

'Open research in psychological & behavioural sciences'

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Popular psychology study

+


Billion dollars company fraud
= ??



What is going on in the world of science?

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 OPEN ACCESS

ESSAY

Why Most Published Research Findings Are False

John P. A. Ioannidis

Published: August 30, 2005 • <https://doi.org/10.1371/journal.pmed.0020124>

75,223
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3,103,509
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RESEARCH ARTICLE



0



19

Estimating the reproducibility of psychological science

Open Science Collaboration^{*,†}

+ See all authors and affiliations

Science 28 Aug 2015:
Vol. 349, Issue 6251, aac4716
DOI: 10.1126/science.aac4716

Article

Figures & Data

Info & Metrics

eLetters

PDF

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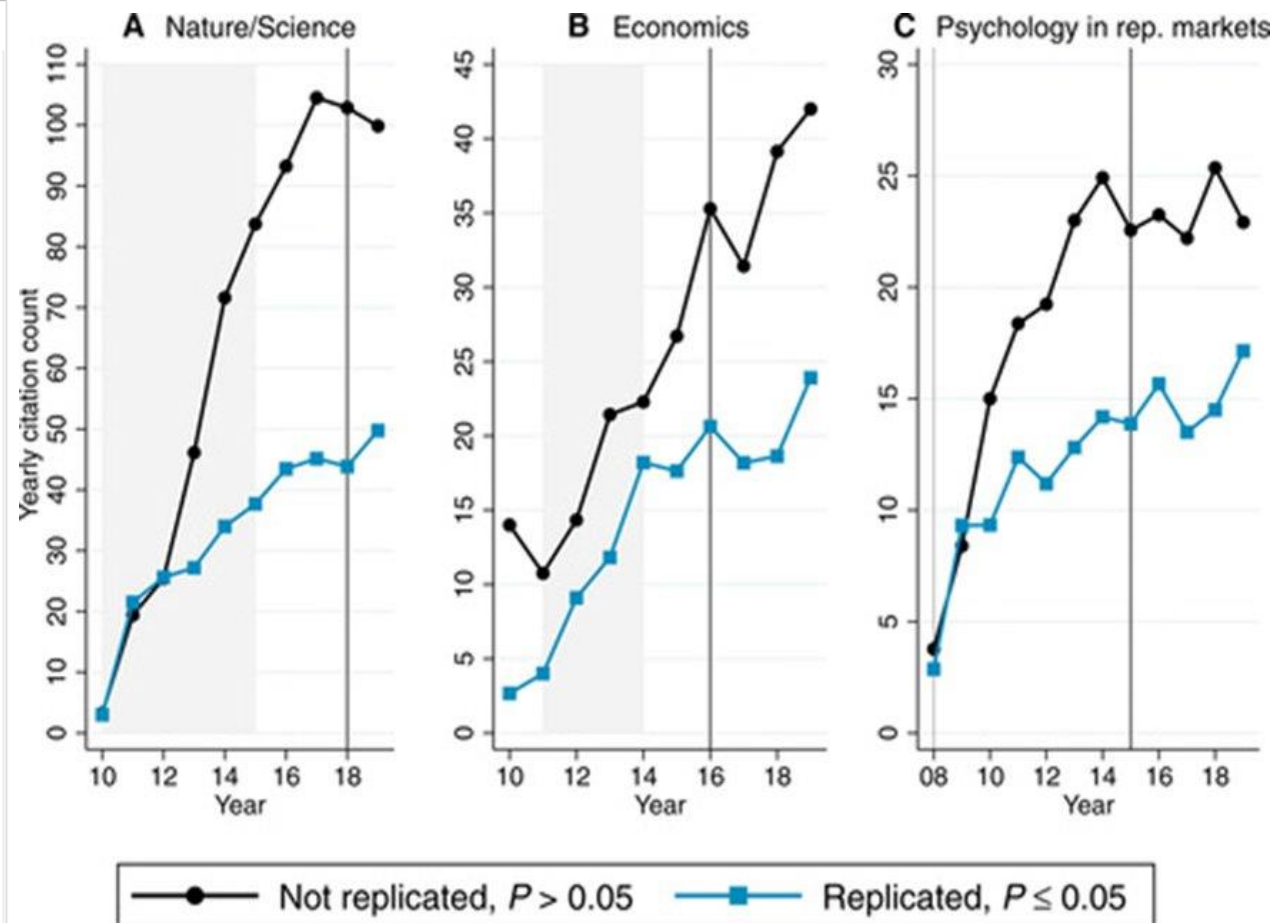
Empirically analyzing empirical evidence

One of the central goals in any scientific endeavor is to understand causality. Experiments that seek to demonstrate a cause/effect relation most often manipulate the postulated causal factor. Aarts *et al.* describe the replication of 100 experiments reported in papers published in 2008 in three high-ranking psychology journals. Assessing whether the replication and the original experiment yielded the same result according to several criteria, they find that about one-third to one-half of the original findings were also observed in the replication study.

Nonreplicable publications are cited more than replicable ones

MARTA SERRA-GARCIA AND URI GNEEZY Authors Info & Affiliations

SCIENCE ADVANCES • 21 May 2021 • Vol 7, Issue 21 • DOI: 10.1126/sciadv.abd1705



One in 25 papers contains inappropriately duplicated images, screen finds

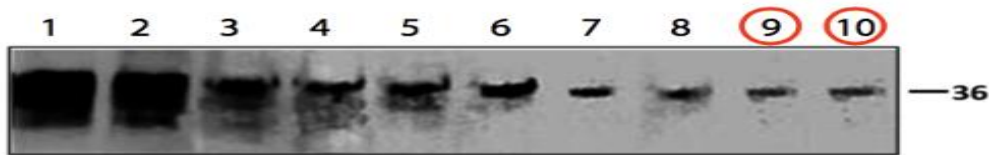
Elisabeth Bik, a microbiologist at Stanford, has for years been a behind-the-scenes force in scientific integrity, anonymously submitting reports on plagiarism and image duplication to journal editors. Now, she's ready to come out of the shadows.

With the help of two editors at microbiology journals, she has conducted a massive study looking for image duplication and manipulation in 20,621 published papers. Bik and co-authors [Arturo Casadevall](#) and [Ferric Fang](#) (a board member of our parent organization) found 782 instances of inappropriate image duplication, including 196 published papers containing "duplicated figures with alteration." The [study](#) is being released as a pre-print on [bioArxiv](#).

An example the paper uses of "duplication with alteration" is this Western blot where a band has been duplicated:



Elies Bik



NEWS | 09 December 2021

Half of top cancer studies fail high-profile reproducibility effort

Barriers to reproducing preclinical results included unhelpful author communication, but critics argue that one-time replication attempts don't tell the whole story.

nature

NEWS FEATURE | 08 March 2024

Superconductivity scandal: the inside story of deception in a rising star's physics lab

Ranga Dias claimed to have discovered the first room-temperature superconductors, but the work was later retracted. An investigation by *Nature's* news team reveals new details about what happened – and how institutions missed red flags.

By [Dan Garisto](#)

Report finds massive fraud at Dutch universities

[Ewen Callaway](#)

[Nature](#) 479, 15 (2011) | [Cite this article](#)

4759 Accesses | 54 Citations | 479 Altmetric | [Metrics](#)

Investigation claims dozens of social-psychology papers contain faked data.

Vox

EXPLAINERS ▼ CROSSWORD VIDEO PODCASTS POLITICS POLICY CULTURE SCIENCE MORE ▼

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SCIENCE MONEY

A top Cornell food researcher has had 15 studies retracted. That's a lot.

Brian Wansink is a cautionary tale in bad incentives in science.

By Brian Resnick and Julia Belluz | Updated Oct 24, 2018, 2:25pm EDT

Forbes

FORBES > INNOVATION > HEALTHCARE

Cornell's Food Lab Is Cooking Up Fake News

Steven Salzberg Contributor

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Oct 2, 2017, 07:30am EDT

This article is more than 6 years old.



Fresh fruits and vegetables lie on display at a Spanish producer's stand at the Fruit Logistica...

[+]



@slavov_n

We discussed this pair of papers in class today. There is a lot to learn from them.

Same Data, Different Conclusions

Genomic responses in mouse models **poorly** mimic human inflammatory diseases

Junhee Seok^{a,1}, H. Shaw Warren^{b,1}, Alex G. Cuenca^{c,1}, Michael N. Mindrinos^d, Henry V. Baker^e, Weihong Xu^a, Daniel R. Richards^d, Grace P. McDonald-Smith^a, Hong Gao^a, Laura Hennessy^f, Celeste C. Finnerty^g, Cecilia M. López^d, Shari Honari^h, Ernest E. Moore^h, Joseph P. Mineiⁱ, Joseph Cuschieri^j, Paul E. Bankey^k, Jeffrey L. Johnson^l, Jason Sperry^l, Avery B. Nathens^m, Timothy R. Billiarⁿ, Michael A. West^o, Marc G. Jeschke^o, Matthew B. Klein^l, Richard L. Gamelli^p, Nicole S. Gilbran^q, Bernard H. Brownstein^q, Carol Miller-Graziano^q, Steve E. Calvano^r, Philip H. Mason^r, J. Perren Cobb^s, Laurence G. Rahme^t, Stephen F. Lowry^{u,2}, Ronald V. Maier^l, Lyle L. Moldawer^l, David N. Herndon^q, Ronald W. Davis^{u,3}, Wenzhong Xiao^{u,3}, Ronald G. Tompkins^{u,3}, and the Inflammation and Host Response to Injury, Large Scale Collaborative Research Program⁴

Seok et al., *PNAS*, 2013

Genomic responses in mouse models **greatly** mimic human inflammatory diseases

Keizo Takao^{a,b} and Tsuyoshi Miyakawa^{a,b,c,1}

^aSection of Behavior Patterns, Center for Genetic Analysis of Behavior, National Institute for Physiological Sciences, Okazaki, Aichi 464-8585, Japan; ^bCore Research for Evolutional Science and Technology, Japan Science and Technology Agency, Kawaguchi, Saitama 332-0012, Japan; and ^cDivision of Systems Medical Science, Institute for Comprehensive Medical Science, Fukuoka University, Fukuoka, Aichi 470-1192, Japan

Edited by Iulian Medzhitov, Yale University School of Medicine, New Haven, CT, and approved June 11, 2014 (received for review January 31, 2014)

Takao & Miyakawa, *PNAS*, 2014

10:09 pm · 10 Sep 2021 · Twitter Web App

ANNALS OF MATHEMATICS

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Quasi-projectivity of moduli spaces of polarized varieties

Pages 597-639 from Volume 159 (2004), Issue 2 by Georg Schumacher, Hajime Tsuji

Abstract

By means of analytic methods the quasi-projectivity of the moduli space of algebraically polarized varieties with a not necessarily reduced complex structure is proven including the case of nonuniruled polarized varieties.

[from the Annals of Mathematics website]

6

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Non-quasi-projective moduli spaces

Pages 1077-1096 from Volume 164 (2006), Issue 3 by János Kollár

Abstract

We show that every smooth toric variety (and many other algebraic spaces as well) can be realized as a moduli space for smooth, projective, polarized varieties. Some of these are not quasi-projective. This contradicts a recent paper (Quasi-projectivity of moduli spaces of polarized varieties, *Ann. of Math.* 159 (2004) 597-639.).

[also from the Annals of Mathematics website]

News Feature | Published: 16 May 2012

Replication studies: Bad copy

[Ed Yong](#)

[Nature](#) **485**, 298–300 (2012) | [Cite this article](#)

12k Accesses | **245** Citations | **1107** Altmetric | [Metrics](#)

In the wake of high-profile controversies, psychologists are facing up to problems with replication.

Harvard Scholar Who Studies Honesty Is Accused of Fabricating Findings

Questions about a widely cited paper are the latest to be raised about methods used in behavioral research.

 Share full article  



Work by a professor at Harvard Business School, Francesca Gino, has come under question. AevanStock/Shutterstock

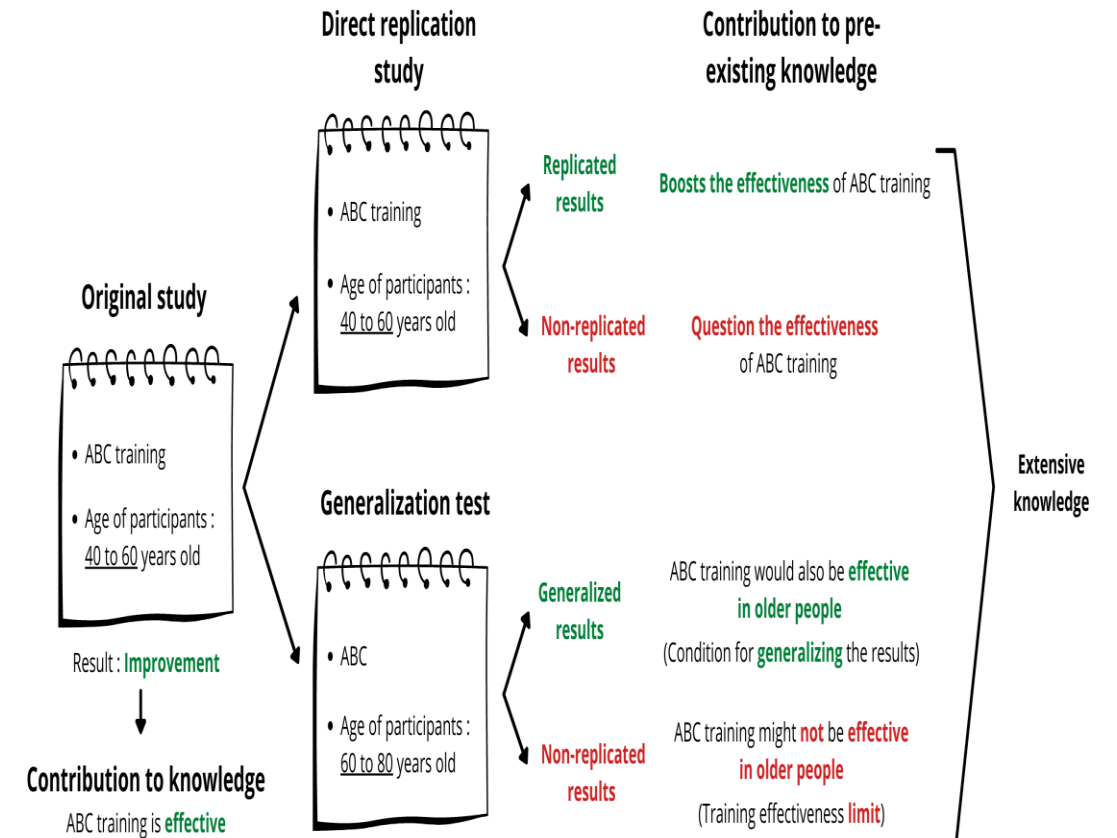
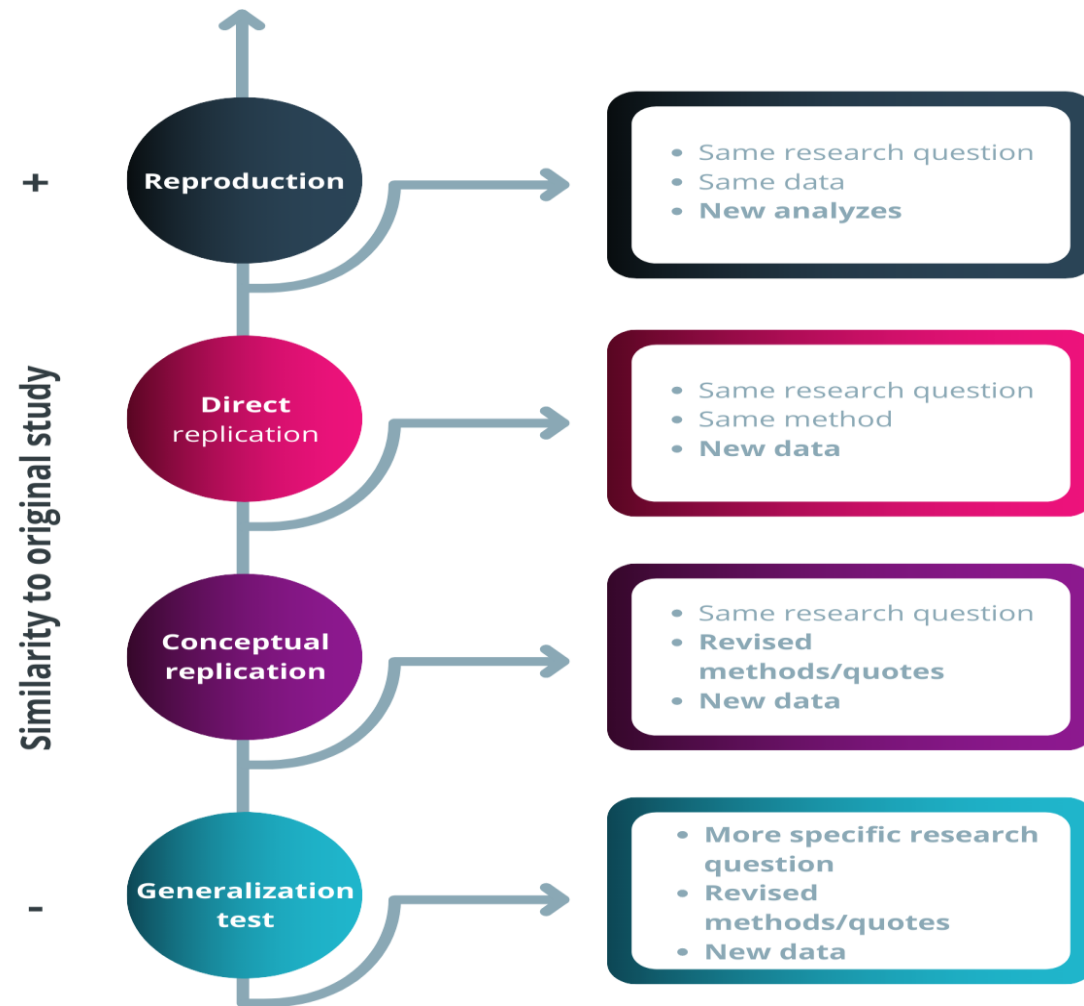


By [Noam Scheiber](#)

Published June 24, 2023 Updated June 25, 2023

What are all these *R* words?

- **Replicability vs. Reproducibility** (Barba, [2018](#))
- **Replicability:** a different researcher/team collects new data and findings are similar to a previous study.
- **Reproducibility:** regenerate the results using the original researcher's data and analysis codes are used to
- Variation across disciplines
- **Why should we care?**
- Research: social good
- Reliable Knowledge? (Oreskes, [2019](#))



Jayal & Tremblay (2002)

What is the situation in India?



Alarming rise of scientific misconduct recorded in India

Retractions from India have increased 2.5-times between 2020 and 2022 over the number recorded between 2017 and 2019

DATA POINT

Achal Agrawal

On the surface, Indian research has never been better. India recently became the third largest producer of scientific articles in the world (Chart 1(a)), a notable achievement for the world's fifth largest economy. But behind the barrage of research papers lies a telling statistic that should be a considerable cause for concern to Indian academia: the number of retractions (Chart 1(b)). Published papers are retracted when they are found to have mistakes, and retractions remove them from the scientific literature. In many instances, papers are also retracted when they are found to contain data or claims produced as a result of misconduct. Historically, a very small fraction of scientific misconduct has been caught.

As such, retractions are the tip of the misconduct iceberg. The Retraction Watch database lists 109 reasons for which papers have been retracted. For simplicity, the reasons can be grouped into three categories: grave reasons (constituting serious breach of academic and scientific integrity), including criminal proceedings, hoax papers, and plagiarism; misconduct (wherein the author knowingly indulged in misconduct), including civil proceedings, conflict of interest, and manipulation of results using computer-generated content; and errors (errors in the article, which can also indicate hasty publication), including concerns/error in data, images, results, etc., requiring correction.

The data show that the number of retractions in India rose dramatically in 2020-2022, mainly for misconduct. As such, India seems to be following in China's footsteps, but could benefit from following in Japan's instead.

To understand the effects of a higher research output on the

number of retractions, consider the ratio of the former to the latter. As a proxy for quality (Chart 1(c)), it indicates an alarming drop in the country - almost halving.

As for the domains of retractions (Chart 2), engineering accounts for almost 48% of all cases, up from 36% in 2017-2019, while the humanities grew by 567%.

Science itself appears to be relatively untouched by this phenomenon. It is difficult to ascertain the major reasons for the rise given the number of factors at play, although the opinion of the research community itself could give us some insights. For example, Chart 3 shows the results of a small survey conducted by India Research Watchdog with 364 respondents. A little more than half believe that university ranking parameters are behind the rise. Another 35% attributed it to unethical researchers, while 10% pointed to the minimal action taken when an allegation is reported or when an offender is 'caught'. There are other factors as well, including making it compulsory for PhD students to publish papers (a change instituted in 2017), as a result forcing those unable to do so to resort to low-quality publications, and the proliferation of predatory journals.

While more investigation is required, the sudden rise is not, as some have claimed, an artefact of the COVID-19 period for two reasons: such an effect was not observed in any other country and the number of papers published/uploaded during the pandemic was only marginally higher, whereas the number of retractions grew by a factor of 2.5.

The data should be an urgent call to action to scrutinise research malpractice in Indian academia. It affects research and teaching. If we don't take a closer look now, we will waste our great potential on producing bogus research.

Achal Agrawal is founder, India Research Watchdog

Cause for concern

The data for retractions were sourced from the Retraction Watch Database and the publication data were sourced from Scimago

Chart 1 (a): The chart shows the number of publications over time for five countries. India recently became the third largest producer of scientific articles in the world

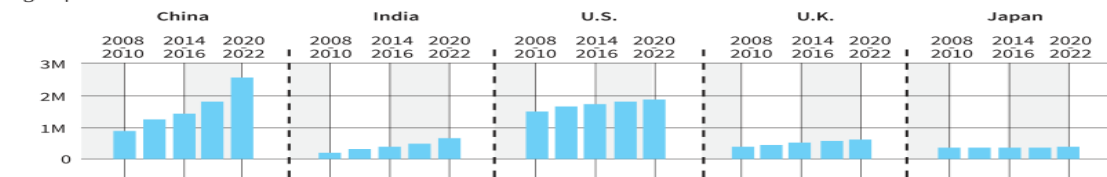


Chart 1 (b): The chart shows the number of retractions over time for the five countries. Graphs are in multiple scales: China (X20), India (X5) and the U.S. (X5)

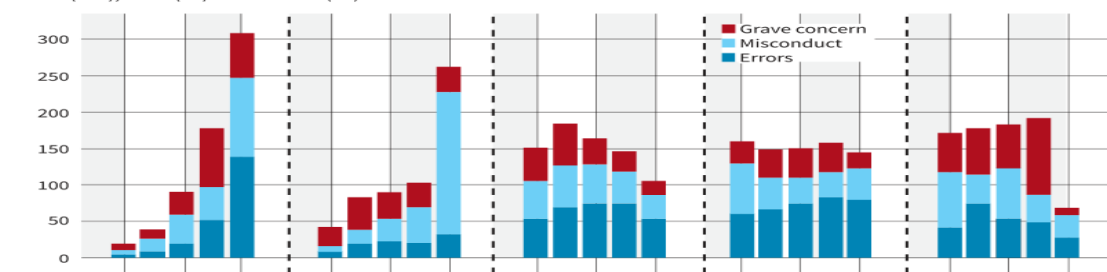


Chart 1 (c): The chart shows the quality of publications as measured by ratio of publications to retractions

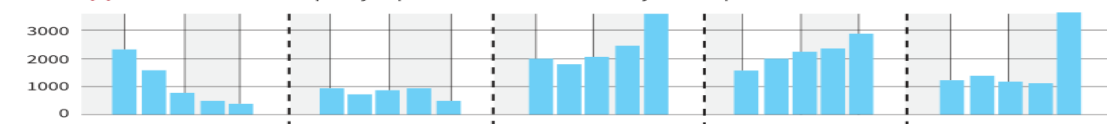


Chart 2: The chart shows retractions by domains in India. Engineering accounts for almost 48% of all cases

achal.agrawal.1987@gmail.com

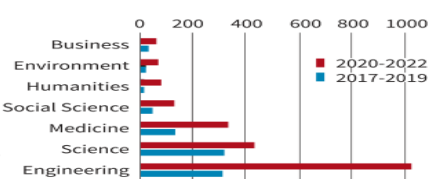


Chart 3: The chart shows the results of a small survey conducted by India Research Watchdog

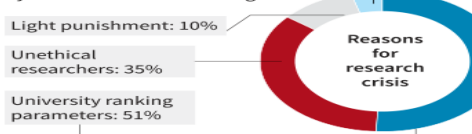


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achal.agrawal.1987@gmail.com

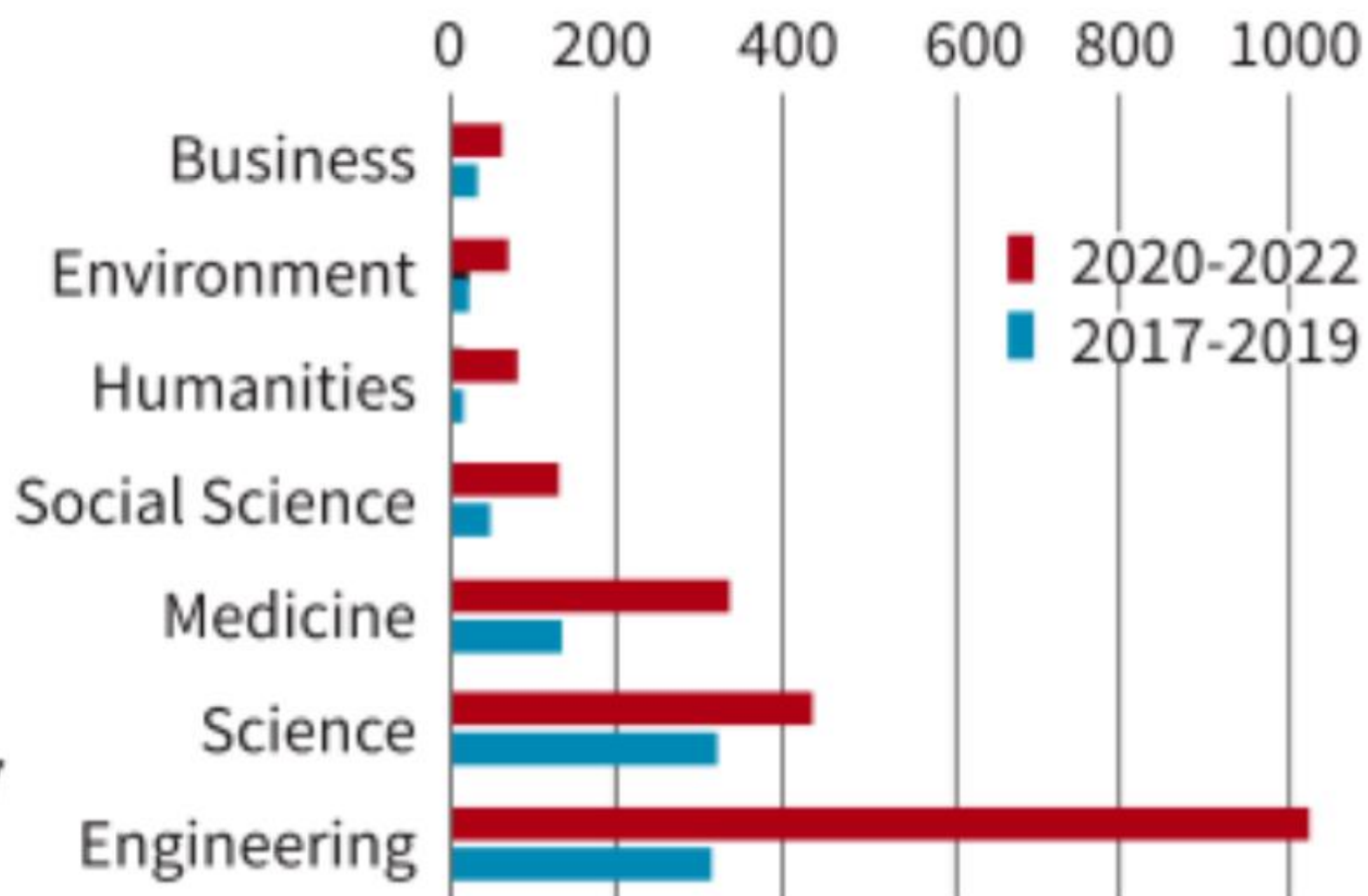


Chart 3: The chart shows the results of a small survey conducted by India Research Watchdog

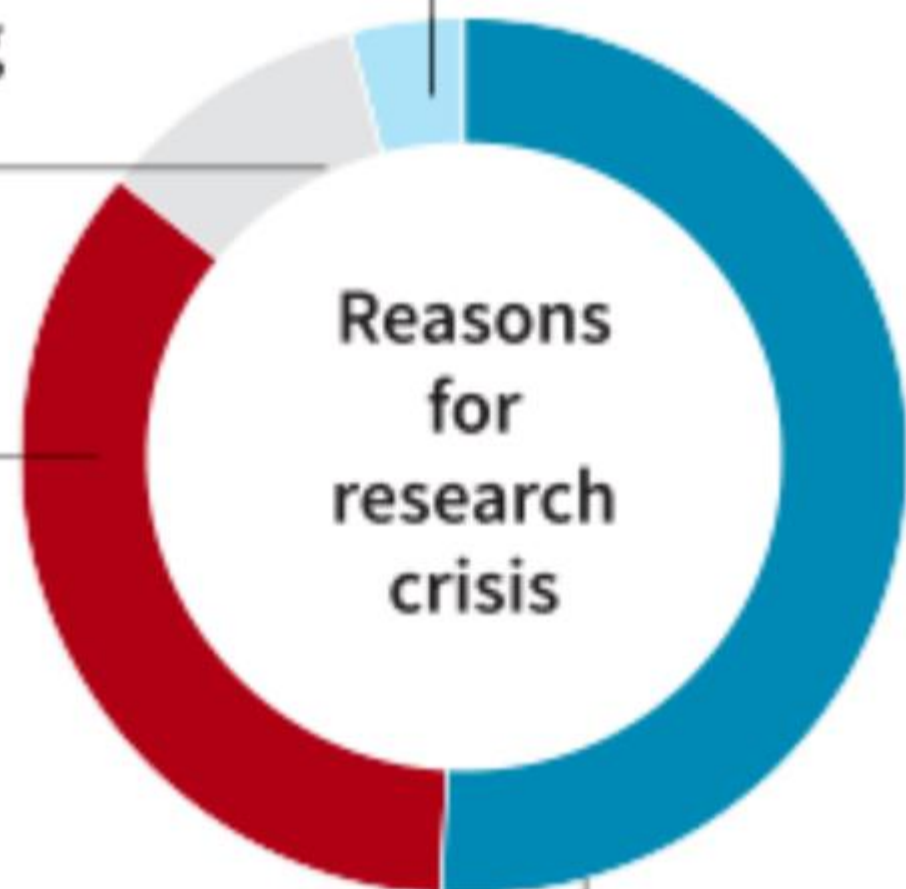
Light punishment: 10%

Unethical researchers: 35%

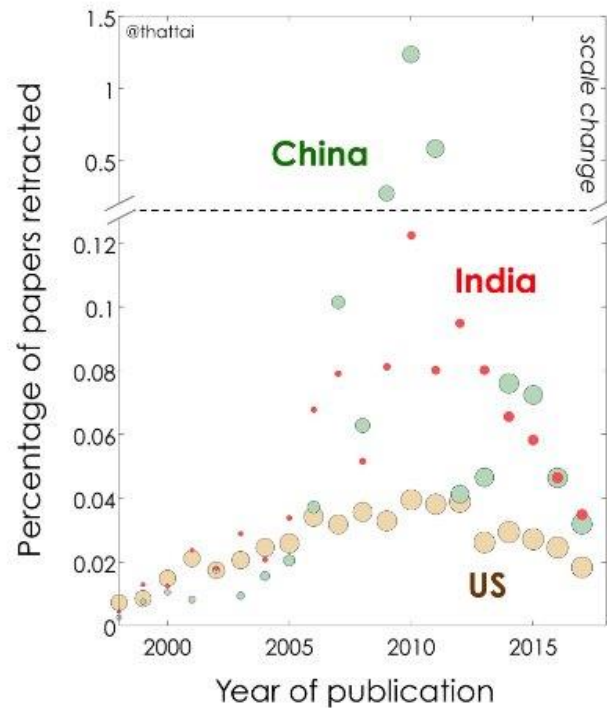
University ranking parameters: 51%

No crisis: 4%

Reasons
for
research
crisis



Retraction rate of academic publications



Sources:

retractiondatabase.org
scimagojr.com

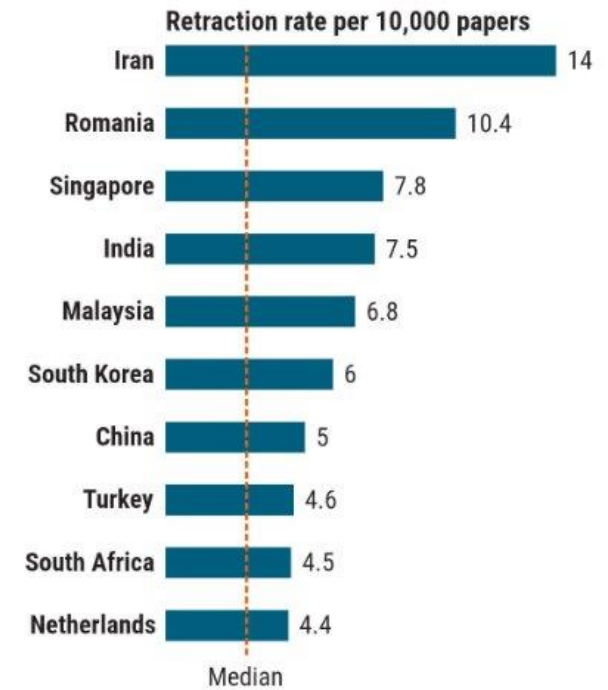
Papers take time to be retracted, so retraction rate for recent years is an underestimate.

Marker area represents total number of citable publications. 2017 values:
US: 546,605; China: 492,803; India: 134,908.

Since 2006 **India** has jumped to **double** the retraction rate of the US.

For the years 2009 – 2011 **China's** retraction rate is **anomalously** high (note change of scale of vertical axis).

Countries with the highest retraction rates



(GRAPHIC) J. YOU/SCIENCE; (DATA) RETRACTION WATCH AND NSF; **METHODOLOGY**

So, what do we do?

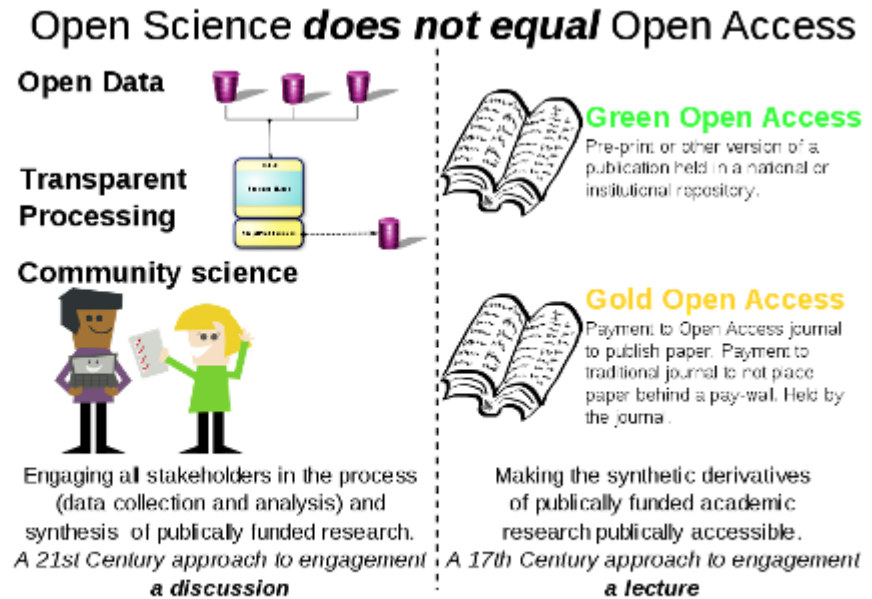
Transparency & Epistemic Humility

Open Science Initiatives:

The Open Science Framework

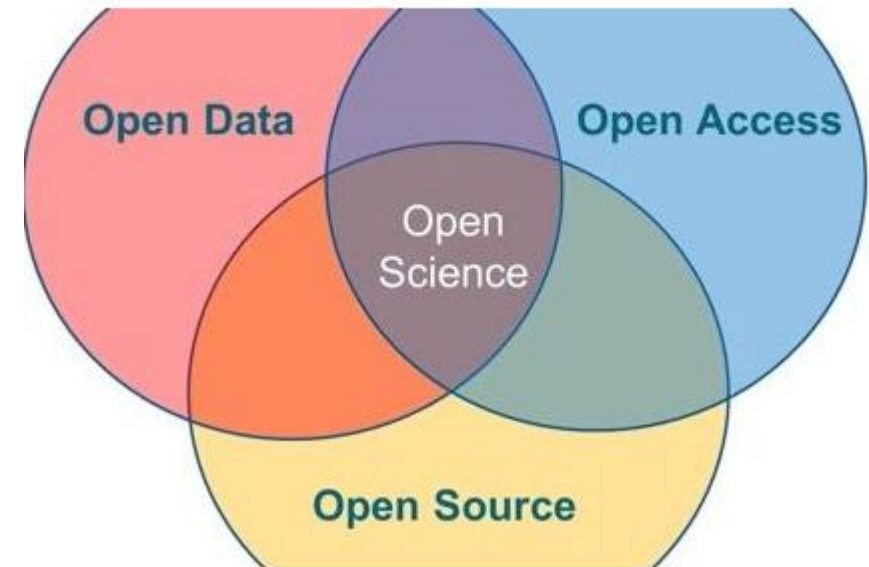
- 1) Preregistration
- 2) Registered Reports: > 300 journals
- 3) Preprints
- 4) Open data & analysis scripts
- 5) Retraction Watch

Open science



Source: Wikimedia Commons

May 24, 2022 | ireub |



Open Science Outlook (UNESCO, 2021)



**UNESCO Recommendation
on Open Science**

Year of Open Science (NASA, 2023)



TRANSFORM TO OPEN SCIENCE

NASA's Transform to Open Science (TOPS) initiative is designed to transform agencies, organizations, and communities to an inclusive culture of open science. TOPS's first priority is to develop the infrastructure to train scientists and researchers as part of our 5-year program. The open science curriculum will introduce those beginning their open science journey to important definitions, tools, and resources; and provide participants at all levels recommendations on best practices.

'6 reasons businesses should embrace open science' (World Economic Forum, 2023)

1. *Get recognition*
2. *Faster, better solutions*
3. *Access the hive mind*
4. *Get the best of the best*
5. *Stand out*
6. *Grow partnerships*

Reproducibility:
Why It Matters for
Business

Stuart Buck
Vice President of Research, Arnold
Ventures

<http://StuartBuck.com>

(1) Preregistration

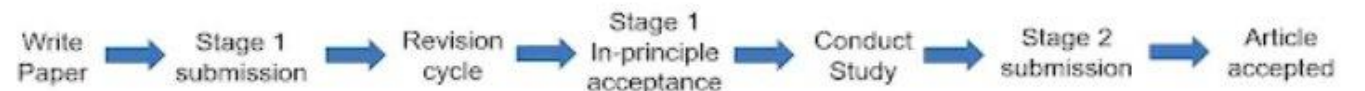
Pre-Registration Myth	Pre-Registration Reality
✗ Stifles creative or exploratory research	✓ Asks researchers to specify whether research is exploratory
✗ Guarantees quality and fully addresses questionable practices such as <i>p</i> -hacking	✓ Only improves quality and addresses questionable practices when done well
✗ Is irrelevant for certain types of research studies (e.g., qualitative research)	✓ Is relevant to many types of research studies and many study components
✗ Fully solves the file-drawer problem (i.e., publication bias)	✓ Only addresses publication bias if the pre-registered study is public and findable (i.e., located on a public platform or external registry)
✗ Is easy to do	✓ Is challenging to do well and requires collaboration within the broader research community
✗ Is time-consuming and expensive	✓ Can save time or add no additional time; may offset costs of errors



(2) Registered Report



Registered Report



What progress have we made?

NEWS | 09 November 2023

What reproducibility crisis? New research protocol yields ultra-high replication rate

Four groups in the field of experimental psychology successfully replicate each other's work by following best practices.

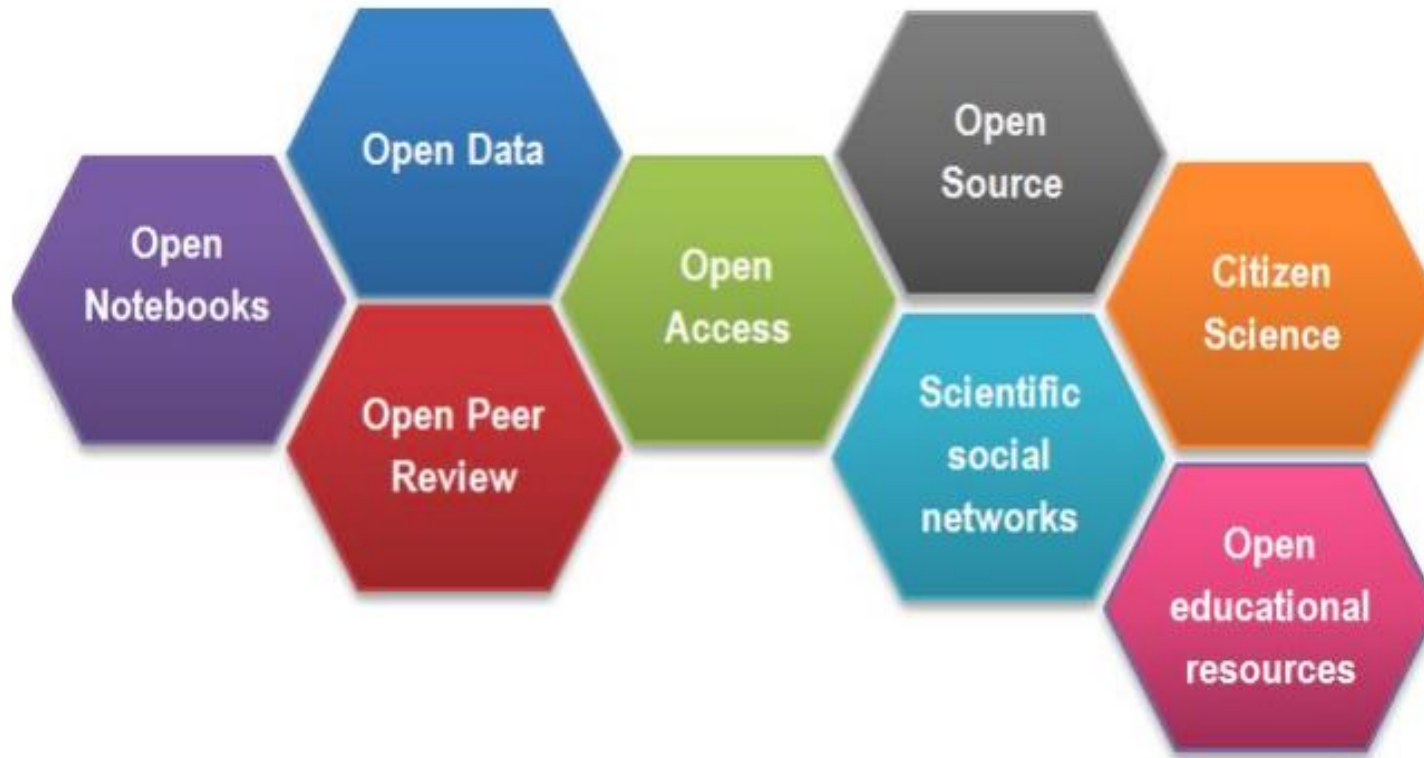
By [David Adam](#)

(3) Preprints

agriRxiv
arXiv
bioRxiv
ECONSTOR
Gates Open Research
OSF Preprints
PsyArXiv
ResearchSquare
TechRxiv



Summing up



Picture source: [*Open Science facets as a beehive*](#) by Gema Bueno de la Fuente licenced under [CC-BY](#)



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STI Indicators and R&D Statistics
Policies for Industrial R&D
Government Science Advice
Science Diplomacy
Responsible Research and Innovation (RRI)
Women in Science in India
Technology Assessment (TA) & Vision Analysis



CENTRE FOR INNOVATION, INTELLECTUAL
PROPERTY AND COMPETITION

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Open Science for an innovative India

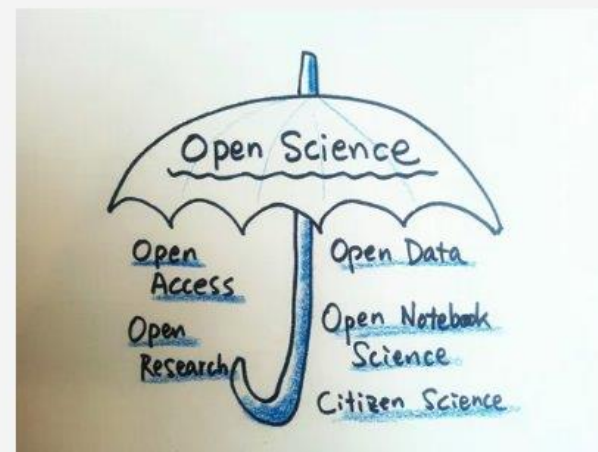
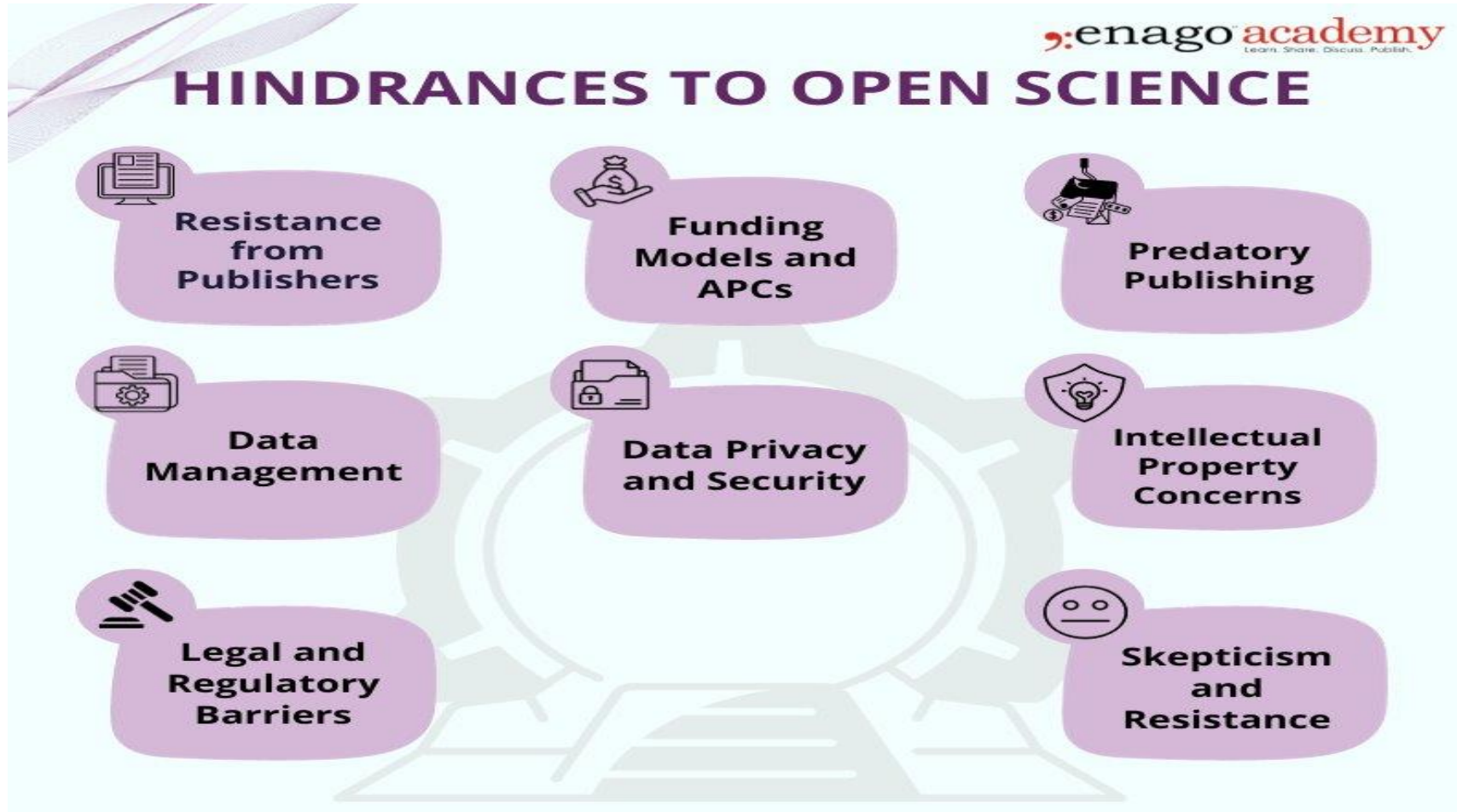


IMAGE SOURCE: OPEN SCIENCE 우산 | BY EOTLS4387/ FLICKR | LICENSED
UNDER CC-BY 2.0

The road of open science is not a bed of roses



Get involved in any capacity



The poster is for an 'Open Science Workshop Webinar Series'. It features a dark blue background with yellow decorative lines and dots. At the top, there is a row of logos: University of Mumbai, PISA, UNESCO, DST-CPR, Indian Institute of Science, and Open Science South Asia Network. The main title 'OPEN SCIENCE WORKSHOP WEBINAR SERIES' is in large white capital letters, followed by the subtitle 'INTRODUCTION TO UNESCO OPEN SCIENCE FRAMEWORK'. A paragraph explains that Open Science is a global movement and that UNESCO has provided a recommendation framework. Another paragraph states the workshop's aim to explore open science dimensions from an Indian perspective. The dates 'FROM 1-5 APRIL' and time 'TIME 4 PM-5 PM' are prominently displayed. Below this, it says 'REGISTRATION FREE - SCAN THE QR CODE'. There is a yellow Zoom icon with the text 'ONLINE ON ZOOM' and a QR code with the URL 'https://shorturl.at/copzJ'. At the bottom, it states 'PARTICIPATION CERTIFICATE PROVIDED*' with a note that certificates are provided to attendees who attend a minimum 50% of the webinar and that registration is free but required.

**OPEN SCIENCE WORKSHOP
WEBINAR SERIES**

INTRODUCTION TO UNESCO OPEN SCIENCE FRAMEWORK

Open Science has emerged as a global movement, transforming the way research and knowledge are produced, disseminated, and shared. To support and advance open science principles, UNESCO has provided a comprehensive recommendation framework covering various dimensions in UNESCO Open Science Recommendation Framework 2021.

This webinar workshop aims to unpack and explore the open science dimensions, as framed in the UNESCO recommendations, from an Indian perspective.

FROM **1-5 APRIL** | TIME **4 PM-5 PM**

REGISTRATION FREE - SCAN THE QR CODE

 **ONLINE
ON
ZOOM**


<https://shorturl.at/copzJ>

PARTICIPATION CERTIFICATE PROVIDED*
Participation certificates would be provided to attendees who attend a minimum 50% of the webinar.
Registration is free but required.

What can you do?

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- [UNESCO Chair in CBR](#)
- [Open Science South Asian Network](#)
- [NASA'S Transform to Open Science \(TOPS\)](#)
- [Student Initiative for Open Science](#)
- [Global Reproducibility Networks](#)
- Email me? pameigairan@gmail.com

Access to this slide deck

