

Data-Driven Insights for a Holistic Understanding of Research Culture

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Abstract

Research environments (and their measurement and tracking) are becoming increasingly complex, with rapid Artificial Intelligence (AI) advancements, interdisciplinary collaboration, and global connectivity shaping the way research knowledge is created and disseminated. Within this dynamic landscape, universities hold an ever increasing collection of valuable data, which are stored within core operational systems including research information systems, research management systems or grants databases, human resource systems and course management systems. This treasure trove of information, often overlooked and underutilised, not only serves as a valuable tool in guiding strategic decisions, but also could be further used to provide a comprehensive approach to monitoring research integrity and culture.

This critical reflection follows extensive conversations and debates around defining and assessing 'research culture'. How can we possibly measure something that has, up until now, been viewed as merely a concept? How can we generate useful metrics that reflect the culture of a research institution? Our reflections will draw attention to the potential of leveraging readily accessible information to gauge and benchmark research integrity and culture practices. We discuss how regular habitual integration of these data sources enables continuous monitoring and measurement of research culture as well as the ability to assist in the assessment of interventions or initiatives designed to improve it. We reflect on how this approach ensures that University leaders have a consistent and up-to-date understanding of the research environment through which they can identify strengths, pinpoint areas for improvement, and cultivate a more robust, inclusive, and transparent research ecosystem.

The current paper, through illustrative examples from one UK-based institution, explores the potential in harnessing existing data, such as collaborative trends and prevailing research practices, to gain valuable insights into the dynamics of academic research. In addition, we explore the advantages and drawbacks of using this data to develop potential metrics that can be used to recognise and reward a healthy research culture.

Keywords: research culture; data analytics; collaboration metrics; research integrity; open research

Introduction

Research culture is a critical component of any university's academic environment, shaping the way research is conducted, shared, and valued. It is a term that can be interpreted in various ways, which has created difficulties in tangibly measuring or assessing research culture. The Royal Society states 'Research culture encompasses the behaviours, values, expectations, attitudes and norms of our research communities. It influences researchers' career paths and determines the way that research is conducted and communicated'. Additionally, the University of Glasgow extends this definition, suggesting 3 distinct themes:

One in which colleagues (i) are valued for their contributions to a research activity, (ii) support each other to succeed, and (iii) are supported to produce research that meets the highest standards of academic rigour (Casci & Adams, 2020: np).

We can also apply a research impact lens when considering an institution's research culture journey. This should not just be approached through an academic lens, but also through broader societal and economic impact. Therefore, research culture through an impact lens may include the support and training offered to researchers embarking on their impact journey; the approach researchers adopt when engaging with external parties and beneficiaries; and, how societal impact is recognised and rewarded.ⁱ Research impact and research culture should not be understood as distinct entities, but instead as part of a symbiotic relationship, reliant on each other to achieve research excellence.

Even with the definitions outlined above, research culture heavily depends on one's own perspective and opinions. A study on research culture Initiatives in the UK, commissioned by the UKRI (2024), found that implemented initiatives covered a wide number of areas across the Research Culture framework reflecting a broad understanding of the term. This broad understanding makes effective evaluation of such initiatives

challenging. The report found the evaluation of submitted initiatives was often uncertain - emphasising the need for more robust evaluation approaches that demonstrate the effectiveness of research culture initiatives. It is important when attempting to measure and track improvements in research culture to recognise that research culture consists of two important elements:

1. Practical provisions, encompassing a nurturing environment where individual researchers are supported.
2. Wider research values, supporting a collaborative research environment that has a culture of integrity, good governance and best practice as defined in the Research Integrity Concordat.

In addition, we need to consider any bureaucratic or administrative burden when addressing either of these aspects. Nobody employed in this sector wants nor needs extra work. Research culture is something that should be embedded as a natural component of the institution's research lifecycle. Fortunately, the existing research environment is already rich with accessible data that can be instrumental in this endeavour. Leveraging such data enables universities to foster a more open and transparent research ecosystem whilst avoiding unnecessary data collection and administrative burdens.

We also need to be cognisant of the misuse of suggested research culture metrics . As Dr Lizzie Gadd rightfully points out in her *My research culture is better than yours* piece 'The risk of pitting us all against each other in some unholy research culture competition is that hyper-competition was always at the heart of so many of our unhelpful research cultures.' (Gadd, 2023).

By adopting an internally focused evaluation approach, universities mitigate the risk of inadvertently creating a competitive ranking system, especially if the success of any initiatives were to be used in a research assessment or evaluation exercise. Research culture and any associated metric should not be used as a 'comparative' benchmark, but as a beacon activity, where institutions can learn from each other. We can cautiously now begin to think about how some existing metrics may enable us to assess research cultures.

In the time BC (Before Culture)

When assessing or measuring research productivity, several traditional methods have been used in the past. These include:

- Publication Count: The number of academic papers published in high impact journals

- Citation Metrics: How often the researchers work is cited by others
- Research Funding/Grants: Amount and prestige of research funding or grants received
- Awards & Honors: Recognition from professional organisations or institutions

The methodologies for these metrics are sourced from research performance databases, traditionally Web of Science or Scopus. However, using these metrics alone has, over time, contributed to unintended negative consequences. Whilst they can provide some insight into the reach and impact of the research, these insights are not necessarily accurate or complete. Bibliometrics alone do not accurately reflect individual performances, they can be easily misinterpreted, plus there are many limitations when we compare diverse disciplines, demonstrated by Fire and Guestrin (2019) in their study on citation-based metrics. Traditional metrics are also considered a hindrance to research culture. The Wellcome Trust's survey of 2020ⁱⁱ found that only 14% of researchers felt that these 'traditional' metrics improved culture. 43% felt that their workplace valued these metrics more than the quality of the research itself. There are numerous reports that associate focus on publication count as driving poor research practices, such as the use of paper mills and citation cartels.ⁱⁱⁱ

Over the past decade, there has been a growing voice throwing caution to the dependence on such metrics, beginning with the San Francisco Declaration on Research Assessment (DORA) in 2013, followed by the 2015 Leiden Manifesto. More recently, research integrity has been drawn into focus through the publication of the Hong Kong Principles for assessing research, and the Singapore Statement on Research Integrity.^{iv} The importance of research integrity and its congenial counterpart, research culture, has finally been recognised. There have also been significant shifts in funder policy as noted by Curry, Gadd and Wilson's revisited report *Harnessing the Metric Tide* (2022). The UKRI also recognise the importance of fostering a healthy system through their Responsible Research Assessment global values.^v

In the face of a long history of research on research culture, why are we still having these conversations? Why aren't things progressing in the much needed direction faster? We find ourselves circling back at the original dilemma. How can we effectively quantify something so nuanced and complex as an institution's research culture? The slow progress can be attributed perhaps to the default reliance on traditional metrics. Not because they are deemed adequate, but because they provide a tangible, albeit limited measure of research excellence - whereas the unquantifiable

facets of a good research culture simply elude a nice tidy numerical representation.

What Other Data Can We Use?

One of the main concerns about moving away from traditional metrics is the unfathomable concept of reviewing narrative CVs, applications, submissions and complex text. This may be necessary to develop a qualitative appraisal of a research culture. However, we should not underestimate the power of openly accessible data to also increase our understanding- these data must be trusted sources, that can be easily accessed and verified.

Universities typically have several core systems that are crucial for day-to-day operation. Those relevant to tracking research activities may include but are not limited to:

- Human Resources: Legal Sex, Disability, Career Age, Ethnic Origin, Dependants, Faculty, School etc.,
- Research Information: REF Unit of Assessment, Research Outputs, Research Activities, Conference Presentations, Prizes
- Research Management: Grant applications, PI/CI detail, Award detail
- Research Performance (analytic tools): Citation counts, Altmetrics, Policy Citations, Patent Citations, Collaborations
- PhD Management System: Supervisory Detail
- Course Management Systems: Module Descriptions

These systems are multifaceted tools, handling day-to-day operational tasks such as recording award applications, depositing research outputs, storing course and module details. They play a crucial role in providing real-time reports on the current status of various data - offering a comprehensive view of institutional operations. Many of these systems are stand alone, siloed and often contain duplicated data. However, these data are frequently overlooked, full of unrealised potential in providing valuable insights. Through data analyses, and made even more powerful through data linkage, these data aid strategic decision making and can enhance the efficiency and effectiveness of implemented initiatives. Universities can not only track the progress and impact but also gain crucial insights into what strategies are yielding positive results and which require re-evaluation. This approach allows for a more targeted identification of groups or departments that excel as mentors, as well as those in need of additional support and encouragement. Ultimately, this

strategic use of data goes beyond mere operational efficiency; it becomes a pivotal tool in fostering an environment of research excellence, ensuring that initiatives are not just implemented, but are also effective and inclusive.

Using Existing Accessible Data: Ulster University as an example

Ulster University (UU), a multi-campus institution located in the north of Ireland, has equality legislation that differs to that of the United Kingdom. Section 75 of the Northern Ireland Act 1998 aims to transform the practices of government and public authorities so that equality of opportunity and good relations are central to policy making and implementation. There are nine protected categories within the legislation:

- Persons of different religious belief, political opinion, racial group, age, marital status or sexual orientation
- Men and women generally
- Persons with a disability and persons without
- Persons with dependents and persons without

As such, all support initiatives programmed by UU's Impact Team have Equality, Diversity and Inclusion (EDI) considerations embedded throughout. An example of this is demonstrated through the Impact Accelerator Account (IAA), awarded to UU by the Arts and Humanities Research Council in 2022. Led by the EDI strategy, developed as part of the grant application, a Steering Group was established with membership representing internal and external stakeholders including UU's Equality, Diversity and Inclusion Section Lead. Members within the steering group underwent EDI training with Advance HE. They meet bi-annually, with EDI a standing agenda item. The IAA underwent Equality Screening as per Section 75 requirements; this entailed analysing UU's EDI data to determine if any protected groups would be impacted by the IAA. This screening involves public consultation ensuring that any policy decisions made by the institution can be scrutinised by the public. The IAA is subject to annual EDI monitoring, carried out by the Principal Investigator (PI) and Co-Investigator (CI) who report to the Steering Group. UU's Equality, Diversity and Inclusion Unit provides anonymised EDI data on IAA award holders which is then benchmarked against staff population and faculty data. From this analysis the IAA Steering Group can design and develop data informed initiatives and programmes of support for underrepresented groups. Y1 analysis of IAA EDI data indicates that the historical underrepresentation of research impact led by female

researchers is improving because of IAA interventions. (Ulster University, 2024)

Ulster's Impact Team is also responsible for the delivery of the University's central Research Impact Fund, open to all researchers and disciplines. This is internally funded research impact seed funding that runs an annual call. Established in 2018 the Fund attracts applications from all career stages, and it was recognised early on that ECRs were underrepresented. In order to ensure equity for all potential applicants, ECR applications are now assessed separately with a ring-fenced budget. Plans are in place to collate and analyse data to determine if and how this support measure is in fact enhancing the research culture for ECRs, for example, existing research information systems coupled with HR data will allow us to track the career trajectory of the award holders, and assess the impact achieved via academic impact, altmetrics etc.

Evidencing a Nurturing Research Environment

Data can of course be useful as proxy measures for the impact of research culture strategy implementation and impact. There are many possible markers of supportive research environments. It is recognised that international collaborations are vital for addressing pressing and global challenges in research. These collaborations do not necessarily occur spontaneously, researchers will require a variety of support to ensure that concrete and productive relationships can develop. These supports may include financial support for travel, time allocation for conference or research study visits or broader technological support. Some of these aspects may seem trivial from a helicopter view of university management. However, these types of support can be transformative for researchers' programmes of work.

Figure 1: Overview of International Research Collaborations at Ulster University. Source: Dimensions on Google BigQuery – Digital Science 2024 and Ulster Organisational Data extract (accessed February 2024).

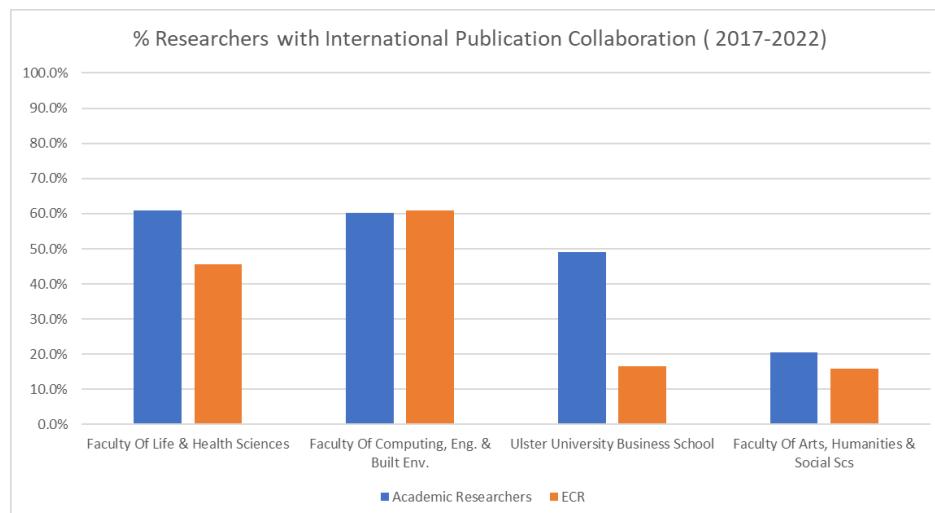


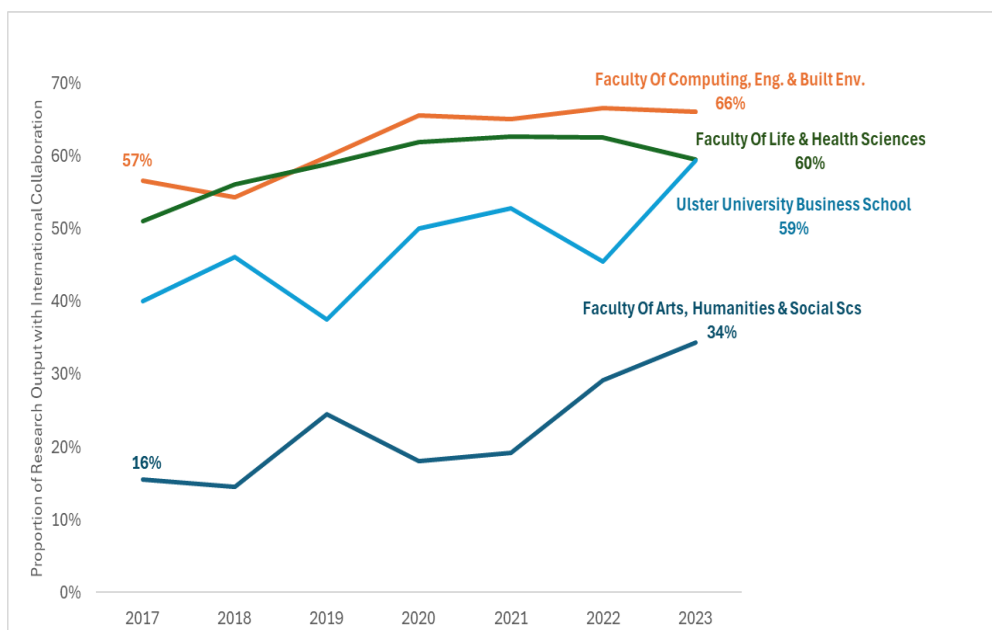
Figure 1 summarises a preliminary analysis of international collaborations of Early Career Researchers (ECR) at Ulster University. In this instance, an ECR is a researcher with an ‘academic age’ less than 4 years (i.e., less than 4 years since their first publication). Therefore, Figure 1 portrays the percentage of papers per cohort (Academic/ECR) that included co-authors from outside the UK from 2017 - 2022. It would be anticipated that researchers at an earlier point in their research career would have fewer international collaborations (as defined by co-authorship with international researchers) than more established academics. It should be noted that we are not comparing faculties or proportions of international collaborations, but we can use the data to pinpoint areas where ECRs might benefit from additional support e.g., in this case, we can further investigate the lower percentage of international collaborations for ECRs in the University Business school. It may be a case of a lower population of ECRs in this faculty, fewer publications in general, or it may be that collaborative research is happening, but not visible through the traditional co-authorship metrics. Either way, the data highlights an area for further exploration. In this instance, it was found that overall, the University Business School had the lowest proportion of ECRs within this timeframe.

Figure 2 may be interpreted as indicating that researchers within the Faculty of AHSS have consistently fewer international collaborations than those researchers in other faculties. However, we believe that these types of interpretations should be treated with caution, reflecting on the applicability of specific metrics to different disciplines, due to the diverse discipline-specific research practices. For example, a large proportion of outputs within the Faculty of AHSS are single authored (27% vs 2% in Faculty of Life and Health Sciences). This demonstrates that measuring

international collaboration through co-authorship may not be appropriate for all disciplines.

In addition, existing data may be used to track growth of international collaborations through co-authors on research papers. These data indicate year-on-year growth in international collaborations across Faculties, with Arts, Humanities and Social Sciences making considerable gains.

*Figure 2: Research Output/Collaboration with Authors outside UK 2017 – 2022.
Source: Dimensions on Google BigQuery – Digital Science 2024 and Ulster Organisational Data extract (accessed February 2024).*



Interdisciplinary Research Within an Institution

Another interesting aspect is the internal collaborations between Faculties, Schools or Units of Assessment. When we use the existing data to compare interdisciplinary research and output by School between 2017 and 2022, we can note the significant increase of interdisciplinary research, which has doubled between 2017 and 2022 (**Figures 3 and 4**). This is a positive sign, suggesting a more integrated and collaborative academic environment. The Schools with the greatest increase include the School of Medicine, School of Psychology and School of Nursing and Paramedic Science. Whilst a proportion of this can be explained by the introduction of the new School of Medicine, these findings indicate that these Schools and others have become particularly active in interdisciplinary research, potentially reflecting strategic initiatives or emerging research areas that encourage cross-departmental collaboration.

These data and analyses provide a valuable overview of the evolving collaboration landscape within an institution. Further investigation could explore the specific nature of these collaborations, the impact on research quality and output, and how these interdisciplinary efforts align with the university's strategic goals.

Figure 3: Research Collaboration by School 2017. Source: Dimensions on Google BigQuery – Digital Science 2024 and Ulster Organisational Data extract (accessed February 2024).

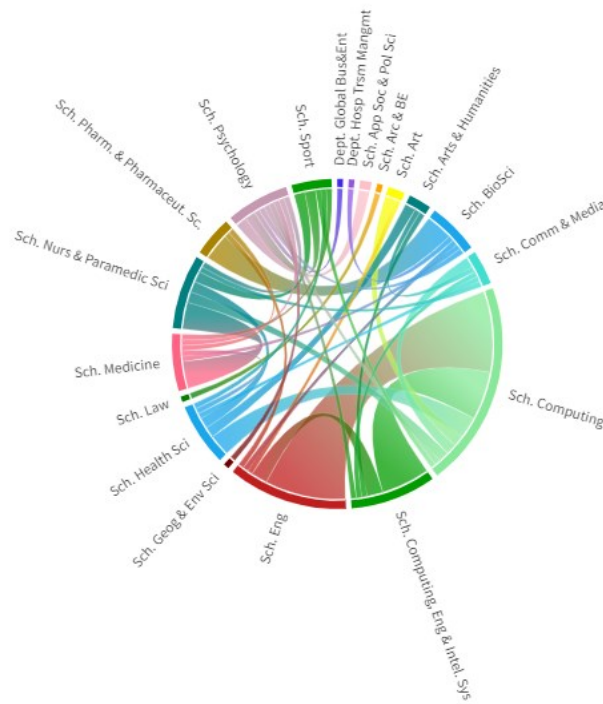
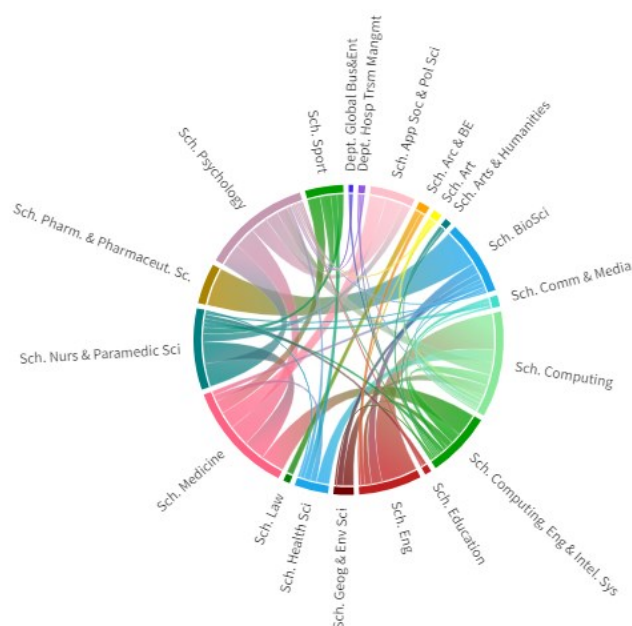


Figure 4: Research Collaboration by School 2022. Source: Dimensions on Google BigQuery – Digital Science 2024 and Ulster Organisational Data extract (accessed February 2024).



Research Integrity and Transparency

We have briefly discussed wider research values and the importance of promoting a culture of research integrity and best practice. If an institution is to foster and maintain a healthy research culture, integrity and transparency are paramount. A coordinated, collaborative approach across a diverse group of stakeholders is required, as emphasised by McIntosh and Hudson (2023). *Open Research* and *Research Integrity* are named as two of the six key themes covered by the UKRI in their approach to supporting a healthy research and innovation culture.^{vi} Publishers are also increasingly developing open data policies for authors as part of their journal submission process.

Much of the responsibility does sit with the individual researcher and there has been much discussion on the promotion, recognition and reward of open research data management practices, for example NI4OS-Europe.^{vii} There are also early indications that data around open research practices will be collected as part of the People Culture and Environment element of REF 2029.^{viii} One of the indicators used in determining Research Environment scores for REF 2021 included whether an institution was a signatory of a particular concordat, for example the Concordat on Open Research Data and the Concordat to Support Research Integrity. But is this overarching commitment really enough to indicate a marker of research

integrity? Perhaps we can now use available data to take one step further in measuring an institution's commitment to a concordat - how it has implemented its policies and practice, and how it has ensured and measured success in these commitments.

Utilising research integrity indicators or 'Trust Markers' (McIntosh et al., 2023) such as data availability statements, author contributions, ethical statements, funder acknowledgments, and conflict of interest declarations can provide valuable insights. Universities can benchmark and assess initiatives to ensure that such statements are required for publications, reinforcing a culture of responsible research conduct.

The Concordat on Open Research Data could be used as an example- this Concordats' 8th principle is: 'Data supporting publications should be accessible by the publication date and should be in a citable form' (UKRI, 2016: 16). Both publishers and funders encourage and often require a brief statement to demonstrate whether the authors have made evidence supporting their findings available, and if so, some further indication as to where the data can be accessed. The statement also provides authors with the opportunity to explain why data might not be available. As Munafò et al. (2022) argue, while open practices like data availability statements are helpful, realigning incentives and cultural change across institutions and funders is key for meaningful improvement. Rather than simply encouraging data sharing, concrete incentives for researchers to make their data available can start to shift the academic culture in a more open and transparent direction. For example, institutions should be encouraged to use accessible systems, such as PURE or the Open Science Framework, to house datasets. This ensures that all researchers at an institution have the necessary tools to enable open data practices with no direct cost implications. The impact of such incentives can be measured using accessible data.

Figure 5 summarises the presence of data availability statements (DAS) in published papers at Ulster University from 2014-2023. The growth in the presence of these statements is striking and may be attributed to a number of external factors, such as publishing norms, encouragement from funders and increasing researcher knowledge of the requirements of openness for research integrity. **Figure 6** provides further analyses of the components of the DAS, namely where the data supporting the research can be accessed. This can include online repositories, supplementary files, within the paper or in the case of sensitive data, or data that is not publicly available, the author can provide access on request. The notable share of DAS advising that supporting data is available 'on request' may suggest that the increased use of statements is driven by publishing house criteria,

rather than changes in the opinions of researchers and proactive practices around data openness.

Figure 5: Growth of DAS included within Ulster University research outputs. (Source: Dimensions on Google BigQuery – Digital Science 2024).

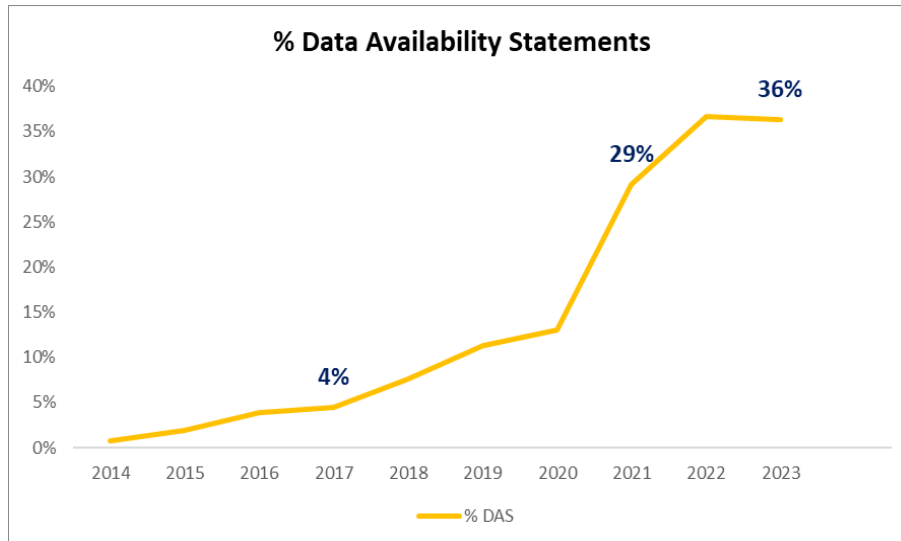
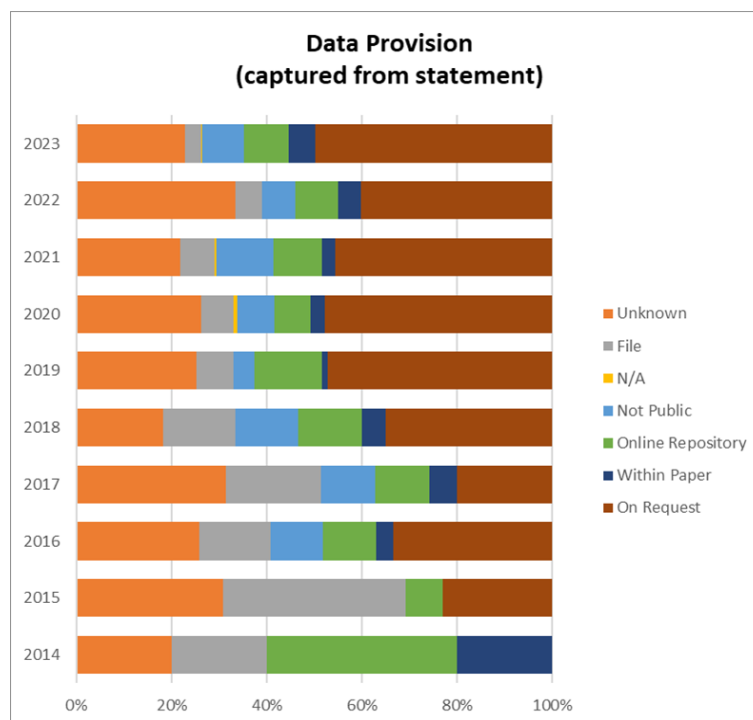


Figure 6: Overview of DAS content within Ulster University Research outputs. (Source: Dimensions on Google BigQuery – Digital Science 2024).



Monitoring improvements in DAS practices intrinsically over time and by discipline and sub-group can not only evidence a commitment to the Concordat on Open Research Data, but it can measure the success of targeted initiatives to promote the practice itself. An additional advantage of this metric is that it is diverse and inclusive. It is not a comparative measure, nor does it contain bias. A recent blog by Digital Science and

Hong Kong Baptist University demonstrated how emerging research countries excelled in good practices, more-so than those in the Global-North.^{ix} Metrics such as data accessibility statements could be incorporated into academic promotion criteria.

Promoting Collaboration and Knowledge Sharing

Open access to research data also helps with collaboration across disciplines and the wider research community. Collaboration is a cornerstone of research culture. Metrics related to collaborations, including International, national, and inter-university partnerships, co-authored publications, and shared research knowledge, can help universities gauge their collaborative efforts. Encouraging cross-disciplinary research and knowledge sharing not only enriches research outcomes but also contributes to a more vibrant research culture. Importantly, these types of activities can be captured by proxy measures such as counts of co-authored publications, co-authored interdisciplinary publications, national and international co-authored publications, and academic-corporate collaboration. These can then be tracked over time to monitor the impact of research culture initiatives on the ability for researchers to form productive and responsible collaborations.

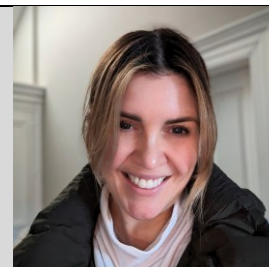
The Future Research Assessment programme (FRAP) has acknowledged that ‘the ways in which HEIs support their staff, *enable collaboration beyond the institution*, support the broad development of disciplinary knowledge and ensure the integrity of their research are all crucial components of research excellence.’ As with REF 2021, REF 2029 will assess an institution’s support for interdisciplinary research and wider research collaborations. As Tigges et al (2019) have suggested, having quantifiable measures for various aspects of an institution’s research collaborations will allow for benchmarking and demonstrating progress on collaborative excellence over time. Although there is not yet a robust methodology available for a standardised metric, data is readily available and accessible for intrinsic benchmarking and monitoring.

Conclusion

Measuring and enhancing research culture should be a priority for universities, and the rich data they possess can be a powerful tool in achieving this goal. By incorporating research impact metrics, research integrity data, collaboration indicators, and existing HR and EDI data, universities can create a more transparent, collaborative, and accountable research environment. To mitigate the concern of additional administrative burden, we can leverage and integrate existing data sources such as HR data and data on equality, diversity, and inclusion (EDI). Utilising readily available data ensures that the process is streamlined and

minimises additional workload on researchers and administrators. Moreover, by using existing data, we are demonstrating that a good research culture is not merely a manufactured statement that only highlights the positive outcomes. It is something that is interwoven into day-to-day life and that can be demonstrated at any time whether it be a successful initiative, or something that has been highlighted as an area for investigation. In an era marked by constrained financial resources and stringent accountability for every expenditure, it is essential to track and monitor initiatives. This oversight is key not only in ensuring the allocation of support towards successful ventures but discontinuing those that do not provide return on investment. Institutions can also use this data-informed approach to promote beacon activities, thus further contributing to the broader academic community.

Ann Campbell serves as a Technical Solutions Manager with Digital Science, where she specialises in scientometric analysis using Dimensions & Altmetric data. With a background spanning 16 years in the university sector, Ann has played a lead role in data preparation for several REF Assessments, Diversity and Inclusion charters and other mandatory submissions. In addition to data integration and analysis, Ann has expertly implemented several research information and management systems and has successfully created key data ecosystems and reports that have provided holistic and comprehensive views of an organisation's research landscape. Ann has extensive working knowledge in identifying data solutions to evidence and gather insights on research impact (for research assessment, funding and otherwise), diversity and inclusion, research integrity and contribution towards the UN SDGs.



Victoria Simms is a developmental psychologist with a specific interest in the development of mathematical thinking in children. Victoria's work also focuses on the long-term consequences of preterm birth, specifically cognitive and educational outcomes. Current projects include cross-cultural comparisons of mathematical cognition and the influence of the home environment on early learning. Victoria's research has been funded by Action Medical Research, Nuffield Foundation, British Academy



and the Global Challenges Research Fund. Victoria is a founding member of the ESRC funded Centre for Early Mathematical Learning- that aims to understand early mathematical development and impact on children's learning experiences. Victoria is a strong advocate of open research practices and public engagement in science. Victoria is Associate Editor for both the British Journal of Developmental Psychology and the British Journal of Educational Psychology. She is also Section Editor for Educational Psychology at Cogent Psychology. In addition, Victoria is the Chair of the Board of the Northern Ireland Science Festival.

Maria is currently Ulster University's Research Impact Manager overseeing strategic impact development and support provision at the University, and is Co-Investigator on Ulster's AHRC Impact Accelerator Account. Maria joined Ulster University in 2013 as lead support on the £3.5m EU-funded, creative industries sector enhancement project, Honeycomb –Creative Works. She has held various roles across the institution including Operations Manager at spin-out company Tactility Factory and Research Co-ordinator for the world-leading research centre, the Transitional Justice Institute. Maria holds a MSc Management in Creative Industries from Ulster University and is currently undertaking a PhD focused on the economic and social impact of transgenerational trauma following the Troubles in the North of Ireland.



List of Figures

All images included with permission or for the purposes of research/review.

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Figure 2: Research Output/Collaboration with Authors outside UK 2017 – 2022. Source: Dimensions on Google BigQuery – Digital Science 2024 and Ulster Organisational Data extract (accessed February 2024).

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Figure 4: Research Collaboration by School 2022. Source: Dimensions on Google BigQuery – Digital Science 2024 and Ulster Organisational Data extract (accessed February 2024).

Figure 5: Growth of DAS included within Ulster University research outputs. (Source: Dimensions on Google BigQuery – Digital Science 2024).

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Endnotes

ⁱ See: Research Impact Academy: How do you build research impact culture in research institutions? <https://researchimpactacademy.com/blog/impact-culture/> [Accessed: 1 February 2024].

ⁱⁱ For details visit: <https://wellcome.org/reports/what-researchers-think-about-research-culture> [Accessed: 1 February 2024].

ⁱⁱⁱ For examples see Nash, J. 2022. Paper Mills—The Dark Side of the Academic Publishing Industry. <https://blog.mdpi.com/2022/05/09/paper-mills/> [Accessed: 1 February 2024].

^{iv} See respectively: (DORA) <https://sfdora.org/>, (Leiden) <http://www.leidenmanifesto.org/>, (Hong Kong) <https://www.wcrif.org/guidance/hong-kong-principles> and (Singapore) <https://www.wcrif.org/guidance/singapore-statement> respectively [Accessed: 1 February 2024].

^v See: UKRI publishes new report on responsible research assessment. <https://www.ukri.org/news/ukri-publishes-new-report-on-responsible-research-assessment/> [Accessed: 1 February 2024].

^{vi} See: Supporting a healthy research and innovation culture. <https://www.ukri.org/what-we-do/supporting-healthy-research-and-innovation-culture/> [Accessed: 1 February 2024].

vii See: https://ni4os-europe.eu/wp-content/uploads/2021/06/NI4OS_RI_ORDM_web_EN_single_pages.pdf
[Accessed: 1 February 2024].

viii See: <https://repository.jisc.ac.uk/9148/1/research-excellence-framework-2028-initial-decisions-report.pdf>
[Accessed: 1 February 2024].

ix See: Navigating Trust in Academic Research: The Rise of Data Availability Statements – Part II,
<https://www.digital-science.com/tldr/article/navigating-trust-in-academic-research-the-rise-of-data-availability-statements-pt2/> [Accessed: 1 February 2024].