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Stephen G

St. Xavier's University, Kolkata, stephenlisp@gmail.com

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ALTMETRIC FOR TOP THREE COVID-19 RESEARCH ARTICLES PUBLISHED IN 2020 - AN OVERVIEW

Dr. Stephen. G

Assistant Librarian i/c Law Library,
St. Xavier's University, Kolkata,
West Bengal.

Abstract

Around the world, researchers are working together to understand COVID-19. Knowing who's talking about related research and what's being said is critical to this effort. Altmetric put together resources to help the navigate altmetric data and evaluate the quality of discussions around corona virus literature. The objective of this study is to determine the top three research articles related with Covid-19 and published in 2020. Based on altmetric attention score "The proximal origin of SARS-CoV-2" is the first rank article out of three and it's published in Nature journal. It has highly mentioned in News Stories, blog posts and facebook posts. Also with 5,251 readers on mendeley and 1,354 citations on dimensions database. Altmetric calculated the attention score is 34,775. Maximum number of twitters for "The proximal origin of SARS-CoV-2" In country wise Spain twitters is dominating with other countries in geographical breakdown. The second rank article is "Effectiveness of Adding a Mask Recommendation to Other Public Health Measures to Prevent SARS-CoV-2 Infection in Danish Mask Wearers" has been mentioned highly compared to other articles with 97,846 tweets, 58 reddit posts, 149 readers on mendeley and 13 citations on dimensions database. Altmetric calculated the attention score is 32,931. Third rank research article is "Dying in a Leadership Vacuum" and it has 468 News Stories, 48,742 tweets, 57 facebook posts, 34 reddit posts, 4 Wikipedia mentions, 189 readers on mendeley and 17 citations on dimensions database. Altmetric calculated the attention score is 26,745. Twitter demographical breakdown shows maximum members of the public category in all three articles. 100% geographical breakdown for the mendeley readers is not able to track by altmetric.

Keywords: Covid-19, Altmetric, Twitters, Citations, Mendeley readers, Medicine, Public

Introduction

The definition of altmetrics stands for alternative metrics and is a way to measure the impact of a scholarly article or project by charting social media mentions as well as blog posts and bookmarks. Altmetrics are metrics and qualitative data that are complementary to traditional, citation-based metrics. Altmetrics let us measure and monitor the reach and impact of scholarship and research through online interactions. Altmetrics stands for "alternative metrics." The "alternative" part references traditional measurements of academic success such as citation counts, journal prestige (impact factor), and author H-index. Altmetrics are meant to compliment, not totally replace, these traditional measures. Supporters of the altmetrics movement believe that doing so will give a more complete picture of how research and scholarship is used. Simply, altmetrics are metrics beyond traditional citations. Altmetrics is the

creation and study of new metrics based on the Social Web for analyzing and informing scholarship (Altmetrics Manifesto).

Altmetrics / Article Level Metrics

Altmetrics is a sub-discipline of scientometrics. Altmetrics typically looks at individual research outputs, including journal articles or datasets. Article-level metrics are a comprehensive and multidimensional suite of transparent and established metrics at the article level (PLUS Article Level metric). They collect and provide metrics for individual articles, rather than aggregating them per journal. Article-level metrics include citations, usage data, and altmetrics. Article-level metrics are typically associated with the publisher Public Library of Science (PLOS), who introduced them for all of their articles in 2009. Altmetrics and article-level metrics are sometimes used interchangeably, but there are important differences. Firstly Article-level metrics also includes citations and usage data secondly Altmetrics can also be applied to other research outputs, such as research data Metrics for other research works -presentations, datasets, software, etc. – typically include usage statistics and altmetrics, but also citations). Author-level metrics aggregate the metrics of all research by a specific author. Metrics can also be aggregated by institution, discipline, etc). Post-publication peer review is the process whereby scientific studies are absorbed into the body of knowledge.

Altmetric Attention Score

The Altmetric Attention Score and donut are designed to help you easily identify how much and what type of attention a research output has received. The Altmetric Attention Score is an automatically calculated, weighted count of all of the attention a research output has received. It is based on three main factors volume, sources and authors. The Altmetric Attention Score and donut area unit designed to assist simply determine what quantity and what form of attention an exploration output has received. The most important part of an Altmetric report is the qualitative data, it's also useful to put attention in context and see how some research outputs are doing relative to others. The Altmetric Attention Score for a research output provides an indicator of the amount of attention that it has received. The Altmetric Attention Score is influenced by two factors firstly the quantity of posts mentioning an output and secondly the quality of the post's source. The quantity is relatively straightforward: the more posts mentioning an output the higher its attention scores. The measure quality in a few different ways. In general: Higher profile posts are worth more than lower profile ones. An article in the Washington Post contributes more, in score terms, than a blog post. A blog post contributes more than a tweet. Who authored each post is important. For posts on social media sites we typically fetch an author's list of followers, a list of their past posts and information about how often those posts were liked, retweeted or reshared. A tweet from a doctor followed by other doctors will contribute more than an automated tweet from a journal's press office.

COVID-19: Corona Virus disease and Pandemic Period

COVID-19 is the cause of a new corona virus known as SARS-CoV-2. The World Health Organization first heard about this new virus on December 31, 2019, when it received a study of

a cluster of cases of 'viral pneumonia' in Wuhan, People's Republic of China. Coronavirus disease (COVID-19) is a recently discovered Corona virus-related infection. The COVID-19 virus causes mild to moderate respiratory illness in the majority of people infected with it and recover without requiring special treatment. People with underlying medical conditions such as cardiovascular disease, diabetes, chronic respiratory disease, and cancer, as well as the elderly, are more likely to develop serious illnesses. The best way to avoid Coronavirus infection and transmission is to be well educated about the disease and how it spreads. Hand washing or using an alcohol-based rub on a regular basis, as well as not rubbing your skin, are both ways to protect one and others from infection. Since the COVID-19 virus is transmitted mainly via the nose when an infected individual coughs, sneezes, or spits, it's important that everyone practice respiratory etiquette. A large number of researchers are working on this study's symptoms, how to monitor and stop it, and how to prevent it from spreading across the world.

Top Three AAS Articles about COVID-19 published in 2020

Article 1 of 3

Title	The proximal origin of SARS-CoV-2
Published in	Nature Medicine, March 2020
Subject Area	Medical and Health Science
Affiliations	Department of Immunology and Microbiology, The Scripps Research Institute, La Jolla, CA, USA. andersen@scripps.edu. Scripps Research Translational Institute, La Jolla, CA, USA. andersen@scripps.edu. Institute of Evolutionary Biology, University of Edinburgh, Edinburgh, UK. Center for Infection and Immunity, Mailman School of Public Health of Columbia University, New York, NY, USA. Marie Bashir Institute for Infectious Diseases and Biosecurity, School of Life and Environmental Sciences and School of Medical Sciences, the University of Sydney, Sydney, Australia. Tulane University, School of Medicine, Department of Microbiology and Immunology, New Orleans, LA, USA. Zalgen Labs, Germantown, MD, USA.
DOI	10.1038/s41591-020-0820-9
Pubmed ID	32284615
Authors	Kristian G. Andersen, Andrew Rambaut, W. Ian Lipkin, Edward C. Holmes, Robert F. Garry
Abstract	Since the first reports of novel pneumonia (COVID-19) in Wuhan, Hubei province, China, there has been considerable discussion on the origin of the causative virus, SARS-CoV-2 (also referred to as HCoV-19). Infections with SARS-CoV-2 are now widespread, and as of 11 March 2020, 121,564 cases have been confirmed in more than 110 countries, with 4,373 deaths. SARS-

	<p>CoV-2 is the seventh coronavirus known to infect humans; SARS-CoV, MERS-CoV and SARS-CoV-2 can cause severe disease, whereas HKU1, NL63, OC43 and 229E are associated with mild symptoms. Here we review what can be deduced about the origin of SARS-CoV-2 from comparative analysis of genomic data. We offer a perspective on the notable features of the SARS-CoV-2 genome and discuss scenarios by which they could have arisen. Our analyses clearly show that SARS-CoV-2 is not a laboratory construct or a purposefully manipulated virus.</p>
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Article 2 of 3

Title	Effectiveness of Adding a Mask Recommendation to Other Public Health Measures to Prevent SARS-CoV-2 Infection in Danish Mask Wearers
Published in	Annals of Internal Medicine, November 2020
Subject Area	Medical and Health Science
Affiliations	Author, Article and Disclosure Information https://www.acpjournals.org/doi/10.7326/M20-6817
DOI	10.7326/m20-6817
Pubmed ID	33205991
Authors	Henning Bundgaard, Johan Skov Bundgaard, Daniel Emil Tadeusz Raaschou-Pedersen, Christian von Buchwald, Tobias Todsén, Jakob Boesgaard Norsk, Mia M. Pries-Heje, Christoffer Rasmus Vissing, Pernille B. Nielsen, Ulrik C. Winsløw, Kamille Fogh, Rasmus Hasselbalch, Jonas H. Kristensen, Anna Ringgaard, Mikkel Porsborg Andersen, Nicole Bakkegård Goecke, Ramona Trebbien, Kerstin Skovgaard, Thomas Benfield, Henrik Ullum, Christian Torp-Pedersen, Kasper Iversen
Abstract	<p>Background: Observational evidence suggests that mask wearing mitigates transmission of severe acute respiratory syndrome corona virus 2 (SARS-CoV-2). It is uncertain if this observed association arises through protection of uninfected wearers (protective effect), via reduced transmission from infected mask wearers (source control), or both. Objective: To assess whether recommending surgical mask use outside the home reduces wearers' risk for SARS-CoV-2 infection in a setting where masks were uncommon and not among recommended public health measures. Intervention: Encouragement to follow social distancing measures for corona virus disease 2019, plus either no mask recommendation or a recommendation to wear a mask when outside the home among other persons together with a supply of 50 surgical masks and instructions for proper use. Conclusion: The recommendation to wear surgical masks to supplement other public health measures did not reduce the SARS-CoV-2 infection rate among wearers by more than 50% in a community with modest infection rates, some degree of social distancing, and uncommon general mask use. The data were compatible with lesser degrees of self-protection.</p>

Article 3/3

Title	Dying in a Leadership Vacuum
Published in	New England Journal of Medicine, October 2020
Subject Area	Medical and Health Science
Affiliations	<i>The editors, New England Journal of medicine</i>
DOI	10.1056/nejme2029812
Pubmed ID	33027574
Authors	The editors
Abstract	Covid-19 has created a crisis throughout the world. This crisis has produced a test of leadership. With no good options to combat a novel pathogen, countries were forced to make hard choices about how to respond. Here in the United States, our leaders have failed that test. They have taken a crisis and turned it into a tragedy. The magnitude of this failure is astonishing. According to the Johns Hopkins Center for Systems Science and Engineering, ¹ the United States leads the world in Covid-19 cases and in deaths due to the disease, far exceeding the numbers in much larger countries, such as China. The death rate in this country is more than double that of Canada, exceeds that of Japan, a country with a vulnerable and elderly population, by a factor of almost 50, and even dwarfs the rates in lower-middle-income countries, such as Vietnam, by a factor of almost 2000. Covid-19 is an overwhelming challenge, and many factors contribute to its severity. But the one we can control is how we behave. And in the United States we have consistently behaved poorly.

Review of Literature

Radhakrishnan and Baskaran (2020) analyses the articles on Phytochemistry Literature with the tools of Altmetric. Ten research articles from phytochemistry literature were taken to analyze and compares the citations received by a publication against the Altmetric score. Found that the most of the Publications are shared by the social media in Twitter. Moreover maximum number of readers preferred to read the articles through reference management software through Mendeley. Study discovered that there is a moderate correlation between Citation and Altmetric Score. Only one paper obtains citation and Altmetric score equally. Other papers are gets citation and Altmetric score in near equal. Out of the ten research articles, four articles have received more citations. Out of four highly cited research articles, three articles have received very low Altmetric score and only one research article received high Altmetric score.

Stephen and Susheela (2019) analyzed the 2019 top three research articles altmetric attention score in the online. The highest Altmetric attention score received for the article of “Few-shot adversarial learning of realistic neural Talking Head Models” with attention score of 13,415 with huge number of twitter mentioned and it was published arXiv, May 2019. Within seven months crossed high attention among the scholars. Followed by Scientists rise up against statistical significance with attention score of 13,171, published in nature journals with 272

citations. Third rank for the article of “Measles, Mumps, Rubella Vaccination and Autism” published in *Annals of Internal Medicine* with attention score of 9,339 with highly mentioned (224) news outlets. Out of these three two articles are from the medicine field.

Xu et al. (2018) examined how video articles in the *Journal of Visualized Experiments* were tweeted and found at least seven out of the top 10 tweeters of JoVE articles to be bots. As bots tweet articles without human selection, they undermine the function of tweet counts as a filter or indicator of impact as suggested in the altmetrics manifesto (Priem et al., 2010). While bots contribute positively to Twitter by creating “a large volume of benign tweets, like news and blog updates” (Chu et al., 2012, p. 812), they can potentially have a big effect on altmetrics calculations if not properly recognized and discounted.

Karanatsiou et.al (2017) present the evolution of the literature, concerning the specific field and metrics used, following with a brief description of basic indicators related to the field of bibliometrics (journal impact factor (JIF), eigenfactor, article influence score and h-index) discussing their advantages and disadvantages. In the second part, the authors describe altmetrics and present the differences with bibliometrics. Both bibliometrics and altmetrics remain weak indicators as fraught with disadvantages with manipulation being the greatest of all. Nevertheless, the combination of the two is proposed in order to export safer conclusions on assessing the impact. Regarding the manipulation there is yet not a clean technique to eliminate manipulation. In specific, regarding bibliometrics, the manipulation of indicators refers only to the human factor intervention. The theoretical implication of this study constitutes of collecting the relevant literature regarding scientific indicators.

Cassidy et al (2017) presented social media has become integrated into the fabric of the scholarly communication system in fundamental ways, principally through scholarly use of social media platforms and the promotion of new indicators on the basis of interactions with these platforms. Research and scholarship in this area has accelerated since the coining and subsequent advocacy for altmetrics-that is, research indicators based on social media activity. This review provides an extensive account of the state-of-the art in both scholarly use of social media and altmetrics. The review consists of 2 main parts: the first examines the use of social media in academia, reviewing the various functions these platforms have in the scholarly communication process and the factors that affect this use. The second part reviews empirical studies of altmetrics, discussing the various interpretations of altmetrics, data collection and methodological limitations, and differences according to platform. The review ends with a critical discussion of the implications of this transformation in the scholarly communication system.

Mohammadi and Thelwall (2014) compared the Mendeley readership counts with citations for different social sciences and humanities disciplines. The overall correlation between Mendeley readership counts and citations for the social sciences was higher than for the humanities. Low and medium correlations between Mendeley bookmarks and citation counts in

all the investigated disciplines suggest that these measures reflect different aspects of research impact. Mendeley data were also used to discover patterns of information flow between scientific fields. Comparing information flows based on Mendeley bookmarking data and cross-disciplinary citation analysis for the disciplines revealed substantial similarities and some differences. Thus, the evidence from this study suggests that Mendeley readership data could be used to help capture knowledge transfer across scientific disciplines, especially for people that read but do not author articles, as well as giving impact evidence at an earlier stage than is possible with citation counts.

Objectives

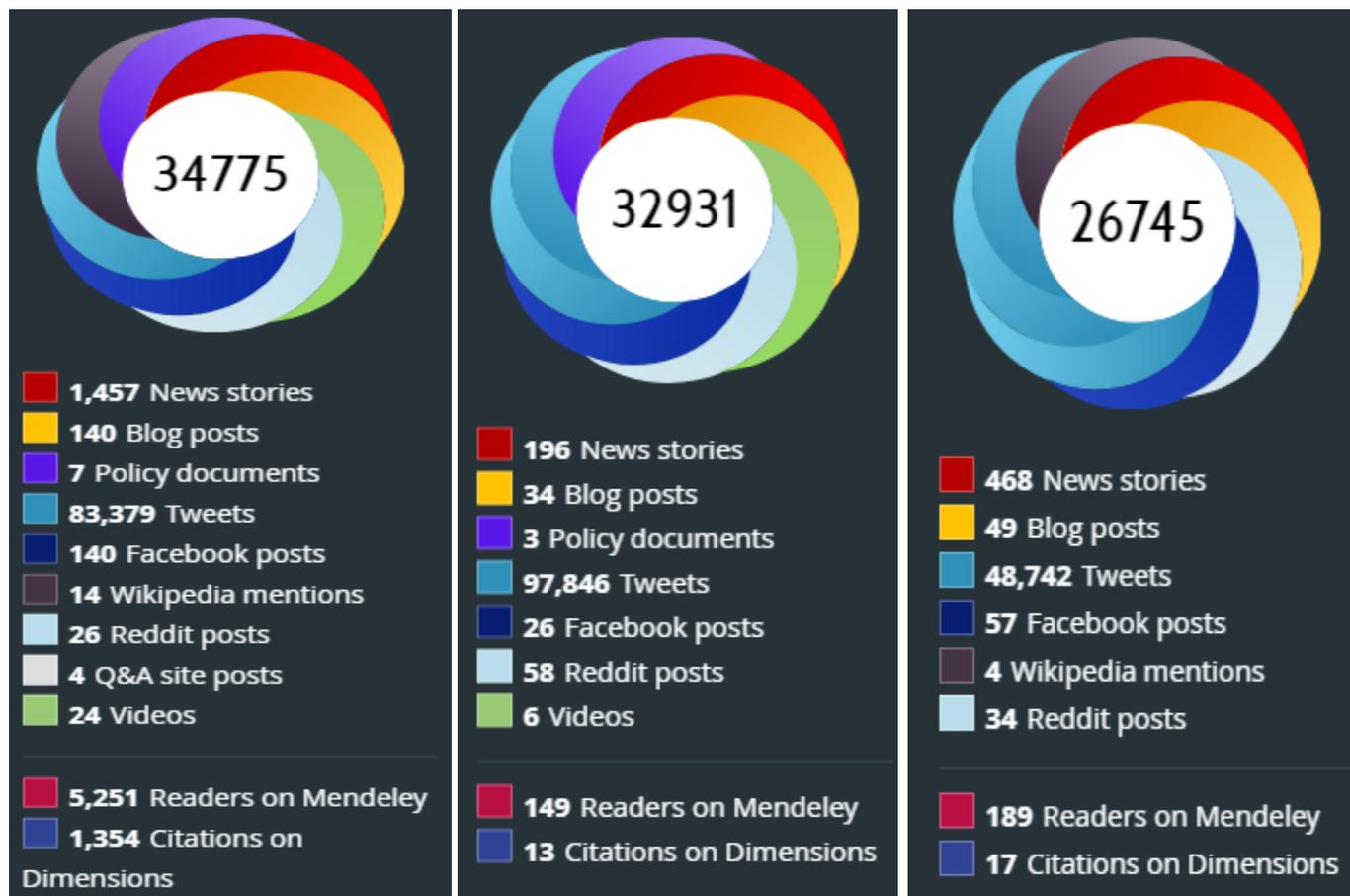
- ❖ To find out the Altmetric Attention score for the top three research articles especially about Covid-19 related and published in 2020.
- ❖ To analyze the majority of Twitter demographical types for the top three Altmetric Attention Score Articles published in 2020.
- ❖ To know the number of citations in the dimension database of Covid related top three articles especially published in the year of 2020.
- ❖ To discover the Mendeley reader's statistics for the top three Altmetric Attention Score Articles published in 2020.
- ❖ To identify professional status of Mendeley readers for the top three Altmetric Attention Score Articles published in 2020.
- ❖ To analyze the various social media mentions like facebook, twitter, news stories, blog posts etc. of top three altmetric attention score articles especially published in the year of 2020.

Methodology

Altmetric is a method that measures the amount of online coverage that research outputs including academic papers and data sets get. It pulls data from social media (facebook and twitter), traditional media, blogs and online reference managements tools like dimension and mendeley. Due to Covid-19 many scientists and authors are researching and publishing the result as a research articles in various journals. Researcher would like to analyze the top three altmetric attention score articles and it should be covid and corona virus related research publications in the year of 2020. Researcher set up the Altmetric Free Bookmark in Chrome to seen the covid related researches and publications altmetric attention scores. Researcher searching for interestingly the top three altmetric attention scores research articles especially corona virus related. Meanwhile top three articles have been found from the Nature Medicine, Annals journal of medicine and New England Journal of Medicine. With the help of altmetric page, the researcher tabulates and interpreted the primary data to complete the study.

Data Analysis and Interpretation

Top Three Altmetric Attention Score of Covid related research articles published in 2020



AAS Article 1/3

AAS Article 2/3

AAS Article 3/3

The first article out of top three AAS article published in the year of 2020 is “The proximal origin of SARS-CoV-2”. This article has been mentioned in 1,457 News Stories, 140 Blog posts, 7 policy documents, 83,379 tweets, 140 facebook posts, 14 Wikipedia mentions, 26 reddit posts, 4 Q&A site posts, 24 videos, 5,251 readers on mendeley and 1, 354 citations on dimensions database. From that all mentions altmetric calculated the score is 34,775. The second article in top three is “Effectiveness of Adding a Mask Recommendation to Other Public Health Measures to Prevent SARS-CoV-2 Infection in Danish Mask Wearers”. It has been mentioned in 196 News Stories, 34 Blog posts, 3 policy documents, 97,846 tweets, 26 facebook posts, 58 reddit posts, and 6 videos also with 149 readers on mendeley and 13 citations on dimensions database. Altmetric calculated the Attention score for the second article is 32,931. The third place out of top three AAS article is “Dying in a Leadership Vacuum”. It has 468 News Stories, 48,742 tweets, 57 facebook posts, 34 reddit posts, and 4 Wikipedia mentions also with 189 readers on mendeley and 17 citations on dimensions database. From that all mentions altmetric calculated the attentions score is 26,745.

Twitter Geographical and Demographical breakdown of Article 1/3

The data shown below were collected from the profiles of 73,216 tweeters who shared this research output. Geographical breakdown and demographical breakdown profile of those who are tweeted regarding “The proximal origin of SARS-CoV-2” (Article 1/3). A geographic map of the tweeter, Altmetric Geolocation to generate users based on the information in their profiles on twitter. The Geo Key is a straightforward breakdown that comes from users who share an article in the world. The vast majority of the mentioned twitters for “The proximal origin of SARS-CoV-2” comes under the unknown category 49% (35,976), followed by 19% (13,893) other country twitters mentions, Spain 8%, USA 6%, Brazil 5%, Italy 3% and only 2% of the twitter from Chile, United kingdom, Peru, Mexico and Colombia. In country wise Spain twitters are dominating with other countries in geographical breakdown.

Country	Count	As %
Spain	6050	8%
United States	4527	6%
Brazil	3381	5%
Italy	2431	3%
Chile	1776	2%
United Kingdom	1308	2%
Peru	1305	2%
Mexico	1291	2%
Colombia	1278	2%
Other	13893	19%
Unknown	35976	49%

Table 1 – Twitter Geographical Breakdown

Type	Count	As %
Members of the public	66652	91%
Scientists	4453	6%
Practitioners (doctors, other healthcare professionals)	1131	2%
Science communicators (journalists, bloggers, editors)	913	1%
Unknown	67	<1%

Table 2– Twitter Demographical Breakdown

Table two shows that twitters demographical breakdown of the article of “The proximal origin of SARS-CoV-2”. Majority of the twitters are the public members 91% (66,652), 6% (999) Tweeters are scientist, 2% (1,131) twitters practitioners (doctors, other health care professional) and only one percentage of twitters are science communicators (journalists, bloggers, editors).

Mendeley Readers stats for “The proximal origin of SARS-CoV-2” (Article 1/3)

The data shown below were compiled from readership statistics for 5,914 mendeley readers of this research output. 100% geographical breakdown not able to track by altmetric. Regarding the demographical breakdown of mendeley readers by professional status, most of the readers are unknown professional status (20%), followed by other category (19%), students those are bachelor (17%), 15% researcher, 13% PhD student and 11% master level students. Only 5% are readers are identified as doctoral student. Mendeley readers by discipline wise (Table 4) shows that most readers are unknown discipline category (25%), followed by other discipline category (23%), 20% readers by discipline as biochemistry, genetics and molecular biology, 12% mendeley readers are both medicine/dentistry category and agricultural and biological sciences discipline, 5% of mendeley readers from immunology and microbiology discipline. Only 3% readers by chemistry discipline.

Readers by professional status	Count	As %
Student > Bachelor	997	17%
Researcher	861	15%
Student > Ph. D. Student	740	13%
Student > Master	678	11%
Student > Doctoral Student	316	5%
Other	1140	19%
Unknown	1182	20%

Table 3–Mendeley Readers by professional Status

Readers by discipline	Count	As %
Biochemistry, Genetics and Molecular Biology	1187	20%
Medicine and Dentistry	730	12%
Agricultural and Biological Sciences	681	12%
Immunology and Microbiology	305	5%
Chemistry	194	3%
Other	1332	23%
Unknown	1485	25%

Table 4 –Mendeley Readers by discipline

Research Output Tracks of “The proximal origin of SARS-CoV-2” (Article 1/3)

Altmetric has tracked 17,418,198 research articles outputs from all sources, out of which this article got first position. Compared to these, it has done particularly well and is in the 99th percentile: it is in the top 5% of all research output tracked by Altmetric. So far Altmetric has tracked 7,473 research outputs from the journal of nature medicine, “The proximal origin of SARS-CoV-2” research article got first place. It's a particularly good, scoring more than 99% of the articles published in the journal of medicine. Older research outputs will score higher because it has more time to submit the report. Research output tracks by similar age, altmetric

can compare altmetric attention score with 318,266 and tracked outcasts which were published within six weeks on both sides of this one in any source. This article has second position. It has done particularly well, scoring more than 99% of its contemporaries. Altmetric can compare this research output to 147 others from the journal of nature medicine and it's published within six weeks on either side of this one. "The proximal origin of SARS-CoV-2" article has got the first rank. It has done particularly well, scoring more than 99% of its contemporaries.

Research Output Tracks	Rank	Total Outputs
All research output	#1	17,418,198
Outputs from nature medicine	#1	7,473
Outputs of similar sge	#2	318,266
Outputs of similar age from nature medicine	#1	147

Table 5 – Research Output Tracks

Details of Twitter Geographical and Demographical breakdown for Article 2/3

The data shown below were collected from the profiles of 45,483 tweeters who shared this research output. Table six shows that geographical breakdown and demographical breakdown profile of those who are tweeted regarding "Effectiveness of Adding a Mask Recommendation to Other Public Health Measures to Prevent SARS-CoV-2 Infection in Danish Mask Wearers". A geographic map of the tweeter, Altmetric geolocation to generate users based on the information in their profiles on twitter. The Geo Key is a straightforward breakdown that comes from users who share a research article in the world. The vast majority of the mentioned twitters for the second rank research article comes under the Unknown category 58% (26,204) twitters, followed by United States 21% (9,580) twitters, United Kingdom 4%, France 3%, Brazil, Canada 2% twitters and only one percentage of the twitter from Japan, Spain, Germany and Australia. In country wise United States twitters are dominating with other countries in geographical breakdown.

Country	Count	As %
United States	9580	21%
United Kingdom	1780	4%
France	1488	3%
Brazil	1079	2%
Canada	920	2%
Japan	370	<1%
Spain	326	<1%
Germany	282	<1%
Australia	226	<1%
Other	3228	7%
Unknown	26204	58%

Table 6 – Twitter Geographical Breakdown

Below the table number seven shows that about the twitters demographical information who is mentioned the article of “Effectiveness of Adding a Mask Recommendation to Other Public Health Measures to Prevent SARS-CoV-2 Infection in Danish Mask Wearers”. Almost 95% (43,323) twitters are public member’s demographic category, 2% (854) Tweets are scientist category and 2% (793) practitioners (doctors and other healthcare professionals) and less than one percentage of twitters are category of science communicators and unknown category.

Type	Count	As %
Members of the public	43323	95%
Scientists	854	2%
Practitioners (doctors, other healthcare professionals)	793	2%
Science communicators (journalists, bloggers, editors)	439	<1%
Unknown	74	<1%

Table 7 – Twitter Demographical Breakdown

Mendeley Readers by Professional Status and by discipline wise for Article 2/3

The data shown below were compiled from mendeley readership statistics for 244 mendeley readers of the article “Effectiveness of Adding a Mask Recommendation to Other Public Health Measures to Prevent SARS-CoV-2 Infection in Danish Mask Wearers”. 100% geographical breakdown of mendeley readers not able to track by altmetric. Regarding the demographical breakdown of mendeley readers by professional status, most of the mendeley readers are unknown (25%) professional status, followed by 16 percentage readers other category and researcher professional status. Students those are student bachelor 14%, student in master professional status 13% and only 7% are identified as PhD student.

Readers by professional status	Count	As %
Researcher	39	16%
Student > Bachelor	34	14%
Student > Master	30	12%
Other	25	10%
Student > Ph. D. Student	17	7%
Other	60	25%
Unknown	39	16%

Table 8 – Mendeley Readers by professional status

According to table nine shows that about to discipline wise mendeley reader's that most readers are medicine and dentistry 34%, followed by other discipline 25%, 18% readers are unknown discipline, 9% nursing and health professionals, 5% readers are both Biochemistry, Genetics and molecular biology and unspecified professional readers. Only 4% mendeley readers belong to engineering discipline.

Readers by discipline	Count	As %
Medicine and Dentistry	84	34%
Nursing and Health Professions	23	9%
Biochemistry, Genetics and Molecular Biology	12	5%
Unspecified	11	5%
Engineering	10	4%
Other	60	25%
Unknown	44	18%

Table 9 – Mendeley Readers by discipline

Research Output Tracks for Article 2/3

Altmetric has tracked 17,418,198 research articles from the all sources, out of which “Effectiveness of Adding a Mask Recommendation to Other Public Health Measures to Prevent SARS-CoV-2 Infection in Danish Mask Wearers” got second position in the year of 2020. So far Altmetric has tracked 12,032 research outputs from the journal of Annals of International Medicine; “Effectiveness of Adding a Mask Recommendation to Other Public Health Measures to Prevent SARS-CoV-2 Infection in Danish Mask Wearers” has achieved the first place. About the output of similar age, altmetric can compare this Altmetric Attention Score with 402,811 tracked outcasts which were published within six weeks on both sides of this one in any source. “Effectiveness of Adding a Mask Recommendation to Other Public Health Measures to Prevent SARS-CoV-2 Infection in Danish Mask Wearers” got second place. It has done particularly well, scoring more than 99% of its contemporaries. Altmetric can compare this research output to 264 others from the same source and published within six weeks either side of one. This one has done particularly well, scoring more than 99% of its contemporaries. This article got the first place.

Research Output Tracks	Rank	Total Outputs
All research output	#2	17,418,198
Outputs from Annals of International Medicine	#1	12,032
Outputs of Similar Age	#2	402,811
Outputs of similar age from Annals of International Medicine	#1	264

Table 10 – Research Output Tracks

Twitter Geographical breakdown for “Dying in a Leadership Vacuum” (Article 3/3)

The data shown below were collected from the profiles of 36,858 tweeters who shared the “Dying in a Leadership Vacuum” research output. Table eleven shows that about geographical breakdown and demographical breakdown profile of those who are tweeted regarding “Dying in a Leadership Vacuum”. A geographical map of the tweeter, Altmetric Geolocation to generate users based on the information in their profiles on twitter. The Geo Key is a straightforward breakdown that comes from users who share an article in the world. The vast majority of the mentioned twitters for article of “Dying in a Leadership Vacuum” comes under the Unknown category 43% (15,879), followed by United States twitters 42% (15,604), Canada

and UK. Mexico, France, Japan, Germany and Spain tweeters are below the one percentage. In country wise United States twitters are dominating with other countries in geographical breakdown category.

Country	Count	As %
United States	15604	42%
Canada	1011	3%
United Kingdom	766	2%
Australia	433	1%
Mexico	258	<1%
France	223	<1%
Japan	209	<1%
Germany	183	<1%
Spain	181	<1%
Other	2111	6%
Unknown	15879	43%

Table 11– Twitter Geographical Breakdown

Table twelve shows that about the twitters demographical breakdown information. Maximum number of twitters is belongs to the public members 82% (30,222), followed by 8% (3,082) tweeters are scientist, 7% (2,557) twitters are practitioners (doctors and other healthcare professionals) and 3% (994) twitters from the Science communicators (journalist, bloggers, editors). Only less than one percentage of the twitters is coming under unknown category. .

Type	Count	As %
Members of the public	30222	82%
Scientists	3082	8%
Practitioners (doctors, other healthcare professionals)	2557	7%
Science communicators (journalists, bloggers, editors)	994	3%
Unknown	3	<1%

Table 12– Twitter Demographical Breakdown

Mendeley Readers breakdown for “Dying in a Leadership Vacuum” (Article 3/3).

The data shown below were compiled from readership statistics for 220 Mendeley readers of this research output. 100% geographic down not able to track by altmetric. Regarding the demographical for the mendeley readers by professional status, most of the mendeley readers are under the other category (23%), followed by one more other category 19%, researcher category (18%), PhD student 11%, 7% professors and only 6% in the student master category. Table thirteen shows that about mendeley readers in discipline wise, most of the mendeley readers are medicine and dentistry 37% discipline, followed by unknown 23%, other 22%. Three kinds of discipline wise mendeley readers are got 5% and those are biochemistry, Genetics and molecular biology and Engineering. Only 3% mendeley readers are belongs to nursing and health professionals.

Readers by professional status	Count	As %
Other	42	19%
Researcher	39	18%
Student > Ph. D. Student	24	11%
Professor	16	7%
Student > Master	14	6%
Other	51	23%
Unknown	34	15%

Table 13– Mendeley Readers by professional status

Readers by discipline	Count	As %
Medicine and Dentistry	81	37%
Agricultural and Biological Sciences	12	5%
Biochemistry, Genetics and Molecular Biology	11	5%
Engineering	10	5%
Nursing and Health Professions	7	3%
Other	48	22%
Unknown	51	23%

Table 14– Mendeley Readers by discipline status

Research Output Tracks for the “Dying in a Leadership Vacuum” (Article 3/3)

Altmetric has tracked 17,418,198 research outputs from all sources, out of which “Dying in a Leadership Vacuum” research article got third position. Compared to these, it has done particularly well and is in the 99th percentile: it is in the top 5% of all research output tracked by Altmetric. So far Altmetric has tracked 28,275 research outputs from the New England Journal of Medicine, has achieved first place “Dying in a Leadership Vacuum” research article. It's a particularly good, scoring more than 99% of its peers. Older research outputs will score higher because they have more time to accumulate mentions. By age, we can compare this Altmetric Attention Score with 320,293 tracked outcasts which were published within six weeks on both sides of this one in any source. The article “Dying in a Leadership Vacuum” research got first place. It has done particularly well, scoring more than 99% of its contemporaries. Altmetric can compare this research output to 288 others from the same source and published within six weeks on either side of this one. It has done particularly well, scoring more than 99% of its contemporaries.

Research Output Tracks	Rank	Total Outputs
All research output	#3	17,418,198
Outputs from New England Journal of Medicine	#1	28,275
Outputs of Simliar Age	#1	320,293
Outputs of similar age from New England Journal of Medicine	#1	288

Table 15 – Research Output Tracks

Finding and Suggestions

The maximum number of Altmetric Attention Score (AAS) received “The proximal origin of SARS-CoV-2” research article. “The proximal origin of SARS-CoV-2” research related with covid-19 and it was published in 2020 by journal of nature medicine. The reason behinds the maximum number of AAS, “The proximal origin of SARS-CoV-2” research mentioned in various social media like news outlets, policy documents, facebook post and blogs post. “The proximal origin of SARS-CoV-2” research article is published in March 2020 it is very earlier compared to other two articles in the top three research articles published in 2020. Also it is published in the nature journal which is highly impact journal in the science and medicine subject. That may be having the chance to get more mentions, more citations and more number of mendeley readers too. 91% (66,652) public members are belong to the majority of twitters demographic category for first rank research article. Majority twitters are belongs the unknown category from the name of country then Spain is dominating with other countries about geographical breakdown. Altmetric not able to track geographical breakdown of mendeley readers. As per demographical breakdown 20% of the mendeley readers are from the Biochemistry, Genetics and Molecular and Biology, 12% of the mendeley readers from medicine and dentistry. Altmetric has tracked 7,473 research outputs from journal of nature medicine and “The proximal origin of SARS-CoV-2” has achieved first place.

The second maximum number of AAS for the article of “Effectiveness of Adding a Mask Recommendation to Other Public Health Measures to Prevent SARS-CoV-2 Infection in Danish Mask Wearers”. Calculated Altmetric Attention Score is 32,931. “Effectiveness of Adding a Mask Recommendation to Other Public Health Measures to Prevent SARS-CoV-2 Infection in Danish Mask Wearers” published in November 2020 in the journal of Annals of International Medicine and got maximum mentions in twitters compared to other two articles. Remarkably mentioned in various social medias like facebook, blogs, twitter etc within two months “Effectiveness of Adding a Mask Recommendation to Other Public Health Measures to Prevent SARS-CoV-2 Infection in Danish Mask Wearers” article got good AAS score. The vast majority of the mentioned twitters for article two out of three comes under the 58% Unknown category twitters and by 21% United States twitters. 95 % public members belong to the majority of twitters in twitter demographic category. Mendeley readers by professional status, most of the readers fall under the unknown category (25%), followed by both other category (16%) and researcher category. Altmetric has tracked 12,032 research outputs from the journal of Annals of International Medicine, “Effectiveness of Adding a Mask Recommendation to Other Public Health Measures to Prevent SARS-CoV-2 Infection in Danish Mask Wearers” research article has achieved first place.

The third rank research article of this study regarding the covid-19 research is “Dying in a Leadership Vacuum”. And it’s published in 2020. It is identified from the altmetric attention score with 26,745. “Dying in a Leadership Vacuum” research article published in October 2020 in the journal of New England Journal of Medicine. The vast majority of the mentioned Twitter for third rank article comes under the Unknown category 43% (15,879) twitters. As per altmetric

data 82% (30,222) public members are belongs to the majority of twitters based on twitters demographic category. According to discipline wise the maximum number of mendeley readers is medicine and dentistry 37%. Altmetric has tracked 28,275 research outputs from New England Journal of Medicine, “Dying in a Leadership Vacuum” has achieved in first place among that.

Conclusion

Social media metrics are often praised as an alternative or complement to traditional bibliometric metrics, especially in the social sciences. This study investigated the state-of-the-art presence of top three altmetric attention score articles for the covid-19 research published in 2020. Mendeley readers and Twitter mentions, the presence of most altmetric data is still very high, even though it is increasing on time. Data presence is essential for the application of altmetrics in research evaluation and other potential areas. The heterogeneity of altmetrics makes it difficult to establish a common conceptual framework and to draw a unified conclusion, thus in most cases it is necessary to separate altmetrics to look into their own performance. Altmetric data with high speed of data accumulation are biased to newly published papers, while those with lower speed bias to relatively old publications. The majority of altmetric data concentrate on publications from the fields of Biomedical and Health Sciences, Social Sciences and Humanities, and Life and Earth Sciences. These findings underline the importance of applying different altmetric data with suitable time windows and fields of science considered. Within a specific subject field, altmetric data show different preferences for research topics, thus research topics attracted different levels of attention across altmetric data sources, making it possible to identify hot research topics with higher levels of attention received in different altmetric contexts. Altmetrics is very swift and researchers may soon feel like they need to speed up, rather than slow down.

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