Elsevier Research Intelligence

Analytical Services
Catalog of Offerings

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Empowering Knowledge™
Not just data, but insights

The indicators presented in our analytical reports are based on publication and citation data, full text article downloads, Mendeley data, and macroeconomic data. These are derived from high quality sources such as Scopus®, ScienceDirect®, Mendeley, Total Patent®, your institution’s own data, and external sources.

The Analytical Services team adds value through careful analysis and the creation of reports that present clients with data-driven key findings. The resulting insights answer pressing research management questions and inform decisions related to funding allocations, research policies and strategies.

Not just data, but insights

The Analytical Services Catalog provides various analytical reports that are currently available, their standard specifications, and options for customization (see Section 3). In order to provide the best solution, and provide the most appropriate analysis, Elsevier’s Analytical Services takes a consultative approach to understand your goals and interests. Please consult your local Elsevier sales team or contact us via elsevier.com/research-intelligence to discuss how we can meet your specific needs.

Introduction

Analytical reports and services for measuring research performance

Elsevier’s Analytical Services provides accurate, unbiased analyses on research performance by combining high quality data sources with technical and research metrics expertise accrued over Elsevier’s 130 years in academic publishing. Our analytics team is experienced in serving policymakers, funders, and academic and corporate research institutions around the world.

Our offerings range from standard, targeted reports (see Section 1) to new analysis (see Section 2) as well as data delivery and web integration services to meet your research management needs. All reports can be combined to form comprehensive, multidimensional studies.

Get access to key statistics of the world’s top 70 research nations

Learn about your country’s research performance through findings on:

- R&D investment and human capital
- Patents filed and granted
- Researcher mobility
- Top institutions’ output, growth, and impact
- Scholarly output and impact
- International and domestic collaboration
- Disciplinary strengths or weaknesses
- Downloads or publication views

Elsevier Analytical Services are proud to present the World of Research 2015, a magnificent 350 pages hardcover book that provides a snapshot of essential research indicators for the most prolific countries or regions in the world.

The book contains over 70 national profiles at your fingertips and comprises general statistics and graphs along with analyses and interpretations.

Learn more about the World of Research 2015 and order your copy now!

elsevier.com/solutions/analytical-services/ wor2015
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1. Standard Analyses

What are the most widely-accepted and used measures of research performance? Standard analyses provide key metrics along various dimensions and can be divided into four groups.

The first of these is focused on measuring the output and impact of scientific publications in order to create an overview of an entity's strengths and weaknesses. It is an essential part of most performance evaluations.

The second group of metrics revolves around researcher mobility, measuring the inflow and outflow of knowledge. In addition to quantity, these analyses look at the quality of research of each subject, allowing you to identify where the most productive, the most senior, and the most impactful researchers are going to or coming from.

The third group of our Standard Analyses focuses on collaboration amongst researchers. Are they co-authoring publications with others, and if so, are these collaborators geographically close or do their networks span the entire globe? This analysis further highlights which collaborations are the most beneficial to an entity and its peers.

The fourth group investigates to what extent research output is used, in particular by the corporate sector. Furthermore, the report tracks the collaboration and researcher mobility between academia and the corporate sector.

Standard specifications for the analyses presented in Section 1 (Unless otherwise specified):

**Deliverable formats**
- A written report in pdf, with text and commentary (AND/OR)
- An Excel spreadsheet, with annotations and visualizations (AND/OR)
- A PowerPoint presentation, with notes and commentary

**Benchmark**
1 (either global or regional)

**Subject areas**
27 Scopus subject areas

**Delivery**
20 days after signature

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1.1 Output, Growth & Impact: Showcase Your Research

These analyses provide an overview of your country or institution's scientific performance. Identify your strengths, weaknesses, and performance relative to peers.

- How does your publication output, growth, and citation impact compare to rest of the world and to selected peers?
- Which subject fields show remarkably high output and/or exceptionally high citation impact?
- Which subject areas have the strongest growth?

This report benchmarks your performance against the world or relevant region, and selected comparators for any of the following metrics:

- Output metrics include the absolute number of publications, the relative article share, and the Compound Annual Growth Rate (CAGR).
- The most important impact metric used in this report is field-weighted citation impact. One of the most sophisticated indicators in the modern research metrics toolkit, this indicator of citation impact allows one to compare the impact of articles across different document types (article, review or conference proceeding paper), publication years, and subject fields.

Recommended Recurrence/Update

Annual update for up to 2 years (e.g., 3-year contract)
1.2 Researcher Mobility: Focus on Your People

This report analyzes the mobility of researchers in a specific country or institution.

- How attractive is your country or institution for researchers?
- From and to where do your talented researchers come and go?

In the past, researcher mobility has been framed in terms of “Brain Gain” or “Brain Drain”, suggesting a rather black-and-white scenario with ‘winners’ and 'losers’. This perspective has given way to the more nuanced concept of “Brain Circulation”. In this view, the skills and networks built by researchers while abroad provide benefits to their home country’s research base both if they eventually return and even if they do not return but remain abroad as a collaborative diaspora.

In our report, we distinguish the several types of mobility categories:

- **Outflow**: researchers leaving from a country or institution and not returning
- **Inflow**: foreign researchers moving into a country or institution and not leaving
- **Transitory**: researchers who moved into a country or institution, stayed for a short period (2 years or less) and moved on to a different country or institution
- **Returnees outflow**: researchers who left a country or institution and returned
- **Returnees inflow**: foreign researchers who moved into a country or organization and returned to their originating country or organization
- **Sedentary**: researchers who do not appear to leave their country or institution at all

For each of the categories, we include statistics on the percentage of researchers, their relative productivity, relative seniority, and citation impact.

This report provides valuable insights on the attractiveness of a research environment. By analyzing the performance of your institution or your country’s researchers with different mobility types, this report highlights which types of researcher mobility are beneficial to your institution or your country. This in turn may assist policy makers in deciding which types of researcher mobility to stimulate and what the best stimulation strategies are, e.g., by setting up collaboration programmes or via strategic funding.

### Non-standard specifications for this analysis

- **Time period**: Over 18 years of Scopus data (1996-present)
- **Peers**: 5 selected comparators
- **Extras**: Top 10 countries or institutions for inflow/outflow

### Recommended Recurrence/Update

- **Two biennial (once every two years) updates**
  (e.g., 5-year contract)

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![Figure showing researcher mobility analysis for the UK.](image)
1.3 Collaboration: Building and Improving Partnerships

This report analyzes the extent of your country or institution’s collaboration and the effects of different types of collaboration on citation impact.

- In what areas does your country or institution collaborate the most internationally? How much is that as a percentage of your country or institution’s total output?
- Who are the top 20 most prolific collaboration partners according to the effect of the collaboration on both partners’ citation impact?

Research collaboration is significantly and positively associated with the citation impact of the resulting publications. Collaborating on a study can increase the overall performance of your institution or country as well as its visibility across borders. Therefore understanding current collaboration patterns is crucial toward maximizing the returns to collaboration.

This report provides a high level overview of current collaboration of different types, then a closer look at the actual collaboration partners. The research informs which collaborations are beneficial to the target country/institution and the collaboration partner, which are beneficial to neither, and which are beneficial to only one of them.

For our analyses, we distinguish between the following types of authorship:

- **Single author publications**: no collaboration
- **Institutional collaboration**: all authors are from the same institution
- **National collaboration**: authors are from different institutions, but within the same country
- **International collaboration**: at least one author is from an institution of a different country

Non-standard specifications for this analysis

**Regional collaboration**
We explore collaboration among authors from multiple countries in the region (e.g., Europe, Middle East, Africa).

**Collaboration network**
We use a network map to show which countries/institutions/researchers are collaborating closely among each other.

**Field-weighted internationalization score**
We normalize collaboration rate by field average to enhance comparison of the internationalization of institutions with different subject focuses.

**Recommended Recurrence/Update**

- **Annual update for up to 2 years**
  - (e.g., 3-year contract)

**Collaboration entities**
If reporting on an institution, we can also look at top collaborating regions or countries with that institutions, and vice versa for reports on countries.

This figure shows which collaborations are most beneficial (both for a region and its partners) based on calculating the average field-weighted citation impact of those collaborations. Reference: The International Comparative Performance of the Welsh Research Base 2013.
1.4 Knowledge Exchange: Economic Development

The knowledge exchange report combines different views on the collaboration between the academic and industry sector.

Economic development, as analyzed in this report, is characterized by knowledge exchange: a two-way transfer of ideas and information between academia and industry. Since knowledge resides with people and not in documents, much knowledge is tacit or difficult to articulate. Consideration is given here to indicators of explicit (codified and transferable) academic-industry knowledge exchange such as co-authored publications, citations to research in patents, cross-sector article downloads and researcher mobility.

The aim is to provide academic institutions with insights in the usage of their output by the industry sector, the impact of their collaboration with corporate institutions, and whether their research has led to innovation.

Institutions can use insights and findings from this report to find industry partners to fund mutually beneficial projects, or commercialize academic research.

A Knowledge Exchange report includes the following analyses:
- Cross-sector co-authorship
- Cross-sector researcher mobility
- Research usage: Patent citations
- Research usage: Downloads by sector (i.e., academic, corporate, government and medical)
- Research usage: Mendeley readership

Recommended Recurrence/Update

Annual update for up to 2 years (e.g., 3-year contract)
2. Beyond the standard reports

The analyses presented in this section are our latest efforts to innovate and adapt to our clients’ needs. They feature novel methods of analysis (such as Fingerprinting) or target entities (metropolitan areas).

2.1 Metropolitan Area Report

Normally, each analysis or report is centered on a single institution or country. For some institutes or government bodies, it may be insightful to widen or narrow the scope to a particular region.

Cities around the world compete to attract talent, jobs and investment. How well they define and communicate their competitive advantages will determine whether the future is one of growth and prosperity or one of decline and difficulty. The Metropolitan area report explores how a metropolitan area is building its future on a foundation of research and innovation to create a sustainable knowledge economy and identifies its strength for attracting investment.

For defining the metropolitan area (and comparator areas), several options exist: using existing definitions – e.g. NUTS (Nomenclature of Units for Territorial Statistics) for Europe and MSA (Metropolitan Statistical Area) codes for the US – or include all institutions within an X-mile radius of a city center.

A Metropolitan Area report includes the following analyses:
- Output & Impact, overall and breakdown by sector
- Cross-sector collaboration, overall and breakdown by within-metro area versus outside-metro area
- Academic collaboration, including a percentage of intra-metropolitan area collaboration versus other types of collaboration
- Research usage: Patent citations and downloads of publications

Recommended Recurrence/Update

Annual update for up to 2 years (e.g., 3-year contract)
2.2 Research Area Report

This report focuses on one or more research areas to give a comprehensive view on the research performance of these research areas.

There are often strategic reasons to investigate one or more research areas in greater detail. This may be because they play an essential role in a country or institution’s research profile, or they are attracting great interest from the academic community, or they influence the development of other research areas.

Elsevier employs various ways to define research areas, ranging from using pre-defined journal categories to searching for keywords, and to applying our sophisticated Fingerprint technique. The best way depends on the features of the research areas and the available inputs for the study.

This report covers the following standard reports:

- Output, growth and impact,
- Collaboration,
- Knowledge transfer,
and can be naturally combined with the report Emerging Topics (see Section 2.3).

Non-standard specifications for this analysis:

Outward focus: Coverage of publications of these research areas across journal categories.

Wider academic impact of research: Extent to which the research in these particular areas are citing or being cited by publications from other research fields.

Recommended Recurrence/Update:

Annual update for up to 2 years (e.g., 3-year contract)

This figure shows the field-weighted citation impact and compound annual growth rate in a research area and its sub-themes. Reference: Stem Cell Research: Trends and Perspectives on the Evolving International Landscape 2013.

The world map depicts top corporate institutions collaborating with the selected comparator countries in one research area. Reference: Brain Science: Mapping the Landscape of Brain and Neuroscience Research 2014.
Science is a dynamic enterprise, and in order for researchers and institutions to stay at the forefront, they need insights on the newest emerging trends.

Moreover, by drawing on both traditional (citations) and alternative metrics (download usage), this report provides multiple perspectives on the current trends in research.

Elsevier’s Fingerprint Engine uses natural language processing techniques and thesauri to analyze the information contained in textual publication data such as title and abstract, and assigns to each publication a collection of key concepts that represent it. Key concepts based on Fingerprint technology are of higher quality and more representative than standard sets of keywords which often suffer from problems such as duplicates, synonyms, and inclusion of irrelevant terms.

Semantic maps using advanced co-occurrence or co-citation analysis will then be used to cluster key concepts to identify emerging topics to inform researchers, research managers and funding bodies on the newest trends.

2.3 Emerging Topics

Science is a dynamic enterprise, and in order for researchers and institutions to stay at the forefront, they need insights on the newest emerging trends.

For example, prior to 1999 and the full sequencing of the human genome, whole areas of study such as genomics and epigenetics did not exist. Today, they are amongst the largest growing subfields in biology.

This report helps identify, for a given discipline (e.g., Mathematics, Agriculture, etc.), what those emerging trends are and who are the trendsetters.

- What are the top clusters of keywords being downloaded?
- What are the top clusters being cited?
- Which institutions are publishing the most articles related to these trends?

Combining the power of the Elsevier Fingerprint Engine, ScienceDirect download data, and Scopus citation data, we identify the top keywords and concepts in a given discipline for the most recent years. Through analyzing this data, the report provides more granular details on both the source of and the audiences for these top trends.

This figure shows the clustering of top concepts in a research area. Colour indicates topics formed by clusters of concepts.

Recommended Recurrence/Update

Annual update for up to 2 years (e.g., 3-year contract)
Collaboration among multiple research areas is a growing trend in research nowadays. By gathering and integrating the knowledge from multiple research areas, the collaboration is believed to increase the citation impact of the research and stimulate the generation of breakthroughs in research.

We use a novel method to define interdisciplinary research. The method relies on the central principle that if an article is cited by/references articles that are relatively 'far' from the article itself, it is an indication of inter-disciplinarity. If an article is cited by/references articles that are relatively 'close' to the article itself, this is indication of single discipline.

In this way, the method does not rely on pre-defined subject areas. It also takes into consideration that the research landscape is dynamic: what is considered interdisciplinary today may be disciplinary tomorrow.

This report covers the following topics in the standard setting:

- Output, growth and impact in interdisciplinary research
- Collaboration in interdisciplinary research
- Knowledge exchange in interdisciplinary research
- Top institutions in conducting interdisciplinary research
- Main subject areas of the authors involved in interdisciplinary research (e.g., whether physicists frequently collaborate with chemists in interdisciplinary research)

This report addresses an important topic in the research landscape by investigating to what extent research is interdisciplinary and how it affects the impact of research.

Non-standard specifications for this analysis

- Knowledge exchange in interdisciplinary research
- Top institutions in conducting interdisciplinary research
- Main subject areas of the authors involved in interdisciplinary research (e.g., whether physicists frequently collaborate with chemists in interdisciplinary research)

Recommended Recurrence/Update

Annual update for up to 2 years (e.g., 3-year contract)

The figure shows the percentage of country’s total publications that belong to world top 10% most interdisciplinary research.
3. Additional Customizations

Naturally, we are open to discuss any possible adjustments to these analyses that you may require. Some examples might be:

- Different time period (default: most recent 5 years)
- Custom subject area mapping (default: ASJC). We can also offer OECD subject categories or even produce a customized mapping.
- Other comparator entities (default: institutions or countries)
  - Groups of institutions (e.g., Russell Group, Ivy League)
  - Large Regions (e.g., Middle East)
  - Cities/Metropolitan regions (e.g., London, Paris, NUTS regions)
- External data sources:
  - Publicly available sources (e.g., NSF NCSES, IPEDS, and BLS (US), HESA (UK), Statistics Canada, OECD, UNESCO, EuroStat, etc.)
  - Institution’s own data: we are fully capable of integrating your institution’s data to complement our analyses
- Stand-alone visualizations

2.5 Gender in Research Report

This report investigates research performance from a gender perspective to help design strategies on gender in research.

Only 15% of full professors in European universities are women, and women are under-represented on decision-making scientific boards in almost all European countries and other regions of the world including Middle East and Africa. A diversity of entry points and perspectives in research strengthens the quality of knowledge production, the relevance of research and the ability of society to innovate. Gender perspectives are an important aspect of this diversity. This report provides contextual information on an entity’s research performance from a gender perspective by answering essential questions such as:

- What is the gender ratio among researchers? What percentage of the entity’s publications are contributed by female researchers?
- How do female researchers compare to their male counterparts in terms of research productivity, seniority and the citation impact of their research output?
- Are female researchers more active in research collaboration? Do these collaborations result in high quality research?
- Are female researchers more active in certain research fields? Do they focus on different topics compared to their male counterparts?

Using the Scopus author profiles and a database containing gender information of different names in different countries in the world, we identify the gender of the authors in Scopus. By matching the gender information to Scopus publication and citation data, this report helps identify the strengths and weaknesses of an entity’s research performance from a gender perspective and design strategies to even the gender inequalities.

Recommended Recurrence/Update

Annual update for up to 2 years (e.g., 3-year contract)

References


* We can identify the gender of around 60% of authors in Scopus.

This figure shows a heat map of global download shares for a particular university.