August 2020

THE 2019 TOP THREE ALTMETRIC ATTENTION SCORE ARTICLES - AN OVERVIEW

Stephen G
NIELIT- Itanagar Centre, Arunachal Pradesh., stephenlisp@gmail.com

Susheela P
CSIR-NGRI, Hyderabad, susheela108@gmail.com

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Dr.G.Stephen,
Assistant Librarian
NIELIT – Itanagar Centre,
Arunachal Pradesh.

P.Susheela,
Technical Officer,
CSIR-NGRI, Hyderabad,
Telengana.

Abstract

Altmetrics are data that can explain both the volume and nature of attention that research receives online. Certain kinds of altmetrics are also indicators for potential downstream impact. Altmetrics are complementary to citation-based metrics, and distinct from social media metrics and usage statistics. In this paper presented the 2019 top three research articles attention 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 filed.

Keywords: Altmetrics, Twitter Mention, Online Attention, Citations, Mendeley, News Outlets

Introduction

The Altmetric Attention Score (AAS) is an automatically calculated, weighted count of all of the attention a research output has received. The AAS takes into account the volume of attention received by a research output across a number of online attention sources. Data sources are to count AAS is News articles, Blogs, Twitter, Facebook, Sina Weibo, Wikipedia, Policy Documents (per source), Q&A, F1000, Publons, Pubpeer, YouTube, Reddit, Pinterest, LinkedIn, Open Syllabus, Google+. Although the Altmetric article page shows Mendeley readers, Scopus citation counts and CiteULike bookmarks, these particular data do not count towards the score. Each source is weighted by the company. The AAS weighting also takes into account whether the author of a mention of a research output regularly posts about scholarly articles.

Altmetrics expand our view of what impact looks like, but also of what's making the impact. This matters because expressions of scholarship are becoming more diverse. Articles are increasingly joined by:

- The sharing of "raw science" like datasets, code, and experimental designs

- Semantic publishing or “nanopublication,” where the citable unit is an argument or passage rather than entire article.
- Widespread self-publishing via blogging, micro blogging, and comments or annotations on existing work.

Because altmetrics are themselves diverse, they’re great for measuring impact in this diverse scholarly ecosystem. In fact, altmetrics will be essential to sift these new forms, since they’re outside the scope of traditional filters. This diversity can also help in measuring the aggregate impact of the research enterprise itself.

Literature Review

Piwowar and Priem (2013) state that ‘the availability of altmetrics expands publishing opportunities to include new venues and stimulates innovative strategies for evaluating research’ (p. 10). Something to highlight in them is that they do not calculate indicators based on the quality of the authors and their work, but at the levels of attention, audience, followers, opinions, and reactions of those people who consult the academic materials. Its use as a new method to evaluate impact makes it comparable to other bibliometric methods where the advantages and disadvantages it has stand out. From a positive point of view, it is a fact that altmetrics data can be retrieved faster than bibliographic citations (Rasmussen & Andersen, 2013). It is also possible to follow other experts in the field, join interest groups, and share references and investigations (Galloway & Pease, 2013), as well as investigating the way in which the academicians from different disciplines interact (Thelwall & Kousha, 2015).

Inversely, Torres-Salinas et al. (2013) affirm that the main problems as an emerging discipline are related to ‘the heterogeneity of sources, the critical mass, the meaning of the indicators or their vanishing character’. These matters of uncertainty and the inconsistency of altmetrics data are still problems that need to be addressed (Zahedi, Fenner, & Costas, 2014), and are exacerbated by the easy manipulation to which data is subjected, given that it is not subject to ideal quality control (Thelwall, Kousha, Dinsmore, & Dolby, 2016).

Stephen (2017) found out about the evidence due to the Altmetric-Review about Zika virus and birth defects article. Results of Altmetric Meditation on 2nd February 2017 are 3804. This article covers 1319 tweeter, 330 in new outlets and 144 in Facebook and 560 Mendeley readers of this research output. Most of the respondents fall into the unknown category, 43% (539) Tweets, followed by 25% (336%) of USA twitter and only 1% of twitter from Chile and Colombia. According to the discipline, the statistics of Mendeli readers show that most readers are depleting medical and dental discipline, followed by 21% of agricultural and biological sciences, third place 20% to other types of readers, 7% Genetics and molecular biology discipline, 6 are received. % Pathak is immunology and microbiology and only 5% of Mendeley readers are nursing and health professionals.)

Stephen (2017) examined the article level metrics for the Association of Hormonal Contraception published in JAMA Psychiatric. In this article, 193 news outlets, 21 blogs, 96 Facebook pages, 951 tweets, the majority of Mendeley readers (41%) have been mentioned which are dropped to the drug and dental discipline and Altmetric has so far produced 7,615,965 products from all sources Tracked. The article got # 120 locations.

Stephen (2019) compiled research output is an Altmetric attribution score of 9147 for the article The Spread of True and Fall News Online. Altmetric has tracked 12,623,901 research outputs in all sources till date 11th, 2019. Altmetric has tracked 7,171,211 research outputs in all the sources so far, out of which this article got # 4 places. By age, we can compare this Altmetric Attention Score with 273,408 tracked outcasts which were published within six weeks on both sides of this one in any source. This article got # 1 place. This research was published to 1,016 others from the same source and within six weeks on both sides of this one. This article got the first place.

Top Three Altmetric Attention Score Articles in 2019

About Few-Shot Adversarial Learning of Realistic Neural Talking Head Models [Rank 1]

Title	**Few-Shot Adversarial Learning of Realistic Neural Talking Head Models**
Published in	arXiv, May 2019
Authors	Egor Zakharov, Aliaksandra Shysheya, Egor Burkov, Victor Lempitsky
Abstract	Several recent works have shown how highly realistic human head images can be obtained by training convolutional neural networks to generate them. In order to create a personalized talking head model, these works require training on a large dataset of images of a single person. However, in many practical scenarios, such personalized talking head models need to be learned from a few image views of a person, potentially even a single image. Here, we present a system with such few-shot capability. It performs lengthy meta-learning on a large dataset of videos, and after that is able to frame few- and one-shot learning of neural talking head models of previously unseen people as adversarial training problems with high capacity generators and discriminators. Crucially, the system is able to initialize the parameters of both the generator and the discriminator in a person-specific way, so that training can be based on just a few images and done quickly, despite the need to tune tens of millions of parameters. We show that such an approach is able to learn highly realistic and personalized talking head models of new people and even portrait paintings.

About Scientists Rise up Against Statistical Significance [Rank 2]

Title	Scientists Rise up Against Statistical Significance
Published by	Nature, March 2019
DOI	10.1038/d41586-019-00857-9
Pubmed ID	30894741
Authors	Valentin Amrhein, Sander Greenland, Blake McShane
Abstract Intro..	When was the last time you heard a seminar speaker claim there was 'no difference' between two groups because the difference was 'statistically non-significant'? If your experience matches ours, there's a good chance that this happened at the last talk you attended. We hope that at least someone in the audience was perplexed if, as frequently happens, a plot or table showed that there actually was a difference. How do statistics so often lead scientists to deny differences that those not educated in statistics can plainly see? For several generations, researchers have been warned that a statistically non-significant result does not 'prove' the null hypothesis (the hypothesis that there is no difference between groups or no effect of a treatment on some measured outcome)1. Nor do statistically significant results 'prove' some other hypothesis. Such misconceptions have famously warped the literature with overstated claims and, less famously, led to claims of conflicts between studies where none exists. We have some proposals to keep scientists from falling prey to these misconceptions.

About Measles, Mumps, Rubella Vaccination and Autism [Rank 3]

Title	Measles, Mumps, Rubella Vaccination and Autism
Published in	Annals of Internal Medicine, March 2019
DOI	10.7326/m18-2101
Pubmed ID	30831578
Authors	Anders Hviid, Jørgen Vinsløv Hansen, Morten Frisch, Mads Melbye
Abstract	Background: The hypothesized link between the measles, mumps, rubella (MMR) vaccine and autism continues to cause concern and challenge vaccine uptake. Objective: To evaluate whether the MMR vaccine increases the risk for autism in children, subgroups of children, or time periods after vaccination. Design: Nationwide cohort study. Setting: Denmark. Participants:657 461 children born in Denmark from 1999 through 31 December 2010, with follow-up from 1 year of age and through 31 August 2013. Measurements: Danish population registries were used to link information on MMR vaccination, autism diagnoses, other childhood vaccines, sibling history of autism, and autism risk factors to children in the

	cohort. Survival analysis of the time to autism diagnosis with Cox proportional hazards regression was used to estimate hazard ratios of autism according to MMR vaccination status, with adjustment for age, birth year, sex, other childhood vaccines, sibling history of autism, and autism risk factors (based on a disease risk score). Results: During 5 025 754 person-years of follow-up, 6517 children were diagnosed with autism (incidence rate, 129.7 per 100 000 person-years). Comparing MMR-vaccinated with MMR-unvaccinated children yielded a fully adjusted autism hazard ratio of 0.93 (95% CI, 0.85 to 1.02). Similarly, no increased risk for autism after MMR vaccination was consistently observed in subgroups of children defined according to sibling history of autism, autism risk factors (based on a disease risk score) or other childhood vaccinations, or during specified time periods after vaccination. Limitation: No individual medical charts were reviewed. Conclusion: The study strongly supports that MMR vaccination does not increase the risk for autism, does not trigger autism in susceptible children, and is not associated with clustering of autism cases after vaccination. It adds to previous studies through significant additional statistical power and by addressing hypotheses of susceptible subgroups and clustering of cases. Primary Funding Source: Novo Nordisk Foundation and Danish Ministry of Health.

Objectives

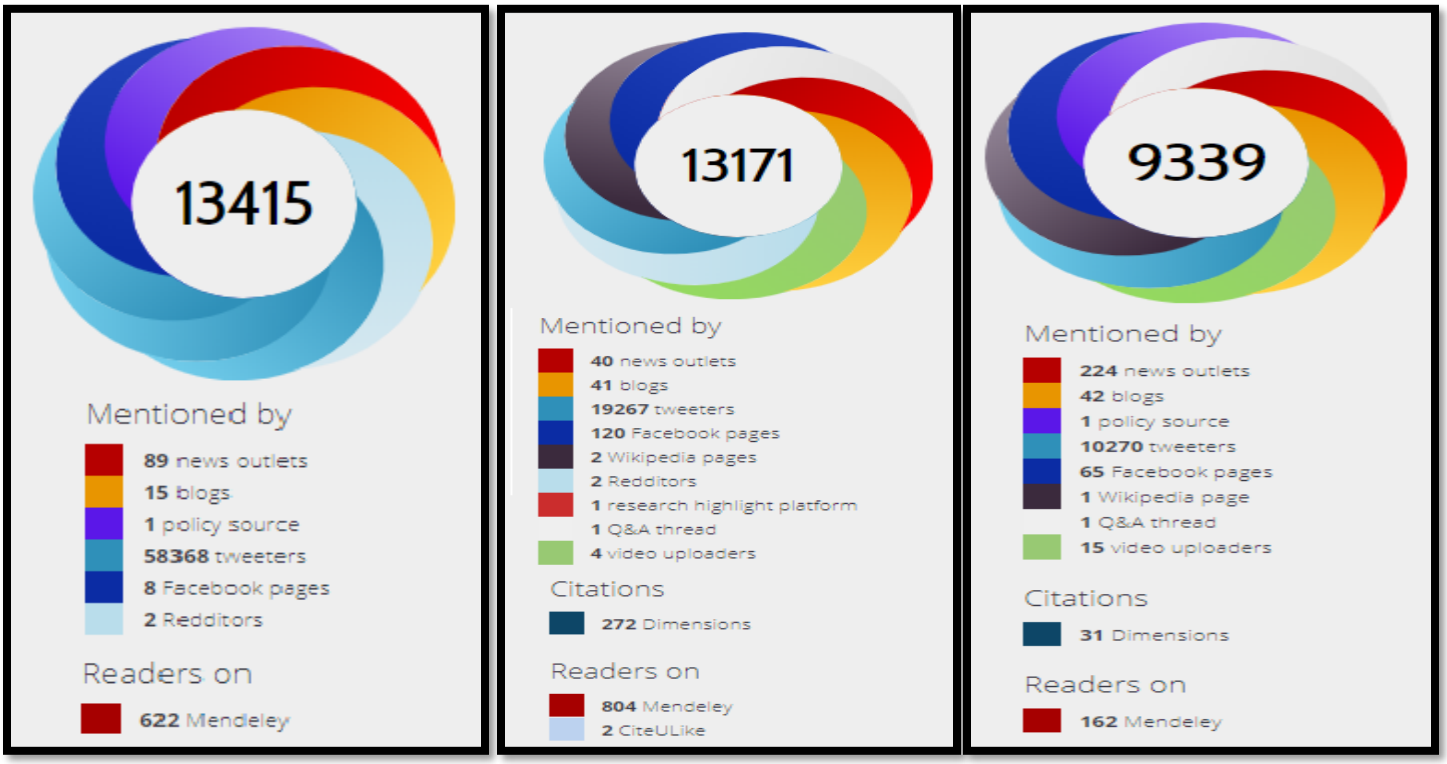
- To find out the Altmetric Attention score for articles of top three in 2019
- Identifying Altmetric Attention Score in context for the 2019 top three Articles.
- To detect online demo and demographic breakdown of real news.
- To analyze the majority of Twitter demographic types mentioned in these articles.
- To discover the Mendeley statistics mentioned this Article.
- To identify professional status of Mendeley readers mentioned these articles.
- To know the various social media mentioned these research articles.

Methodology

The article-level metric (Altmetric) is a measure of the effect and effect of an article in the world of research. The data collected from mainstream and social media is used to determine how and how much the research article is attracting the attention of a colleague. Researchers set up the Altmetric Free Bookmark in Chrome to see online share and mention of an article spreading right and wrong news online with one click. Researchers search for interesting top three altmetric attention scores articles, meanwhile, in these three articles has been found in arXiv, Nature and Annals of Internal Medicine. After receiving the Altmetric page, the researcher tabulated and interpreted to complete the research. Here Rank wise tables are showed

the output in different color. Light orange color table data indicate for Rank 1 article, Blue for rank two article, purple for Rank 3 article.

Altmetric Attention Score (AAS)



Rank 1 Article **Rank 2 Article** **Rank 3 Article**

Altmetric focus score is automatically calculated, weighted algorithm. It is based on three main factors. First, the volume of Mention (how many were?), the source of the second mention (where they were high profile new stories, re-tweeted, or perhaps a Wikipedia reference?), the author of the third mention (whether this magazine was) publisher, or an influential Academic?). Combined, the score represents a weighted estimate of all types of meditation altmetric was raised for the production of research, rather than a raw total of the number of mentions. The default value of each mention is News outlet-8, Blog-6, Policy source- 3, Facebook page- 0.25, Tweets - 1, Wikipedia page-3, Google + Page -1, Redditors post-0.25, video upload -0.25, Q & A Thread Page-0.25.

This article of Few-Shot Adversarial Learning of Realistic Neural Talking Head Models [Rank 1] has been mentioned in 89 news outlets, 15 blogs, 1 policy sources, 8 Facebook pages, 58,368 tweeters, and 2 Redditors posts also with 622 mendeley readers. However, the score is 13,415. This article of Scientists Rise up Against Statistical Significance [Rank 2] has been mentioned in 40 news outlets, 41 blogs, 120 Facebook pages, 19,267 tweeters, 2 Wikipedia pages, 20 Google + Pages and 14 Redditors posts, 4 Videos uploads, one research platform and

Q&A Thread However, 804 Mendeley readers and 2 CiteULike readers. Altmetric Attention Score is 13,171. This article of Measles, Mumps, Rubella Vaccination and Autism [Rank 3] has been mentioned in 224 news outlets, 42 blogs, 1 policy sources, 65 Facebook pages, 10,270 tweeters, one Wikipedia pages posts and15 Videos uploads with 162 Mendeley readers. And also has 31 dimension citations. However, the score is 9339.

Twitter Mention and Geographical breakdown

Altmetric categorizes users based on their posting history and profile information from Twitter. Where Twitter data is available for an article, the calculations for each user category and geolocation data are included in the Demographics tab of the details page. The data shown below were collected from the profiles of rank one article 58,368 tweeters, second rank article 19,267 tweeters and third rank article 10,270 tweeters who shared this research output.

Country	Count	As %
United States	10695	18%
Japan	2930	5%
United Kingdom	1897	3%
France	1342	2%
Canada	1026	2%
Spain	1024	2%
Brazil	699	1%
Germany	564	<1%
India	531	<1%
Other	7137	12%
Unknown	30523	52%

Rank 1 Article

Country	Count	As %
United States	3193	17%
United Kingdom	1633	8%
Japan	850	4%
Canada	664	3%
Spain	632	3%
Australia	514	3%
France	420	2%
Germany	336	2%
India	323	2%
Other	3381	18%
Unknown	7321	38%

Rank 2 Article

Country	Count	As %
United States	1592	16%
Spain	515	5%
United Kingdom	491	5%
Japan	282	3%
France	273	3%
Canada	263	3%
Australia	259	3%
Italy	197	2%
Ireland	170	2%
Other	1641	16%
Unknown	4587	45%

Rank 3 Article

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 Twitter for First rank article comes under the Unknown category 52% (30523) twitter, followed by 18% (10695) percent of USA twitter and only 1% of the twitter from Germany and India. Twitter Mentioned for First rank article also comes under the Unknown category 38% (7321) twitter, followed by 18% (3381) from other category and 17% (3193) from USA and only 2% of the twitter from France, Germany and India. For the rank third article 45% from Unknown twitters and 16% of twitter from USA. Only 2% of twitter from Italy and Ireland. Out of all three articles USA twitters dominating with other countries geographical breakdown.

Twitter Demographic Breakdown

In order to compile a table of Twitter demographics, Altmetric profile looks at keywords in detail, the types of journals linking users and followers lists for assigning each profile in one category: a member of the public - the person who is a scholar Does not link to literature and otherwise it is not fit to follow any categories. Researcher - Anyone familiar with the literature. Businessman - A doctor or researcher who is working in clinical science. Science Communicator - People who are often associated with various types of scientific articles from different journals / publishers.

Type	Count	As %
Members of the public	55738	95%
Scientists	1631	3%
Science communicators (journalists, bloggers, editors)	652	1%
Practitioners (doctors, other healthcare professionals)	343	<1%
Unknown	4	<1%

Type	Count	As %
Members of the public	12681	66%
Scientists	5126	27%
Practitioners (doctors, other healthcare professionals)	1049	5%
Science communicators (journalists, bloggers, editors)	406	2%
Unknown	5	<1%

Type	Count	As %
Members of the public	8531	83%
Scientists	835	8%
Practitioners (doctors, other healthcare professionals)	691	7%
Science communicators (journalists, bloggers, editors)	211	2%
Unknown	2	<1%

About 95% (55,738) public members belong to the majority of twitter's Twitter demographic category, 3% (1631) Tweets are scientist are mentioned for the article of Few-Shot Adversarial Learning of Realistic Neural Talking Head Models [Rank 1]. Majority 66% (12,681) public members belong to s Twitter demographic category, 27% (5,126) Tweets are mentioned by scientist are mentioned for the article of Scientists Rise up Against Statistical Significance [Rank 2]. About 83% (8,531) public members belong to the majority of Twitter demographic category, 8% (835) Tweets are from scientist, 7% (691) twitter practitioners (such as doctors and other health care professionals). In this view public category completely dominating other category tweeters of demographic category.

Mendeley Readers by Professional Status

Mendeley is a global research collaboration forum and academic database. Mendeley's desktops, mobile and web apps help people organize, share and discover new research. Since its launch in 2009, Mendeley has become more than three million users worldwide. The online reference manager is the Altmetric sole Altmetric provider to display such detailed information about the spread of articles among readers, and users will also be able to click on an article to record articles on the Mendeley site from the Altmetric Details page.

Readers by professional status	Count	As %
Student > Ph. D. Student	141	23%
Student > Master	121	19%
Researcher	106	17%
Student > Bachelor	57	9%
Other	112	18%
Unknown	85	14%

Readers by professional status	Count	As %
Researcher	174	22%
Student > Ph. D. Student	164	20%
Student > Master	89	11%
Student > Bachelor	47	6%
Other	245	30%
Unknown	85	11%

Readers by professional status	Count	As %
Student > Master	32	20%
Student > Bachelor	23	14%
Researcher	17	10%
Student > Ph. D. Student	16	10%
Unspecified	5	3%
Other	21	13%
Unknown	48	30%

Regarding the demographic of Mendeley readers by professional status, most of the readers fall under the 23% of Ph.D students followed by Mater Degree students for the rank one article. For second rank articles mendeley readers 30% are in other category followed by Researcher category. Only 6% of the professional readers are in bachelor students. For the article of Rank third position majority are comes under unknown category followed by Master degree student Level. Only 3% of professional readers in the unspecified status.

Mendeley Readers by Discipline Wise

According to discipline Mendeley reader's figures show that most readers are leaving unknown discipline, followed by unspecified, social science, computer science, psychology, decision science and others.

Readers by discipline	Count	As %
Computer Science	331	53%
Engineering	70	11%
Unspecified	30	5%
Physics and Astronomy	17	3%
Mathematics	8	1%
Other	65	10%
Unknown	101	16%

Readers by discipline	Count	As %
Medicine and Dentistry	121	15%
Agricultural and Biological Sciences	98	12%
Biochemistry, Genetics and Molecular Biology	65	8%
Psychology	49	6%
Neuroscience	34	4%
Other	277	34%
Unknown	160	20%

Readers by discipline	Count	As %
Medicine and Dentistry	30	19%
Biochemistry, Genetics and Molecular Biology	17	10%
Nursing and Health Professions	14	9%
Psychology	8	5%
Social Sciences	8	5%
Other	32	20%
Unknown	53	33%

For the article of Few-Shot Adversarial Learning of Realistic Neural Talking Head Models mendeley readers 53% of Computer science discipline followed by unknown discipline 16%, from engineering 11% and only 1% from Mathematics discipline. For second rank article of Scientists Rise up Against Statistical Significance, majority of the readers from other and unknown discipline followed by 15% of the Medicine and Dentistry discipline 12% from agricultural and Biological Sciences discipline. Only 4% percentage of mendeley readers from Neuroscience discipline. About the article of Measles, Mumps, Rubella Vaccination and Autism mendeley readers from unknown discipline followed by Other discipline and medicine and dentistry discipline. Only 5% of mendeley readers from Psychology and Social Sciences.

Research Output Tracks For Altmetric Attention Scores

For the Article of Few-Shot Adversarial Learning of Realistic Neural Talking Head Models Altmetric has tracked 1,41,80,703 research outputs from all sources, out of which this article got # 1 locations. 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 5,49,145 research outputs from this source of ARXIV, has achieved first place in this article. It's a particularly good, scoring more than 99% of your colleagues. Older research outputs will score higher because they have more time to submit the report. By age, we can compare this Altmetric Attention Score with 2,59,755 tracked outcasts which were published within six weeks on both sides of this one in any source. This article got # 1 place. It has done particularly well, scoring more than 99% of its contemporaries. Altmetric can compare this research output to 30,271other people and is published within six weeks from the same source. This article got the first place. It has done particularly well, scoring more than 99% of its contemporaries.

Research Output Tracks		
All research Outputs	14180703	#1
Outputs from ARXIV	549145	#1
Outputs of similar age	259,755	#1
Outputs of similar age from ARXIV	30,271	#1

Research Output Tracks		
All research Outputs	14180502	#2
Outputs from nature	71574	#1
Outputs of similar age	263410	#1
Outputs of similar age from nature	938	#1

Research Output Tracks		
All research Outputs	14180703	#9
Outputs from Annals of Important Medicine	10938	#1
Outputs of similar age	263052	#2
Outputs of similar age from Annals of Important Medicine	168	#1

For the Article of Scientists Rise up Against Statistical Significance, Altmetric has tracked 1,41,80,502 research outputs from all sources, out of which this article got # 2 locations. By age, we can compare this Altmetric Attention Score with 2,63,410 tracked outcasts which were published within six weeks on both sides of this one in any source. Altmetric can compare this research output to 938 other people and is published within six weeks from the same source. This article got the first place.

For the Article of Measles, Mumps, Rubella Vaccination and Autism, Altmetric has tracked 1,41,80,703 research outputs from all sources, out of which this article got # 9 locations. By age, we can compare this Altmetric Attention Score with 2,63,052 tracked outcasts which were published within six weeks on both sides of this one in any source. Altmetric can compare this research output to 168 other people and is published within six weeks from the same source. This article got the first place.

Findings and Conclusion

Considering Altmetric Attention Score of top score of all three articles with 13,415 article of Few Shot Adversarial Learning of Realistic Neural Talking Head Models. It has been mentioned in 89 news outlets, 15 blogs, 1 policy sources, 8 Facebook pages, 58,368 tweeters, and 2 Redditors posts also with 622 mendeley readers. Followed by Altmetric Attention Score are 13,171 for the article of Scientists Rise up Against Statistical Significance and third position with AAS 9,339 article of Measles, Mumps, Rubella Vaccination and Autism.

As per Twitter mentions the vast majority of the mentioned Twitter for First rank article comes under the Unknown category 52% (30523) twitter, followed by 18% (10695) percent of USA twitter and only 1% of the twitter from Germany and India. Twitter Mentioned for First rank article also comes under the Unknown category 38% (7321) twitter, followed by 18% (3381) from other category and 17% (3193) from USA and only 2% of the twitter from France, Germany and India. For the rank third article 45% from Unknown twitters and 16% of twitter from USA. Only 2% of twitter from Italy and Ireland. Out of all three articles USA twitters dominating with other countries geographical breakdown. USA twitters contributed to these three articles to get the AAS score very high.

Find out the twitter demographic category wise About 95% (55,738) public members belong to the majority of twitter's Twitter demographic category, 3% (1631) Tweets are scientist are mentioned for the article of Few-Shot Adversarial Learning of Realistic Neural Talking Head Models [Rank 1]. Majority 66% (12,681) public members belong to s Twitter demographic category, 27% (5,126) Tweets are mentioned by scientist are mentioned for the article of Scientists Rise up Against Statistical Significance [Rank 2]. About 83% (8,531) public members belong to the majority of Twitter demographic category, 8% (835) Tweets are from scientist, 7% (691) twitter practitioners (such as doctors and other health care professionals).

Regarding the demographic of Mendeley readers by professional status, most of the readers fall under the 23% of Ph.D students followed by Mater Degree students for the rank one article. For second rank articles mendeley readers 30% are in other category followed by Researcher category. Only 6% of the professional readers are in bachelor students. For the article of Rank third position majority are comes under unknown category followed by Master degree student Level. Only 3% of professional readers in the unspecified status.

For the article of Few-Shot Adversarial Learning of Realistic Neural Talking Head Models mendeley readers 53% of Computer science discipline followed by unknown discipline 16%, from engineering 11% and only 1% from Mathematics discipline. For second rank article of Scientists Rise up Against Statistical Significance, majority of the readers from other and unknown discipline followed by 15% of the Medicine and Dentistry discipline 12% from agricultural and Biological Sciences discipline. Only 4% percentage of mendeley readers from Neuroscience discipline. About the article of Measles, Mumps, Rubella Vaccination and Autism mendeley readers from unknown discipline followed by Other discipline and medicine and dentistry discipline. Only 5% of mendeley readers from Psychology and Social Sciences.

The "Attention Score in Context" tab on the Altmetric Details Pages show the score in some different contexts, to help anyone understand if the level of attention is typical compared to similar articles. There is increasing understanding that scholarly research has moved beyond the printed page and that traditional measures of impact are inadequate. Citations are only a small part of the scholarly ecosystem and only represent one type of impact. Other media types of increasing importance such as data, tools, software, websites, videos, etc. produced for or during the research process may be just as, or more, important than the articles that accompany them. Since most research, including journal articles, is now electronic and networked we can track how many times they are accessed, used, and shared. These numbers provide a more complete picture of the reach and impact of research and scholarship; one that goes beyond citations in peer-reviewed publications.

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