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# Reproducibility Narratives

Is science really facing a  
reproducibility crisis, and do  
we need it to?

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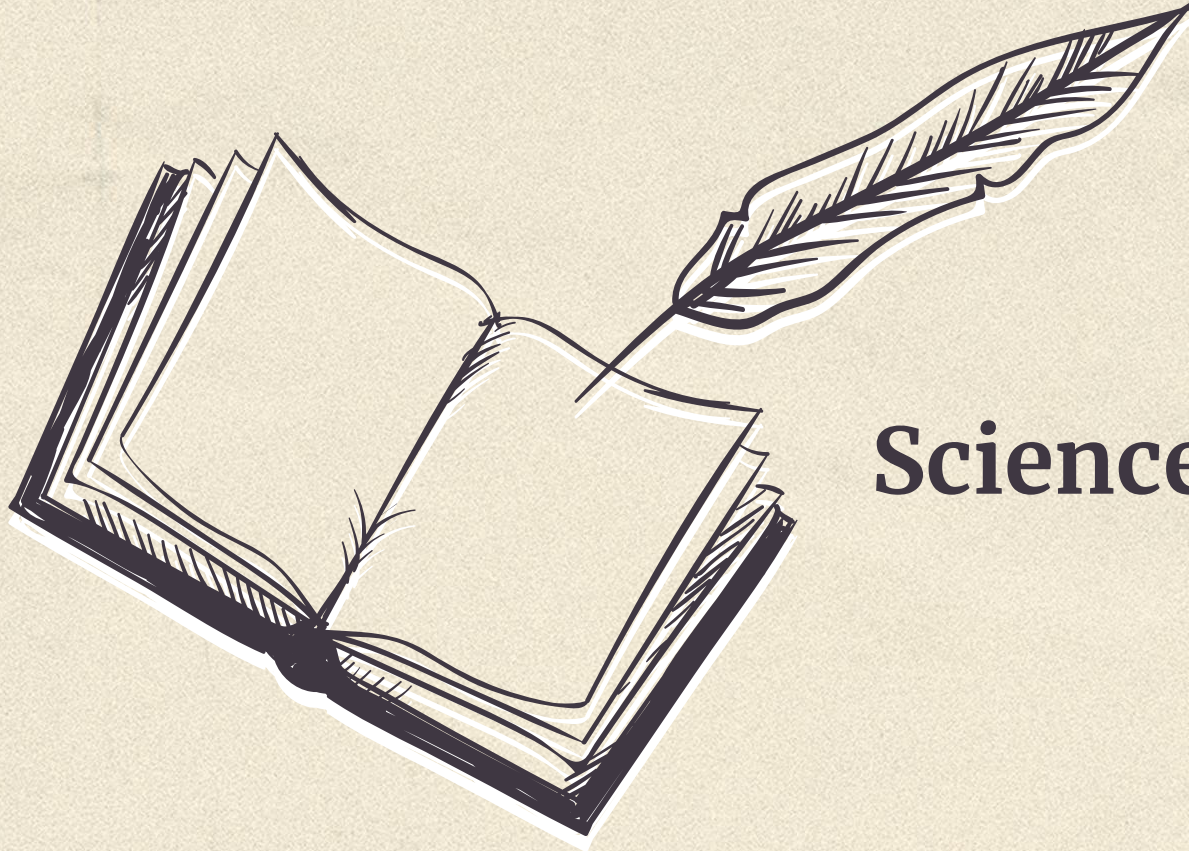


Science's crisis is real... scientists  
cannot hope to resolve the problem  
alone as they have contributed to  
create it in the first place.



**- Saltelli & Funtowicz, 2017**





01

# Science in Crisis

What does this mean?  
Notes from Fanelli (2018)

# What is the reproducibility crisis?

Crisis in the reliability of science due to **Fabricated, False, Biased, and Irreproducible** Findings

Narratives of this crisis are growing.



# Evidence



## Fabrication

**1-2%** of scientists admit to falsification or fabrication at least once



## Bias

**14% false discovery rate;** minor effects in distorting meta-analysis



## False Results

Contributed by low statistical power, but is context-dependent

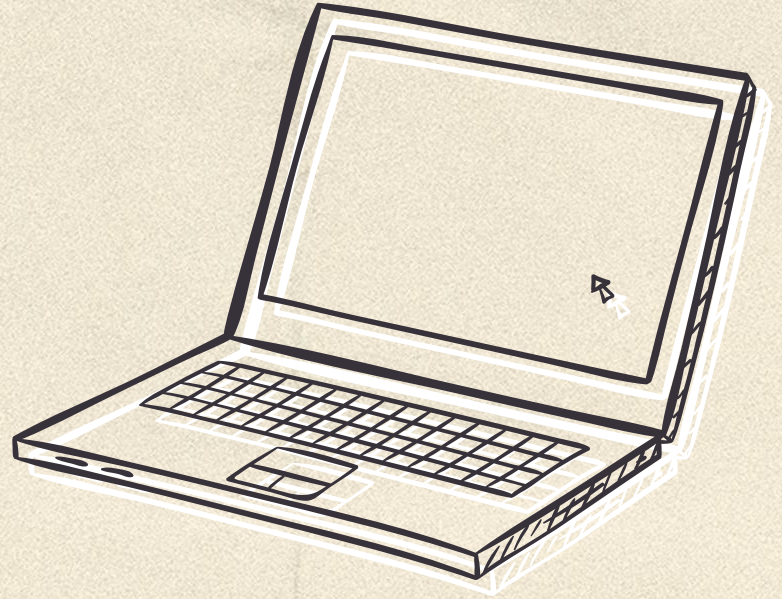
Publication bias itself a bias?



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# Non- reproducibility:

Feature, not a bug?



# Considering Reproducibility...

01

## Large Scale Studies

Many Labs: 10/13 psychology studies replicated

11/18 economics studies replicated

Largest reproducibility estimate < 50%

02

## Reproduction Study Specifics

Low reproducibility depends on subfield, methodology, and expertise of the authors conducting the replication

03

## Philosophical Orientation

How should reproducibility even be measured? By replicating the entire study? By re-analysing the data?

# ...Across Time

04

## What crisis?

Narrative of “crisis” suggests that science is experiencing an acute and dramatic challenge

05

## Always been like this?


No evidence that QRPs, errata, corrections, statistical errors increased

Retractions, reports of positive results increased sharply

Practice of salami-slicing?





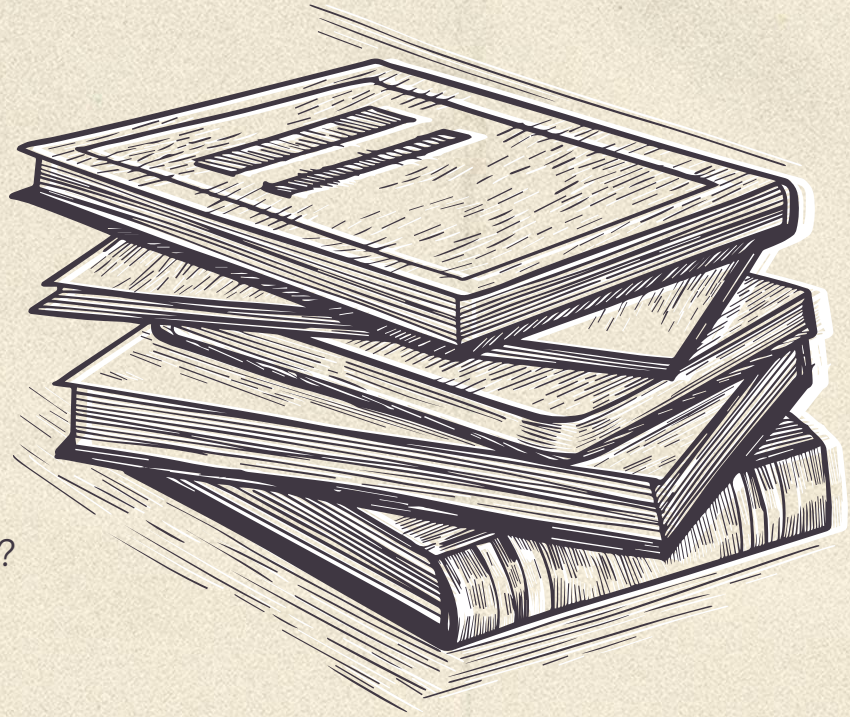
A stack of books is shown in a blurred background. The books have various covers, including one with the name 'ANDI ZEISLER' in purple and another with 'HOLLANDSWORTH' in white. A dark blue rounded rectangle is overlaid on the center of the stack, containing white text.

Publication  
pressure is NOT  
linked to scientific  
misconduct

# 02

## Evolution

Do we need this “Science in Crisis” narrative?



# Ongoing debate

**Against**

1. Foster attitudes of cynicism and indifference in young scientists
2. Discredits evidence and feeds anti-scientific agendas

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1. Scientific assessment of the quality of research
  2. Increasing openness and transparency of science

**For**



03

# Discussion

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# Questions

## **Question 1**

How convincing is the argument that science is not having a reproducibility crisis? How would you evaluate the points raised?

## **Question 2**

It was found that many contributors of QRP are from emerging nations. How can we enable open science while not gatekeeping new scientists?



## Final question:

What other narratives can we use to describe the state or science now?