Data management in perspective: *the career profile of data managers*

The Research Information Network (RIN) and JISC were co-founders, in partnership with the Digital Curation Centre (DCC), of the Data Management Skills Support Initiative (DaMSSI), which supported five JISC research data management training projects*. These aimed to help researchers and their institutions to plan effectively the development of data management skills and training.

DaMSSI has drawn together a range of short career profiles to illustrate the relevance of data management skills to four graduate professions represented by the JISC training projects. These professions are: conservator; social science researcher; clinical psychologist and archaeologist. Each profile demonstrates how the value of data management skills learned alongside other research skills during graduate and post-graduate study contributes to and underpins high-quality professional performance.

DaMSSI has also developed this career profile for describing the work of data managers, to help raise awareness about this emerging new profession.

* Details of the ‘RDMTrain’ projects are available online at: www.jisc.ac.uk/whatwedo/programmes/mrd/rdmtrain.aspx
What data managers do

The role of data manager is a developing profession and as such its definition continues to be debated. For the purpose of the present profile, we define data managers as those who manage and curate the research data generated by researchers during their work on a project or contract. This is in contrast with research information managers and records managers, who handle the management of administrative data in the form of organisational records, including but not limited to data about the research activities within an organisation.

Data managers may work exclusively with the data generated and gathered by one project, or as part of a team working across the organisation, with focus changing according to the demands of each project. The role is an integral part of the research team in commercial or publicly-funded research agencies, government research departments, data centres and the university sector.

Studying to be a data manager

Educated to degree level, data managers often undertake subsequent IT training in a research-related environment, or pick up research and IT skills from postgraduate research experience, e.g. during a PhD or post-doc position. They may also come to the profession from a related field such as computer science, information technology or library and information science.

Daily duties and necessary skills

General responsibilities of the role include checking and cleaning data received or generated by researchers, validating linkages and performing other checks, preparing documentation about the datasets, handling metadata, securely providing access to datasets for internal and external users, and preparing datasets for analysis, secondary analysis and archiving. Other common tasks include liaison with programmers and researchers, defining syntax, contributing to reports and data management plans, and undertaking quality control of publications.

Teamwork is an important element of the role: as well as working well with other members of the research team, data managers benefit from close collaboration with those providing the IT infrastructure, and with those who design and deliver policy and standards. Data managers are also often tasked with project management, the strategic delivery of processes and improving process efficiency.

There are a wide variety of skills required by the role: these are often dependent on the subject area or discipline the data manager is working within and consequently the types of data they are handling. Common skills include a thorough knowledge of popular analysis tools such as SPSS and STATA; understanding of database construction and statistical analysis methods; knowledge of databases and
spreadsheets such as Excel; extensive knowledge of data management issues, including an understanding of the multiple pieces of legislation and requirements covering data security, risk, information governance, copyright and intellectual property; detailed knowledge of the agency or department's subject area or discipline; scrupulous attention to detail; a logical and systematic approach to work; ability to multi-task; project costing and management skills and excellent numeric and communication skills. Some data managers may also need to be familiar with programming languages such as SAS, Perl and Python.

**Professional standards**

Organisations which carry out population-based research are, as a result, responsible for the management of data about individuals. The Data Protection Act 1998 places a series of legal obligations on such organisations and how they can lawfully obtain, store, access, share and dispose of this data. The other main piece of legislation with which data managers must be familiar is the Freedom of Information Act 2000 (in Scotland, there is the distinct Freedom of Information (Scotland Act) 2003; those working in environmental science are covered by the Environmental Information Regulations 2004 and the Environmental Information (Scotland) Regulations 2004), which specifies the legal obligation public authorities are under “to provide information through an approved publication scheme and in response to requests.”

Many research organisations are audited to various ISO standards relating to data management and security, specifically ISO 20252 (Market, Opinion and Social Research); ISO 9001:2000 (Quality Management Systems) and ISO 27001 (Information Security).

Many are also members of the Market Research Society (MRS), which requires adherence to its Code of Conduct. MRS is the professional body for those working in market, social and opinion research, and the business intelligence, market analysis, customer insight and consultancy professions. The MRS Code covers the standards and behaviour expected from members during the collection, storage, analysis, sharing and disposal of data. One of the main principles of the Code is that members of the Society must “respect the confidentiality of information collected in their professional activities” – an undertaking which can only be reasonably expected from organisations with robust data security measures.

The MRS Code also makes its relationship with data protection legislation explicit in its list of Disciplinary Regulations, which specify that members can be subject to disciplinary action if they are “found to be in breach of the Data Protection Act 1998 or other comparable legislation applicable outside the UK.” This message is reiterated in rule A1 of the Code.

Data managers must be aware of the demands of these standards and demonstrably apply them to their practice. They are also likely to need detailed awareness of the standards and codes of conduct relating to data management propagated by the funders of their research and by their own organisation.

**The importance of good data management**

Data must be properly curated, that is to say actively managed throughout its useful life; for much (but not all) data, this should ensure that it is available for re-use, whether by other researchers (or the same researchers in the future), policy-makers, government departments, the commercial sector and the general public. The data supplied by research agencies or departments is sometimes the basis for important financial or policy decisions or ground-breaking research publications and so can be particularly subject to scrutiny. Datasets are often large, complex and constantly evolving, and may also include sensitive or personal data.

---

8. [www.mrs.org.uk/code.htm](http://www.mrs.org.uk/code.htm)
9. MRS Code of Conduct, p4, Principle 4
10. MRS Code of Conduct, p6, regulation (g)
11. “Research must conform to the national and international legislation relevant to a given project including in particular the Data Protection Act 1998 or other comparable legislation applicable outside the UK.” MRS Code of Conduct, p10
These circumstances dictate that data managers must be able to provide rigorous and understandable documentation of the data with which they work, and of the decisions made by the research team about the research project and resulting data. Version control and secure storage and access to data are other important elements of data management which can make a difference to the reputation of the agency, department or organisation and the success of the research project itself.

Data managers must plan for and arrange solutions to the preservation challenges of data which is deemed to be of long-term value, so as to maximise its longevity. Government studies, for example, often require access to data that spans years or even decades, and university departments may be required by their institution and/or funding bodies to make data accessible for several years once a project is completed. Ensuring that data of longer-term value, including that created years ago, remains accessible, understandable and ready for re-use is therefore a key role for the data manager.

In summary, data managers occupy a key position within research agencies, departments and teams. Data managers may have considerable skills in many disciplines and success in the role is underpinned by the ability of the data manager to translate between these various specialisms. Whilst other members of the research team may have some data management skills, the data manager carries the responsibility for the ongoing quality, security and accessibility of data, with an emphasis on timely delivery and cost-effective provision of support to research projects.

Further reading...

**JISC guidance on FoI and research data:**

**Market Research Society Code of Conduct:**

**Market Research Society also provides a list of professional standards, including government and ISO, at** [www.mrs.org.uk/standards/other.htm](http://www.mrs.org.uk/standards/other.htm)

**Information Commissioner’s Office: Data Protection Act for organisations:**

---

This factsheet is available to download at: [www.rin.ac.uk/data-management-skills](http://www.rin.ac.uk/data-management-skills) and [www.dcc.ac.uk/training/data-management-courses-and-training/career-profiles](http://www.dcc.ac.uk/training/data-management-courses-and-training/career-profiles)

For hard copies, please email contact@rin.ac.uk