

# **Bibliometric analysis of HRB supported publications: 2018-2022**

Executive summary



22 March 2024



We would like to thank the Digital Sciences team for the Bibliometric Analysis and final report prepared by them on behalf of the HRB.

**Disclaimer**

Any views expressed in this report are those of the authors and not necessarily those of the Minister for Health, the Department of Health, or the Health Research Board.

This is an executive summary of the report 'A Bibliometric Analysis of HRB Supported Publications 2018-2022'. The full report is available at [Bibliometric Analysis of HRB Supported Publications \(figshare.com\)](https://figshare.com)

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## Introduction

This report presents the results of a detailed bibliometric study of HRB-funded publications in the period 2018 to 2022. Where possible and relevant, an overview of HRB-funded publication data from 2000 to 2022 has been included to facilitate analysis of broader trends. The quantitative analysis for this study was commissioned from [Digital Science](#), a world-leader in bibliometrics.

Bibliometric analysis of publication data has long been regarded as a robust quantitative, statistically based method to estimate scientific quality and impact of research findings at many levels (field, type of research, institution, country etc.) through several indicators. Highly regarded research, often evidenced by being highly cited, plays a significant role in influencing subject reviews, systematic reviews, consensus statements, and evidence-based clinical guidelines, ultimately shaping clinical care models and health policies. Peer-reviewed journal publications form the universal currency of research, enabling colleagues to build upon existing work and facilitating knowledge expansion. However, solely counting the number of publications cannot adequately gauge the value peers place on specific research results, the extent to which these findings are adopted within the research community, comparisons with other similar research groups, or trends in the development or decline of research fields. To examine these aspects of the publication landscape, bibliometric analysis employs quantitative, statistically based methods to estimate research quality and impact.

In 2014, the HRB conducted a comprehensive bibliometric analysis of publications stemming from awards granted between 2000 and 2012. This analysis was subsequently expanded upon in 2018 to encompass the bibliometric impact of peer-reviewed publications supported by the HRB from 2013 to 2016. As a result, the HRB sought a bibliometric service to conduct a follow-on analysis of peer-reviewed publications supported by HRB funding for the five-year period of 2018-2022, with additional broader trend data included from 2000 to the end of 2022.

This latest analysis highlights certain fields of research where HRB publication outputs have grown, including Health services and Systems, subsequent to targeted investments in successive HRB strategies. The report documents positive trends in open access publications, fewer uncited publications, and higher than average citations in most health research fields when compared with other funders in Ireland. It also underlines the greater potential for reach and impact as a result of transnational research, based on higher citations of papers co-authored with international collaborators.

Importantly, this is the first such analysis to document policy impact through citations on policy documents and will hopefully serve as a useful benchmark for future years, as HRB's investment portfolio in programmes aimed at policy impact grows.

## Report Content

The analysis is focused on bibliometric assessment of HRB funded research outputs within Digital Science's [Dimensions database](#). The Dimensions database includes research from a vast range of publishers, journals, funders, and specialised platforms. The analysis allows comparisons of research published by researchers from Ireland, as well as a national and international benchmark organisations as agreed with HRB. Benchmark organisations include - Science Foundation Ireland, Irish Research Council, Netherlands Organisation for Health Research and Development, Australia's National Health and Medical Research Council, Health Research Council New Zealand, and Nova Scotia Health research. The publication data set was also matched to level 1 and level 2 of the Australia and New Zealand Standard Research Classification (ANZSRC) to allow for analysis based on fields of research.

## Main Findings

### Publication Volume and Make Up

1. HRB-funded publications experienced a steady growth from 2000-2022. The current analysis between 2018-2022 included 3,189 publications generated from HRB funding. HRB-funded publications accounted for 2.9% (in 2019) to 3.4% (in 2020 and 2021) of total Irish publication output.
2. Articles have been the most common publication types acknowledging the HRB as a funder. Book chapters used to be the second most frequent publication type from around 2008-2018, until chapters largely disappeared and were surpassed by preprints, which are now more numerous than chapters ever were; this is a global trend visible for HRB publication types.
3. In terms of publication volume, the most prominent HRB fields of Research (as categorized by ANZSRC Level 1 are 1) Biomedical and Clinical Sciences, 2) Health Sciences, 3) Psychology and 4) Biological Sciences. Going a level deeper with the ANZSRC Level 2, by 2022, Health Services and Systems (Health Sciences) has emerged as the most prominent field by publication volume followed closely by Clinical Sciences (Biomedical and Clinical sciences). Clinical Sciences dropped to 2<sup>nd</sup> place after 2018.

### Journals

4. The majority of HRB publications between 2018 and 2022 used Open Access options. Only 15% of publications were published using Closed access.
5. 1,472 (48.1%) were published using full Gold open access journals, overwhelmingly in **HRB Open Research** (444). This indicates that HRB's Open Access Policy is having a real impact. BMJ Open and PLOS ONE emerged as the second and third most popular journals to publish in; both are Gold open access. MedRxiv (Green) and BioRxiv (Green) complete the top 5. The popularity of BMJ Open and PLOS ONE is consistent with the previous analysis between 2013-2016 where these journals emerged as the most popular.

6. Source Normalized Impact per Paper (SNIP) was used to measure a journal's contextual citation impact within its field. Only journals with an assigned SNIP value were included in the analysis. Within journals with a SNIP value, the British Medical Journal's open access journal BMJ Open was the largest publication route for HRB-funded research with 77 publications, followed by PLOS ONE with 59 publications. Both are broad medical journals with moderately high SNIP scores of 1.3 and 1.4 respectively, indicating solid scientific influence. Journals with the highest SNIP are the Lancet or its affiliated journals- Lancet Neurology, The Lancet Respiratory Medicine, The Lancet Psychiatry, and The Lancet Oncology. 16 HRB funded publications appeared across these journals, with each journal receiving anywhere between 1 and 6 HRB-funded publications. Lancet Neurology and JAMA received 6 HRB funded publications each.

## Scholarly Impact

7. One of the indicators used in the analysis to measure scholarly impact was **Field Citation Ratio (FCR)**. This is calculated by dividing the number of citations a paper has received by the average number received by documents published in the same year and in the same Fields of Research category. FCR for this analysis was calculated for all publications in Dimensions which are at least 2 years old and were published in 2000 or later. Values are centred around 1.0 so that a publication with an FCR of 1.0 has received exactly the same number of citations as the average. In all fields, HRB-funded publications outperform global averages by 2 to 4 times, showing the high citation impact of HRB Research.
8. In terms of **average citations**, HRB outperformed other publications originating in Ireland in all Fields of Research but three<sup>1</sup>. Indeed, two thirds of HRB's research discipline portfolio as measured by ANZSRC Level 2, has a Citation Ratio above 1. This suggests that HRB funding yields high impact research relative to broader Irish output across most fields analysed.
9. Particular strengths for HRB, as measured by average citations, were evident in Clinical Sciences and Oncology and Carcinogenesis -where HRB-funded publications outperformed those from other major Irish health research funders.
10. Comparing with the International comparison group of health research funders, HRB's 17.7 average citations per publication lags behind larger funders like Australia's NHMRC (22.9) and New Zealand's HRC (20). However, HRB outperforms Ireland's IRC (16.1) and the smaller Nova Scotia funder (16.2) for impact.
11. **Top 1%:** Clinical Sciences had the highest overall publication volume as well as the highest number of top 1% most cited publications, with 45 publications (6.0% of its output) ranking in the top 1% globally. In total, 1.8% of HRB publications ranked in the top 1% most cited globally. This indicates substantial high impact output.
12. **Uncited Research:** The HRB publication portfolio had 11.6% uncited publications over 2018-2022, compared to 50.9% for global publications. In the previous analysis, just over 16% of HRB-funded publications remained uncited, which shows a positive trend in the reduction in uncited research over the years. Public Health had the highest proportion of uncited publications followed by Health Services and Systems and Reproductive Medicine. Globally,

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<sup>1</sup> The 3 Fields of Research are Public Health, Nutrition and Dietetics and Biochemistry and Cell Biology

'Health Services and Systems' has 30% uncited publications, so HRB's 16.0% compares favorably.

13. In the previous analysis period, we see that clinical sciences had an uncitedness of 20.9% which has reduced to 9.3% in this more recent analysis. However, while the % of uncited Research is below global levels, HRB lags behind in the comparison group, with highest % of uncited work.

## Collaboration and co-authorship

14. 1,605 publications (52%) were internationally co-authored and had the highest impact with 20.4 average citations. 1,395 publications (46%) had only national co-authors with lower average citations at 13.0.
15. Oncology and Carcinogenesis, Reproductive Medicine and Clinical Sciences tended toward more international collaboration as indicated by co-authorship. Health Services and Systems, Nursing, and Immunology leaned more national, with roughly twice as many national versus international publications. In this analysis period, HRB-publications with international co-authors tended to have higher impact due to higher average citations. This trend is also seen in the comparison group of international funders.

## Policy Impact

16. This recent analysis was the first to document evidence of policy impact as determined by citations in policy documents. Between 2018 and 2022, 104 publications (3.2%) funded by HRB were cited in policy documents, as tracked by Dimensions. By comparison, other national funders had lower shares of funded publications cited in policy during this period. It is important to note that there are a limited number of organisations in Ireland that are indexed in Dimensions, and thus findable through this specific analysis.<sup>2</sup>
17. Policy and Practice relevant Organisations which have cited HRB funded publications include WHO, ESRI, OECD, and the Canadian Agency for Drugs and Technology in Health.

## Conclusion

In summary, HRB's assessment of bibliometric analyses as a methodology is that it represents one tool in a basket of tools available to assess a particular type of health research outcome; in this case publication impact. HRB's recent partnership with Researchfish will assist with the systematic and longitudinal tracking of a diverse range of other health research outcomes and impacts such as influence on policy and practice and wider societal and economic benefits. This will ensure that we are better able to capture the full picture of health research related impacts that HRB investment has generated.

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<sup>2</sup> The following Irish institutions producing policy documents are indexed in Dimensions: Economic and Social Research Institute, Department of Enterprise, Trade and Employment, Department of Justice, Department of Culture, Heritage and the Gaeltacht, Higher Education Authority, Citizens Information Board, Royal Irish Academy.

