

S Flaxman, S Mishra, A Gandy *et al.* **REPORT 13: Estimating the number of non-pharmaceutical interventions on COVID-19 in 11 European countries.** Imperial College London; 30-03-2020.  
doi: <https://doi.org/10.25561/77731>

S. Flaxman, S Mishra, A Gandy *et al.* **Estimating the effects of non-pharmaceutical interventions on COVID-19 in Europe.** Nature; 08-06-2020, published online. <https://doi.org/10.1038/s41586-020-2405-7>



### MRC Centre web report summary

Unique pageviews 363,070 -



### Institutional Repository Usage Statistics

Total downloads 19,607 -



### ResearchGate

Research interest score 63.3 303.9^  
Citations 115 530  
Reads 248 1,721



### Altmetric

Attention score 698 6,252\*  
Policy documents 3 5  
News stories 68 417  
Blog posts 12 67  
Tweets 623 6,457  
Twitter reach (followers) 1,283,215 19,589,239  
Facebook pages - 9  
Wikipedia pages 3 -  
Q&A threads - -  
Video uploads - 3



### Twitter

Impressions 141,308 -

[Tweet \(report\)](#)

^This item's Research Interest is higher than 99% of research items on ResearchGate.

\*This article is in the 99<sup>th</sup> percentile (ranked 50<sup>th</sup>) of the 291,753 tracked articles of a similar age in all journals and the 99<sup>th</sup> percentile (ranked 2<sup>nd</sup>) of the 772 tracked articles of a similar age in *Nature*



### Imperial news item

Unique pageviews 9,367 36,324



### Twitter

Impressions - 22,335

30-03-2020 [Coronavirus measures may have already averted up to 120,000 deaths across Europe](#)

(report)

08-06-2020 [Lockdown and school closures in Europe may have prevented 3.1m deaths](#)

(nature)

[Tweet \(news nature\)](#)

MAC Vollmer, S Mishra, HJT Unwin *et al.* **REPORT 20: Using mobility to estimate the transmission intensity of COVID-19 in Italy: A subnational analysis with future scenarios.** Imperial College London; 04-05-2020, doi: <https://doi.org/10.25561/78677>

MAC Vollmer, S Mishra, HJT Unwin *et al.* **REPORT 20: Using mobility to estimate the transmission intensity of COVID-19 in Italy: A subnational analysis with future scenarios.** medRxiv; 05-05-2020, doi: <https://doi.org/10.1101/2020.05.05.20089359>



### MRC Centre web report summary

Unique pageviews 89,687 -



### Institutional Repository Usage Statistics

Total downloads 414 -



### ResearchGate

Research interest score 4.0 5.5  
Citations 5 2  
Reads 60 94



### Altmetric

Attention score ? 41  
Policy documents - -  
News stories - 2  
Blog posts - 1  
Tweets - 24  
Twitter reach (followers) - 66,788  
Facebook pages - -  
Wikipedia pages - -  
Q&A threads - -  
Video uploads - -



### Twitter

Impressions 62,910 -

05-05-2020 [New report models Italy's potential exit strategy from COVID-19 lockdown](#)



### Imperial news item

Unique pageviews 31,224



### Twitter

Impressions -

TA Mellan, HH Hoeltgebaum, S Mishra *et al.* **REPORT 21: Estimating COVID-19 cases and reproduction number in Brazil.** Imperial College London; 08-05-2020, doi: <https://doi.org/10.25561/78872>

I Hawryluk, TA Mellan, H Hoeltgebaum *et al.* **Inference of COVID-19 epidemiological distributions from Brazilian hospital data.** Journal of the Royal Society Interface; 25-11-2020, doi: <https://doi.org/10.1098/rsif.2020.0596>



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Unique pageviews 153,049 -



### Institutional Repository Usage Statistics

Total downloads 786 -



### ResearchGate

Research interest score - 0.2  
Citations - 0  
Reads - 4



### Altmetric

Attention score 1 21  
Policy documents - -  
News stories - -  
Blog posts - 1  
Tweets 1 24  
Twitter reach (followers) 8 251,223  
Facebook pages - -  
Wikipedia pages - -  
Q&A threads - -  
Video uploads - -



### Twitter

[Tweet \(report\)](#)

Impressions 42,204 -

11-05-2020 [Coronavirus 'not yet under control' in Brazil, scientists warn](#)



### Imperial news item

(report)

Unique pageviews 25,135



### Twitter

Impressions -

HJT Unwin, S Mishra, VC Bradley *et al.* **REPORT 23: State-level tracking of COVID-19 in the United States.** Imperial College London; 21-05-2020, doi: <https://doi.org/10.25561/79231>

HJT Unwin, S Mishra, VC Bradley *et al.* **REPORT 23: State-level tracking of COVID-19 in the United States.** medRxiv; 14-07-2020, doi: <https://doi.org/10.1101/2020.07.13.20152355>

HJT Unwin, S Mishra, VC Bradley *et al.* **State-level tracking of COVID-19 in the United States.** Nature Comms; 03-12-2020, doi: <https://doi.org/10.1038/s41467-020-19652-6>



**MRC Centre web report summary**

Unique pageviews

72,440

-

-



**Institutional Repository Usage**

Total downloads

640

-

-



**ResearchGate**

Research interest score

5.0

10.4

4.8

Citations

5

14

5

Reads

136

106

48



**Altmetric**

Attention score

6

22

19

Policy documents

-

-

-

News stories

-

1

-

Blog posts

-

2

1

Tweets

17

7

17

Twitter reach

9,571

10,988

172,504

Facebook pages

-

-

-

Wikipedia pages

-

-

-

Q&A threads

-

-

-

Video uploads

-

-

-



**Twitter**

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[Tweet \(report update\)](#)

[Tweet \(nature\)](#)

Impressions

39,937

19,869

6,174

21-05-2020 [Potential US COVID-19 resurgence modelled as lockdowns ease](#)

22-06-2020 [United States COVID-19 model passes Codecheck](#)

17-07-2020 [Majority of US states seeing rapid increase in COVID-19 transmission](#)



**Imperial news item**

(report)

(code check)

(report update)

Unique pageviews

26,384

2,550

3,331



**Twitter**

[Tweet \(news report\)](#)

[Tweet \(news code check\)](#)

[Tweet \(news report update\)](#)

Impressions

16,511

8,778

10,976

S Mishra, J Scott, H Zhu *et al.* **A COVID-19 Model for Local Authorities of the United Kingdom.** medRxiv; 27-11-2020, doi: <https://doi.org/10.1101/2020.11.24.20236661>



### MRC Centre web report summary

Unique pageviews -



### Institutional Repository Usage Statistics

Total downloads -



### ResearchGate

Research interest score 0.5

Citations 0

Reads 8



### Altmetric

Attention score 4

Policy documents 4

News stories -

Blog posts -

Tweets 3

Twitter reach (followers) 11,134

Facebook pages -

Wikipedia pages -

Q&A threads -

Video uploads -



### Twitter

Impressions -



### Imperial news item

Unique pageviews -



### Twitter

Impressions -

E Volz, S Mishra, M Chand *et al.* **REPORT 42:**  
**Transmission of SARS-CoV-2 Lineage B.1.1.7 in England: insights from linking epidemiological and genetic data.** Imperial College London; 31-12-2020, doi: <https://doi.org/10.1101/2020.12.30.20249034>



### MRC Centre web report summary

Unique pageviews 84,441



### Institutional Repository Usage Statistics

Total downloads -



### ResearchGate

Research interest score 4.8  
Citations 5  
Reads 89



### Altmetric

Attention score 1,038  
Policy documents -  
News stories 73  
Blog posts 6  
Tweets 766  
Twitter reach (followers) 3,506,084  
Facebook pages 1  
Wikipedia pages 1  
Q&A threads -  
Video uploads -



### Twitter

Impressions 779,875

31-12-2020 [New COVID-19 variant growing rapidly in England](#)



### Imperial news item

Unique pageviews 42,638



### Twitter

Impressions -

# Estimating the effects of non-pharmaceutical interventions on COVID-19 in Europe

Overview of attention for article published in Nature, June 2020

## SUMMARY

<b>Title</b>	Estimating the effects of non-pharmaceutical interventions on COVID-19 in Europe
<b>Published in</b>	Nature, June 2020
<b>DOI</b>	10.1038/s41586-020-2405-7
<b>Pubmed ID</b>	32512579
<b>Authors</b>	Seth Flaxman, Swapnil Mishra, Axel Gandy, H. Juliette T. Unwin, Thomas A. Mellan, Helen Coupland... <a href="#">[show]</a>

## Twitter Demographics

The data shown below were collected from the profiles of **5,379** tweeters who shared this research output. [Click here to find out more about how the information was compiled.](#)

## ? About this Attention Score

In the top 5% of all research outputs scored by Altmetric

[MORE...](#)

## Mentioned by

**310** news outlets

**40** blogs

**4** policy sources

**5379** tweeters

**8** Facebook pages

**8** Redditors

**1** research highlight platform

3 video uploaders

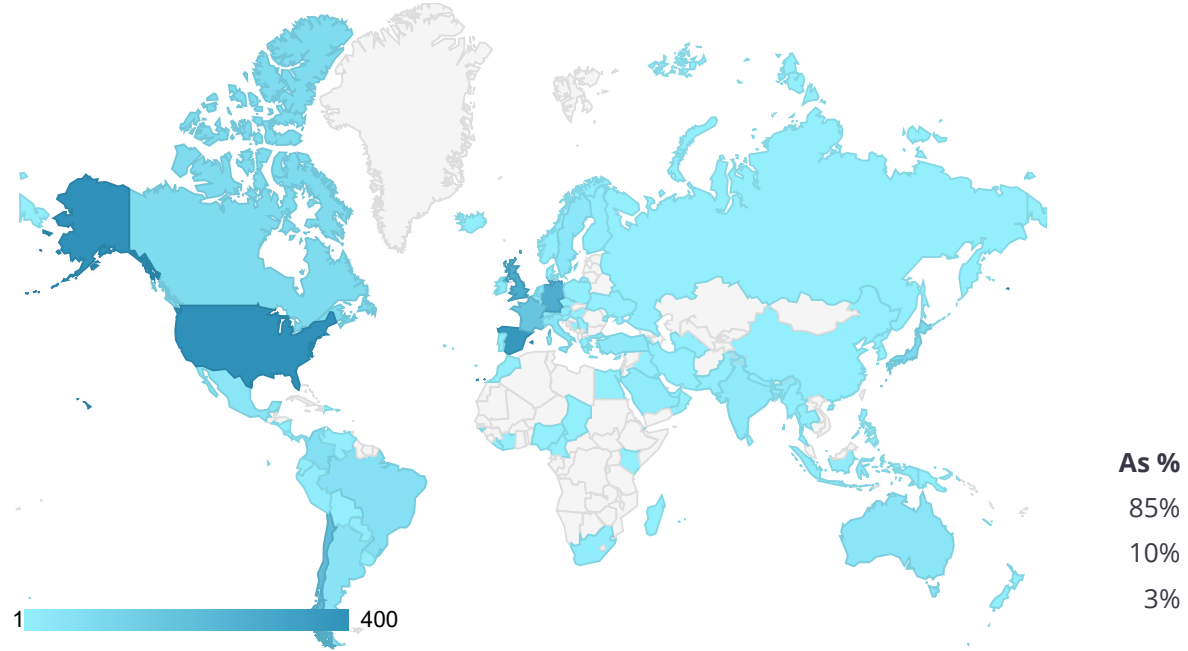
Citations

532 Dimensions

Readers on

804 Mendeley

What is this page?



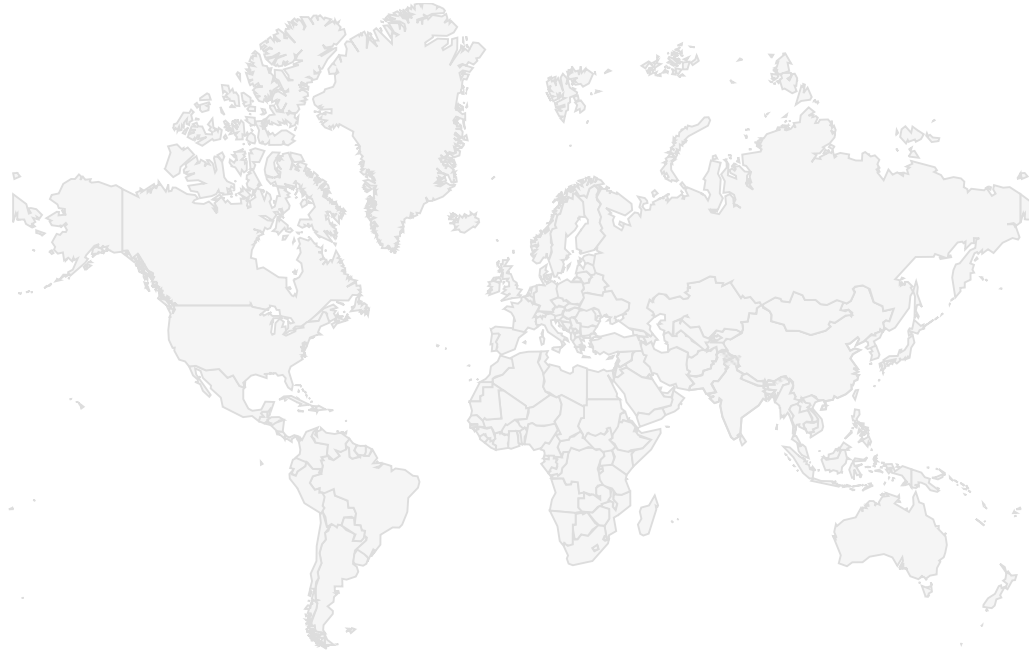
United Kingdom	284	5%	Science communicators (journalists, bloggers, editors)	96	2%
Germany	278	5%	Unknown	5	<1%
Chile	216	4%			
France	179	3%			
Japan	91	2%			
Canada	82	2%			
Colombia	67	1%			
Other	760	14%			
Unknown	2654	49%			

## Mendeley readers



The data shown below were compiled from readership statistics for **804** Mendeley readers of this research output. [Click here to see the associated Mendeley record.](#)





### Geographical breakdown

Country	Count	As %
Unknown	804	100%

### Demographic breakdown

Readers by professional status	Count	As %
Researcher	139	17%
Student > Ph. D. Student	109	14%
Student > Master	94	12%
Student > Bachelor	66	8%
Other	66	8%
Other	179	22%
Unknown	151	19%

Readers by discipline	Count	As %
Medicine and Dentistry	149	19%
Social Sciences	48	6%
Agricultural and Biological Sciences	46	6%
Mathematics	38	5%
Biochemistry, Genetics and Molecular Biology	36	4%
Other	284	35%
Unknown	203	25%

## Attention Score in Context



This research output has an **Altmetric Attention Score** of **6318**. This is our high-level measure of the quality and quantity of online attention that it has received. This Attention Score, as well as the ranking and number of research outputs shown below, was calculated when the research output was last mentioned on **06 February 2021**.

ALL RESEARCH  
OUTPUTS

#217

of 16,805,370  
outputs

OUTPUTS FROM  
NATURE

#19

of 77,718 outputs

OUTPUTS OF  
SIMILAR AGE

#49

of 291,986 outputs

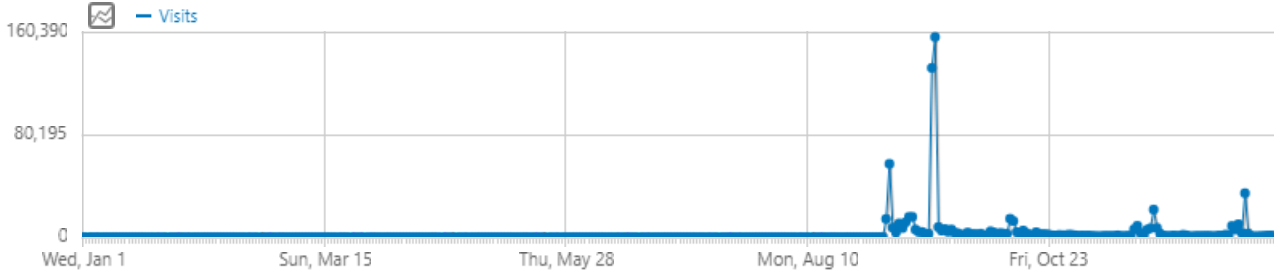
OUTPUTS OF  
SIMILAR AGE FROM  
NATURE

#2

of 772 outputs

Altmetric has tracked 16,805,370 research outputs across all sources so far. Compared to these this one has done particularly well and is in the 99th percentile: it's **in the top 5% of all research outputs ever tracked** by Altmetric.

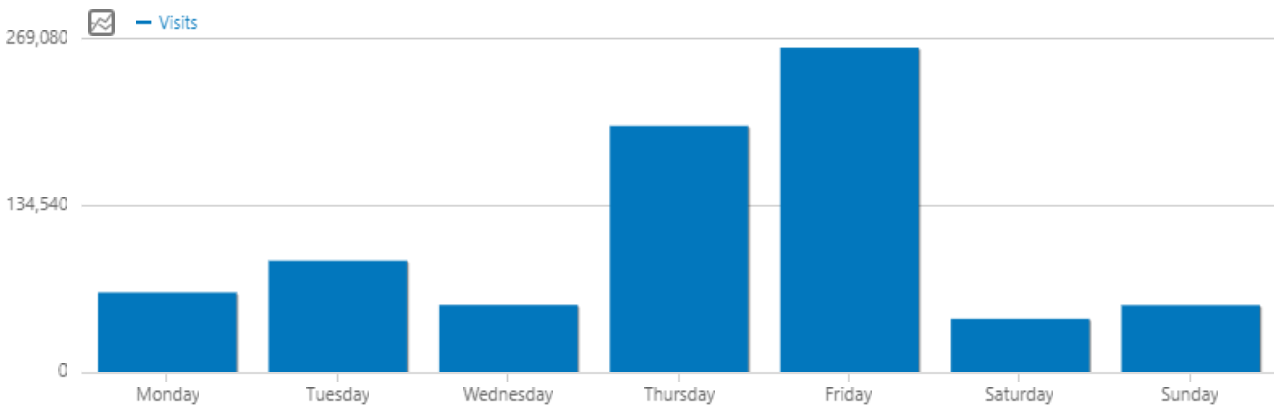
### Visits Over Time



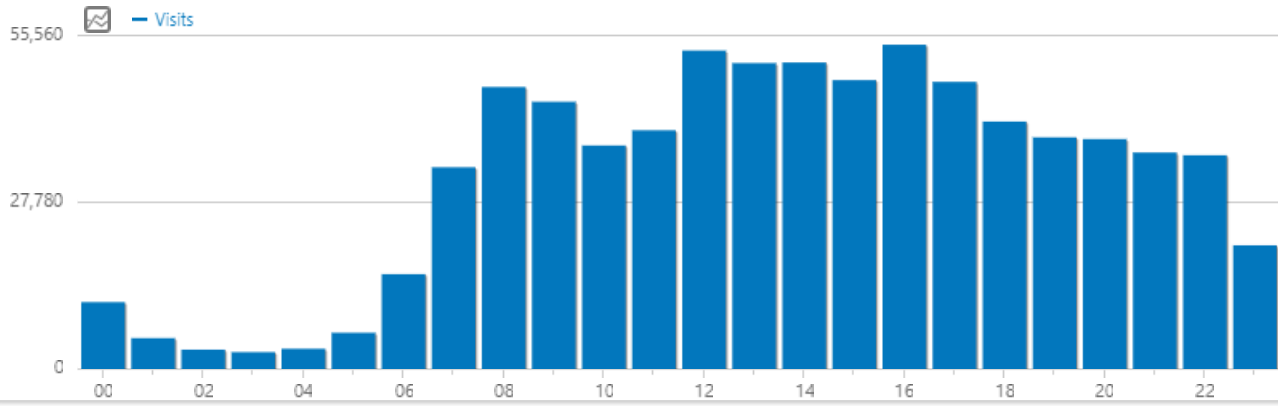
### Visits Overview

- 763,993** visits
- 1 min 2s** average visit duration
- 62%** visits have bounced (left the website after one page)
- 2.4** actions (page views, downloads, outlinks and internal site searches) per visit
- 1.19s** average generation time
- 1,104,653** pageviews, **935,563** unique pageviews
- 411,947** total searches on your website, **500** unique keywords
- 857** downloads, **746** unique downloads
- 3,943** outlinks, **3,681** unique outlinks
- 561** max actions in one visit

### Visits by Day of Week



## Visits per local time

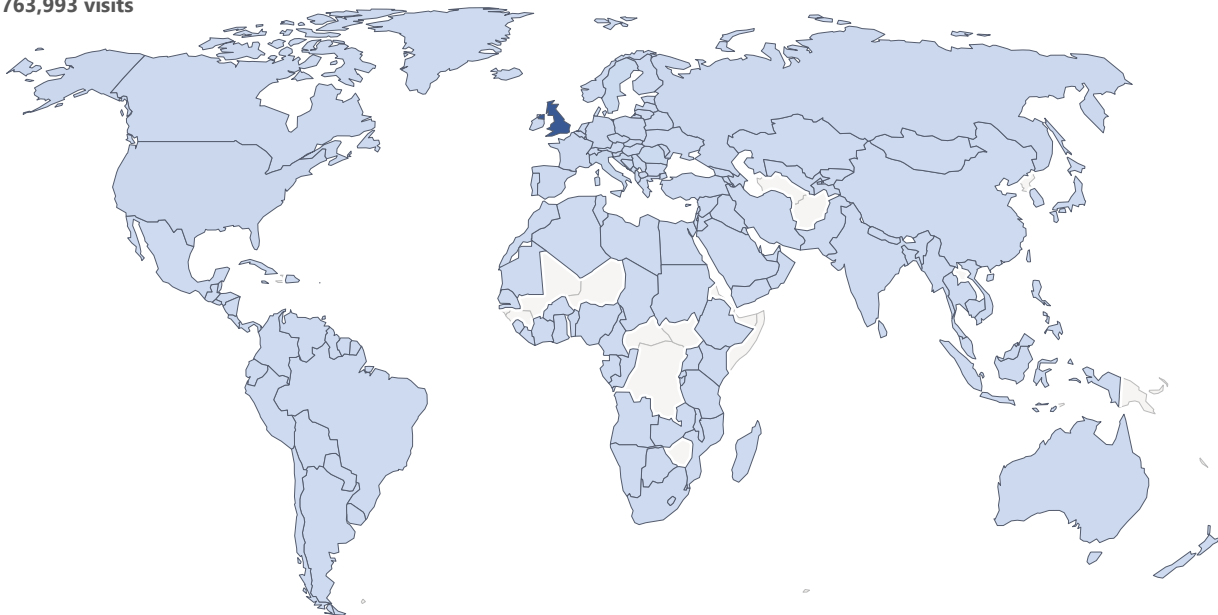


## Channel Types

CHANNEL TYPE	VISITS
⊕ Websites	70.1% 535,793
Direct Entry	25.6% 195,829
⊕ Social Networks	3.8% 29,342
⊕ Search Engines	0.4% 2,987
⊕ Campaigns	0% 42
<b>Totals</b>	<b>763,993</b>

## Visitor Map

763,993 visits



🌐 Countries

World-Wide

Visits



Graphic detail

Daily chart

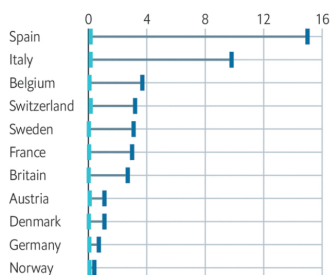
# Covid-19 may be far more prevalent than previously thought

Government lockdowns in 11 countries are estimated to have already saved 60,000 lives

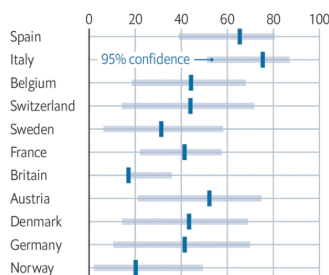
## Contagious uncertainty

Official cases Average estimate

Population infected with covid-19  
As of March 28th 2020, %



Deaths averted because of societal interventions  
As of March 31st 2020, % of potential\* covid-19 deaths



\*Estimated deaths assuming no interventions  
Sources: "Estimating the number of infections and the impact of non-pharmaceutical interventions on COVID-19 in 11 European countries", by Seth Flaxman, Swapnil Mishra, Axel Gandy et al, Imperial College London, 2020; Johns Hopkins University CSSE; World Bank; The Economist

Apr 1st 2020



ONE OF THE trickier tasks for epidemiologists studying the coronavirus pandemic is determining just how prevalent it is. According to Johns Hopkins University, there are now 886,000 confirmed cases of covid-19 around the world, or roughly one case for every 9,000 people. But these numbers reflect not only how many people are known to have contracted the illness, but how many are being tested for it. This varies widely from country to country. Germany is testing 500,000 of its citizens each week. Britain, which is limiting tests to those with severe symptoms, is managing just one-tenth as many.

A new paper by a group of 62 scientists attempts to shed light on the matter using some clever statistics. The study, which was overseen by Neil Ferguson and Samir Bhatt of Imperial College London, looked at data for 11 countries in western Europe. To arrive at accurate estimates for the likely prevalence of the virus in each country, the researchers' epidemiological model calculates backwards using data on observed covid-19 deaths. By observing the timing of deaths alongside known information about transmission rates and time lags of infections, the researchers arrive at better estimates of covid-19 prevalence.

The results suggest the virus is far more prevalent than official case counts would suggest. Across the 11 European countries studied, official government statistics indicate that there are 319,500 confirmed cases, affecting less than 0.1% of the population. The Imperial researchers peg the more likely figure at 18.5m cases (with a confidence interval of between 7m and 43m), which suggests that, as of March 28th, 5% of the population in these countries have contracted the virus.

This high infection rate is partly because of the highly contagious nature of the virus. The epidemiologists estimated the "basic reproduction number" of covid-19 to be 3.9, meaning that in a population where no one is immune, and no precautions are taken to control the outbreak, each infected individual passes on the virus to nearly four other people. By implementing "non-pharmaceutical interventions"—such as school closures, the banning of public events and nationwide lockdowns—governments have successfully reduced this reproduction number. Once it drops below one, the number of new infections starts to fall.

The researchers estimate that timely interventions over the past month have reduced the reproduction number of the virus across the 11 countries studied by two-thirds to 1.4, thus saving between 21,000 and 120,000 lives. In Italy, alone, interventions have prevented some 38,000 deaths, according to the researchers. The past few weeks have been tough for those hit by the crisis.

They can take some solace in knowing that it could have been much worse.

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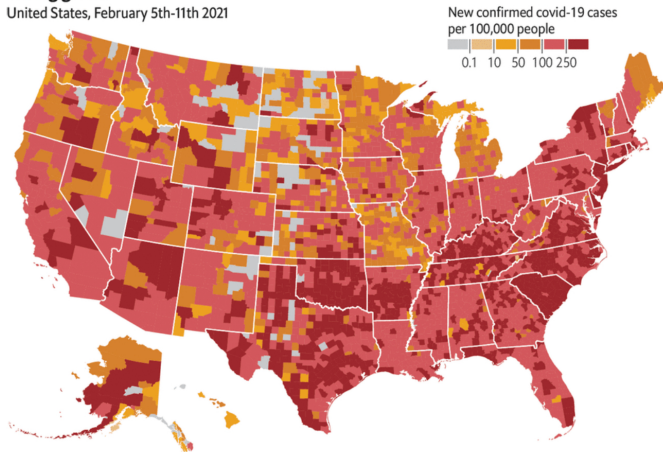
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##### Failing grade

United States, February 5th-11th 2021



Source: Centres for Disease Control and Prevention  
The Economist

Daily chart

### Will reopening schools in America cause covid-19 cases to spike?

Daily chart

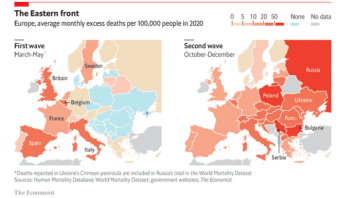
### Bitcoin hits \$50,000 for first time



Source: Coin Desk  
The Economist

Daily chart

### Covid-19's second wave has devastated eastern European countries



\*Deaths reported in Lithuania, Cyprus, and Greece are included in Russia total in the World Mortality Dataset  
Source: World Mortality Database, World Mortality Database, government websites, The Economist  
The Economist

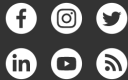
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## Coronavirus lockdown measures may have saved 59,000 lives in Europe already, says new study

In the UK, 370 lives have been saved to date but 'herd immunity' is low suggesting lockdown must be maintained



Lockdown is working, but the continent remains a long way from developing 'herd immunity' yet CREDIT: GETTY

By Sarah Newey and Paul Nuki, Global Health Security Editor, London

30 MARCH 2020 - 9:00 PM



At least 59,000 lives have already been saved in 11 European countries due to the social distancing measures introduced to stem the spread of Covid-19, new modelling suggests.

According to the analysis, 370 deaths have already been averted in the UK - where a nationwide lockdown came into effect just one week ago - while Italian interventions have saved 38,000 lives to date.

But the study also shows that the continent remains a long way from developing "herd immunity", whereby the vast majority of people have caught, recovered and become immune to the coronavirus.

The modelling, [published yesterday by Imperial College, London](#), analyses the impact of lockdown in 11 European countries, including the UK.

It suggests that between as many as 43 million people may have been infected with the virus by March 28. This means the highest estimate for the "attack rate" - the proportion of a population infected in these countries - is 11.4 per cent.

"Our estimates imply that the populations in Europe are not close to herd immunity," the authors said. They added that because the interventions will continue to trigger a drop in transmission rates, "the rate of acquisition of herd immunity will slow down rapidly".

"This implies that the virus will be able to spread rapidly should interventions be lifted," the researchers warned.





In the UK, the study estimates that just 2.7 per cent of the population (1.6 million people) have been infected, which contrasts to epidemiological modelling from Oxford University that suggests as much as half the UK population may have already been infected.

In the Imperial study, Norway and Germany have the lowest infection rates at 0.41 at 0.7 per cent respectively, while Spain has the highest “attack rate” in Europe, at 15 per cent.

While Italy has the largest outbreak in Europe - second only to the United States worldwide - the country also has a bigger population than Spain, putting the attack rate at 9.8 per cent.

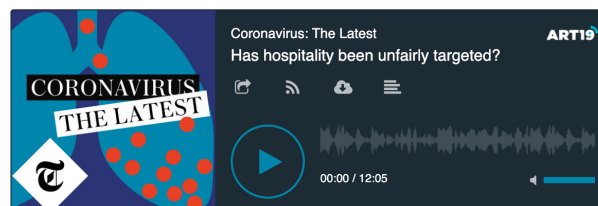
The modelling was published by the MRC Centre for Global Infectious Disease Analysis at Imperial.

The team also produced the report that suggested 260,000 people would die if the UK produced a “mitigation” strategy alone, triggering the Government’s decision to impose a nationwide “suppression” or lockdown seven days ago.

“This analysis shows that the interventions European countries have put in place have significantly slowed the spread of Covid-19,” said Professor Neil Ferguson, director of the MRC Centre.

“However, it is not yet clear whether or how quickly these measures will cause the numbers of new cases to decline. Data collected in the next two weeks will be crucial to refining our assessment of this key point,” he added.

The report analysed real-time data from Austria, Belgium, Denmark, France, Germany, Italy, Norway, Spain, Sweden, Switzerland and the UK, and determines that the interventions imposed have reduced the reproductive rate of the coronavirus by 64 per cent on average.



But the number of lives saved by interventions is dependent on how long they have been in place and the size of the epidemic. In Italy, some 38,000 deaths have been averted, while Spain has prevented 16,000 and France 2,600.

In countries where the coronavirus outbreak remains much smaller these figures are far lower. In Norway the team estimate that under 10 lives have been saved, while Denmark has prevented 69 fatalities. So far these countries have reported 32 and 77 deaths respectively.

“Europeans, like many people elsewhere, have changed their lives profoundly in recent weeks,” said Christl Donnelly, a professor of statistical epidemiology at Imperial and one of the study’s authors.

“This report makes clear early evidence of the benefits of these social distancing measures. By keeping our distance from each other, we limit the opportunities for the virus to spread and reduce the risks of illness and even death among those around us,” he said.

But the report added that it is too soon to determine the impacts of interventions on mortality rates, as coronavirus fatalities tend to occur weeks after an individual contracted the virus.

“Even as the death toll continues to mount, we see enough signal in the data to conclude that sustained, drastic actions taken by European governments have already saved lives by driving down the number of new infections each day,” said Dr Seth Flaxman, expert in statistical machine learning at Imperial.

“But because these interventions are very recent in most countries, and there is a lag between infection and death, it will take longer—from days to weeks—for these effects to be reflected in the number of daily deaths,” he added.

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By India McTaggart, Gareth Davies  
18 Feb 2021, 04:34PM



From transmission to efficacy, the Pfizer, Oxford and other Covid vaccines compared

By Anne Gulland  
18 Feb 2021, 04:14PM



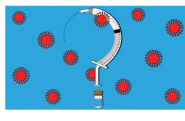
Covid has cost more than 800,000 years of life in the UK, global report finds

By Sarah Newey  
18 Feb 2021, 04:12PM



Covid-19 vaccine: Latest updates on Novavax, Oxford and Pfizer breakthroughs - and who will get it first?

By Annelies Gartner, Lizzie Roberts, Christopher Hope, Hannah Boland  
18 Feb 2021, 03:52PM



New Covid-19 variants: what we know about the Kent, South Africa and B1525 strains

By Paul Nuki, Anne Gulland, Jennifer Rigby, Sarah Newey  
18 Feb 2021, 03:52PM



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By Ashley Jackson  
18 Feb 2021, 03:02PM

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When will Boris Johnson announce the roadman to end



INSIGHT

# 22 days of dither and delay on coronavirus that cost thousands of British lives

Scientists, politicians, academics and advisers reveal the inside story of ministers' desperate battle with the virus before the country finally locked down



Jonathan Calvert, George Arbuthnott, Jonathan Leake, Dipesh Gadhur | Saturday May 23 2020, 6.00pm, The Sunday Times

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There is a simple mathematical truth that would have caused alarm about the coronavirus pandemic if it had been more fully appreciated when it was first flagged up in reports from China in late January. The number of people infected appeared to double in as little as three days. The maths was remorseless. It meant one case would become eight in nine days, and after 21 it would be 128. In less than nine weeks, one case could infect a million people.

So time was already running out for Britain when, amid the last of the late February storms, Boris Johnson returned from his working holiday at the state-owned Chevening residence to face opposition accusations that he was a “part-time” prime minister.

On Monday, March 2, the virus had been in the country for almost five weeks and was multiplying fast. This was an important day as Johnson had decided to get a grip on the crisis by doing something he had notably failed to do since it started. “I have just chaired a Cobra meeting on coronavirus,” he declared in a video message to the nation.

Standing in front of a Downing Street bookcase full of leather-bound volumes, the prime minister warned that the virus was likely to become a more significant problem and added “this country is very, very, well prepared . . . we’ve got fantastic testing systems, amazing surveillance of the spread of disease”. Widespread testing and contact tracing would, however, be abandoned in just over a week.

Johnson had agreed an “action plan” with his fellow members of the Cobra

emergency committee that morning but new measures, to prevent the spread of the virus, would be introduced later only if needed. It would be a notable feature of the prime minister's televised press briefings over the next crucial three weeks until lockdown that key actions would be deferred until future dates. Meanwhile, the [virus was spreading rapidly](#).

Inexplicably, the final sentence of the March 2 video message has been lopped off the version posted on the prime ministerial Twitter page. It was: "I wish to stress that, at the moment, it's very important that people consider that they should, as far as possible, go about business as usual."

Having delivered Brexit on January 31, Downing Street was keen to foster a mood of buoyancy and optimism as the nation began its new future of self-determination. In the following days, Johnson initially epitomised the upbeat spirit, shaking hands and attending the rugby at Twickenham, in a clear signal that life should go on despite the virus.



The prime minister and Carrie Symonds, his partner, watched England play Wales at Twickenham  
FACUNDO ARRIZABALAGA

Life did go on as usual at the beginning of March. The bars and trains remained packed and mass sporting events were attended as normal. Many people are likely to have paid with their lives for commuting on packed trains, drinking in pubs and attending events such as the Cheltenham Festival during this period.

Across the world, many governments would be grappling with the fast-moving crisis and few would emerge from the coming months without mistakes. In Britain, the government's response was to replace "Let's get Brexit done" with a new mantra: "We're following the science". But was that what the decision-making team — Johnson, key advisers such as Dominic Cummings, and ministers, including the health secretary Matt Hancock, as well as the chief scientific and medical advisers — [were actually doing](#)?

#### **The big lockdown gamble**

An Insight investigation has talked to scientists, politicians, academics, emergency planners and advisers to Downing Street about the government's response to the coronavirus crisis in the three weeks from March 2.

We found that a key government committee was informed at the beginning of the month by its two top modelling teams that Britain was facing a catastrophic loss of life without drastic action. By then, however, any hope of containing the virus through contact tracing had fallen through because the government had failed to adequately increase its testing capacity in January and February.

Caught in the headlights, the government was intent on pursuing a "contain" and "[delay](#)" policy of allowing the virus to spread through the population, with the intention of shielding the vulnerable and elderly and introducing new measures to slow the rate down at some future point when it looked as if the [NHS](#) might be overwhelmed.

This approach was based on the flu model, which was designed to cope with an infection that was very infectious in a similar way to the coronavirus but less deadly. In the Far East, countries such as Taiwan, South Korea, Vietnam and Singapore based their approach on lessons learnt combating the Sars crisis of 2002 and 2003, and the central authors of that strategy, from China, Malaysia, Britain

2003 and other viral outbreaks that emerged from China. They were better prepared to move fast, particularly in their use of tests and tracing to restrict the spread.



South Korean soldiers disinfect Dongdaegu railway station  
KIM HYUN-TAI

In the UK it was hoped that antibody resistance would be built up in the population — herd immunity — in order to avoid a second outbreak later in the year that might be even worse. This, however, was a big gamble as there was no clear evidence that people who had suffered the virus would have lasting antibody protection. Despite using the term at the time, the government denies it had a policy of herd immunity.

The government pursued its contain and delay strategy through the first two weeks of March despite the strong warnings from its two main modelling teams that it could lead to a catastrophic number of people being killed by the virus. The teams from Imperial College London and the London School of Hygiene & Tropical Medicine (LSHTM) both concluded separately that if the mitigation measures under the delay strategy were followed, it could result in about 250,000 deaths. They delivered papers detailing those findings to a meeting of Sage, the scientific advisory group for emergencies, on March 3 attended by government officials.

It was only in the middle weekend of March that the key decision makers would fully engage with the fact that their mitigation measures risked a death sentence for a quarter of a million people and something far tougher was required.

What is more, this realisation came only after the academic teams took it upon themselves to model a lockdown as the only solution that could avoid overwhelming the NHS — showing how deaths could be kept to the tens of thousands.

There was a key meeting of the prime minister's close team on the morning of Saturday, March 14, after the modellers' new projections on the lockdown solution had been delivered. By this point European countries were hastily introducing lockdowns and there was growing support among Johnson's team for the move.

After being initially hostile to the idea, the prime minister put his libertarian instincts to one side and agreed in principle that a lockdown would be necessary. However, rather than locking down immediately, there was a further nine-day delay as he deliberated over how and when a lockdown should be introduced.

That prevarication proved, for some, to be fatal. New back-dated modelling assessing the historic spread of the disease — which is published for the first time today — estimates the number of people infected in the UK was indeed doubling every three days during late February and early March, just as some of the initial reports from China in late January had suggested they might.

The work, produced jointly by an Imperial College London team led by Samir Bhatt and Oxford University, suggests that on March 3 — the day the government committee gave the warning about the dire consequences of a mitigation approach — there were about 14,000 infections in the UK. Such was the speed of the spread of the virus that 200,000 people were estimated to be infected by the time the government began to change its mind about its policy on Saturday, March 14.

The last nine days while Johnson wrestled over the decision on when and how to go for lockdown were particularly brutal. By the time the lockdown was announced on Monday, March 23, such large numbers were doubling over such a short period that infections are estimated to have soared to 1.5 million.

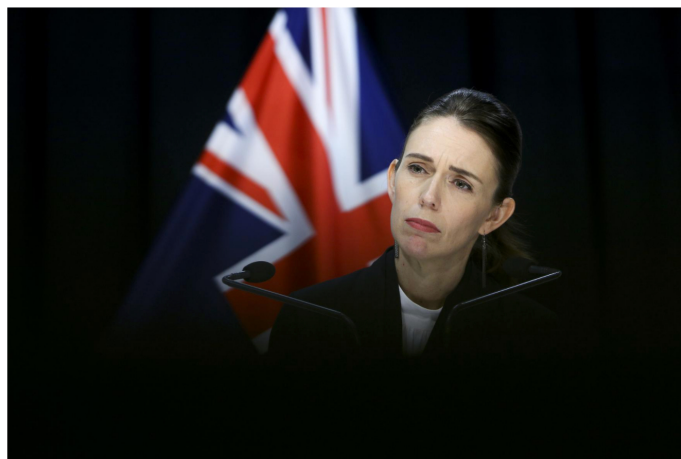
According to the data, no other large European country allowed infections to sky-rocket to such a high level before finally deciding to go into lockdown. Those 20 days of government delay are the single most important reason why the UK has the second highest number of deaths from the coronavirus in the world.

#### **Getting in front of the virus**

A few hours before Johnson attended Cobra on March 2 another leader was holding her own press conference on the response to the coronavirus crisis on the side of the world where the sun rises first.

With slow precision Jacinda Ardern, the New Zealand prime minister, read out a raft of measures her small island nation was taking to protect health and business because “the precautionary approach is best”.

Travel from China had already been banned for a month and 8,000 New Zealand nationals returning home from the area and Iran had been self-isolating for two weeks. That day Ardern said travellers from Italy and South Korea would be required to self-isolate for two weeks. “It is too early to say what the impact will be, but regardless, we are getting in front of this issue,” she added.



Jacinda Ardern locked down New Zealand hard and early  
HAGEN HOPKINS

The early intervention would prove highly successful and enabled New Zealand to start to return to normality last month after a relatively short lockdown with just over 1,500 cases and 21 deaths.

By contrast, the island of Britain was in a far more exposed position than New Zealand as an international air hub with 23.7 million people arriving in the UK in the first three months of the year.

So it was perhaps all the more surprising that so little had been done in the five weeks before March to prepare the UK for a pandemic while our borders were kept open, despite warnings from scientists.

A statement on March 2 by the government's scientific pandemic influenza (SPI) group on modelling had advised that it was "almost certain" there would be sustained transmission of the coronavirus in the UK and it was "highly likely" to be already happening. It estimated that the time taken for cases to double was about four to six days — a rate that had been revised downwards from initial estimates in January on the spread of the disease in Wuhan, the Chinese city where the outbreak is thought to have begun.

However, the recent research from Imperial College London and Oxford University has been able to make more accurate estimates by using the dates when people died from the virus to look back and work out the likely rates of infection in the past. This appears to confirm that infections were in fact doubling every three days and an estimated 11,000 people were already infected on March 2 — and could soon become millions.

While the government's modelling committee may have underestimated the speed of the [spread of the virus](#), it was not blind to the scale of the problem faced in Britain. It warned of a worst case scenario of 80% of the population becoming infected.

### The Cobra plan

Given the grim predictions and the near-certainty of sustained transmission, it might have been expected that the prime minister would announce concrete and immediate steps when he returned back to Downing Street via the network of corridors from committee room B, where he had attended his first Cobra meeting on the crisis.

But the action plan that emerged from the meeting amounted to a series of measures that would only be taken at some future date to halt the spread of the disease. It puzzled Lord Kerslake, who would have been responsible for implementing such a plan when he was the head of the civil service under David Cameron. "If ministers believe that emergency measures will be necessary, they should act now," he told *The Guardian* that day, adding that the only reason for holding back was if "you don't believe they are necessary in the end".

The full details of the government's action plan were set out in a lengthy document from the Department of Health and Social Care on March 3 that introduced its "contain, delay, research, mitigate" strategy. It notes ominously that "if the disease becomes established in the UK . . . it may be that widespread exposure in the UK is inevitable".

Officially, the country was still in the "contain" phase in which the contacts of anyone who had contracted the virus would be tracked down and tested. But that battle had already been lost. Such was the rapid [spread of the virus](#) that it had almost certainly reached one of Johnson's own ministers, Nadine Dorries, the health minister, who would start to go down with symptoms two days later.



Sir Patrick Vallance, the chief scientific officer  
PA

Given that widespread exposure appeared highly likely, it would have been possible to have moved on swiftly to the delay strategies outlined in the document, which included: "school closures, encouraging greater home working, reducing the number of large-scale gatherings". But, according to the document, the government was planning to weigh up the trade-off between the "social and economic impact" of such measures and "keeping people safe." It decided to wait. And wait.

True to form, the prime minister was in a characteristically upbeat mood when he presented the action plan at the first of his daily press conferences on March 3 flanked by two doctors who were to become household names. Likeable, earnest and Patrick Vallance, the chief scientific adviser, would be used as the government's human proof that it was "following the science".

Johnson told the journalists sitting shoulder to shoulder in the wood-paneled R

Johnson told the journalists sitting shoulder to shoulder in the wood-paneled Downing Street room that the coronavirus was “overwhelmingly a disease that is moderate in its effects” before repeating his misplaced faith in the UK’s testing and surveillance systems. “This country is going to get through coronavirus, no doubt at all and get through it in good shape,” he added.

The prime minister said the plan was not a list of actions the government “will do” but rather it was what it “could do at the right time”. He said: “Our plan means we are committed to doing everything possible based on the advice of our world leading scientific experts to prepare for all eventualities.”

#### **Sage advice on modelling**

It has now emerged that earlier that same day some of those world-leading scientists had presented data to a meeting of the Sage advisory group showing the alarming consequences of the mitigation measures being proposed by the government.

The renowned pandemic modelling teams from Imperial College London and LSHTM had been asked to assess the effects of strategies to mitigate the virus such as social distancing, school closures, whole household isolation and banning mass gatherings. Their findings were a stark warning to the government about the policy it was pursuing.

If there were no interventions then there could be as many 500,000 deaths. But the figures were still frightening when they factored in the mitigation measures. The teams both found that no matter how they modelled the measures — singly or in combination — the death toll was huge: more than 200,000 could lose their lives in the LSHTM calculation, and 250,000 according to Imperial.



Professor Neil Ferguson of Imperial College London

A source close to the two teams said Professor Neil Ferguson of Imperial, and Professor John Edmunds of LSHTM — who had both attended Sage meetings at the time — became increasingly concerned after the figures had been calculated. It seemed that all the scenarios the teams were asked to model were insufficiently draconian to avert a disaster. “We looked at the mitigation strategies one by one and in combination and we realised that they would still likely result in large numbers of deaths,” said Edmunds.

However, the source said the government did not even ask the teams to model whether a lockdown might be the solution and instead only commissioned them to look at increasingly finer-grained versions of mitigation in early March. “I think a sense of, ‘It can’t really be that bad’ was important in explaining the delay,” said the source. “The [modellers’] central estimates of severity were viewed as a ‘reasonable worst case’ by the government — not the most likely scenario. It took them a while to be convinced.”

The source added: “I think an overarching concern — and why so much time was spent looking at alternatives involving mitigation and shielding — was that everyone, especially Chris Whitty, Patrick Vallance and the policy people, knew what the economic and social costs of lockdown would be.”

The modellers would later take matters into their own hands.

#### **UK is open for business**

In the first week of March the number of officially confirmed cases rose significantly from 36 to 206. By the weekend of Saturday, March 7, the scale of



the catastrophe facing the UK and its speed could be seen just a thousand miles away in Italy where cases had risen fivefold to 5,800 and the deaths had increased eightfold to 233 in just six days that week.

There was no clear reason to assume the UK would escape the pandemic more lightly than Italy. That weekend the Ireland versus Italy Six Nations rugby match in Dublin was called off because of fears that it might help spread the virus. Across the UK, hundreds of thousands of people attended sports events as usual.

On Sunday, March 8, France banned public gatherings of more than 1,000 people but that same day thousands of French fans were allowed to mingle in the 67,000 crowd at Murrayfield, Edinburgh, for their team's Six Nations game with Scotland.

The prime minister made his own statement the previous day about Britain being open for business by joining the 81,000-strong crowd that watched England beat Wales at Twickenham.

Across the world people had been replacing handshakes with awkward waves or the knocking of elbows in an attempt to limit the spread of the infection. In the UK the SPI behavioural group, which reports to Sage, the key committee informing the political decision makers, made clear recommendations that the "Government should advise against greetings such as shaking hands and hugging, given existing evidence about the importance of hand hygiene."

But Johnson was determined to carry on as normal. "I'm shaking hands," he had told the March 3 press conference on the day the behavioural group's guidance came out. "I was at a hospital the other night where I think there were a few coronavirus patients and I shook hands with everybody, you'll be pleased to know."



Phillip Schofield asked the prime minister whether he had washed his hands

A couple of days later during an appearance on ITV's *This Morning* he bounded over to Phillip Schofield and seized his hand when the presenter had deliberately kept his arms by his side. Schofield pointedly inquired whether Johnson had washed his hands before grabbing him.

Unrepentant, Johnson then posted on Twitter a video of himself eagerly shaking hands with five female rugby players at Twickenham on Saturday, March 7. It was curious behaviour bearing in mind Johnson's repeated statements that he and the government were following the advice of the scientists on the crisis.

A source who was advising Downing Street at the time said: "The handshake — you can't minimise how important that is. He was the ultimate example of somebody saying, 'This is a mild illness, the scientists are overstating this.'"

#### **Gunmetal skies at Cheltenham**

Three days later the gunmetal skies and threat of drizzle did little to damp the ardour of the horse-racing enthusiasts as more than 60,000 people flocked to the opening of the four-day Cheltenham festival on the morning of Tuesday, March 10.

The Cheltenham festival had once been cancelled for foot and mouth, a livestock disease, but it was not going to stop for the coronavirus, especially with the prime minister sending out messages that Britain was open as usual. On the

opening day of the event, Ian Kenton, the festival's director, sent a letter to concerned local councillors setting out the reasons for going ahead.

It said: "As with events from England v Wales attended by the prime minister at Twickenham on Saturday to 10 Premier League games around the country this weekend, the government guidance is for the business of the country to continue as usual while ensuring we adhere to and promote the latest public health advice."



Gloucestershire registered a spike in hospital death rates in the weeks after the Cheltenham Festival  
ANDREW MATTHEWS

Bottles of hand sanitiser were placed in the washrooms and around the racecourse for the crowds who mingled and pressed together in the enclosures drinking and eating. One of those people was Jules Annan, a 55-year-old freelance photographer, who worked on all four days taking photographs of celebrities, tycoons and royals who had joined the throng. Ten days later he found himself struggling for breath as he was rushed to Cheltenham General Hospital and placed on oxygen. "My lungs basically gave up," he said. "I knew I was in a bad way."

He cannot be certain about how he became infected with the virus, which he eventually shook off, but he believes he may have become infected during the races. "There was a guy in the bed opposite me at the hospital who was at the races too and thinks he got it there."

Gloucestershire would later experience a spike in hospital death rates and the effects of the event may have spread across the country. Two racing enthusiasts who attended the festival died on the same day at the end of March.

They were Paul Townend, 61, a racehorse owner from Stratford-upon-Avon, who had his ventilator switched off in Warwick Hospital, and David Hodgkiss, a 71-year-old chief executive of a steelmaking firm and chairman of Lancashire cricket club, from Cumbria.

Townend's widow, Geraldine, blames her husband's death on the government's failure to bring in the lockdown earlier. "I don't know why we were so late?" she said. "Other countries were in lockdown well before us. The writing was on the wall."

One of the last sporting fixtures played this year was on March 11, when 3,000 fans came over from Spain to watch Liverpool play Atlético Madrid in the Champions League. According to the Imperial College London and Oxford University estimates, Spain had 640,000 infections at the time compared with 100,000 in Britain, although it was just a week ahead in terms of the spread of the virus such was its unchecked growth across the UK during that period.

Edge Health, which analyses health data for the NHS, carried out modelling that estimated that the match and the Cheltenham festival are linked to 41 and 37 additional deaths respectively at nearby hospitals between 25 and 35 days later, compared with similar hospital trusts that were used as a control. And that was just the local hospitals.

### **The herd immunity problem**

Back in London on the day before the Cheltenham festival began, the chief scientist Vallance had been put forward to express the scientific view that mass gatherings were not a big problem. Vallance, who had left a £780,000-a-year job in the pharmaceutical industry a year before to take the job advising ministers, explained that gatherings “actually don’t make much difference”.

He said: “There’s only a certain number of people you can infect. So, one person in a 70,000-seater stadium is not going to infect the stadium. They will infect potentially a few people they’ve got very close contact with. That’s true in any setting: in the house, in a church, in a restaurant.”

Sir David King, one of Vallance’s predecessors as chief scientific adviser and a critic of the current administration, is scathing about the reasoning on mass gatherings. His son was at the Cheltenham festival and later suffered coronavirus symptoms, which took him three weeks to recover from.

King said: “If you’ve ever been to a race meeting or football match, you would normally meet your friends in a pub beforehand, then you often need to get a train — there are long queues and big crowds. Anyone who has attended any of these events knows you are in contact with a very large number of people.

“But worse than that the people at these football matches and horse races come from all over the country and return to all over the country. It’s the ideal way to spread the virus. My only sensible interpretation is that is what you would advise if you were aiming for herd immunity.”

The news from the government was becoming increasingly gloomy that Monday, March 9. After chairing another Cobra meeting, Johnson had been forced to announce that attempts to contain the virus were unlikely to succeed on their own.

Johnson said measures would inevitably have to be introduced to delay the spread of the virus and he would follow the scientific advice and act when the time was judged to be right. Whitty told journalists that the first of those measures — asking anyone with respiratory symptoms or a fever to self-isolate — would be the next step, but not for another 10 to 14 days.

The delays and the toleration of mass gatherings in a way fitted with the same policy. There was a view within the team advising the government that once contact tracing had failed to contain the outbreak then a burgeoning number of cases was inevitable — even desirable.

The plan — which the modellers had already estimated would cause more than 200,000 deaths — was to allow the virus to infect large parts of the population, while shielding the old and the vulnerable, and bringing in measures to slow down the rate of infection when it looked as if the numbers of cases might overwhelm the NHS.

The thinking behind this approach was that any attempt to shut down the virus completely would have repercussions later, with a likely second outbreak that might cause an even greater death toll in the autumn and winter, as insufficient numbers of people would have acquired immunity to the virus. This was the implicit herd immunity aspect of the policy that became so controversial when it

became explicit as the second week of March wore on.

Vallance told the Monday press conference: “What you can’t do is suppress this thing completely and what you shouldn’t do is suppress this thing completely because all that happens is that this thing pops up later in the year when the NHS is in a more vulnerable stage in the winter.”

A source who was advising Downing Street at the time said that [herd immunity](#) was central to the government’s plans in late February and early March. “There was always this message coming straight down of, ‘We’ve all got to get it,’” the source said. “And I remember having a conversation about how, ‘I don’t like this and this chicken pox party thing.’ In February and March it was like, we’ve all got to get it at some point and that was just a sort of mantra.”

But patience was running out with the government’s delays and inaction. On Wednesday, March 11, Anthony Costello, professor of global health at University College London and a former World Health Organisation director, tweeted what many experts were thinking.

“We’re simply not doing enough now. We shd [sic] ban mass gatherings, close parliaments, alert all health workers about protective equipment and hygiene, close schools/colleges, promote home working wherever possible, and protect workers in the gig economy. Every day of delay will kill.”



On March 12, Johnson told the nation that “many more families are going to lose loved ones”  
SIMON DAWSON

On Thursday, March 12, there was a deepened gravity in the prime minister’s voice when, standing in front of two Union Jack flags, [he told the nation](#): “This is the worst public health crisis for a generation . . . I must level with you, level with the British public — more families, many more families are going to lose loved ones before their time.”

Only nine days earlier he had described the virus as a “moderate illness”. But by that Thursday the number of confirmed cases had jumped from 51 on March 3 to 596 and there had been 10 deaths. The contain strategy had not worked and contact tracing was abandoned — as the failure to increase testing capacity during previous weeks made it impossible.

By then it would have been futile anyway because the Imperial and Oxford back-modelling estimates predict by that day 130,000 people had caught the virus. This suggests that the contact testing programme had only picked up 0.5% of the infections when it was finally discarded.

first of the mitigation measures was finally brought in that day when people were told to self-isolate at home if they had symptoms. Just three days before, Whitty had said this measure would be introduced in 10 to 14 days.

Two other measures would also be brought in — the banning of mass gatherings and isolation of whole households if one person had symptoms — but again the government stressed these would be delayed to the “right time” in the future.

Vallance and Whitty explained the staged timing by saying people might tire of such social distancing measures if they were brought in too early and lasted a long time. “If people go too early they become very fatigued. This is going to be a long haul. It is very important we don’t start things in advance of need,” Whitty said.

The newspapers the next morning, Friday the 13th, were withering. “Johnson’s response has not been to lock down entire cities or even the whole country as China, South Korea and Italy have done. He has not ordered the closure of schools, as Ireland and Denmark did yesterday. Nor has he ordered the cancellation of large public events, as France and even Scotland has done,” complained [The Times leader](#).

“Instead, his response was to announce that Britain would stop testing all but those exhibiting the most severe symptoms of the virus . . . This is a remarkable gamble by Mr Johnson, albeit one that the government insists is informed by science.”

That morning Vallance went on Radio 4’s *Today* programme and dug an even deeper hole for his colleagues by mentioning the phrase the spin doctors did not want the public to hear. The government’s aim, he said, was to suppress the virus but not completely and “to build up some degree of herd immunity” while protecting the vulnerable. Later, on Sky News, he said that herd immunity would require 60% of the population to contract the virus.

That would be 40 million people — of whom 1% were likely to die, based on events in China and Italy. It was quite a gamble as it had not yet even been established whether people would develop long-running antibody resistance after contracting the virus.

### **The solution**

The days were ticking by quickly. Despite repeated assertions by the government it was following the scientific advice, there was increasing concern among its two university modelling teams that their warnings were not being heeded that the death toll would still be horrendous even if the mitigation measures were introduced.

They took matters into their own hands and, without being commissioned to do so, began crunching the numbers on a lockdown from their campuses in London. The first results were contained in a LSHTM study — co-authored by Edmunds and his colleague Nicholas Davies. This was communicated to the government’s advisory modelling committee on Wednesday, March 11, according to Davies. Modellers at Edinburgh University, led by Professor Mark Woolhouse, confirmed the findings.

The report advised that the death rate could be drastically cut with more severe measures to suppress the virus. It predicted that intermittent periods of intensive lockdown-type measures would prevent the NHS from being overwhelmed.

Ferguson and his team at Imperial drew similar conclusions that week in an equally devastating report. The early results of that work were discussed in Sage that week and provided to the government that weekend. A draft was also sent to the White House as it predicted up to 1.2 million deaths in America under a mitigation strategy.

The team estimated that the number of UK deaths could be cut to about 30,000 with a series of lockdowns over a two-year period, whereas the government’s preferred mitigation measures could allow hundreds of thousands of deaths. The two reports were the beginning of the end for the government’s strategy.

### **World closes down**

The world was closing down by Saturday, March 14. France said it was shutting non-essential public locations, Spain went into lockdown that evening, America had announced a ban on flights from the UK and the Italians were already holding impromptu concerts from their balconies after the whole country had been confined to their homes since Tuesday.

In the UK many people had given up waiting for the government to take action and were already taking matters into their own hands. Firms were encouraging employees to work from home, and suddenly that Saturday’s sporting fixture list was looking threadbare as the leagues cancelled games of their own volition despite the huge losses in revenues.

The government’s strategy was in shreds: ripped apart by its own modelling scientists and looking creepily Darwinian after the unfortunate introduction of the words “herd immunity”. More than 200 scientists and academics signed a

letter condemning the delay policy and saying thousands of lives could be saved by introducing stricter social distancing measures immediately.

These were the problems confronting Johnson when he summoned a meeting of his inner team at 9.15am that Saturday morning. By then it is understood that his most influential adviser Cummings had gone through a “Domoscene conversion” to being a strong advocate of the kind of suppression strategy that would lead to lockdown.

A source who attended Cobra meetings at the time said: “The libertarian in Boris didn’t want lockdown.” However, Johnson is said to have been won over at the meeting because of the seriousness of the threat, and a decision was made in principle to lock down Britain. He told those around him “we need to be taking all measures necessary”.



Italy during lockdown: the deserted Piazza Duomo in Milan  
DANIEL DAL ZENNARO

But the key issues of how and when to introduce a lockdown would not be resolved for another nine days. A senior Tory source said Johnson “bottled” lockdown during the following week because of concerns about the economy.

The failure to seize the initiative and go into lockdown at that point was a decision that cost many lives. After deliberating over the weekend, the government waited until the evening of Monday March 16 to introduce a package of advisory measures. People were told to work from home if possible, avoid pubs and restaurants and self-isolate at home if someone in their household was ill.

Even scientists on the government’s own advisory committees were alarmed by the delays in introducing more stringent measures. Professor Peter Openshaw, a member of the government’s Nervtag (new and emerging respiratory virus threats advisory group) committee said: “Many of us on the scientific advisory committees were quite keen that action should be taken a couple of weeks before action actually was taken.”

“I think that critical period of delay made the big difference to the peak numbers, both of hospitalisations and of deaths. I think everyone would accept now in retrospect that if we’d gone for lockdown a couple of weeks earlier that would have greatly reduced the numbers of hospitalisations and deaths.”

Every day was vital now as the UK already had an estimated 320,000 infections on March 16, according to the Imperial and Oxford back-dated modelling, and it would double again almost every three days despite the advisory measures which were introduced.

#### **Final days to lockdown**

The final week before lockdown was played out in slow motion. There had been a fundamental pivot in government policy towards more draconian actions but the prime minister is said to have still been uncomfortable with the the idea of a full legally enforced shutdown which many of his advisers now saw as an unfortunate necessity.

It was to be a week of more delays and more drip feed measures. The big announcement on Wednesday was that finally schools would be closed indefinitely but that would not take place until Friday afternoon.

The measures to close cafés, pubs, bars, clubs, restaurants, gyms, leisure centres, nightclubs, theatres and cinemas would not take effect until midnight that evening. Isolation to protect the 1.5 million people identified as extremely vulnerable as a result of existing conditions would not be announced until Sunday, March 22.

While many people were already working from home and starting to stand their distance from others in social situations, there were reports that many commuter buses and trains were still packed in central London, which had more than a third of known cases. Google data tracking people's movements suggests the use of public transport was down by only a third across the UK by Wednesday March 18. It was clear not everyone was following the government's advice.



A passenger on the London Underground takes precautions in the days before lockdown  
GABRIELLE FONSECA JOHNSON

Having backed the government's earlier strategy, Cummings was said to now be convinced it wouldn't work and was advocating a lockdown, starting with restricting traffic in and out of London. Military chiefs are said to have been put on notice that their troops might be needed to enforce a lockdown in the capital starting at midnight on Saturday.

A government insider said the prime minister looked "haunted" as he wrestled with the big decision of what to do next. His attempts at jollity had backfired at the beginning of the week when he described the effort to equip the NHS with more ventilators to meet the coming blizzard of respiratory illnesses as "operation last gasp".

The gearing up of the NHS had one particularly ill-thought-out and reckless consequence. On Thursday, March 19, the health department announced 15,000 people should be discharged from hospitals into the community and care homes to free up beds for coronavirus patients. This was without a mandatory requirement that they be tested for the virus.

On Friday, March 20, Dr Jenny Harries, deputy chief medical officer for England, reassured the country that there was a "perfectly adequate supply of PPE [personal protective equipment] for care workers and any supply pressures have been "completely resolved." The lack of PPE and the failure to protect the elderly in care homes would shortly become the next national scandal to haunt the government and expose its lack of planning since January.

At the Downing Street press conference, Harries advised people to stay two metres apart during walks while standing at a lectern less than a metre from the prime minister.

By that day, the number of infections had doubled during the midweek to an estimated 790,000, according to the Imperial and Oxford data. Despite the growing dangers, many people popped out for a last drink before the pubs shut overnight.

The clement spring weather that weekend brought thousands of people out into parks and open spaces in the new world where they could no longer congregate in sports clubs, pubs or restaurants.

Johnson skipped the daily press briefing on Saturday, March 21 and took a break with his fiancée Carrie Symonds in the prime minister's second home at Chequers. He returned the following day to host a press conference where he made the same mistake as Harries — standing a metre away from his colleagues while imploring the nation to stay two metres apart.

Inside Downing Street there was a growing realisation Britain was now on a trajectory to be "Italy, at least" in terms of cases and fatalities, according to a source advising the top team. The final straws were the crowds out in the fresh air on Mothering Sunday and the still considerable commuter traffic on Monday morning with half of workers still travelling to their offices. Johnson was forced to finally announce the lockdown that evening.

When the new measures came in on the evening of Monday, March 23, the

infections had almost doubled again since the previous Friday and there were an estimated 1.5 million across the UK, according to Imperial and Oxford's new data. Close to 1.2 million of those infections had happened since Johnson resisted calls to lockdown on Monday March 16.

An analysis of the data shows the lockdown swiftly reduced the spread of the virus but was introduced so late that Britain had a higher number of infections than every other major European country at the time they took the same emergency measures. For example, Italy had an estimated 1.2 million at its lockdown on March 10 and Germany, which locked down a day earlier than than the UK on March 22, is estimated to have had just 270,000 infections.

Sir David King said the lockdown delay was "grossly negligent". "The fact they were short of PPE, the fact they were short of testing equipment. The response of the government has not just been tardy. It has been totally disrespectful of British lives," he said. "We created an unmanageable situation."

There had been too much delay. The sheer number of people who had been allowed to become infected meant the country was riddled with the virus and the only defence was the workers of the NHS who had been left critically short of testing and protective equipment.

To date, 36,675 people in Britain have been confirmed as having died from the virus, including more than 300 NHS staff and care workers. Within four days of lockdown the infection had found its way to the very top of government when the prime minister himself tested positive for the coronavirus.

Last night a government spokesperson said: "Our strategy has been designed at all times to protect our NHS and save lives. Our response has ensured that the NHS can provide the best care possible for people who become ill, enabled hospitals to maintain essential services and ensured ongoing support for people ill in the community.

"It has been vital through this global pandemic to make interventions which the public can feasibly adopt in sufficient numbers over long periods. The Government has been very clear that herd immunity has never been our policy or goal."

## **SPORT AND SOCIALISING AS THE VIRUS SPREAD**

### **March 2**

**Estimated daily new infections: 2,405**

Boris Johnson says the UK is "very, very well prepared" after chairing his first Cobra meeting on the coronavirus

### **March 3**

**3,069**

Top scientific modellers warn the government that up to 250,000 people may die without drastic action to stop the virus spreading

### **March 4**

**3,917**

Officials announce the biggest one-day leap in confirmed Covid-19 cases to 87

### **March 5**

**5,002**

Johnson appears on ITV's This Morning, ignoring scientific advice by shaking hands with Phillip Schofield. First UK death announced

### **March 6**

**6,388**

Nadine Dorries, the health minister, goes into self-isolation after being struck with Covid-19 symptoms

### **March 7**

**8,162**

Ireland cancels its Six Nations rugby match with Italy in Dublin, but Johnson attends the England v Wales match at Twickenham

### **March 8**

**10,430**

France bans gatherings of more than 1,000 people. However, French rugby fans



France bans gatherings of more than 1,000 people. However, French rugby fans travel to Edinburgh to watch their team play Scotland

**March 9**

**13,333**

Ireland bans St Patrick's Day parades. Sir Patrick Vallance, the UK's chief scientific adviser, claims mass gatherings "actually don't make much difference" to the spread of the disease

**March 10**

**17,049**

60,000 punters attend the opening day of the four-day Cheltenham horse-racing festival. Italy, meanwhile, goes into lockdown

**March 11**

**21,805**

3,000 football fans from Spain — where matches are being played behind closed doors — travel to Anfield to watch Liverpool v Atlético Madrid in the Champions League

**March 12**

**26,661**

With 10 UK deaths so far, Johnson admits this is "the worst public health crisis for a generation . . . many more families are going to lose loved ones before their time"

**March 13**

**34,012**

Vallance tells broadcasters that the government's strategy had in part been to "build up some degree of herd immunity"

**March 14**

**43,204**

France and Spain announce draconian restrictions on public movements. Johnson's team also begins to consider tougher measures

**March 15**

**54,774**

Ireland orders all pubs, bars and hotels to close. In Cardiff, the Stereophonics play to a packed arena for the second night in a row

**March 16**

**64,498**

The prime minister advises Britons to work from home if possible, avoid restaurants and bars, and to self-isolate if someone in their home is ill

**March 17**

**81,336**

Vallance tells MPs that if deaths can be limited to 20,000 or under it would be "a good outcome"

**March 18**

**101, 854**

The government announces the indefinite closure of all schools in two days' time

**March 19**

**127,110**

Hospitals are told to discharge patients to care homes and into the community to free up NHS beds. No mandatory virus testing is required

**March 20**

**158,423**

All pubs, restaurants, cinemas and gyms are ordered to shut by midnight

**March 21**

**187,055**

Johnson visits his Chequers retreat with partner Carrie Symonds as the estimated number of infections edges to one million

**March 22**

**232,156**

1.5 million of the country's most vulnerable people are told to self-isolate for at least three months to protect themselves

March 23

286,528

Johnson finally goes on air to announce a full UK lockdown

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lockdown and what might be in it?



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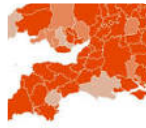


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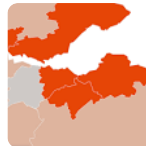
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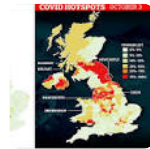


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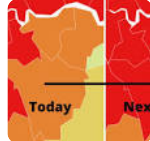
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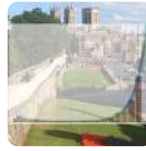


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**S** The Star

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A study by Imperial College London says that there is an 81 per cent chance that Sheffield will become a coronavirus hotspot. The temporary ...  
17 Sept 2020

World Economic Forum

## COVID-19: What you need to know about the coronavirus

Victoria, the hotspot of Australia's COVID-19 outbreak, has gone two days ... according to scientists at Imperial College London, who have been ...  
27 Oct 2020



The Scottish Sun

## East Renfrewshire is the UK's Covid hotspot as it tops virus watchlist

Meanwhile, a new interactive map tool, created by experts at Imperial College London, has been released - and can predict which areas will flare ...  
4 Sept 2020



Manchester Evening News

## New North West hotspot for mutant Covid variant identified in Cumbria

A new hotspot for mutant coronavirus strain has been identified in the ... Disease Analysis, Imperial College London, and NervTag member, ...  
1 month ago



Peeblesshire News

## Coronavirus: Borders guest house gets booking from 'hotspot'

A hotspot is defined by Imperial College London researchers as a council area with a rate of more than 50 new cases per 100,000 per week.  
25 Oct 2020



Falmouth Packet

## Covid growth rate in south west compared to UK average - plus R number

... infectious disease analysts at Imperial College London, who have predicted that Cornwall has an 83 per cent chance of becoming a 'hotspot' ...  
20 Nov 2020



Anadolu Agency

## UK records highest COVID-19 death toll since May

The city is a coronavirus hotspot and has been in Tier 3 restrictions, the highest level, for almost three weeks. The military will be drafted in to ...  
4 Nov 2020



Eastern Daily Press

## Coronavirus cases up in Breckland, Great Yarmouth, Norwich ...

New figures have revealed the new cases of Covid-19 across Norfolk since the ... Researchers at Imperial College London have predicted that there is a 20pc chance of Breckland becoming a Covid-19 hotspot and an 18pc ...  
4 Sept 2020

Bournemouth Echo

## Covid: what map predicts for BCP and Dorset over Christmas

Imperial College London says: "In the map, we show the probability of an area being a hotspot in the next one, two and three weeks."  
14 Dec 2020




Scottish Daily Record

### Covid: West Dunbartonshire on track to be one of the worst affected areas in the UK

Covid: West Dunbartonshire on track to be one of the worst affected areas ... created at Imperial College London (ICL) predicts that incidences are set to ... West Dunbartonshire has a 97 percent of being a UK Covid hotspot by 15 Sept 2020



 Reading Chronicle

### Coronavirus in Reading: Predictor shows worrying trend as

...

COVID-19 cases in Reading are predicted to rise significantly by next week. ... been highlighted in the interactive map devised by Imperial College London. ... rise above 50 per 100,000 weekly, which it classes as a 20 Oct 2020



Stay up to date on results for *imperial covid hotspot before:2020-12-31 after:2020-09-03*.

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