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Reading and publishing during a pandemic



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The results presented in this report are based on research carried out on behalf of Taylor & Francis by Tom Fleet, Data Analyst; Catherine F. Smith, Data Analyst; Jo Cross, Director of Research & Analytics; Anna Gilbert, Senior Manager Research & Analytics; Claire Doffegnies, Marketing Communications Manager; and Mark Robinson, Marketing Communications Manager.

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COVID-19 has impacted so much of our lives since early 2020. But what has been the impact on research? What were people reading and publishing during the global pandemic?

This report unpacks these questions, offering insights on trends in user behavior during key stages of the pandemic through 2020 and 2021.



Data methodology

The report aimed to gather insights on user behavior around publishing and reading habits during the COVID-19 pandemic, and focused primarily on publications of research in journals, rather than monograph or other forms of publication. The data gathered was based on journals published by Taylor & Francis. Citation data was obtained on 23 August 2021, from Digital Science's Dimensions platform, available at <https://app.dimensions.ai>. Altmetric data were sourced from [Altmetric.com](https://www.altmetric.com) on 16 February 2022. Percentages have been used and absolute numbers removed to protect commercially sensitive information.

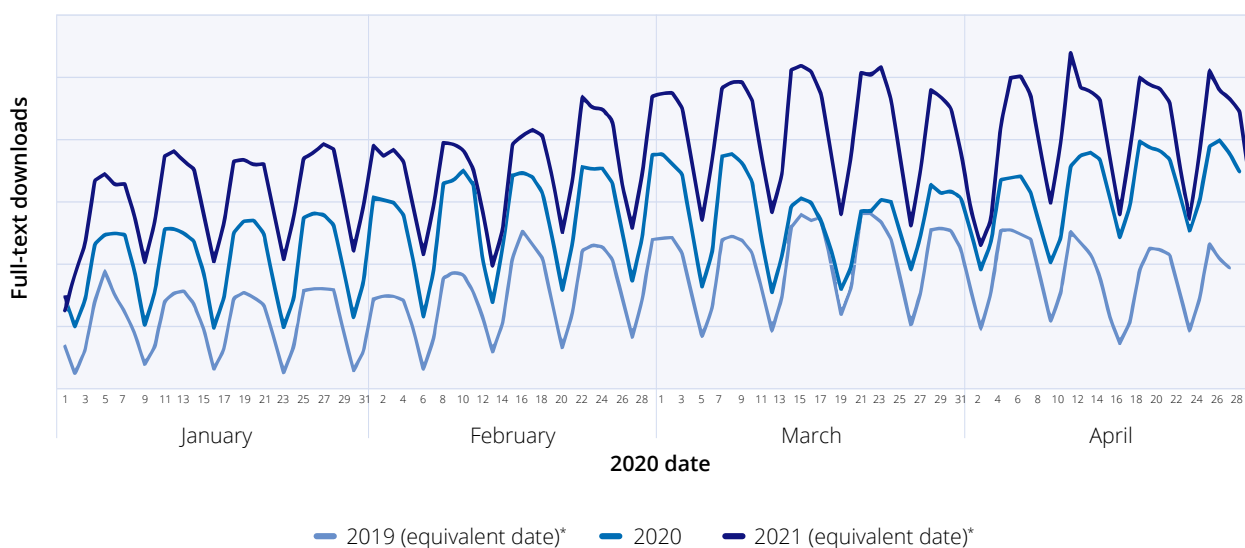
Reading trends

What were people reading during the pandemic?



Reading patterns on Taylor & Francis Online

Taylor & Francis Online: daily article usage, Feb-Apr 2019, 2020 & 2021



What reading patterns did we see on Taylor & Francis Online as we cycled through global lockdowns, school closures, remote working, and more?

Daily article readership was down the last two weeks of March 2020, coinciding with global adjustments to working patterns in light of the fast-developing pandemic and lockdowns happening around the world.



Mid-February 2021 saw a drop in daily article readership (though to a lesser extent than 2020), again coinciding with when lockdowns were reintroduced in some countries.

Looking at longer-term trends, there is no evidence that the pandemic directly caused any sustained increase or decrease in usage, no matter the access type (open access, free to access, or subscription).

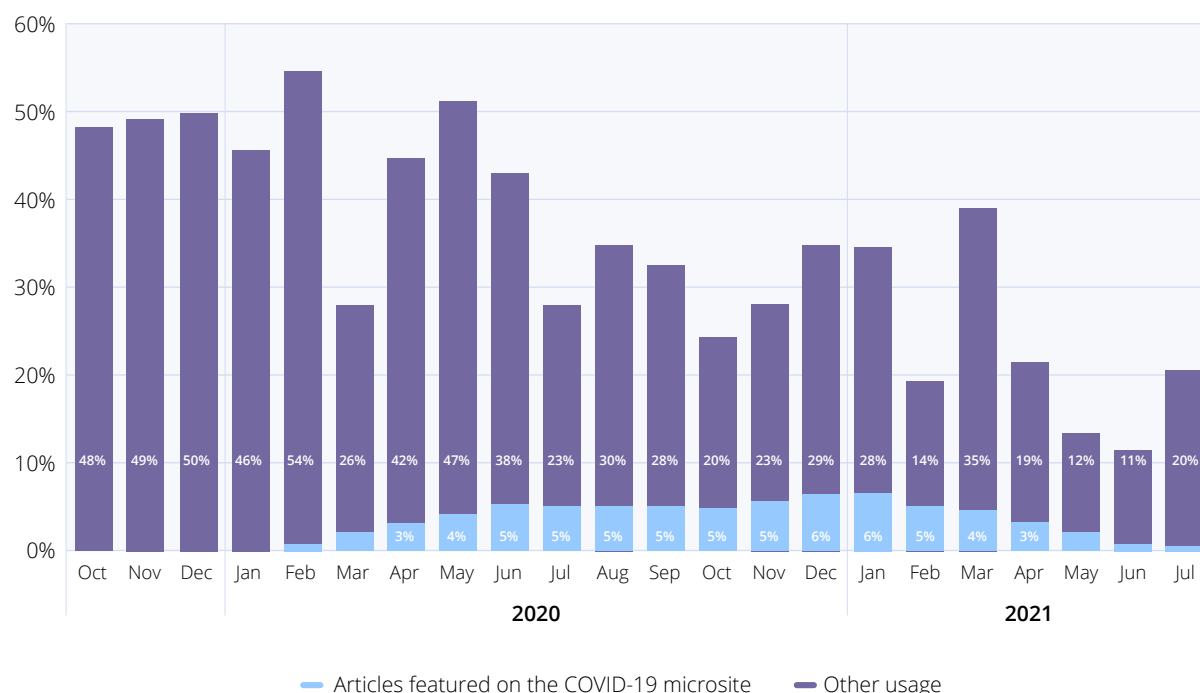
* 'Equivalent date' aligns year-on-year weekday and weekend results.

Was COVID-19 research the most read?

In early 2020, we made a significant body of research articles and data relevant to COVID-19 free to view. This was applied across all disciplines, given the multi-faceted nature of the response needed - medically, economically, and socially.

The graph below shows how much articles featured in this collection contributed to overall usage growth of research published on Taylor & Francis Online:

Contribution of articles featured on COVID-19 microsite to overall year-on-year monthly usage growth, Oct 2019-Jul 2021



Articles on COVID-19 did contribute significantly throughout 2020, with a monthly high of 6% contribution to overall usage growth. But overall usage growth was largely driven by other kinds of content, meaning **there remained a strong and consistent appetite for all research throughout the pandemic.**

Gaining attention: what was being discussed?



What's Altmetric?



The [Altmetric Attention Score](#) or 'Altmetric' enables you to see the attention articles are getting from non-traditional sources, including:

- Mainstream and social media
- Public policy documents
- Patents
- Online reference managers
- Wikipedia

You can use Altmetric to explore the conversations around research on Taylor & Francis Online and understand the impact it is having beyond research publications.

Research articles that received online attention in 2020 and have the highest Altmetric attention scores (published in 2020)

ARTICLE TITLE	JOURNAL
Exhaled respiratory particles during singing and talking	<i>Aerosol Science and Technology</i>
A factor of two: how the mitigation plans of 'climate progressive' nations fall far short of Paris-compliant pathways	<i>Climate Policy</i>
The appallingly bad neoclassical economics of climate change	<i>Globalizations</i>
Molecular and serological investigation of 2019-nCoV infected patients: implication of multiple shedding routes	<i>Emerging Microbes & Infections</i>
Persistent self-reported changes in hearing and tinnitus in post-hospitalization COVID-19 cases	<i>International Journal of Audiology</i>
A systematic review of the giant alligatoroid Deinosuchus from the Campanian of North America and its implications for the relationships at the root of Crocodylia	<i>Journal of Vertebrate Palaeontology</i>



Did COVID-19 articles receive high levels of attention? Yes they did - research related to COVID-19 features in the Taylor & Francis Online articles with the highest Altmetric attention scores from 2020.

But it wasn't the only thing people were talking about – also featured is research on a range of other topics, from climate change to paleontology.

Research articles that received online attention in 2020 and have the highest Altmetric attention scores (published prior to 2020)

ARTICLE TITLE	JOURNAL	PUBLISHED ONLINE
Associations between chronotype, morbidity and mortality in the UK Biobank cohort	<i>Chronobiology International: The Journal of Biological & Medical Rhythm Research</i>	2018
The ASA Statement on p-values: context, process, and purpose	<i>The American Statistician</i>	2016
Data organization in spreadsheets	<i>The American Statistician</i>	2018
Weight and prognosis for influenza A(H1N1) pdm09 infection during the pandemic period between 2009 and 2011: a systematic review of observational studies with meta-analysis	<i>Infectious Diseases</i>	2016
Vaccine confidence plummets in the Philippines following dengue vaccine scare: why it matters to pandemic preparedness	<i>Human vaccines immunotherapeutics</i>	2018
The possible roles of solar ultraviolet-B radiation and vitamin D in reducing case-fatality rates from the 1918–1919 influenza pandemic in the United States	<i>Dermato-Endocrinology</i>	2009

What about research published before 2020 but still being discussed during 2020 – the year when lockdowns were introduced? **Some areas have remained high since publication such as p-values, but some bubbled up again in light of COVID-19 – such as the articles on vaccine confidence, published in 2018 and on influenza, from 2009.**

This shows the importance of maintaining the scholarly record for generations to come, ensuring easy discovery long-term, as what may be considered a niche paper in one year can have startling relevance in years to come.



Research articles that received online attention in 2021 and have the highest Altmetric attention scores (published in 2021)

ARTICLE TITLE	JOURNAL
COVID-19 lockdown cost/benefits: a critical assessment of the literature	<i>International Journal of the Economics of Business</i>
Testing mobile air purifiers in a school classroom: reducing the airborne transmission risk for SARS-CoV-2	<i>Aerosol Science and Technology</i>
Weaponizing economics: big oil, economic consultants, and climate policy delay	<i>Environmental Politics</i>
Efficacy of face masks, neck gaiters and face shields for reducing the expulsion of simulated cough-generated aerosols	<i>Aerosol Science and Technology</i>
A new furileusaurian abelisaurid from La Invernada (Upper Cretaceous, Santonian, Bajo de la Carpa Formation), northern Patagonia, Argentina	<i>Journal of Vertebrate Paleontology</i>



Fast forward to 2021 and COVID-19 research was still being much talked about. The top article comes from the *International Journal of the Economics of Business*, demonstrating research outside of Medicine making an impact in debates around COVID-19.

Research articles that received online attention in 2021 and have the highest Altmetric attention scores (published prior to 2021)

ARTICLE TITLE	JOURNAL	PUBLISHED ONLINE
Edward Jenner and the history of smallpox and vaccination	<i>Baylor University Medical Center Proceedings</i>	2017
Data organization in spreadsheets	<i>The American Statistician</i>	2018
Nitrous oxide emissions from cattle urine deposited onto soil supporting a winter forage kale crop	<i>New Zealand Journal of Agricultural Research</i>	2017
The ASA Statement on p-values: context, process, and purpose	<i>The American Statistician</i>	2016
The language and writing system of MS408 (Voynich) explained	<i>Romance Studies</i>	2019

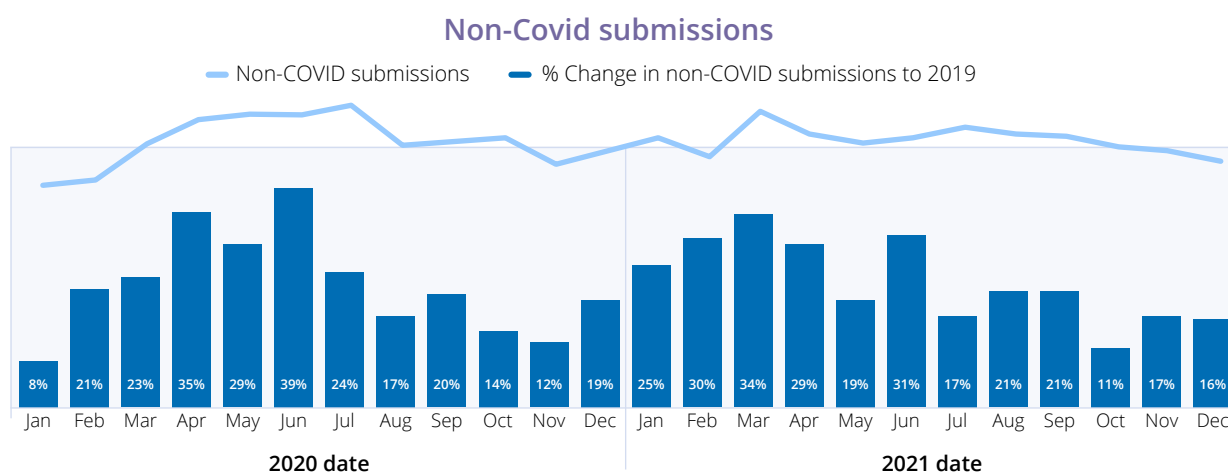
Publishing trends

What were people publishing during the pandemic?



It is fair to say we saw a surge in submissions during the pandemic. In 2020, we worked with our academic journal editors, peer review support teams, and production colleagues to **prioritize the rapid publication of COVID-19 research**.

Was this increase mostly in medical research and fields related to COVID-19, or was it uniform across disciplines as researchers across subject areas had more time at home to write up papers?



The similarity in the above graphs, comparing all submissions and non-COVID related submissions, shows that **there was an increase in submissions for all articles, not just those relating to the pandemic.**

Was medical research prioritized?

Was the rush to publish research in 2020 mostly in Medicine, given such a focus on vaccine delivery during this period? We looked at year-on-year excess growth in the second quarter of 2020 to find out:

Top 10 subject areas: excess growth

JOURNAL SUBJECT AREA	Q2 2020 % COVID SUBMISSIONS	Q2-Q1 2020 EXCESS GROWTH
Biomechanics	6%	59%
Entrepreneurship & Small Business	3%	53%
Law & Ethics In Health	40%	47%
Special Education	0%	44%
Medical Education	25%	43%
Accounting	2%	36%
Sport Management	12%	35%
Environmental Health	8%	34%
Ophthalmology	6%	31%
Multicultural Education	0%	31%

Those with the highest excess growth came from a variety of disciplines, in areas as wide ranging as Entrepreneurship and Ophthalmology.



What subject areas received the highest proportion of COVID-19 submissions in 2020?

JOURNAL SUBJECT AREA	% COVID SUBMISSIONS
Immunology	31%
Law & Ethics in Health	22%
Medical Education	19%
Allied & Public Health	18%
Public Health	17%
Mental Health (Multidisciplinary)	17%
Sport Management	16%
Behavioral Medicine	16%
Health Psychology	15%
Educational Media & Technology	14%

What subject areas received the highest proportion of COVID-19 submissions in 2021?

JOURNAL SUBJECT AREA	% COVID SUBMISSIONS
Behavioral Medicine	27%
Health Psychology	27%
Immunology	25%
Allied & Public Health	23%
Mental Health (Multidisciplinary)	21%
Public Health	21%
Educational Media & Technology	20%
Hospitality & Tourism	18%
Psychiatry	18%
Communication Studies	17%



Immunology was the subject area that had the highest percentage of submissions about COVID-19 in 2020, shifting to Behavioral Medicine in 2021 – perhaps reflecting the changing focus from finding a vaccine to the longer-term impact of COVID-19 and ongoing health responses.

Hospitality & Tourism, and Communication Studies also make an appearance in the top 10 subject areas by percentage of COVID-19 submissions in 2021.

Application of research: has medical research on COVID-19 been cited faster?

We've taken the top 10 cited articles relating to COVID-19 published online in July 2020, as an example month (number of citations received in first 12 months):

NUMBER OF CITATIONS	ARTICLE TITLE	SUBJECT AREA
155	Country responses and the reaction of the stock market to COVID-19? A preliminary exposition	Finance
119	COVID-19's impact on stock prices across different sectors? An event study based on the chinese stock market	Finance
115	Social media and vaccine hesitancy: new updates for the era of COVID-19 and globalized infectious diseases	Immunology
115	The use of the health belief model to assess predictors of intent to receive the COVID-19 vaccine and willingness to pay	Immunology
109	The impact of the COVID-19 pandemic on firm performance	Finance
107	Impact of COVID-19 on logistics systems and disruptions in food supply chain	Manufacturing Engineering
102	Classification of the COVID-19 infected patients using DenseNet201 based deep transfer learning	Molecular Biology
98	Effects of COVID-19 pandemic on hospitality industry: review of the current situations and a research agenda	Tourism
93	Mobilizing policy (In)Capacity to fight COVID-19: understanding variations in state responses	Politics
92	The disease outbreak channel of exchange rate return predictability: evidence from COVID-19	Finance

Social Sciences and Science & Technology COVID-19 articles have seen more citations than Medicine articles. **From Tourism to Finance, Politics to Molecular Biology and of course Immunology, there is a wide spread of top cited articles.**



Discovery trends

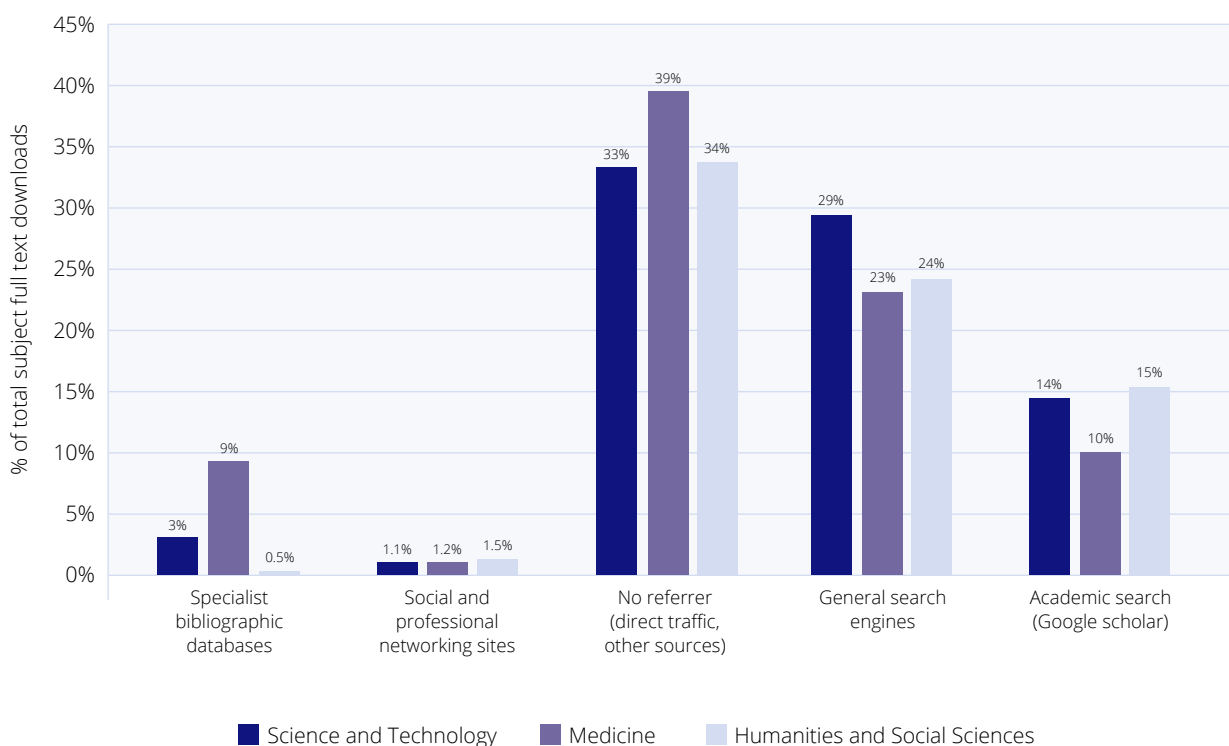
How did people discover the research they needed during the pandemic?



Search by subject: where do people start?

General search engines and academic search engines were the top referrers to Taylor & Francis Online between 2017 – 2021, but there were differences across disciplines:

Article downloads on Taylor & Francis Online by referrer and broad subject area

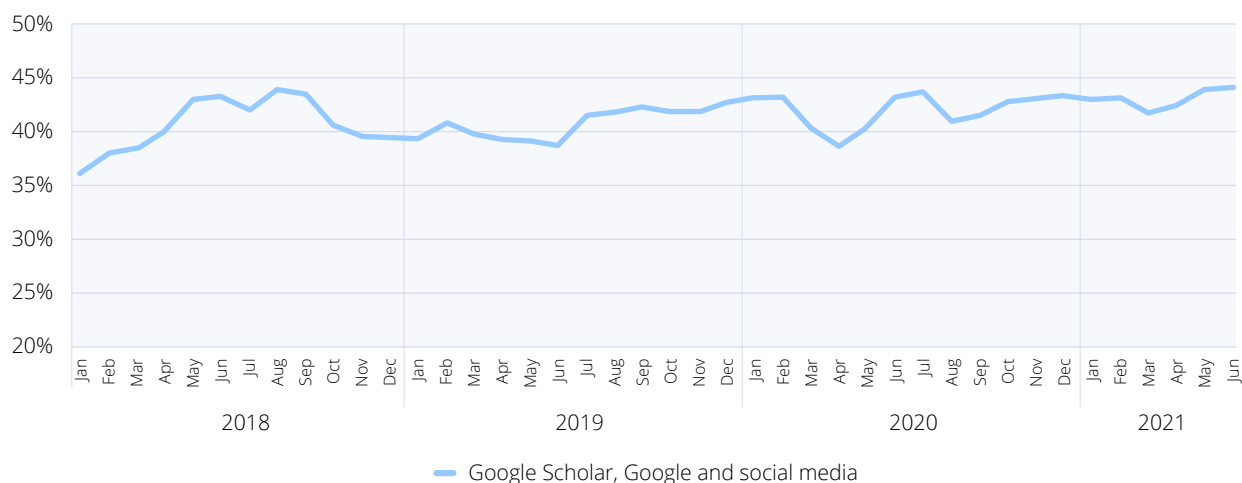


In early 2020, many researchers were working off campus as lockdowns were introduced around the world. We began 2020 with an enormous drive to ensure librarians and researchers had easy, swift access to content with help guides, updates and customer service support.

Was 2020 the year of Google, Google Scholar and social media?

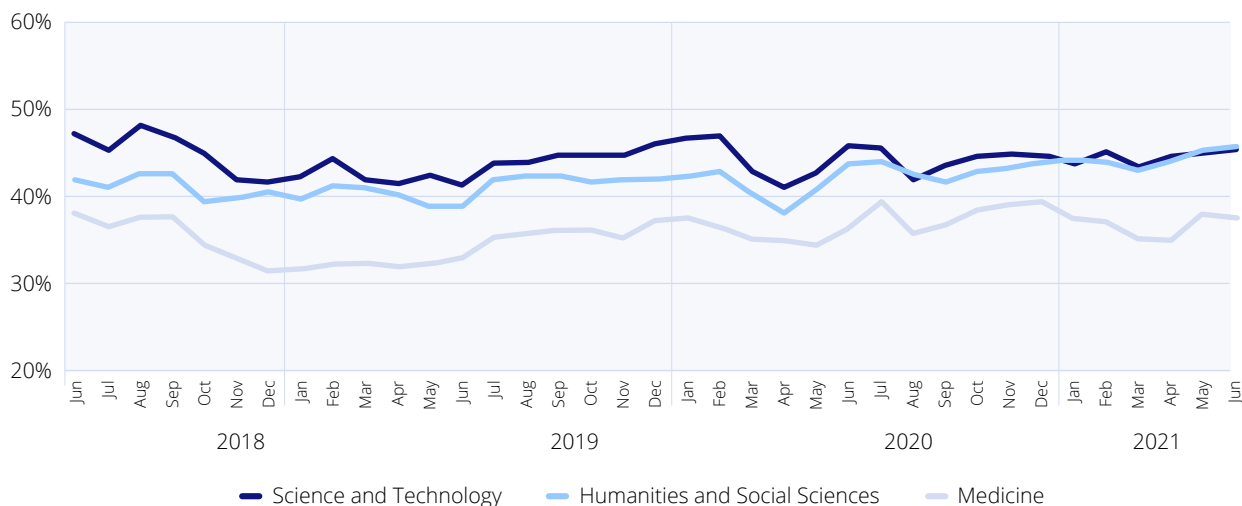
As researchers switched to remote working away from the library, was there an uptick in referrals from Google (especially Google Scholar) and social media – discovery tools easily and often accessed from home?

Proportion of usage coming from Google Scholar, Google and social media, 2019-2021



Our data showed no significant increase in referrals from social media (Facebook, Twitter, and LinkedIn) or academic search engines. **We saw a small dip in referrals from Google Scholar, Google, and social media during March and April 2020 as lockdowns came in around the world, but no long-term impact.**

Proportion of usage coming from Google Scholar, Google and social media by journal subject area, 2019-2021





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How we're driving discovery of published research

We prioritize making the research we publish discoverable: helping readers get the right research at the right time - as seamlessly as possible.

Through global lockdowns and remote working, we've continued to drive discovery by maintaining world-leading standards, indexing content in popular databases, and partnering with cutting-edge technology organizations and bodies.