

# NCRM's reflections and recommendations following the 2023 ESRC Data Driven Research Skills Report and Response



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## Purpose of this document

This document outlines the initial reflections of the UK's National Centre for Research Methods (NCRM) to the ESRC's Autumn 2023 publication of their Data Driven Research Skills (DDRS) report<sup>1</sup> and their response to this report<sup>2</sup>. The below sections reflect on these published documents and make suggestions towards achieving the planned vision and published commitments.

The contents of this document are informed by discussions held with:

1. NCRM's Senior Leadership Group,
2. NCRM's Advisory Board,
3. The Data Resources Training Network (DRTN), chaired by the NCRM,
4. The Doctoral Training Partnership - Training Network (DTP-TN), chaired by NCRM,
5. Further DDRS-involved NCRM partners and stakeholders<sup>3</sup>.

As might be expected given its remit, the NCRM offers already a wide range of activities and infrastructure in support of DDR and in the training of DDRS. The document outline areas

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<sup>1</sup> <https://www.ukri.org/wp-content/uploads/2023/09/ESRC-181222-DataDrivenResearchSkills-ScopingReport.pdf>

<sup>2</sup> <https://www.ukri.org/wp-content/uploads/2023/10/ESRC-311023-SkillsNeededToSupportDataDrivenResearch-ESRCresponse.pdf>

<sup>3</sup> Our thanks for comments received from Dr Sarah Lewthwaite (University of Southampton) and from the Q-Step Centre for Computation Social Science (C2S2) at the University of Exeter.

where NCRM could further support the DDRS agenda. Thus, given its relevant infrastructure, on-going training activities, and expertise, the NCRM is well placed to help shape and support the investment in DDRS training recommended within the ESRC's Report.

## Introduction

Based on the two published documents, the NCRM understands that:

- a. Data Driven Research (DDR) and Data Driven Research Skills (DDRS) are both continuing to develop – with the implication that there is a need to monitor both, if the UK is to remain a world-leader in DDR.
- b. A lifelong learning approach is required to support academics in developing and maintaining DDRS – and that this approach needs to be sensitive to the overlapping, unique, and internationally-contextualised needs of academics at different stages of their careers.
- c. Particular support is needed in the development of Mixed Method approaches to DDR and DDRS.
- d. There will remain a need for DDRS training that is specific to the Social Sciences, and for DDRS training that is situated within a learner's discipline.
- e. That implementing the vision and plans articulated in the ESRC reports on DDRS will require investments in both leadership and infrastructure for the purpose of drawing together the varied activities already in place to support UK DDR, DDRS, and DDRS training.

## 1. Initial reflections common to the ESRC's DDRS Steering Group Report and ESRC's follow-up Response

### 1.1 A developing field

Data Driven Research (DDR) continues to develop at a fast pace – with this being a partial product of continuing developments in various technological means of data capture, ongoing

development of new forms of data analysis (e.g., via AI methods such as machine learning), and the mass availability of AI tools (e.g., large language models such as ChatGPT). Contained within both the DDRS Steering Group's Report and the ESRC's Response to this report is content that speaks to the resulting definitional uncertainties regarding what DDR is (and is not), and what research activities DDR encompasses. For example, consider the inclusive but also broad definition of DDR adopted by both documents: research that is, "... *determined by or dependent on the collection and/or analysis of data*" (DDRS Steering Group Report p.6).

Because DDR is still developing, so we can expect DDRS to change. Today's DDRS are not necessarily those of the next five years. Therefore, there is a **need for longitudinal monitoring of DDRS** (at an appropriate pace) to be undertaken if the UK is to remain a world-leader in DDR -- as per recent claims by the Royal Society<sup>4</sup>, as per the ESRC's DDRS Report, and as reflected upon in 2013 in a joint statement from the Academy of Medical Sciences, the British Academy, the Royal Academy of Engineering, and (again) the Royal Society<sup>5</sup>. Of course, this monitoring also needs to be coupled with systems of DDRS training that are sensitive and responsive to changing understandings of both DDRS and DDR.

The NCRM envisages the need for the longitudinal monitoring of DDRS and for this to encompass appropriately paced (to DDR development) examinations of:

1. The nature of contemporary UK DDRS;
2. The appropriateness of contemporary UK DDRS training for contemporary and future DDR;
3. The effectiveness of contemporary UK DDRS training, and,
4. The equity of contemporary UK DDRS training.
5. Of course, there is no assumption that all four areas need to be monitored with the same frequency.

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<sup>4</sup> <https://royalsociety.org/-/media/policy/projects/dynamics-of-data-science/dynamics-of-data-science-skills-report.pdf>

<sup>5</sup> <https://acmedsci.ac.uk/file-download/35314-51e90edb3afd2.pdf>

## 1.2 Lifelong Learning

The NCRM welcomes the promotion of lifelong methods learning in both the ESRC's Report and Response and that there are benefits from this promotion adopting a 'carrot' rather than a 'stick' approach. The majority of (if not all) training courses and resources are open to researchers at any career stage but, as the ESRC Report's authors discuss, there are barriers that make it difficult for mid and later career researchers to take advantage of them and their needs are (somewhat) likely to differ to those of researchers at an earlier stage. A major factor is the time needed to attend training and consolidate learning through further reading and application. As noted in the Report, researchers that are more senior may not need to know the technicalities of how to use a particular method; rather they may need to learn enough about a method to have an appreciation of its potential and limitations. NCRM has already established different modes of training delivery with, for example, formal courses and spring/autumn schools often targeting PhD students and early career researchers (ECRs). However, other modes for training and capacity building (TCB) are particularly designed for senior researchers, for example innovation fora, interactive expert workshops, networks, MSIGs (Methodological Special Interest Groups), methods conferences, mentoring and collaboration schemes, etc.

It should also be recognised that senior researchers often learn about new methods informally by working with PhD students and early career researchers, or with researchers with different methodological skill sets. There is therefore merit in promoting such collaborations — just as is already undertaken by the NCRM via our networks, Methodological Special Interest Groups (MSIGs), and our engagement work.

Four observations contextualise these reflections on lifelong methods learning:

1. At times it can be difficult to define early, mid, and later career stages. For example, there can be significant overlap between some midcareer researchers and doctoral researchers, since many PhD students may have had longer-term careers already in their field of practice before starting a PhD. Hence, career development may not be a simple linear construct.
2. That there is also lifelong learning required by (senior) managers who have the need to develop high-level technical understanding.

3. That there may be topics that researchers need training in across all career stages, such as those that have developed rapidly through recent changes in the areas of technology concerning programming languages (e.g., Python) and AI.
4. DDR is, and will continue to be, a range of endeavours that are characterised by international and continuing (rather than one-off) collaborations across the timespan of careers. This means that UK DDRS, across all career stages, need to be not only compatible with opportunities for international collaboration, but also the consequences of an internationally mobile researcher labour force.

### 1.3. Support for Mixed Methods in DDRS training

An intent for, “*Transcending the Qualitative/Quantitative Binary*” in methodological approaches to DDRS is welcomed by the NCRM. Consider, for example, comments within the DDRS Report (p. 25) on the difficulties of mixed methods training in DDRS, and that the Mixed Methods International Research Association (MMIRA) was founded in only 2014<sup>6</sup>.

Thus, the NCRM advocates for an additional focus on, and support for, the development of Mixed Methods DDRS. Towards practical support for this development, the NCRM has been working for a long time to bridge some of the divide between Qualitative and Quantitative Methods – this via the promotion of Mixed Methods research skills training at the national level.

## 2. Initial reflections specific to the ESRC DDRS Steering Group Report

### 2.1 Investments in DDRS training

The NCRM supports the recommendations from the ESRC’s Report that investments be made in a DDRS training centre of excellence and that investments be made in the development of new approaches for effective DDRS training. While it would make sense for a DDRS centre of excellence to involve other funding bodies, as this would allow pooling of resources and expertise and facilitate cross-disciplinary training, we believe that there will remain a need for

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<sup>6</sup> <https://mmira.wildapricot.org/about>

training specific to the Social Sciences and for training that is situated within a learner's discipline.

Towards supporting the recommended investments in a new DDRS training centre and new approaches for effective DDRS training, there are the potential for time-, efficiency- and cost-savings from taking forward the existing work in this area carried out by the NCRM. These include the NCRM's various partnership models that could be used and/or extended in order to achieve this delivery, as well as extending the training infrastructure model that the NCRM constitutes and provides.

## 3. Initial reflections specific to the ESRC Response to the DDRS Steering Group Report

### 3.1 Meeting immediate practical needs

Meeting the immediate needs requires the ESRC to go further than their current stated goals, “[to] work with our strategic investments, such as (but not limited to) survey data collections and longitudinal studies, data services, research centres and networks”. This is because these data investments focus on data collection and curation, while most research centres focus on substantive research rather than on methods development and training. Rather than, “working with” these strategic investments, we suggest that the ESRC (and potentially others) draws together their activities – allocating additional resources to do so, in support of their short- and long-term DDRS goals.

We also suggest the need for leadership and infrastructure to be put in place to deliver the recommendations within the ESRC's Report on DDRS training – and we note that time and cost-savings may be possible by building upon, for example the well-established training infrastructure provided by the NCRM (and potentially others).

Towards delivering its short-term plan, the NCRM welcomes the ESRC's ambition to work in partnership with other research funders, research organisations, and other strategic stakeholders to foster a research culture and environment conducive of DDR, DDRS, and DDRS training. At the same time, we encourage the ESRC (and others) to publish:

- More practical steps on how this will be achieved.
- A timescale for the desired culture and environmental changes to be achieved.
- The risk-factors salient to realising these cultural and environmental achievements.
- Areas where there are special challenges (e.g., in the development of Mixed Methods DDRS).

### 3.2 Maintaining focus on DDR and DDRS as broad and developing terms

By maintaining a consistent, yet inclusive understanding of these two terms, the ESRC is better positioned to support the current and short-term required range of DDRS and also better positioned to respond flexibly in the longer term. Thus, we support the definition of DDR within the ESRC's Response document as being, "*determined by or dependent on the collection and/or analysis of data*" but urge caution with more limited scoping such as when referencing, "*skills and capacity to maximise the value of large and complex data...*". The initial broad definition of DDR extends beyond such data. Further, the skills needed by UK social scientists to engage in world-leading DDR are more than just, "*...technical skills and conceptual and methodological understanding*". Current and future UK social scientists engaged in DDR also need skills that support:

- Team working in DDR.
- DDR project management.
- The development of new DDR research methods.
- The development of new research paradigms for DDR. For example, in response to the epistemological challenges that are posed by newer kinds of data (e.g., from web scraping or text mining) or from new technological changes (e.g., the use of AI based methods).

## 4. Initial reflections on areas where the NCRM could support the DDRS agenda moving forward

### 4.1 What NCRM is doing already

The NCRM already delivers training and capacity building (TCB) activities in many areas that are highly relevant for developing lifelong DDRS. The NCRM is therefore well positioned to support the vision and activities described in the ESRC's DDR Response document. Relevant NCRM activities include the dual provision of advanced and technical sessions and materials -- alongside others of a more introductory or mid-level nature -- plus the capacity to support new DDRS-relevant engagement.

Regarding NCRM's current capacity building and DDRS activities, a number of NCRM's existing training topics already cover DDRS. These include TCB activities on: technical skills, research design, data analysis, data linkage, software, data visualisation, new forms of data including smart data, and the development of new research methods, including training in AI. As mentioned above this NCRM training is also inclusive of Qualitative, Quantitative, Mixed, Creative, Visual, and Digital Methods.

NCRM training (apart from a few exceptions) also targets the development of research skills across a researcher's career course. We have developed new TCB formats and mechanisms that are well suited for PhD and early career researchers as well as formats and mechanisms that are particularly well suited for more senior researchers, such as innovation fora and network activities, including methodological special interest groups (MSIGs).

Recent changes to the NCRM website highlight learning pathways, some focussing on particular DDRS related skills.

### 4.2 Relevant existing NCRM infrastructure

Beyond supporting the ESRC with its current activities, the NCRM is also well placed to respond to the challenges described in the ESRC's response document – this via our active DDRS-related networks and collaborations that include:



1. The Data Resources Training Network (DTRN), chaired by NCRM, including for example UKDS and key survey investments.
2. Our Doctoral Training Partnership Training Network (DTP-TN).
3. Our Centre Partners (e.g., Timescapes on qualitative data).
4. On-going collaborations with Administrative Data Research UK (ADR-UK).
5. Links to other ESRC investments (e.g., the Survey Futures, Research Centres, methods focussed investments)
6. Key NCRM collaborators (e.g., with The Alan Turing Institute).

For example, our work with ADR-UK has developed and facilitated the delivery of TCB on administrative data, focussing on the UK flagship datasets, such as the National Pupil Database, ECHILD and ASHE-Census – all of which are complex, linked datasets, requiring specialised training. We have also established a new Methodological Special Interest Group (MSIG) with the ADR-UK PhD Cohort to build timely and flexible capacity and are running a DataHeckathon in Autumn 2024. Partnering collaborations with the ESRC new initiative on ‘Survey Futures’, which includes key survey investments, are well under way with a scoping exercise across sectors recently conducted, informing future capacity building in the area of survey methodology and data collection.

### 4.3 Preparedness of NCRM to lead and deliver

Two key challenges within the ESRC’s response to its DDRS Report is the need for leadership and activities that are flexible to potential change in technology, practice, and research. Such challenges are precisely those that the NCRM has frequently engaged with and delivered over the past 20 years. Our flexible responses to change have included ascertaining and acting upon new training needs (via horizon scanning activities), for example, in the areas of machine learning, computational and digital skills, and visualisation methods. One key example highly relevant to supporting DDR is the recently launched new AI focal area in NCRM comprising an offer of TCB activities alongside activities to build engagement in key areas (e.g., with The Alan Turing Institute). This in the context of NCRM activities that aim to foster cross-disciplinary

research (including beyond the Social Sciences) and cross-sector working – two areas stated as required for the future within the ESRC's DDRS report.

As noted in the ESRC's DDRS report, the remit of the NCRM already encompasses monitoring of contemporary and future training needs in the UK Social Sciences, including horizon scanning, plus the response to these needs via provision of effective, equitable, and inclusive training. While operating at a macro-level (across all Social Science disciplines and all research methods [inclusive of DDR and DDRS]) there is therefore the potential to extend current NCRM practices and infrastructure to achieve more focused monitoring of (and response to) DDR and DDRS as they continue to develop and change. Furthermore, the NCRM's infrastructure and networks are well placed to offer monitoring and response across a career course in the social sciences.

#### 4.4. How NCRM can support the ESRC's "*Vision for supporting social scientists' DDRS*"

NCRM's support of the ESRC's vision manifests in two sets of activities. First, in the monitoring, horizon scanning, and analysis of training needs that are required for continuing and future world-leading UK DDR in the Social Sciences. This informed by, and in coordination with, the ESRC's Future Data Services Review. Second, in the delivery of DDRS training in the Social Sciences. This including, but not limited to DDRS: technical skills, research design, data analysis, and the development of new research methods. This training is already delivered, where beneficial, by partnerships inside and outside the Social Sciences and understood to be flexible to: shifting understandings of DDR and DDRS; the varied approaches and traditions within Social Science research; and the varied approaches that are effective to the needs of Social Scientists at different career stages.

#### 4.5 How NCRM can support the ESRC's "*Approach to addressing the recommendations in the Steering Group's Report*"

The NCRM is well positioned to contribute to the vision for the community engagement and activities that will foster culture change in the UK that is supportive of DDRS. Towards supporting this ESRC vision, there is much scope for building upon NCRM's current community

engagement activities plus, with appropriate support from the ESRC, the development of new NCRM DDRS activities. The NCRM also possesses the resources that are necessary for the community engagement with social scientists that the report highlights – resources that include: technical infrastructure, professional partnerships, and the ‘reach’ to social scientists inside and outside of academia. A practical example of this could be NCRM support communication opportunities regarding DDRS to social scientists, e.g., via adding DDRS signposting and/or classifications to existing TCB provision. This might include introductory/ intermediate/ advanced badges and/or clarifications on the categories of data that are relevant, with emphasis on highlighting depth of coverage on secondary/ large-scale/ admin data resources. Further, it might be possible for NCRM to build up resources that provide guidance on more extended training opportunities in DDRS and to bring together already existing resources easily accessible from the NCRM portal.

Looking beyond the short-term, NCRM may also conduct scoping exercises that are intended to steer NCRM course participants into certain DDRS directions. As part of this, targeted communications and marketing could steer researchers to already existing resources and training opportunities in DDRS.

Toward facilitating lifelong learning of DDRS, the NCRM has already a training bursary scheme available to post-doctoral researchers and part of this scheme could be easily targeted to mid- and senior researchers.

#### 4.6 NCRM’s support of ESRC’s “*Principles that will underpin the interventions that they put in place to strengthen support of DDRS*”

In strengthening support of DDRS, shared principles underlie the activities undertaken by NCRM and the ESRC. These shared principles have run throughout the previous sections of this document and include:

- The importance of a life course approach to ensure appropriate tailoring of training and professional development.
- Engagement with cultures of research methods in the UK Social Sciences – promoting and nurturing change to facilitate UK Social Science research as world leading.

- An inclusive understanding of Social Science research methods and research methods training -- respecting traditions associated with Quantitative, Qualitative, Multiple Method, Mixed Methods, Visual, and Digital approaches to research.
- The value of inter- and trans-disciplinary research and the need for research methods training that supports this research.
- Partnership working (inside and outside academia) for effective, equitable, and inclusive research methods training.
- Sensitivity and responsiveness to changes in society, the Social Sciences and Social Science research methods, thus creating new opportunities for, and innovations in, research methods training.