

Measuring Matthew Effects in science

and how the application of Responsible Research and Innovation & Open Science can influence it

Objectives and research questions

The main research objective in this part of the project is to identify and measure the extent of Matthew Effects in science and how they are influenced by the application of RRI and Open Science principles.

Three questions lead the research activities:

1. *What motivates academics with regards to their research practices and publishing behaviours, using various indicators (including the MoRRI)*
2. *Who benefits and to what extent from the application of RRI and Open Science principles, along with criteria of geographical location, gender, institutional standing, etc.*
3. *What is the uptake of RRI and Open Science in Training Policy*

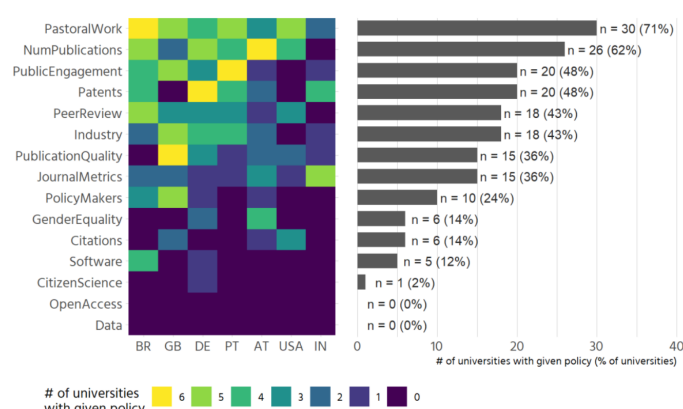
Status and developments

To understand the motivation of certain behaviours and practices, the research centres on several actions.

The first research activity developed two datasets: 1. Promotion, Review and Tenure and 2. Research Papers. The datasets are presented in a machine-readable form and enable the quantitative analysis of the links between criteria for academic progression and academic productivity. They also enable the exploration of "if and how the academic behaviour has links with policies and RRI & OS institutional practices".

Another research line is to answer the question of "*Who benefits and to what extent from the application of RRI and Open Science*". A three-phase approach will aid in answering this main question, by investigating sub-questions relating to limitations of accessing research literature and the relationship between academic performance and RRI & OS.

These questions will be answered by exploiting large datasets (e.g. [CORE Discovery](#) and



Microsoft Academic Graph), while the investigation will extend to various geographic locations, ranking of institute, and researcher gender.

The last research area will assess the participation of researchers in RRI & OS training across both geographical areas and RRI & OS topics. With the use of a survey, this work aims to explore researchers' familiarity with RRI & OS concepts and practices. With follow up interviews it will acquire in-depth information about specific researcher practices and institutional policies. This work will gather examples of practical implementation and the eventual impact of RRI & OS on researchers' daily research practices, and showcase whether these practices have an impact on researchers' career and promotion.

Next steps

The data presented in the aforementioned two datasets will feed into the task "Analysing RRI & OS incentives and indicators". To answer the research question relating to "What leads to Matthew Effects in Open Science", the work will entail drawing conclusions on the use of datasets, validating the approaches, analysing the data and presenting the scientific conclusions.

The survey on the uptake of RRI & OS in training will run at the beginning of 2021. It will be addressed to training activity beneficiaries and other academics who (may) have not received training over a variety of geographical locations. All this work will feed to the research conducted in other sections of the ON-MERRIT project and will contribute to the project's final assessment on Matthew Effect.



Outcomes

Nancy Pontika, Bikash Gyawali, Tony Ross-Hellauer, Thomas Klebel, Hannah Metzler, Helene Brinken, Antonia Correia, and Petr Knoth. *How do career promotion policies affect research publications and open access?* [in press]

Bikash Gyawali, Nancy Pontika, and Petr Knoth (2020). *Open Access 2007 - 2017: Country and University Level Perspective*. In: Proceedings of the ACM/IEEE Joint Conference on Digital Libraries in 2020 (JCDL '20). <https://doi.org/10.1145/3383583.3398606>

RRI: Responsible Research and Innovation
OS: Open Science
Matthew Effect: those who already have status can gain more, whereas those without status struggle more to gain it.

Involved institutions:
 Open University (WP leader), KNOW Center,
 University of Minho, University of Göttingen,
 TU Graz.

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