UiO : Universitetet i Oslo

ELSEVIER

How to make the best use of output metrics

Herman Strøm
Universitetet i Oslo | Senior Adviser - Education and Research Administration Office

Guillaume Warnan
Elsevier | Research Intelligence Consultant

NARMA Workshop
Oslo | 21 April 2016

Main points covered in this presentation

- Factors that affect metrics
- The example of CRIStin data in SciVal
  - Short introduction to SciVal
  - Example of UiO
  - Live demo in SciVal
- Q&A

Factors that affect metrics

Universitetet i Oslo

ELSEVIER

Empowering Knowledge

"Non-performance variables" may need to be taken into account when using metrics

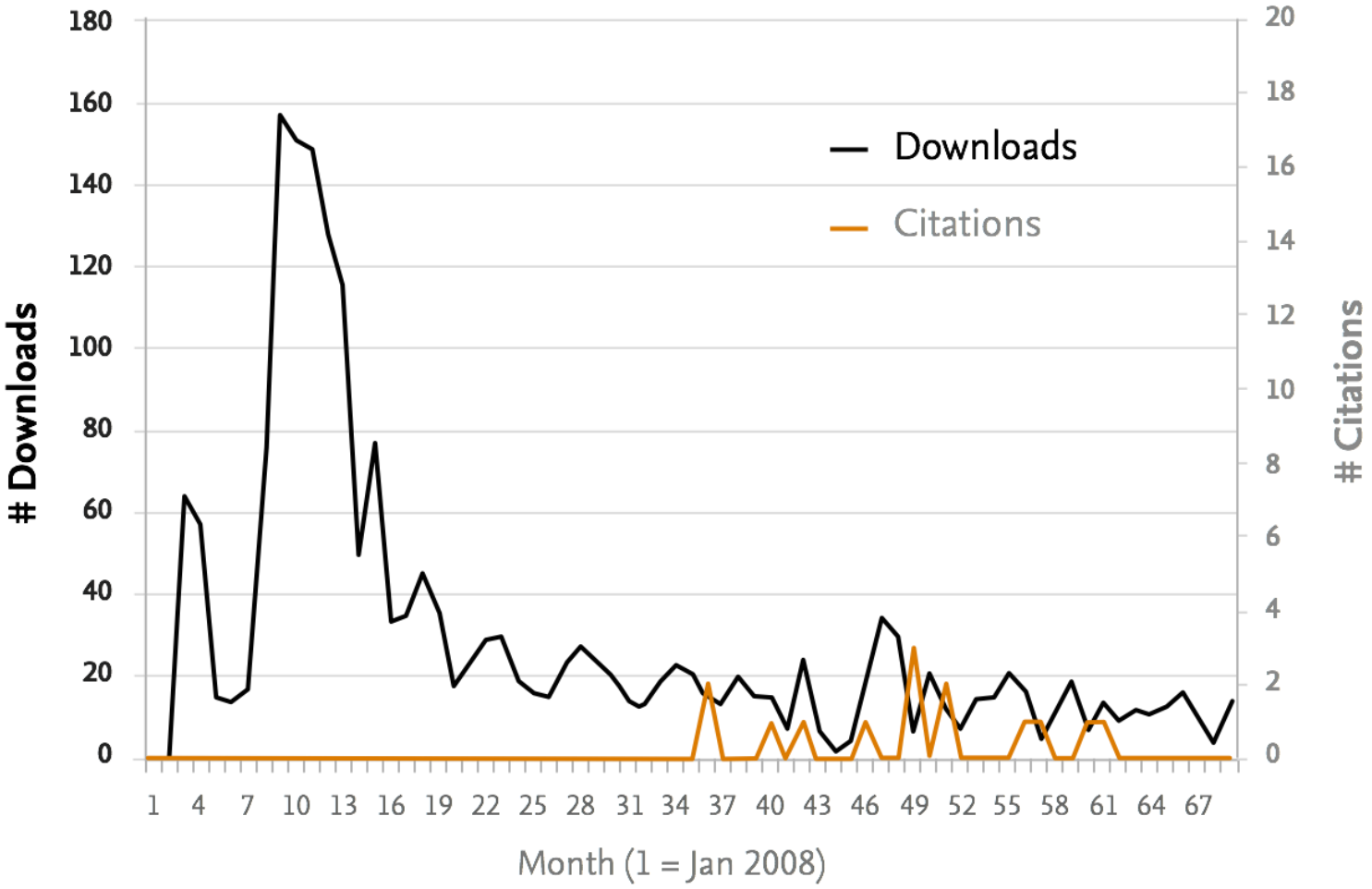
1 **Size**	Larger entities will tend to have higher metrics when size is a factor
2 **Age** (Output/Researcher)	Older outputs (as more senior researchers) have had more time to attract attention, and to receive higher counts of interest
3 **Discipline**	Working habits differ from one discipline to another, such as citation or collaboration patterns
4 **Data source**	Any metric is linked to a specific data source. The same metric might differ from one data source to another

1 Size: bigger does not necessarily mean better

Source: SciVal (Scopus data up to 29 Feb 2016)

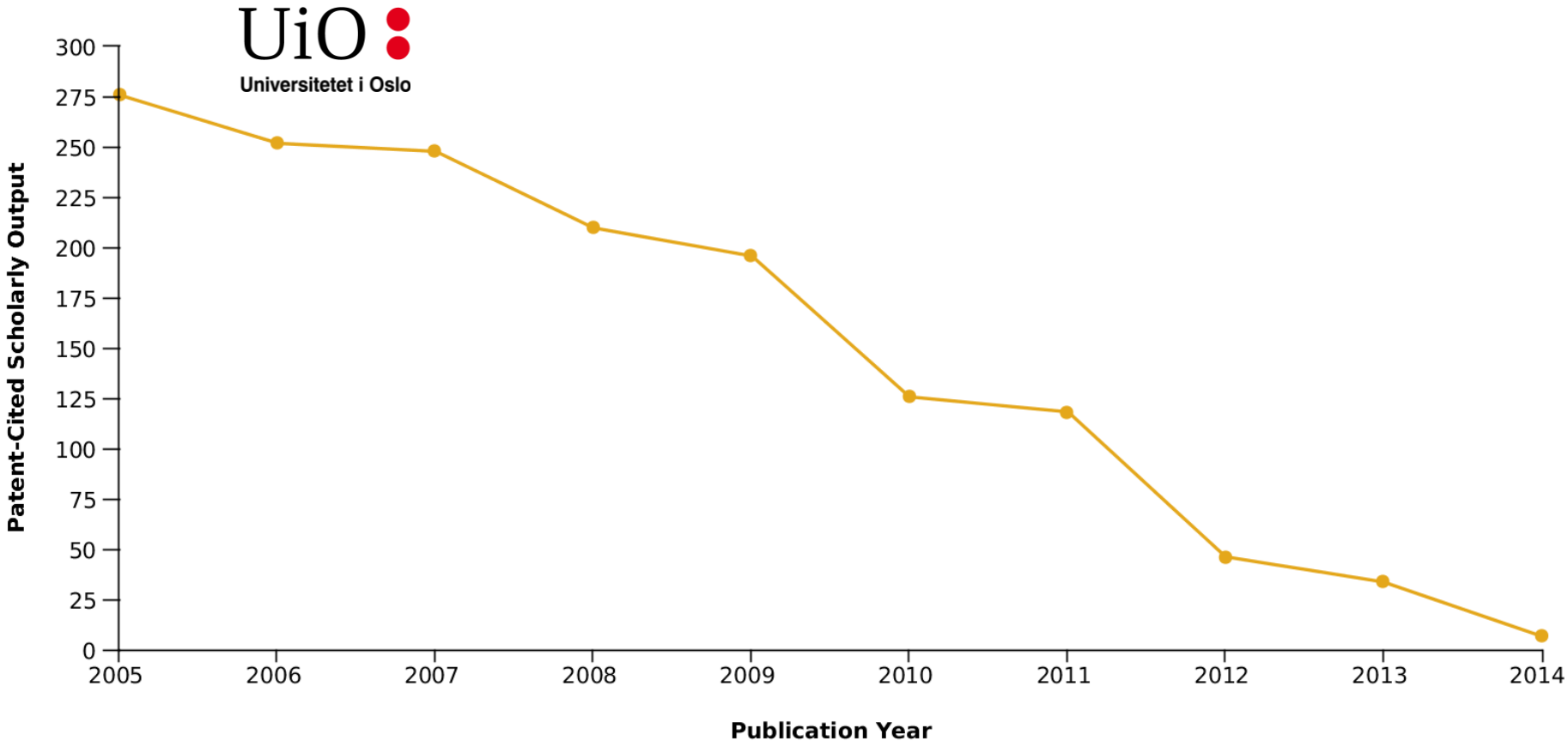
2 Age: different metrics require different time windows

Example: views vs. citations



2 Age: different metrics require different time windows

Example: patent-cited scholarly output



Source: SciVal (Scopus data up to 29 Feb 2016)

2 Researchers' age also affect some metrics such as the H-Index

The H-Index is one of the sole metrics that can only increase, even if you do nothing

3 Citation patterns vary greatly from one discipline to another

Between "large" disciplines

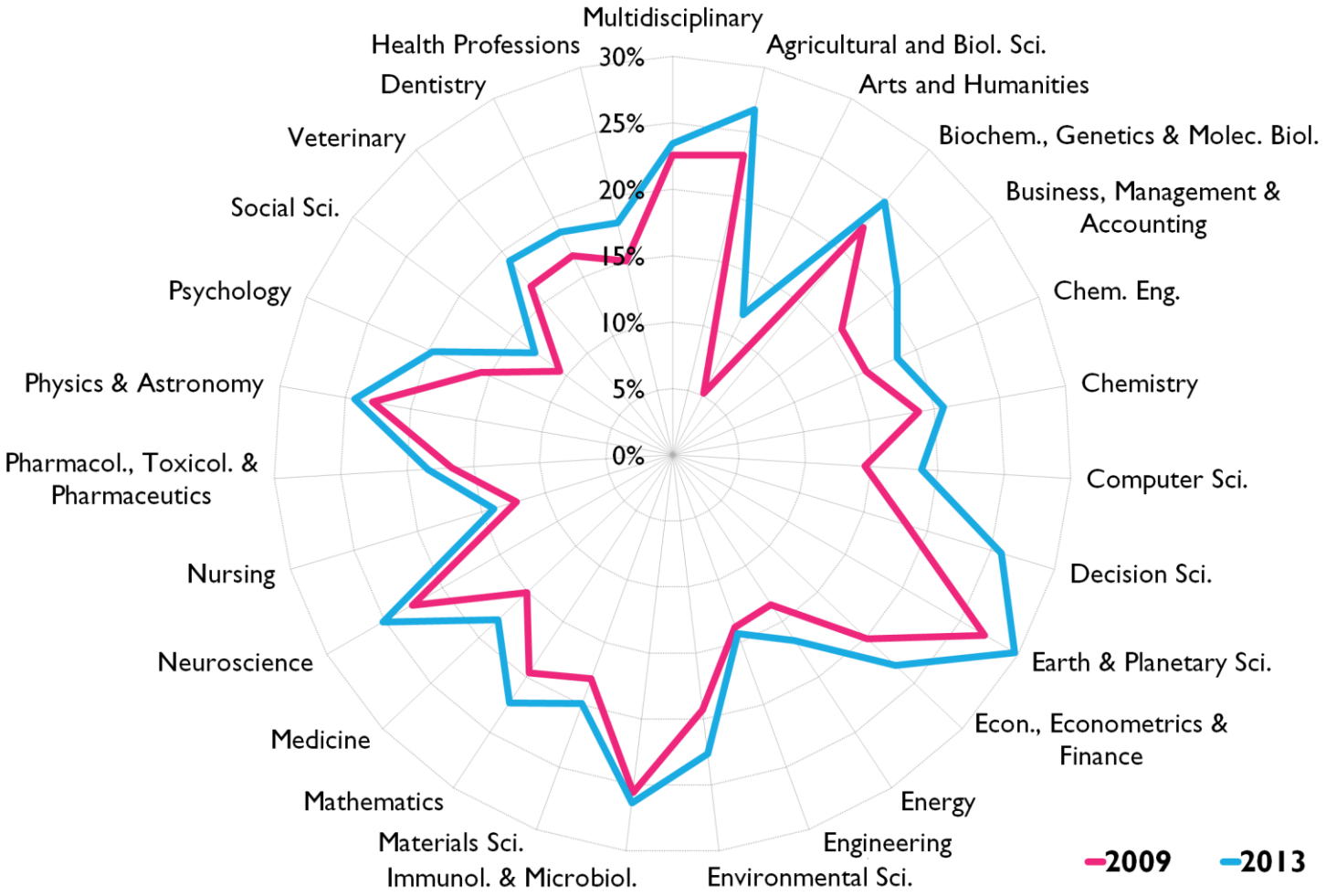
Subject area	# citations per pub.
Overall	5.7
Medicine	6.8
Engineering	3.5
Materials Science	6.9
Arts and Humanities	1.9
Social Sciences	2.8
Agri. and Bio. Sciences	6.7

Within a discipline (Social Sciences)

Subject area	# citations per pub.
Overall Medicine	6.8
Anatomy	6.3
Biochemistry (medical)	8.9
Dermatology	4.8
Embryology	7.2
Family Practice	2.8
Health Informatics	3.3

Source: SciVal (Scopus data up to 29 Feb 2016); 2010-2014

3 Collaboration patterns differ between disciplines



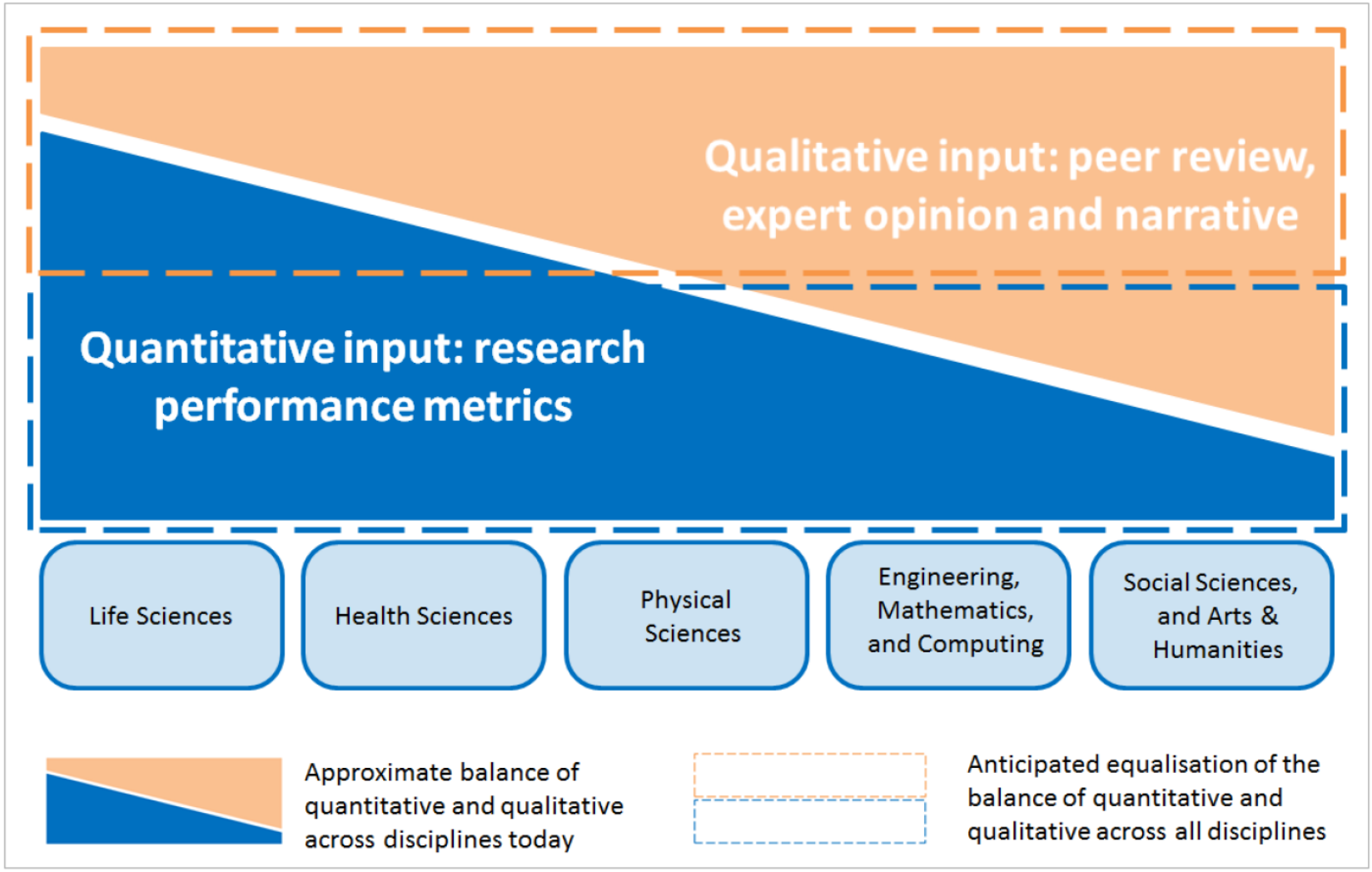
Share of international co-publications per scientific field 2009 and 2013 . Source: Scopus

Source: Pohl H, WarnanG, and Baas J (2014) Level the playing field in scientific international collaboration with the use of a new indicator: Field-Weighted Internationalization Score, *Research Trends* 39, 3-8.

3 Age – Potential interest in normalized metrics

- Normalized metrics give the ability to address discipline discrepancies
- For example Outputs in Top Percentiles (field-weighted)
- Many other normalized metrics are available such as FWC (for international collaborations), FWVI (usage), SNIP (journal), etc.
- Non-normalized metrics are still useful in some situations. They tend to be more straightforward and transparent than normalized metrics, lending themselves more easily to validation.

3 Some disciplines might require some more qualitative input



Source: "Response to HEFCE's call for evidence: independent review of the role of metrics in research assessment", Elsevier, June 2014

4 Data source

Scopus

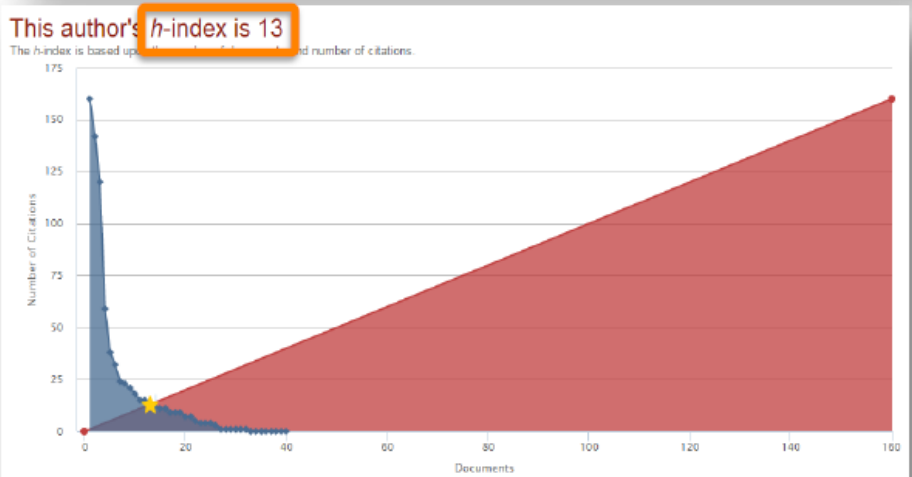
Gerard 't Hooft (Nobel prize in Physics, 1999)

Dutch Research School of Theoretical Physics - DRSTP, Institute of Theoretical Physics, Utrecht, Netherlands

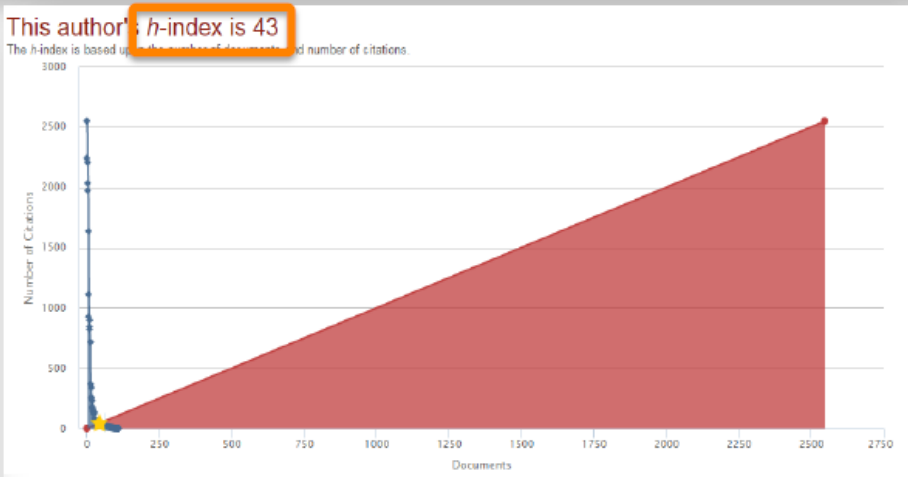
Author ID: 7005101336

About Scopus Author Identifier | View potential author matches

Other name formats: Hooft, Gerard't
'T Hooft
't Hooft
View More



Documents published between: **1996 - 2016**
Number of publications: **40**
Number of citations: **782**
h-index: **13**



Documents published between: **1971 - 2016**
Number of publications: **110**
Number of citations: **23,134**
h-index: **43**

Metrics should also be carefully selected to ensure that they are appropriate to the question being asked

Which metrics should you use? Snowball Metrics!

Recipes in first recipe book

Recipes added in second recipe book

	Research Inputs	*Research Process*	*Research Outputs and Outcomes*
Research	**Applications Volume** **Awards Volume**	**Income Volume** **Market Share**	**Publications & citations** • Scholarly Output (enhanced) • Citation Count • Citations per Output • *h*-index • Field-Weighted Citation Impact • Outputs in Top Percentiles • Publications in Top Journal Percentiles **Collaboration** • Collaboration • Collaboration Impact • Academic-Corporate Collaboration • Academic-Corporate Collaboration Impact **Societal impact** • Altmetrics • Public Engagement
Enterprise Activities/ Economic Development	• Academic-Industry Leverage • Business Consultancy Activities	• Contract Research Volume	• Intellectual Property Volume • Intellectual Property Income • Sustainable Spin-Offs • Spin-Off-Related Finances
Post-Graduate Education			

The example of CRIStin data in SciVal

Universitetet i Oslo

ELSEVIER

Empowering Knowledge

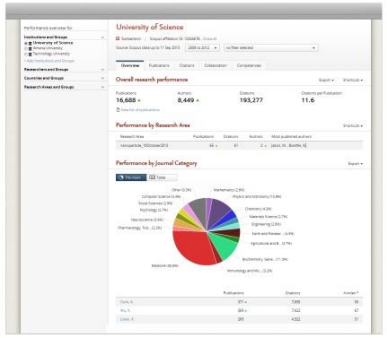
Introduction to SciVal

SciVal at a glance

SciVal offers quick, easy access to the research performance of 220 nations and 7,000+ research institutions worldwide.

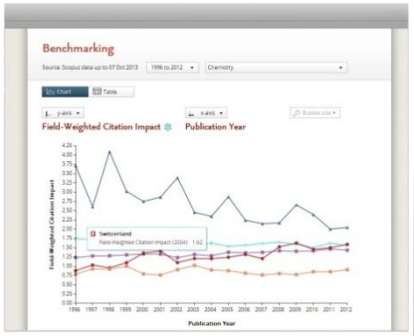
Overview
Visualize research performance

Ready-made-at a glance snapshots of any selected entity



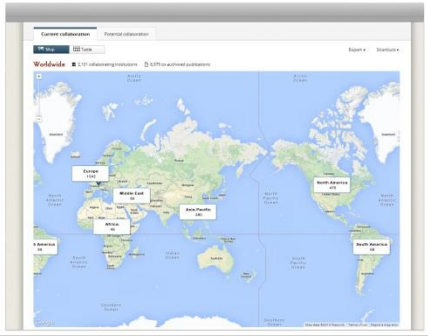
Benchmarking
Benchmark your progress

Flexibility to create and compare any research groups



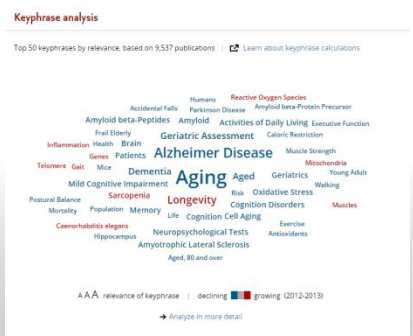
Collaboration
Develop collaborative partnerships

Identify and analyze existing and potential collaboration opportunities



Trends
Analyze research areas' trends

Examine research areas to discover the top performers and rising stars



A ready-to-use solution with predefined entities

SciVal pre-defines 7,000+ institutions and 220 nations, and allow users to group those institutions and entities on-demand.

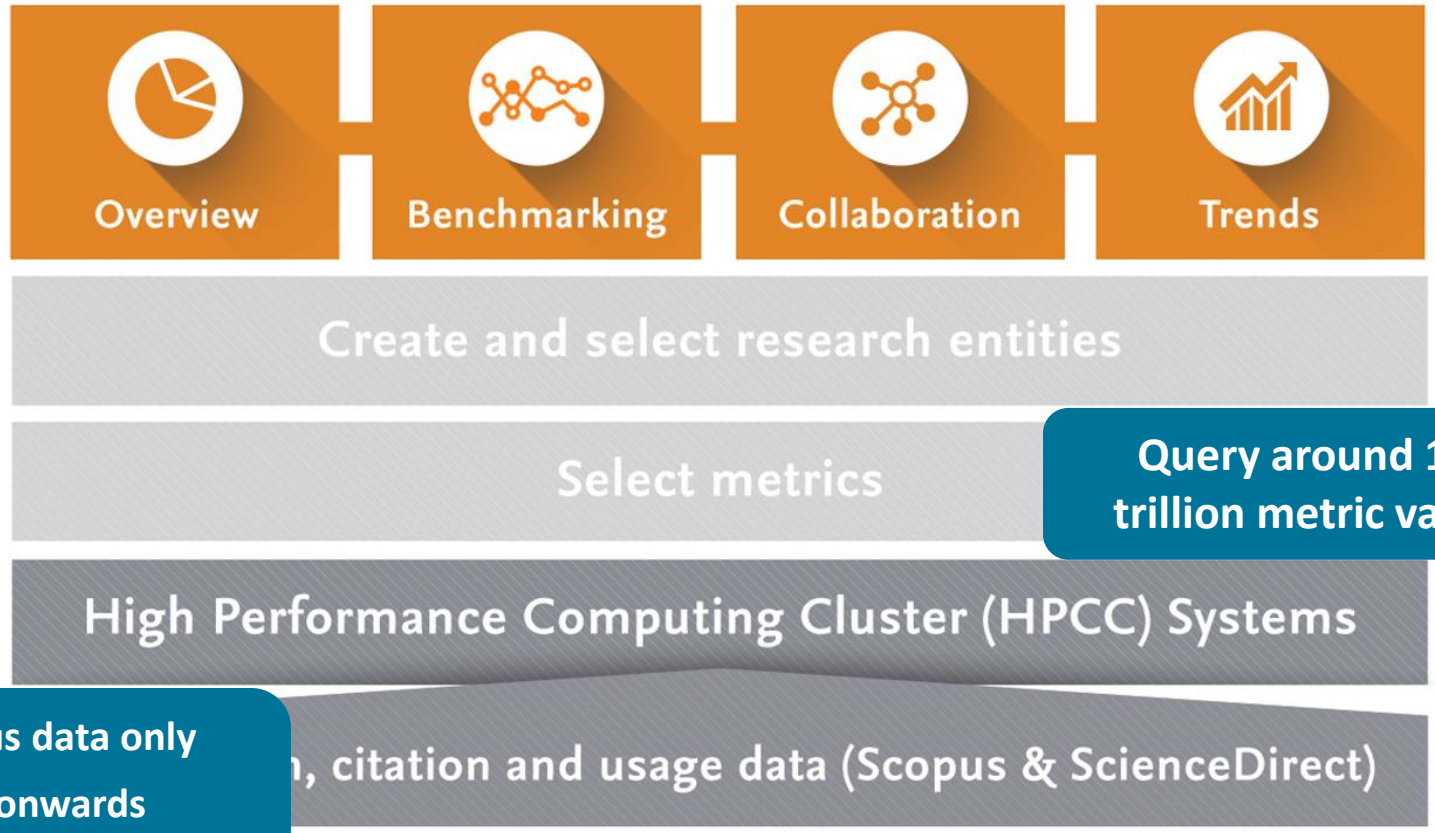
Ready-to-use & Create your own

- Institutions (+ groups)
- Countries (+ groups)
- Research Areas
  - Search terms
  - Entities
  - Competencies
- Researchers (+ groups)
- Publication sets (+ groups)

- Access to pre-defined 7,000+ institutions, 250 countries and groups (i.e. EU28, US states, German Bundesländer, Russell group and more)
- Ability to create any desired grouping of entities, researcher groups or documents

The structure of SciVal

Using advanced data analytics technology, SciVal allows you to instantly process an enormous amount of data to generate powerful data visualizations on-demand, in seconds.

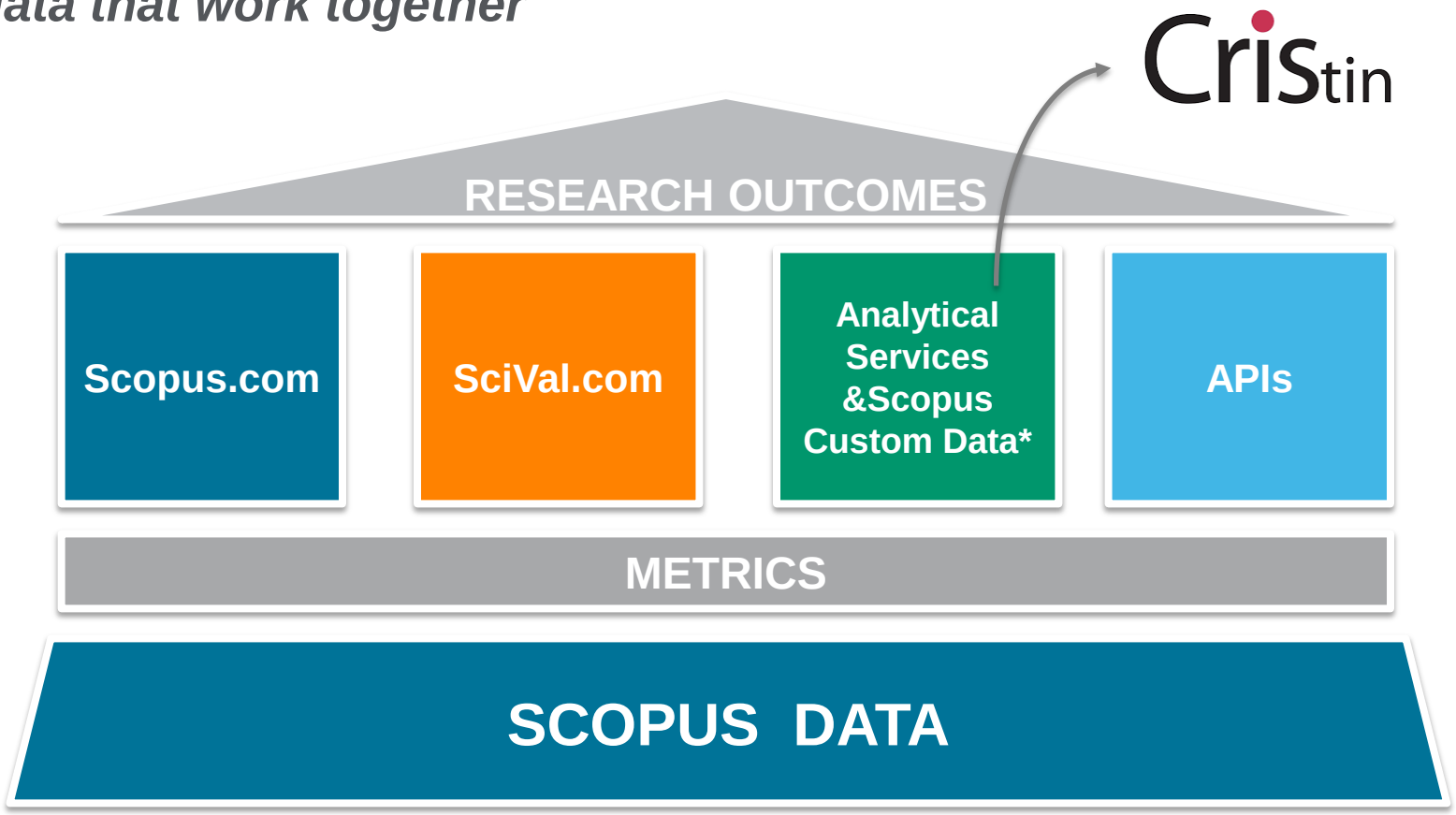


Query around 100 trillion metric values

- Scopus data only
- 1996 onwards
- Bi-monthly update

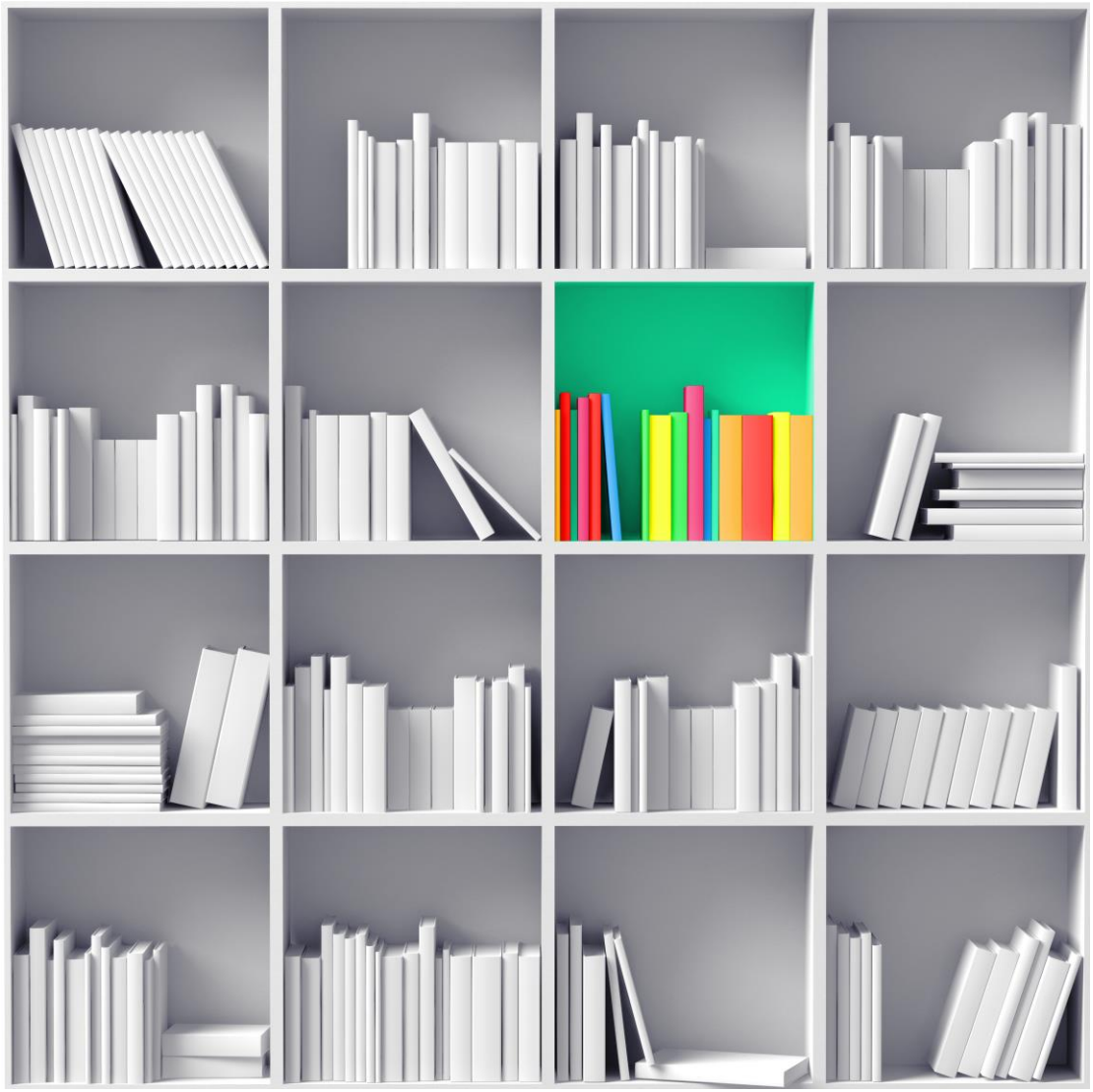
The main role of the data provider is to ensure the best possible transparency and reproducibility

One common database with different applications on top of the data that work together



*Analytical Services refers to the use of Scopus Custom data (and other data) in reports, assessment exercises, rankings and other Custom Data commercial projects.

Example of UiO



Structuring data for analyses in SciVal

Data sets:

1. «Raw data» in SciVal
2. SciVal ➡Excel➡ SciVal
3. Data set based on Scopus queries
4. Data validated i CRIStin
5. Data set based on names, addresses, DOI, etc.

Data is updated frequently – your query results might vary from one day to the next

Analyses

- Country
- Institution
- Faculty
- Department
- Research group
- Researcher

The depth and precision of your analyses will vary depending on which data set you choose

Which year to look at?

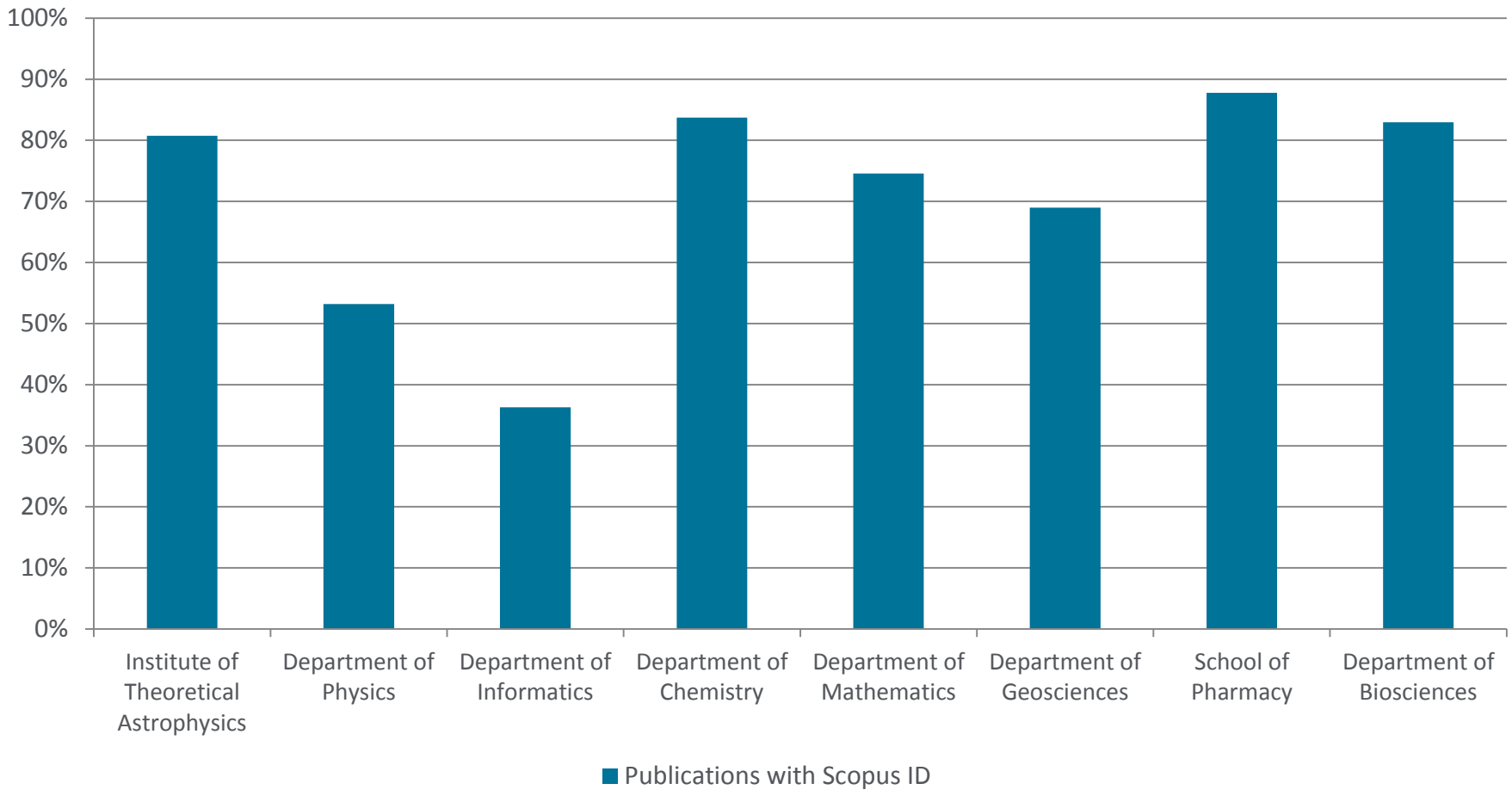
- 2015 publication set from April 2016
  - UiO total: 5,491 publications
  - With Scopus ID: 2820 (51.4%)

- 2014 publication set from April 2015
  - UiO total: 5,451 publications
  - With Scopus ID: 2460 (45.1%)

- 2014 publication set from April 2016
  - UiO total: 5,444
  - With Scopus ID: 2882 (52.9%)

- All publication sets are based on NVI-kontrolldata (excel) from CRIStin

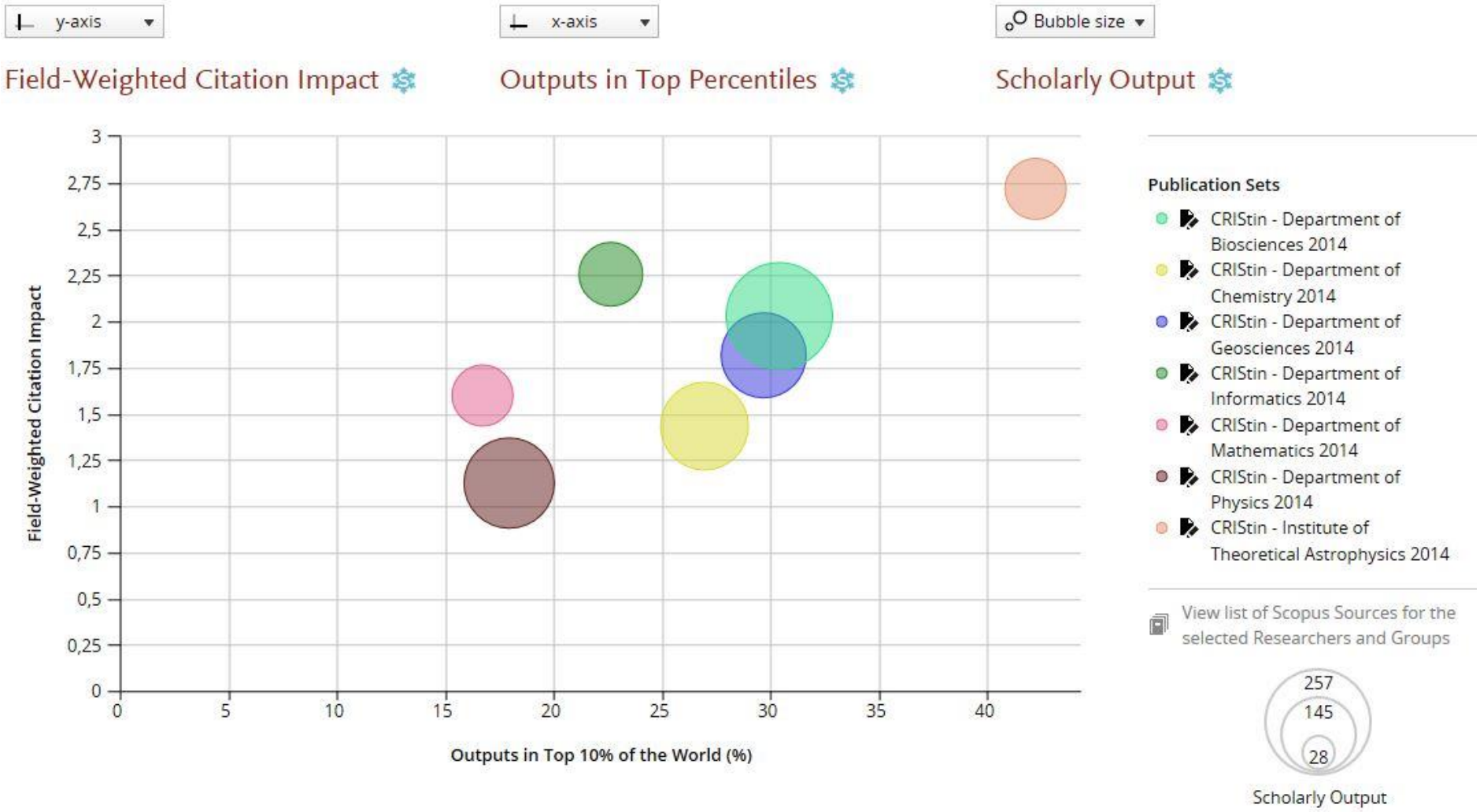
Faculty of Mathematics and Natural Sciences



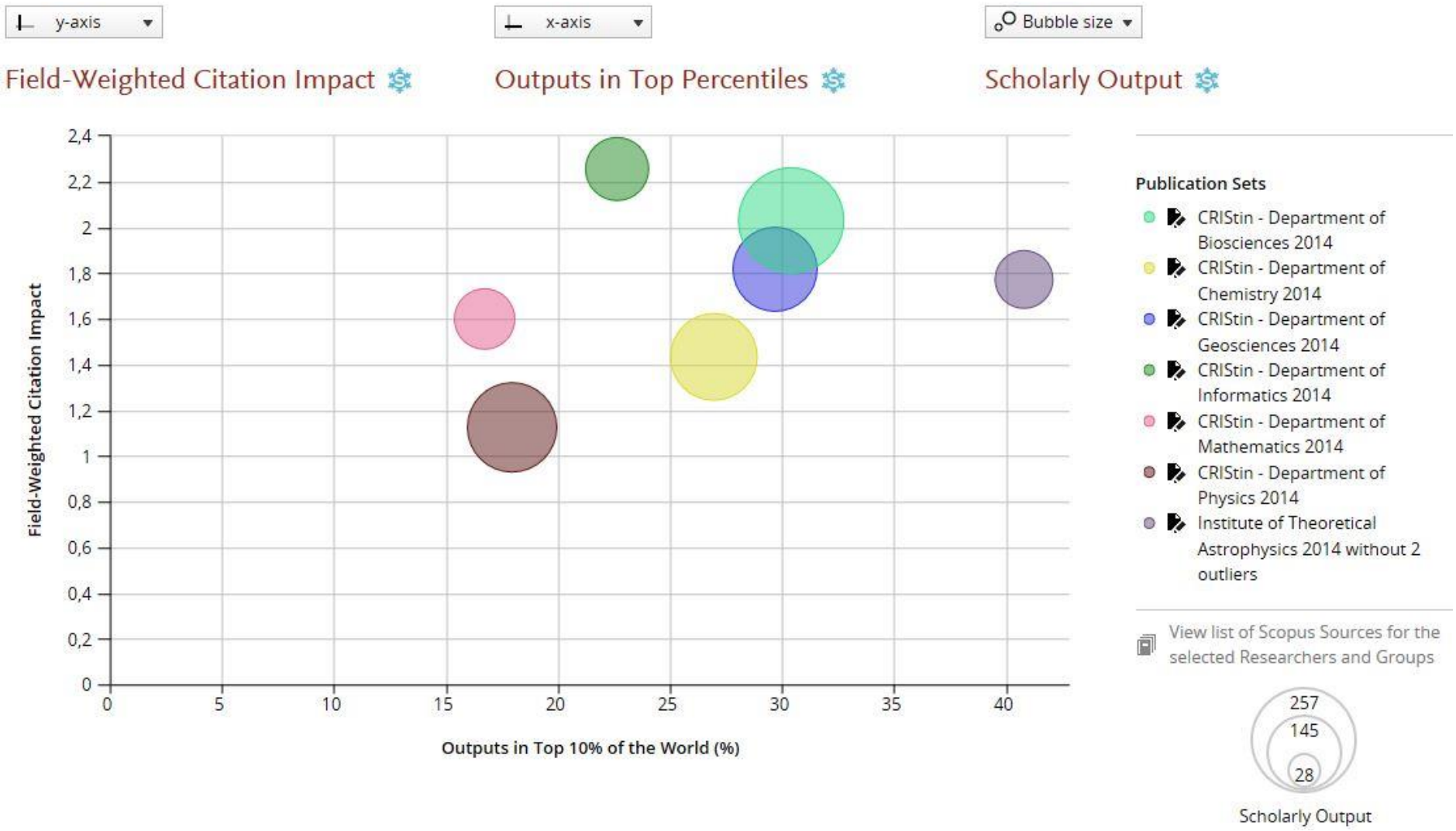
Step by step

- In CRIStin:
  - Download NVI-report (excel file)
- In Excel:
  - Remove entries that were not reported (?)
  - Filter columns S, T, U to include only the unit you are investigating (department, research group etc)
  - Remove duplicates (remember, there is one row pr affiliation)
  - Copy Scopus IDs from column G
- In My SciVal:
  - Define new publication set, Import publication set
  - Paste list of Scopus IDs
  - Wait for the list to be processed
  - Give your new publication set a name, and add tags
  - Start analysing

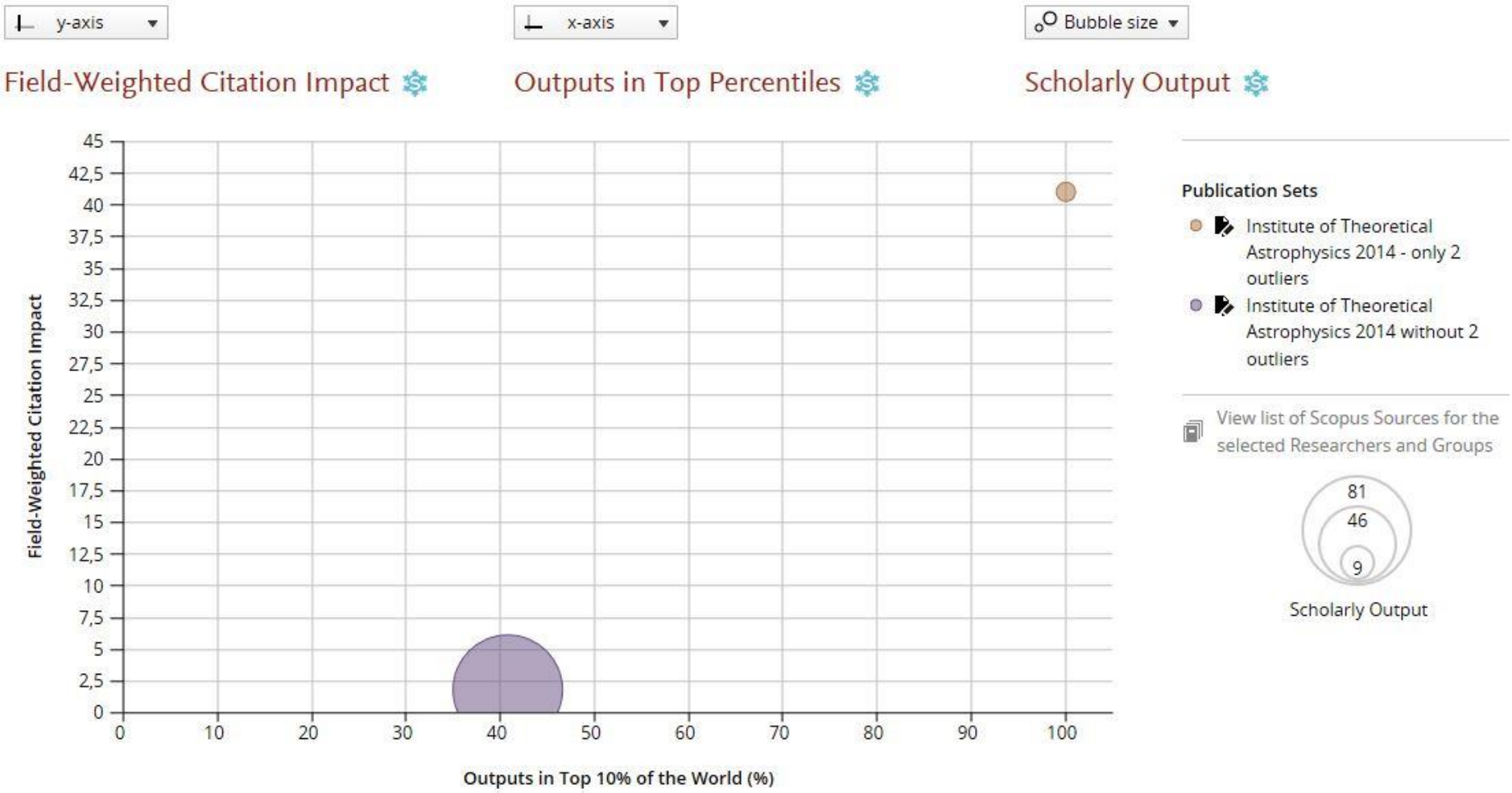
Benchmarking the departments I



Benchmarking the departments II



Removing two outliers



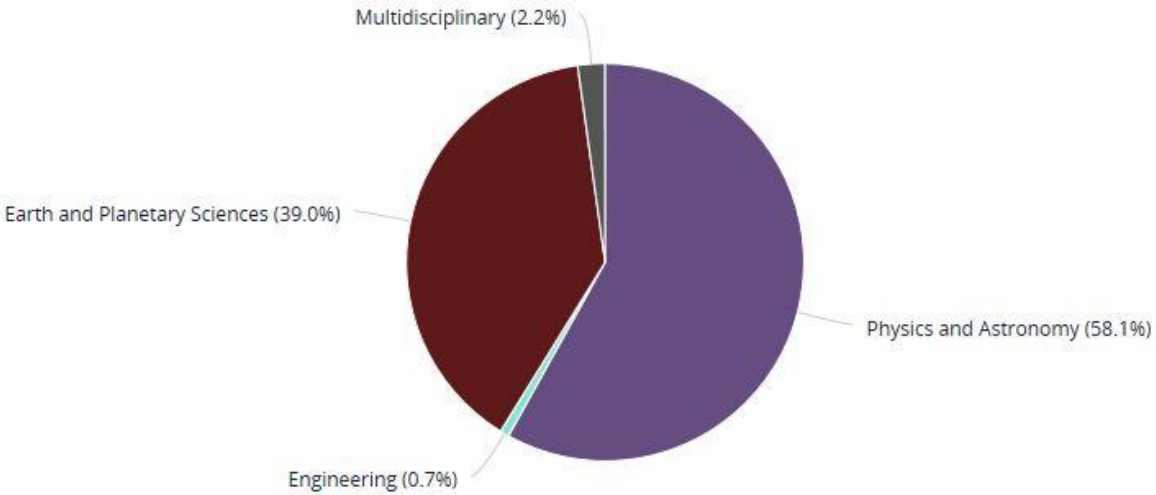
Institute of Theoretical Astrophysics

Overall research performance

Download page as PDF Export

Publications	Citations	Authors	Field-Weighted Citation Impact	Citations per Publication
83	1,044	701	2.72	12.6

View list of publications



Analyze in more detail

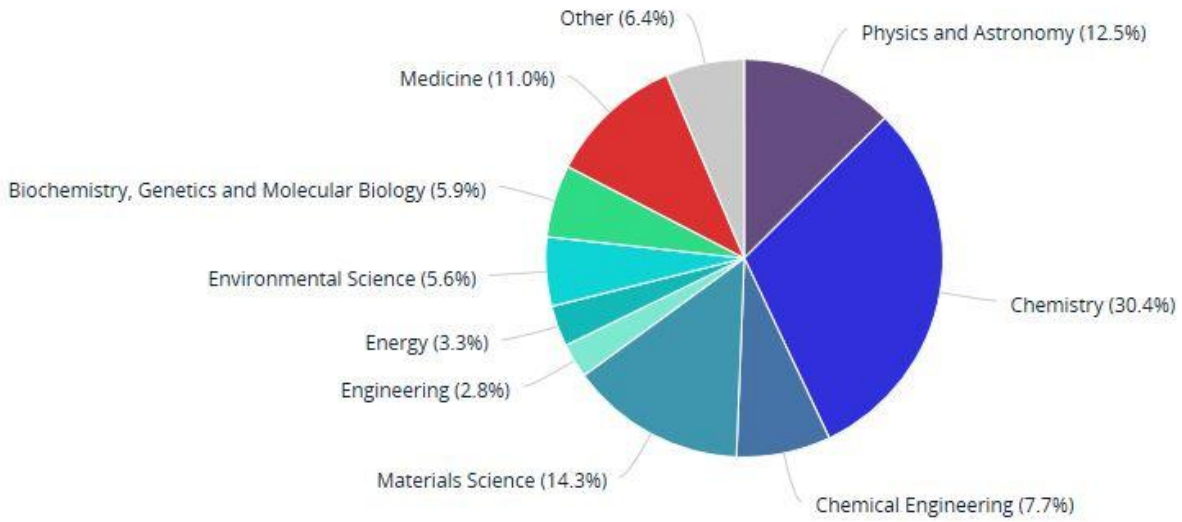
Department of Chemistry

Overall research performance

Download page as PDF Export

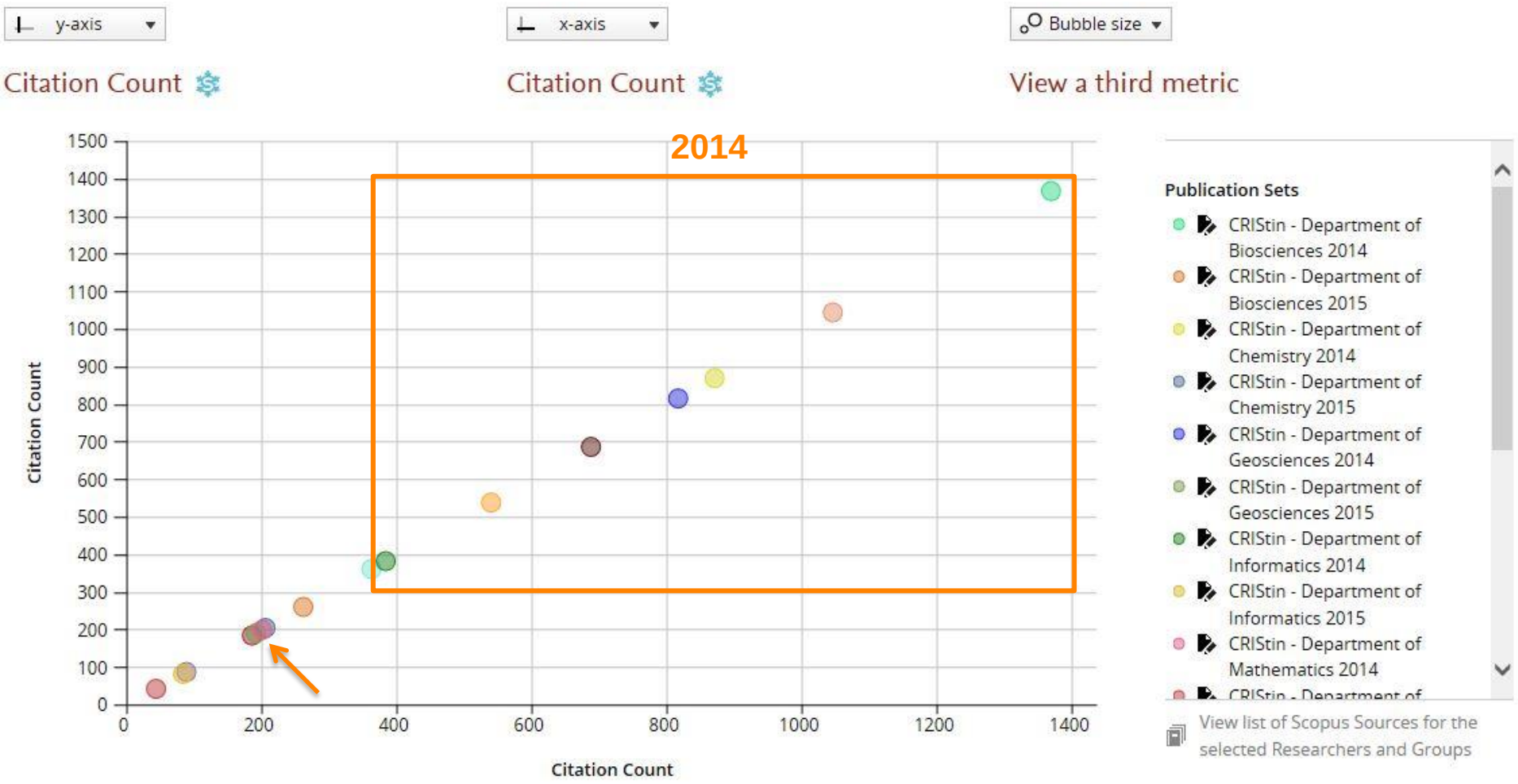
Publications	Citations	Authors	Field-Weighted Citation Impact	Citations per Publication
171	869	828	1.43	5.1

View list of publications



Analyze in more detail

Citation count – 2014 *vs.* 2015 publications

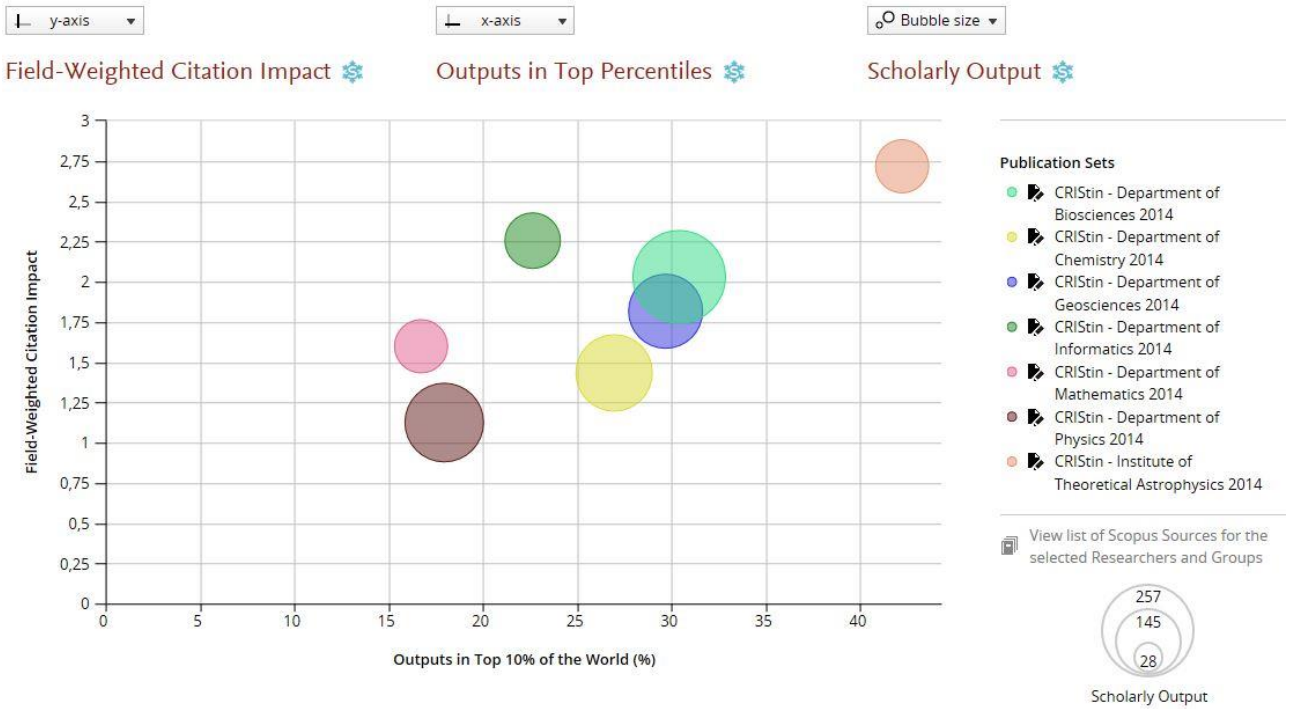


Key takeaways

- Benefits of using CRIStin data in combination with SciVal
  - Cleaned/validated data
  - Good basis for analysis of a particular department etc.
  - Can combine citation-based analyses with the Norwegian publication indicator, and examine «non-Scopus» publications
- The overlap between CRIStin and Scopus varies between departments/research groups etc. Not all units are equally well covered in Scopus.
- Do not confuse subject area and organisational unit
- Be aware of outliers

Live demo

Thank you for your attention. Any question?



Herman Strøm | herman.strom@admin.uio.no

Guillaume Warnan | g.warnan@elsevier.com

www.elsevier.com/research-intelligence