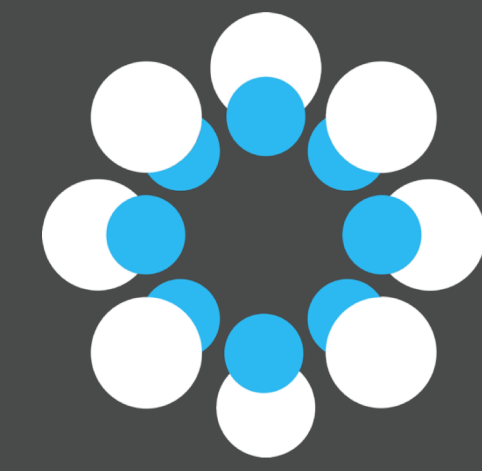# MAKING SCIENCE TRANSPARENT BY DEFAULT

CENTER FOR OPEN SCIENCE

CHALLENGE

Research is not reported as completely or transparently as it could be, which is a barrier to replicating and applying important discoveries.

VISION

We envision a future in which science advances rapidly and efficiently through a **transparent process** that makes all underlying research content preserved, connected, and discoverable.
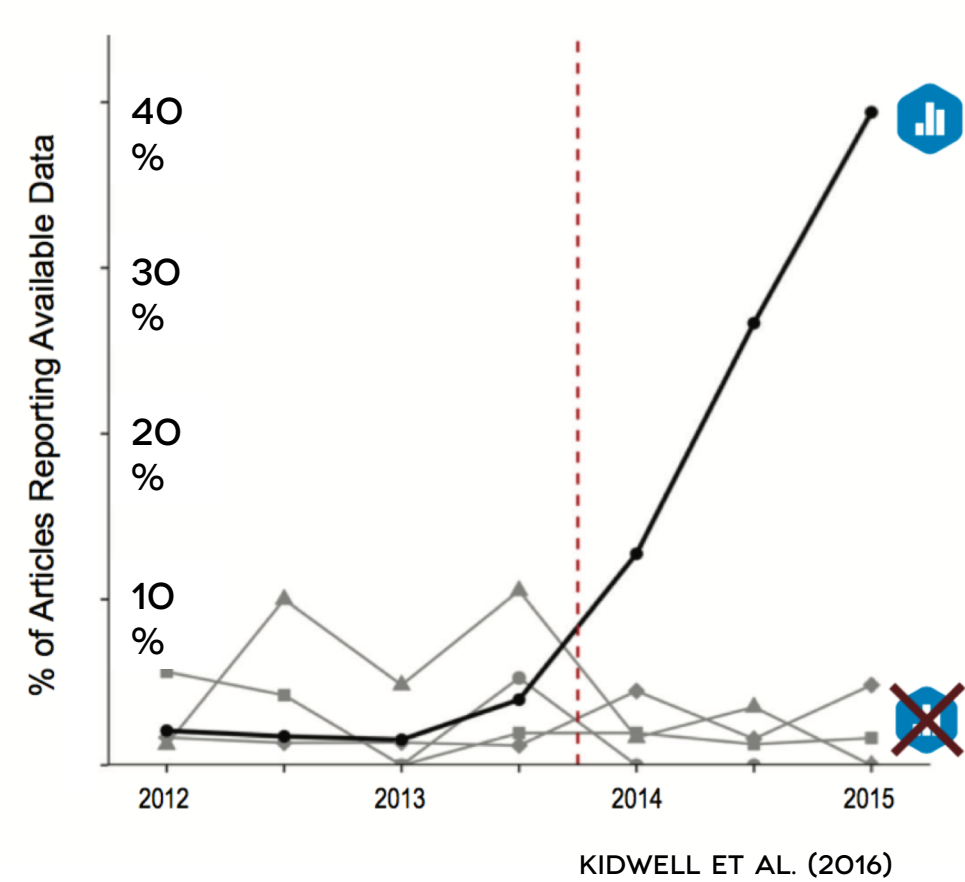
TRANSPARENCY & OPENNESS PROMOTION GUIDELINES

TOP consists of eight standards at three levels of increasing rigor

DATA CITATION STANDARDS	DESIGN & REPORTING TRANSPARENCY
DATA TRANSPARENCY	STUDY PREREGISTRATION
MATERIALS TRANSPARENCY	ANALYSIS PREREGISTRATION
METHODS (CODE) TRANSPARENCY	REPLICATION

VERIFY
LEVEL III
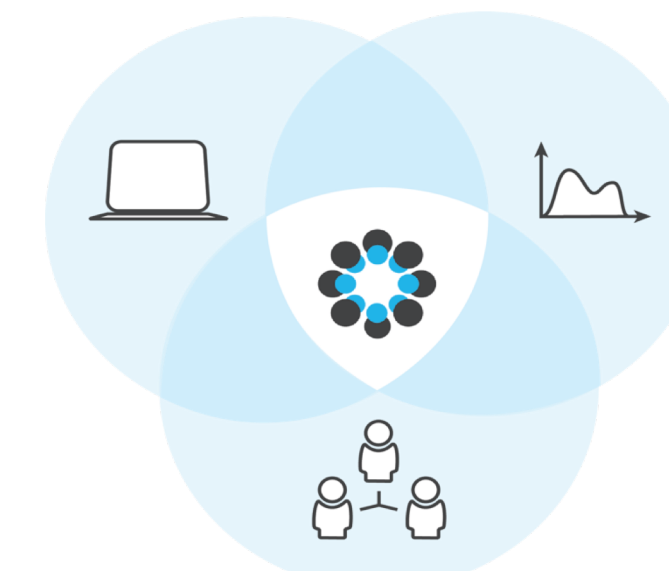
REQUIRE
LEVEL II

DISCLOSE
LEVEL I

BADGES TO ACKNOWLEDGE OPEN PRACTICES

A simple, low-cost method for increasing transparency

Recognize researchers when they are more transparent than required.

% of Articles Reporting Available Data
40%
30%
20%
10%
2012 2013 2014 2015
KIDWELL ET AL. (2016)

OPEN DATA
PREREGISTERED
OPEN MATERIALS

THE CENTER FOR OPEN SCIENCE

• Evidence to encourage change
• Training to enact change
• Incentives to embrace change
• Technology to enable change

PREREGISTRATION

Problem

Presenting exploratory results as confirmatory increases publishability at the expense of credibility.

Solution

Clearly distinguish between planned, confirmatory tests & unplanned discoveries.

PREREGISTERED

REGISTERED REPORTS

DEVELOP IDEA → DESIGN STUDY → COLLECT & ANALYZE DATA → WRITE REPORT → PUBLISH REPORT

Stage 1 Peer Review

Stage 2 Peer Review

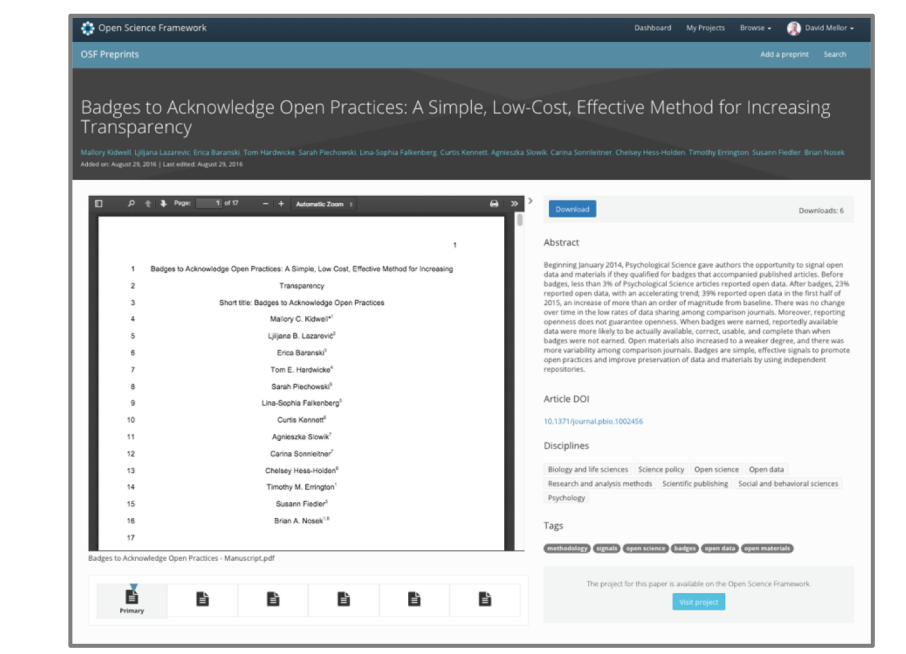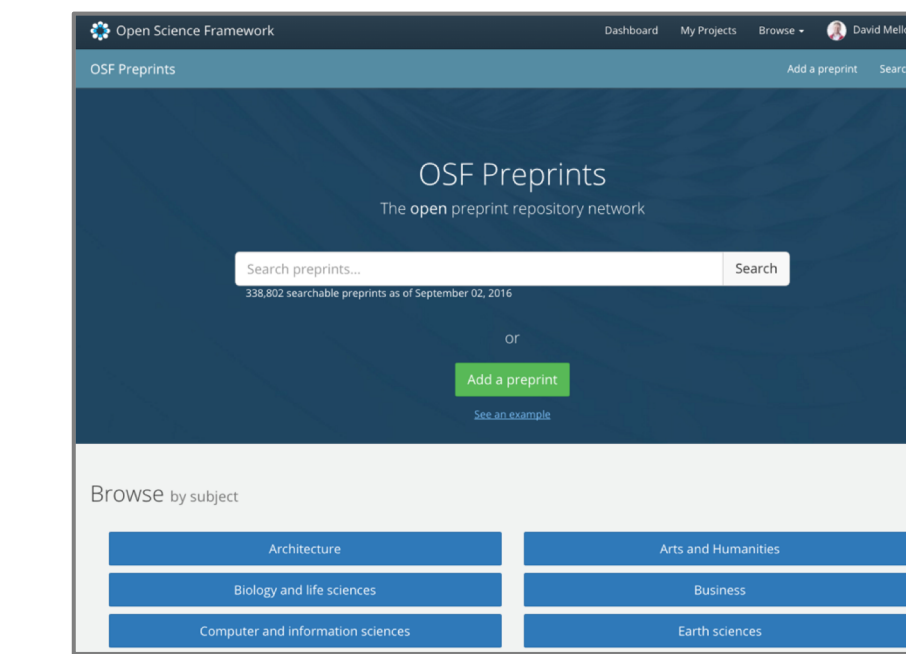**Registered Reports improve research**

1) Peer review occurs to before results are known, so that biases do not affect interpretation of methods.
2) Addresses publication bias so that research is disseminated based on rigor.

Offered by journals publishing across most disciplines

The British Psychological Society

F1000Research
Open for Science

nature human behaviour

aps ASSOCIATION FOR PSYCHOLOGICAL SCIENCE

BMJ Journals

BioMed Central
The Open Access Publisher

cos.io/rr

PREPRINTS

• Allows researcher-led control of branding, standards, community building, and norms.
• Community controlled moderation.
• Common infrastructure enables growth across disciplines while not reducing discoverability.

LawArXiv
Earth ArXiv
THESIS COMMONS
ΨArΧiv
paleorXiv
SOC ARXIV

osf.io/preprints

REGISTRIES AND COLLECTIONS

OSF REGISTRIES
The open registries network

• Connects registered research from multiple registries
• Workflows for:
  • Novel research
  • Confirmatory or Exploratory work
  • Replication studies
  • Registered Reports
  • Research using secondary data analysis
  • Qualitative and mixed methods