

Trust in science: assessing pandemic impacts in four EU countries

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Trust in science can be considered an important aspect of science's situation in society; in a crisis like the Covid-19 pandemic, these trust relations are accentuated and severely tested. Facing the novelty, complexity and wide impacts of the new coronavirus, the limits of scientific knowledge have been exposed and scientists have appealed for understanding and trust that they are doing their best to overcome these limits.

Public health experts, virologists, epidemiologists, immunologists, infectious diseases experts, and increasingly also social psychologists and political scientists, have been challenged to advocate with confidence for social measures with wide effects even while their knowledge of the virus and the means to control or eliminate it is provisional. Either explicitly or implicitly they have been saying to their national and international audiences: This is the evidence we have. This is why we advise as we do. Trust Us. Political leaders, representing their societies, have claimed to be “following the science”, even as it became clearer that *the science* is diverse and contested.

Trust ideas are very popular in many business fields, for example, in market research on brands, or in attempts to theorise the practice of public relations. Edelman, the global PR company, has been tracking trust in business, government, media and NGOs for twenty years. Their 2019 barometer² shows that the top six countries in the world for trust in general are all Asian, China being the clear leader, followed by several other notably authoritarian countries. In their table of 26 countries, six of the seven with the lowest trust (or highest distrust) are European. This strongly suggests

that the barometer is actually measuring differences in political systems and civic cultures.

Some academic writers have challenged this kind of survey work and the conceptions of trust on which they are based. The distinction is often made in sociology between personal trust and institutional trust on the basis that trust of individuals is relational, in a way that is not possible for institutions. Political scientist Russell Hardin (2006) suggests that confidence is a better term than trust when speaking of public attitudes to institutions, including science.

Philosopher Onora O'Neill and science studies scholar Brian Wynne have challenged the notions of a crisis in trust that has particularly strong resonance in discussions of science in society. O'Neill points out that trust in judges and nurses has always been relatively high, and politicians and journalists relatively low, and that such poll findings show little variation over time. But it has been common for many years to situate discussions of trust in science in a lament about the decline in trust – or growth in distrust – of science.

The British-based advocacy group Sense About Science still recalls 20 years after its founding that in 2001 “media scare stories were rife, and public confidence in science was at an all-time low”. Wynne (2006) challenged this view as a new deficit model of the public, referring to the “incessant agonising about the ‘public mistrust of science’ problem ... there is no general, indiscriminate public mistrust or rejection of ‘science’; indeed, there are lots of enthusiasm for it – but this is discriminating enthusiasm”.

It has long been thought that greater knowledge of science among the public would contribute to greater trust; Wynne (2006) presented this as No. 1 of nine ‘scientific deficits of understanding of publics’, though in the reverse form: Public mistrusts science because it is ignorant of science. Wynne sees this as a demonstration of “persistent routine externalization and projection onto others of its [science’s] own possible responsibility for public disaffection or disagreement”.

This perspective supports O’Neill’s efforts to shift the focus to trustworthiness (2018). She points to the dangers of trust in untrustworthy agents, writing that it is “puzzling that so much contemporary investigation and discussion of trust and levels of trust, particularly when based on evidence provided by polls, says little – all too often nothing – about what it takes to direct trust to trustworthy institutions and persons, or to direct mistrust to untrustworthy persons and institutions”.

So, what makes science trustworthy? Science historian Naomi Oreskes (2019) finds the answer in the processes of science, in its constant scrutiny of itself, and she advocates for more open acknowledgement of the social and personal dimensions of science. Similarly, Ivan Oransky, co-founder of the science publishing watchdog, Retraction Watch, argues that retractions of scientific papers, which might be thought to contribute to distrust in science, “are a sign someone is paying attention ... It’s when you deny that problems happen that you lose trust” (Wysong 2020).

Survey findings show that the relationship between trust and knowledge is contingent and contradictory, at least as far as self-perceived knowledge is concerned. The Wellcome Global Monitor 2018³ findings for the four countries represented among the present authors show that Irish respondents exhibited the highest levels of trust – as measured in a Trust in Science Index compiled from responses to several pertinent questions – but the second-lowest

level of confidence in their own knowledge of science. For Italian respondents, this relationship was direct rather than inverse. More generally from the same report, Australia, New Zealand and northern Europe recorded the top levels of ‘high trust’ in science, and it was noted that those with higher incomes tended to show higher trust. These findings may again be reflecting wider socio-political and socio-economic differences.

In 2019-20, as the epidemic was turning to pandemic, the US-based Pew Research Center surveyed the populations of 20 countries⁴, asking respondents *inter alia* to state whether they had a lot, some, or not too much trust in scientists to do what is right for their respective societies. Percentages answering ‘a lot’ ranged from 59 in India and 48 in Australia and Spain, to 23 in Brazil and Japan, 14 in Taiwan and 11 in South Korea. Three of the four countries represented by the present authors were covered by this survey: in Sweden 46 per cent declared ‘a lot’ of trust in scientists, in Germany 43 per cent, and in Italy 33 per cent.

Surveys focused on public attitudes to the pandemic were undertaken in 2020 by the Pew Research Center in 14 countries⁵ and by Kantar in 21 EU member states for the European Parliament⁶. The Pew study asked respondents to rate their countries’ handling of Covid-19: Germans showed high approval at 88 per cent (combined ‘very good’ and ‘somewhat good’ job) and Italians and Swedes near-median levels at 74 and 71 per cent respectively.

The Kantar study asked which sources of information on the pandemic respondents trusted most: ‘scientists’ were the most frequently mentioned (by 41 per cent of respondents), ahead of national health authorities (34), World Health Organisation (24) and national governments (22). Scientists received most mentions in Italy and Germany, but national health authorities had top ranking in Sweden and Ireland.

These various findings illustrate the need for caution in comparing between surveys that may have been undertaken with different purposes and methods. When it comes to findings specifically on trust the precise wording of the questions has a significant bearing. With these cautions in mind, we present summaries of the evidence on public trust in science in four European countries, before and during the Covid-19 pandemic.

Germany

An annual representative public attitudes survey Science Barometer (Wissenschaftsbarometer) was established in 2014 by the German science communication organisation Wissenschaft im Dialog (Science in Dialogue). The Wissenschaftsbarometer but also Eurobarometer data from the years prior to 2014 show that there is a relatively stable trust in science over time in Germany. From 2017 to 2019 around 50 per cent of the respondents say that they completely or somewhat trust science and research⁷. One item that has also been included in the Eurobarometer⁸ allows us to look back further on this issue: "We depend too much on science and not enough on faith". The approval of this statement was very stable over time in Germany, ranging from 32 to 40 per cent, which is lower than the average of all European countries. Wissenschaftsbarometer and Eurobarometer data also show high interest in science and research in Germany with up to 60 per cent of respondents stating they have a very strong or somewhat strong interest in science and research.

Since 2017 the Science Barometer also included a number of items measuring reasons to (dis-)trust science⁹. Results showed that a possible distrust of the population is based in particular on doubts whether science is working towards the common good and - with some reservations - on concerns about the integrity

of science. In contrast, there is a very high level of trust in the expertise of scientists.

In a coronavirus special edition of the Science Barometer in spring 2020, one could observe a substantial increase in trust in science in general (73 per cent stating they trusted science completely or somewhat). The respondents also believed that science had a high level of problem-solving abilities and expected a vaccine or medication to be developed soon.

A large number of respondents also agreed that the scientists had done well in communicating scientific uncertainties with regard to the coronavirus pandemic. A majority also had a positive view of scientific controversies: they agreed that different points of view are important for scientific progress.

In addition, 81 per cent supported political decision-making on the coronavirus pandemic that is based on scientific results; this also represented a significant increase on comparable findings in the context of climate change in the autumn 2019 survey.

In the regular survey at the end of 2020¹⁰, a decline in absolute trust values could be observed (from 73 per cent in April and 66 per cent in May to 60 per cent in November). Nonetheless, these levels remained above those of 2017-19. The values also remained above the pre-pandemic values for the other trust-related items.

In addition to the standard items, a few additional questions were asked in November 2020, mainly dealing with the topic of disinformation and scepticism about the coronavirus pandemic. Two results in particular are worth noting: 40 per cent of respondents think that scientists are not telling them the whole truth about the coronavirus; and 15 per cent agree with the statement, "There is no real proof that the coronavirus really exists".

Ireland

The most recent study on trust in science was the Science in Ireland Barometer 2015¹¹, which found that 22 per cent of respondents had ‘a lot’ of trust in advice given by the scientific community. The report’s authors stated that “this indicates the presence of a ‘trust deficit’ between experts and the wider population”, although 60 per cent said they had ‘some trust’ in such advice and among 15-19-year-olds the ‘lot of trust’ response was 44 per cent. On a different question, “When you hear/read an opinion from a scientist or engineer, how much do you trust it?”, 17 per cent responded they completely trusted it and 32 per cent that they had a great deal of trust.

Public opinion polling during the pandemic did not ask comparable questions, though survey work for a new Science in Ireland Barometer was conducted in late 2020 and the results will be published in 2021.

A survey of the Irish population for the international Veracity Index in May 2020 posed the trust question in a particular form: “I will read you a list of different types of people. For each, would you tell me if you generally trust them to tell the truth or not?” The highest levels of positive responses (expressed in percentages) were assigned to Nurses (97), Local Pharmacists (96), Doctors (95), National Public Health Emergency Team (91), Teachers (89) and Scientists (87)¹². In none of these cases was the change since December 2018 more than three percentage points. The Covid-19 effect is seen more noticeably in categories lower down the rankings for declared trust: Gardaí (police service) (82, up 9), EU Leaders (58, up 15), Government Ministers (47, up 20) and Politicians (32, up 10).

These findings correspond with those of the Kantar study mentioned earlier; in this, Ireland was the only country in which scientists did not feature among the three most frequently named trusted sources, and was

equal-highest with Denmark in the proportion of respondents naming their national government among their most trusted sources.

From March 2020, the Department of Health conducted tracking surveys to inform communication strategies and the findings were made public¹³. The questions covered such items as personal behaviours to mitigate virus transmission, emotional wellbeing, attitudes to national policies, including social restrictions, and sources of information, but no questions relating to trust or confidence in science or experts.

However, there may be an indication of changing attitudes on that issue. From June to October, the percentage of respondents saying they thought there should be “more restrictions” rose from 20 per cent to over 60, just surpassing the level recorded in March 2020. The case for more restrictions was being argued through the summer and autumn with increasing force by scientists, both individually and in groups – often in the face of resistance from politicians and economic interests.

Italy

The key source for data on trust in science in Italy is the Observa Science and Technology in Society Monitor, which has been running since 2003 an annual survey of public perceptions and attitudes to science and technology. Data from the Monitor confirm general international trends, showing high and increasing levels of trust in science.

The general perception that benefits of science are greater than potential risks has increased by 14 percentage points in the last decade (from 68 per cent to 82). Specific confidence in scientists and engineers has also substantially increased, now involving 65 per cent of citizens and largely outweighing confidence in other professional categories (e.g. journalists 4 per cent, politicians 3 per cent).

When it comes to sources of science communication, Italians consider the most reliable sources to be those which connect directly to researchers, like public lectures by scientists (85 per cent regard them as trustworthy). Data collected from two special editions of *Observa STS Monitor* at the outset of the Covid-19 pandemic (March and April 2020) offered further confirmation and specifications in this light¹⁴. Almost the totality of citizens (97 per cent) expressed confidence that scientists will find a solution to this pandemic, with 24 per cent expecting the solution will come soon, and 74 per cent expressing a rather more mature expectation that this will happen in a longer time horizon.

Data collected during the ongoing pandemic show that citizens rate as most reliable the indications from institutions on how to avoid infection, while they put very little trust in social media sources. However, the so-called ‘second wave’ of the pandemic seemed to be characterised by a more critical public perception. Citizens’ evaluation of the management of the crisis by local, national and international institutions became increasingly negative. The most negative data concerned the evaluation of the role of scientific experts, down by 23 per cent and now negative for one-quarter of citizens. In addition, now almost two-thirds (62 per cent) perceive the diversity of advice publicly given by experts as a potential source of confusion.

This change of context is also reflected in the attitudes towards long-awaited vaccines for Covid-19. Only 36 per cent of Italians expressed the intention to receive the vaccine as soon as it will be available. A similar proportion (38 per cent) expressed the intention to receive the vaccine, but not immediately. More than one in five stated they did not intend to be vaccinated.

These attitudes are not the expression of a generic scepticism toward science, nor towards vaccination in general (in Italy only 4 per cent

of citizens firmly oppose vaccination) and not even of a so-called “negationist” approach towards the gravity of the pandemic threat (which characterises 6.5 per cent of public opinion). The central theme appears rather to be trust in institutions and in their long-term operational capacity.

Sweden

VA (Public & Science), a national non-profit organisation promoting dialogue and openness between the public and researchers, has since 2002 been running two annual surveys of public attitudes towards science and researchers. One is the VA Barometer, which is a telephone-based survey of c.1,000 respondents, and the other a postal survey gathering c.1,700 responses conducted within the *Vetenskapen i Samhället* (Science in Society) project. The latter is part of the National SOM surveys¹⁵ in Sweden.

Data from the VA Barometer (VA report 2020:4) conducted in September 2020 show that almost nine out of ten Swedes (88 per cent) have *fairly* high or *very high* confidence in researchers working in universities, an increase of nine percentage points from 2019. Thirteen per cent of the respondents say that their confidence in researchers has increased during the pandemic, while four out of five (79 per cent) state that their confidence is unaffected, and five per cent say that their confidence has decreased. As seen elsewhere (e.g. Johnson and Peifer 2017), there is a clear correlation between respondents’ level of education and their confidence level: those with higher education show higher confidence.

Sweden chose a somewhat different national strategy to fight the pandemic from that of most other countries. VA monitored public attitudes and information behaviour during the pandemic in collaboration with the Karolinska Institute and Södertörn University¹⁶. From March to December 2020, 12 survey waves

were conducted, based on representative samples through Kantar Sifo's national web panel. These showed that the news media have consistently been the primary source of information about the coronavirus for the Swedish public. Only a small proportion (1–2 per cent) stated that they mainly access coronavirus information through social media.

During early autumn 2020, an increasing proportion, particularly among younger persons, were not accessing any information at all about the virus. But as the number of Covid-19 cases increased again, so did the consumption of news, as well as the confidence in the media reporting.

In the March 2020 survey 67 per cent perceived reporting as *fairly* or *very hyped/alarmist*; by September this had dropped to 22 per cent, but then rose gradually and was in December 52 per cent.

Swedes have the greatest confidence in public service media: in December 80 per cent stated they had fairly high or very high confidence in Swedish Television's reporting, and 76 per cent gave this rating to Swedish Radio. The Swedish Television, commercial TV4 and Swedish Radio are the news media that most Swedes have turned to for information about the coronavirus.

Swedes' perception of how much in agreement various professional groups are in their views on how Sweden is handling the pandemic has also been investigated. In the December survey, 67 per cent of respondents perceived researchers to be *fairly* or *very much in agreement*. This is an increase of 13 percentage points compared to August, but still lower than in April, when the corresponding number was 72 per cent.

Confidence in researchers who comment on the coronavirus in the media has been consistently high, with minor fluctuations. In December, 87 per cent said that they have *fairly high* or *very high confidence* in researchers (the

same level as in March 2020). By the same time, confidence in politicians was 29 per cent, in journalists 21 per cent, in government officials 61 per cent, and in health care providers commenting in media 91 per cent.

Discussion and Conclusions

The survey findings presented in summary here show that public trust in science has been stable or has risen during the Covid-19 pandemic in the four countries under consideration – and, from most indications, well beyond these countries. This is worth underlining, as it is not self-evident that this would be the case. Scientists and public authorities acting on their advice have made major demands on populations, asking them to change their behaviours radically in order to reduce the spread of the virus. Experts have faced the very significant challenge of securing citizens' compliance with social restrictions while continuously updating and revising their knowledge. It seems reasonable to assume that the evidence of unprecedented international research collaboration and the public disclosure of science-in-the-making have helped secure trust at high levels.

With the second and third waves of the coronavirus pandemic rolling over the globe, this trust in science seems more relevant than ever. The availability of vaccines opens a new chapter in this process. The mass vaccinations planned in many countries presuppose that people have trust in the vaccines that were developed under high pressure and in the science behind them.

However, as Mede and Schäfer (2020) outlined recently, counter-scientific and populist movements are challenging the efforts to defeat the virus and pose threats to public order and democratic values. In Germany, the so-called *Querdenker*-movement (literally: lateral or unconventional thinkers) has developed a dangerous momentum in recent

months. The movement has strong connections to the radical right and defies public regulations such as restrictions on social contacts and obligations to wear masks in public.

It may be that the noisy public presence of such movements helps maintain a widespread stereotype of the public as distrustful of science or even anti-science. The daily lamentations on issues like climate change, mass vaccinations, and anti-pandemic measures persist. Such views, either for carelessness or ignorance, neglect widely accessible data, which is quite ironic given that many who share such arguments claim to be fighting "fake news".

The relationship between politics and science may contribute further to confusion. Some political leaders have sought to build their popularity on challenging expertise (e.g. Trump, Bolsonaro, Johnson). This is a backdrop to the recurrent theme of distrust in science, which persists in media and policy discourses. For some media, these minority groups serve the news value of controversy, however outlandish the claims of 'coronavirus hoax' and similar claims may be.

The role of science communication is critical in this context. Indeed, trust in science communication becomes a live issue. As mass vaccination programmes are rolled out, major communication efforts to address various degrees of vaccine hesitancy and resistance are also being undertaken. During the pandemic, however, science communication has sometimes been given an ideological role, supporting a paternalistic and ultimately authoritarian vision of science in society, and this may affect the current science communication efforts.

Building mutually trusting relationships between institutions, experts and citizens requires open, clear and trustworthy communication on scientific innovation, methods, workings and quality standards, and on scientists' norms and motives. In the cacophony of

the digital media environment, science communication communities need to engage with decision-makers, public institutions, business, civil society organisations and scientific bodies on how to reach these aims.

The unprecedented exposure of expert sources across media has in many cases been guided more by individual goodwill and intuition than by reference to accumulated knowledge, public opinion data and audience analysis. Investment in training, institutional recognition of science communication activities, international sharing of data and practices, and development of comparative studies might be valuable steps towards science communication that, rather than emphasising distrust or supporting paternalism, sustains and reinforces social responsibility.

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Notes

¹ This discussion paper was developed from the authors' contributions to a panel at the Esof (Euroscience Open Forum) conference held in Trieste and virtually in September 2020. The panel was a joint initiative of Eusea (European Science Engagement Association) and PCST (Public Communication of Science and Technology) Network. CA is president and MW former president of Eusea. BT is president of PCST and MB and BF are members of its Scientific Committee.

² Report available at: https://www.edelman.com/sites/g/files/aatuss191/files/2019-02/2019_Edelman_Trust_Barometer_Global_Report.pdf

³ Reports available at: <https://wellcome.org/reports/wellcome-global-monitor/2018>

⁴ Pew Research Center, September 2020: Science and scientists held in high esteem across global publics; available at: <https://www.pewresearch.org/science/2020/09/29/science-and-scientists-held-in-high-esteem-across-global-publics/>

⁵ Pew Research Center, August 2020: Most approve of national response to Covid-19 in 14 advanced economies; available at: <https://www.pewresearch.org/global/2020/08/27/most-approve-of-national-response-to-covid-19-in-14-advanced-economies/>

⁶ Kantar, June 2020: Uncertainty / EU / Hope – public opinion survey commissioned by the European Parliament; report available at: [https://www.europarl.europa.eu/at-your-](https://www.europarl.europa.eu/at-your-service/files/be-heard/eurobarometer/2020/public_opinion_in_the_eu_in_time_of_coronavirus_crisis/report/en-covid19-survey-report.pdf)

[service/files/be-heard/eurobarometer/2020/public_opinion_in_the_eu_in_time_of_coronavirus_crisis/report/en-covid19-survey-report.pdf](https://www.europarl.europa.eu/at-your-service/files/be-heard/eurobarometer/2020/public_opinion_in_the_eu_in_time_of_coronavirus_crisis/report/en-covid19-survey-report.pdf)

⁷ See <https://www.wissenschaft-im-dialog.de/en/our-projects/science-barometer/>

⁸ See Eurobarometer 2005 and 2010 <https://www.europarl.europa.eu/at-your-service/de/be-heard/eurobarometer>

⁹ Based on the work of Hendricks et al. 2016

https://www.researchgate.net/publication/297569382_Trust_in_Science_and_the_Science_of_Trust

¹⁰ available at www.sciencebarometer.com

¹¹ Science Foundation Ireland, October 2015: Science in Ireland Barometer; report available at: <https://www.sfi.ie/resources/Science-in-Ireland-Barometer-Key-Points.pdf>

¹² Ipsos-MRBI, June 2020: Ipsos MRBI Veracity Index 2020; report available at: <https://www.ipsos.com/en-ie/ipsos-mrbi-veracity-index-2020>

¹³ Reports available at: <https://www.gov.ie/en/collection/6b4401-view-the-amarach-public-opinion-survey/>

¹⁴ Reports available at <https://sagepub.blogspot.com/2020/03/italian-citizens-and-covid-19.html> and <https://sagepub.blogspot.com/2020/04/italian-citizens-and-covid-19-one-month.html>; see also www.observa.it

¹⁵ The National SOM surveys are conducted by the SOM institute at the University of Gothenburg. The surveys consist of several parallel questionnaires and include questions related to politics, society, media and social background.

¹⁶ <https://v-a.se/english-portal/projects/studies/the-public/corona/>