

Communicating statistics during a pandemic

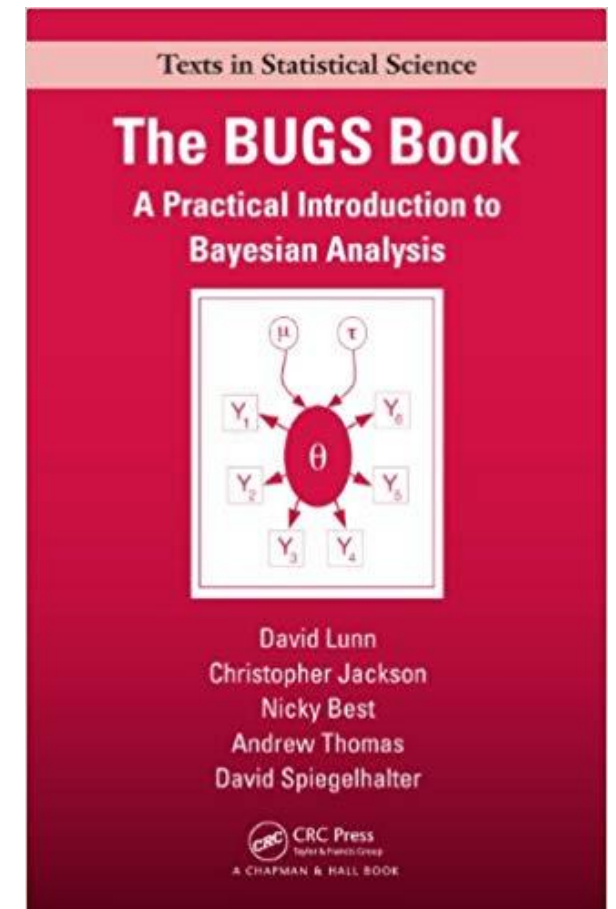
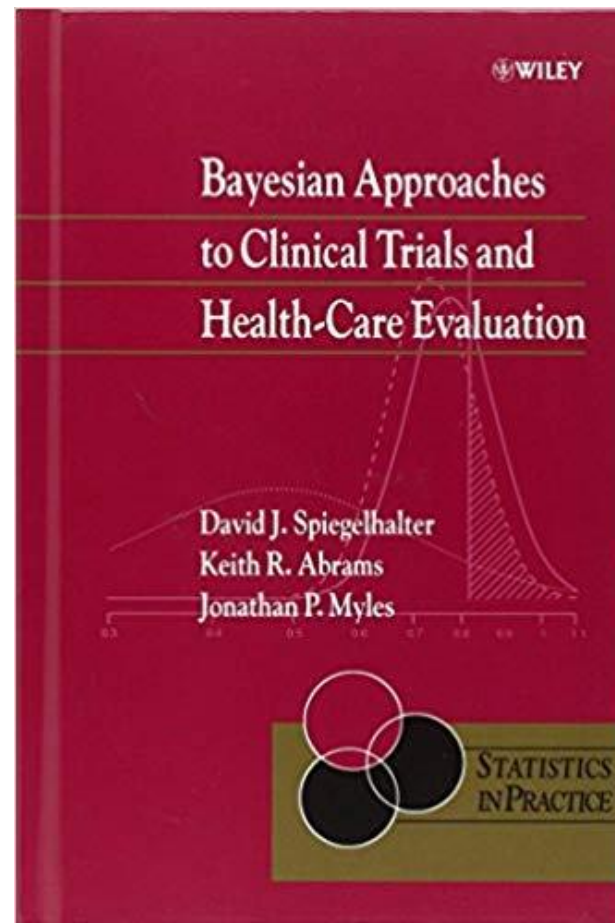
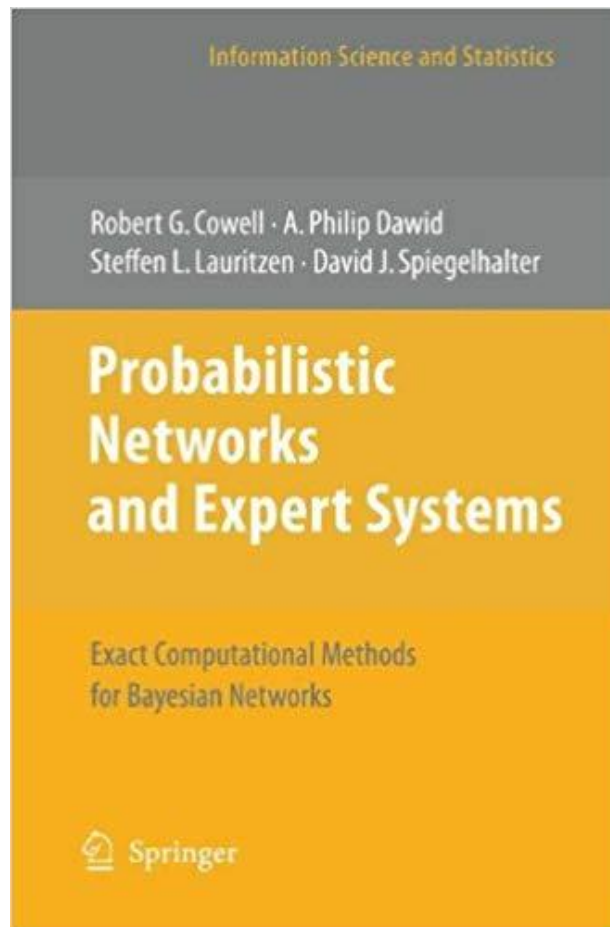
David Spiegelhalter

*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

How to Communicate Data in a Pandemic 2021



I used to do statistical methodology....
until I was philanthropically funded in 2007.....

FOUR Climate Change by Numbers

Home Clips



Last on
BBC FOUR Thu 5 Mar 2015
22:00
BBC FOUR

This programme is not currently available on BBC iPlayer.

At the heart of the climate change debate is a paradox - we have more information about our changing climate, yet surveys show the public are, if anything, getting less sure they understand what's going on.

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 t v



Next on
BBC FOUR **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



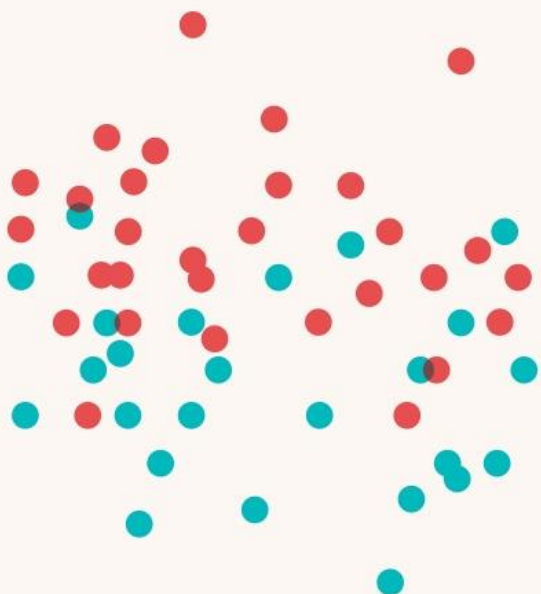


A PELICAN BOOK

The Art of Statistics

Learning from Data

David Spiegelhalter

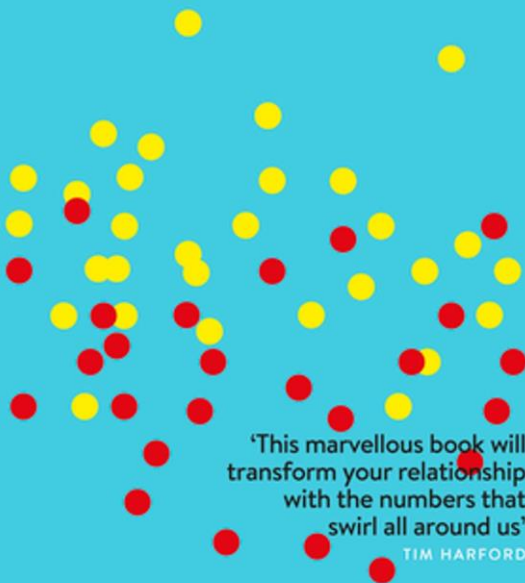


A PELICAN
BOOK

The Art of Statistics

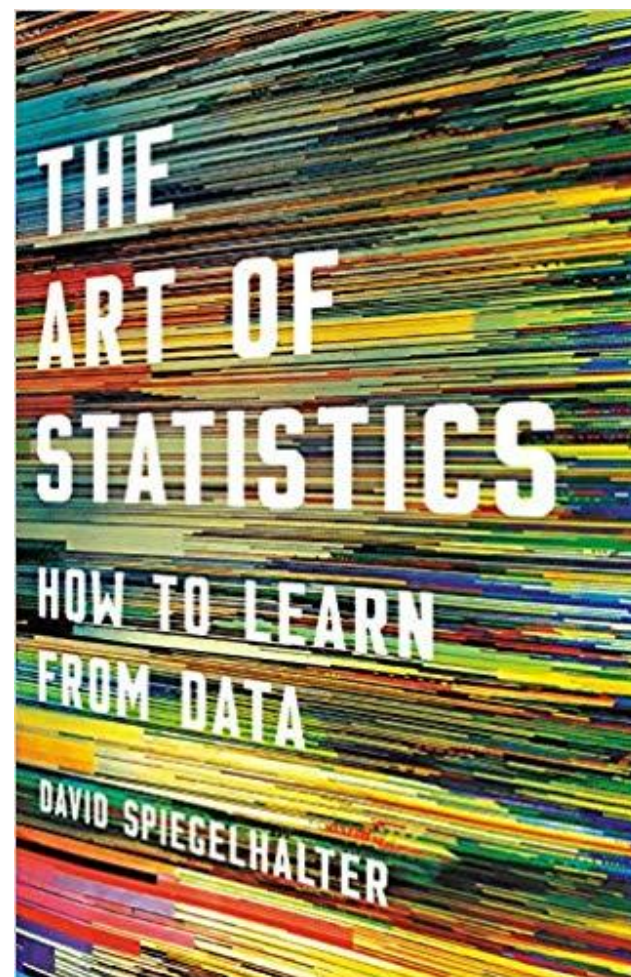
Learning from Data

David Spiegelhalter



'This marvellous book will
transform your relationship
with the numbers that
swirl all around us'

TIM HARFORD



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.

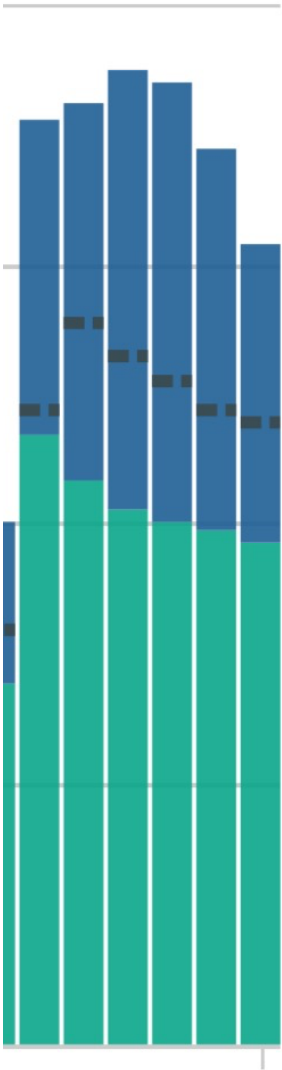
— Nate Silver, *The Signal and the Noise*¹

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'

Non-covid deaths are below average

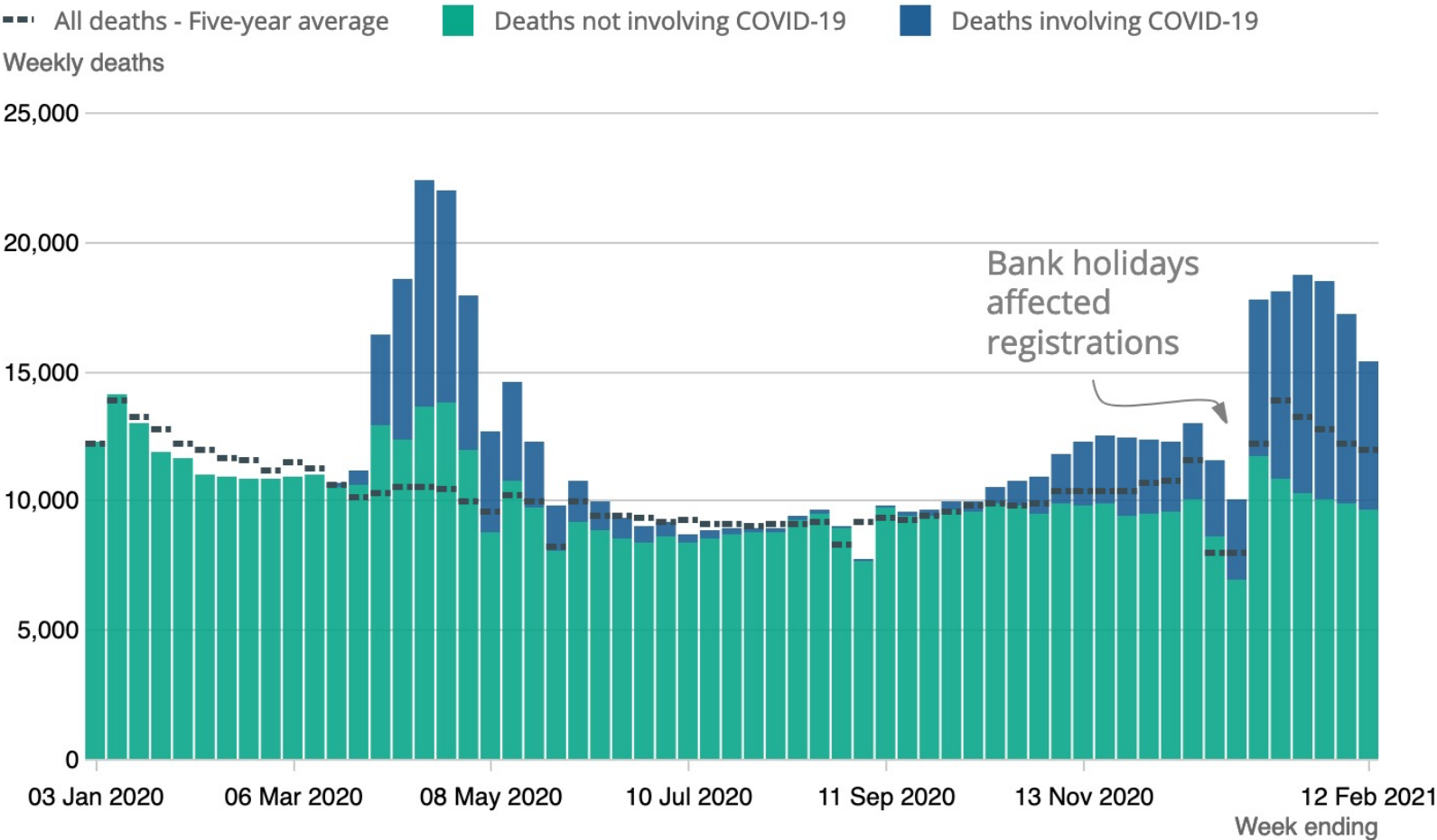
- Data from 23rd Feb
- Explanation on graph
- Title providing important message



12 Feb 202

Figure 3: Deaths not involving COVID-19 were below the five-year average in Week 6

Number of deaths registered by week, England and Wales, 28 December 2019 to 12 February 2021



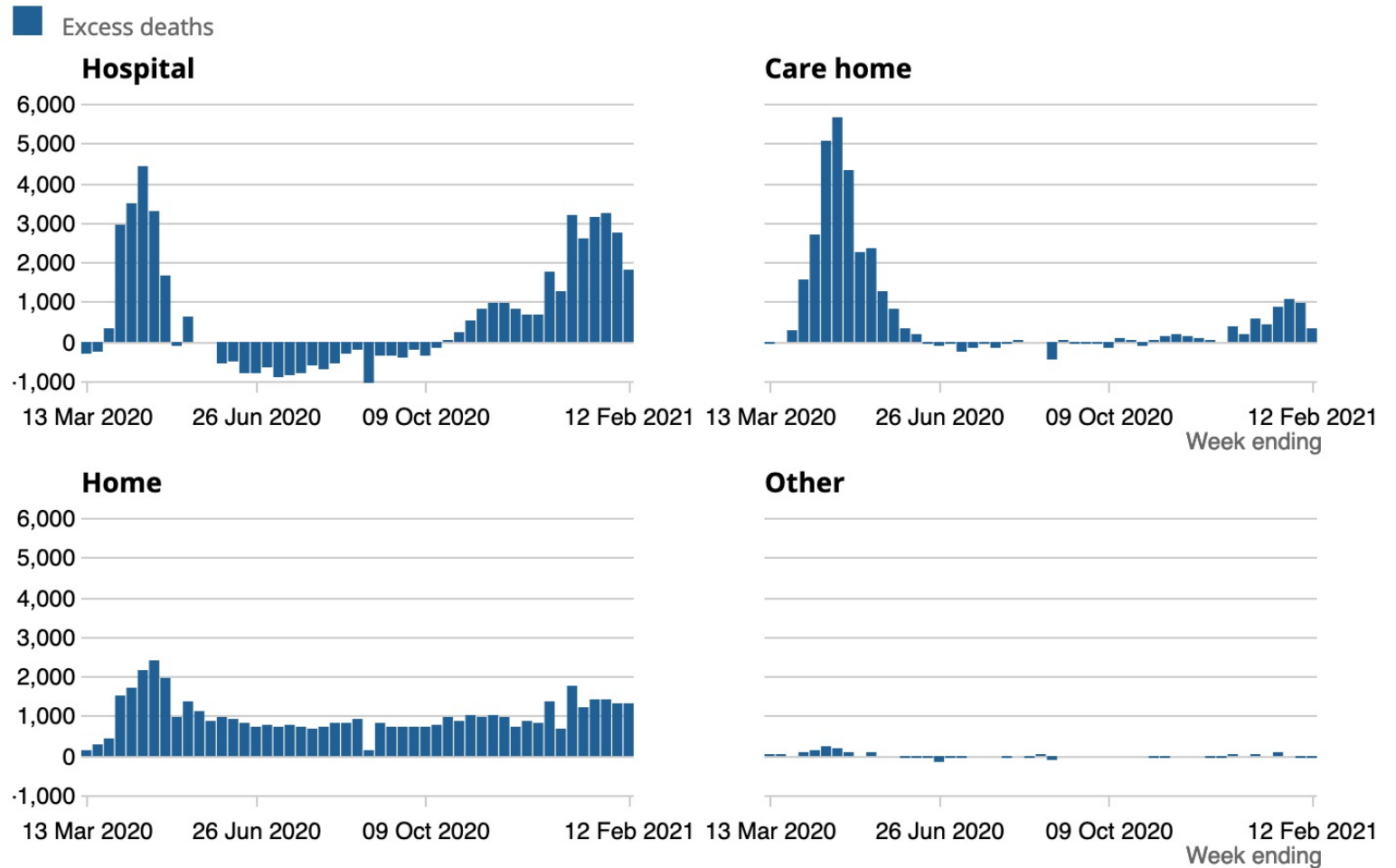
Source: Office for National Statistics – Deaths registered weekly in England and Wales

But let's drill down

- 48% extra deaths at home continue
- Two-thirds are not Covid
- What is the quality of these deaths?
- Note: use of 'small multiples'

Figure 6: Deaths were above the five-year average in private homes, hospitals and care homes in Week 6

Number of excess deaths by place of occurrence, England and Wales, registered between 7 March 2020 and 12 February 2021



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

UK Summary

See the [easy read summary](#) for the UK.

People vaccinated up to and including 22 February 2021

First dose: 17,916,181

Second dose: 642,788

[View vaccination data](#)

Estimated R number

0.6 to 0.9 with a daily infection growth rate range of -6% to -3% as of 19 February 2021.

Cases

People tested positive

Latest data provided on 23 February 2021

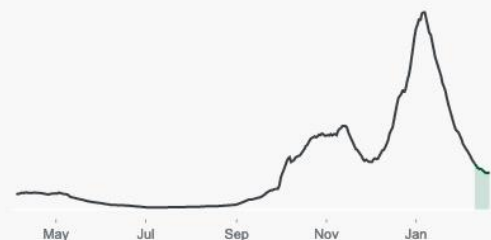
Daily

8,489

Last 7 days

76,172 ↓ -10,149 (-11.8%)

► Rate per 100k resident population: 119



[All cases data](#)

Deaths

Deaths within 28 days of positive test

Latest data provided on 23 February 2021

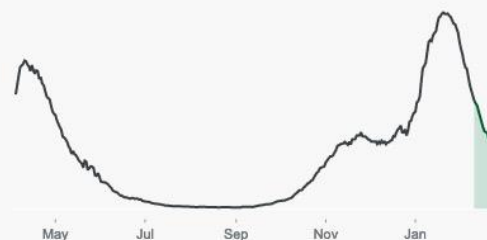
Daily

548

Last 7 days

3,111 ↓ -1,234 (-28.4%)

► Rate per 100k resident population: 4.5



[All deaths data](#)

Healthcare

Patients admitted

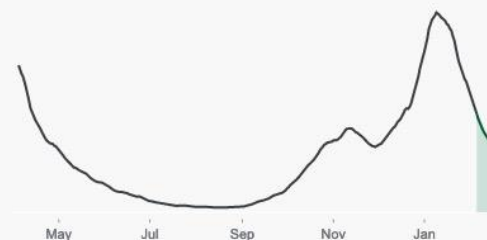
Latest data provided on 18 February 2021

Daily

1,323

Last 7 days

10,157 ↓ -2,658 (-20.7%)



[All healthcare data](#)

Testing

Virus tests conducted

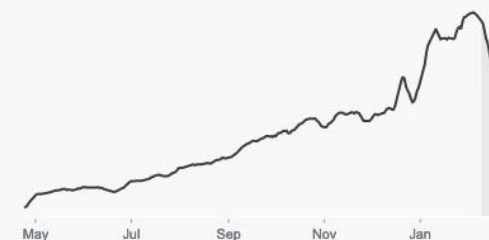
Latest data provided on 22 February 2021

Daily

670,560

Last 7 days

3,818,321 ↓ -143,252 (-3.6%)



[All testing data](#)

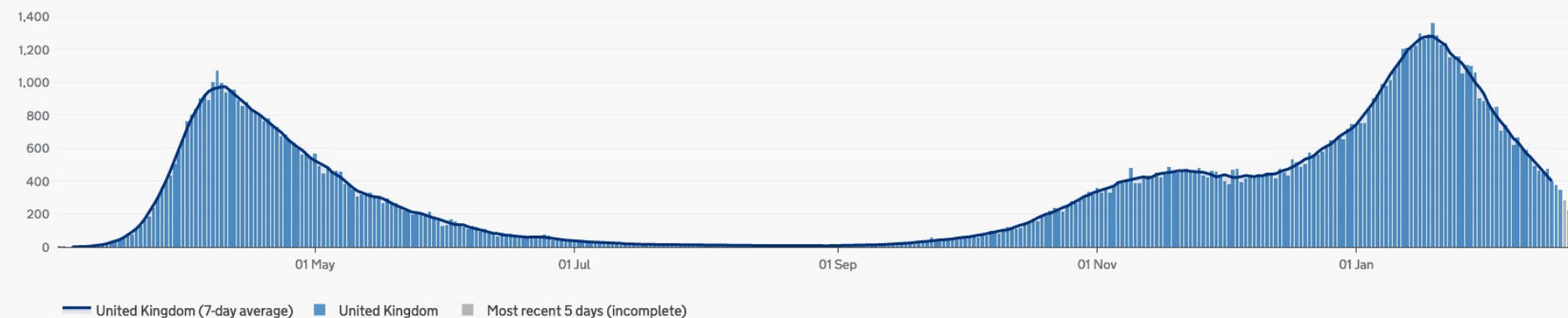
- Media obsession with daily 4pm announcement
- But this is ‘reported deaths’, which vary hugely by day of week (eg always low on Sundays and Mondays)
- Dashboard highlights ‘date of death’

Deaths within 28 days of positive test by date of death

☒ UK total ☐ By nation

Number of deaths of people who had had a positive test result for COVID-19 and died within 28 days of the first positive test. Data from the four nations are not directly comparable as methodologies and inclusion criteria vary. Data for the period ending 5 days before the date when the website was last updated with data for the selected area, highlighted in grey, is incomplete.

[Daily](#) [Cumulative](#) [Data](#) [About](#)



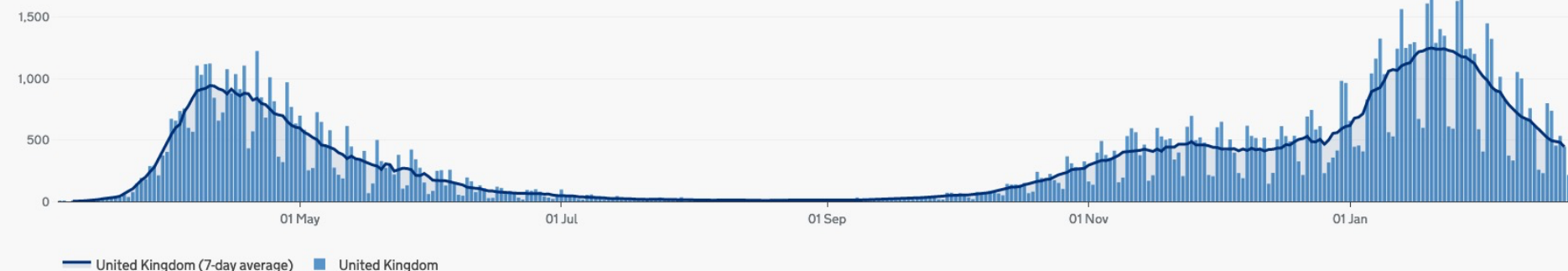
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Deaths within 28 days of positive test by date reported

☒ UK total ☐ By nation

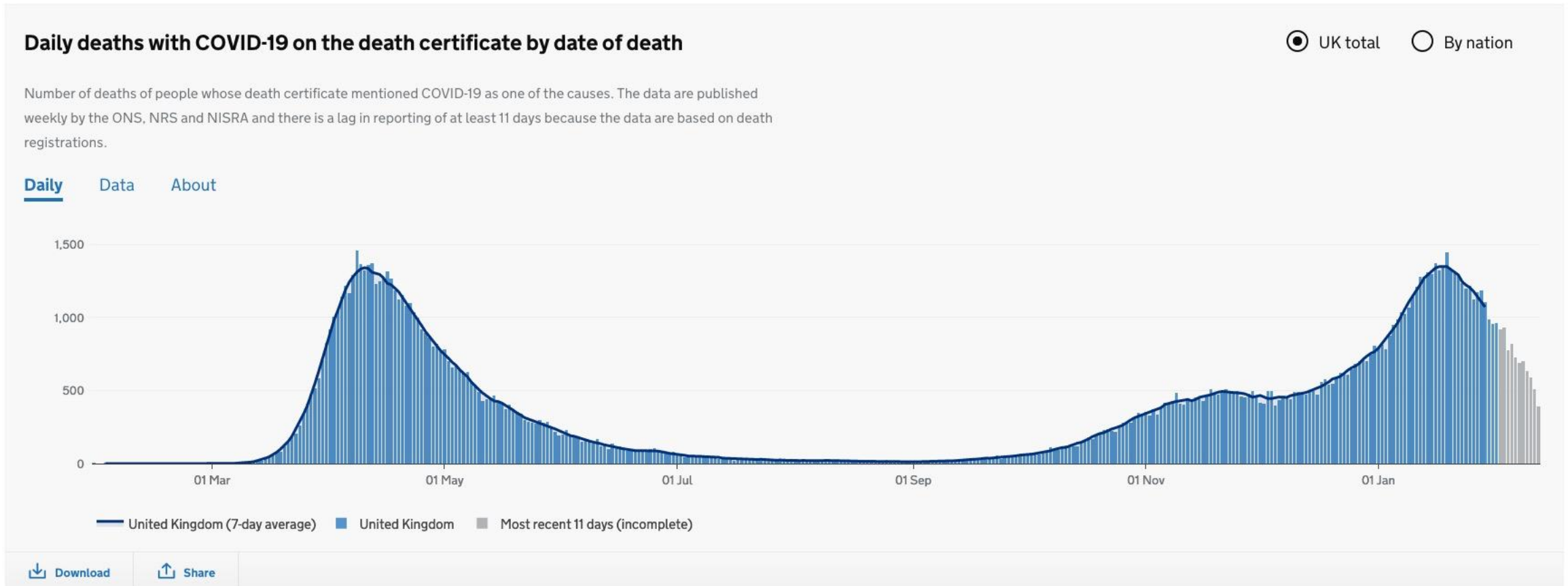
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[Daily](#) [Cumulative](#) [Data](#) [About](#)



What is a Covid death anyway?

- Best to look at death certificates
- But inevitable delay, so not so 'newsworthy'



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

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.



STAY ALERT CONTROL THE VIRUS SAVE LIVES

'Taking back control'



The 'Krebs list'

John Krebs was Chair of the UK Food Standards Agency through multiple crises

He advised to tell the media and public -

1. What you know - *knowledge*
2. What you don't know - *uncertainty*
3. What you are doing to find out - *plans*
4. What they can do in the meantime to be on the safe side - *self-efficacy*
5. That advice will change - *flexibility*



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

“Star ratings” for quality/strength of evidence for effectiveness of policies

UK *What Works Centres*



Toolkit Strand ^

Cost v

Evidence Strength v 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 R_t 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](#) ✉

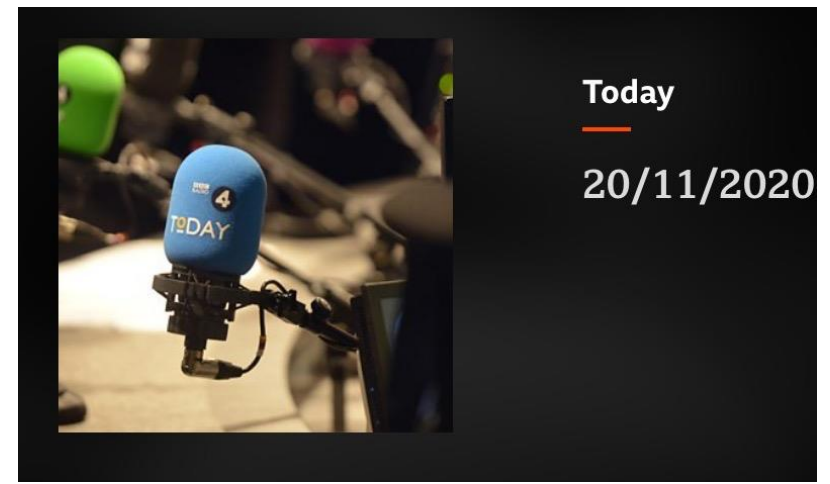


Consider what information — in what format — would best support your audiences' decisions. Credit: Matthew Horwood/Getty

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

Be careful speaking to the media...

In December on the Today programme, discussing possible Christmas rules



- 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....



EXPRESS

Home of
the Daily and
Sunday Express

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**

PUBLISHED: 09:25, Fri, Nov 20, 2020 | UPDATED: 16:06, Fri, Nov 20, 2020

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

Philosopher Onora-O'Neill....



Need *intelligent openness* about information

- ***Accessible***: people can find it
- ***Intelligible***: people can understand it
- ***Useable***: it answers their questions and concerns
- ***Assessable***: it can be checked and explained