New insights in interdisciplinary science research

Times Higher Education

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Partnership with Times Higher Education
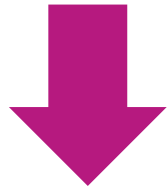
Introducing the project

- Research is a complex space – as part of the WUR changes we were looking at different ways of measuring progress

- In 2021 we began to explore interdisciplinary research
  - Series of roundtables
  - Data collection

Development of rankings

- Piles of metrics:
  - Each may show something, but no coherent theory
- Statement of record:
  - Coherent theory underpins methodology, record of what is
- Promoting change:
  - Coherent theory, record of what is, incentive to improve

Our Rankings

TEACHING

THE Online Learning Rankings

Focus: student satisfaction, employer reputation, graduation rate + more

Participation rules: ranking specific

RESEARCH

THE World University Rankings

Focus: research output, research quality, research collaboration, reputation + more

Participation rules: 1,000+ publications over 5 years, teach undergraduates across a range of subjects

IMPACT & SUSTAINABILITY

Times Higher Education Impact Rankings

Focus: research, teaching, stewardship and outreach against the UN's 17 Sustainable Development Goals

Participation rules: all UG or PG higher education institutions

Roundtables

Global – April 2022

THE Innovation and Impact Summit (Stockholm)

Europe – May 2022

THE Europe Universities Summit (Barcelona)

Asia – May 2022

THE Asia Universities Summit (Aichi, Japan)

North America – May 2022

Schmidt Science Fellows Global Meeting (Boston)

Global – June 2022

Virtual

Initial Data collection

Data Collection Portal

Quantitative

Research funding
Industry funding
Recruitment

Qualitative

Measure of success
Facilities
Admin support
Promotion

Survey

General Reputation

Institution Specific
Encouragement
Enablement
Reward
Tenure

Bibliometric data

ISR Publications
Proportion of ISR
Out of field citations
Quality of ISR

University provided data

Times Higher Education

1169 institutions submitted <u>Quantitative</u> data

629 institutions submitted non-null data

Research income dedicated to ISR
521 provided data
108 didn't (17%)

Job ads mentioning ISR
537 provided data
92 didn't (14%)

Additional data such as research income, industry income, academic and research staff number reused from World University Rankings submissions

761 institutions submitted <u>Qualitative</u> data

710 answered yes to at least one question

ISR Admin Support

96 said no (14%)

ISR Measure of Success

216 said no (30%)

ISR Physical Facilities

60 said no (8%)

ISR Tenure or Promotion

270 said no (38%)

Survey

General Survey - Reputation

14,335 respondents

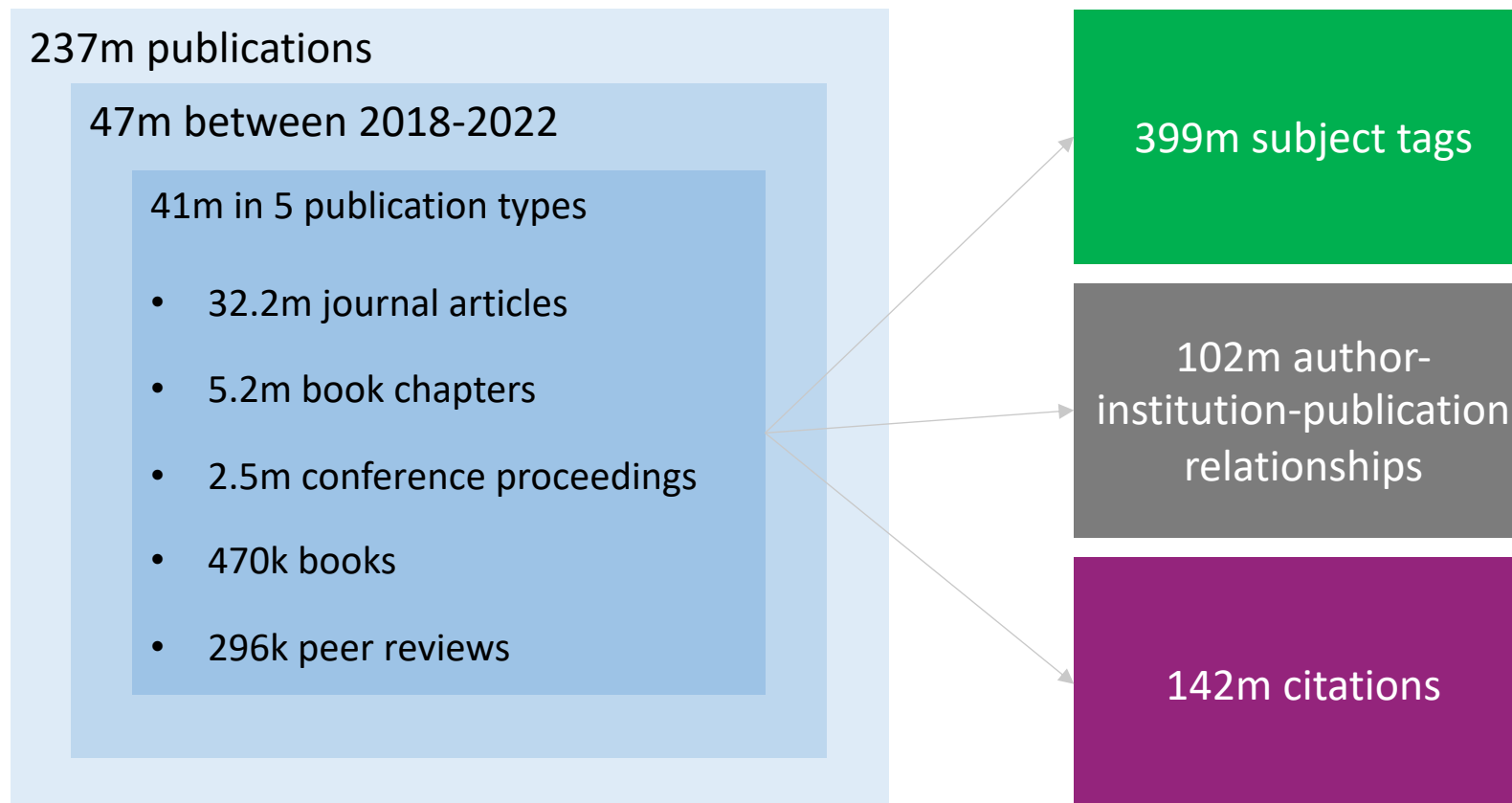30,633 votes

3637 Institutions

Institution Specific Questions

7,750 unique institutions
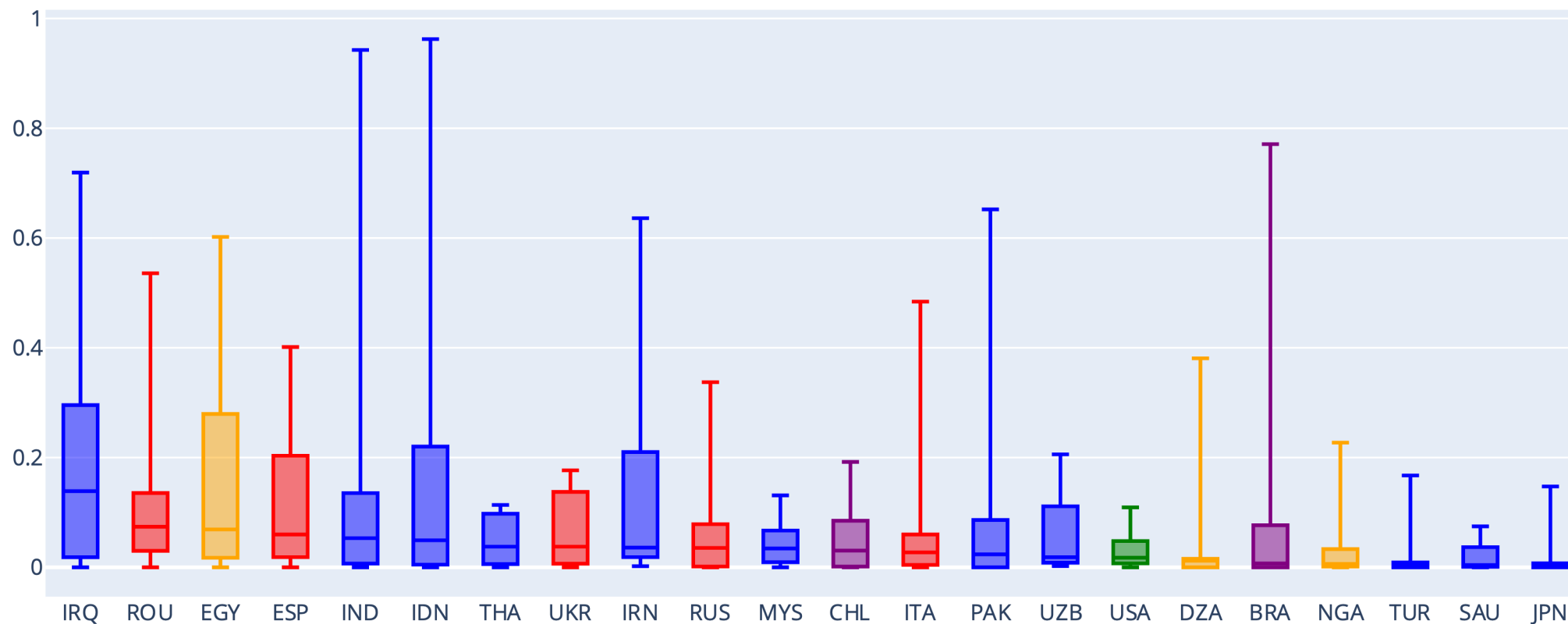
24 institution has >=50 responses

?

Bibliometric
Based on OpenAlex May 2023 snapshot
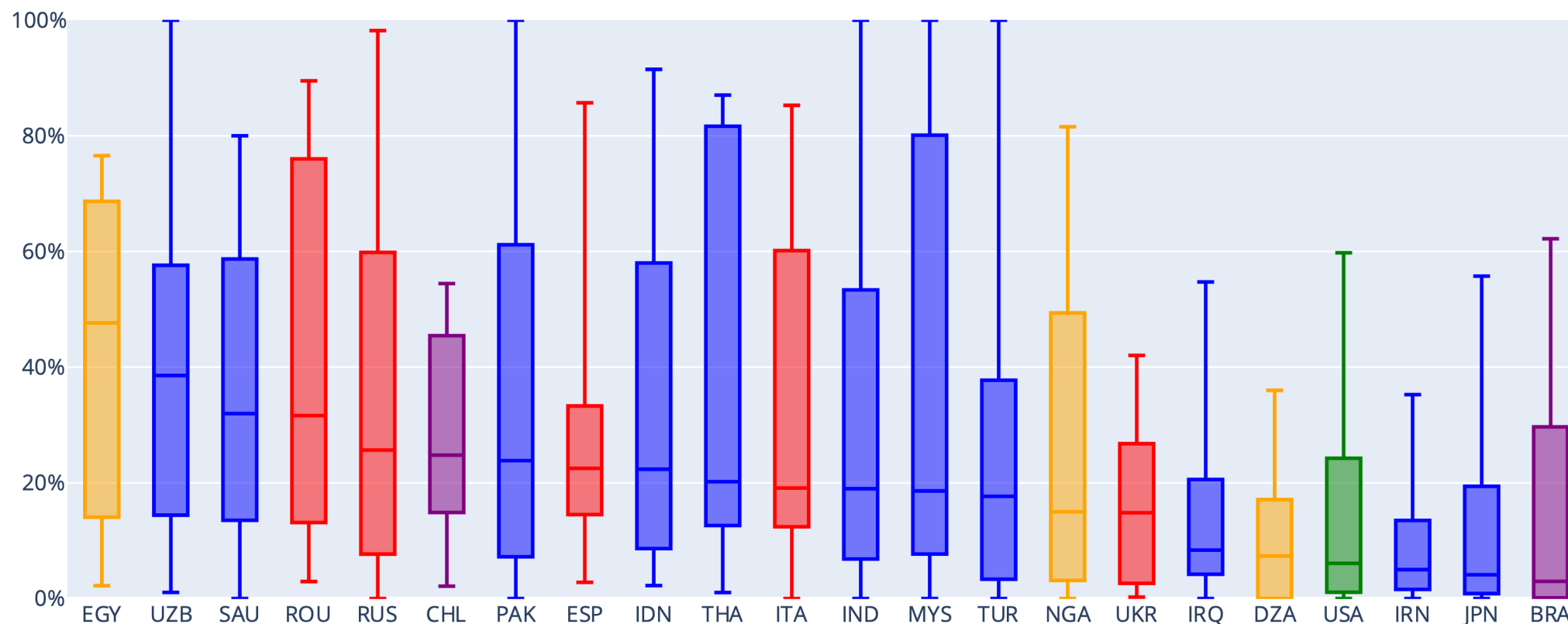
237m publications

47m between 2018-2022

41m in 5 publication types

- 32.2m journal articles

- 5.2m book chapters

- 2.5m conference proceedings

- 470k books

- 296k peer reviews

399m subject tags

102m author-institution-publication relationships

142m citations

Technical note: Identifying ISR publications

- In OpenAlex every publication is tagged with a set of subjects and relevance scores e.g. {'Computer Science': 0.3, 'Biology': 0.7}

- We can format these scores into a vector S

- Based on the co-occurrence frequency, we can determine the distance between subjects. Let D be the distance matrix

- The ISR score of the document is
$$(S^{\frac{1}{2}})^T D S^{\frac{1}{2}}$$

- A publication is considered ISR if its ISR score is in the top 25% percentile of all eligible publications

0	0.3	0	0	0.7	0	0	0

Adverts
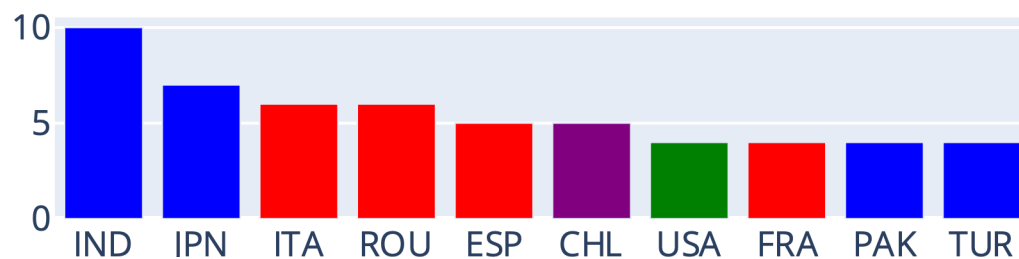
Number of ISR ads per staff

ISR Research Income

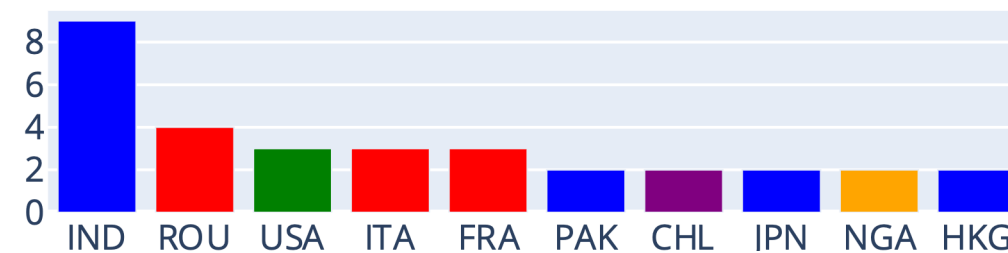Proportion of research income dedicated to ISR
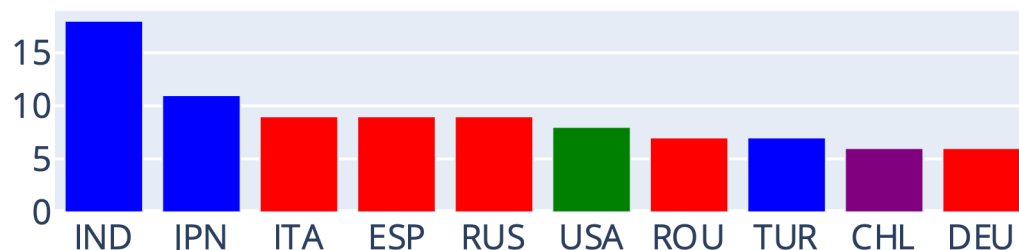
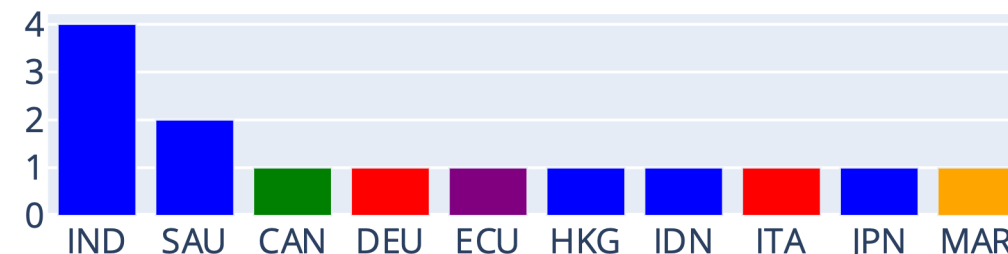# Where universities support ISR

isr admin support

isr measure success

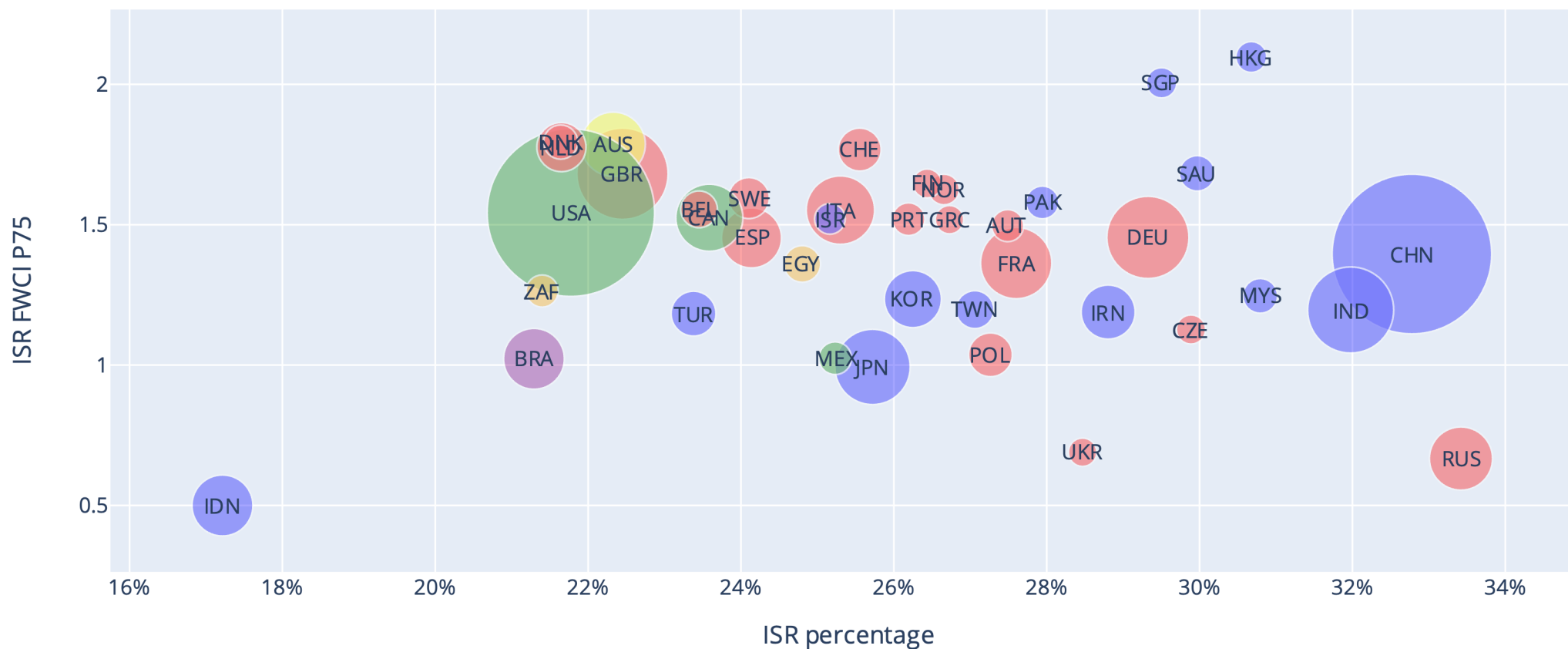isr physical facilities

isr tenure promotion
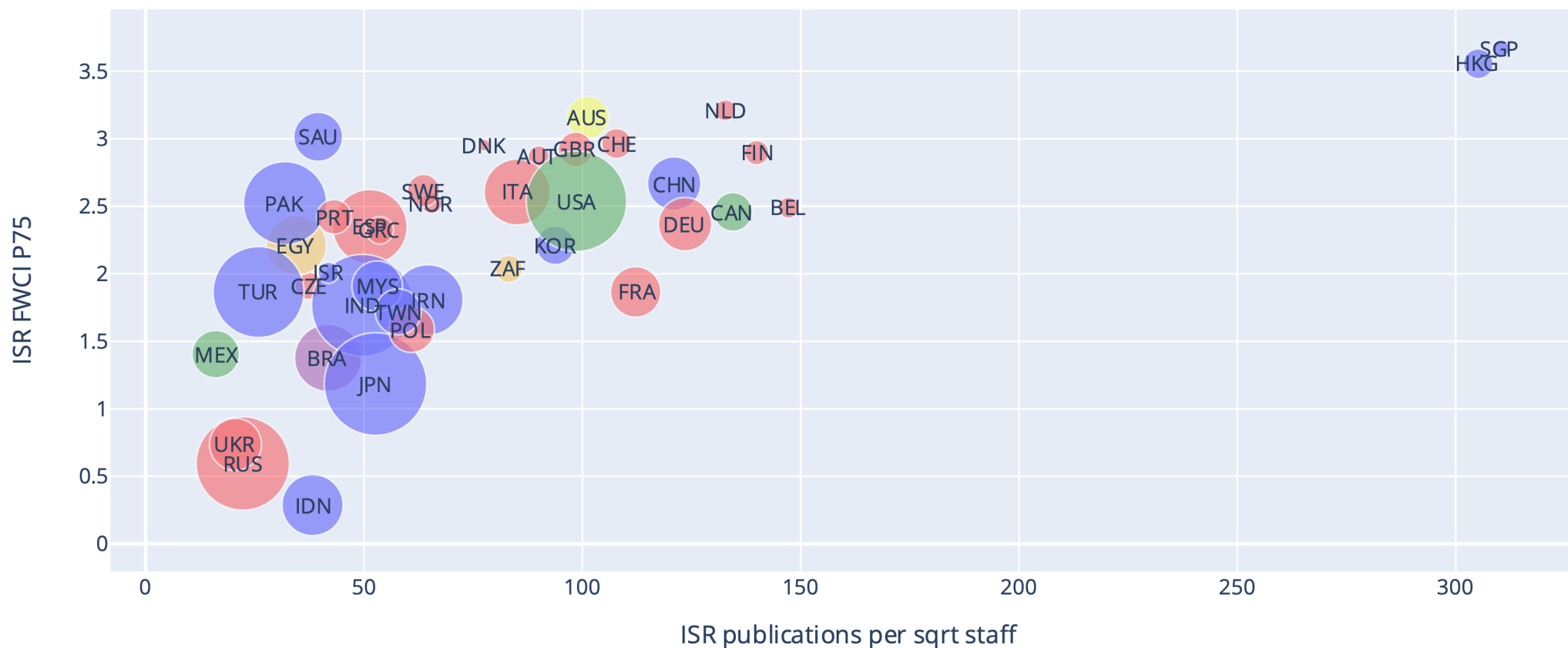
ISR publications

ISR quality vs. ISR percentage

ISR publications productivity

ISR quality vs. ISR productivity

What have we learned?

- Strong appetite
- However, most institutions do not systematically record their effort
  - More importance needs to be placed on recruitment and recognition
- In terms of ISR research outputs, Hong Kong and Singapore are leading the way
- China and India focus heavily on ISR
- Traditional research hubs such as US, UK, Canada and Australia less so

Key Recommendations

- More dedicated policy processes to enhance ISR, including physical facilities, administrative support, and staff incentives such as promotion.

- More funding for ISR as a percentage of overall research funding.

- Greater visibility for ISR outputs from the Global South, potentially through further collaboration with the Global North, to raise impact and reputation.

Interdisciplinary Science Ranking (ISR)

Tentative Release Date	• November 2024
Coverage	• Research focused institutions (typically WUR participants)
Known issue	• Challenges around data collection – new data not previously collected
Methodology	• Broad methodology (data to be collected) established. Final metrics and percentages to be established.
Insights	• Feedback to universities around success and areas of improvement.

THE Times Higher Education

ISR High Level Methodology

Input

Research funding
Industry funding
Recruitment

Process

Measure of success
Facilities
Admin support
Promotion

Encouragement
Enablement
Reward

Output

Reputation
Tenure
Publications
Proportion of ISR
Out of field citations
Quality of ISR

Interdisciplinary Science Ranking (ISR)
Draft metrics

Pillar	Metric Name	Source
Input	Proportion of research funding dedicated to ISR	Portal
Input	Amount of research funding from industry	Portal
Input	Recruitment of ISR researchers	Ads / Portal
Process	Does your institution encourage ISR work	Survey
Process	Are younger academics able to explore ISR	Survey
Process	Is ISR rewarded in promotion	Survey
Process	Does your university have measures of interdisciplinary success?	Portal
Process	Does your university provide specific physical facilities for interdisciplinary teams?	Portal
Process	Does your university provide specific administrative support for interdisciplinary teams?	Portal
Process	Does you have a tenure a promotion system in place that recognizes interdisciplinary research?	Portal
Output	Amount of ISR	Bibliometric
Output	Proportion of ISR	Bibliometric
Output	Utility of ISR - out of discipline citation	Bibliometric
Output	Quality of ISR - FWCI or network	Bibliometric
Output	Reputation of support for interdisciplinary teams	Survey
Output	Does you have a tenure or promotion system in place that recognizes interdisciplinary research?	Survey

ISR Timeline

- Academic Survey Feb – May 2024
  - To participate https://www.timeshighereducation.com/content/interdisciplinary-science-rankings-participation

- Data Collection Jan – Mar 2024 (along with WUR)

- Ranking Production – Summer 2024

- Ranking Launch – Nov 2024 (tentative)

Q&A

Download the report

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