ACKNOWLEDGED RESEARCH FUNDING

DASHBOARD DATA DESCRIPTION

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METHODOLOGY AND FURTHER REFERENCES

A detailed description of the methodology used to generate the data, including the specific details of queries and processing can be found in the Supplementary Methodology section of Huang et al (2020)[1] which is the source of the information provided here.

DATA SOURCES AND OUTLINE

Data were collected from four main sources. Crossref Metadata was used to collate the population of outputs that were considered for analysis. Each DOI contained in this collection provided information on funding and publication dates. The FundRef dataset then provided further information on each funder, such as their type and geographical location. Bibliographic information was then obtained for Microsoft Academic, which allowed us to link objects with DOIs with institutions. Finally, the GRID dataset offered metadata about institutions, primarily for this analysis the institutions addressed, and therefore country.

LIMITATIONS

Research outputs that do not have an associated DOI are not included in this analysis. While this means we did consider the contribution of over 100 million outputs, there is still a substantial contribution to the scholarly record not currently covered by this identifier system. Additionally, Funder data only exists from the commencement of the FundRef initiative and is not complete, with quality diminishing the further back in time you go. Finally the bibliographic data source (Microsoft Academic) has substantial biases and limitations with respect to affiliation sources. These are minimised and less pronounced when working at aggregation at the country level as opposed to individual institutions however.

DATA GATHERING

For this analysis, we consider the set of all research outputs with Crossref DOIs as this target population. This is identified as the most practical approach that allows tracking and disambiguation of research objects using persistent identifiers.

Queries were run against a Microsoft Academic snapshot to result in a comprehensive set of outputs for each GRID and aggregated to the country level. Subsequently, these are filtered down to include only objects with Crossref DOIs. Objects were then aggregated up to the country level based on metadata about those institutions obtained from the GRID database.

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[1] Huang et al (2020) Meta-Research: Evaluating the impact of open access policies on research institutions https://elifesciences.org/articles/57067

DATA VISUALISATION

With the set of objects with a DOI linked to each country in the world, and those same DOIs now linked to their respective funding sources (where we also know the nature and location of these funders) we are able to visualise across a number of charts. These charts are described below, going left to right, top to bottom.

The following two charts show data at a global level

- **Ratio of Domestic to International Funding**: From the FundRef dataset we know the country of each funder, so we look across all the outputs for each country to understand the proportion of acknowledged funding that is coming from domestic (where the funder is located in the same country) or international sources (the funder is located in a different country). Each country is featured independently, however colours representing each region in the world are used in the global visualisations.

- **Funder Acknowledgements per Country**: This chart helps the reader understand the relative levels of funder acknowledgements by country in the dataset.

The following three charts are responsive to the Country Drop-Down Selector

- **Acknowledged Funders by Country of Funder**: Using the same metadata from the FundRef dataset, for the country selected we can see the proportional breakdown of funding acknowledgements from the top 9 countries with the remainder grouped into the 'other' category.

- **Acknowledged Funders by Year of Publication and Country of Funder**: With a focus on the top 5 countries of funding acknowledgements, this chart offers a time dimension to understand any potential trends over a 5-year period.

- **Funder Acknowledged in Publications by Name and Number of Acknowledgements**: The final chart does not focus on country of origin, but instead on individual funders. From left to right, we can see the top 15 individual funding sources from the selected country, with the vertical axis of the chart showing the total amount of acknowledgements for each of these funders.