Good data means nothing if communication is poor – how the UK's Covid Infection Survey has informed the public and government decision making

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Abstract

As was the case globally, the UK's Office for National Statistics has played a crucial role in providing data and analysis to inform government decision makers and the public with reliable data on how the COVID-19 infection was spreading. In partnership with government departments and the University of Oxford, the Covid Infection Survey was established in just weeks. It has since grown and is frequently cited as the gold standard in trustworthy data in which to monitor the pandemic. The need for data quickly translated into a need for clear and reliable communication. The audience for the data is widespread, ranging from the public to government to academic experts. Meeting this diverse range of needs is complex and so a range of products are available. Balancing comprehensive reports with timely outputs, often published twice per week has been a particular challenge, but also a major success.

Our published products range from a weekly bulletin, a COVID-19 Insights Tool (which is updated several times each week and provides a high level picture of all COVID related data), interactive charts and maps, technical articles and blogs. We have organised ourselves to meet this demanding schedule in addition to providing management information to a closed, government audience twice per week to provide the latest data at the earliest opportunity to inform decision making.

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On 31st January 2020, the UK recorded its first positive Covid-19 case. By March, this had risen to 87 cases and by mid-March, there were 1,500 confirmed cases and 55 deaths. At that time, cases were recorded as a result of people displaying serious symptoms and taking a test, which were not readily available among the community. There was an urgent need for a population surveillance study to understand how the virus was spreading.

The UK's Office for National Statistics was in a good position to set up and implement a national survey to track the spread of the infection. As the official National Statistics Institution, it had established procedures for setting up a survey and processing the results in a timely manner, but it didn't have the necessary expertise on how to collect samples, understand how viruses spread and how to apply the best models to understand the data.

Partnerships were quickly established with the University of Oxford, the Department for Health and Social Care, Public Health England, IQVIA and others to identify the statistical need for the survey and how to achieve this need through collection of data and samples, processing and analysis. Setting up the initial survey took just 7 days and field work began in England in April 2020. This was expanded over the next few months to Wales, Northern Ireland and Scotland.

The survey collects samples and interviews around 400,000 participants in households each month and collects nose and throat swab samples for PCR testing regardless of whether they have symptoms of Covid-19. In addition, a subsample of participants provide blood samples for antibody testing. The survey collects data on demographic characteristics as well as on symptoms, behaviours and other characteristics such as occupation and vaccine status. These data are then used to estimate the latest number of positive infections among the community; and break the numbers down by different characteristics.

The Covid-19 Infection Survey is frequently cited as the gold standard in trustworthy data in which to monitor the pandemic. It has been used to inform government decisions on the pandemic response, the data has provided evidence to evaluate those decisions and it has provided valuable insight on transmission. For example, our survey identified that just over half of participants reported

symptoms, creating a strong public message that anyone could have the virus and spread it unknowingly.

As was the case internationally, suddenly there was heightened interest in statistics and the latest data among all audiences. As producers of the data, we needed to create products that met the needs of these audiences that ranged from a general public audience to government decision makers to academic and professional researchers. We also had competition with other data sources, that measured the pandemic in different ways and could sometimes give different messages. Understanding our own data and these other data sources became crucial to us communicating clear messages and helping our audiences understand how the pandemic was developing.

We designed our range of products to meet the need for timely, reliable data, while upholding our reputation of trust and quality:

Public audience (including media)
- Weekly bulletin containing latest estimates of positive infection across the community by UK country and English regions. This also includes breakdown by age and shows infection levels over time. When applicable, our data are also shown by variant.
- Fortnightly antibodies publication, showing estimates of the number of people who would test positive for antibodies by UK country, English region and age group. We also include estimates by vaccine status to provide context.
- Fortnightly characteristics publication, showing infection levels by different characteristics. These have included symptoms, socially distanced or physical contact with others, occupation, ethnic group and others.
- Ad hoc blogs that explain particular concepts or decisions to help people understand what our data are showing. Recent examples are how the measurement of antibodies relates to immune protection, how we identify variants and why people should trust our data.
- Covid-19 Insights Tool which presents a snapshot in one location of the latest data on the pandemic. This includes latest data on infections, hospitalisations, deaths, antibodies, vaccines and provides breakdown by age, well-being, behaviours and comparisons with other data sources.

Government audience
We provide weekly Management Information of early data to ensure that a closed link of government officials and advisors have the latest data available upon which to base decisions.

Technical audience

For our technical audience, they can apply to become approved researchers to access the survey data through our Secure Research Service.

We work in partnership with academics and produce joint publications. A recent [example](#) of a published paper is on the impact of vaccines on new infections.

We also publish ad hoc [technical articles](#) that explain complex analysis. The topics are often of interest to a public audience so we draft our main messages in simple language.

Impact
Our data has directly informed decisions on the management of the pandemic in the UK. These decisions have included

- The introduction and removal of national lockdowns.
- Regional lockdowns, which introduced different tiers of restrictions depending on local infection rates.
- The Government's 'Roadmap' out of restrictions, which set out a number of tests that needed to be satisfied in order to move to the next stage. One of these tests was that there was no new 'surge in infections'.
- The success of the vaccination programme, which was evident in the rise in antibodies among older people who were prioritised for vaccination first.
- Symptoms – initially the recognised symptoms of Covid-19 were a high temperature and a new and persistent cough. Our data also showed that some people were experiencing fatigue, headache and a loss of taste and/or smell. Our data also showed that nearly half of people testing positive were not experiencing any symptoms. This gave a strong public message about transmission and likely encouraged behaviours such as wearing face masks and maintaining social distancing.

Conclusion
The value of the data from our Covid-19 Infection Survey has evolved from simply providing estimates of positive infection to identifying further characteristics about the infection. These data provide insight into how the infection spreads and, importantly, how the spread could be reduced. Our products reach a wide audience and are highly regarded as a trusted source of evidence. We have achieved this by continually reviewing and responding with new analysis to answer the latest questions. This has only been possible through our successful partnerships and continued dedication of all those involved in the Covid-19 Infection Survey, including of course, our 400,000 participants.