



EXECUTIVE SUMMARY

A BIBLIOMETRIC ANALYSIS OF RESEARCH PUBLICATION OUTPUT
SUPPORTED BY THE HEALTH RESEARCH BOARD (2013–2016)

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Executive summary

This report presents the results of a bibliometric study of peer reviewed publications fully or partially funded by the Health Research Board (HRB). The bibliometric analysis for this study was commissioned from CWTS Leiden, a world-leader in this area. The results of that analysis were compared, where possible, to a previous Bibliometric study undertaken by the HRB in 2014, which looked at HRB publications from 2000-2012.

HRB-supported publications between 2013 and 2016 were matched to the *Web of Science* database and were linked to a number of units of analysis. The benchmark units chosen by CWTS Leiden reflected either similar size (HRC New Zealand) or similar focus (MRC UK and NIHR UK), and HRB publication output was also compared to the publication output of Ireland as a whole. In addition publications were matched by the HRB to Grant types (Projects & Programmes, Infrastructure & Networks, Capacity Building & Leadership, and Co-funded Awards) and HRB Strategic Pillars (Basic Biomedical, Applied Biomedical, Clinical, Population Health and Health Services Research).

The internal coverage, which is an estimate of the importance of *Web of Science* indexed publications for researchers, was above 75% for all units of analysis (average 90.4%.) This indicates that only a small share of the publication output by these units was excluded from this bibliometric analysis. For the citation impact analysis, only publications published in 2013 and 2014 have been taken into account (citations included until 2015).

Key findings

Publication output:

- 1,759 HRB-supported publications in the 2013-2016 publication period were matched to the *Web of Science*, of which 1,730 were citable and were used in the analysis. These included 1,458 articles, 263 reviews and 9 letters. The number of HRB funded publications is increasing over time, and is now responsible for a considerable share of all Irish publications in some journals.
- A small number of awards that commenced as far back as 2001 were still disseminating results through journal publication up to 14 years later. For awards made from 2004 onwards the number of publications produced in the period 2013-2016 became significant, representing a time to publication of 6-7 years at minimum.
- The performance of publications arising from all Grant Types and Strategic Pillars, in terms of citation impact, journal impact and positioning in the top 10% of publications in the field, was above the world averages of 1.0 and 10%, respectively, and higher than Ireland as a whole.

Citation impact, general:

- On aggregate, HRB funded publications a citation impact well above world average and higher than the citation impact of all publications linked with Ireland. One sixth of HRB funded publications belong to the top 10% of highly cited publications in their fields.

- 7.5% of HRB publications had accumulated citation impacts (MNCS) greater than twice the world average and in some cases many times the world average. Their citation impact would be expected to increase even further in the coming years, given that they have been so highly cited so soon after publication.
- In terms of citation impact, two groups of funding organisations could be identified. Publications supported by the HRB and HRC NZ had a high impact (higher than Ireland as a whole) while publications supported by the UK based funding organisations MRC and NIHR have a very high citation impact. However, this pattern was not consistent at the level of Grant Type, Strategic Pillar or Web of Science research category.
- At the level of Grant Type and Strategic Pillar the citation impact of 'Infrastructure and Networks' and of 'Health Services Research' had the highest citation impact of all HRB publications. One fifth of awards classified as 'Health Services Research' or as 'Co-funded Awards' produced publications in the top 10% in their field.

Citation impact of research fields:

- There was a strong focus on a limited number of fields in each of the HRB Strategic Pillars, with a maximum of nine fields needed to cover more than 50% of the publication output of each Strategic Pillar. For all HRB publications, 12 fields accounted for more than 50% of the publication output.
- The HRB's most important fields of activity in terms of share of publications, were 'Medicine, General & Internal' and 'Neurosciences'. 'Neurosciences' was also a top three field of activity for the other benchmark funding bodies.
- In the top 24 fields, in terms of share of publications, HRB supported publications had a citation impact around, above or very much above world average, although in many fields the UK based funding organisations have an even higher citation impact.
- In some research fields the citation impact of all Irish research publications was (slightly) higher (e.g. 'Biochemistry & Molecular Biology' and 'Cell Biology') than the HRB.
- Publications funded by any of the benchmark funding organisations (including HRB) attracted a citation impact of twice the world average in the field of 'Psychiatry'. The high share of highly cited publications in the field of 'Psychiatry' resulted from publications that belonged to the Grant types 'Capacity-building and Leadership' and 'Projects and Programmes'.
- Some fields (e.g. 'Endocrinology & Metabolism', 'Immunology') with a relatively high HRB citation impact showed a huge range of citation impact scores among Grant types.

Journal and research profiles:

- A comparatively large share of HRB funded publications (and to a certain extent its benchmark units) were published in open-access journals 'PLOS ONE', 'BMJ OPEN' and 'Cochrane Database of Systematic Reviews'. Many of the journals in which a large share of HRB publications was published had a MNJS around world average or slightly lower. However, many HRB researchers have also successfully published in the top 100 ranked journals in the world.
- There has been a clear change in journal usage by HRB-funded researchers, when compared to the previous bibliometric study period (2000-2012), which may reflect the changing HRB focus towards patient oriented, population health sciences and health services research, especially since 2010.

- The ten journals that included the largest share of HRB funded publication output covered 12.9% of all research publications funded by the HRB, and had a considerable overlap with the journals mainly used for publications funded by the benchmarked UK funders.
- In general, similar patterns to the MNCS existed for the journals in which publications funded by the HRB and its benchmark units were published: a moderate Mean Normalized Journal Score (MNJS) for all Irish publications, a high MNJS for publications supported by HRB or by HRC NZ and a very high MNJS for publications supported by the UK MRC or the UK NIHR.
- On aggregate, the HRB, the UK MRC, and the UK NIHR had an MNJS that was lower than their MNCS, which indicates that the citation impact of the contributions they funded was on average higher than the impact of all publications in a journal.
- This ratio carried through into HRB Grant Types and Strategic Pillars and was particularly strong for 'Infrastructure and Networks' and 'Health Services Research', which suggests that publications arising from these Grant Type and Strategic Pillar are regarded highly by peers, who cite them in their own work.

Co-authorship and Collaboration:

- For HRB, its benchmark units and the Grant Types and Strategic Pillars approximately half of all publications resulted from international collaboration.
- For HRB funded internationally co-authored papers, there has been a steady upward trend over time and the share of such papers have risen from 33.8% (2000-04) and 43.8% (2008-12) to 48% of all HRB publications in the 2013-16 publication period. However, relatively speaking, international collaboration was not as common for HRB funded publications as it was for all publications involving researchers in Ireland, which had more than 60% internationally co-authored publications.
- For the HRB's benchmark units, high citation impact was associated with a large share of publication output from international collaborations. Publications resulting from international collaboration by HRC NZ have a citation impact which was somewhat higher than HRB's, but HRC NZ's citation impact for the other collaboration types was lower than HRB's. However, the collaboration types of the UK based funding organisations with the lowest citation impact still surpassed the HRB's high citation impact for international collaboration.
- The HRB's non-collaborative (institutionally co-authored) publications, which accounted for about 25% of all publications, yielded the highest citation impacts. This is at odds with the collaboration profile of the benchmark units (highest citation impact for international collaboration).
- Publications arising from the Strategic Pillars 'Health Services Research' and 'Clinical Research' had the highest citation impacts for non-collaborative publications.

Citedness:

- On aggregate, just over 16% of HRB-funded publications (2013-2014) remained uncited in 2016. This is in line with the comparator funding organisations and was around half the percentage of uncitedness for all Irish publications. The Strategic Pillars 'Basic Biomedical Research' and 'Clinical Research' had a comparatively low and high uncitedness, respectively. This may be due to difference in citation practices in these different research fields.

APPENDIX 1: FINAL DATA SET USED IN ANALYSIS

Table A.1 Final dataset (publication years: 2013-2016)

Unit of analysis	Non-citables	Articles	Reviews	Letters	Total publications
HRB	29	1,458 ¹	263	9	1,759
Benchmark units					
IRELAND	11,812	26,638	2,473	785	41,708
HRC NZ	3	1,157	97	0	1,257
UK MRC	34	11,823	1,250	7	13,114
UK NIHR	88	14,838	3,133	6	18,065
Grant Types					
Capacity-building and Leadership Awards	6	374	72	2	454
Co-funded Awards	4	55	6	0	65
Infrastructure and Networks	3	139	14	0	156
Projects and Programmes	16	891	171	7	1,085
Strategic Pillars					
Applied Biomedical Research	7	549	97	0	653
Basic Biomedical Research	0	42	9	0	51
Clinical Research	11	354	89	4	458
Health Services Research	7	272	49	3	331
Population Health Sciences	4	244	19	2	269

¹ Three articles belong to two Strategic Pillars, one article belongs to two Grant Types.

APPENDIX 2: Summary of bibliometric performance

Table 3.1 Overview of bibliometric performance by HRB, benchmark units, grant types, and strategic pillars

Unit of analysis	Output (2013-2016)	MNCS	P(top 10%)	PP(top 10%)	MNJS	PP(uncited)	PP(self citations)	Internal coverage
HRB	1,730	1.34	82.13	15.7%	1.20	16.1%	19.9%	90.4%
Benchmark units								
IRELAND	29,890	1.11	937.04	11.5%	1.10	32.9%	23.3%	75.7%
HRC NZ	1,254	1.29	51.37	13.4%	1.31	20.2%	24.5%	87.0%
UK MRC	13,080	1.87	708.93	22.9%	1.74	11.0%	18.4%	92.7%
UK NIHR	17,976	1.61	824.98	20.4%	1.51	16.8%	19.0%	84.8%
Grant Types								
Capacity-building and Leadership Awards	448	1.30	17.73	14.6%	1.21	14.0%	18.0%	86.1%
Co-funded Awards	61	1.33	2.23	14.1%	1.36	18.0%	24.0%	95.4%
Infrastructure and Networks	153	1.75	9.27	19.8%	1.29	15.2%	15.3%	83.6%
Projects and Programmes	1,069	1.30	52.91	15.7%	1.18	17.0%	20.8%	92.0%
Pillars								
Applied Biomedical Research	646	1.26	34.23	14.3%	1.18	14.8%	19.8%	95.7%

Bibliometric analysis of HRB-supported publications 2013-2016

Unit of analysis	Output (2013-2016)	MNCS	P(top 10%)	PP(top 10%)	MNJS	PP(uncited)	PP(self citations)	Internal coverage
Basic Biomedical Research	51	1.27	3.25	12.5%	1.16	8.7%	11.9%	97.0%
Clinical Research	447	1.38	15.84	15.4%	1.19	20.9%	24.1%	89.2%
Health Services Research	324	1.55	16.10	20.5%	1.26	15.5%	18.8%	72.7%
Population Health Sciences	265	1.38	12.72	17.1%	1.24	17.3%	18.9%	83.2%