



# Characterizing journals using advanced bibliometrics: Area-Based Connectedness (ABC) to society

Beijing October 2018

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# Take away

(in case I am stopped by the moderator ;)

Non-scientific impacts of science actors (incl. journals) can be measured by Area-Based Connectedness (ABC) to society

Data:

- Web of Science (CWTS version)
- Publication level classification
- Altmetrics data

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# Assessing journals

# Why?

- Library management
- Assessing output
- Index selection (Web of Science, Scopus, ...)
- OA > APC > predatory journals

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# How?

- Journal impact factor (IF)
- Eigen factor
- Source Normalized Impact per Paper (SNIP)
- Scimago Journal Rank (SJR)
- Cite Score
- MNJS
- ...

# What about other impact/ features?

- Societal impact
- Socio-economic impact
- Professional impact
- Cultural impact
- ‘Appliedness’

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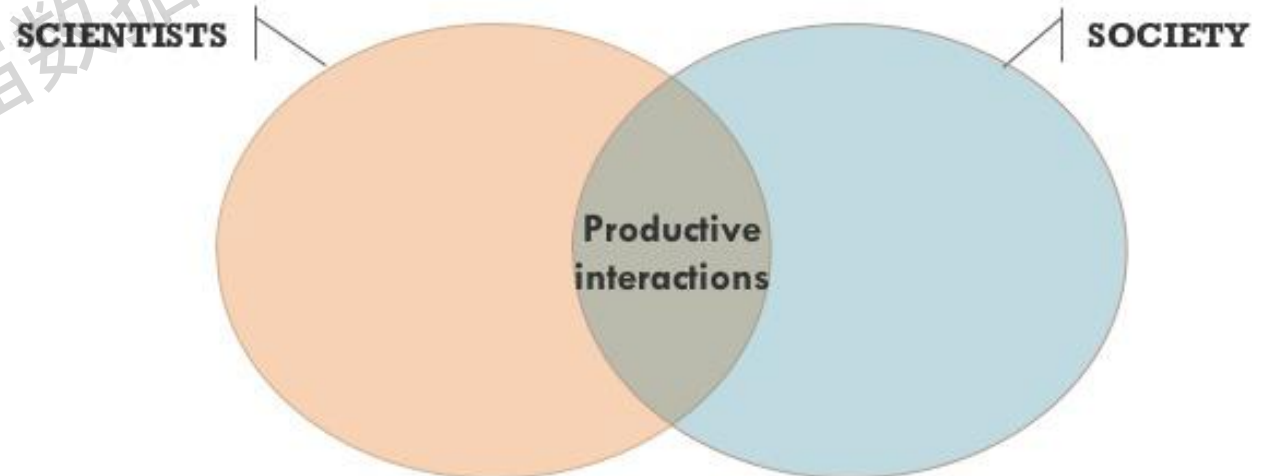
# Societal impact

# How does science impact society?

- Process unclear;
- Process divers;
- Is there any science that does not impact society?

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## From societal impact to social engagement







# Introducing ‘productive interactions’ in social impact assessment

Jack Spaapen and Leonie van Drooge

**Productive interactions:**  
**Societal impact =>**  
**connectedness to society**

# How to measure connectedness?

- Through signals between science and society;
- Signals from both sides;
- Each signal represents a certain link/ connection/ interaction.

# Signals (through the lens of research)

- Papers (co-)authored by industry;
- Papers published in local languages;
- Papers cited by patents;
- Papers mention on twitter (or other social media);
- Papers mentioned in policy documents;
- Papers mentioned in news;
- ...

# How to measure these signals: Area-based connectedness

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# Should we measure these signals at the level of actors?

- Should we consider the amount of papers in a journal mentioned in twitter as societal connectedness?
- Should we count the number of co-authored papers with industry of an organization to measure societal impact?
- Is an institute from which papers are mentioned in policy document more societal relevant?
- Is a journal from which papers are cited in patents, more applied?

# If the answer is no, how should we then measure it?

- Research is a collaborative effort;
- It's a community that has impact/ is connected, not the individual actor;
- Therefore, we should measure the interactions at the level of research areas;
- This has the advantage of making it less sensitive to manipulation/ gaming.

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# Research areas and their connectedness

# Consider the map of all sciences (publication based classification, 4000 clusters)

Social Sci & Hum.

Maths & CompSci

Life & Earth

Biomedical & Health

Physical Sci & Engin.



# About each cluster (research area) we know:

- All info covered by its publications (journals, authors, affiliations, keywords, etc);
- Total volume (number of P whole period);
- Volume per year (trend);
- Other average stats (n authors, refs, affiliations, share International collaboration, ...);
- Impact (overall and per year)
- Interdisciplinarity?
- Internal coverage (proxy for database coverage)
- ...

# What else do we know about the clusters?

- The percentage of papers (co-authored) by industry;
- The percentage of papers not published in English;
- The percentage of papers being cited by patents;
- The percentage of papers being tweeted;
- The percentage of papers mentioned in news items;
- The percentage of papers mentioned in policy documents;
- The percentage of papers in OA
- ...

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Maths & CompSci

Life & Earth

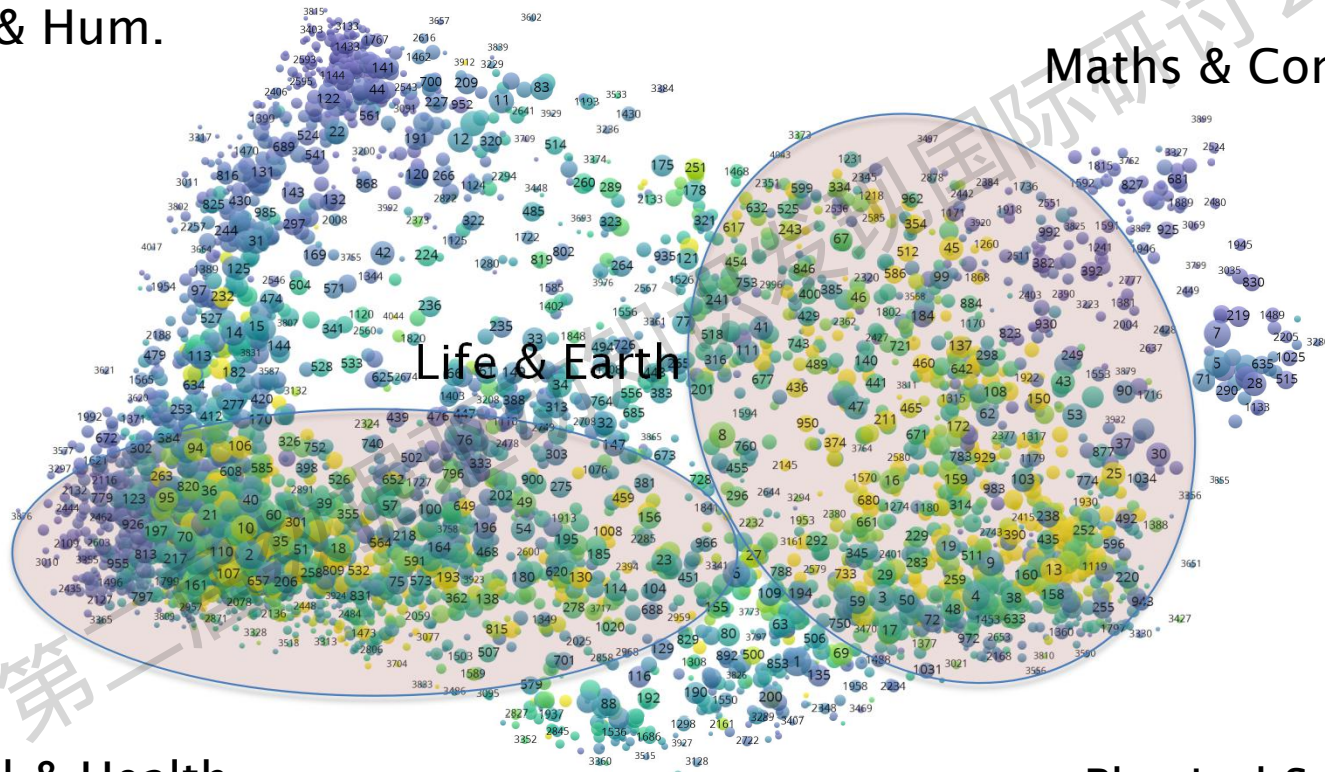
Biomedical & Health

Physical Sci & Engin.

# Share (co-)authored by industry

Social Sci & Hum.

Maths & CompSci



Biomedical & Health

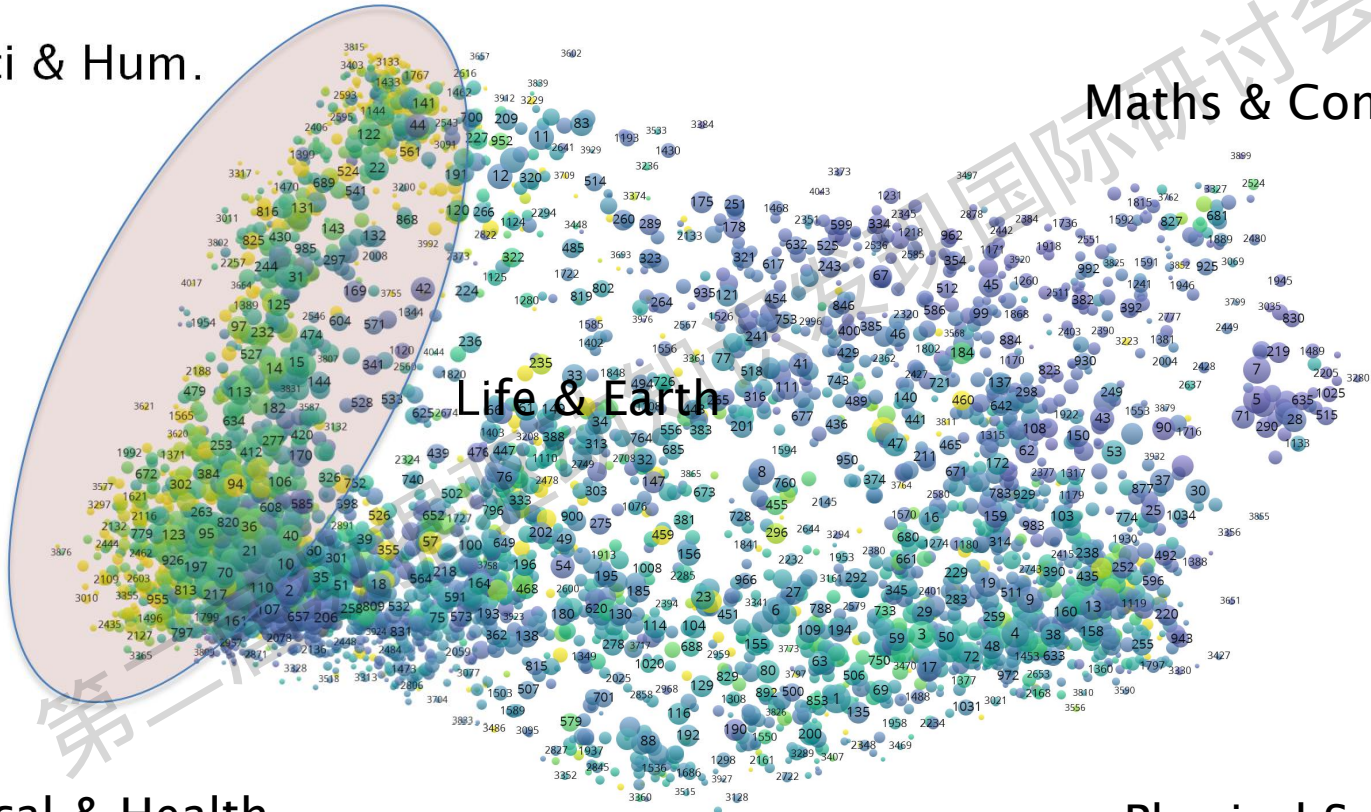
Physical Sci & Engin.



# Share of papers not in English

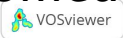
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Maths & CompSci



Biomedical & Health

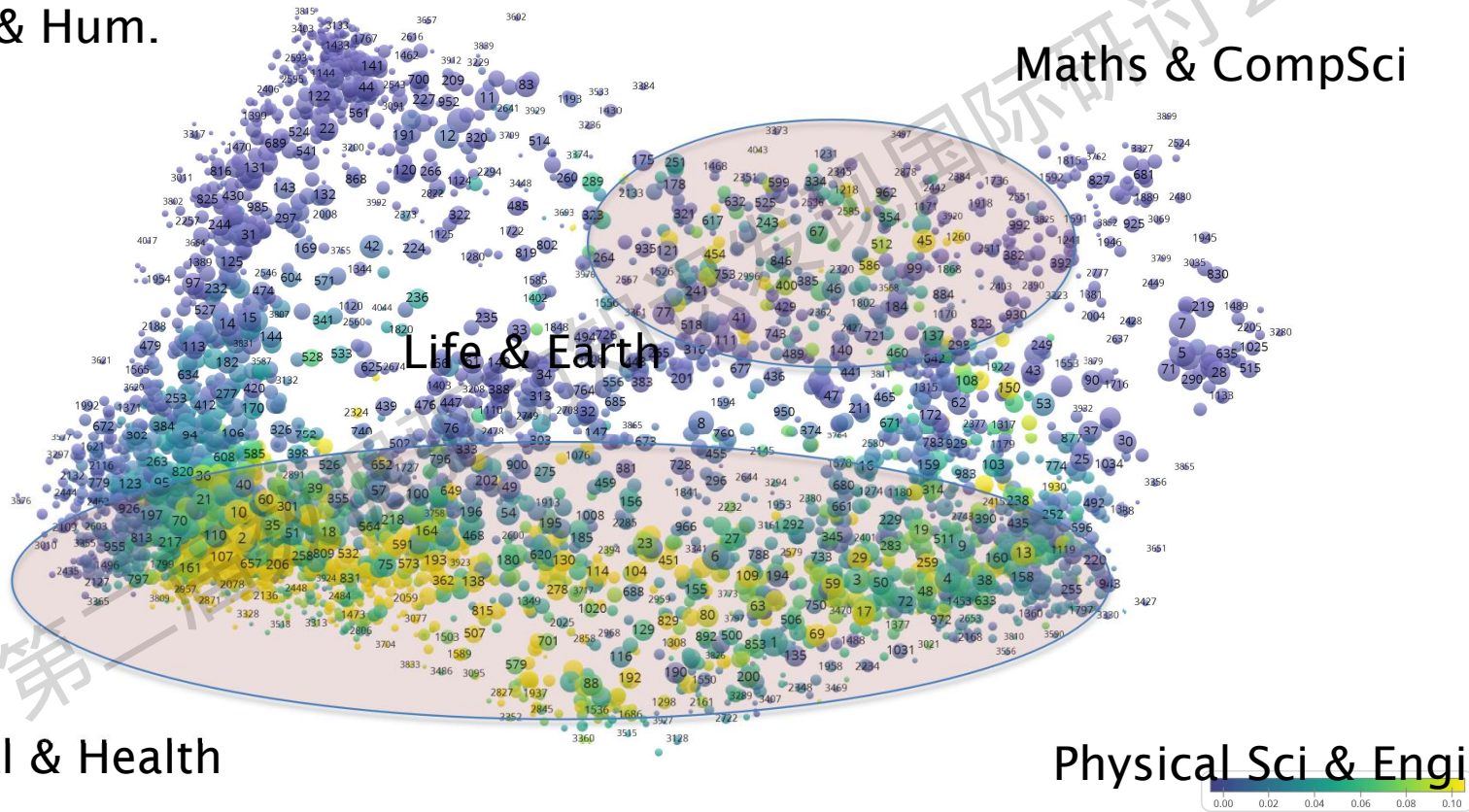
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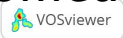
# Share of papers cited by patents

Social Sci & Hum.

Maths & CompSci



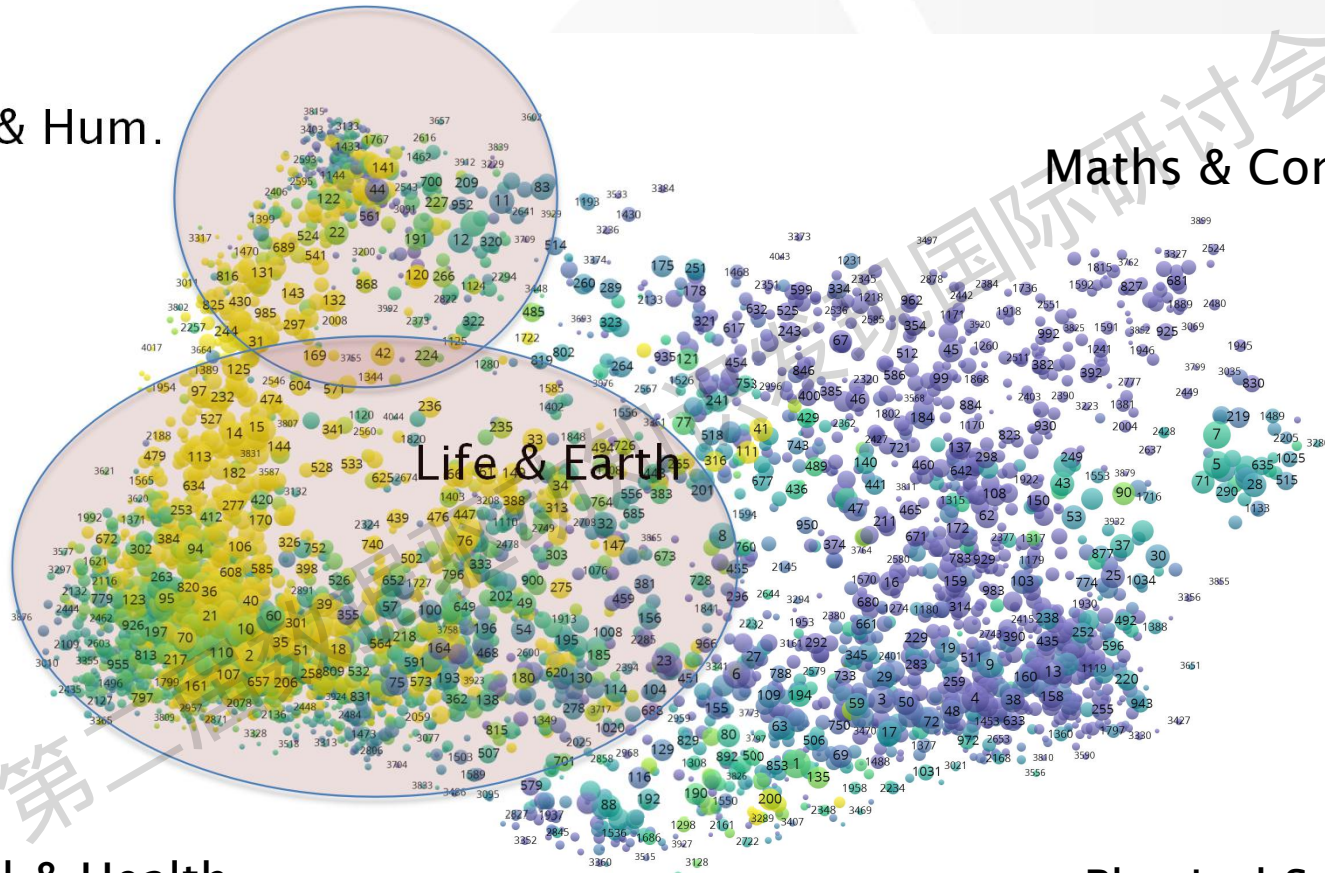
Biomedical & Health



# Share of papers mentioned on Twitter

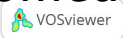
Social Sci & Hum.

Maths & CompSci



Biomedical & Health

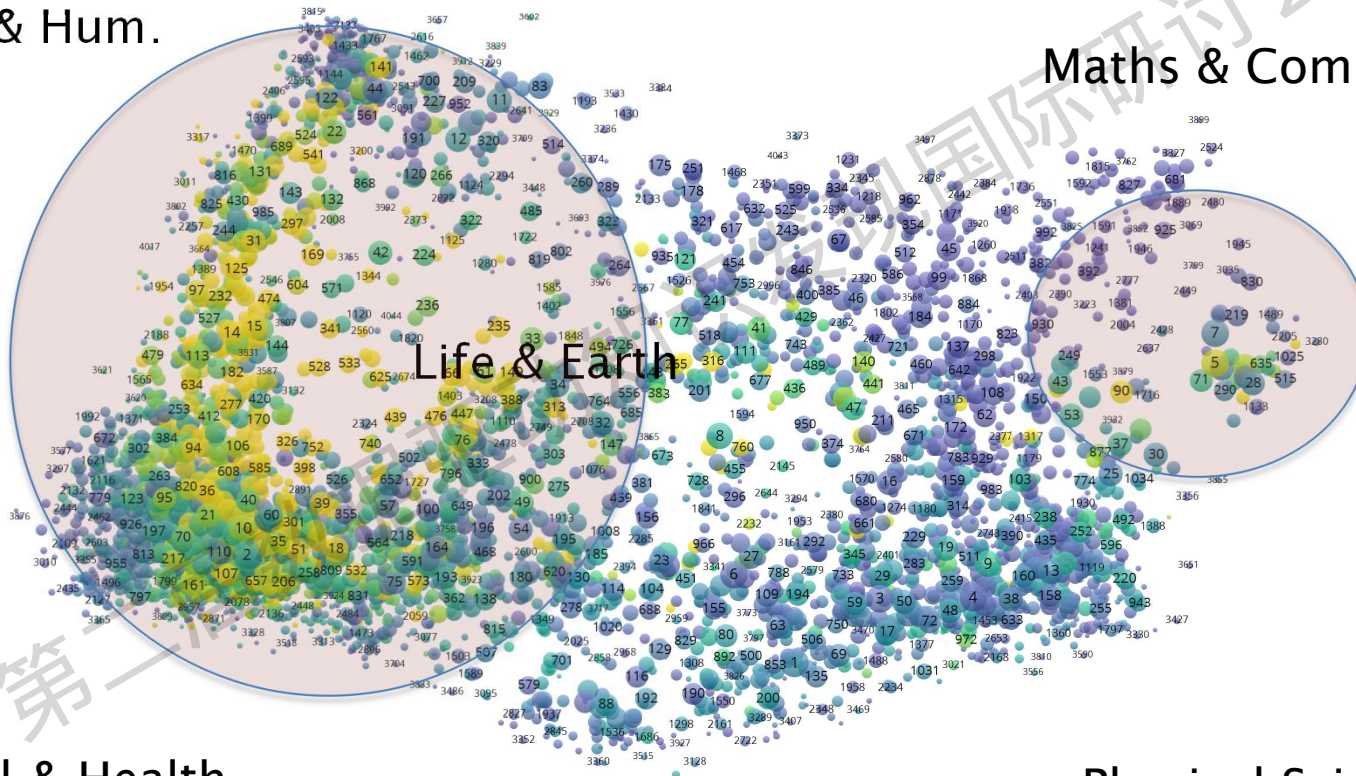
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# Share of papers mentioned in News

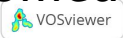
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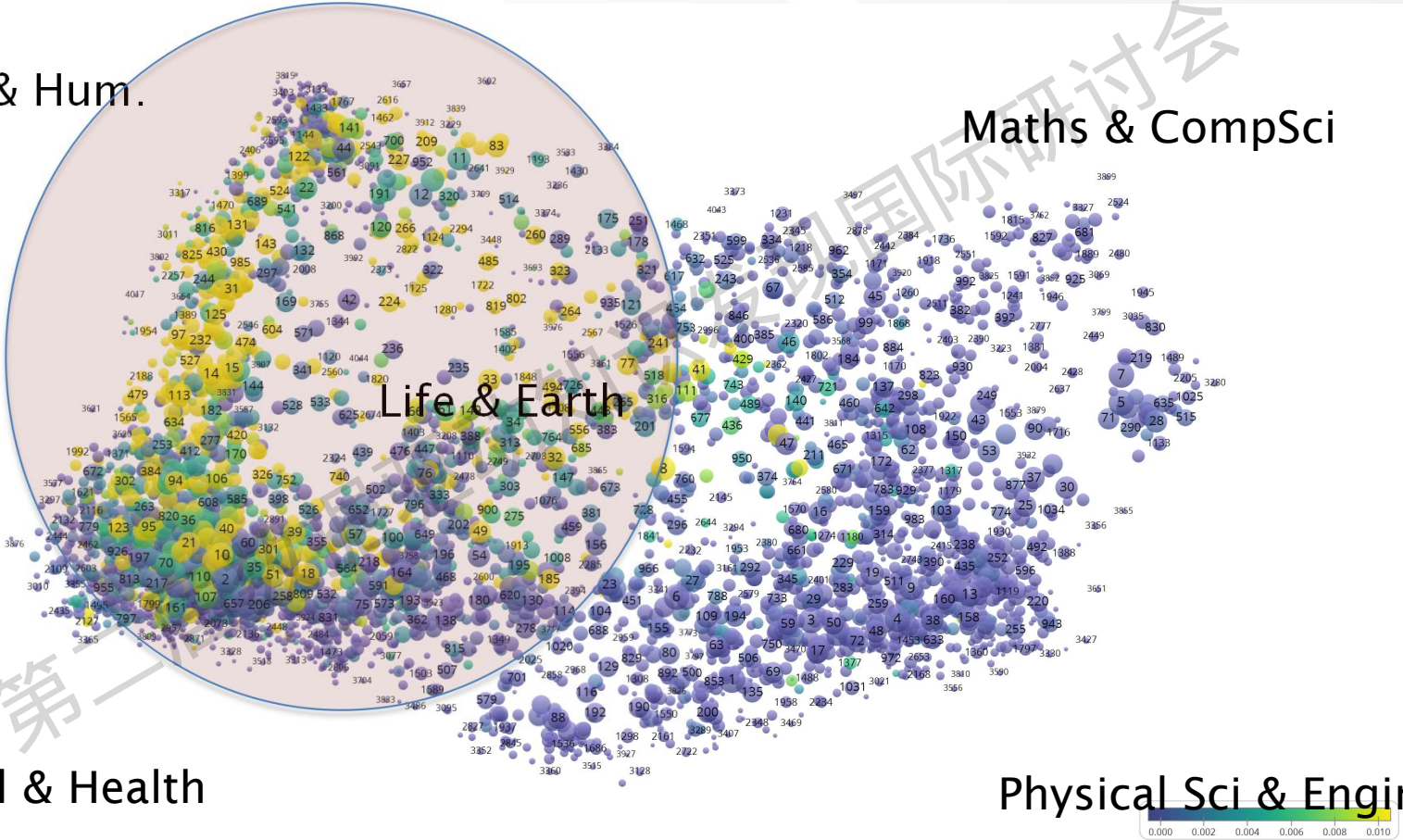




# Share of papers mentioned in policy documents

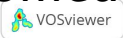
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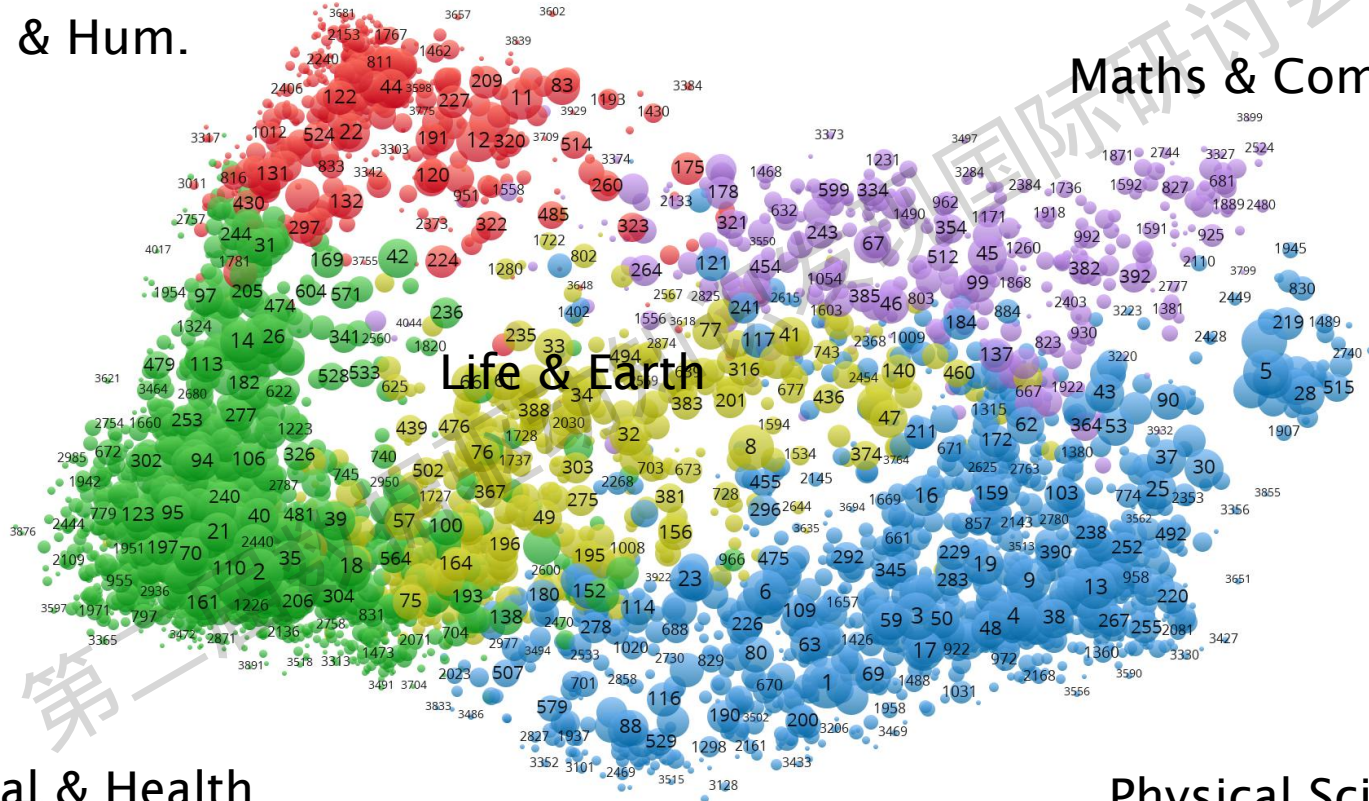
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# Case study

# The case of the Chinese journal of cancer research

Social Sci & Hum.

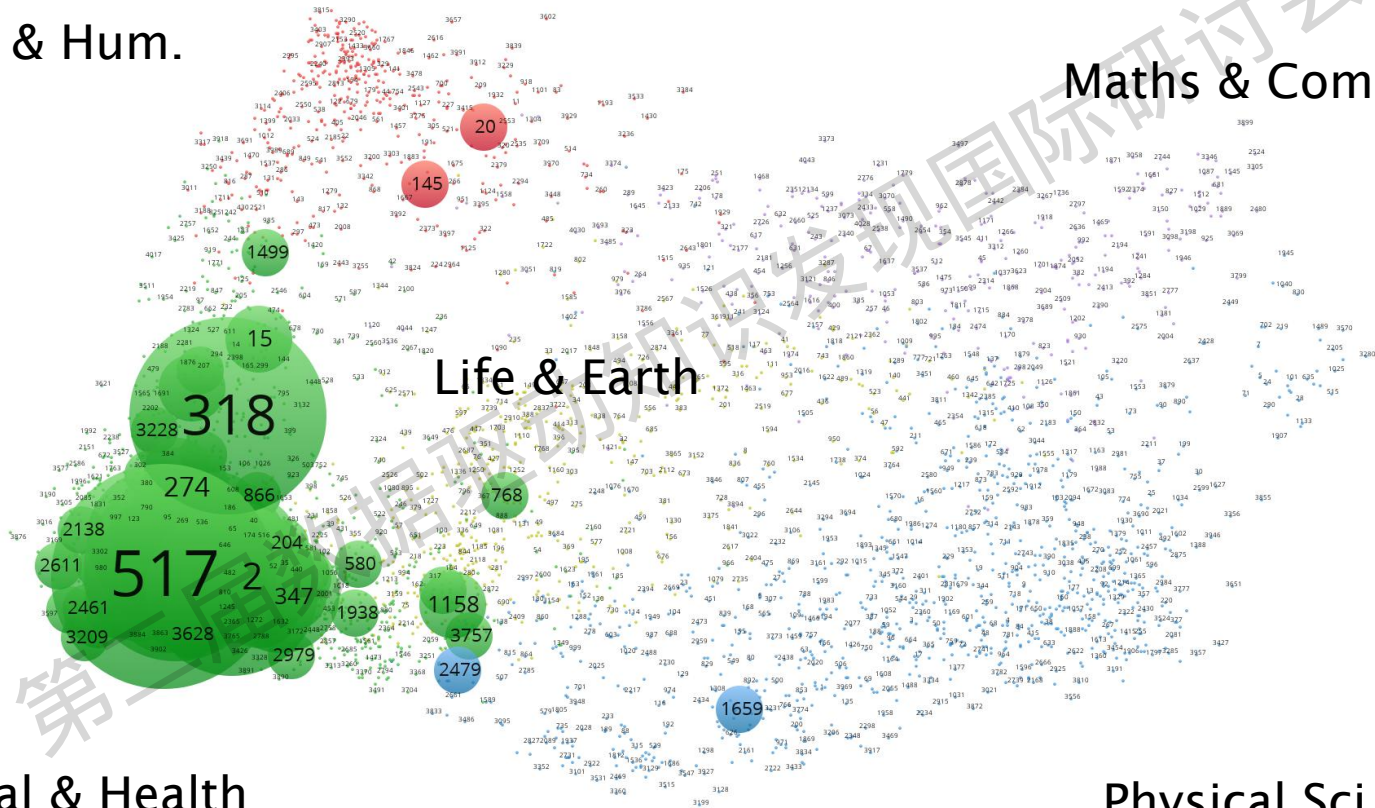
Maths & CompSci



# The case of the Chinese journal of cancer research

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Biomedical & Health

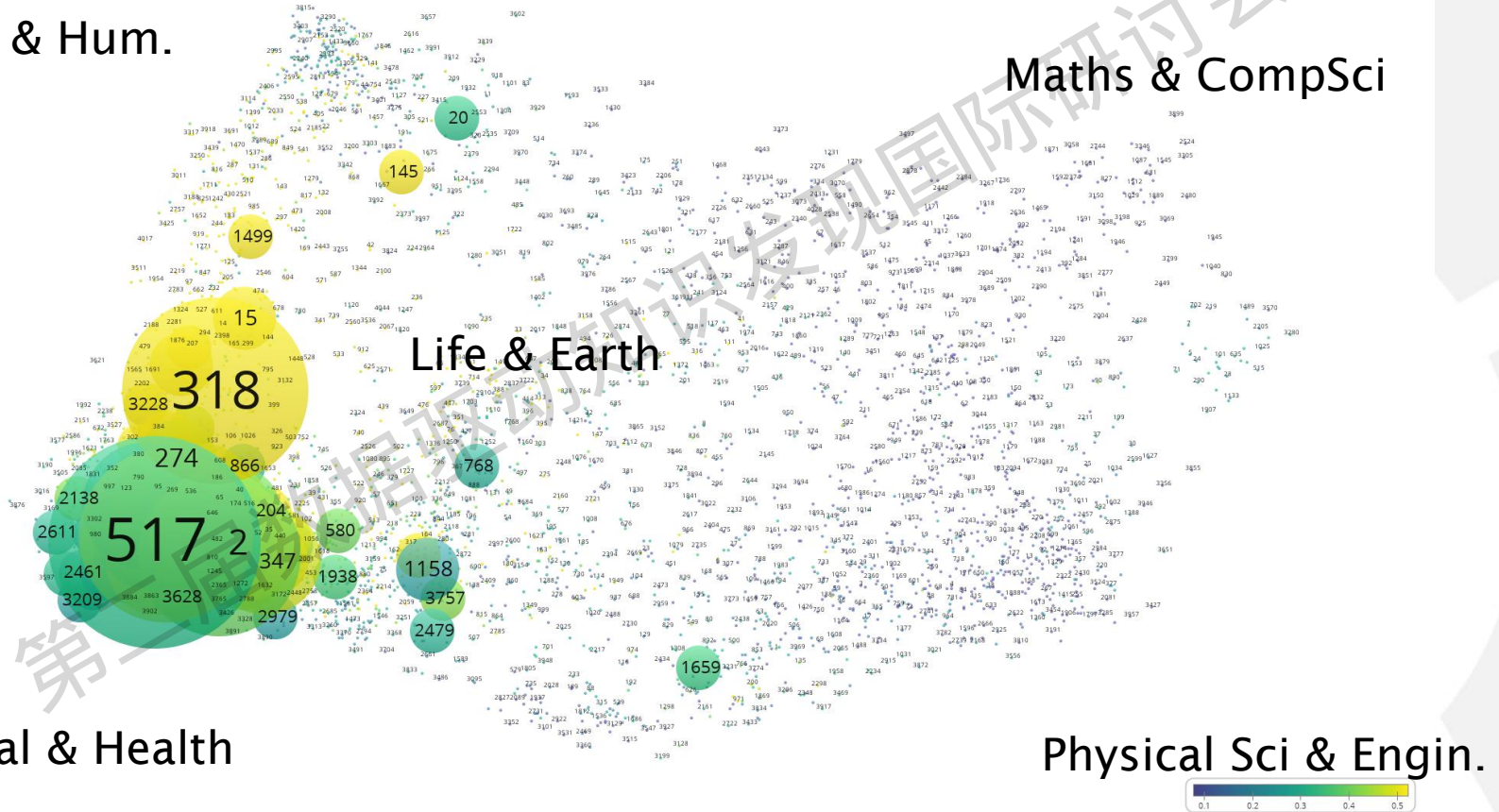
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# Twitter connectedness of areas of the Chinese journal of cancer research

Social Sci & Hum.

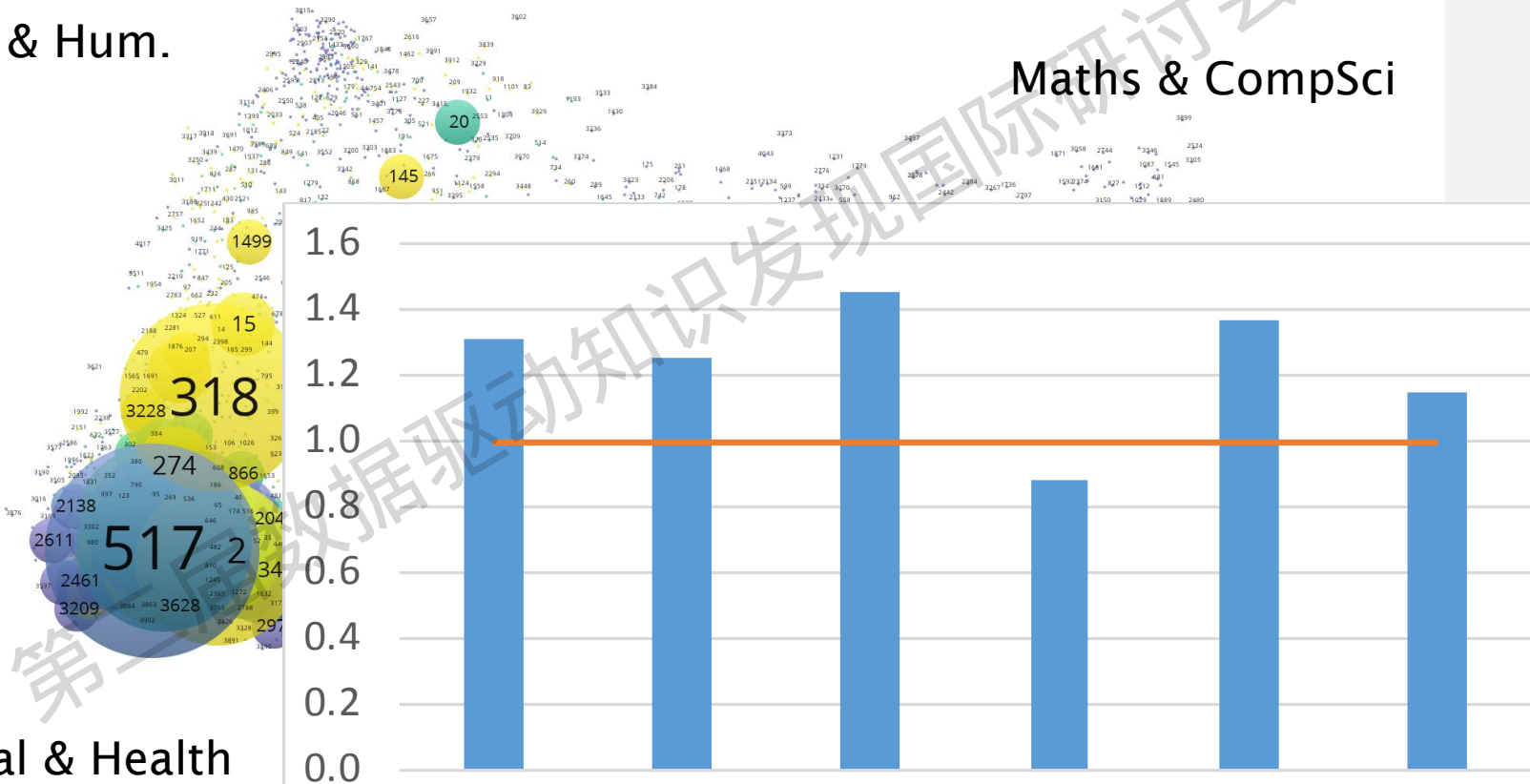
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# Policy connectedness of areas of the Chinese journal of cancer research

Social Sci & Hum.

Maths & CompSci



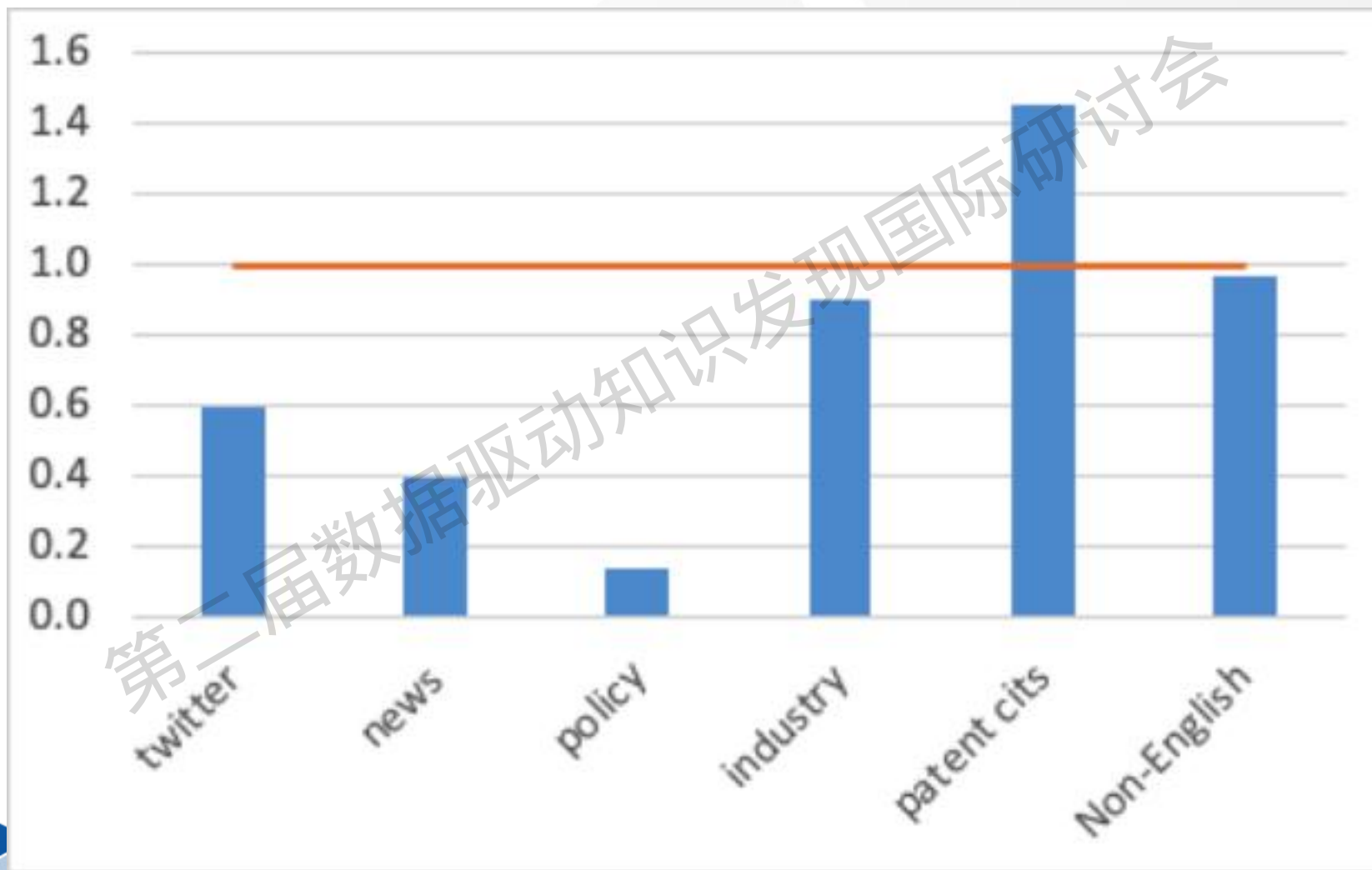
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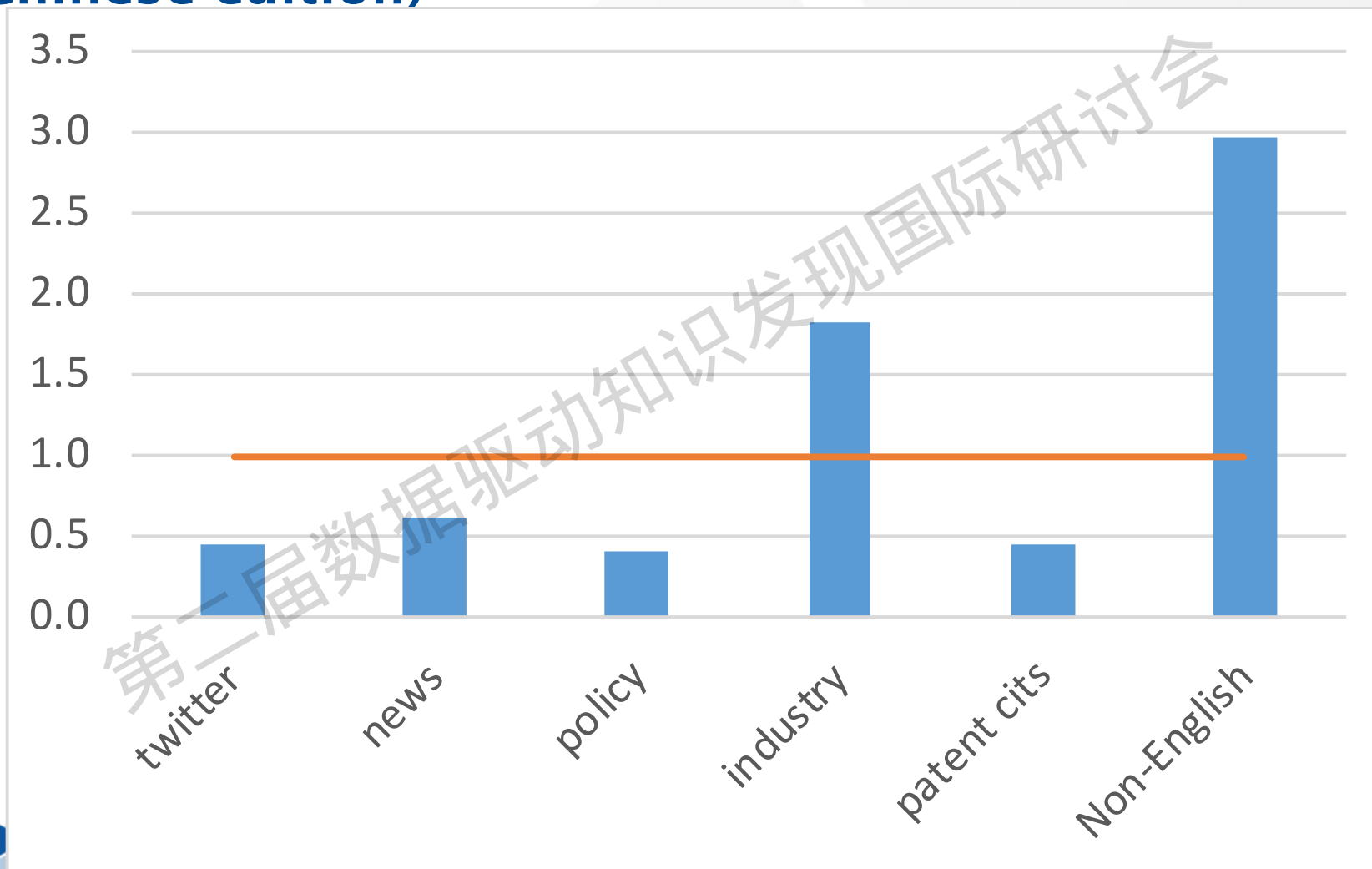
## Some other examples

# Connectedness of the JOURNAL OF THE CHINESE CHEMICAL SOCIETY





# Connectedness of the CHINESE JOURNAL OF GEOPHYSICS (Chinese edition)



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# Conclusions

# Conclusions

- Societal impact of research should be framed as productive interactions or connectedness to society;
- There is variety of signals representing different dimensions;
- The connectedness of actors should be measured at the level of the areas in which they are active: ABC to society.

More info in Blogpost at [www.cwts.nl](http://www.cwts.nl)  
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