Output, journals, quality and impact – considerations from CWTS

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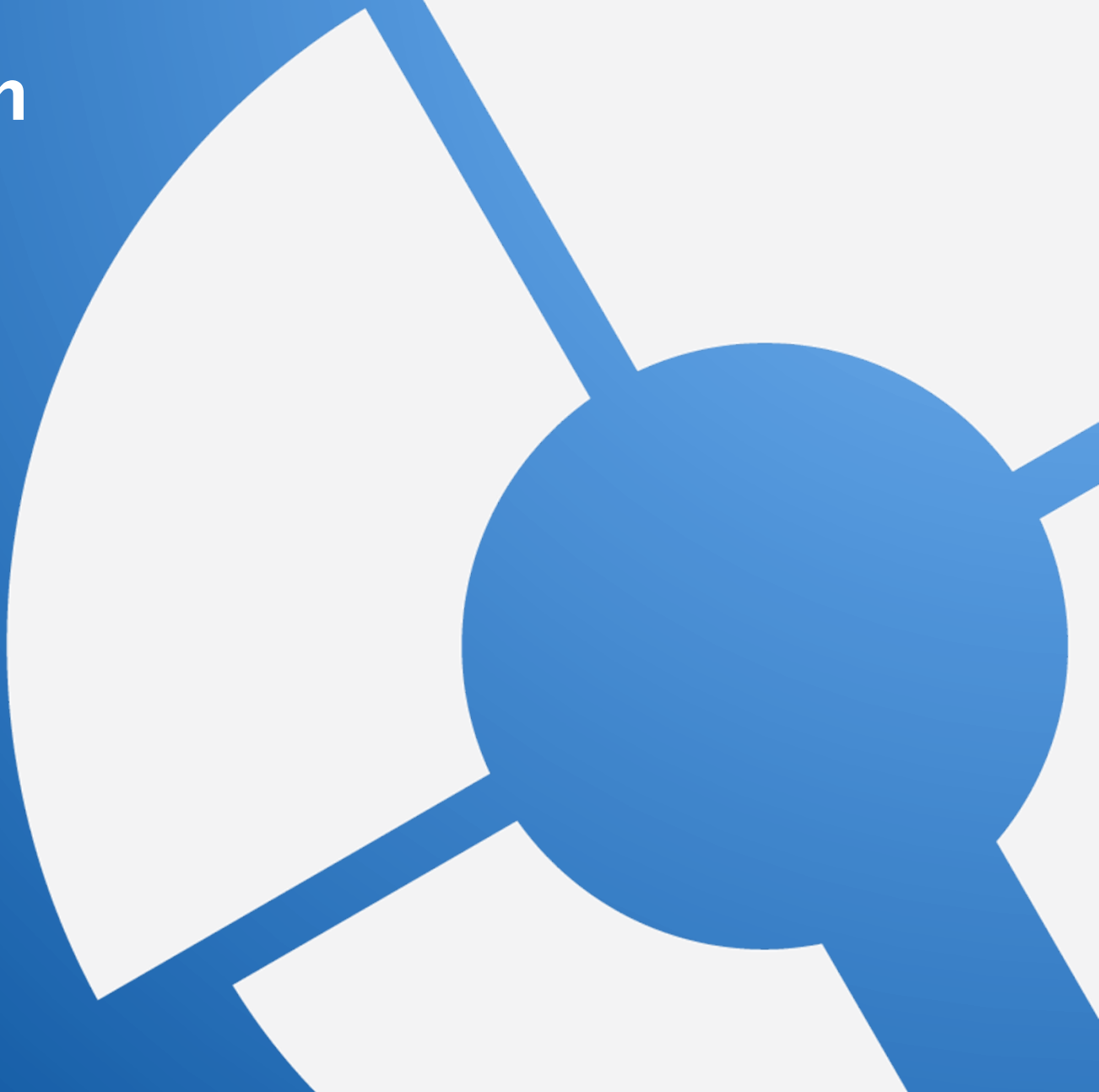
Outline

- Introduction
  - CWTS
  - Myself
  - CWTS and Brazil
- Output
  - Why?
  - What?
  - How to use in assessment/ evaluation?
- Relevant research at CWTS in this context

CWTS, Brazil and me

Introduction



Introduction CWTS

- Research institute (CWTS)
  - 30 years
  - Initially focusing on bibliometrics
  - Since 2008 substantial funding
  - Since 2010 broadening of agenda
  - Recently evaluated
  - No educational task yet
- Company (CWTS BV)
  - Derived from research
  - Input for research
  - Studies performed by researchers at institute

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Research at CWTS

- Groups
  - Quantitative Science Studies (QSS)
  - Science and Evaluation Studies (SES)
  - Science, Technology and Innovation Studies (STIS)
- Themes
  - Open science
  - Responsible metrics
  - Research integrity

Services (the company)

- Primarily quantitative studies in the context of research evaluation
- For universities, research institutes, funding agencies, ministries …
- Beyond simple statistics and standard reports
- Training and education

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Assets of CWTS BV services

- Commercial license for Web of Science
- Unique databases and tools
- Direct link to research (both directions)

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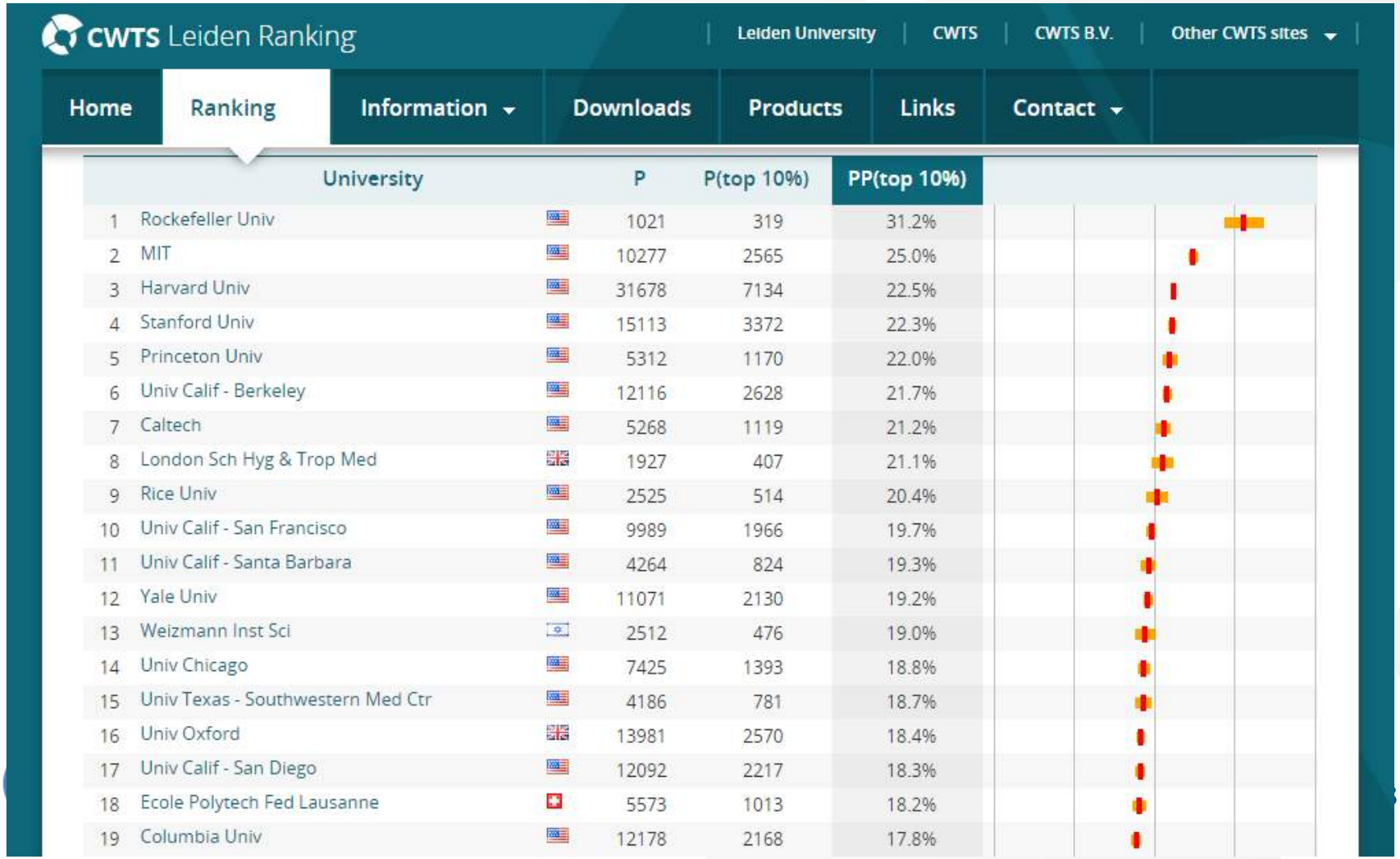
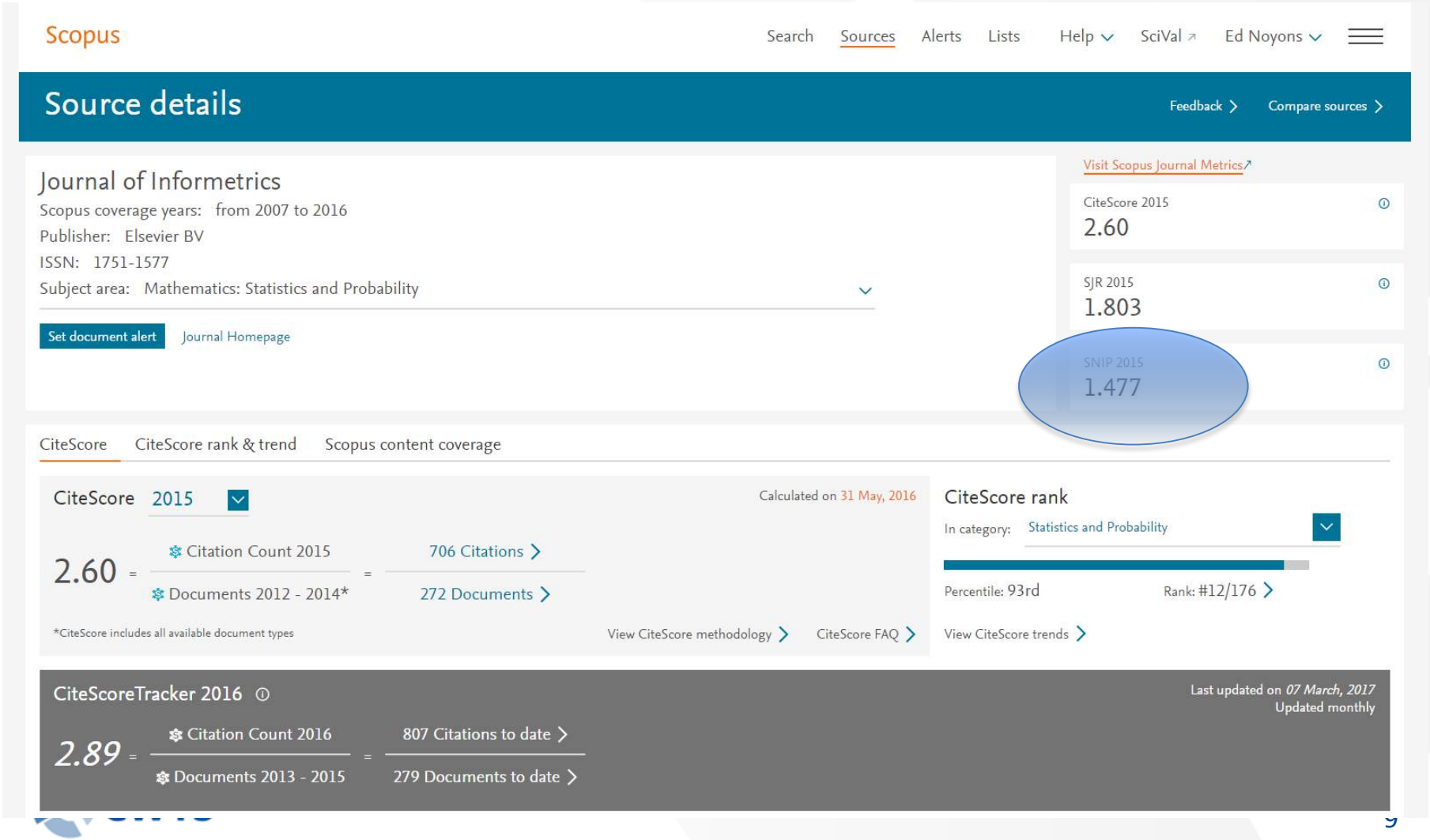
CWTS Leiden Ranking (www.leidenranking.com)



	University	P	P(top 10%)	PP(top 10%)
1	Rockefeller Univ	1021	319	31.2%
2	MIT	10277	2565	25.0%
3	Harvard Univ	31678	7134	22.5%
4	Stanford Univ	15113	3372	22.3%
5	Princeton Univ	5312	1170	22.0%
6	Univ Calif - Berkeley	12116	2628	21.7%
7	Caltech	5268	1119	21.2%
8	London Sch Hyg & Trop Med	1927	407	21.1%
9	Rice Univ	2525	514	20.4%
10	Univ Calif - San Francisco	9989	1966	19.7%
11	Univ Calif - Santa Barbara	4264	824	19.3%
12	Yale Univ	11071	2130	19.2%
13	Weizmann Inst Sci	2512	476	19.0%
14	Univ Chicago	7425	1393	18.8%
15	Univ Texas - Southwestern Med Ctr	4186	781	18.7%
16	Univ Oxford	13981	2570	18.4%
17	Univ Calif - San Diego	12092	2217	18.3%
18	Ecole Polytech Fed Lausanne	5573	1013	18.2%
19	Columbia Univ	12178	2168	17.8%

SNIP (www.scopus.com)

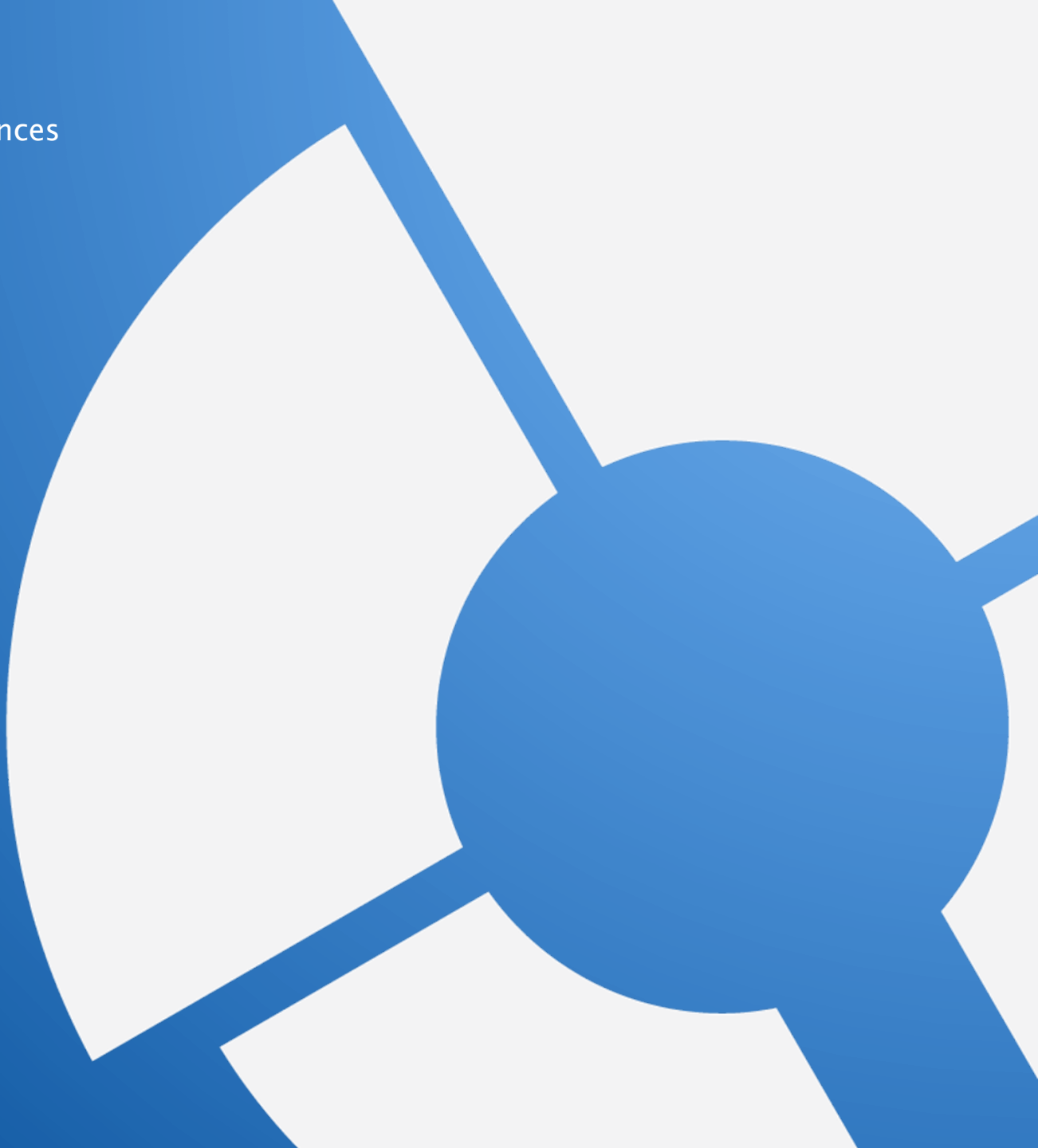


More specifically …

- I have been at CWTS for almost 30 years and involved in almost all activities;
- Since 2009 we have received many ‘sanduiches’ as well as master students from Brazil;
- Leiden University has over 20 Memorandums of Understanding (MoU) with Brazilian institutions;
- In January 2019 CWTS will host the first Brazilian full time PhD.

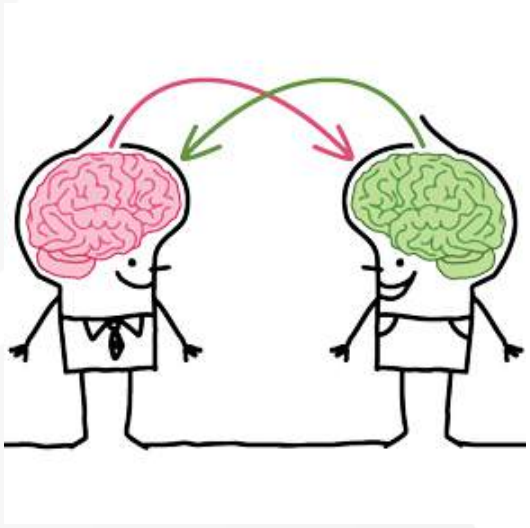
Insights from CWTS experiences

Assessing output



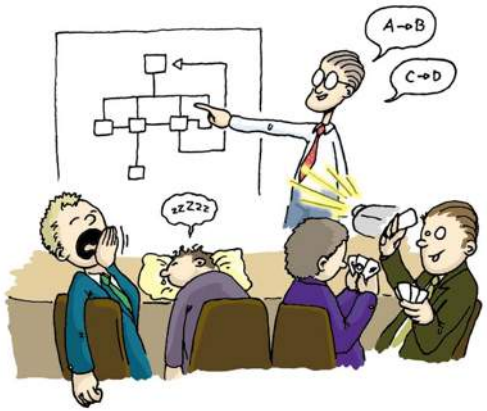
Output – why?

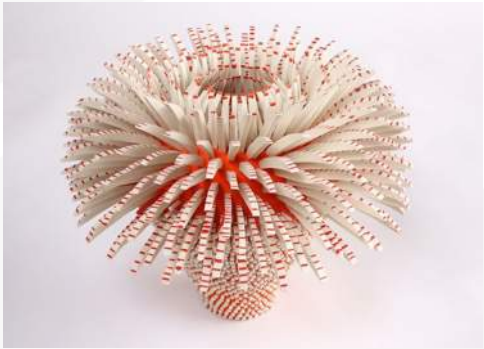
- (Scholarly) Communication
- Debate
- Collaboration
- Development



Output – what?

- Journal papers
- Books
- Datasets
- Presentations
- Artistic products





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Output – how to assess?

- To evaluate output we need some kind of classification;
- Most commonly used are journals (e.g., Qualis);
- Issues related to this:
  - What defines quality?
  - How to measure it?
  - Does a journal indicator reflect the quality of an individual paper? (DORA declaration)
  - Role of metrics in research assessment (UK REF, Metric Tide

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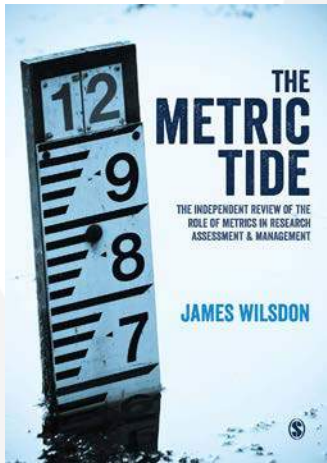
San Francisco DORA Declaration on Research Assessment



DORA (sample) recommendations

General Recommendation

- Do **not** use **journal-based metrics**, such as Journal Impact Factors, as a surrogate measure of the **quality of individual research articles**, to assess an individual scientist's contributions, or in hiring, promotion, or funding decisions.

For funding agencies

- Be **explicit** about the **criteria** used in evaluating the scientific productivity of grant applicants and clearly highlight, especially for early-stage investigators, that the scientific content of a paper is much more important than publication metrics or the identity of the journal in which it was published.
- For the purposes of research assessment, consider the **value and impact of all research outputs** (including datasets and software) in addition to **research publications**, and consider a **broad range** of impact measures including qualitative indicators of research impact, such as influence on policy and practice.

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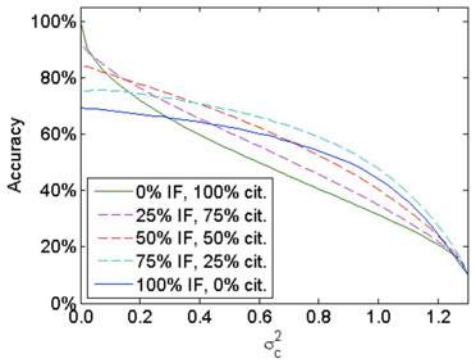
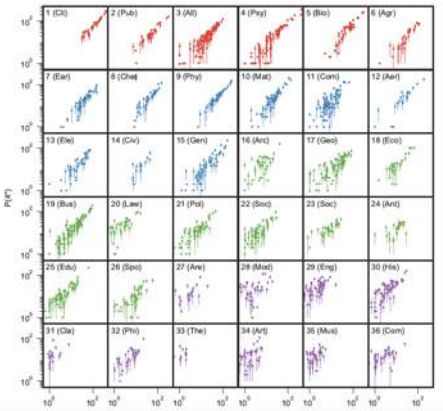
Some recent activities done (at CWTS) regarding these issues

- Leiden Manifesto (2015)
- Study ‘Use of the journal impact factor for assessing individual articles need not be wrong’ (Waltman & Traag, 2017) as reply to ‘DORA’
- Study ‘Systematic analysis of agreement between metrics and peer review in the UK REF’ (Traag & Waltman, 2018) as a reply to ‘The Metric Tide’





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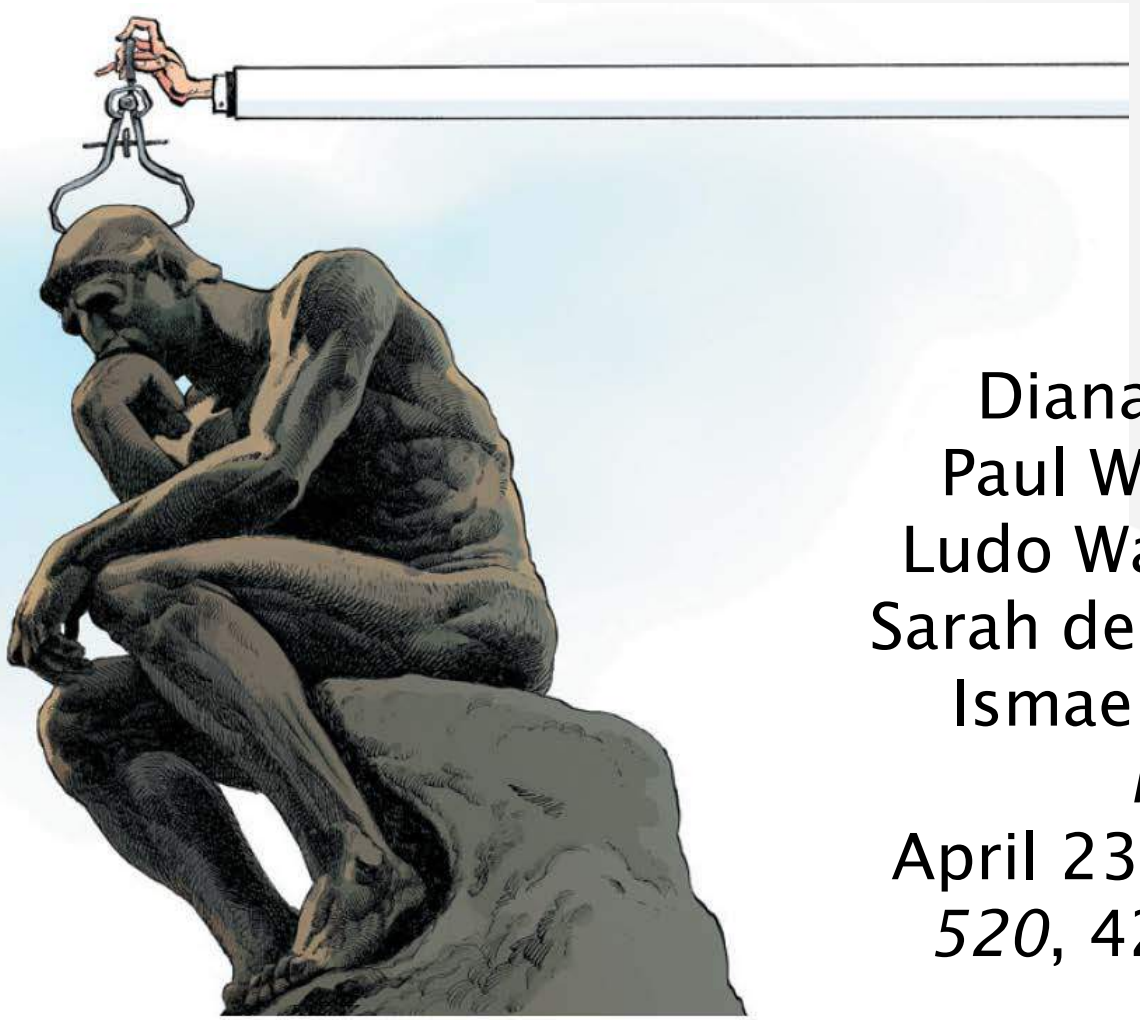

Diana Hicks,
Paul Wouters,
Ludo Waltman,
Sarah de Rijcke,
Ismael Rafols
Nature,
April 23, 2015,
520, 429–431

The Leiden Manifesto for research metrics

Leiden Manifesto

- Plea for careful, responsible use of research metrics
- High-level principles that need further elaboration in specific contexts
- Large variety of evaluative settings
- Balancing between different principles

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10 Principles

1. Quantitative evaluation should support qualitative, expert assessment
2. Measure performance against the research missions of the institution, group or researcher
3. Protect excellence in locally relevant research
4. Keep data collection and analytical processes open, transparent and simple
5. Allow those evaluated to verify data and analysis
6. Account for variation by field in publication and citation practices
7. Base assessment of individual researchers on a qualitative judgement of their portfolio
8. Avoid misplaced concreteness and false precision
9. Recognize the systemic effects of assessment and indicators
10. Scrutinize indicators regularly and update them

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Use of the journal impact factor for assessing individual articles need not be wrong (Waltman & Traag, 2017)

- Approach
  - Computer simulation to test validity of the argument that skewed distribution of citations rejects the use of the JIF to assess individual articles;
- Main conclusions
  - Results counter the argument. The conclusion is *not* that the JIF *should* be used but that the statistical argument of skewed distribution is not valid.

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Systematic analysis of agreement between metrics and peer review in the UK REF (Traag & Waltman, 2018)

- Approach
  - Analysis of the correlation between peer review and proper citation analysis within the context of the UK Research Excellence Framework
- Main conclusions
  - Particularly in Physics, Clinical Medicine, and Public Health, metrics agree quite well with peer review and may offer an alternative to peer review.

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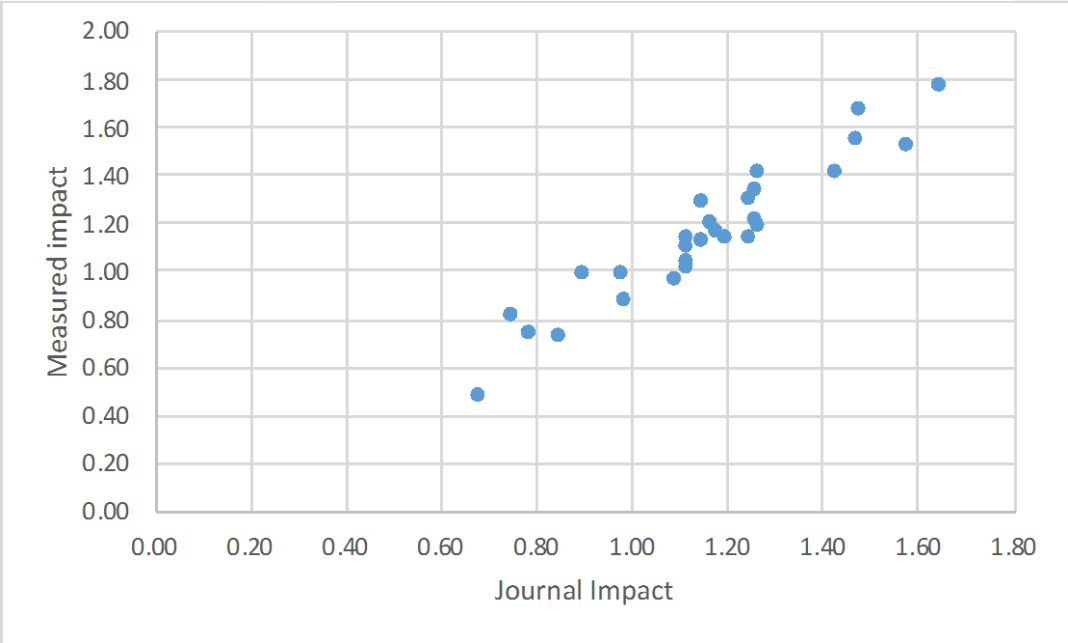
CWTS experience using journal indicators in institutional evaluation

- Approach
  - Mean Normalized Journal Score (MNJS): MNCS of journals in which an institution publishes its papers, i.e., the impact of journals in which an actor manages to publish
- Finding:
  - There is a strong correlation between MNCS and MNJS



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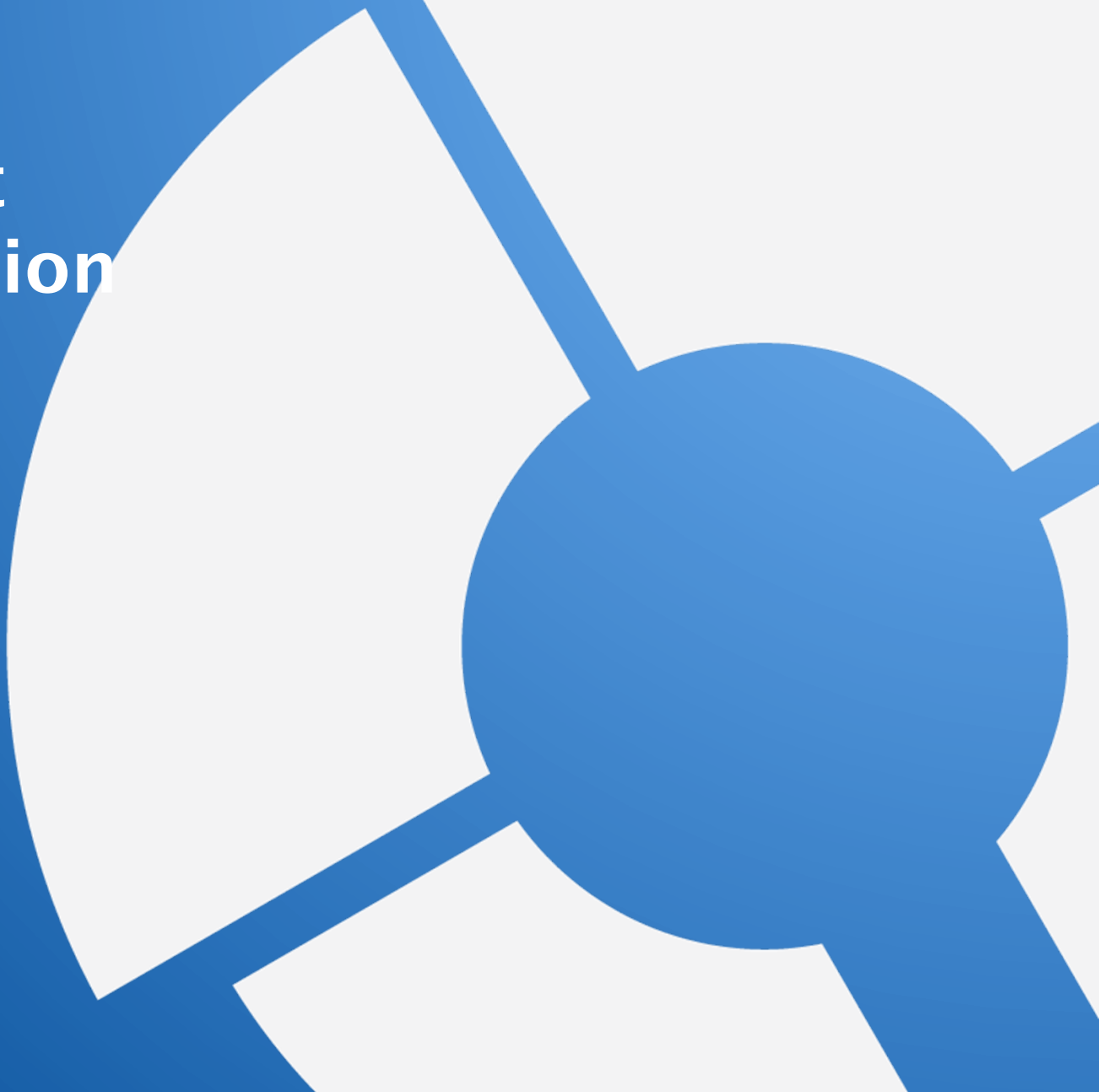
Journal assessment and evaluation



Main conclusions

- Quality is a complex concept and as such not applicable;
- The same applies to impact, but the best proxy for scientific impact are citation-based indicators;
- The impact of a journal should not be used to assess an individual paper, but
- For aggregated output per actor, a sophisticated journal indicator may well be used;
- Sophisticated indicators can account for differences between fields

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