

# How to be a good scientific citizen

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15 July 2022



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 Median Watch

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# Read a lot

The screenshot shows a Google Scholar search results page. The search query "Aspiring to greater intellectual humility in science" has been entered into the search bar. The results are displayed in a grid format.

**Search results:**

- Aspiring to greater intellectual humility in science** [HTML] nature.com  
R Hoekstra, S Vazire - Nature human behaviour, 2021 - nature.com  
The replication crisis in the social, behavioural and life sciences has spurred a reform movement aimed at increasing the credibility of scientific studies. Many of these credibility ...  
[HTML] nature.com  
Fulltext@QUT
- Getting it wrong most of the time? Comparing trialists' choice of primary outcome with what patients and health professionals want** [HTML] springer.com  
S Treweek, V Miyakoda, D Burke, F Shlyak - Trials, 2022 - Springer  
Randomised trials support improved decision-making through the data they collect. One important piece of data is the primary outcome—so called because it is what the ...  
[HTML] springer.com  
Fulltext@QUT
- Psychology needs to get tired of winning** [PDF] royalsocietypublishing.org  
GJ Haeffel - Royal Society Open Science, 2022 - royalsocietypublishing.org  
Psychological science is on an extraordinary winning streak. A review of the published literature shows that nearly all study hypotheses are supported. This means that either all ...  
[PDF] royalsocietypublishing.org  
Fulltext@QUT
- Questionable, objectionable or criminal? Public opinion on data fraud and selective reporting in science** [HTML] springer.com  
J T Pickett, SP Roche - Science and engineering ethics, 2018 - Springer  
Data fraud and selective reporting both present serious threats to the credibility of science. However, there remains considerable disagreement among scientists about how best to ...  
[HTML] springer.com  
Fulltext@QUT
- Addressing exaggeration of effects from single RCTs** [PDF] wiley.com  
E van Zwet, S Schwab, S Greenland - Significance, 2021 - Wiley Online Library  
Randomised controlled trials are often presented as the gold standard for testing new medical treatments. In the early stages of research, however, reports from single trials are ...  
[PDF] wiley.com  
Fulltext@QUT
- How does COVID-19 kill? Uncertainty is hampering doctors' ability to choose treatments.** [HTML] Fulltext@QUT  
H Ledford - Nature, 2020 - go.gale.com  
Use this link to get back to this page. Select. For the best user experience on this site, you should have JavaScript enabled in your browser. Skip to Content Google Scholar ...  
[HTML] Fulltext@QUT
- Is There an Epidemic of Research Fraud in Natural Medicine?** [HTML] nih.gov  
AR Gaby - Integrative Medicine: A Clinician's Journal, 2022 - ncbi.nlm.nih.gov  
[HTML] nih.gov  
Fulltext@QUT

# Not like this



**Gilp**  
@The\_Gilp

How to be a scientist:

1. Open 50 PDFs
2. Never save or read any of them
3. Restart computer
4. Repeat

# Have humility

Avoid arrogance, over-confidence and intellectual fragility

"I appreciate being corrected when I make a mistake."

DOI: [10.1038/s41562-021-01203-8](https://doi.org/10.1038/s41562-021-01203-8)

# Be prepared for bad and good luck

"It's just the luck of the draw and I shudder to think of some of the talented people that have had the door shut in their faces." Bob Mortimer

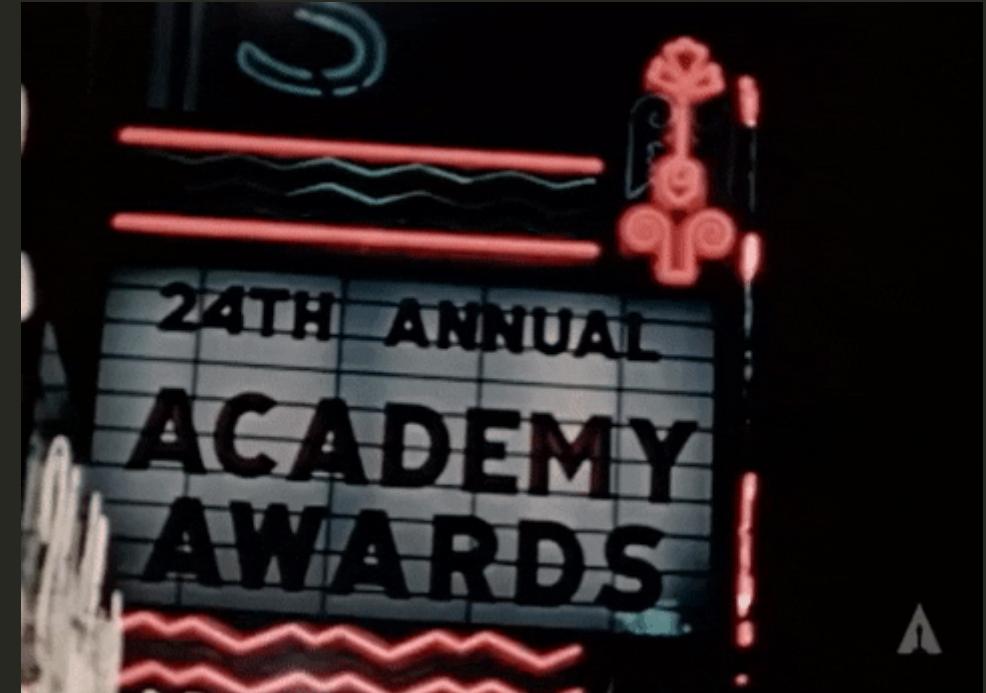


Image from Wikipedia, University of Salford Press Office

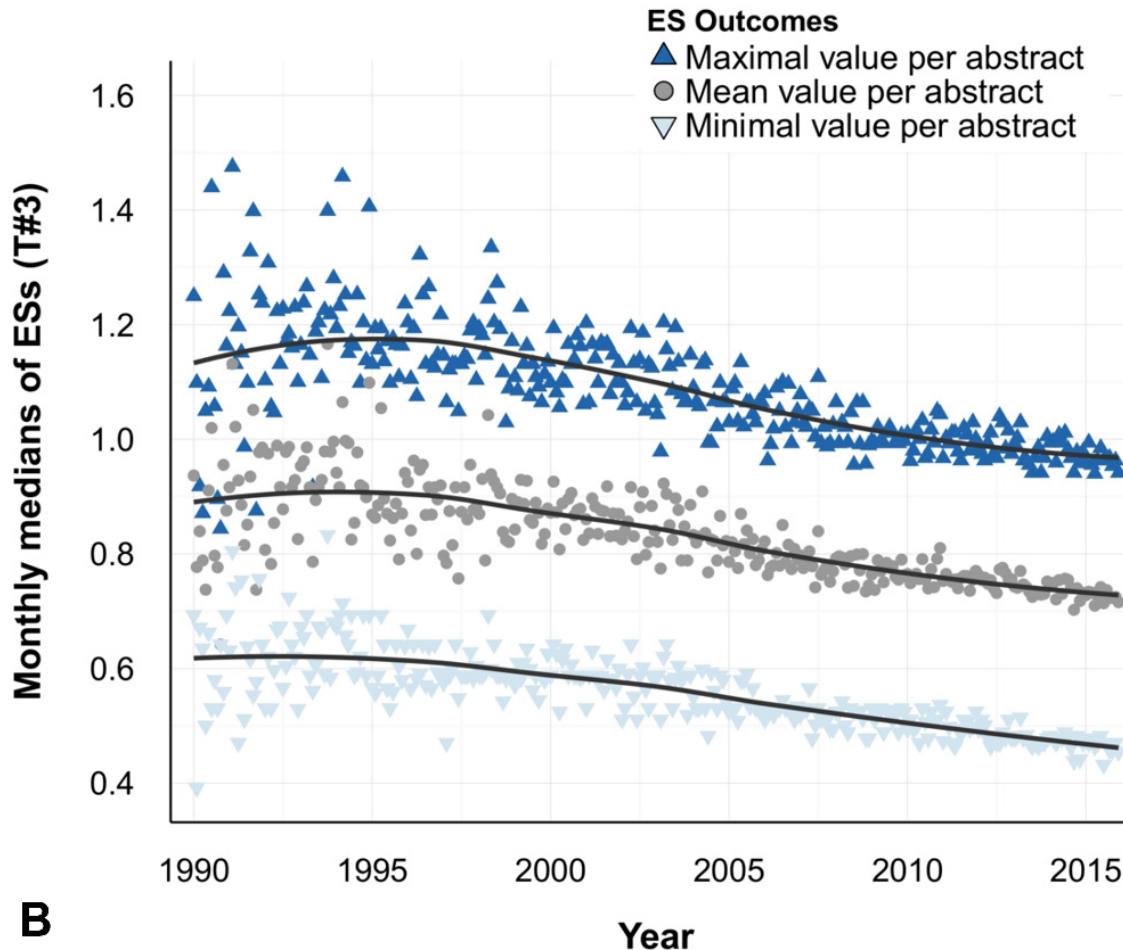
# Ignore the sideshows

Ignore journal impact factors, awards, titles

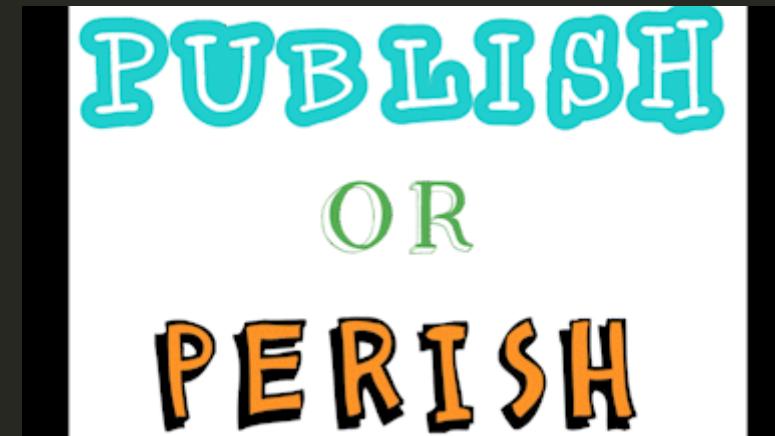
The main game is improving peoples' lives



# Research big, obvious problems



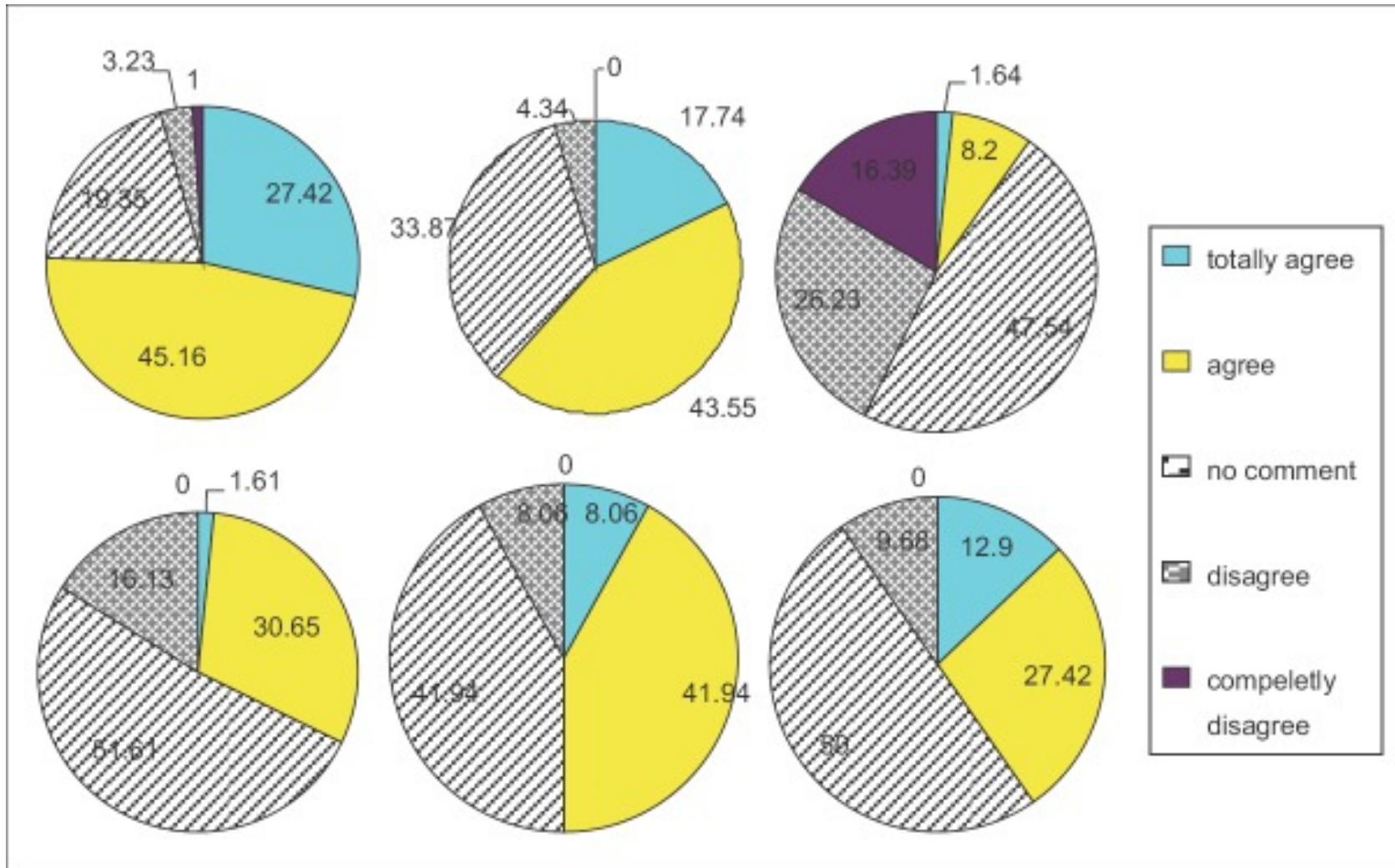
Slow down



# Take time to learn methods

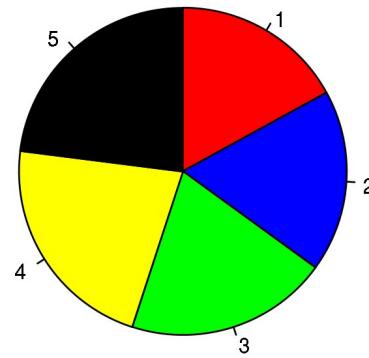


# Take time to learn methods

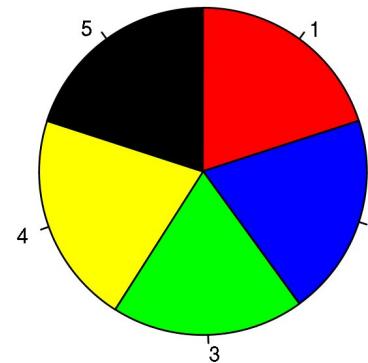


(never ever use pie charts)

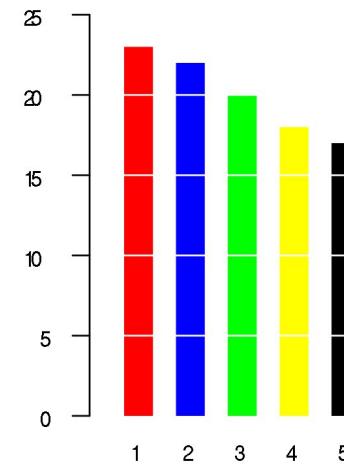
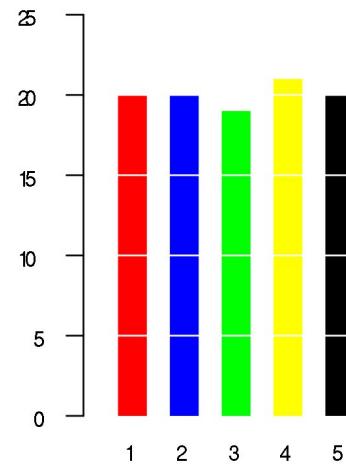
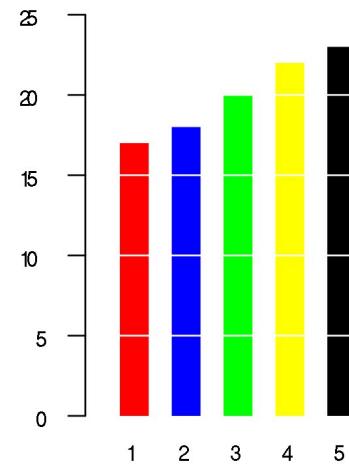
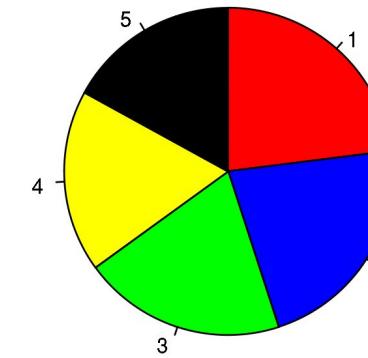
**A**



**B**



**C**



From <https://twitter.com/MaxCRoser/status/857389434756505600>

# Ten simple rules for good research practice



## Planning

1. Specify your research question
2. Write and register a study protocol
3. Justify your sample size
4. Write a data management plan
5. Reduce bias

## Execution

6. Avoid questionable research practices
7. Be cautious with interpretations of statistical significance
8. Make your research open

## Reporting

9. Report all findings
10. Follow reporting guidelines

# Plan your work

- \* Use systematic reviews
- \* Write a protocol
- \* Write an analysis plan
- \* Use scrambled outcomes



# Involve patients or the public early

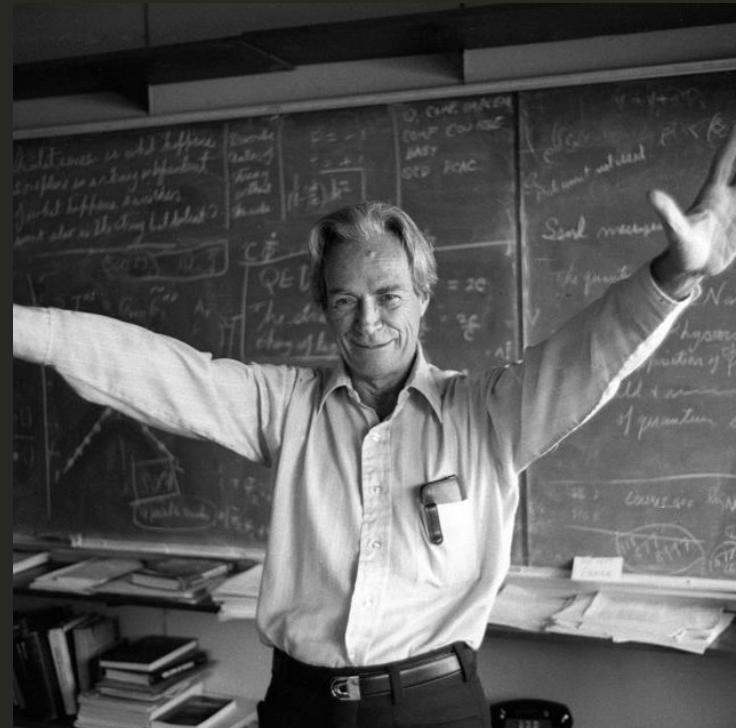


# Be transparent and open to sharing



# Develop your communication skills

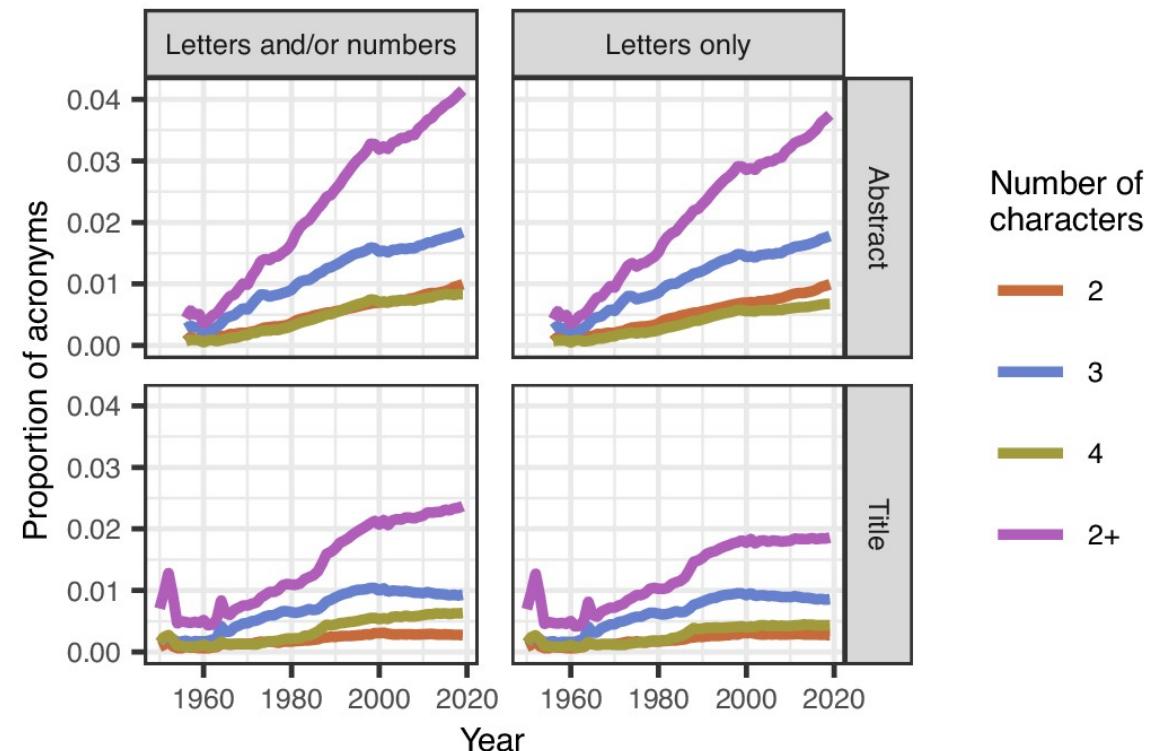
"The ultimate test of your knowledge is your ability to convey it to another." Richard Feynman



(from @ProfFeynman)

# Stop using acronyms

"RUN had significantly ( $p<0.05$ ) greater size-adjusted CSMI and BSI than C, SWIM, and CYC; and higher size, age, and YST-adjusted CSMI and BSI than SWIM and CYC."



# Be open to surprises

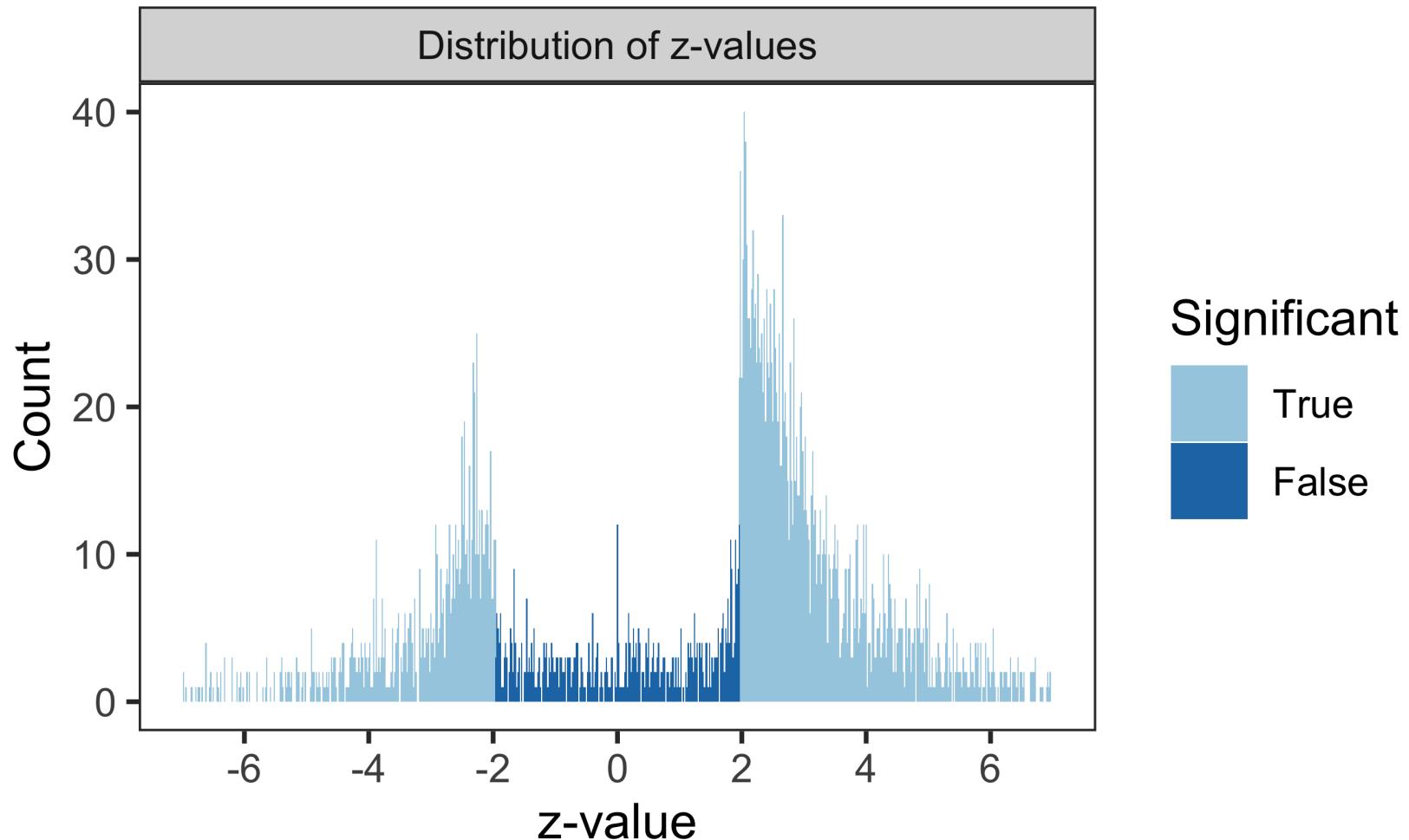
The most exciting phrase to hear in science,  
the one that heralds new discoveries, is not  
“Eureka” but “That’s funny...”

Isaac Asimov (1920 to 1992)



Image from Wikipedia, Phillip Leonian

# Stop using p-values and statistical significance



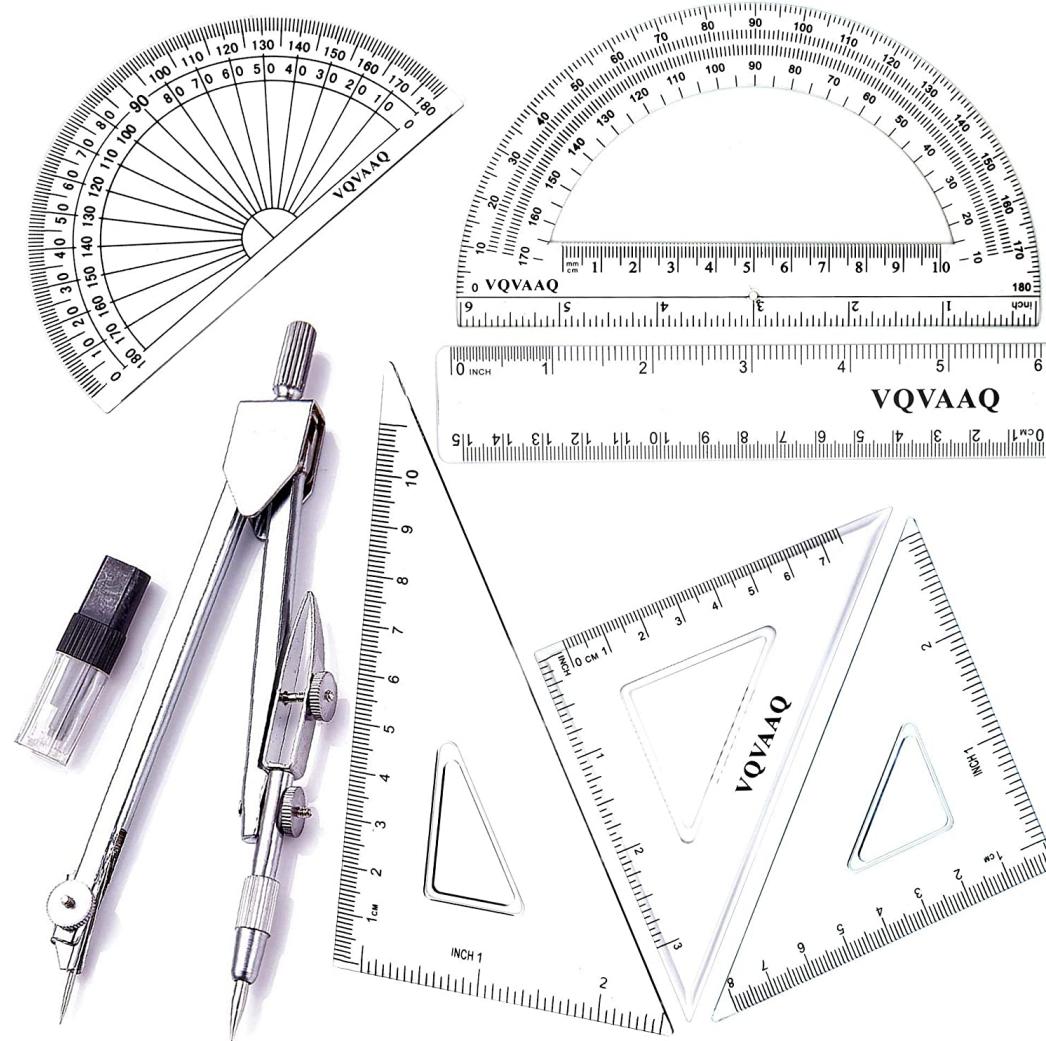
# Avoid group-think



# Give compliments when earned



# Embrace change



# Read/Follow Retraction Watch

# Be generous (for supervisors)

Push your students forward

Give them opportunities

