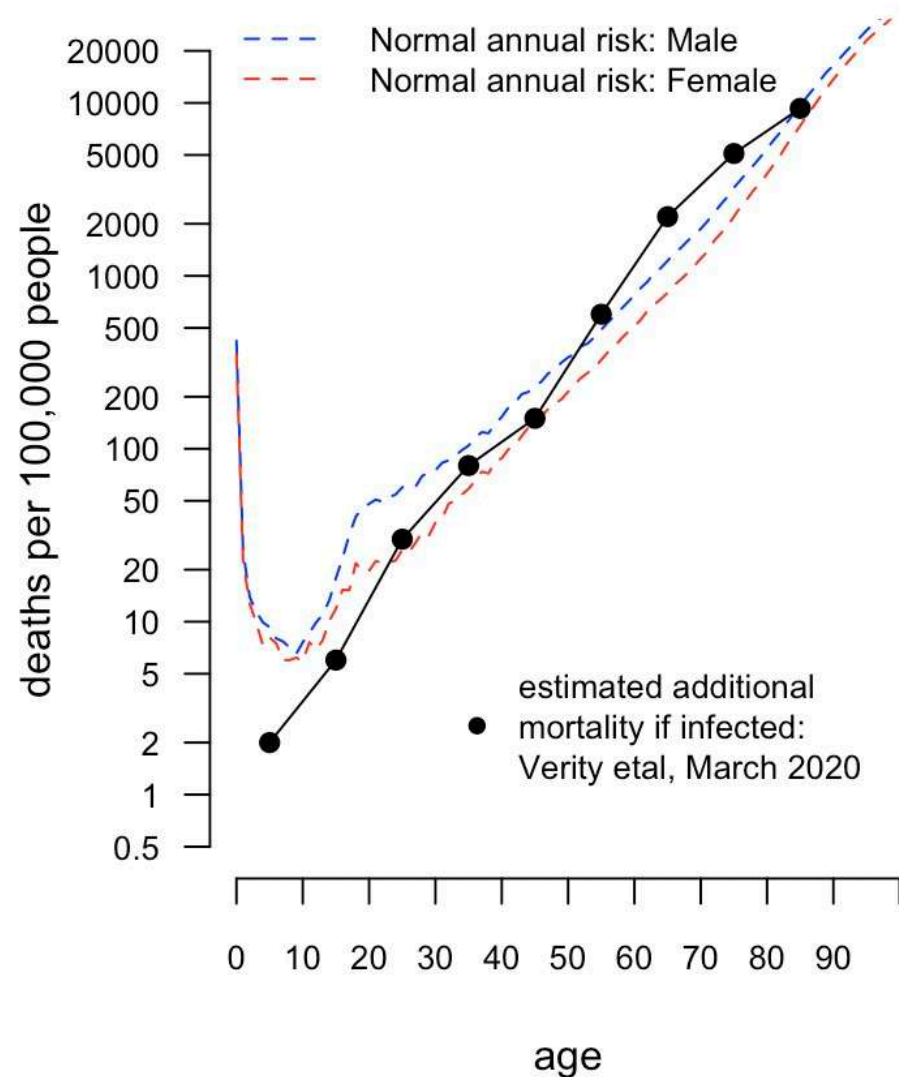1 May 2020, 11:44 | Updated: 1 May 2020, 15:15

CALMING FEARS Your risk of dying from coronavirus is roughly the same as your annual risk, says expert

Lucy Jones, Digital Health & Fitness Reporter

1 May 2020, 11:44 | Updated: 3 May 2020, 10:13

What about the chance of dying IF you catch it? (IFR)

Availability of data can have unintended consequences…

18th November 2020

Toby Young ✓
@toadmeister

New study suggests more than five million Britons have had the coronavirus. Given that ~50,000 people have died from it, that means it has an IFR of <0.1%. That's roughly the same as seasonal flu.
dailymail.co.uk/sciencetech/ar...
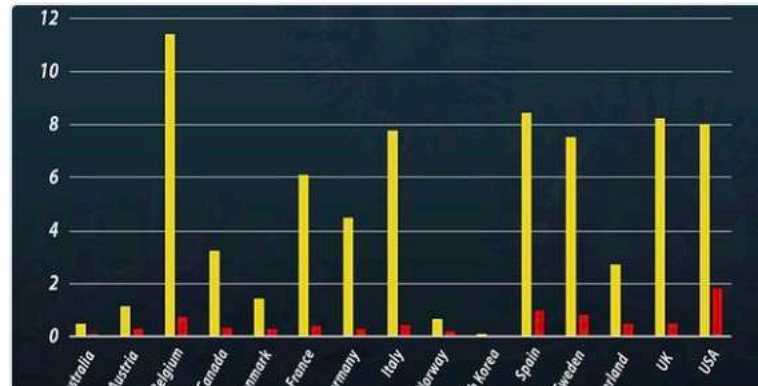
More than 5 MILLION Britons caught the coronavirus by September
dailymail.co.uk

5:43am · 18 Nov 2020 · Twitter for iPhone

2,266 Replies **692** Retweets **2,143** Likes

But 50,000 from 5,000,000 is 1%, not 0.1%....

What about **trust**?

Onora-O'Neill….

- Organisations should not be aiming to 'increase trust'

- Rather, aim to demonstrate *trustworthiness*

Code of Practice for Statistics

Ensuring official statistics serve the public

Edition 2.0
February 2018

Office for Statistics Regulation

UK Statistics Authority

The pillars and principles of the Code of Practice for Statistics

Trustworthiness
Confidence in the people and organisations that produce statistics and data

T1 Honesty and integrity

People in organisations that release statistics should be truthful, impartial and independent, and meet consistent standards of behaviour that reflect the wider public good.

T2 Independent decision making and leadership

Organisations should assign a Chief Statistician/Head of Profession for Statistics who upholds and advocates the standards of the Code, strives to improve statistics and data for the public good, and challenges their inappropriate use.

T3 Orderly release

Organisations should commit to releasing their statistics in an open and transparent manner that promotes confidence.

T4 Transparent processes and management

Organisations should have effective business processes and appropriate resources to support their statistical functions and be open about their plans, priorities and progress.

T5 Professional capability

People producing statistics should be appropriately skilled, trained and supported in their roles and professional development.

T6 Data governance

Organisations should look after people's information securely and manage data in ways that are consistent with relevant legislation and serve the public good.

Part of demonstrating trustworthiness..

- .. is admitting uncertainty about what we know
- Could be a range about a number
- Or an acknowledgement of limited quality of evidence

Too much precision?

- Different estimates of R from 8 groups
- Using essentially same data, different models
- Precise estimates (narrow intervals)
- But cannot be accurate, as don't all overlap
- Intervals are based on assuming model assumptions are true
- Too confident!
- "***All models are wrong, but some are useful***"

Figure 1: SPI-M-O groups' estimates of median R in the UK, including 90% confidence intervals. Bars represent different independent estimates. shaded area represents the combined numerical range and the black bar is the combined range after rounding to 1 decimal place.

The UK estimate of R is the average over very different epidemiological situations and should be regarded as a guide to the general trend rather th description of the epidemic state.
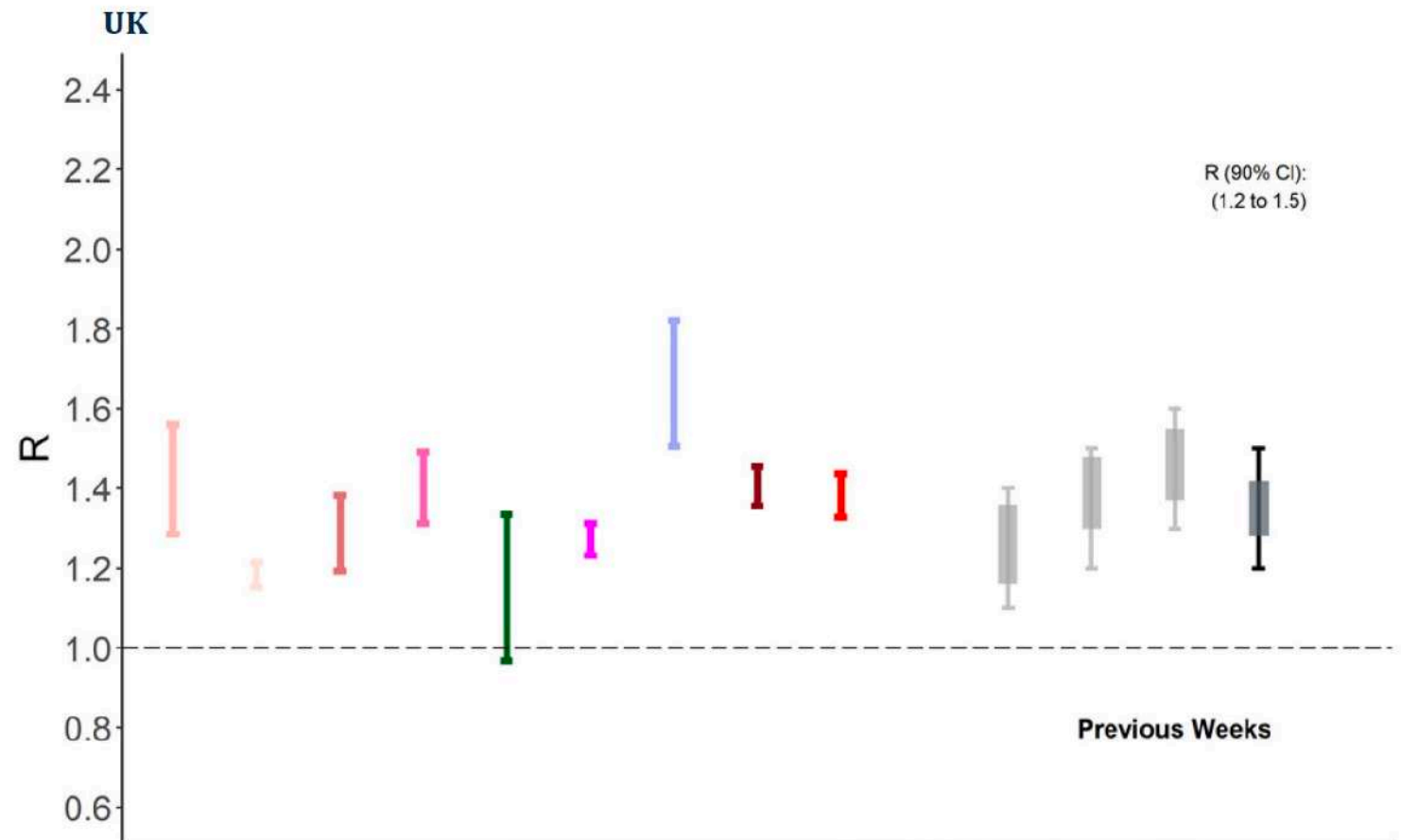
"Star ratings" for quality/strength of evidence for effectiveness of policies

UK *What Works Centres*

Education Endowment Foundation

Toolkit Strand	Cost	Evidence Strength	Months Impact
Arts participation — Low impact for low cost, based on moderate evidence.	£ £ £ £ £	🔒🔒🔒🔒🔒	+2
Aspiration interventions — Very low or no impact for moderate cost based on very limited evidence.	£ £ £ £ £	🔒🔒🔒🔒🔒	0
Behaviour interventions — Moderate impact for moderate cost, based on extensive evidence.	£ £ £ £ £	🔒🔒🔒🔒🔒	+4
Block scheduling — Very low or no impact for very low or no cost, based on limited evidence.	£ £ £ £ £	🔒🔒🔒🔒🔒	0
Collaborative learning — Moderate impact for very low cost, based on extensive evidence.	£ £ £ £ £	🔒🔒🔒🔒🔒	+5

Sage on Covid interventions (S0770)

Requirement for use of face covering outdoors
Very Low impact on community transmission.
High confidence.

Closure of places of worship / community centres
Potential reduction in Rt of up to 0.1, though precise estimation very difficult
Moderate confidence.

COMMENT · 18 NOVEMBER 2020

Five rules for evidence communication

Avoid unwarranted certainty, neat narratives and partisan presentation; strive to inform, not persuade.

Michael Blastland, Alexandra L. J. Freeman ✉, Sander van der Linden, Theresa M. Marteau & David Spiegelhalter ✉

Consider what information — in what format — would best support your audiences' decisions. Credit: Matthew Horwood/Getty

1. Inform, not persuade
2. Balance but not false balance
3. Disclose uncertainties
4. State evidence quality
5. Pre-bunk misinformation

Conclusions

- Data literacy is a vital skill in modern life
- The Covid crisis has made this even clearer!
- Statisticians have shown themselves to be helpful and without strong agendas

Be careful speaking to the media…

In December on the Today programme, discussing possible Christmas rules

Today
20/11/2020

- I said that raised voices could spread the virus
- So maybe singing may be banned?
- Also might be a good idea to ban family arguments
- This was a joke
- By 9.25 am….

Christmas warning: Families could be banned from ARGUING to prevent Covid spread

FAMILY rows could be banned at Christmas dinner if coronavirus lockdown rules are relaxed over the festive period, according to a leading British statistician.

By OLI SMITH