

# **Facilitating Research Culture Change: tools, removing barriers, incentives, and norming**

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Senior Director of Research  
Center for Open Science

These slides: <https://osf.io/7q6nr>

# Norms

## **Communality**

Open sharing

## **Universalism**

Evaluate research on own merit

## **Disinterestedness**

Motivated by knowledge and discovery

## **Organized skepticism**

Consider all new evidence, even against one's prior work

## **Quality**

# Counternorms

## **Secrecy**

Closed

## **Particularism**

Evaluate research by reputation

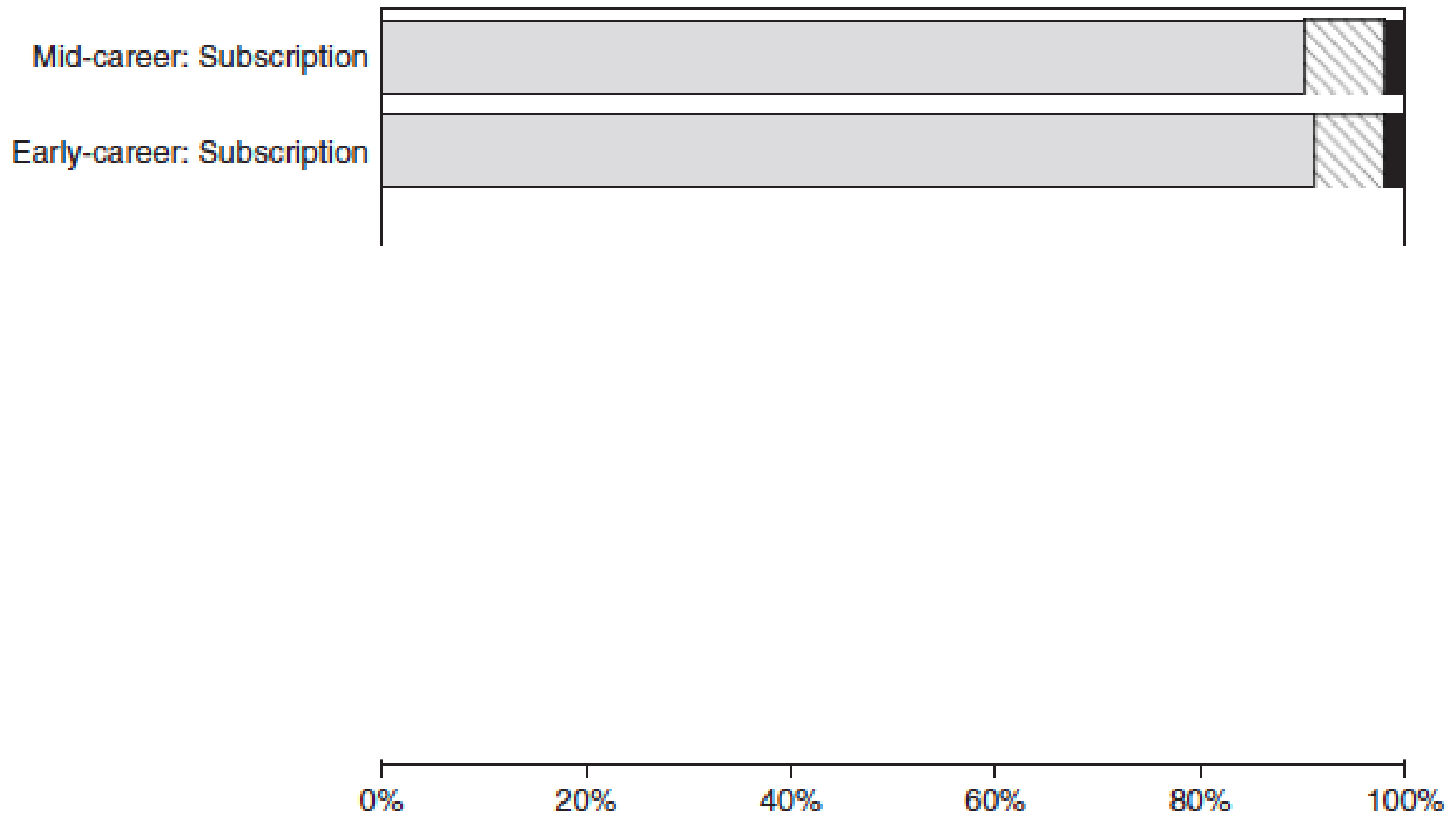
## **Self-interestedness**

Treat science as a competition

## **Organized dogmatism**

Invest career promoting one's own theories, findings

## **Quantity**

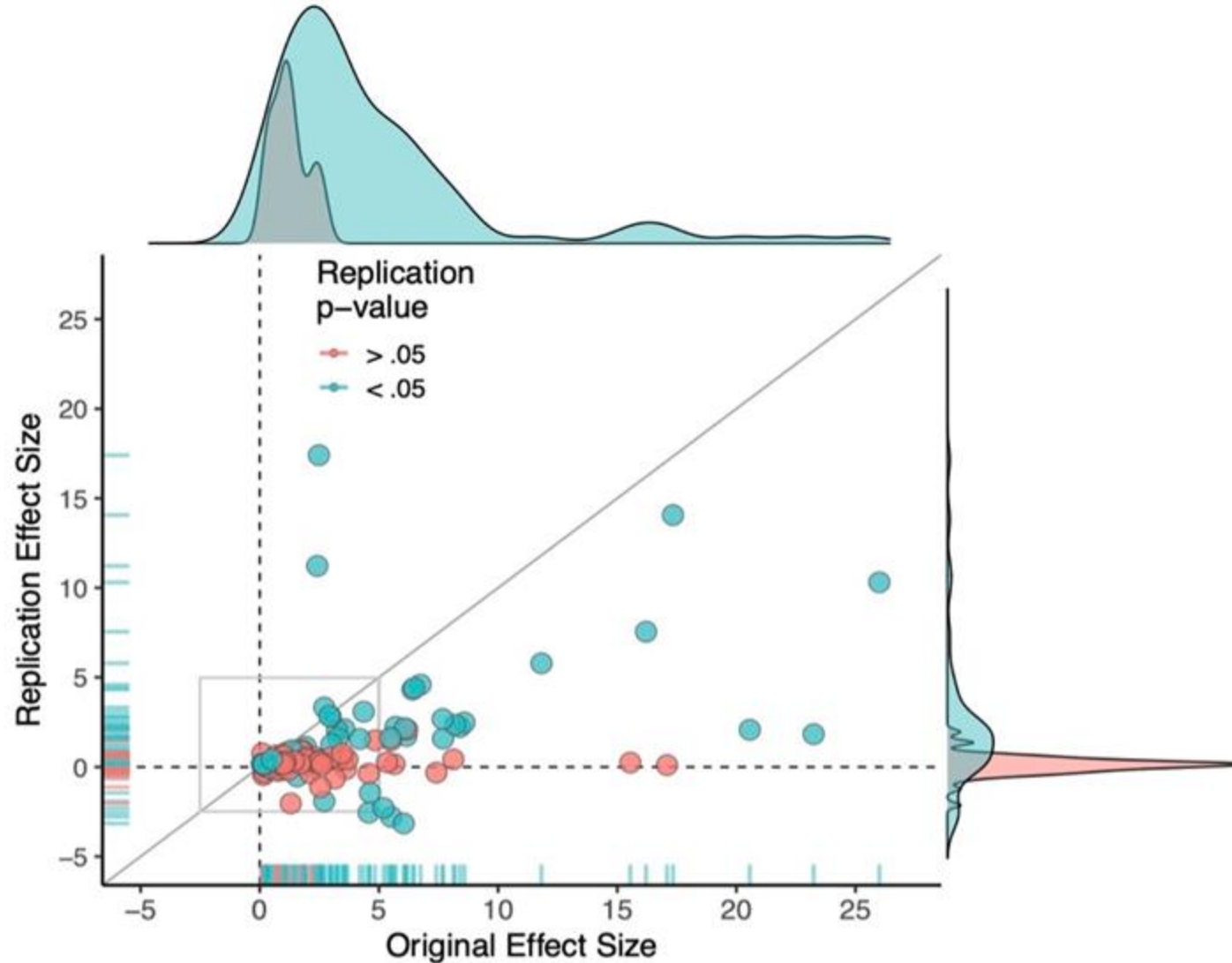


**FIG. 3.** Norm versus Counternorm Scores: Percent with Norm > Counternorm (dotted), Norm = Counternorm (striped), Norm < Counternorm (solid).

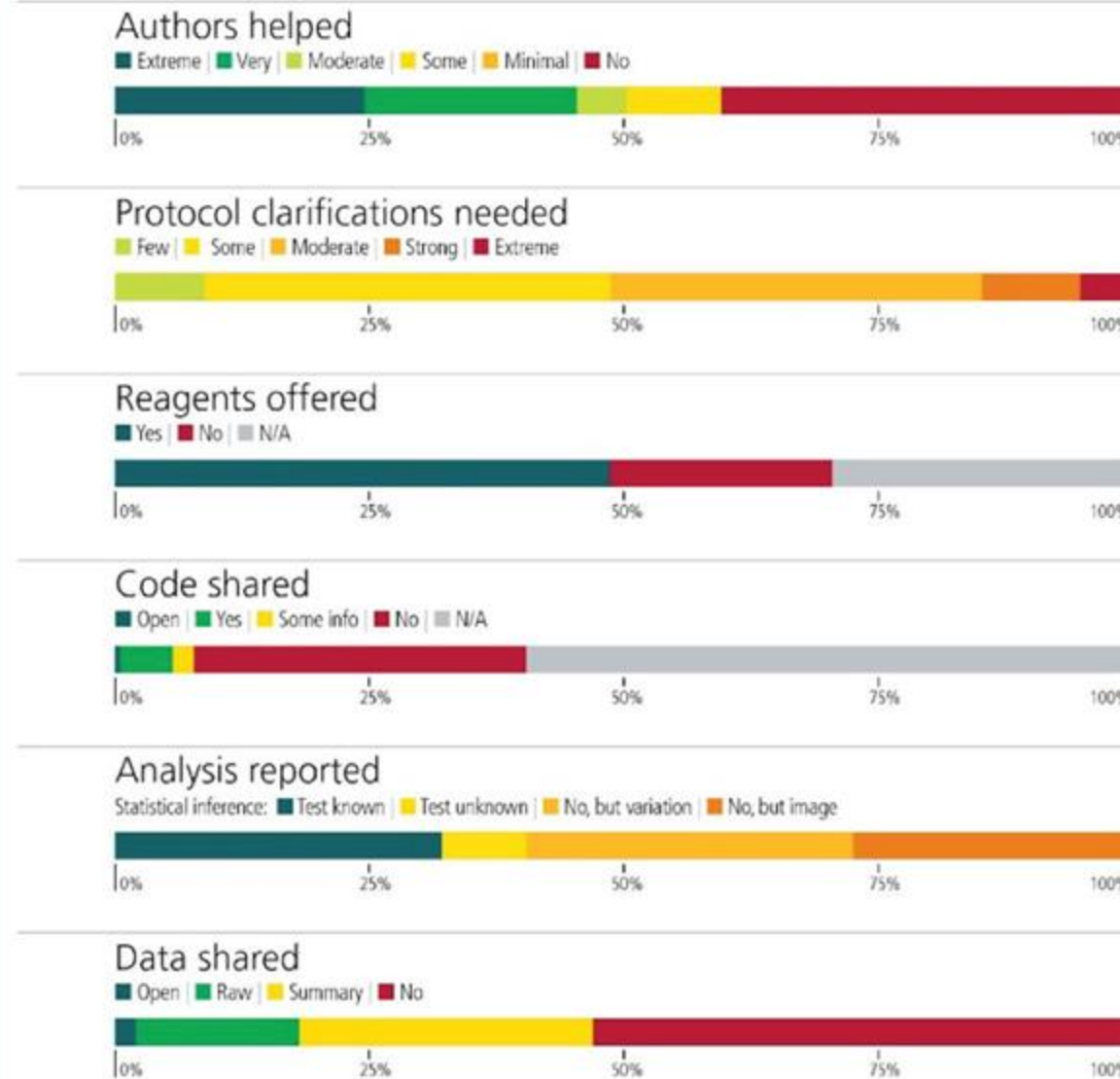
“Incentives for individual success are focused on getting it published, not getting it right.”

# Replication effects 85% smaller than original findings

Cancer Biology



**DESIGNED**  
193 experiments



# Why is research credibility lower than expected?

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Low power and precision

Questionable research practices

Low rigor

Publication bias

Lack of replication

Limitations of null hypothesis significance testing

# How can research credibility be improved?

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Larger samples

Transparency

Distinguish planned versus unplanned

Report all outcomes

Replication

Aggregate evidence

Narrow use of null hypothesis significance testing



Challenges



Solutions



Implementation



# Why ineffective?

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## *“Strategy”*

Study the issue

Education & training

Inculcate the values

Knowing what to change

Knowing how to change

Wanting to change

Necessary, not sufficient

# Why ineffective?

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## *“Strategy”*

Study the issue

Education & training

Inculcate the values

Knowing what to change

Knowing how to change

Wanting to change

## Additions

Reward system

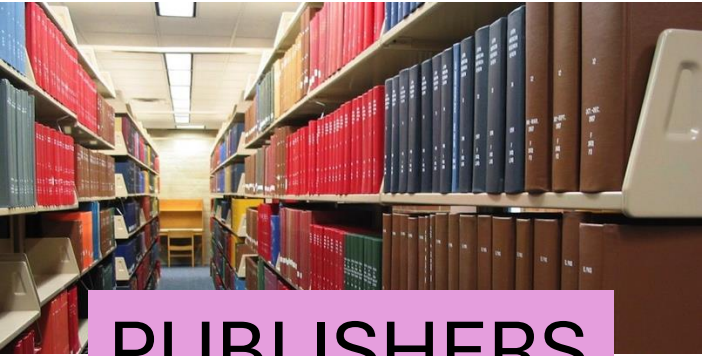
Infrastructure

Incentives to embrace change

Technology to enable change



UNIVERSITIES

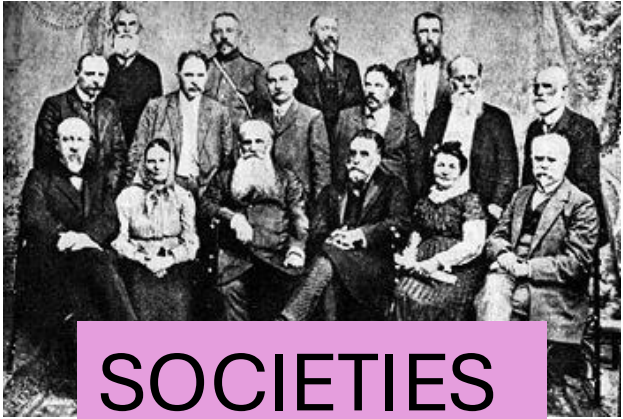


PUBLISHERS

social  system



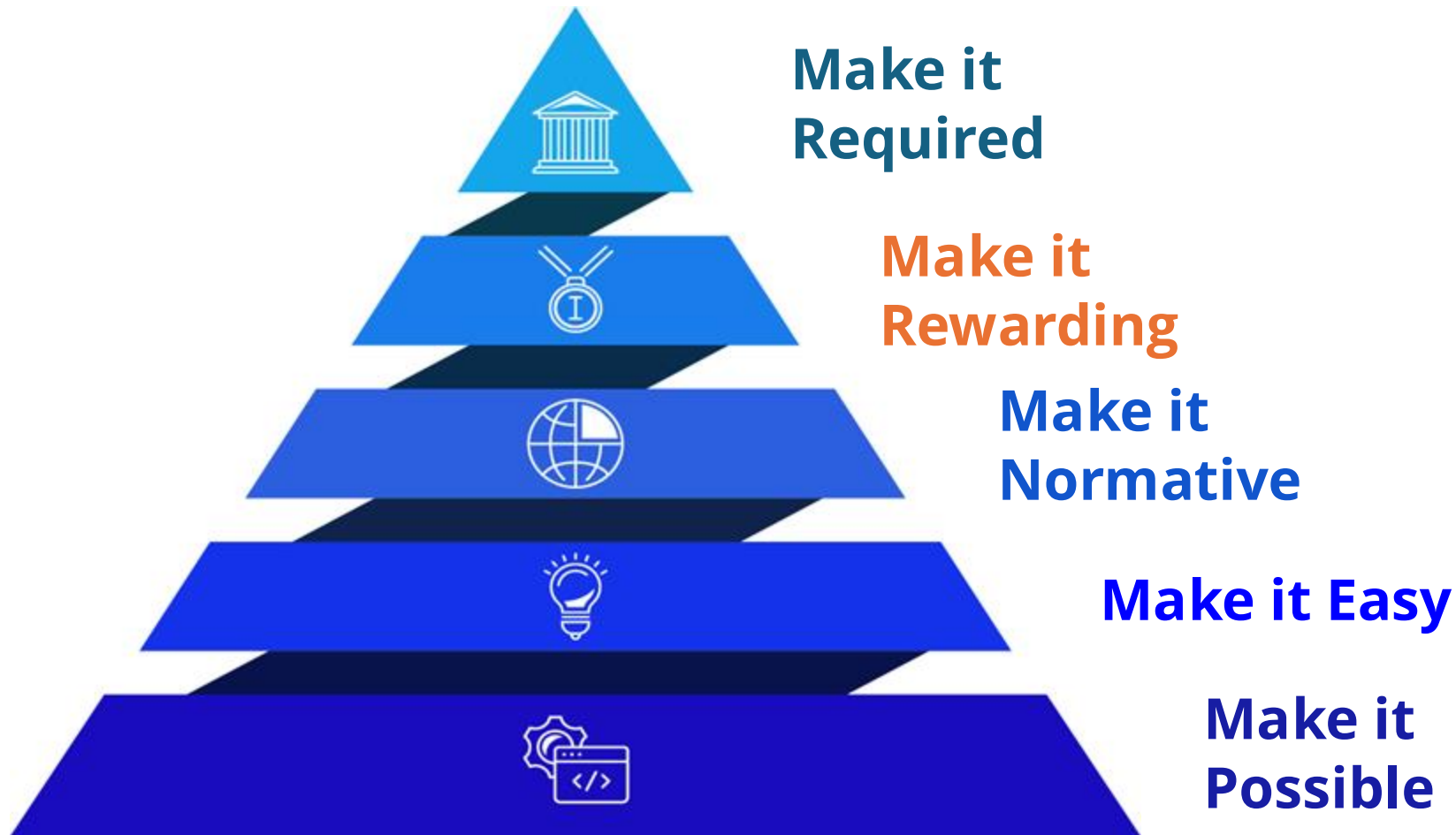
FUNDERS



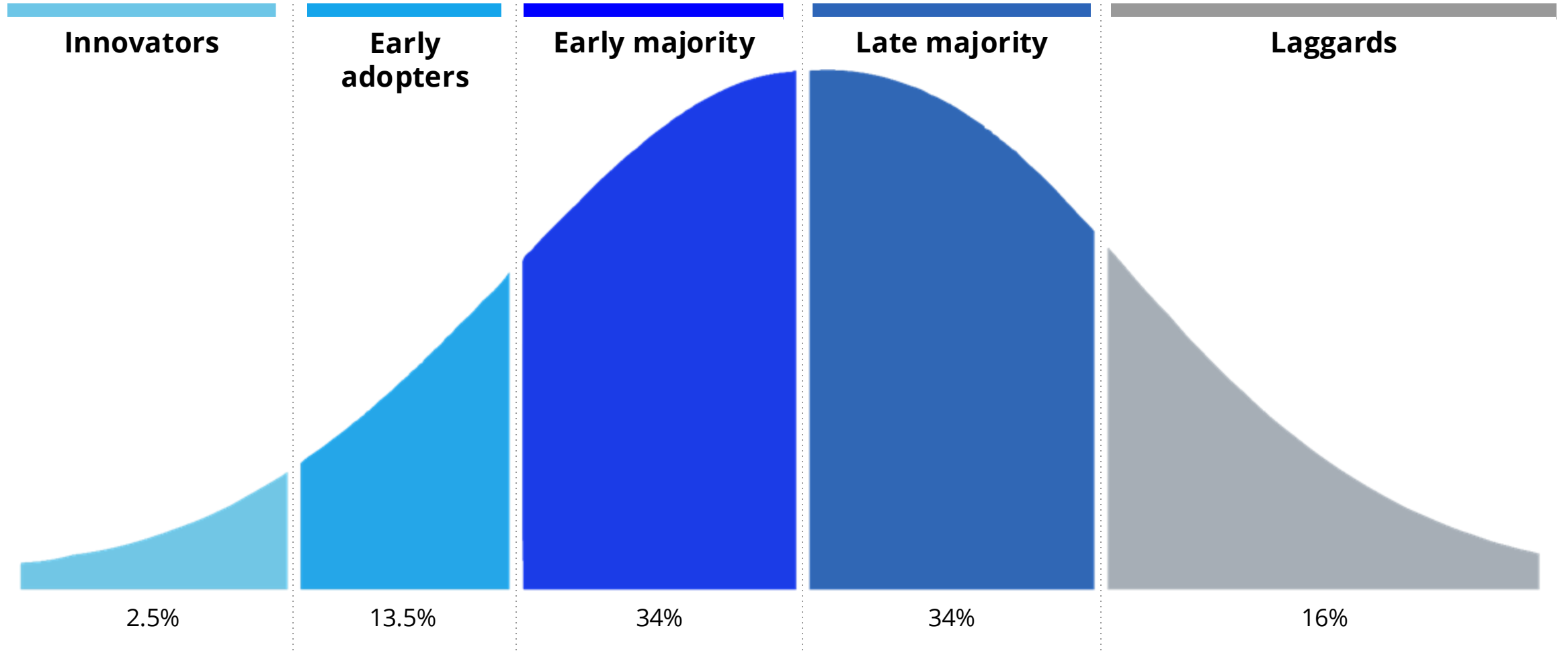
SOCIETIES

# A strategy for culture change

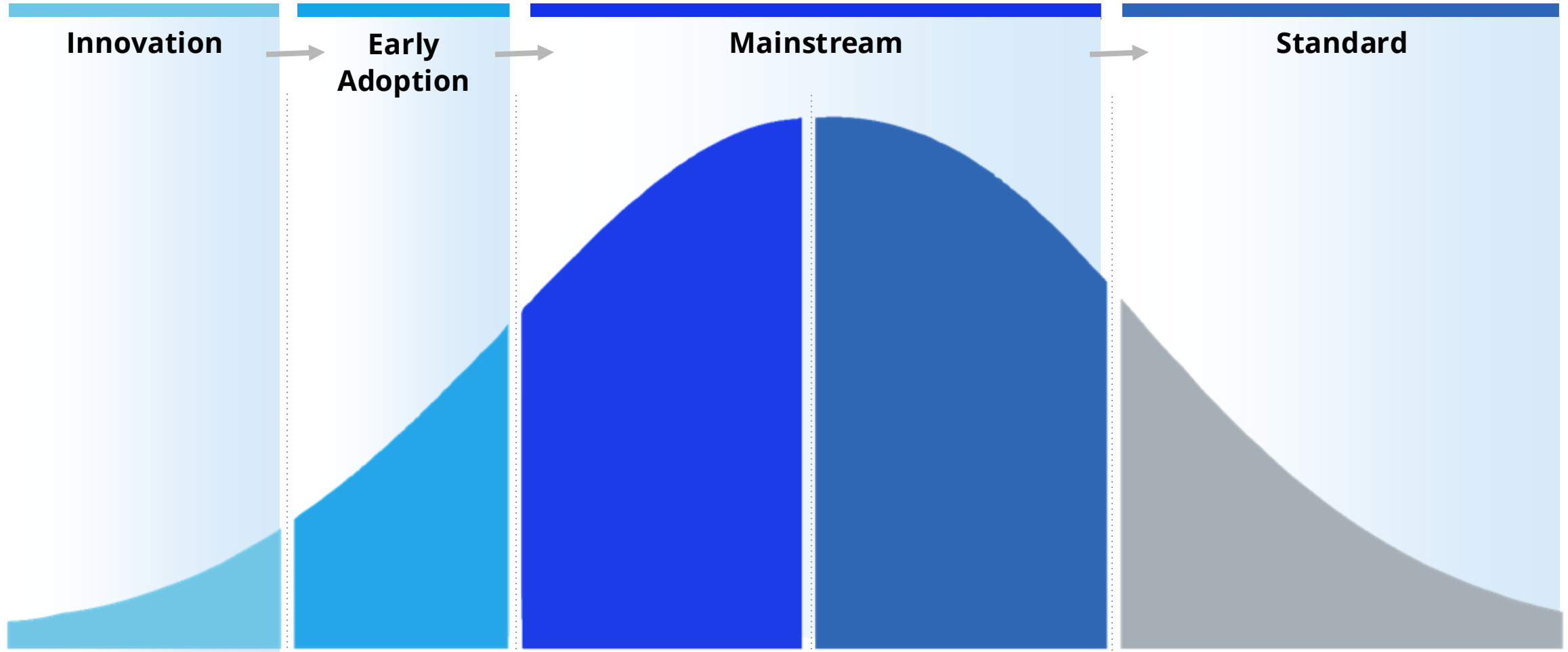
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# Diffusion of innovations



# Diffusion of innovations for research culture



**Innovation**



**Early Adoption**



**Mainstream**



**Standard**

**Make it Possible**

**Make it Easy**

**Make it Normative & Rewarding**

**Make it Required**

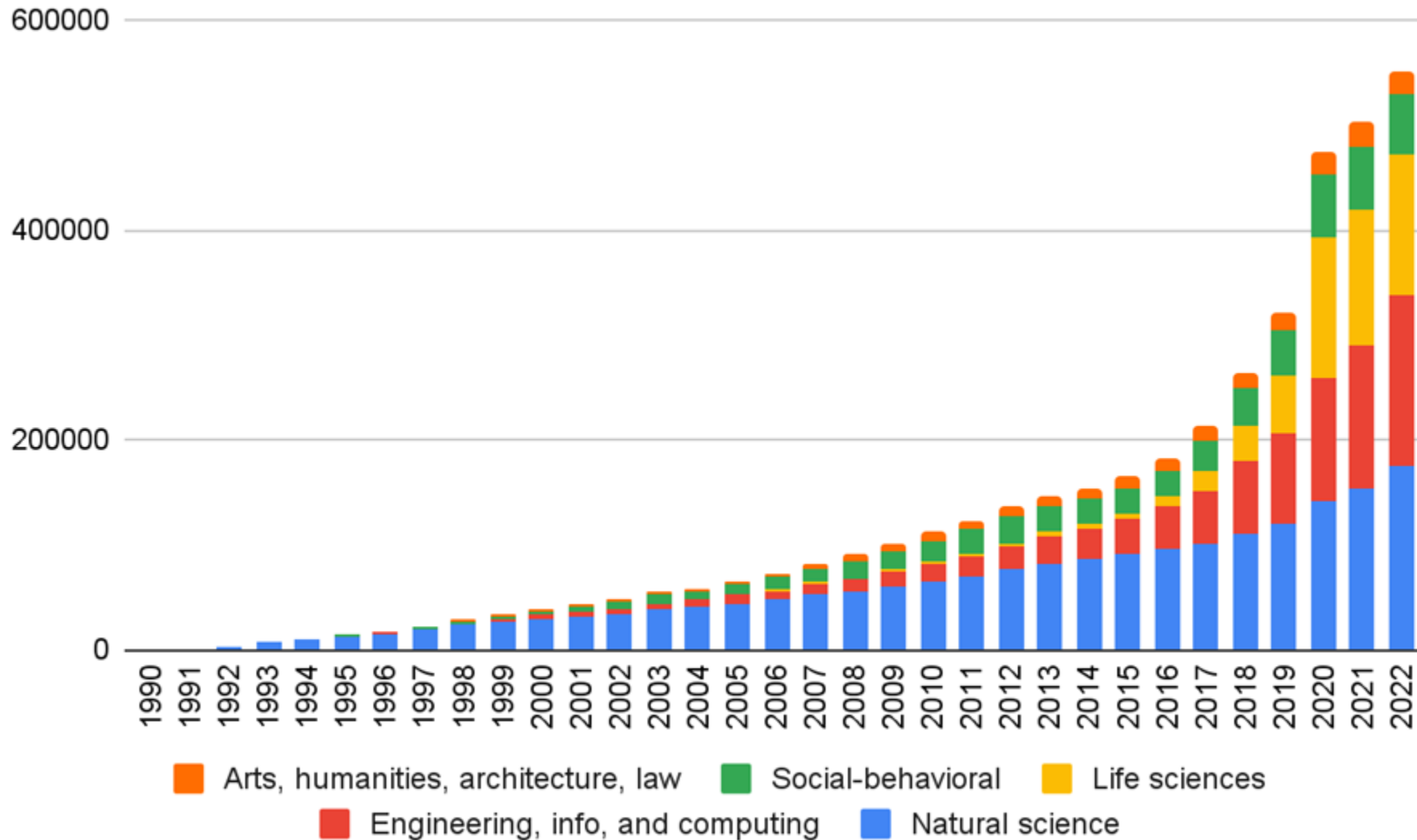


# Example: Preprints

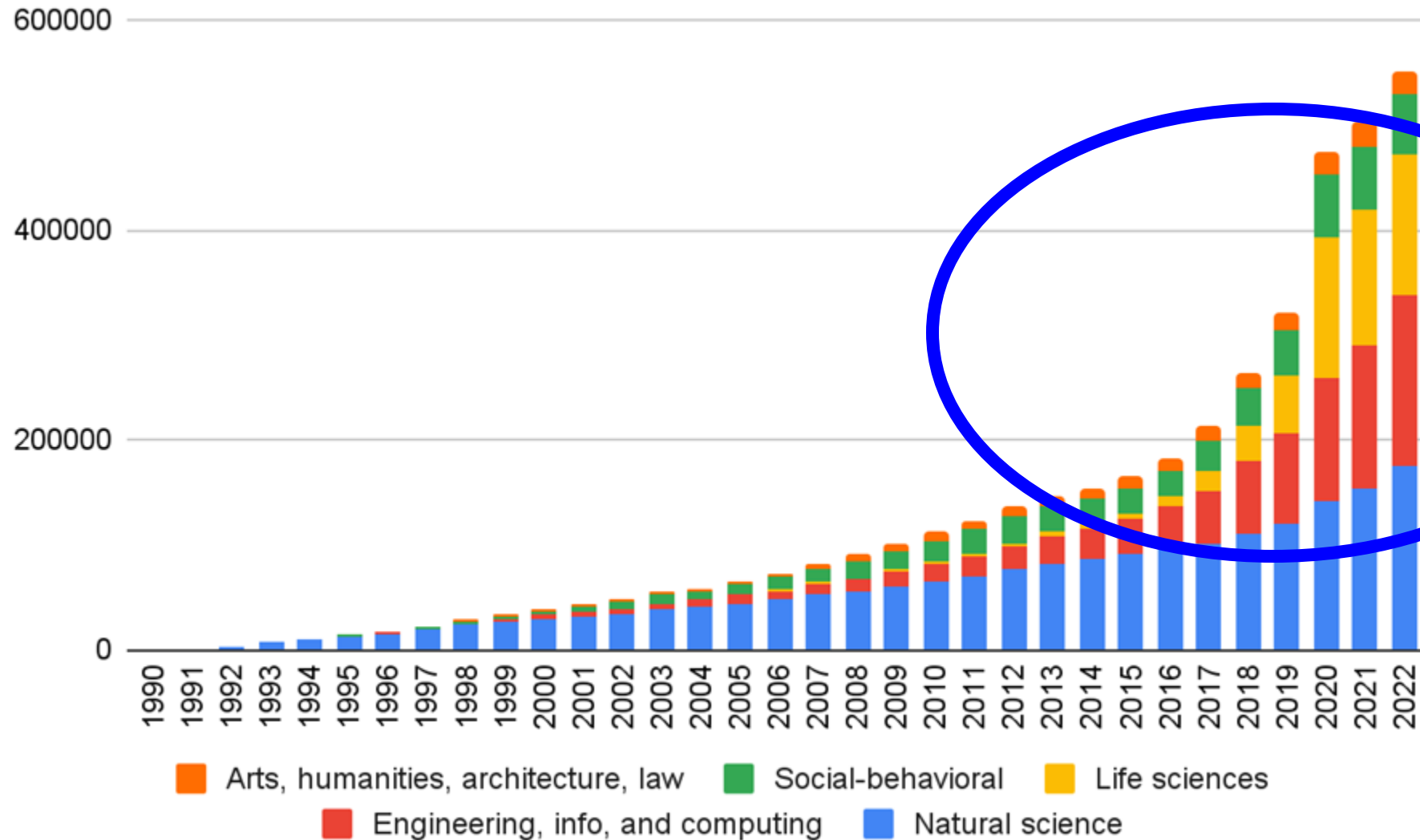
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*Make research more quickly available to enable discovery and reuse*

# Growth in Preprints over Time



# Accelerated Adoption in the Life Sciences



# Make it Possible

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# Make it Easy



[Publish with PLOS](#) ▾

[Research Communities](#)

[Open Science](#) ▾

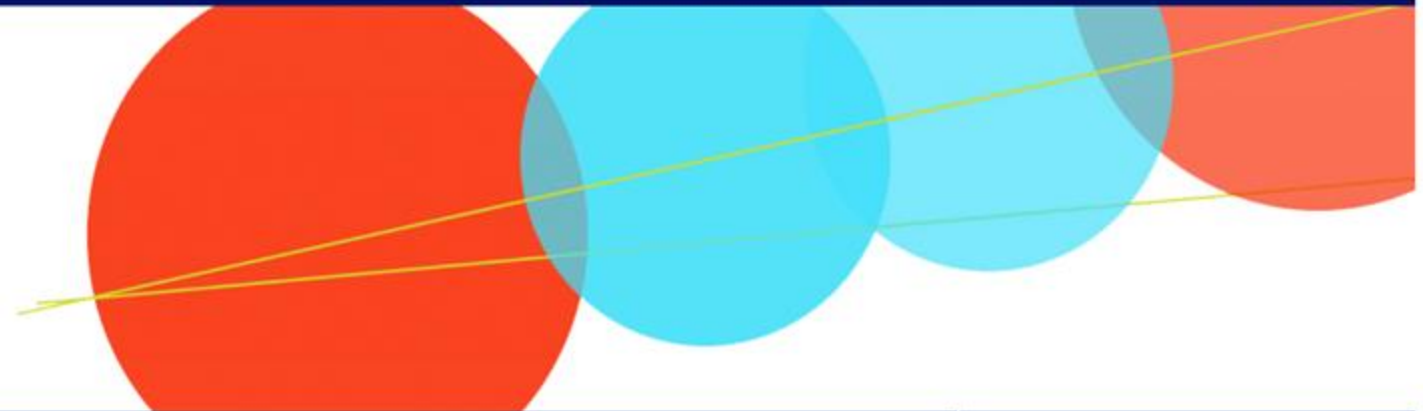
[Resources](#) ▾

[About PLOS](#)



PLOS BLOGS

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## Power to the Preprint

May 1, 2018 / [PLOS](#) / [In the News](#) [Innovation](#) [Open Access](#) [Open Science](#) [Publishing](#)

# Make it Normative

**Preprint policy toolkit for funders**

Developing and implementing a preprint policy

Download the toolkit

**ASAPbio**



Funder policy toolkit

ASAPbio Preprint policy toolkit for funders



2023 ASAPbio Fellows program

sciences updates  
session goals  
workshops  
transparency skills  
practice  
**ASAPbio**  
Fellow  
members contribution  
engage community  
activities sharing  
resources resources  
support program

Become a preprint advocate:  
apply now to be a 2023  
ASAPbio Fellow

Enter search terms here (optional) **B**

Twitter activity | all categories | Since yesterday | 20 results per page | Search

## Most tweeted bioRxiv papers, last 24 hours **C**

417 results found. For more information, click each entry to expand.

**A**

<b>1: The life of P.I. - Transitions to Independence in Academia</b>	<a href="#">more details</a> <a href="#">view paper</a>
<b>730</b> tweets <a href="#">scientific communication and education</a>	Posted to bioRxiv 10 Mar 2019
<b>2: Clades of huge phage from across Earth's ecosystems</b>	<a href="#">more details</a> <a href="#">view paper</a>
<b>377</b> tweets <a href="#">microbiology</a>	Posted to bioRxiv 11 Mar 2019
<b>3: Convergent gene loss in aquatic plants predicts new components of plant immunity and drought response</b>	<a href="#">more details</a> <a href="#">view paper</a>
<b>85</b> tweets <a href="#">plant biology</a>	Posted to bioRxiv 11 Mar 2019
<b>4: Feature Selection and Dimension Reduction for Single Cell RNA-Seq based on a Multinomial Model</b>	<a href="#">more details</a> <a href="#">view paper</a>
<b>83</b> tweets <a href="#">genomics</a>	Posted to bioRxiv 11 Mar 2019

# Make it Rewarding



CANCER  
RESEARCH  
UK

Together we will beat cancer

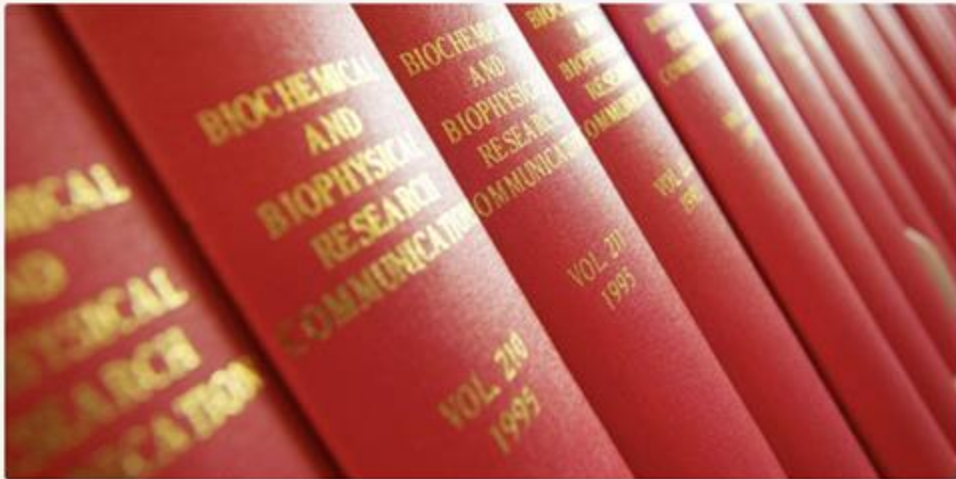


[About cancer](#) ▾ [Get involved](#) ▾ [Our research](#) ▾ [Funding for researchers](#) ▾ [Shop](#) ▾ [Abc](#)

[Home](#) ▸ [About us](#) ▸ [Cancer news](#) ▸ We accept preprints in grant applications: new guidance for researchers

## We accept preprints in grant applications: new guidance for researchers

Category: Research Feature  May 30, 2017  Cancer Research UK  Comments are closed  3 minute read



We allow – and encourage – our researchers to deposit preprints of their publications, and to cite preprints and other non-traditional research outputs in their funding applications. We're updating our application guidelines to make this clear.



Science



[← BACK TO SCIENCEINSIDER](#)

SCIENCEINSIDER | POLICY

## NIH enables investigators to include draft preprints in grant proposals

Agency welcomes raw manuscripts of findings that haven't yet been peer reviewed

24 MAR 2017 • BY [JOCELYN KAISER](#)



A new National Institutes of Health policy encourages researchers to include in their grant proposals preprints, which are early, unedited versions of papers that later appear in journals like these. [SERGEI25/SHUTTERSTOCK](#)

# Make it Required





# Factors Affecting Preprint Adoption in Life Science

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## Technical

Low discoverability

Suboptimal versioning & linking

Lack of key metadata

And so on...



## Social

Low awareness of benefits & uses

Fear of scooping

Perceived legitimacy

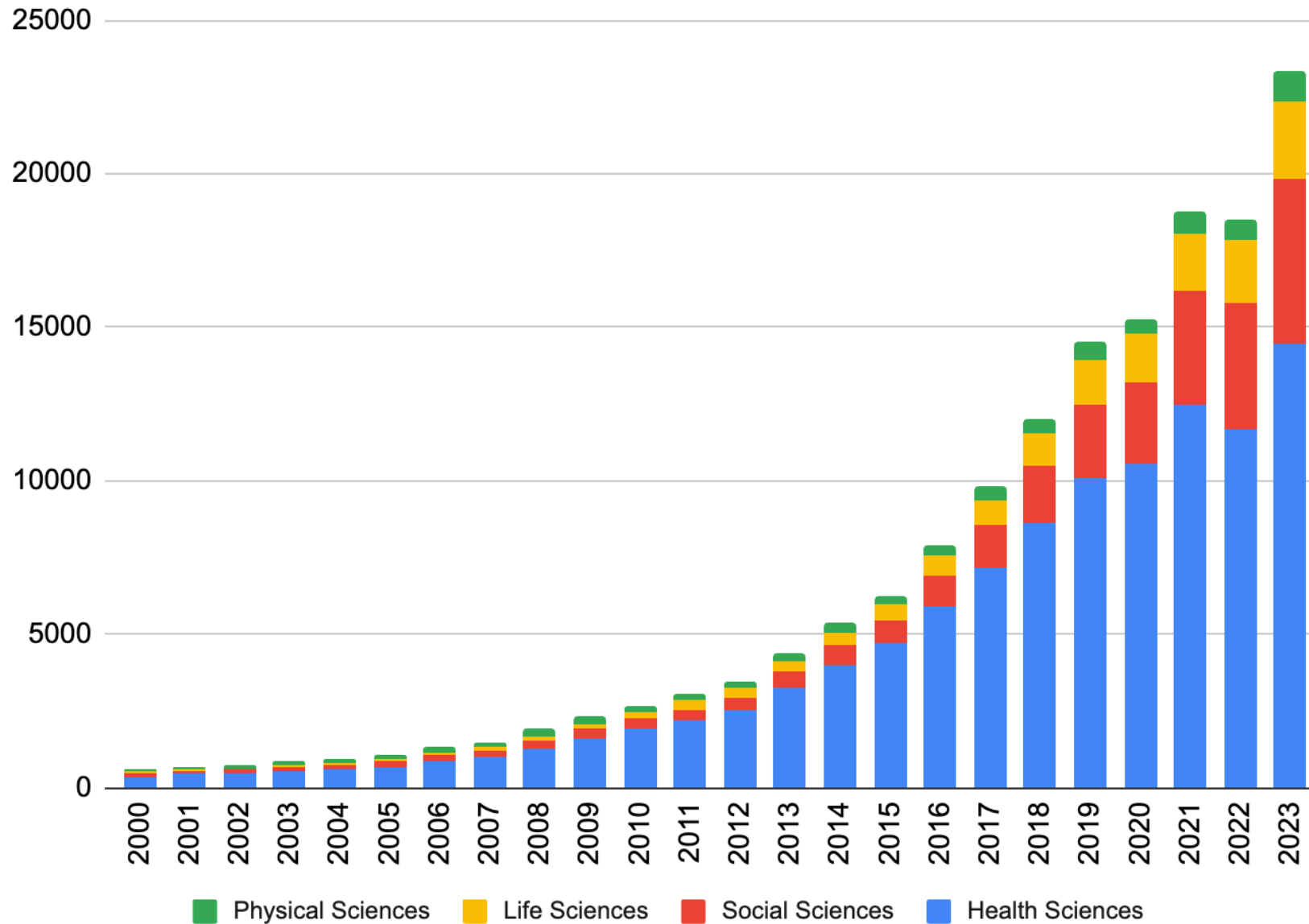
Confusion re: licensing

# Example: Preregistration

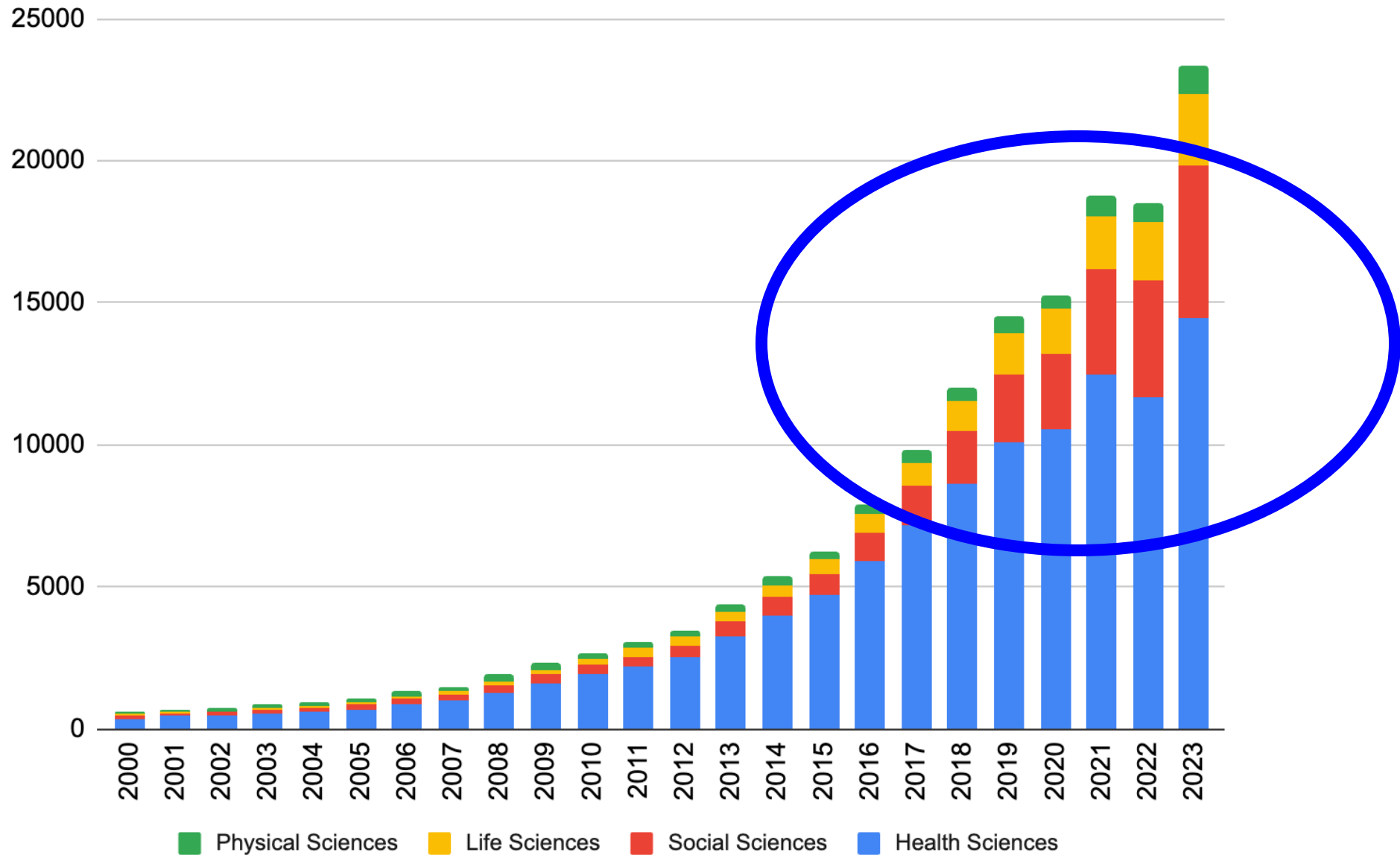
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*Increasing reproducibility by reducing QRPs and improving transparency*

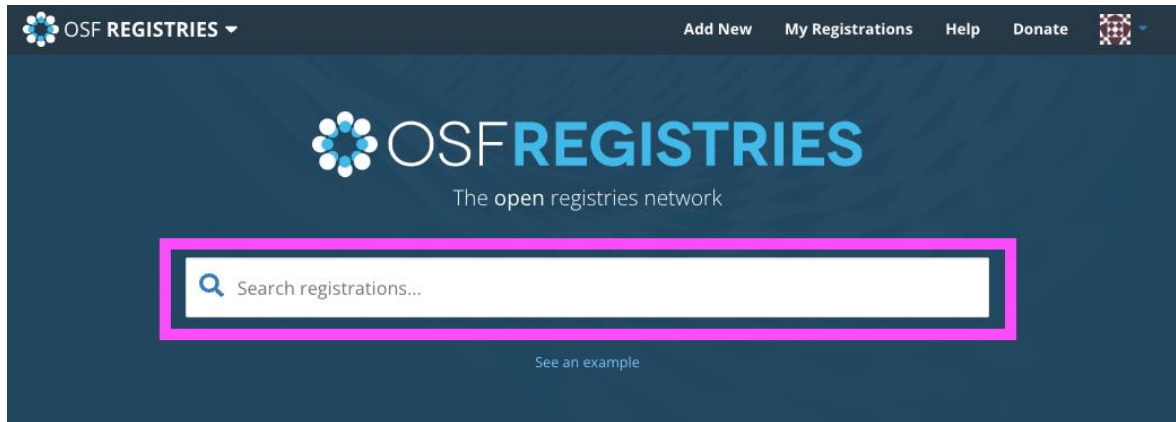
# Growth in Papers Mentioning (Pre)registration Over Time



# Accelerated Adoption in the Social Sciences



# Make it Possible



**RIDIE**  
Registry for International  
Development Impact Evaluations



Registry of Efficacy  
and Effectiveness Studies



**AS PREDICTED**

# Make it Easy

## STEP 2

Which type of registration would you like to create? \*

OSF Preregistration ▲

Qualitative Preregistration

OSF Preregistration

Registered Report Protocol Preregistration

Secondary Data Preregistration

Template	Description
<b>OSF Preregistration</b>	Standard, comprehensive, and general purpose preregistration form.  Most commonly used.
<b>Open-Ended Registration</b>	Most flexible template. Only use if another template doesn't fit your study design or registering a completed project.
<b>Generalized Systematic Review</b>	For preregistering systematic reviews, scoping reviews, and meta-analyses
<b>OSF-Standard Pre-Data Collection Registration</b>	State whether data have been collected or viewed and other pertinent comments. Use this one if your pre-analysis plan is uploaded on OSF as a doc
<b>Pre-Registration in Social Psychology</b>	Preregister a research study outlining the hypotheses, methods, and analysis plan
<b>Preregistration Template from AsPredicted.org</b>	Eight questions derived from content recommended by <a href="https://aspredicted.org">AsPredicted.Org</a> .
<b>Qualitative Preregistration</b>	Template for registering primarily qualitative work
<b>Registered Report Protocol Preregistration</b>	Register your protocol AFTER having been given "in-principle acceptance" from a <a href="https://www.nature.com/journal/41566">Registered Report</a> journal
<b>Replication Recipe (Brandt et al., 2013): Post-Completion</b>	Register a replication study after it has been conducted with questions regarding the outcomes of the replication.
<b>Replication Recipe (Brandt et al., 2013): Pre-Registration</b>	Register a replication study with a series of questions regarding the original work.
<b>Secondary Data Preregistration</b>	For preregistering a research project that uses an existing dataset.

# Make it Normative



**Psychological Science**

Restricted access | Research article | First published November 28, 2022 | pp. 186–200

[When Do Observers Deprioritize Due Process for the Perpetrator and Prioritize Safety for the Victim in Response to Information-Poor Allegations of Harm?](#)

Maja Graso, Karl Aquino, Fan Xuan Chen , Jeroen Camps, Nicole Strah, Kees van den Bos

[Preview abstract](#) ▾

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Open Access | Research article | First published November 28, 2022 | pp. 201–220

[The Dispositional Essence of Proactive Social Preferences: The Dark Core of Personality vis-à-vis 58 Traits](#)

Benjamin E. Hilbig , Isabel Thielmann , Ingo Zettler , Morten Moshagen

[Preview abstract](#) ▾

[PDF / EPUB](#)

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Restricted access | Research article | First published November 28, 2022 | pp. 221–237

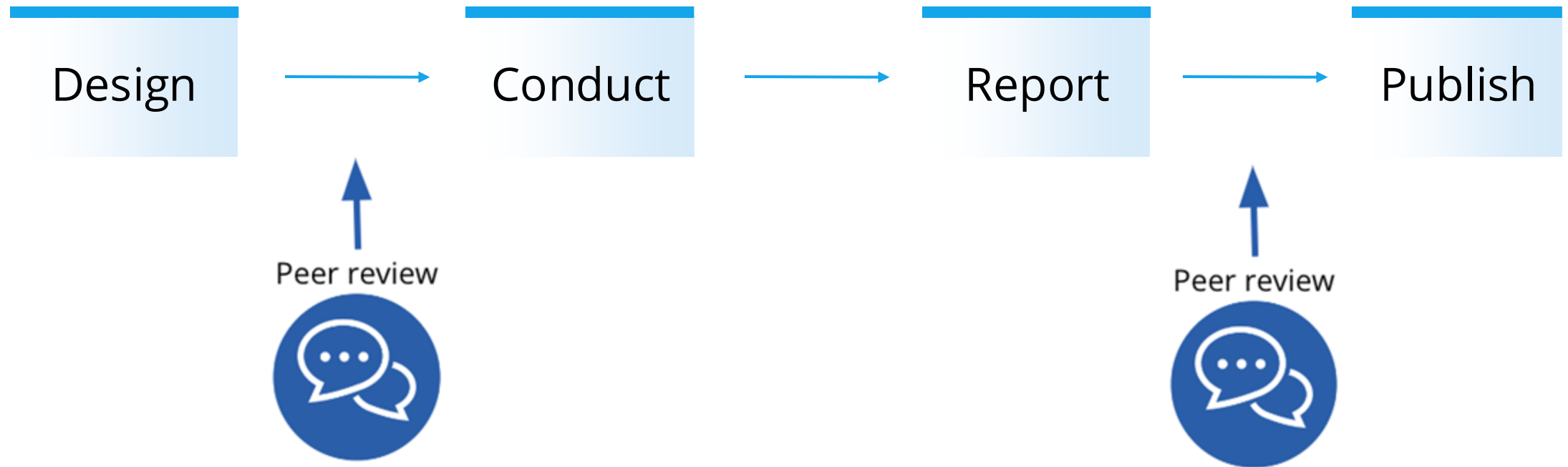
[Mnemonic Content and Hippocampal Patterns Shape Judgments of Time](#)

Brynn E. Sherman , Sarah DuBrow, Jonathan Winawer , Lila Davachi

[Preview abstract](#) ▾

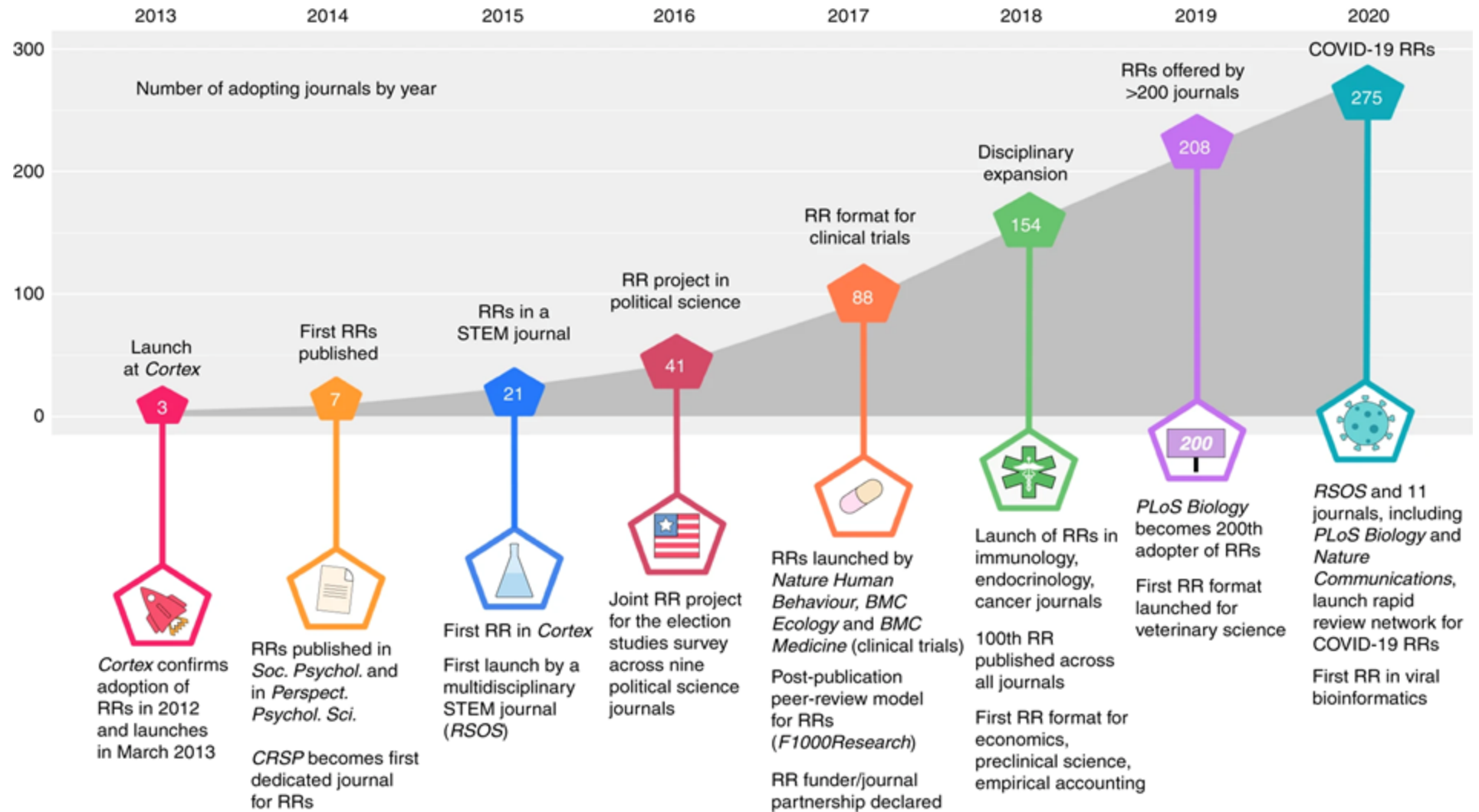
# Make it Rewarding

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# Make it Rewarding



# Make it Required

 Arnold Ventures

## Arnold Ventures' Approach to Funding Research

We work to ensure the accuracy and independence of our research by **requiring**:

- ✓ preregistration
- ✓ open data
- ✓ open code
- ✓ full transparency about methods and results



**All trials and studies** funded by the Foundation Dam must preregister in **[the foundation's own registry at Open Science Framework](#)** (OSF).

# Factors Affecting Preregistration Adoption

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## **Technical**

Suboptimal discoverability & linking

Alignment between preregistration and paper

Lack of key metadata

And so on...

## **Social**

Uncertainty about cost and benefits

Fear of others gaining productive advantage

Changes order of work

And so on..

# Example: Global Flourishing Study

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*Increasing rigor and transparency through data access agreements*

# Longitudinal Data Collection On Human Flourishing

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## RESEARCH OF UNPRECEDENTED SCOPE AND SCALE

The launch of the Global Flourishing Study culminates four years of collaboration among more than 40 leading experts from four esteemed organizations: Harvard University's Human Flourishing Program, the Baylor Institute for Studies of Religion, the Center for Open Science, and Gallup, the worldwide authority in public polling.

**40+**

leading researchers from  
around the globe

**200K**

research  
participants

**20+**

countries

**40**

lenses of inquiry in 6  
domains

**5-Year**

groundbreaking  
exploration

# Longitudinal Data Collection On Human Flourishing

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## About the Data

**Data from the first wave is now available for those who have preregistered their analysis plans or are planning a Registered Report with an eligible journal.** Starting with the second wave of data collection, access to the data will be available to anyone without restriction one year following the data collection for each wave.

# Make it Required

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## Data Request Agreements

The Global Flourishing Study is designed to be a model of transparency, sharing, and rigor. It employs best practices for: (1) maximizing rigor of testing hypotheses using preregistration and Registered Reports; (2) maximizing openness and reusability of research materials, surveys, and data; (3) facilitating safe and secure access to sensitive data through appropriate ethical review and approval; and (4) minimizing publication bias by promoting reporting of all preregistered analyses using the datasets and open availability of all reports by publishing open access or sharing green open access on preprint services. To that end, you will need to confirm that you will adhere to the data request agreements described in the next section when you complete your preregistration.

# Make it Required

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## Data Request Agreements

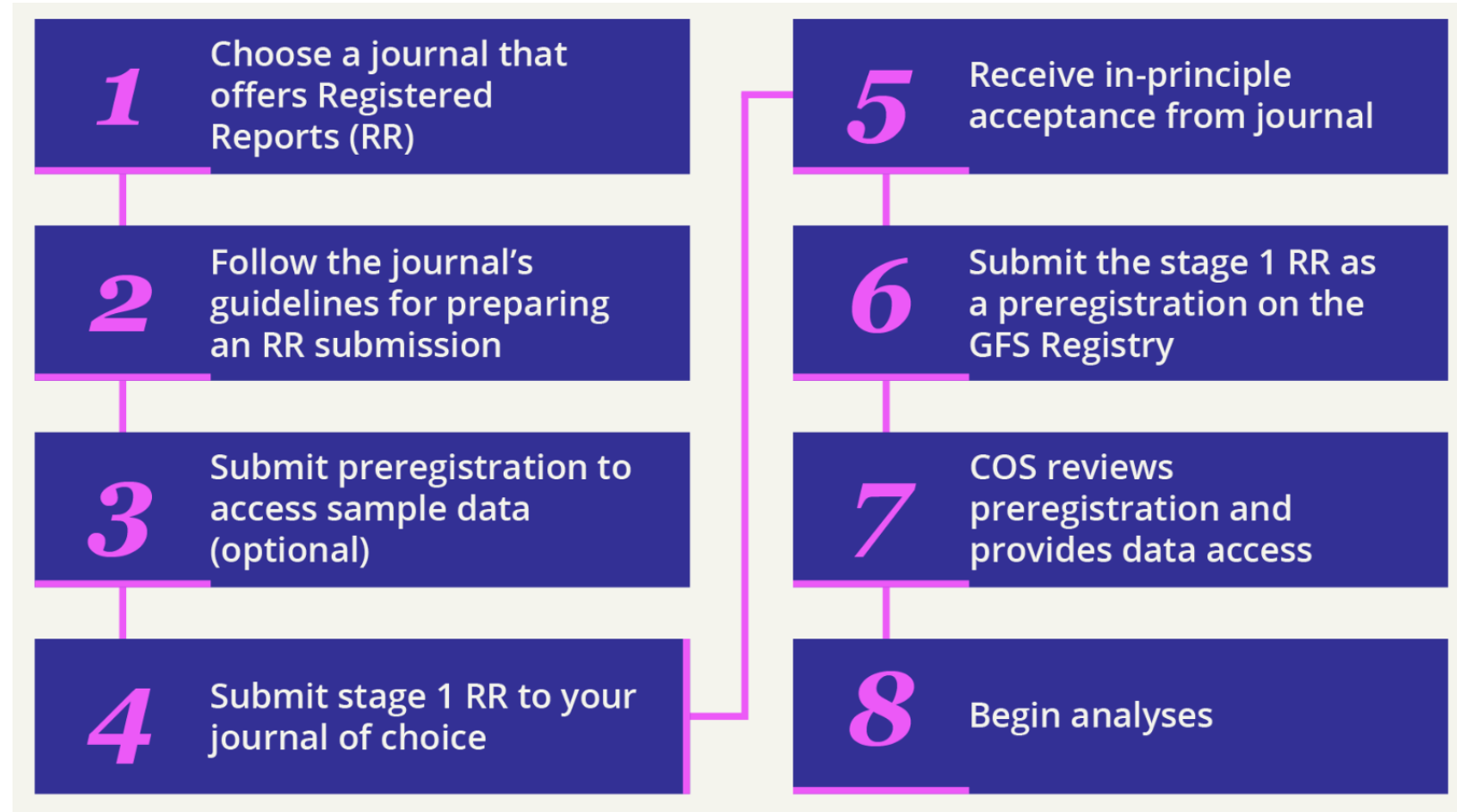
- I will use these data to test for my preregistered hypotheses only (until these data are publicly available on the Open Science Framework). I will return to the Open Science Framework and preregister any additional hypotheses.
- In order to request future waves of data, I will be required to report on my progress towards certain outcomes from my previous data use including, but not limited to: derived data, analysis code, DOI links to publications, links to preprints.
- Except when not possible (e.g. journal prohibits preprints), I will post preprints to the appropriate or relevant preprint server (e.g., [SocArXiv](#), [medRxiv](#), [bioRxiv](#), and [PsyArXiv](#)).
- I will cite the GFS dataset hosted on the Open Science Framework (OSF) (<https://doi.org/10.17605/OSF.IO/3JTZ8>) in any publications (including, but not limited to peer reviewed journal publications, preprints, preregistration, media articles, blog articles, etc) in a format that includes the GFS project DOI (<https://doi.org/10.17605/OSF.IO/3JTZ8>)



# Make it Rewarding



OR



# Make it Normative

## Open Science Resources


Preregistration is an impactful way to increase the discoverability and rigor of your research, but there are many additional ways throughout the research lifecycle to emphasize openness, transparency, and reproducibility in your work. Click on each open science practice below to learn more about the [OSF](#), [Preregistration](#), [OSF Projects](#), and [Preprints](#). Find a number of useful resources and [help guides](#) about the OSF in six languages (and counting!). We are always looking for enthusiastic translators who are excited to help countless people around the world join the open science movement. If you are interested please fill out this [Translator Interest Form](#).

Trainings specifically related to preregistration and Registered Reports can be accessed below.

## GFS-Specific Resources

- [Guide to Preregistration on the Global Flourishing Study Registry 2024](#)
- [Global Flourishing Study Wave 1 and 2 Preregistration Template](#)
- [Guide to connecting preprints, code, and data to your preregistration](#)
- [Guide to requesting sensitive data](#)
- [Hands-on Data Management Kickstarter](#)
- [Questionnaire Development Report](#)
- [Methodology Report](#)
- [Supplemental Methodology for Wave 1 Sensitive Data and US-Weighted Data by State](#)
- [Codebook](#)
- [Translation Document](#)
- [An Introduction to Preregistration, Study Registries, and Registered Reports: Learning Materials For the Global Flourishing Study](#)
- [Effective Practices for a Rigorous Preregistration](#)
- [Webinar: An Introduction to Wave 1 Sample Data \(recording, slides, and Q&A\)](#)
- [Webinar: Preregistration and Registered Reports \(recording, slides, and Q&A\)](#)
- [Webinar: Understanding and Accessing Wave 1 Data for Researchers \(recording, slides, and Q&A\)](#)

The Global Flourishing Study /



### Training Materials - Preregistration and Registered Reports

Contributors: [Daniel Lakens](#), [Lesley Markham](#), [Huajin Wang](#)  
Affiliated institutions: [Center For Open Science](#)  
Date created: 2023-07-20 05:12 PM | Last Updated: 2024-11-27 08:01 PM  
Identifier: DOI 10.17605/OSF.IO/DZ84P  
Category: Procedure  
Description: *Self-guided training through a series of presentations on the fundamentals of preregistration and registered reports*  
License: [CC-BY Attribution 4.0 International](#)

Files

Name	Modified
Training Materials - Preregistration and Registered Reports	
OSF Storage (United States)	
GFS_Training_Introduction.pdf	2023-08-02 11:13 PM
GFS_Training_Part_I.pdf	2023-08-02 11:13 PM
GFS_Training_Part_II.pdf	2023-08-02 11:14 PM
GFS_Training_Part_III.pdf	2023-08-02 11:14 PM
GFS_Training_Part_IV.pdf	2023-08-02 11:14 PM
GFS_Training_Part_V.pdf	2023-08-02 11:14 PM



A Guide to Preregistration on the  
Global Flourishing Study Registry 2024

**Table of Contents**

# Make it Easy

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## New Preregistration Template for Wave 1 and Wave 2 Data

The GFS team has developed a new [preregistration template](#) and [guide](#) to streamline data access requests, including both currently available and upcoming 2025 data.

- Wave 1 non-sensitive - available now via preregistration
- Wave 1 sensitive - available now via preregistration and ethical approval
- Wave 1 US weighted by state - available now via preregistration
- Mid-year 2024 - release date to be announced in 2025
- Wave 2 coming first quarter 2025
- Wave 2 sensitive - release date to be confirmed in 2025

## Sample Data Resources

### Sample Data Codebook

The [sample data codebook](#) contains information about the organization and naming of the variables in the sample data and is a key resource for researchers when working with the dataset.

The codebook for the GFS data is available for anyone to access on the [GFS Registry](#), or you can simply [access it here](#).

### Access Sample Data Without Preregistration

This sample dataset contains the data collected in Sweden. It has been perturbed by adding a small amount of random error and randomized across rows. [Read more here](#).

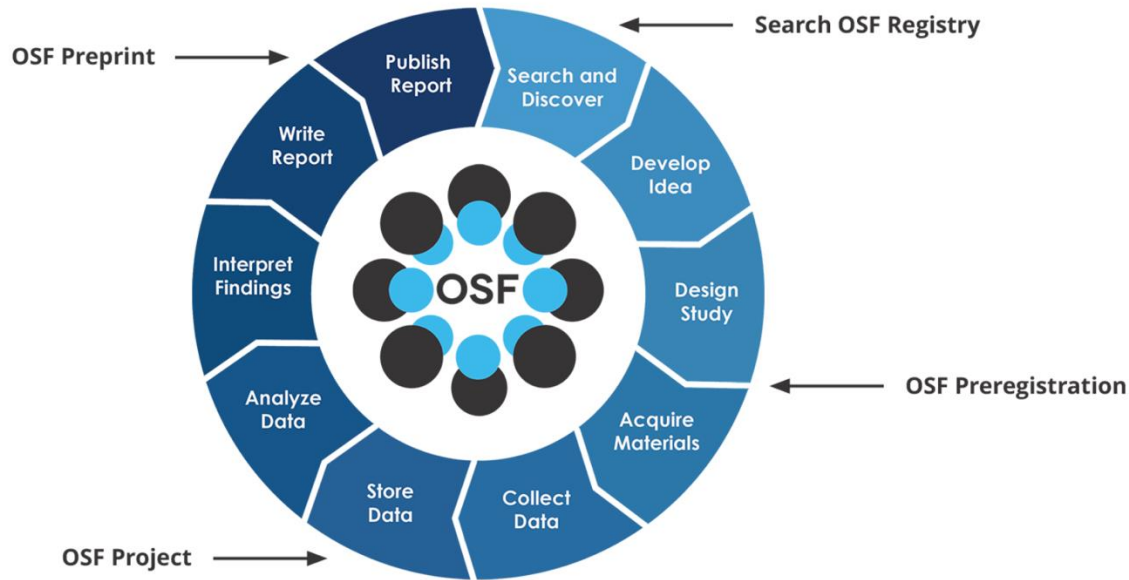
You can use it to prepare your hypotheses, models, and analysis script. [Fill out this form](#) to access the sample data without preregistration.

### Access Sample Data With Preregistration

The sample dataset contains the data collected in Sweden which has been perturbed by adding a small amount of random error. [Read more here](#).

Access to this sample dataset requires preregistration in advance through the [GFS Registry](#).

# Make it Possible



GFS Registry

Moderation Add New My Registrations Help Donate

Global Flourishing Study

This registry contains preregistrations using the Global Flourishing Study (GFS) dataset. The GFS is a 5-year longitudinal data collection and research collaboration. This initiative includes data collection for over 200,000 participants from 20+ geographically and culturally diverse countries and territories, including Argentina, Australia, Brazil, China (Hong Kong), Egypt, Germany, India, Indonesia, Israel, Japan, Kenya, Mexico, Nigeria, the Philippines, Poland, South Africa, Spain, Sweden, Tanzania, Turkey, United Kingdom, and the United States. The study will obtain nationally representative data within each country, with collection on the same panel of individuals annually. GFS measures global human flourishing in six areas: Happiness and life satisfaction; Mental and physical health; Meaning and purpose; Character and virtue; Close social relationships; and Material and financial stability.

To learn more about the study and how to access the data, go to [www.cos.io/gfs](http://www.cos.io/gfs) or email [globalfourishing@cos.io](mailto:globalfourishing@cos.io).

The following information will help you in your submission:  
[Guide to Preregistration](#) | [Preregistration Template](#) | [Codebook](#)

Enter search term(s) here

133 results

## Connecting Resources to your Preregistration

Navigate to your study preregistration in the GFS Registry and open it.

Click "Resources" in the left-hand sidebar.

OSF REGISTRIES

Moderation Add New My Registrations Help Donate

Barriers and Facilitators to Adolescents Seeking Mental Health Care in Low and Middle Income Countries

Public registration Updates

Overview Files Resources Wiki Components 2 Links 0 Analytics Comments 0

Study Information

Hypotheses

We expect that adolescents that reside in low income, high stress countries encounter more barriers than those in low income, low stress countries.

Design Plan

Study type

Observational Study - Data is collected from study subjects that are not randomly assigned to a treatment. This includes surveys, "natural experiments," and regression discontinuity designs.

Registration type

OSF Preregistration

Blinding

Contributors

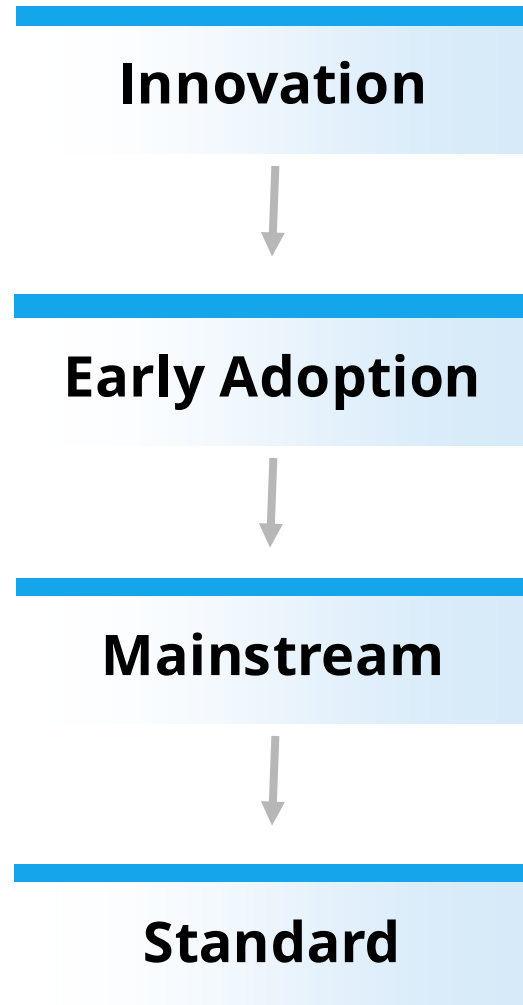
Mark Call and Eric Olson

Description

This study will explore quantitative and qualitative evidence describing barriers and facilitators for adolescents when seeking mental healthcare in low and middle income countries. It will explore differences between rural and urban settings and look for any related variables (ex. tribal, stress, etc.)

# Implementation Strategy for Scaling Open Scholarship

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## **Make it Possible**

INFRASTRUCTURE, TOOLS, PROCESSES

## **Make it Easy**

RESEARCHER-CENTRIC, INTEGRATED SOLUTIONS

## **Make it Normative & Rewarding**

COMMUNITY-BUILDING, TRAINING, INCENTIVES

## **Make it Required**

POLICY REFORM AND IMPLEMENTATION

**Thank you**

**These slides: <https://osf.io/7q6nr>**

**Me: [tim@cos.io](mailto:tim@cos.io)**