

Review of the information environment for social science researchers

A report commissioned by ESRC

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Reading this report

An executive summary points to key recommendations. Conclusions and recommendations appear in section 10. A bibliography and glossary appear in the Annexes. In the body of the report any acronyms or jargon terms appearing in the glossary are underlined the first few times they appear thus. The first Annex is a summary of our survey data with charts and figures.

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1 Executive summary

This report was commissioned by the ESRC (Economic and Social Research Council, UK) in response to widespread concerns and uncertainties about the rate of change in the environment within which social and economic researchers find and access information crucial to their work. It was written between September 2005 and January 2006, by Nicky Ferguson and Seb Schmoller, with guidance from an ESRC Advisory Group chaired by Lynne Brindley.

The report presents findings from:

- a web survey of the economic and social research community, including users, to which 342 people responded;
- 47 interviews with figures within that community, from a wide range of roles and disciplines, in academia, the private sector, government and the voluntary sector;
- a focus group at the British Library involving 25 government researchers;
- a Future Look email exchange with 22 research, information and technology experts;
- a desk survey of recent reports, papers, talks and interviews.

The report is organised in five main sections, with eight supporting Annexes. The main sections are as follows:

Section 5 – Information resources

Section 6 – Users and intermediaries

Section 7 – Open access and peer review

Section 8 – Communicating research to policy makers and practitioners

Section 9 – Technology issues: the future

The report's 36 recommendations appear at relevant points at the end of each section, and are also included in full, with related conclusions, in **Section 10**.

This is an executive summary of our main findings, rather than a comprehensive précis of the report itself. The aim of this summary, taken together with Section 10, is to provide readers who are short of time with sufficient insights into the report's contents to inform discussion within ESRC concerning the report's recommendations.

We believe that it is vital for the ESRC information services, and all ESRC-funded resources, to open as much as possible of their data and records to indexing by Google and other search engines. SOSIG has shown that it is possible for a UK-based service, focussing on quality, to be top ranked by Google. The challenge now is to get the contents of internal data structures fully indexed, so that ESRC investment is fully rewarded by the kind of wide audience that Google will provide. Libraries and publishers are already doing this with records which are "hidden" behind databases or "locked" behind authentication barriers. If they can do this, then so should ESRC information services and key UK social science research libraries, data services and other resources.

Communication of research results to research users and potential users is necessary if social science is to be taken seriously by policy makers, practitioners and society as a whole. ESRC Society Today has made a good start with its contribution to this, particularly the Facts and Figures and plain English summaries. Although the government researchers we spoke to all recognised the importance of communication, it is not recognised by all

academics and work needs to be done to explain why it is an important role for the ESRC. It seems to us that there is a role for “knowledge translation” – intermediaries taking on the role of communicating key research finding to policy makers and practitioners.

We noted repeated references to inequities of information access within sectors and between sectors to the extent that there is, in effect, a multiplicity of information environments for social and economic researchers, rather than just one, with the amount of “friction” in these different environments varying widely. These access problems primarily involve subscription journals and databases, but can also include slow and restricted internet connections. Researchers at well-resourced institutions with a good infrastructure found fewer problems than those at small or less research-focussed institutions. Some government departments have far better access than others. Researchers moving into government from academia often found they could not access databases and journals which they previously took for granted. Many US-based services are free because of government subsidies – and UK-based researchers and policy makers will use these free resources in preference to UK-based resources with good coverage of UK research because it is difficult or impossible to persuade their employer to subscribe. In the long run we believe that it would be an enormous benefit to national competitiveness and collaboration between academic, public, private and not-for-profit sectors if radical steps were taken to open access to key subscription journals and databases to the entire UK population. The government of Iceland has taken this step with positive results. The UK’s population is 200 times that of Iceland, but the GDP per capita is similar and we believe the ESRC should work with RCUK and JISC to press the government to actively examine this option. In the shorter term, the ESRC should:

- press the government to negotiate similar access deals across all government departments and to look at subsidising key databases with good coverage of UK-based research;
- ensure that all ESRC-funded researchers have access to the key journals and databases they need;
- talk with JISC and the publishers to examine the viability of low cost temporary access (one to seven days) to such resources.

Information skills training has a bad name, with some justification, because of workshops focussing on skills which are not transferable and rapidly out of date, particularly the details of using particular databases and services. "Why can't these services be as easy to use as Google?" is the reaction. And libraries complain that when they put on an information skills workshop no one shows up. Yet our work tells us that there is a substantial and articulated need for professional development in specific areas of information skills. Topics mentioned by our respondents include:

- using the advanced features of search engines;
- awareness of the wide range of specialist databases and services (particularly those with UK research coverage) other than search engines (without the details of usage procedures);
- judging the quality and authenticity of resources once found;
- creating a successful strategy for a comprehensive review of current research in an area.

We recommend that NCRM, VTS, SOSIG, the Researcher Development Initiative and the Evidence Network be brought together to discuss addressing this need. We recommend the creation of an online tutor-less course with milestones and completion record which should be compulsory for ESRC-funded postgraduates and open to all.

The default search on ESRC Society Today is found to be unsatisfactory by many respondents, even those who appreciate the value of the new content on the service. The poor search results, with low relevance and low quality of the final hits, bring the whole service into disrepute. We suggest several steps be taken to address this. The quality of the web sites associated with ESRC programmes and centres, particularly those which have recently finished or are near the end of their funding, needs to be improved and some measures of consistency introduced. Out of date and undated material should be deprecated. The default search on Society Today should

focus on high-quality material of relevance, including all the corporate material from the ESRC, all the ESRC information services and high-quality material from other research funders. Other sources can still be made available as part of the advanced search. In addition we recommend that an ESRC-site-only search is clearly available as an alternative from the main search page. We also recommend more communication and links between ESRC-funded resources. All resources should be making RSS "feeds" publicly available and Society Today should use this or similar technology to maintain up to date information on and news about the entire family of ESRC-funded resources.

We note that the mandatory deposit in open access repositories of all ESRC research results and resulting publications (and all PhD theses) is supported by the community and we recommend this should be pursued with vigour. We also recommend that the ESRC should make available a corpus or "subject view" of all such deposits and investigate the feasibility of linking them to awards data, other publications and outputs, plain English summaries and datasets both used and created in the research.

We note that the way peer review is carried out may change fundamentally with open access and recommender technology. We also note that some influential figures are questioning the need for and the scope of current peer review practices. While these comments and changes now focus on publication, there is every reason to think that they may apply to peer review as it is used by research councils. We note that if the ESRC is to be a trusted mediator in the future world of peer review it will need to maintain and foster networks of community expertise in quality selection, systematic review and information skills training and to monitor technology developments closely.

We note that paper (books, journals, printer output, grey literature) remains a preferred medium for many researchers. We also note that access to these hard copies is increasingly mediated by a digital search. So we support the creation of digitised catalogues for resources which are not likely to be digitised themselves.

We note that the ESRC information services IBSS and SOSIG have support and high usage amongst our respondents. We recommend that they should be put on a sustainable footing and allowed, indeed required, to undertake approved research and development activity to take advantage of technological developments.

We note the success of the SOSIG section editors, both as a way of taking advantage of distributed expertise and as a mechanism for rooting the service in leading research institutions. We recommend community involvement in Society Today, which should extend to researchers and research users in government.

Full results of our survey with charts and data tables appear in Annex 1. Other Annexes include a glossary and bibliography, findings from the focus group, a list of ESRC-funded resources and the members of the advisory group.

2 Background to the review

This report was commissioned by the ESRC in response to widespread concerns and uncertainties about the rate of change in the environment within which social and economic researchers find and access information crucial to their work.

The ESRC consultancy brief stated:

The main aim of the review is to establish the current state of the broad social science information environment and how it is reflecting the emerging needs of the UK social science research community. The second aim is to identify where the ESRC currently sits within this environment and its future role within it. The review will therefore inform the development of a set of initiatives by the ESRC, in possible collaboration with other funders and providers, in order to enhance future access to and the provision of information resources. In particular, the review will be used to inform the future development of the new online service ESRC Society Today and other information resources.

More details on the brief for this work, and a link to the original call for proposals, can be seen at <http://www.therightplace.net/ESRC-RIESS/brief.html>

The report is intended primarily for a policy-oriented rather than technically-oriented audience, and all of it is intended to be intelligible to anyone who is active as a social and economic researcher, or active in the provision of services or support for social and economic researchers, at any level and in any sector.

Previous reports, papers, talks and studies (full details in the bibliography) which informed our work include: the British Library *Social Sciences Review* (in particular the market research done by consultants bpri to assist this review)¹; the British Academy review: *E-resources for Research in the Humanities and Social Sciences*²; Commission on the Social Sciences: *Great Expectations: the Social Sciences in Britain*³; Council for Science and Technology: *Better Use of Personal Information: Opportunities and Risks*⁴; ESRC: *Consultation with Stakeholders: A Summary*⁵; H M Government: *Guidelines on Scientific Analysis in Policy Making*⁶; Loughborough University: *IBSS User Survey*⁷; NSF: *Long-Lived Digital Data Collections: Enabling Research and Education in the 21st Century*⁸; Research Councils UK: *Position Statement on Access to Research Outputs*⁹; Research Information Network: *Strategic Plan 2005–2008*¹⁰; RSLG: *Researchers' Use of Libraries and Other Information Sources: Current Patterns and Future Trends*¹¹; Tony Hey and Anne Trefethen: *The Data Deluge*:

¹ Tuck, John; British Library; Dec-04; Social Sciences in the British Library; http://www.lse.ac.uk/library/other_sites/aliss/tuck.ppt ; British Library

² Spärck Jones, Karen, et al; British Academy; Apr-05; *E-resources for Research in the Humanities and Social Sciences*; <http://www.britac.ac.uk/reports/eresources/> ; University of Cambridge

³ Rhind, David, et al; Commission on the Social Sciences; Mar-03; *Great Expectations: the Social Sciences in Britain*; <http://www.city.ac.uk/vco/davidrhind/expectations.html>

⁴ Council for Science and Technology; Nov-05; *Better Use of Personal Information: Opportunities and Risks*; <http://www2.cst.gov.uk/cst/reports/files/personal-information/report.doc>

⁵ ESRC; Dec-04; *ESRC Consultation with Stakeholders: a Summary*; http://www.esrc.ac.uk/ESRCContent/DownloadDocs/ESRC_stakeholder_consultation.pdf

⁶ Office of Science and Technology; Oct-05; *Guidelines on Scientific Analysis in Policy Making*; http://www.ost.gov.uk/policy/advice/guidelines_2005.htm

⁷ Creaser, Clare, Lockyer, S. Davies, J E.; Loughborough University; Jun-04; *IBSS User Survey*; http://www.lse.ac.uk/collections/IBSS/pdf/IBSS_Survey_report04.pdf ; Loughborough University

⁸ National Science Foundation; Sep-05; *Long-Lived Digital Data Collections Enabling Research and Education in the 21st Century* ; <http://www.nsf.gov/pubs/2005/nsb0540/>

⁹ Research Councils UK; Jun-05; *RCUK Position Statement on Access to Research Outputs*; <http://www.rcuk.ac.uk/access/index.asp>

¹⁰ Research Information Network; *Research Information Network Strategic Plan 2005–2008*; <http://www.rin.ac.uk/files/RIN%20Strategic%20Plan%20summary.pdf>

¹¹ Education for Change Ltd; SIRU, University of Brighton The Research Partnership; Research Support Libraries Group; Jun-02; *Researchers' Use of Libraries and Other Information Sources: Current Patterns and Future Trends* ; <http://www.rslg.ac.uk/research/libuse/>

*An e-Science Perspective*¹²; Clifford A. Lynch: *The Data Deluge Hits Campus*¹³. Other sources are mentioned in the text and/or the bibliography.

There were also several contemporaneous studies whose authors we spoke to: NCRM (ESRC National Centre for Research Methods) kindly shared information from their *2005 Consultation on Training Needs*; similarly Katalysis Limited and Education for Change. Particular attention should be drawn to Professor Peter Elias' work undertaking the development of a National Strategy for Data Resources to support social science research. With reference to the latter it is worth noting that our brief stated:

this review is not expected to cover social science research data set access and provision (e.g. survey or administrative data). This review will complement the work being undertaken by the ESRC Strategic Advisor for Data Resources, Professor Peter Elias, and the UK Data Forum, who are working to develop a National Strategy for Data Resources.

Naturally it was not always easy to draw a line between data and information – and the advisory group recommended that we include data insofar as it was relevant to general resource discovery.

The ESRC currently funds or part funds 22 research resources (a full list appears in Annex 6) of which the majority are concerned with data. Of the others, we were asked to look particularly at the three which can be described as information services:

- IBSS (the International Bibliography of the Social Sciences);
- SOSIG (the Social Science Information Gateway);
- Society Today, a service piloted in 2004 and launched in June 2005, which replaces the ESRC's own corporate web site, Regard (the awards and publications database), and which provides a federated search facility over a number of different ESRC and external information services.

Amongst the current developments which informed our work it is also worth highlighting the following:

November 22, 2005 *Librarian of Congress James H. Billington and Google Co-Founder Sergey Brin announced today that Google is the first private-sector company to contribute to the Library's initiative to develop a plan to begin building a World Digital Library (WDL) for use by other libraries around the globe. The effort would be supported by funds from nonexclusive, public and private partnerships, of which Google is the first.* <http://www.loc.gov/today/pr/2005/05-250.html>

November 4, 2005 *Microsoft and the British Library today announced a strategic partnership to digitise 25 million pages of content from the Library's collections in 2006, with a long term commitment to digitise still more in the future.* <http://www.bl.uk/news/2005/pressrelease20051104.html>

September 29, 2005 The Open WorldCat program makes records of library-owned materials in OCLC's WorldCat database available to web users on popular Internet search, bibliographic and bookselling sites. "Deep" links to content in library collections – books, serials, digital images and many other formats – appear alongside links to traditional web content. <http://www.oclc.org/worldcat/open/>

3 Definitions, methods and results

3.1 Definitions

Annex 3 has a full list of acronyms and their expansions together with some definitions and jargon terms. Here we define the key terms used in this report:

The **Information Environment**. We defined this in our survey as: *The information environment includes any information sources, services and tools that researchers or research users might use in their work: books, libraries, journals, internet resources, fieldwork results, data, bibliographies, citations, search engines etc.* It was pointed out to us that colleagues, collaborators, conference proceedings and networks of people working in similar areas are all important sources of information which were omitted from this definition but might have

¹² Hey, Tony; Trefethen, Anne; Nov-04; *The Data Deluge: An e-Science Perspective*; [http://www.ecs.soton.ac.uk/~ajgh/DataDeluge\(final\).pdf](http://www.ecs.soton.ac.uk/~ajgh/DataDeluge(final).pdf)

¹³ Lynch, Clifford; Educause; Oct-05; *The Data Deluge Hits Campus*; http://www.educause.edu/content.asp?page_id=666&ID=EDU05033&bhcp=1

been included. The phrase "information environment" is used extensively in a broader context by JISC (Joint Information Systems Committee, UK), who say:

Considerable investment at both the institutional and the national levels has been made to provide high-quality digital information resources for further and higher education. But students, lecturers and researchers are nevertheless currently faced with a vast and sometimes bewildering range of potential sources of electronic information. Each source of information has its own name, its own interface, features and search facilities. Little wonder, then, that many users remain unaware of their existence or fail to discover their value for their own learning, teaching or research. A key challenge is therefore to achieve a managed, coherent and shared information environment that will overcome these obstacles.¹⁴

This seems to be a good summary of many of the concerns which lie behind our own study.

For our purposes **Research** is assumed to include all social and economic research wherever it is being conducted and whether and however it is funded.

Research Users include anyone who uses or would like to use research for work or study, within and outside of academia.

3.2 *Methods and instruments*

3.2.1 Personal interviews

The original brief for this study intended that the majority of the work would be desk work and synthesis from existing reports. However, in discussion with the advisory group it became clear that it was important to consult key members of the social science community and representative research users from outside academia before finalising the methods we would use and before designing our survey. We therefore conducted 47 scene-setting interviews and small-group discussions, mostly face to face, or occasionally by telephone. The interviews were diverse, rich and occasionally contradictory – we have used their content not only to inform this report but to inform the process of design and administering the surveys and focus group. Quotes are labelled by name, role or as **Interviewee**.

3.2.2 Focus group for government researchers

We also ran a focus group for government researchers at the British Library. Some findings, with quotations from the participants, are in Annex 5. To summarise:

1. Movement of researchers between government and academia should be encouraged.
2. There is very patchy access to key resources within government departments.
3. Many researchers had not heard of IBSS, SOSIG, Society Today or several other of the resources mentioned in our questionnaire.
4. Many were also unaware of the government's own initiatives for joining up information from and between departments, such as The Policy Hub, <http://www.policyhub.gov.uk/>
5. Permanent secretaries and heads of departments are working towards better sharing of data within government but it has not reached researchers yet. They are frustrated by inability to get hold of each other's data.
6. Paper still has an important role to play.
7. Many articulate a need for professional development but there is some confusion over how this might be provided.
8. Many use Google as a first port of call or for "scanning the field".

There was general agreement that many site search tools were inadequate: several said that they preferred to use Google to search within sites, including their own departmental sites. Quotes are labelled as **Focus group respondent**.

¹⁴ http://www.jisc.ac.uk/index.cfm?name=ie_home

3.2.3 Web survey

A web-based survey of social and economic researchers, research supporters and research users was set up and publicised amongst the ESRC community of researchers, research users and supporters. It was open for less than three weeks and we received 342 completed questionnaires. As a result of the focus group at the British Library and a concerted effort to get responses from government researchers, we received 50 responses from the public sector. These responses indicated that there is a demand for the kind of information which the ESRC can and does make available and that there is significant potential for expanding the role that social and economic research can play in policy making. A summary of the results from the survey is in Annex 1. Quotes are labelled by name, role or as **Survey respondent**.

3.2.4 "Future Look" questionnaire

A questionnaire with 14 questions requiring free text answers was distributed to 69 figures, some of whom were senior social scientists, others senior figures in UK organisations using or creating social research and other national and international figures in information management and technology; 22 responses were received. In addition a number of respondents decided to complete the web survey instead, and in at least one case one reply was received from a group of respondents. The feedback from this questionnaire was wide in scope and valuable – it has been used to inform the report and quotes appear throughout. Quotes are labelled by name, role or as **Future Look respondent**.

4 General background and context

It is apparent that while the rapidly changing information environment offers exciting opportunities, many researchers find it confusing or declare themselves suffering from "information overload". This coincides with a period where many researchers, in and outside academia, declare themselves short of time and pressured to complete multiple duties which clash with or hinder their ability to carry out thorough research.

The phenomenon of web searching, whether using a generic service like Google or Yahoo, or specific ones like Ingenta, IBSS, or the Policy Hub, has transformed the information environment and has created a dominant "first step" behaviour and a new metaphor for the discovery of research resources. Online search is used as a first step even to paper and books, even to a researcher's own resources, with several respondents commenting to us that they have used a search tool to find a reference to an article, book or report which they have then been able to locate on their own shelves. This is not to minimise electronic browsing; in fact searching and browsing blur into each other with users browsing through search results to find unexpected and odd synchronicities much in the same way that they might scan a library shelf, and some services (e.g. SOSIG) using search algorithms to create and present to users browsable classified subject pages.

There are several players in the search engine arena, with Microsoft and Yahoo both having a major presence and the possibility of others emerging in this rapidly changing and highly contested field. But the best known name is Google, and we shall use "Google" throughout this report as a shorthand for "Google, Yahoo, Microsoft and other search engine providers, established, emerging and yet to emerge".

Several concerns about Google were raised at the beginning of this project by our advisory group and others. We can summarise them as:

1. Has Google rendered specialised services such as IBSS, SOSIG and Society Today redundant?
2. Is Google stopping researchers using more appropriate tools because they would rather use an easy and quick interface?
3. Is Google "dumbing-down" research by making researchers and reviewers lazy and uncritical?

We will attempt to answer these questions as we go along.

The primacy of online search means it is vital to ensure that all resources have some sort of web presence that is indexed by Google. In such an environment, it is crucial to "Get offline stuff online" (either by digitising the resources themselves or, as is suggested by the British Academy review, by digitising catalogues of the

resources). It seems clear that, in the near future, resources which have no web presence will not be seen or used by the majority of their potential audience.

Colleagues and networks, seminars, face to face meetings and conferences are all still vital resources, but within all of these fora, the resources researchers share, use and recommend will be digital and, if not digital or digitally catalogued, will tend to be invisible. And the way that colleagues share, network and discuss will also be digital, so the record of these processes will often be accessible as part of the (digital) information environment for social and economic researchers.

The responses also emphasise the great importance of paper – people use paper, and most people feel comfortable reading on paper not on screen. People still want to hold paper and experience artefacts. But even for people who use their own books and journals as a key resource (45% of our respondents), online discovery mechanisms will increase in importance (they may use Google Desktop to find a word file and then print it out to read, they may use IBSS to check which issue a journal article appears in and go to the shelf for the article, they may scan a fragment of text or artefact to illustrate a point and put it on a wiki or blog with supporting argument).

Electronic tools such as blogs, wikis and social book-marking systems are changing the nature of, and increasing the opportunities for, research discourse. Although more prevalent in other science areas at the moment, this is beginning to affect social and economic researchers and this will increase. Some comments from our questionnaire:

*They work well in research that is traditionally team/lab based, and poorly in subjects where investigators work alone. However, their capacity to draw together colleagues on an international level is having an impact even here, and is likely to increase the level of international integration between subjects with small group wikis and blogs. I also expect that wikis and blogs will greatly transform the ability to convey our research onto the web and make it available for cumulative research. However, there are serious threats here since academic credit cannot really be earned here in any quantity, and many departments discourage this kind of activity as a result. This has probably been the greatest tragedy of the RAE in the UK, since over the same period when scholars could have been developing new cultures of publishing and collaborating online, this activity was actually negatively rewarded in the RAE model, which tends to reward conformity. **Michael Fischer**¹⁵*

*When the printing press was created a whole new set of mediums were created. Broad-sides. Posters. Leaflets. Etc. Some of them are still used. Some not. Wikis and blogs may be the broad-sides and leaflets of today's era. ... I believe wikis and blogs have the possibility for supplementing the scholarly communications process, but not necessarily replacing it. **Eric Lease Morgan**¹⁶*

*I feel there are more problematic issues in using these tools in the context of government (e.g. policy implications, freedom of information, confidentiality etc). So I'm not sure that they would make the transfer of information easier between government and the research community. However they may be a useful interface between researchers in departments – I can definitely see the potential for greater ease in the flow of information, especially in the context of the current situation where trying to get details from colleagues is a real challenge! With a protocol for sensible usage (again a role for GSR here as the central body for defining such things) it could be very useful indeed. **Government researcher***

Many of the traditional reference library functions are now being undertaken by researchers themselves via Google. Advice from a reference librarian is ideally based on quality judgements and subject knowledge. Advice from a service supported mostly by advertising revenue and shareholder expectations may or may not be high quality but will certainly be commercially mediated. The Pew Internet & American Life Project recently published a report called *Internet Searchers are Confident, Satisfied and Trusting – but they are also unaware and naïve*; our respondents tell us that this naïveté extends to postgraduate students and some researchers too.

Today's Internet users ... say they are comfortable and confident as searchers and are satisfied with the results they find. They trust search engines to be fair and unbiased in returning results. And yet, people know little

¹⁵ Prof. of Anthropological Sciences, Director, Centre for Social Anthropology and Computing, University of Kent
<http://lucy.ukc.ac.uk/fischer.html>

¹⁶ <http://dewey.library.nd.edu/morgan/>

*about how engines operate, or about the financial tensions that play into how engines perform their searches and how they present their search results. Furthermore, searchers largely don't notice or understand or discern the different kinds of search results that are being served up to them.*¹⁷

The commercial organisation presenting you with your results may take various pragmatic decisions, changing with circumstances, on whether to highlight scholarly, high-quality resources and which ones to promote. The algorithms for ranking are highly confidential so the mechanism's neutrality cannot be proved (although you can attempt to test it in practice, you only get a snapshot relevant to that moment in time). One needs to balance these negatives with the democratisation (easy and wide access) of resource discovery and deeper and more open access to information resources of all sorts from a wide variety of sources and regions. A transformation of the information environment is taking place whether we want it or not, and the evidence, even from our survey (of self-selecting "e-literate" respondents) is that many people, including researchers, are not that keen:

There is so much information around, I can turn off and not read any of it. Even when I am motivated to read it – where do I start? **Focus group attendee**

My main concern with the information environment is that it is terribly confusing because of the AMOUNT of information sources out there. Some kind of systematic overview would be helpful. **Survey respondent**

Many others express a need for some guidance and control of this overabundance from a source whose quality judgements they trust. This is discussed further below in the section on SOSIG. It is also worth noting that recommender systems introduce a new element into this environment and offer possibilities for addressing an issue which is of key concern to many.

Our final point is that the information environment looks (and is!) different for different users. Discipline, institutional factors such as library resourcing and personnel, network configuration, skill and experience of the user, geographical proximity to a copyright library, whether you are academic, public sector, voluntary sector or commercial - these are all important variables. So there are many information environments for the social sciences, rather than just one.

5 Information resources

5.1 Summary of questions on resources

In our survey we asked respondents whether they had heard of or used in research the following resources:

- ESRC Society Today
- The UK Data Archive / Economic & Social Data Service
- The Social Science Information Gateway (SOSIG)
- The International Bibliography of the Social Sciences (IBSS)
- The Census Programme
- Google
- Google Scholar
- The Question Bank (CASS)
- Web of Science
- COPAC
- A2A
- ESRC National Centre for Research Methods
- ESRC National Centre for e-Social Science

This list was designed to give us a feel as to the recognition and use of the three key information services compared to other resources inside and outside the ESRC research community. Some particular resources or services were added at the request of the advisory group.

¹⁷ http://www.pewinternet.org/pdfs/PIP_Searchengine_users.pdf

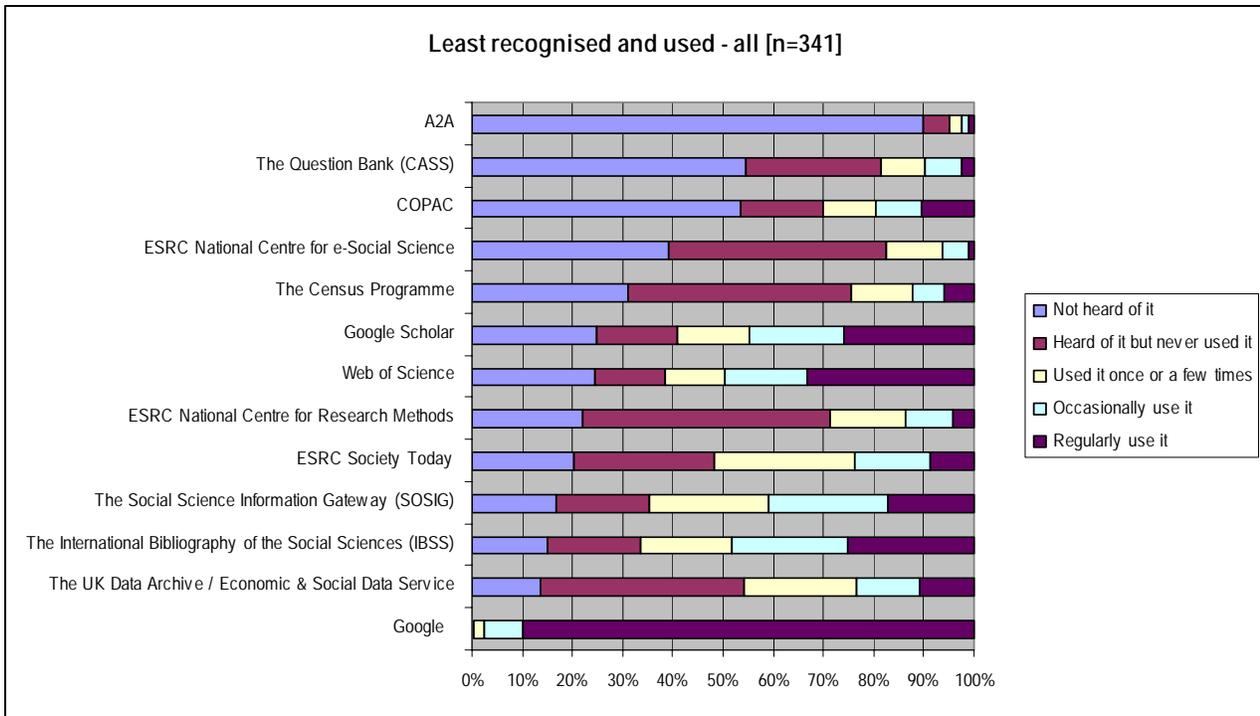
We went on to ask *Where would you go to first to find high quality research information?* and a slightly different question, *Which information sources do you find particularly useful or productive overall?* For these we gave a more generic list of options:

- My own books or journals
- My own fieldwork
- ESRC-funded information resources such as Society Today, SOSIG or IBSS (please specify which resource below)
- ESRC-funded data resources such as the Data Archive or the Census Programme (please specify which resource below)
- Locally supplied resources (institution's own library, library catalogue, e-resource gateways, portals)
- Major journal services (e.g. EBSCOHost, Blackwells, Elsevier)
- Major databases (e.g. Ageinfo)
- Other UK data resources (please specify which resource below)
- International data resources, e.g. ICPSR
- Public library
- British Library
- Google
- Google Scholar
- Other commercial search engine (please specify below)
- Other internet sources (please specify below)
- Institutional repositories
- Subject repositories
- I use none of the above, in which case please indicate in your response to the next question where you typically go first to find high quality research information

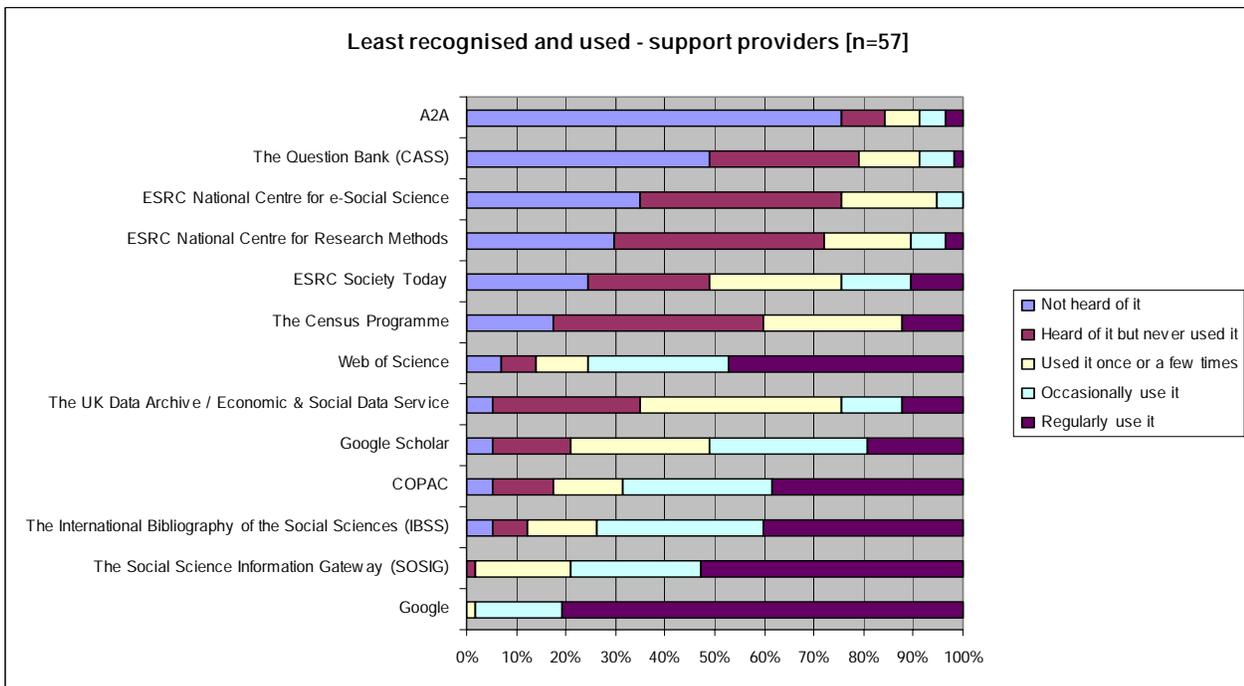
We also asked *How do you keep up-to-date with developments in your discipline / subject area?* Giving the options:

- Printed refereed journals
- Books & current publications
- Bibliographic tools, abstracting & indexing services
- Electronic journals & other electronic publications
- Electronic full text services
- Other printed non-refereed journals
- Electronic pre-print archives
- Computerized data sets
- Photographs & still images
- Newspapers
- Rare books & MSS
- Microfilm / microfiche
- Moving images and / or sound recordings
- Maps & charts
- Artefacts
- Current awareness services
- Internet information services
- Internet search engines
- Others, in which case please specify in your response to the next question

5.2 Recognition, use and approval of existing resources



The chart above shows that IBSS and SOSIG have broadly similar profiles, though IBSS has more regular users and slightly more people have not heard of SOSIG. Surprisingly, only slightly more people have "not heard of" Society Today than SOSIG, indicating that it has done well in marketing and recognition for a new service. However, amongst those polled, Society Today has few regular users and significantly fewer regular or occasional users than the other two services. It may be that Society Today has a broader target audience than the respondents to our survey.



Looking at the same question, but isolating support providers (i.e. information services, librarians and subject support staff; see Annex 1), we get a different picture, with over 50% of them using SOSIG regularly and none saying they had not heard of it. So it seems that on the whole IBSS is more popular with individual researchers and SOSIG with intermediaries, but both compare well with the other services featured.

A further breakdown of all data with many other figures appears in Annex 1.

5.3 IBSS – respondents' comments, our views

Established by an international NGO in 1951, an electronic version of IBSS was first available in 1993, with an online version available free of charge to UK higher and further education institutions in 1995, via BIDS. A complete history and full description is at: <http://www.lse.ac.uk/collections/IBSS/about/keyFacts.htm>

As a result of a competitive tender IBSS appointed Ovid as service provider for the IBSS online service from July 2005; unsurprisingly many users have not yet caught up with this change and others who were used to the BIDS interface hanker after it. IBSS is also now available free of charge to all government departments and to ESRC-recognised research institutes – again many users and some government departments do not seem to be aware of this yet.

*... we direct users to Web of Knowledge, IBSS, EconLit etc which have much wider coverage and which now link to all our e-journals. **Survey respondent***

*Government access arrangements to IBSS; each government researcher being readily able to set up an Athens account. I would like further information on the ESRC resources available. **Government researcher***

*Appropriate databases (major – including IBSS – and minor) would be the first port of call for a conventional enquiry. **Survey respondent***

*GSR have recently provided access to a search facility. The problem is all these bespoke search facilities, whereas I would prefer access to academic search facilities e.g. IBSS and greater access to electronic journals. **Government researcher***

*[I can't access] IBSS, our institution does not have an Athens account so access to various services I know from academia can be difficult. **Survey respondent***

*IBSS (and similar) could have their search functions improved (to be more functional to search as medline is for example). **Survey respondent***

*Restore something equivalent to the BIDS-IBSS service for bibliographic search: the Ovid gateway is far less satisfactory for my needs. **Survey respondent***

*Perhaps an integration of IBSS and SOSIG could use the way SCOPUS has integrated SCIRUS as an example [Elsevier subscription services – one is available from inside the other]. **Survey respondent***

*Google is particularly useful in looking up authors/looking for specific articles if you know the title. Whereas IBSS is excellent for doing a literature search on a particular topic. **Survey respondent***

IBSS performs a valuable and valued service for a significant part of the community we reached, but there is obviously need for an easier path to access, particularly for those in government departments and outside academia generally.

Language is a key issue for IBSS: its translated keywords and abstracts allow one to use English to access non-English resources, which is a very useful facility. Good machine translation has been promised for many years now and has not yet materialised, but a different approach is now being tried, for example by Google, which is developing machine translation using the huge processing power available to it, alongside the increasing body of digitised work (UN documents, out-of-copyright novels etc.¹⁸) that is available in multiple languages, already translated by professional, human translators. If there are major advances in the quality of machine translation

¹⁸ <http://www.itconversations.com/clip.php?showid=382&start=1443.5&stop=1567> extract from speech given at Stanford University by Peter Norvig, Google's Director of Search Quality, 7/11/2004

(as recent evaluation of output from a system developed by Google seems to indicate is very likely¹⁹) then this will have a big impact on the information environment – something IBSS and other services will need to monitor.

The model of access where all academic and government end users have free at the point of use access to IBSS is easy to understand, equitable and popular. If similar deals were negotiated with more databases, this would address some of the inequities of access and provision in the information environment.

IBSS should work with Ovid (their technology partner) to ensure that as much of their content as possible is indexed by Google.

5.4 SOSIG respondents' comments, our views

Established in 1994²⁰, SOSIG was the first subject-based gateway to internet resources in the UK, giving rise to a number of other subject-based projects, all of which now form part of the Resource Discovery Network (RDN). It has a wide subject coverage encompassing all of what ESRC defines as social science. More information can be found at: http://www.sosig.ac.uk/about_us/what_is.html

SOSIG has a network of "section editors" at leading research institutions who look after particular subject sections. It runs an email-alerting service and a colleague-finding service, "Likeminds", which both allow researchers to specify the subjects in which they are interested. Interestingly, both of these services were requested by more than one of our respondents, unaware that such a service already existed.

*I don't use Google Scholar – I didn't find it was a substitute for proper bibliographic searching and it didn't find things that I would normally use Google for. [...] I have created my own set of weblinks – which take me to relevant economics gateways and directories such as Resources for Economists on the Internet, WebEc, INOMICS etc. [...] I also make considerable use of publishers' alert services and direct searches of online journals via EBSO and our library. [...] However to guarantee QUALITY outputs I would always turn to SOSIG or IBSS. **Survey respondent***

*Facilitating access to quality information e.g. via indexing on SOSIG and funding to make the info available i.e. provide and maintain servers on which to mount the info. **Survey respondent***

*Further development of portals (such as SOSIG) so they really become a first stop shop for social science information, links, and so on. I have used SOSIG on a number of occasions but have never been overly satisfied with the experience. However, the idea is sound and I would particularly like it to be developed further. **Survey respondent***

*Since the information is so vast in the field, sources such as SOSIG or Web of Science which bundle the information are very helpful and useful, since they provide central points of access. **Survey respondent***

*The ESRC should also fund services providing access to other high quality social science resources e.g. SOSIG [...] It should continue to support centres of excellence eg on Research Methods. **Survey respondent***

*I suspect it is not widely used, maybe by IT literate people and librarians. It's good but it needs more publicity. **Interviewee***

The section editor of the SOSIG law section is the Institute of Advanced Legal Studies, of which one of our respondents says:

*I am grateful to staff at the IALS library. I am one of the few lucky ones to work for the IALS and I am delighted with the guidance offered there to my researchers and students. **Survey respondent***

Where centres of excellence like this exist then they should be making their expertise widely available (as IALS are, through the law section of SOSIG). Several respondents (from inside and outside social sciences) have recommended this kind of community involvement for widening the content carried by Society Today. It may

¹⁹ US National Institute of Standards and Technology 2005, Machine Translation Evaluation Official Results, http://www.nist.gov/speech/tests/mt/mt05eval_official_results_release_20050801_v3.html

²⁰ Nicky Ferguson, who is one of the authors of this report, played a role in the initial development of SOSIG, but is no longer connected with it

also be worth looking at ALISS (Association of Librarians and Information Professionals in the Social Sciences): http://www.lse.ac.uk/library/other_sites/aliss/

SOSIG performs a valuable and valued service for a significant part of the community we reached; it has been successful in reaching intermediaries who in turn use it to advise and help researchers. More needs to be done to raise awareness amongst the researchers themselves. SOSIG has also put effort into ensuring that other key web sites point to it and recommend it, and the SOSIG data is beginning to be repackaged and represented in other places and interfaces. It is a significant achievement that a Google search for "social science" ranked SOSIG in first place, above all the US-based organisations, services and learned societies, throughout the duration of this work (September 2005 to January 2006). To fully capitalise on this, it is vital that SOSIG records are indexed by Google – this is an urgent priority.

5.5 Society Today – respondents' comments, our views

Society Today was launched in June 2005. It performs several functions. It replaces the old ESRC corporate web site with a lot more information on the research that ESRC funds and the organisation itself. Notably it features plain English summaries of research and regularly updated breaking news features, drawing attention to research that is in the news, or results that have recently been announced. It also replaces the previous Regard database of research awards, publications and other activities which flowed from those awards. It also provides a new search feature, allowing users to cross search a large number of related services, centres, programmes and databases. The default search it offers from the home page is to search all of these sources. More information is available at: <http://www.esrcsocietytoday.ac.uk/ESRCInfoCentre/help/FAQ/#1>

How can I extract information from Society Today? It's a good start but I just get web pages returned – I want something I can use immediately in my work: PowerPoint slides or excel sheets or word charts and tables.

Private sector researcher

PowerPoint slides and some tables are already available from the Facts and Figures section of Society Today. Excel files do not seem to be available, but pasting many of the tables into Excel is trivial. We can read this and many other similar comments as both an indication of lack of awareness of what is really there and an endorsement that Facts and Figures is a step in the right direction.

I think the ESRC already makes results freely available in a user friendly form. They are doing a great job.

Survey respondent

There is a need to raise awareness of work going on in research subject areas (allowing users to contact colleagues and also to check that their proposal is not already being duplicated elsewhere). Society Today could fulfil this role. **Survey respondent**

It is worth noting here that Society Today has a facility where registered users are able to set up contacts lists of other users who have "public" profiles. SOSIG also has the Likeminds and Grapevine facilities.

ST should also be used to get information from people about the ESRC and their perceptions of the organisation, the way it uses its funding, the resources they would like access to etc. ST could be supported by subject specialist librarians – such networks already exist. The National Electronic Library for Health (NeLH) have such a community behind them. Their job is to tell researchers in particular subject areas what's new, what up and coming etc. Such a group could feed news stories etc to ST. **Interviewee**

[ESRC should be] widening access to knowledge and promoting research literacy in users. I really do find Society Today useful and hope it continues to evolve and grow ... But I'm not sure how many people outside of academia know about it or how they find navigating around it. **Survey respondent**

It is unnecessarily labour intensive (and even for a highly motivated policy user, completely unrealistic) to expect a user to have to dig so deeply to get to the core of a major piece of directly relevant ESRC funded research. **Jane Foot**²¹

²¹ Independent policy and research consultant

Has interesting articles and the breaking news section is good; BUT [...] I have journalists ringing me up all the time asking me for the latest research on xyz. Previously, I would not give them the address of Regard because you had to learn to use it, but I could go to Regard and get a couple of screens worth of useful information for them. The new thing doesn't even give me that – Frances Cairncross said they wanted to develop something where you put in "productivity" and got the top UK current research, interestingly written up. I always try it when I go to ST and I just get lots of obscure hits. Interviewee

It's awful ... the old system [i.e. Regard] was clunky and old fashioned but it worked, this doesn't work. I have several excellent postgraduates who can't use it to find essential details of awards and current research, it's very frustrating ... We have a big problem here. Interviewee

I have to say that I don't think the ESRC Society Today web site is all that accessible (and my graduate students have said the same). ... There ought to be some way to make research findings more accessible through this site. Survey respondent

The ESRC must make easily available the results of its own funded research. In my view ESRC Society Today does not adequately fulfil this function. In particular search facilities such as Autonomy do not give the precision necessary. Survey respondent

The new content provided by ESRC Society Today is generally welcomed by our respondents. The plain English research summaries and news sections are popular, although there is a suggestion that they could be more tightly integrated with other sections of the site.

I only discovered these ESRC Fact Sheets in the course of this interview, and they are aimed at people like me. But looking at, say, those under Governance and Citizenship I'd have expected to see more cross-referencing to outputs from the ESRC's own Democracy and Participation Programme. Jane Foot²¹

There were also suggestions that research users (such as government researchers) might be involved in the editorial process of approving fact sheets and summaries. It is generally agreed that all summaries and plain English versions of research need to have the approval of the researchers themselves. There was an often expressed view that the ESRC did a lot well and that one of the key functions of Society Today should be to make those things more visible. The site should also inspire confidence and generate an informal "seal of approval" status – like the BBC. Users would like to feel that if the ESRC features it, then it must be top class research. This is one reason why the federated search, which takes users to diverse and often poor quality pages, is problematic.

There are clearly many people frustrated with the search facilities on Society Today, with complaints received from people wishing to search the awards, the corporate material and the federated search.

Even at the simplest level there has to be a better way of giving people an overview of what exists. ESRC Society Today does not really meet people's needs. It provides a classic example of a Research Council building something for users when it is not connected to the users. I am not sure that its technical approach is realistic. Whereas Autonomy might be right for the BBC, with a large range of similar resources to make available, there is an enormous diversity of resources being captured via ESRC Society, to which the technical approach is simply not suitable. Interviewee

Since the Regard service is no longer around to compare with, it is impossible to do comparative work to prove or disprove the complaint we heard from several respondents that the functionality which Regard offered has been lost. If this is not the case, and we are assured it is not, then there is clearly a problem of presentation, since users who were familiar enough with Regard to complain about its interface and the difficulty in using it nevertheless complain that Society Today does not "even" offer what they got from Regard. Clearly work needs to be done in this area.

Our impression is that many people go to Society Today to look for corporate information, a second group to look for awards information and a third, very important, group to search and browse for key information on what social science research is announcing results or being funded. The default search interface is to search everything – which presents results from a wide variety of social science and non social science sources. As Phil Bannister, Head of Evidence and Analysis at BECTA, says:

An issue with cross-searching is the way in which you lose any sense of the context or identity of the resources you find. For this reason I actually quite like going to a source (like SOSIG) which has a proper identity. For me that is the drawback with resources which try to provide aggregated access to a wide range of sources.²²

To focus your search, you must select advanced options. Perhaps the intention here is to present users who think they have a need for one type of information with a broader range in order to inform them and raise their awareness of related resources. This would work if the results obtained inspired confidence in the way that Google does. They do not – the results of the default, federated search are often off target and frequently contain out of date materials from poorly maintained sites, particularly those that are near or past their end date.

*ESRC funded programmes such as the Democracy and Participation Programme are not forced by ESRC to summarise/capture/connect their results to the real world of policy and practice. The "information environment" is full of web sites like <http://www.essex.ac.uk/democracy/> and <http://www.hull.ac.uk/futgov/>, with undated content; un-updated content; no useable summaries; dire information design, broken links etc [see <http://www.essex.ac.uk/democracy/Projects/ListofProjects.html>]. In all or almost all cases in the D&PP programme the easily accessible information is about what we are **going** to do not what we have done. That cannot be acceptable. **Jane Foot**²¹*

This is not the sort of thing to inspire confidence or encourage users to regard ESRC Society Today as conveying a seal of approval status on what they find. In the absence of Google-like precision, ranking and relevance, Society Today would do better to restrict the scope of the federated search to high quality sites and sites over which it can exert some degree of control.

Even when searching ESRC-funded services like ESDS and SOSIG, with which one would expect quite tight integration, there are problems. For example, the interface presents the search results from other services within a frame which is reducing the functionality a user would expect – it means that the browser Back button and the bookmarking function do not work as expected or at all, unless the user first spots and then understands a small link saying "remove this frame". A search for "anthropology" on Society Today finds three hits on SOSIG in the top ten hits. All three are dead links, as the records were deleted by SOSIG earlier in the year. These two rather detailed criticisms can hopefully easily be fixed, but they are another indication that not all is well with the federated search. The ESRC should replace the default search with a more tightly controlled search of social science relevant, high quality material (perhaps just a search of the corporate information, ESRC information services such as IBSS and SOSIG, other high quality databases such as Rowntree and ESDS and the awards database) to provide the quality and relevance people expect and need from the ESRC web site. In addition a clearly marked search of the corporate web site only should be available.

5.5.1 ESRC and all its funded resources

A list of ESRC-funded information and data resources appears in Annex 6.

Currently there is little to suggest from the web presence of these resources that they are part of a "stable" or family. Indeed it is only recently that a list of these resources was made available on Society Today. This development is welcome, along with the resource directors' meetings which now take place and a sense that the ESRC is now keen to promote the resources and publicise the fact that it funds them in a way that perhaps has not happened in the past. This is not so much a "brand" issue as one of user awareness, though clearly ESRC staff at all levels should have the confidence in all the resources to recommend them and promote them at all public events and during meetings with users. Users should be given the opportunity to discover more about the rest of the stable and certainly that they exist. There is a need for co-ordination between resources; some clearly occurs, but much more is possible. It is notable that the NCRM's recent survey found that as many users found out about NCRM courses from SOSIG as from the NCRM itself and as a result more collaborative work is planned. This is an example of how resources can promote each other and work together in areas of common interest. To an outside user there should be evidence of joined up strategies between the resources.

Society Today could certainly help this by having a section which mapped needs to resources: "if you are looking for X then this is what we have got". A physical version (paper/card/mouse-mat?) of this might also be appropriate. It could primarily be aimed at postgraduates but also be useful for mid-career researchers who may be unaware of specific services.

²² Phil Bannister, Head of Evidence and Analysis, British Educational and Communications Technology Agency (BECTA)

Information services in particular often have fragmented or disparate origins – the RDN is a good example of this. Services, quite rightly, grow out of good ideas, are piloted as a development prototype (or in the case of IBSS transform themselves from a paper-based product to an online service) and then because they are popular or successful or fill a niche, become a service. So the ESRC domain is populated by disparate resources and services which are poorly or not at all integrated with each other. ESRC is not alone in this. For example the same is true, in the main, of many of JISC's services.

So the page which lists ESRC research resources should be expanded or supplemented by a more dynamic page not only listing the resources but saying something about each one (the only extra information it has currently is the date at which funding for that resource ends – not something which encourages a user to use the resource!). One way of accomplishing this would be to use RSS or, as they are sometimes known, "newsfeeds". Each resource should anyway be making at least one RSS feed available to the community. Each could offer a "Latest News" and a "Top Ten" feed. These could be collated on a central Society Today page so that from one page a user could not only find links to the resources themselves and their latest news and most popular features but could also see fragments or examples from these feeds. This is supported by comments from respondents:

... it would be great if their web site could also link to other (searchable) high quality research.
Survey respondent

... more general (but succinct) information on the currently available [ESRC] resources. I've heard of many of them but don't know what they are about, or how they could help me. **Survey respondent**

I think there is loads of information available, but one has not always the time to survey them all. I think something like RSS feeds, that pull information from internet sites and assemble them to a personalised 'news' service would be a great way of improving things. **Survey respondent**

Some of this advanced functionality is already available in Society Today to registered, profiled users; but currently the only available "feeds" seem to be from the Society Today site itself. There seems to be a need for integrating feeds from other ESRC resources, making this functionality more visible and for awareness raising of the advantages and potential benefits of registering.

Resources and information that can be surfaced in a number of flexible ways – I don't necessarily want to have always to go to one place for information, but do want to be kept up to date/made aware of new resources and research outputs. Being able to subscribe to information (ie register for) that is then fed into resources that I also use on a regular basis would be helpful. (RSS feeds, email newsletters/alerts, for example).
Survey respondent

For all the ESRC resources complete exposure to Google is probably the single most important step they can take to promote use and raise awareness, following the approach taken by the journal publishers, with the resources within Blackwell Synergy²³, for example, completely crawled by Google²⁴. OCLC and Blackwell examples make it clear that this can be accomplished even if your resources are contained within a database and even if they require authentication. We are not suggesting that it is always simple to accomplish, but it must be a very high priority for any resource interested in raising its visibility and for any funder wanting the results of its investments to be widely used. No academic service can compete with the flexibility, technical resources and power of commercial search services, so working with them or at least using them to your advantage appears to be an imperative. For the information services, exposure to Google is not just desirable, it is essential. Society Today, SOSIG (as part of the RDN) and IBSS should be taking all steps necessary to expose their content.

The ESRC needs to ensure that funded centres and programmes have a good quality web presence which is maintained throughout the life of the project and after its funding ceases, particularly if it is to be included in a default search of what appears to be the ESRC corporate web site. The ESRC will need to decide whether to have some constraint over such sites or to mandate working to prescribed document structures and standards and whether a third party should monitor and take measures if standards are not maintained. Specific

²³ <http://www.blackwell-synergy.com/>

²⁴ For similar examples and background to the work that OCLC is doing on this see: http://www.oclc.org/worldcat/open/deeplinking/openworldcat_deeplinking.pdf and <http://www.cilip.org.uk/publications/updatemagazine/archive/archive2004/november/lorcan.htm>

recommendations could be made on content and maintenance of these web sites and something could be included within the contractual obligations to reinforce this.

When it launches a big programme ESRC should allocate money to enable the big programme to work with MIMAS (say) to get the sustainability and information management side sorted out. Principal investigators need to be made to do more in this direction, and the "service enhancers" need to be actively attached to projects. Opportunities to achieve economies of scale are not being taken. Peter Halfpenny²⁵.

We recognise that it may take four or five years for stricter policies and controls to have noticeable results in the information environment; meanwhile it may be appropriate to investigate structurally monitoring research centre and programme web sites. It may also be appropriate to conduct a one-off exercise requesting hosting sites to update or remove out of date sites from past investments and for Society Today to take responsibility for such sites after the institutional commitment has elapsed. We understand that Society Today includes the functionality to archive the content of sites, which may be relevant in this respect. All this may take some time. Until the quality of such information improves, we recommend excluding it from the default search available from Society Today.

Integration is happening at the level of individual projects and services, rather than as a result of strategic guidance from ESRC. ESRC Society Today is trying to produce integration, but this probably is not a realistic endeavour; and in some respects every new initiative just adds to the complexity. Ideally a researcher should be able to navigate an information environment containing data as well as research output. We need some sort of "top level portal" through which a researcher can query all these resources, but this is complicated, given the lack of consistent application of technical standards. Success will depend on solutions to a mass of technical and organizational issues concerning things like formats, metadata, authentication, up-to-date-ness, permissions, and prices. Getting things to fit together will only work if there are clear standards, and if funders and research programmes commit both to working together and to the adoption and application of standards. Peter Halfpenny²⁵

5.6 Quality, sustainability and integration

Our survey shows that the ESRC information services IBSS and SOSIG are significant in the landscape. There are many who are unaware of their existence but this could be addressed by taking measures outlined elsewhere. In spite of the 90% of our respondents who use Google on a regular basis, there is no support for the argument that Google has replaced such services. Several of our respondents forcefully emphasise the present and future importance of quality control and services which take quality judgments. ESRC Society Today clearly has an important role to play in disseminating research and research results to policy makers and others, and many of its efforts to provide high quality readable content are praised by our respondents. It could also act as a valuable tool for linking researchers as well as performing the functions of a corporate web site and linking those who need them to details of the ESRC's own awards and the publications and activities which flow from them. It is a new service and there are problems with it, primarily with the search function which is frustrating users and giving them a negative opinion of the site as a whole. If they were addressed quickly and thoroughly, there is no reason for Society Today not to become a recognised source of high quality information for researchers and research users.

From the financial information we have seen, it seems to us that the ESRC gets good value from its investments in SOSIG and IBSS. We have not been given access to such information for Society Today, so it is not possible to comment on this or make comparisons with the other two services. The body of expertise, not to mention the content itself, which has been built up over the years by IBSS and SOSIG is currently associated with the ESRC; it is generally a positive association and one which could be better promoted by the ESRC. It does seem to us that both IBSS and SOSIG would be improved by receiving funding as if they were sustainable services, not temporary phenomena. When their funding is considered, as it regularly has to be, by the appropriate boards, it would be desirable for a debate to take place about how best to make the most of these investments by using their expertise, integrating the facilities they offer, improving their interfaces and allowing them some room to research and develop new directions. It would also be very desirable to see some performance indicators based on regular consultations with the community (users and non-users of the services) and on how well the services

²⁵ Peter Halfpenny, Executive Director, ESRC National Centre for e-Social Science (NCeSS)

themselves succeed in building bridges with the policy community and with other resources, and in getting their data and services integrated, used, reused and re-presented in different forms.

We discuss elsewhere the need for coordination across the ESRC resources. Our respondents also make various references to the need for better coordination between the Research Councils and JISC. Much work has been done in this area but more needs to be done. A balance needs to be struck between ensuring there is no duplication of effort and also that social science has an effective voice in decisions and that JISC is not necessarily relied upon to just "get on with the technical stuff" without appropriate advice and input. No mention is made by our respondents of learned societies or the British Academy, but several mention the British Library. This and the success of the event we held there might indicate that more BL/ESRC and BL/IBSS, BL/SOSIG collaborations could be fruitful.

Also expressed is a need for coordination with other funders (there are many references to Rowntree, including at least one comparing its web site, and particularly the search facility, favourably with Society Today). Rowntree is one of the "external" web sites which should remain within the default federated search. There is a need to work more closely with other social science research funders and link to each other's sites. It might strike an outsider as faintly ridiculous that there was any "competition" to fund and then present high quality research, especially as many apparently top-rated proposals are turned down due to limited resources.

One final word on sustainability. Both IBSS and SOSIG have expressed their concern to us over funding uncertainties. The fact that the University of Bristol is apparently issuing redundancy notices to staff working on SOSIG as we write this, because no decision has been taken on future funding, is not only worrying for them but is part of a pattern of short-term funding which does not reflect well on the ESRC. IBSS and SOSIG have built up an impressive array of mixed information and technical expertise in spite of chronic problems of uncertainty over their future. Decisions on the future of such services should be finalised at least 12 months before their funding is due to expire and some sort of rolling funding arrangement allowing some research and development should be in place to avoid this situation in the future.

5.6.1 The Google factor

The search tools on existing web sites (and this is true for the environment as a whole but we have noticed it particularly during our scanning of the information environment for social sciences) are rarely good, often poor or worse. Our conversations lead us to believe that many users share our view. The more e-literate of them are going to Google and using the advanced search to search a site rather than use the site's own search engine²⁶.

Google has made a big difference. Of course there is a difference between naive and intelligent use of it [...] Google typically does a better job of indexing a particular site than the site's own search tool. For example I recently searched the ONS web site using a text string from an ONS press release and got "no matches found". I searched using Google and found the press release right away on the ONS web site. A further thing I have noticed is that Google's ranking of items is often more useful than that of a site's own search tool.

Richard Exell²⁷

Any resource, service or web site which offers its own search service should regularly be comparing the results with a Google search of the site and either using this to improve their search or offering a Google search of the site alongside their own search (see the Joseph Rowntree Foundation <http://www.jrf.org.uk/> for an example of the latter).

Confidence is a key issue here and Google inspires confidence. People use Google to find basic resources such as telephone numbers, addresses, directions, email addresses, postal addresses and people. Google is very good at that. This seems to engender an unshakeable and unreasonable confidence. Just as people will be very easily put off by a search facility or IT tool or system if it is difficult to use and no amount of new versions or updates will tempt them back, so they will embrace a tool if their first few attempts at use are completely easy and anxiety free and the results inspire confidence and wonderment (and who of us has not been astonished at the

²⁶ For example, inserting "site:nhs.uk" as a search term in Google will restrict returns only to resources on the nhs.uk domain and its (many) sub-domains

²⁷ Senior Policy Officer, TUC

speed and accuracy of Google at well-defined but otherwise impossible tasks?). For information services with limited budgets and without the power of a huge, technically powerful entity behind them, saying "Use us first not Google" is futile and should be abandoned. Saying "Use Google to find us" is much more sensible.

Yet there are major problems with Google as a tool for research. Partly because of the confidence it generates, people don't even bother to use it as effectively as they could do. Despite Google Scholar²⁸'s relatively high level of recognition and use since its launch 12 months ago, far fewer respondents know about it than know about Google, which probably indicates that many have not used the advanced search facilities that Google itself offers. It is also an often-expressed opinion that building collections and other quality controlled indices and bibliographies is not worthwhile in the age of Google. We believe this is a misconception, as our respondents tell us that they may use Google more regularly than any other web-based service but often it is as a tool to find their way to quality-controlled collections, opinions they trust and people they wish to contact. The misconception that Google is all you need is referred to by Carl Lagoze as *googlization*:

Googlization is used in a variety of ways. Here, it refers to the troublesome misconception that Google represents the apotheosis of digital information and that the remaining problems in this domain have either been solved or will be solved by Google (or perhaps by Yahoo!, MSN, etc.). Informal discussions with colleagues in the digital library research community indicate that googlization has infected funding agencies, both public and private. While the absence of a well-funded digital library research program within the National Science Foundation can be attributed to a number of causes, the notion that "Google has solved the problem" is contributory. Carl Lagoze²⁹

A few research supervisors who were sceptical about the value of training or intermediary help to use ESRC services and resources suggested that time and effort would be better spent teaching their undergraduates and new postgraduates to use Google properly and to evaluate resources critically.

*Students are familiar with Google and need to know how to use it better. Young researchers cannot make quality judgments but should be **taught** to. Interviewee*

However, even if this training need were addressed, Google does not find you everything you need. It is a good starting point for finding other resource finders, and for browsing and searching sites, particularly those which have an editorial or quality selection function. Again, the confidence users have in Google is tempting them to trust it to do social and economic research as well as it finds personal contact details. So we identify two immediate problems induced by confidence in Google:

- Sloppy use
- Partial results and limited indexing of the hidden web.

The first can be addressed by training and professional development, the second by back end integration and exposure to indexing by Google (and by training in where else to look).

Search engines are already offering sophisticated advanced facilities such as restricting your searches to particular file type (spreadsheets, PowerPoint presentations, pdfs etc.). They are also dealing differently with sites requiring access and authorisation (see the way Google omits cached information from certain sites, e.g. Blackwell). Google is working with libraries³⁰ and publishers to access information about the journals they subscribe to and the people who are or are not authorised to access them:

<http://scholar.google.com/scholar/libraries.html>

²⁸ Google Scholar was launched in November 2004. Two excellent explanations/critiques of it are available at <http://www.unc.edu/cit/infobits/bitnov05.html#2>

²⁹ Lagoze, Carl, Dean B. Krafft, Sandy Payette, Susan Jesuroga; D-Lib Magazine, Volume 11, Number 11, ISSN 1082-9873; Nov-05; *What Is a Digital Library Anymore, Anyway? – Beyond Search and Access in the NSDL*; <http://www.dlib.org/dlib/november05/lagoze/11lagoze.html>

³⁰ OCLC is exposing millions of bibliographic records to Google and Yahoo: see Dempsey, Lorcan; Nov-04; *The Three Stages of Library Search*; <http://www.cilip.org.uk/publications/updatesmagazine/archive/archive2004/november/lorcan.htm>

5.7 Coordination and organisation in the information environment

5.7.1 The wider information environment and its players

Even looking just within the UK, the ESRC sits within a rather complex structure of players who act within or affect the information environment. It is out of the scope of our work to explain, justify or even provide a schematic for this structure.

Co ordination would be fantastic but not sure if it would be possible ... so many types of social science research from many institutions etc. At present it is very incoherent and demands expertise in searching to get most out of databases. Salina Bates³¹

It is not realistic to try to coordinate the research environment; indeed, the idea of some sort of centralized management system would run counter to the objectives of the research itself. ... As funders of research, ESRC should require that research be available to the public as a whole, and not merely that segment of the public able to pay for access. Stephen Downes³²

To coordinate the environment itself is not possible; to coordinate national and international initiatives designed to enhance the environment is highly desirable. We will point to some of the key UK players, with whom close consultation is essential.

JISC is involved in all sorts of infrastructure, information and research and development activities which contribute to the research information environment. JISC is mentioned several times in this report and also by our respondents and interviewees. We had very useful conversations with Rachel Bruce and Neil Jacobs from the JISC Information Environment team and with Caroline Williams from the RDN.

The British Library is clearly central to the UK research information environment, both in provision of paper copy and electronic services. There is room for closer collaboration between it and ESRC-funded services such as SOSIG – they are working in similar areas and have pools of expertise which would be useful to each other. Again the BL is mentioned often by respondents and interviewees. We had very useful discussions with John Tuck at the BL and he kindly hosted the focus group we ran for government researchers.

Other funders of social and economic research, e.g. **Rowntree**, **Leverhulme**, **Nuffield**. Rowntree is mentioned several times; its web site³³ is popular and effective:

The contrast between the Joseph Rowntree Foundation web site and ESRC Society Today is sharp. JRF makes a non academic researcher feel welcome. ESRC ST comes across as exclusively academic, and with an emphasis on a set of stated research challenges to which we find it hard to relate. Marion Lacey⁴⁸

Certainly from the point of view of researchers looking for funding and research users looking for results, there are good reasons for closer links on the presentation of information from major social science funders.

Our survey (Annex 1) shows us that a very important element in the information environment for most researchers (69%) is the local entry-point, described in our survey as *Locally supplied resources (institution's own library, library catalogue, e-resource gateways, portals)*. So the repackaging of information from ESRC services so that it is directly usable by local gateways is particularly important.

Publishers are also very important, with 52% of our respondents identifying *Major journal services (e.g. EBSCOHost, Blackwells, Elsevier)* as a first port of call.

Although some call for a "czar" role in this area, others point out that the environment itself is "uncoordinatable" and that this kind of top-down approach for an environment whose roots and experience is bottom-up will never work. Nevertheless there is general agreement that close coordination is desirable between UK bodies involved in the provision, assessment, creation and dissemination of information for researchers, if only to avoid duplication and spread awareness of the myriad initiatives and projects in this area.

RIN – Research Information Network. We had a useful discussion with Michael Jubb and Stephane Goldstein who were helpful in providing context for our discussions on open access. RIN is charged to provide a

³¹ Information manager, Social Care Institute for Excellence, <http://www.scie.org.uk/>

³² <http://www.downes.ca/>

³³ <http://www.jrf.org.uk/>

coordination role in the UK research environment and is therefore potentially a very important player, with funding from a variety of sources and input from the research councils, BL, JISC and others. It is not yet clear exactly how this will play out, as RIN has only recently been set up. Several of our interviewees commented that RIN would have to "prove its worth" by actions, but it is too early to judge that at present.

RIN does have a role here but it is hard to see what it is as yet ... what is it doing? ... what activities will result. Partly early days and partly RIN is based in BL and therefore not very visible to academic community and academic librarians. There is some nervousness about the role of RIN/BL ... are they aiming to make institutional libraries unnecessary? **Interviewee**

JISC has shown that it is realistic and beneficial to coordinate and harmonise electronic provision across the HE sector. It is now desirable and beneficial to extend such coordination and harmonisation across sectoral boundaries (eg involving the national libraries, National Archives, museums etc). [...] I am pleased about the establishment of the new Research Information network and believe it well placed to offer a strategic lead and focus for the coordination of UK research resource provision. [...] It is excellent that the Research Councils are involved in sponsoring and steering the work of RIN. ESRC should lead on providing guidance on the social science elements and needs since it is the single expert body best placed to do so. **Geoff Smith**³⁴

5.7.2 International collaboration

We asked respondents to the Future Look questionnaire what steps should be taken on international collaboration concerning the information environment, and to highlight important existing collaborations.

Stuart Macdonald and Geoff Smith point to a wide range of existing international collaborations:

With regard to data we appear to be well served [...]. We actively participate in IASSIST (<http://www.iassistdata.org/>) - the International Association for Social Science Information Service and Technology. [...] Other organisations in the international data arena are: CESSDA (<http://www.nsd.uib.no/cessda/>) - the Council of European Social Science Data Archives; IFDO (<http://www.ifdo.org/>) - the International Federation of Data Organizations for the Social Science; ICPSR (<http://www.icpsr.umich.edu/>) - the Inter-university Consortium for Political and Social Research. **Stuart Macdonald**³⁵

There is already a lot of bilateral and multilateral collaboration taking place, and international forums which bring UK experts and institutions and their foreign counterparts together. Examples include: UKDA's international data exchange agreements; JISC's international collaborations; worldwide digital preservation research; the BL's relationships with other national libraries etc. Rather than seeking to start new initiatives at this point, a useful first step might be to survey existing international collaborative activity and achievements among the relevant major UK players. **Geoff Smith**³⁴

Stephen Yeo is more cautious:

Cooperate (internationally) on data, and on metadata standards, and leave the rest to decentralized cooperation. **Stephen Yeo**³⁶

Cliff Lynch highlights a particular concern about linking between repositories:

This is going to be crucial. I'm particularly concerned about how disciplinary and institutional data repositories link up across international boundaries, especially when the disciplinary/institutional mix varies so much from one nation to the next. **Clifford Lynch**³⁷

There were several other comments on international collaboration in this area which emphasised the value of researcher to researcher collaboration rather than organisational structures. There were contradictory opinions voiced and nothing approaching consensus on whether and in what form international organisational effort would be worthwhile. We draw the conclusion that attempts to coordinate and/or supervise international efforts

³⁴ Formerly Head of Co-operation and Partnerships, British Library and involved in the BA report (see bibliography)

³⁵ Assistant Data Librarian at the University of Edinburgh

³⁶ Chief Executive Officer, Centre for Economic Policy Research

³⁷ Executive director of the Coalition for Networked Information

would not be fruitful but that regular monitoring of existing collaborations would be worthwhile to avoid duplication of effort and to capitalise on worldwide work in this area.

5.8 What users want from resources

- Instant access from the desktop, with little patience for having to wait for Inter Library Loans to arrive.
Accessing books on line rather than relying on the inter library loan system would speed things up and increase the number of sources I use since I generally avoid a source which is only available via the ILL unless absolutely necessary. Survey respondent
There are many commercially available full-text journal services that we simply cannot afford to subscribe to. Interlibrary loans will provide copies, but this is not as immediate as our users are now accustomed to, in the e-world. Survey respondent
After doing a database search – if I find articles that are not available in eformat I have to order them via inter library loan which can take a long time. Survey respondent
In my own research I mostly use electronic journals. I will only look for a hard copy journal after failing to find it first electronically. Survey respondent
- “How to” web sites for my discipline.
- Back-digitisation of “pre-web” research.
- Books and print matter which are not held by the local institution. There is enthusiasm for sharing arrangements between institutions but also a desire for online versions of books.
- 24 hour or one week paid access to data.
It would help greatly if ESRC, on behalf of the social science community as a whole, could exercise some influence over database producers/vendors to provide more affordable access (say for 24 hours or a week). This would also help academic researchers, because many university libraries seem to restrict themselves to mainstream (often US-biased) databases. Survey respondent
- Commercial researchers want access to the same IE.
It is currently incredibly difficult to find up to date good quality research, as a result research that is done outside academia suffers. Private research consultancies are growing and have a place in important policy decisions, therefore it is important that quality research is available to all. Survey respondent

It seems there is a need now to do to databases what html and Mosaic did to the internet. Fifteen years ago, in order to access internet-based information you needed to master an arcane and inconsistent series of commands and procedures to access text or files on any internet-based site. Our respondents complain that you still need to do this for databases, commercial and otherwise. They are looking urgently for easier, more consistent and more comprehensible access. Users are more confident about what constitutes an excellent online service and thus less tolerant of poorly designed interfaces and complicated access procedures.

5.9 New resources and future needs

In the survey we asked *If there are any new or potential research resources to which you would like to draw our attention, please do so in the space below.*

As one would expect, answers to this question were very varied and no common theme emerged, so we have produced a list (see Annex 7). A couple of things caught our eye. Geospatial data was mentioned by one or two survey respondents as being an important but neglected area, including one who asked for:

Online geospatial datasets for Europe and Internationally. Historic geospatial datasets. Survey respondent

Perhaps we were asking the wrong question here – it is likely that there will be so many new potential research resources available (see comments below on *the data deluge*) providing all sorts of interesting opportunities for social scientists that the question will be which resources to examine not which new resources should we create. One survey respondent pointed out that the internet itself was throwing up plenty of these interesting new potential sources:

Some fantastic new research arenas include: [...] flickr.com, youtube.com, archive.org, waybackmachine.org
Survey respondent

Social bookmarking systems, which are web-based online reference management systems, are a relatively new form of research resource which went unmentioned by survey respondents. For some social and economic researchers, the contents of publicly available bookmarking systems like del.icio.us³⁸ (recently acquired by Yahoo!) are themselves of potential interest as a source of data about their users. A bookmarking system can also provide a researcher with a helpful tool, integrated into her browser, for managing references; and if that researcher chooses to make her bookmarks publicly available, then these become part of the information environment for other researchers. Connotea, a sophisticated open source social bookmarking system launched January 2005 by the Nature Publishing Group, and modelled broadly on del.icio.us, is an interesting case in point³⁹.

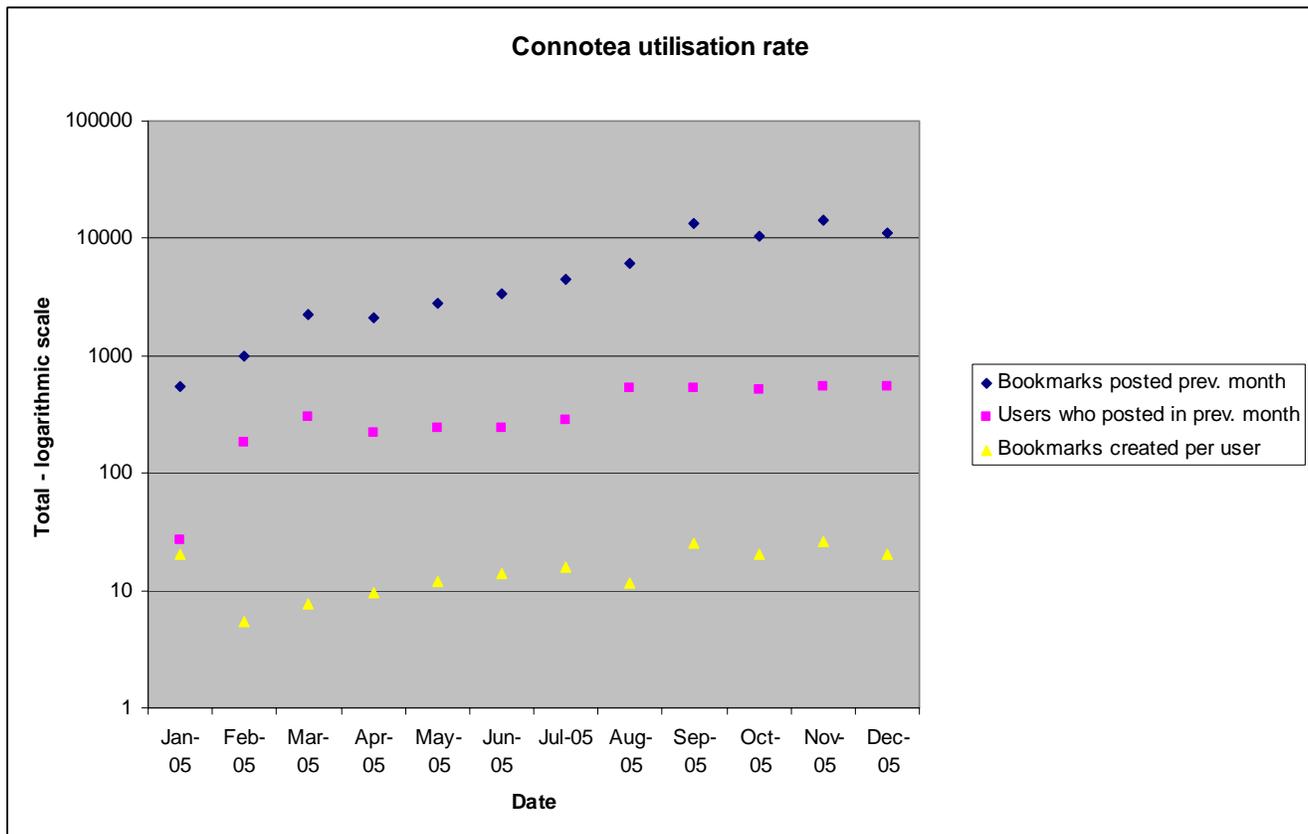
*Connotea is a place to keep links to the articles you read and the web sites you use, and a place to find them again. It is also a place where you can discover new articles and web sites through sharing your links with other users. By saving your links and references to Connotea they are instantly on the web, which means that they are available to you from any computer and that you can point your friends and colleagues to them. In Connotea, every user's links are visible both to visitors and to every other user, and different users' libraries are linked together through the use of common tags or common bookmarks.*⁴⁰

The chart below (based on unpublished data helpfully provided to us by Ben Lund from Nature Publishing Group's New Technology Team) shows the growth in utilisation rate since the launch of the service. What is not clear from the data is the extent to which Connotea is used by researchers for resource discovery as well as for storing bookmarks, and this is something which ESRC should investigate, alongside examining whether an application with similar functionality to Connotea should be provided as a service within ESRC Society Today.

³⁸ <http://del.icio.us/>

³⁹ Lund, Ben, Hammond, Tony, Flack, Martin, Hannay, Timo; Apr-05; D-Lib Magazine, Volume 11 Number 4; *Social Bookmarking Tools: A Case Study – Connotea*; <http://www.dlib.org/dlib/april05/lund/04lund.html>

⁴⁰ <http://www.connotea.org/about/>



We were not surprised that none of our survey respondents mentioned the ESRC "research challenges" – they are relatively new and most researchers have their own research interests which they will bend to fit the current priorities. We did press our interviewees to tell us if the challenges would create particular new needs for the information environment. Most said "No". The positive responses we did get were more general than specific to particular challenges, but a couple are worth mentioning briefly in this context.

The mass of government data is slowly becoming available; much more could come in the future. The government is committed to sharing data between departments (though departments report a long way to go on this) and there is no reason why suitably anonymised data should not be more generally available; see <http://www2.cst.gov.uk/cst/reports/#10>. Techniques which are used widely in supermarkets and credit agencies could be extended to government data. Even the commercial data themselves could be analysed within appropriate secure analysis facilities, as is currently being done with some government data. There is also scope for the integration of quantitative data from very different sources (the geospatial data mentioned above might be relevant in this context).

Probably the best way to keep in touch with the developing needs of the user community is to conduct regular, repeatable and comparable consultations with that community. The JISC/CURL report on digitisation recommends to the research councils:

There needs to be a systematic survey of user needs, particularly in the sciences and social sciences. This could be carried through approaching research bodies, subject associations, the academies and the royal societies. Researchers are more likely to respond to research bodies than the RLN, but the library community could help in encouraging RLN awareness and thus increasing its impact ... The findings of the user needs study should be shared with JISC and CURL and/or the Research Libraries Network so that the response to the findings and the roles undertaken by these players can be co-ordinated.⁴¹

We believe that, building or improving on the hastily assembled methods used in this study, the ESRC should put in place regular consultation mechanisms with the community, collecting comparable data on an annual or

⁴¹ JISC / CURL; -05; Digitisation in the UK The case for a UK framework; http://www.curl.ac.uk/projects/Digitisation_in_the_UK.pdf

biennial basis which should also be open for the community to analyse. Standing focus groups might be used for users of the information environment to provide the ESRC with feedback and ideas. Mandating services and research resources to encourage their users to participate in such mechanisms would also be useful. Allowing room for some "over the shoulder" observation of user behaviour would also be valuable.

5.10 Recommendations from this section

Recommendation 1: The ESRC should make a very high priority of exposing the hidden records (or metadata associated with them) of resources to search engines, particularly Google. Society Today, IBSS and SOSIG are prime candidates but all ESRC resources should look at it urgently.

Recommendation 2: The ESRC should use its influence with leading UK social science research institutions to encourage similar initiatives to the OCLC and Google collaboration, i.e. opening library catalogues to indexing in order to promote and "release" research resources (in their physical and online manifestations).

Recommendation 3: The ESRC should replace the default Society Today search with a more tightly controlled search of social science relevant, high quality material (we suggest just a search of the corporate information, ESRC information services such as IBSS and SOSIG, other high quality databases such as Rowntree and ESDS and the awards database) to provide the quality and relevance people expect and need from the ESRC web site. In addition a clearly marked search of the corporate web site only should be available. The complete federated search could be offered from the Advanced Search screen, until the federated search has proved that it can provide what people expect and need from the ESRC web site.

Recommendation 4: All ESRC resources should be mandated to produce RSS feeds for latest news and most popular resources (or equivalent RSS feeds as they see fit). Society Today should host a page bringing together these feeds so that there is an ESRC Resources page on Society Today with current information and news on each of the ESRC funded resources.

Recommendation 5: The ESRC should take measures to ensure its investments have consistent high quality web sites and that past investments are adequately represented.

Recommendation 6: Building or improving on the hastily assembled methods used in this study, the ESRC should put in place regular consultation mechanisms with the community, collecting comparable data on an annual or biennial basis which should also be open for the community to analyse. Standing focus groups might be used for users of the information environment to provide the ESRC with feedback and ideas. Mandating services and research resources to encourage their users to participate in such mechanisms would also be useful. Allowing room for some "over the shoulder" observation of user behaviour would also be valuable.

Recommendation 13: The ESRC should fund a pilot project to present to users from one interface: research results, summaries in plain English, the data used and created during the research, publications, interviews and other outputs.

Recommendation 21: IBSS should promote awareness both among government researchers but also amongst their IT support staff.

Recommendation 26: IBSS and SOSIG should be funded in the future on a sustainable basis so that regular crises involving staff redundancy notices do not occur and so that the services have room for research and development and are not technically "frozen". The ESRC should work to promote the services throughout the community, showcasing them at appropriate events and ensuring individual staff promote them in their contacts with the community.

Recommendation 27: Society Today should consider more community involvement in the creation and dissemination of content. The SOSIG section editors are a valuable model in this regard, and ALISS⁴² (Association of Librarians and Information Professionals in the Social Sciences) may also be worth investigating.

⁴² http://www.lse.ac.uk/library/other_sites/aliss/

Recommendation 28: If the ESRC is to be a trusted mediator in the future world of peer review it will need to maintain and foster networks of community expertise in quality selection and information skills training and to monitor technology developments closely.

Recommendation 29: The ESRC information services Society Today, IBSS and SOSIG should all have performance indicators linked to the feedback from the community gained in such consultations. PIs based on the reuse, re-presentation and integration of data from the services into other services and interfaces should also be considered.

Recommendation 30: The relationship between the ESRC and the RDN should be handled at a JISC level so that jointly funded initiatives get a consistent message.

Recommendation 31: The ESRC and the British Library should examine the potential for enhancing the scope, quality and depth of ESRC-funded research by specifically exploiting British Library collections and resources.

Recommendation 32: ESRC information services and the British Library should examine areas of potential collaboration and expertise sharing; they should also examine the potential for holding awareness-raising events aimed at specific target audiences such as NGOs, charities and not-for-profit organisations, as well as local and national government researchers.

Recommendation 33: Society Today and SOSIG should actively collaborate to discuss possibilities for their authenticated services, investigate integration and ensure that there is no unnecessary duplication of effort or confusion in the minds of users over such services. They should also investigate the possibility of having a common username and password for both services.

Recommendation 34: IBSS and SOSIG should meet regularly and investigate where there are possibilities for closer collaboration – one possibility is to make one available from inside the other in the way that Elsevier have integrated SCOPUS and SCIRUS.

Recommendation 35: There should be a visual roadmap matching needs to resources – appearing on Society Today and possibly as a card leaflet or mouse-mat.

Recommendation 36: The ESRC should ask the National Centre for e-Social Science to investigate the extent to which social bookmarking systems such as Connotea are used by researchers for resource discovery. In the light of the results, the ESRC should then consider whether or not an application with similar functionality to Connotea should be provided as a service for social and economic researchers within ESRC Society Today.

6 Users and intermediaries

6.1 Serendipity and "Googleocracy"

Contrary to popular opinion, search engines appear to be tools for serendipity. One often hears concern voiced that the serendipity of a library shelf or common room journal table cannot be replaced by the sharp focus of a search engine query. But it may be that there is a serendipitous effect of using a search engine which is different but equally powerful. In a paper submitted to the WWW2006 conference in Edinburgh in 2006, Fortunato et al produce empirical data to show that:

The net effect of search engines on traffic appears to produce an egalitarian effect, smearing out the traffic attraction of high-degree pages ... search engines lead users to visiting about 20% more pages than surfing alone ... contrary to intuition and prior hypotheses, the use of search engines contributes to a more level playing field, in which new Web sites have a greater chance of being discovered and thus of acquiring links and popularity.⁴³

This is supported by the fact that a very surprising 53% of our respondents use search engines for keeping up to date. Again, this is an indication that less obvious but very powerful facets of services are underused. Both Google and SOSIG offer alerting services notifying researchers by email of new materials in their specifically

⁴³ http://arxiv.org/PS_cache/cs/pdf/0511/0511005.pdf

selected subject areas – yet not one of our respondents mentions these alerting services, although several ask for such services to be set up:

ESRC should have an internet service where people could subscribe, select some topics of interest. Then the ESRC could e-mail subscribers to inform about the latest publications and researches about their topics of interest. Survey respondent

There is certainly scope for closer collaboration between Society Today and ESRC-funded services to ensure better integration and that unnecessary duplication does not occur on such services. For example, looking at Society Today and SOSIG, ideally one would have the same login for both services (cf Yahoo and Flickr) – certainly they should share alerting, colleague-finding and their registered user base.

Twenty years ago many people expressed a worry about computers replacing books. Now almost everyone uses computers but people have not stopped reading books. Similarly Google will be (is, according to our respondents) almost universally used but will lead people to other sources of detailed and appropriate information. In a conversation between Clifford A. Lynch, executive director of the Coalition for Networked Information, and Michael A. Keller, University Librarian, at Stanford University they point out that if millions of books get indexed it is a leap forward into promoting and "releasing" the books off library shelves.⁴⁴ Whatever its limitations, they argue that such indexing must be better than the limited metadata in library indexes. Thus there will be more people seeking to look at both the physical volumes and their online manifestations, just as happened when library catalogues were put on line. Lynch comments that word searching is only the beginning of the game, drawing attention to the power of being able to do computation on the contents. We are, he says, going to see very powerful new access techniques and organisational techniques based on computational approaches, using text mining etc. This is of particular interest to social scientists. We know that when a text becomes digital it opens up new research techniques and analyses with the use of all kinds of software approaches not possible on printed material. We should look forward to using the ability to extract multiple meaning, through text mining, from large bodies of digitised literature of all sorts. The Google Print initiative and the other digitisation efforts mentioned here open up another rich vein of research resources.

6.2 Intermediaries and support

Information professionals (intermediaries) care about the quality of the information they are giving to their clients. The client may care primarily about the quality of his/her own argument/thesis, which is slightly different.

Many researchers are heavily dependent on colleagues and a small information service or library staff; the survey highlights this. The intermediaries are often the gatekeepers of knowledge and the path of access to services and publications whether commercial, academic or open to all. There were many comments praising local library staff (as well as a small number questioning the value of them at all). The intermediaries who are used, both by researchers and by other intermediaries, get a ringing vote of confidence from both researchers and intermediaries. However, the comments we have indicate something a little more subtle, in that several of them doubt the general level of expertise "out there", i.e. amongst the intermediaries who are not their immediate colleagues:

Researchers in academia ought to be able to get professional guidance and support in this area from their university libraries, but it seems that this is frequently not the case. The reasons may be primarily financial (libraries are too overwhelmed with undergraduates, and under-resourced to provide such a service) but it may also be that libraries assume that the provision of networked access to electronic resources is all that's needed. It isn't. There will almost always be other resources that could be useful, and the assumption that all researchers know how to use electronic resources effectively is misplaced. Many need ongoing support and help (even if not all know they do!), preferably locally provided. Survey respondent

The pace of change in the digital environment and the other demands on their time means that individual subject librarians and intermediaries complain that they have difficulty keeping up. In interviews we are told that support is already informally provided between institutions (sometimes locally, sometimes on a subject-focus basis). However, staff are wary about admitting this as they perceive that it might be discouraged by university

⁴⁴ <http://www.learningtimes.net/acrlarchiveaccess.html>

authorities who are keen on establishing a competitive advantage over other institutions rather than encouraging collegiality between them. Perhaps the ESRC, or the Research Councils together, could press institutions to share or pool expertise where support person A in institution Y provides specialised support to a researcher in institution X?

The ESRC might also run events aimed at intermediaries (e.g. social science librarians) to get together with talks on ESRC resources. The British Library might be a good location for such an event; it certainly proved so for us. Perhaps, as a beginning, a tailored version of the resources strand of the ESRC Research Methods Festival⁴⁵ could be repeated in front of an audience of social science librarians. This might be combined with an approach to ALISS (as mentioned above).

6.3 Existing access problems and suggestions

There are different types of users of the information environment. We know from our respondents that research supervisors in senior positions at well-funded institutions with good institutional infrastructure report few access problems. Many government researchers, researchers working for independent and/or small commercial organisations and researchers at smaller or poorer academic institutions do report problems with access. They range from waiting for Inter Library Loans to the inability to get hold of e-journals to being forced to take long journeys to the British Library. Many suggest that they will often use the materials which are easily available and only if materials are vital will they endure difficult, costly or time-consuming access procedures. These **survey respondents** were all concerned to widen access:

The Home Office internet connection is not very good, we cannot access sites which require Flash etc. Also it would be useful to have desktop access to some of the big research databases e.g. psychlit etc.

Central funding of a few common electronic resources would be very useful and would smooth out resource differences between institutions. In the business field – market research and company information [...] JSTOR would be another very useful resource candidate.

Ensuring researchers at all institutions get equal access to online resources. In the current environment, researchers at larger and better funded institutions have access to considerably more resources.

Is there a way which people on ESRC grants could have access to more journals ... I'm sure this would make research a lot quicker.

As a general point – and especially for social science practitioners, policy makers and researchers outside academia – the cost of subscriptions is a major deterrent.

Working in local government, it is often very difficult to access resources that the academic community take for granted, academic libraries, online journals. We tend to use alternative sources.

I [government researcher] feel very restricted by no longer having access to the resources I used to have when I was in academia. I now have to use an intermediary.

Many informants alluded to what might best be described as “friction” in the information environment, i.e. “difficulties with finding stuff”. This is particularly true of research results where many complain of frustration with what one describes as “fragmentation of research output”. Causes include lack of skill and experience; access difficulties (as mentioned above, the biggest variation is between those in and outside academia, but there are also wide variations between different institutions); incoherent organisation of online resources at institutional, service or programme level; lack of proper training:

*I have previously received extensive training in the use of resources at the (Australian) institution where I undertook my PhD studies. My experience here has been that such resources are far less accessible, but this has not been a problem for me due to my previous training. I do have concerns for my students though, because it is not clear where they can go for guidance. **Survey respondent***

It's worth stressing that most researchers (and others, including PhD students) I've been involved in from an information retrieval training point of view have very limited skills and knowledge of the resources that might be useful. Tracking things down through Google (or similar) can also require considerable persistence and

⁴⁵ <http://www.ccsr.ac.uk/methods/festival/index.htm>

*ingenuity. If ESRC could invest in better training (including refresher courses) in information skills, it would be a great boon. **Survey respondent***

Another cause of frustration is the sheer complexity of finding information:

*My priority would be a drive for simplicity and minimising clicks in the e-environment: the amount of hoop jumping it takes to access data could easily raise suspicions of an exclusionary plot! **Survey respondent***

*There is too much information available and too many places from which to source it. It is all overwhelming and I tend now to stick to one or two sources I am familiar with. **Survey respondent***

*Generally, I go to the SSCI first (held on Web of Science) to look for articles dealing directly with the issue. Depending on what I find (number of articles, number of frequently cited articles, quality of articles) I will either read these, or try to identify the area that my topic is a subset of, and look for these articles. I will at the same time, but with much less vigour, look for documents through Google ... Depending on what I find, and the importance I attach to delving into the topic, I will look for books, and go to the library to read them. **Survey respondent***

Several respondents mention difficulties in getting hold of PhD theses and query why they are not available by default online as is normal in the US. Several knowledgeable respondents also compare unfavourably the UK government's attitude to funding key databases and other resources to that of the US government:

*Far too many UK resources are priced because central government won't fund or even partially support them. As a result I and many social science researchers fall back on free United States resources which in the social care world reflect a different culture. For example AgeLine is free, so is NCJRS, Medline etc etc – all American. AgeInfo, ChildData, Social Policy & Practice, Planex, etc struggle to survive because few university librarians know about them. Yet these databases contain most if not all of the UK's research and practice output. **Survey respondent***

*There is a marked difference in approach between the UK and the US in respect of very long time series for, for example labour market data. These are much easier to obtain for the US than from the UK, and if time series – a major priority for us – can be found on Government web sites they have a habit of not being there next time you look for them. **Ian Brinkley**⁴⁶*

Researchers are frustrated by a lack of access to commercial resources mainly due to high costs, some noting that commercial organisations spend millions collecting data whose commercial value is high only for a short period of time and yet academic researchers have not found it possible to access even the historical data.

*Resources primarily targeted at business users and priced out of reach of most academic institutions: e.g. tax treaty database and other publications from International Bureau for Fiscal Documentation. **Survey respondent***

*Company information, especially accounts information in historic standardised form (now lost from Datastream). **Survey respondent***

*Research carried by private companies – it is often frustrating that you cannot review publications or data without paying for them, as often you don't know whether it's worth paying as you can't be sure what you're paying for. **Survey respondent***

Some assert that pressure to reduce library expenditure is causing subscriptions with low usage figures to be cancelled, regardless of quality:

*More specific research journals, the institutions demand that all resources must earn their place means more generality. **Survey respondent***

Others complain that once a print subscription is cancelled in favour of an electronic journal, the organisation is endangering its future, since if the online service is later ended, there is no print back-up:

Electronic access is expensive and increasingly so. Also libraries are increasingly taking out electronic subscriptions and cancelling print ones. This means that when they cut off the subscription, they have no

⁴⁶ Chief Economist, TUC

*organisational memory of those facilities. This is very dangerous in academia and leaves the library hostage to private corporations (who might increase prices, go bankrupt etc).*⁴⁷ **Survey respondent**

One's first thought might be that the advent of electronic media, the pervasive use of the web and email from work and home and the increasing amount of digitised content would all have made it easier for isolated researchers and those at poorly funded institutions and reduced the "information gap" between them. Our respondents tell us that is not how they see things. If anything these developments seem to have exaggerated the disparity of access – with researchers at well-provided institutions being able to access almost everything they need easily and seamlessly, often not knowing when they are using free or subscription-based resources. Others paint a far more disjointed and dispiriting picture of the information environment. Certainly expectations are raised by those resources that are easily and freely available, by researchers moving between sectors and between institutions and by more contact with colleagues nationally and internationally. For many, whether "absolute standards of living" have gone up for all is not as relevant as the growing gap in relative standards. The movement of researchers between sectors and the increasing collaboration between sectors also highlights unequal access to resources between sectors:

We get a lot of approaches for help and advice from social and economic researchers in academia, and we ourselves do and commission social and economic research, or work alongside academic researchers on such research. It is unhelpful that we are excluded from accessing the same range of research resources as are routinely and easily accessed by our colleagues in academia. Why are we not allowed into the same research environment as our research partners? **Marion Lacey**⁴⁸

Data is central to our work, and there has recently been greater effort by Government to get bigger and better data-sets organised, which are sometimes less easily accessed by consultants than by academics. The situation is worse for access to research literature where there simply is not a level playing field between researchers in the private sector and in academia. For this reason we tend to steer clear of contracts involving literature reviews, but this is to some extent rather limiting, in that if we were also undertaking literature reviews it would mean we would bring a broader perspective to our more policy-oriented work. **Private sector researcher**

Several respondents point out that ESRC-funded researchers *should* have access to the best research resources and that this is surely in the ESRC's interest in order to improve the quality of the research that the council funds; they further point towards the intriguing notion that the ESRC could attempt to level the playing field for their funded researchers so that the individual institutional policy was not such a crucial factor. We presume that at any one time the total number of ESRC-funded researchers (to include not only award holders but research assistants and funded postgraduates) would be around the size of some academic institutions; and that many of those researchers (perhaps well over half) are at well-resourced institutions and can already access most of the subscription only resources they need. So perhaps, in the short term, the ESRC could negotiate through JISC, and/or directly with publishers, access for all of its researchers – this would clearly benefit the isolated and poorly resourced researchers who appear to be a disadvantaged minority in this regard.

Since 1998 Iceland has provided a countrywide access portal providing all Iceland's citizens with free access to more than 8,000 full text journals and 30 databases, funded by some of the country's major libraries. Icelanders thus have comparable access to digital resources to that enjoyed by researchers in a typical UK research university⁴⁹; and extensive use is reportedly being made of these resources by people outside the research domain.

It is clear that there has been a great increase in the usage of electronic journals provided by the national access. It is used by the general public, specialists and researchers. It is used by many institutions that do not pay for this access. The electronic journals are available to everybody, but only a few libraries pay for them out of their budgets. The usages of this electronic information is increasing, benefiting the total population. It is

⁴⁷ Authors note that LOCKSS aims to solve this problem: <http://www.lockss.org/>

⁴⁸ Research Manager, Scottish Council for Voluntary Organisations

⁴⁹ <http://www.hvar.is/sida.php?id=5>

important for education, technology and research that this access will remain open. **Solveig Thorsteinsdottir**⁵⁰

Certainly such an arrangement for the UK, with a population nearly 200 times as large as Iceland's, would be a major undertaking. But its feasibility is something that the ESRC should be encouraging the UK Government to examine.

6.4 Professional development

At the very least, students should be given a basic introduction to search techniques and, where appropriate, training should extend beyond the mainstream, academic resources that are currently made available within the universities through JISC. They should be made aware of (or trained in how to identify) a wider range of sources, and how they might be accessed from other locations such as the British Library or specialist institutions. They might also usefully be given a general understanding of the complexity of the social science literature including the variety of media in which it appears. **Grayson and Gomersall**⁵¹

We are always battling against potential skepticism, which prevents researchers thinking constructively about tools which could help them. Through training, ESRC should be building the capacity of the research community to understand the future possibilities. **Peter Halfpenny**⁵²

In my experience many researchers in HE need professional development in information skills, with a specific emphasis on what is available for their domain, on the general principals of search (Boolean operators, truncation, wildcards etc), and on how to sort the wheat from the chaff. Academics are very varied in their skill and understanding of these issues. **Andrew Fleming**⁵³

6.4.1 Respondents' views

Given the unease expressed in many comments about researchers' lack of information skills it is interesting that only 34% of academic researchers answer Yes to the question "Would you like to know more about finding and evaluating information from libraries, databases, the internet and other sources?", as opposed to a very high 70% of those in the public, business and not-for-profit sectors. Yet 34% is enough, we think, to point to a significant demand. Comments received cast some light on this, with several respondents not liking to sign up to our wording but nevertheless expressing a desire for professional development in particular related areas:

Not interested in finding out how to evaluate info from libraries or datasets since it will be my job to do this evaluation if I have to tackle a topic. Am interested in how other people go through information sources and what criteria they use to select important information, how people compare disparate documents on a topic – generally how others “read” through the vast information sources available. **Survey respondent**

Social scientists need more than a set of functional skills at finding information, since part of what search and retrieval may involve is finding details of an effective research methodology. **Phil Bannister**²²

Many researchers rely on unsophisticated undergraduate level searching skills. The majority never use “advanced search” features and most are content with a quick and dirty search on a non-academic search engine or through an e-journal's search box. The majority fail to realise that information finding is a sophisticated research method. **Survey respondent**

I feel particularly poorly served in terms of professional development, particularly in connection with the kind of work I do. Would value some ESRC provided PD aimed at social scientific researchers on information processing that was provided in my region. **Survey respondent**

⁵⁰ Thorsteinsdottir, Solveig; Journal of the European Association for Health Information and Libraries, Volume 1 Number 4; Nov-05; *Does National Access to e-Publications Make a Difference: The Icelandic Experience?*; http://www.eahil.net/newsletter/journal_2005_vol1_n4.pdf

⁵¹ Grayson, Lesley, Gomersall, Alan; ESRC UK Centre for Evidence Based Policy and Practice; Jun-03; *A Difficult Business: Finding the Evidence for Social Science Reviews*; <http://evidencenetwork.org/Documents/wp19.pdf>

⁵² Peter Halfpenny, Executive Director, ESRC National Centre for e-Social Science (NCESS)

⁵³ Project Manager, Evidence and Analysis, British Educational and Communications Technology Agency (Becta)

It might be useful to attend a professional development course about identifying and selecting relevant documents to a topic – dealing with processes of identifying, selecting, and processing documents. My current job involves a lot of this, my boss has been an excellent mentor and I have become quite proficient at it, but still lack confidence and feel it would benefit a lot of people. **Survey respondent**

We'd gain a lot from professional development in the use of online resources, but such development would be much more useful if and when the access issue alluded to previously is addressed. **Marion Lacey**⁴⁸

Social and economic researchers in the private sector would gain from professional development in things like using ESRC resources, using Google and other search tools, judging the quality of what they find, and it should not be assumed that commercial researchers are up-to-date on recent developments. **Private sector researcher**

In spite of the wide availability of excellent indexes to the literature now available online, most students (at whatever level) have little or no idea how to search effectively, preferring to trawl the web instead of using the targeted indexes to the literature that we provide. Much of my job involves trying to break down the Google mentality and introduce the idea that purpose-designed indexes provide 100% better results. Once shown what can be achieved with the kind of resources we provide, e.g. here <http://www.bath.ac.uk/library/info/ss.html> researchers' skills improve quickly. But these kind of skills are not innate and need to be taught by information professionals. Skilled structuring of searches is the key to getting good results from any online resource. **Survey respondent**

Several sources indicate that postgraduates routinely overestimate their skills:

Discussions within the classroom ... often showed the students were genuinely surprised regarding their competence level ... more often than not they were shocked by how little they knew. **Stubbings and Franklin**⁵⁴

It seems from our respondents that researchers often don't realise how much they don't know about information discovery and retrieval until they go on a course – then they are grateful (IF it is a good course). However, many intermediaries complain that it is getting them on the course in the first place that is the problem. We should be aware that there is a problem with telling users to "eat their spinach", as Lorcan Dempsey calls it. Dempsey quotes Stanley Wilder, writing in a subscription only journal:

The typical freshman assumes that she is already an expert user of the Internet, and her daily experience leads her to believe that she can get what she wants online without having to undergo a training program. Indeed, if she were to use her library's Web site, with its dozens of user interfaces, search protocols, and limitations, she might with some justification conclude that it is the library, not her, that needs help understanding the nature of electronic information retrieval. [...] The only solution, from the information-literacy point of view, is to teach students the names of databases, the subjects and titles they include, and their unique search protocols -- although all of those facts change constantly, ensuring that the information soon becomes obsolete, if it is not forgotten first. Almost any student could suggest a better alternative: that the library create systems that eliminate the need for instruction. **Stanley Wilder, quoted in Dempsey**⁵⁵

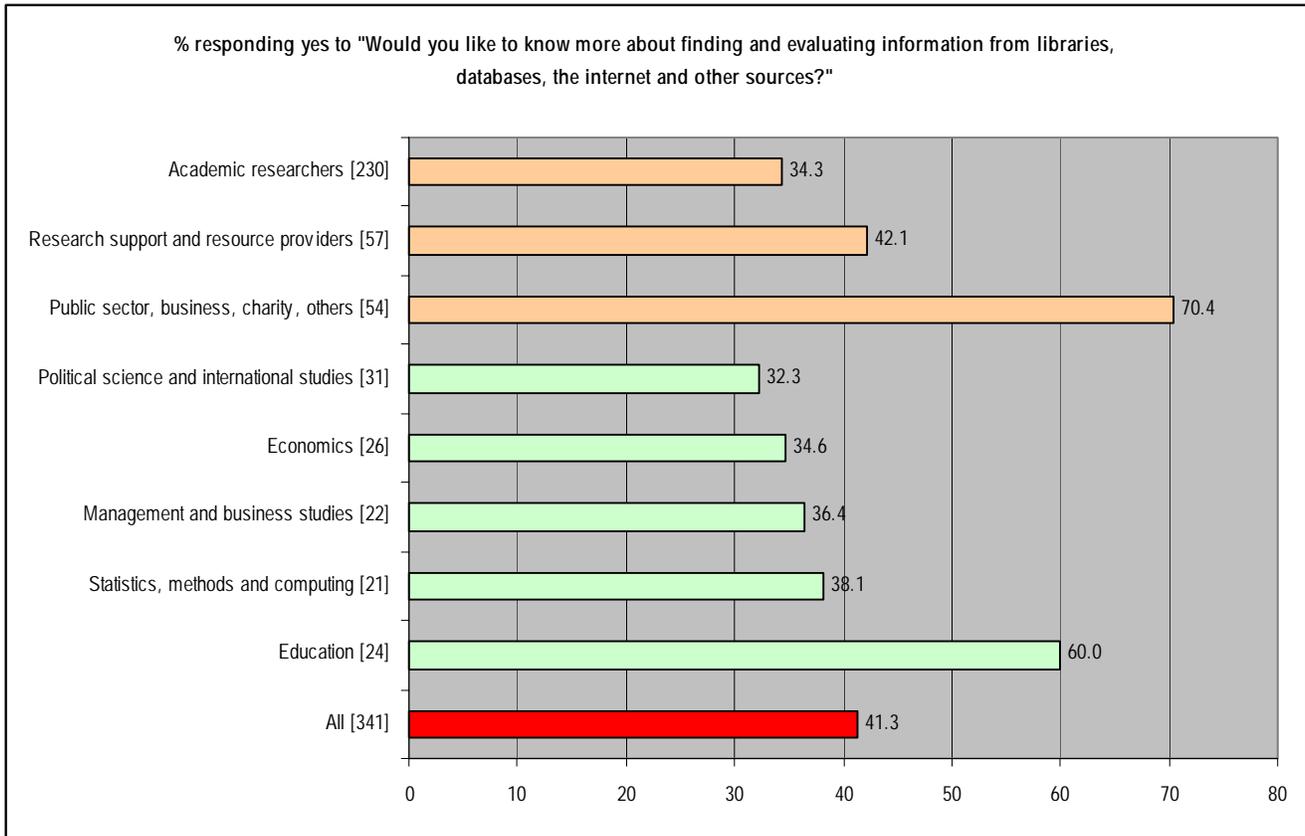
Dempsey goes on to say:

*Too often, we have an "eat your spinach" message about the library: come to the library, it is good for you. This is apparent in some of the defensive commentary about Google. Libraries have a better story to tell than this.*⁵⁵

We think that courses would be more likely to attract researchers if they included a strand such as "Getting more out of Google" and focussed on supplementing Google with other services and using Google to find specialist databases, rather than focussing on the details of those "unique search protocols". If a researcher finds something which is absolutely on topic and available, then she will learn whatever protocols need to be learnt in order to extract the essentials. Courses should focus on teaching researchers to find the right stuff with the tools they know and like and then to be able to evaluate it and use it.

⁵⁴ Stubbings, Ruth; Franklin, Ginny; University of Glasgow; Dec-05; *More to Life than Google – a Journey for PhD Students*; http://www.jelit.org/61/01/JeLit_Paper_15.pdf; Loughborough University

⁵⁵ Dempsey, Lorcan; Jan-05; *Eat Your Spinach, It's Good for You*; <http://orweblog.oclc.org/archives/000540.html>; OCLC



Research users in public policy positions express a clear need for professional development in this area. The ESRC NCRM already seems to be reaching this audience – but our respondents say clearly that they want more than research methods training: professional development should include much broader information skills and raising awareness of ESRC resources.

Some might ask why the ESRC should contribute towards the professional development of researchers in government. Our response would be that, as a publicly funded organisation, the ESRC has a role in trying to improve the quality of social and economic research wherever it takes place, but particularly in the public sector; that this will help collaboration between government and academia at a time when there is increasing movement of people and ideas between the two sectors and improve usage and awareness of ESRC-funded resources; and that it will improve the quality and scope of research which the ESRC funds in policy-related areas and in the policy sector in particular. In view of the difficulties of getting research from academics noticed and acted upon by policy makers and practitioners (described below by Phil Davies from the Cabinet Office), the importance of improving these channels of communication cannot be overestimated.

We suggest an online tutor-less course with milestones and completion record (requiring two days' concentrated effort) should be compulsory for ESRC-funded postgraduates (although there is no reason why it should not be open to all). This could be supplemented or maybe the first day (optionally) replaced by attendance at an approved face to face course. We suggest that people from the Virtual Training Suite, NCRM, the recently launched Researcher Development Initiative <http://www.rdi.ac.uk>, the Evidence Network and SOSIG are all brought together to discuss and make proposals for how this might be accomplished. It should also be noted that CPD should be available to those who trained before institutions started information skills training, although it was pointed out to us that such mid-career researchers need face to face training provided with their peers as they are reluctant to expose their lack of knowledge to postgraduates whose equivalents they may be supervising.

*The obvious answer is lack of training. The majority of PhD students attending summer schools at the ESRC UK Centre for Evidence Based Policy and Practice have had little or no **information retrieval** training, either at undergraduate or postgraduate level. The same applies to other researchers and practitioners (usually graduates) attending information retrieval workshops. This is a serious gap given the vital importance of this*

skill to social science researchers, and the lack of professional information retrieval support in many university libraries. Survey respondent

6.5 Recommendations from this section

Recommendation 9: The ESRC should bring together people from the Virtual Training Suite, the ESRC NCRM, the Researcher Development Initiative, the Evidence Network and SOSIG to discuss and make proposals for the creation of an online tutor-less course with milestones and completion record (requiring two days' concentrated effort) which should be compulsory for ESRC-funded postgraduates and open to all.

Recommendation 10: The ESRC should ensure that research methods training offered by institutions includes search and discovery skills and awareness raising of key generic and subject-specific information sources.

Recommendation 11: The NCRM should build on its successes in reaching researchers from government to offer broader information skills and search and discovery skills training to researchers from outside academia.

Recommendation 12: All ESRC resources, together with major ESRC investments, should be offered training and guidance in metadata creation – this might be done within the community where the skills exist.

Recommendation 23: Where substantial and unique collections of grey literature exist in non-digitised form, the ESRC should consider working collaboratively with other organisations such as JISC and with the holders, e.g. the British Library, to enable the creation of a digital catalogue for such resources, with the proviso that any such funding should be conditional on open access for researchers from all sectors to the physical resource and its digital manifestations, if any.

Recommendation 24: Where important social and economic resources exist in smaller collections which are not digitised and are not likely to be so, then the ESRC should consider working collaboratively with other organisations such as JISC to fund the creation of a digital catalogue for such resources, with the proviso that any such funding should be conditional on open access for researchers from all sectors to the physical resource.

Recommendation 25: The ESRC should treat predictions of, calls for or strategies based on the abandonment of print with extreme caution.

7 Open access and peer review

7.1 Open access

There is general strong support for the principle of open access among our respondents. However, most are very pragmatic about their own publishing decisions. Many tell us they would prefer to publish in open access journals but that this is not a major factor in their submission decisions. The journal with most impact and the highest RAE rating will be the preferred route.

Open-access journals [...] are often not held in the highest esteem by other academics, and as we often have to compete in terms of esteem it is not in our interests to go with what is [...] viewed as a second best option.

Survey respondent

Too early to say whether the open access approach will work. It could damage the well resourced virtuous circle of journal paper to abstract to database to searcher to end user. Somebody has to pay for much of this circle.

Survey respondent

Research supporters and librarians are predictably more enthusiastic about open access, understanding as they do the costs of journal subscriptions:

Most members of my institution probably haven't got a clue how much it costs to provide electronic journals, and may think they are 'free' because they don't pay as end users. Survey respondent

In our interviews, the journal publishers argued that they added background structure and access, search and supply facilities, as well as editing and the more obvious functions associated with publishing, in particular the provision of definitive versions of published research.

A distinction was drawn between open access journal publishing, which is taking advantage of the cost savings afforded by “online only” publication:

Electronic-only publishing of journals makes possible substantial cost savings (of the order of 20–25%), although relatively few publishers seem to have taken this route as yet, mainly because of customer reluctance to abandon print. The same is becoming true of book publishing; the smaller the market (e.g. for scholarly monographs), the more pressure there is to publish only electronically. **Sally Morris**⁵⁶

and self-archiving, which some see as potentially more of a problem, for publishers as well as for the learned societies:

Self-archiving (the ‘other route’ to OA) is potentially much more threatening to established journals. Where copies (even pre-peer review copies) of journals are widely self-archived, as is the case in some areas of Physics, online usage of the published journals appears to fall dramatically. Given the much better usage statistics that librarians (as budget holders) now have, it is easy to identify those journals which are not well used, and given cost constraints, cancellation is an obvious response (ALPSP is researching this issue at present). However, someone has to pay for the value which publication adds, and if no one pays a journal will die – not to mention the potential knock-on effect on those learned societies which depend on journal income for their other activities, with adverse consequences for the scholarly community. **Sally Morris**⁵⁶

A really good Google Scholar system and a fantastically well-networked institutional repository system would go some way to providing an alternative method of distributing research output. But how would the necessary excellence in the editorial and peer review process be provided? Wouldn't they have to reinvent peer review? And at the moment users and libraries want material in print and on line. **Sarah Phibbs**⁵⁷

The “someone has to pay, don't underestimate the costs” theme chimes with worries expressed by Lynch and others that some institutions may be underestimating both the maintenance requirements of institutional repositories and the value of discipline- or subject-based repositories:

I believe there is not only room for both [institutional and disciplinary repositories], but a real need for both. In the US, my concern is that there isn't going to be enough investment at the disciplinary level. **Clifford Lynch**

It is not that either the discipline or the institutional approach is necessarily preferable – but it is almost certain that it would be unwise to assume that “the institutions will do that” – better to have redundancy than incomplete results and loss and degradation of unique material. The discipline approach should concern learned societies and research councils as well as publishers (perhaps an area where discussions on a collaborative pilot might be fruitful?). One way forward would be freely available “pre and post prints” combined with higher value added commercial content.

Despite recent public statements that initiatives such as the RCUK proposal threatens the publishers, and hence threatens a substantial tax take to the economy (more than the entire public library budget, one claims), some publishers are more sanguine.

We have sufficient scale economies to manage the technology of journal publication, peer review, discovery, and access, and to maintain the integrity of the definitive version of the papers that our journals contain. We have changed our author policies and copyright terms to take account of the development of repositories and the emergence of Open Access. We do not feel overly threatened by either, since what we are doing runs with the grain of these developments rather than against it. **David Green**⁵⁸

⁵⁶ Chief Executive of the Association of Learned and Professional Society Publishers (ALPSP)

⁵⁷ Humanities & Social Science Journals Editorial Director, Blackwell Publishing Ltd

⁵⁸ Global Publishing Director for Taylor and Francis Journals, <http://www.taylorandfrancisgroup.com/>

The RCUK proposal is modest, allowing the very things that publishers are publicly demanding and in many cases already have established, for example a moving window of protected recent publication and protection of value added pdfs. It is hard to escape the conclusion that battle lines have been drawn that enable some publishers to protect their forward position by asserting that their very foundations are threatened. Except perhaps in respect of self-archiving (and this is far from proven for the social sciences), the threat of open access publication does seem to be less serious than some would suggest, with publishers indicating that they are reasonably confident that they will have a viable long-term business model whatever happens with open access developments. In practice, journal publishers seem to be willing to alter their stance in the direction of open access if conditions demand it:

*Three publishers, Blackwell, OUP and Springer, have today announced changes to their license conditions that will provide for research published in their journals to be immediately available on line and without charge to the reader. Wellcome Trust press release, 15/12/2005*⁵⁹

By resisting open access it seems that publishers may be affecting researchers' behaviour in an unintended way: many respondents say that they use free material first and only use material they have to pay for if it is absolutely vital or as a last resort. It seems reasonable to conclude, therefore, that research findings which are only available through paid-for channels will find a smaller audience and be used less by other researchers than those which have an open access presence of some sort. This supposition could do with proper testing, and care needs taking with it because of the open availability of pre- and post-prints of articles from some non-open access journals⁶⁰.

For the foreseeable future there is going to be a mixed economy of refereed articles, which may take one of several forms:

1. pre-digitisation – available (depending on who and where you are) in hard copy from your local library stock or by inter library loan or from the British Library
2. in conventional non-open access journals – available (depending on who and where you are) digitally, accessed through subscription (online to your desktop or in your library) or digitally, through a pre- or post-print made freely available if the author has chosen to do that, or in hard copy from your local library stock or by inter library loan or from the British Library
3. in open access journals, freely available to your desktop and may not even exist in print.

Every researcher and research user is now, and increasingly will be, faced by that spectrum. The factors which are important in who and where you are, for these purposes, include:

- a) who do you work for and how good is your library?
- b) how recent is the material to which you require access?
- c) what subject or discipline is that material related to? (different disciplines have very different levels of open access coverage, and different levels of use of pre- and post-print archives – interdisciplinary researchers may have particular problems traversing these differences)
- d) to what extent is the availability of different versions of the same resource a problem?

Search and retrieval have suddenly advanced light years, with search engines such as Google (and Google Scholar) making a very big difference. But this has surfaced a new and serious problem which is that by using such search engines you may find two or three versions of the same resource, for example, pre-peer review, post-peer review, and published, and it may not be clear which is the definitive version. ALPSP and the

⁵⁹ http://www.wellcome.ac.uk/doc_WTX027916.html

⁶⁰ See "Conclusions: Decentralised sharing of scientific reprints through the internet creates a degree of de facto open access that, though highly incomplete in its coverage, is none the less biased towards publications of higher popular demand", BMJ, doi:10.1136/bmj.38422.611736.E0 (published 12 April 2005)

National Information Standards Organisation (NISO) have set up a working group to address this issue. (http://www.niso.org/committees/Journal_versioning/JournalVer_comm.html). **Sally Morris**⁶¹

- e) how well configured is your local infrastructure? (e.g. does it allow you to click straight through to access a journal article found on IBSS without a further authentication barrier?)

The work of the JISC Programmes on Digital Preservation & Asset Management and Digital Repositories, and the institutional investment in this area suggests a commitment to continued growth in alternative forms of publishing. The tools for exploring this across institutions are not yet in place, and the RDN believes that there will be a demand for taking a subject based approach to exploring digital repositories. In addition, our recent investigations suggest a need for training and guidance in metadata creation in order to facilitate access to digital repositories. **Stephen Downes**

Over time, the ESRC could easily form a corpus or "view" of open access papers from the mandated open access deposits of all ESRC research and postgraduate awards, regardless of where it is stored, in institutional, subject or publisher's OA repository. This will take time to build up but needs looking at now; it is possibly more important than making a decision on repository type at a time when it is not clear how these will develop. These records should be linked to the awards, outputs, summaries and to the datasets, if any.

While there is unequivocal consensus that publicly funded research should be publicly available for anyone who wants to use it,

ESRC should not only encourage publication of research output via open access but should require it. **Survey respondent**

Opinion is much more divided on whether "author pays" publication is going to be effective, or whether it is desirable. There seem to be several objections to this model, two of the most widely expressed being:

1. it would raise a further barrier to researchers who do not have an ESRC grant and exclude them from getting their research published.
2. it is unethical and undesirable to raise money from authors and would lead to "vanity publishing" where authors with money would be published and those without would not.

It may be that many of these "in principle" objections are based on an incomplete understanding of what is proposed and that some are based on an ill-thought out notion that researchers do not currently have to pay to publish in journals (whereas of course their institutions are paying large subscriptions to support the journals). Whatever is the case, it is undoubtedly true that such a proposal would need a lot of explaining and "selling" to a significant part of the community.

This is crazy. The minute that even the slightest hint of vanity publication enters the scene then it sets up an even more socially unequal playing field. People with money other than research grants (comfortable parents) have an advantage in finding ready money at the end of their PhD for example to ease the wheels of publication, then helping bump up their CVs at the expense of others without that advantage. ESRC are totally wrong to allow this, and such journals should be considered not legitimate for job selection or RAE etc. I cannot believe that this is actively encouraged. **Survey respondent**

Even without the debate about pay-for-publication journals, the research councils appear to have some work to do in reducing the stigma of open access journals. This may happen over time but it could do no harm to have a simple explanation of the advantages, particularly aimed at the senior researchers who seem the most out of sympathy with anything other than publishing in top flight subscription-only journals.

One of the most powerful arguments for repositories with open access is the very pragmatic one emerging from our survey that people are increasingly refusing to use or read sources for which they have to pay or wait. It is important to note two different but related issues here – reluctance to pay and reluctance to wait. Reluctance to wait is easier to explain – where some material is available digitally and free to your desktop it rapidly builds an expectation that all material should be so available. Reluctance to pay is rather different – it may be that in academic environments there are factors which make researchers reluctant to pay per article, even for crucial information. These might include individuals' unwillingness to pay with their own credit cards (purchase orders

⁶¹ Chief Executive of the Association of Learned and Professional Society Publishers (ALPSP)

are seldom accepted for such transactions over the internet), the bureaucratic hurdle of claiming back such costs, the reluctance of university authorities to sanction such costs when inter library loans are available and the traditionally cash-poor culture in academic research.

7.2 Peer review

The above section more or less takes for granted that quality journals and articles are refereed by the process known as peer review. This has come to have a very specific meaning in the research community – but the meaning of peer review and the need for the refereeing process as we know it are being challenged by the technological change implicit in some open access developments:

*There will continue to be refereed research published; some of it will be open access and some of it won't. The portion that is open access is likely to grow. Open access has some very powerful appeal to authors and to society as a whole. I also think that we are spending too many resources refereeing too much material unnecessarily. We need to find ways to allocate resources much more wisely here. I think that the experience of physics suggests that in terms of actual contribution to scholarship, peer review is hardly a prerequisite, and may often be a delaying factor or impediment. We need a rigorous cost-benefit analysis of peer review that takes into account disciplinary variations. **Clifford Lynch***

We currently have many systems of peer review to judge quality, whether in journal publication, grant proposal or assessment of research quality. Systems of peer review are generally regarded as very imperfect but as better than any other available option (criticisms that are often levelled at these systems include inflexibility, self-interest, the perpetuation of an out of date elite and cronyism). The systems themselves are already being replaced by similar electronic systems. There are a number of possible outcomes from this. The new electronic systems may be based closely on the old manual ones, in which case little will change. Or the new systems may be replaced by technically advanced systems and the elite of reviewers replaced with a new web-literate early technology-adopting elite, which will be open to many of the same criticisms once the change of personnel has settled down; or the systems may wither in the face of the onslaught from Google to be replaced by machine judgements of popularity as a proxy for quality; or, as the advocates of recommender systems and the development of the semantic web promise, they may be replaced by a far wider and more representative and responsive quality judgment process using the sophisticated algorithms developed for ranking and judging importance but applying those to measures of quality, taking into account each judge's (or service's) own rating as a judge.

*Open access is critical to the long term health of academia; by contrast, the continued reliance on closed and proprietary publishing will over the long run strangle discourse. [...] The purpose of refereeing was to ensure quality. This was necessary at a time when the means for distribution were limited. Today, distribution is no longer limited, which allows us to seek more open processes to ensure quality. [...] In particular, refereeing served a gate-keeping and filtering function, and took place, necessarily, prior to publication. As information access tools improve readers will be able to not only read a wide range of articles, they will be able to search for them and filter them based on reviews extant in the same environment. [...] This form of access – sometimes described under the heading of 'recommender systems' – makes refereeing obsolete; we no longer need to rely on the opinions of a selected, anonymous, and usually biased group of reviewers; now the community as a whole can participate in the review, ensuring that quality publications, which may previously have been denied publication (there are many examples of this), can see the light of day. **Stephen Downes***

One danger of such changes is the popularising of "bad science". The ESRC needs to meet this challenge by being ready to participate in such change and affecting the outcome. If the ESRC is to be a trusted mediator it will need to develop, maintain and foster networks and centres of expertise in quality selection; to develop community confidence in those centres; to promote information skills; and to monitor technology developments closely.

7.3 Recommendations from this section

Recommendation 14: The mandatory deposit in open access repositories of all ESRC research results is supported by the community and should be pursued with vigour.

Recommendation 15: The ESRC should make available a corpus or "subject view" of all such deposits and investigate the feasibility of linking them to awards data, other publications and outputs, plain English summaries and datasets both used and created in the research.

Recommendation 16: The ESRC should provide a simple explanation of the advantages of open access publication, particularly aimed at the senior researchers who seem the most out of sympathy with anything other than publishing in top flight subscription-only journals.

Recommendation 17: The ESRC should approach JISC and publishers/database providers to negotiate access for all ESRC-funded researchers and their research assistants for the duration of their funding.

Recommendation 18: The ESRC should engage in a dialogue with publishers and database providers about the feasibility of allowing paid-for short-term (i.e. 24 hour or seven-day) access to their products.

Recommendation 19: The ESRC should use its influence to encourage government directly to fund or subsidise databases which showcase and focus on UK research or to follow the excellent example of IBSS and to negotiate deals allowing access to all researchers in academia and government (see following recommendation).

Recommendation 20: The ESRC should act with RCUK and JISC to encourage government to examine a longer term, wide ranging and strategic approach such as that taken by Iceland, where the entire population have access to key journals and databases from leading international publishers.

Recommendation 22: The ESRC should ensure that all PhD theses resulting from ESRC funding are available online and should press leading UK social science research institutions to ensure that all PhD theses whether ESRC funded or not are available online. These will be essential components of any subject-based repository.

Recommendation 28: If the ESRC is to be a trusted mediator in the future world of peer review it will need to maintain and foster networks of community expertise in quality selection, systematic review and information skills training and to monitor technology developments closely.

8 Communicating research to policy makers and practitioners

Our interaction with academic researchers is poor, except in respect of those with whom we've built up a working relationship. Certainly we'd welcome it if ESRC made it its business to liaise with us and with others in our position concerning our priorities, in relation both to what programmes ESRC funds, and how the findings from its programmes are made available for researchers like ourselves. [...] Our suspicion is that there are many more researchers "out there" doing things we are interested in, and who might be interested in work we are doing. There does not seem to be a systematic process for ensuring two-way contact between researchers and research-users outside of academia and researchers in academia. Ian Brinkley⁶²

Many of the policy researchers we talked to and heard from during this exercise had similar things to say about the accessibility of academic research. Respondents from commercial and not-for-profit sectors agree. They want easy summaries, on balance conclusions; not dumbing down but complex stuff simply presented.

⁶² Chief Economist, TUC



Getting Research Into the Evidence Chain – Phil Davies, Cabinet Office

Phil Davies, Deputy Director of the UK Government Social Research Unit⁶³, uses the above diagram to explain that academic research is often much too far away from "the ear" of those making policy and practice. Academics who are also "experts", "policy advisers" or in "think tanks" stand a far better chance of contributing to evidence-based policy than those who concentrate on publishing to satisfy the RAE. Davies and others agree that there is a key role here for what are becoming known as "knowledge translators" – people who have a high level of expertise and respect in their field but who are also willing and able to translate the findings of their colleagues into material which will reach the ear of policy and practice.

*I think it's too much to ask researchers to make research results available in "relevant and digestible ways for policy makers and practitioners". Open access makes the research results available; it's up to other third parties (journalists, other academics, researchers with unusual communications skills, etc) to help the public to interpret them. **Clifford Lynch***

*Putting partial and incomplete information in the hands of policy makers is dangerous. If you want important decisions to be rationally based you need intermediaries working on the production of material summarising the implications of research for policy. **Vanessa Pittard**⁶⁶*

Margaret Haines, Director of Information Services & Systems at Kings College London, believes this is an opportunity for professional development for senior researchers with a gift for communicating, and quotes the example of the NHS where the Health Foundation funded mid-career professional development for academics and clinicians. This was an opportunity for people to add a qualification in research or information management to their skills. She believes this would help with creating the right people to become systematic reviewers of evidence in whatever field, and she looks for social science equivalents to figures like Ben Toft, who is still a GP but now also an information specialist.

Certainly this need for knowledge translation is called for in *Great Expectations*,⁶⁴ and also by our respondents:

⁶³ www.gsr.gov.uk

⁶⁴ Rhind, David, et al; Commission on the Social Sciences; Mar-03; *Great Expectations: the Social Sciences in Britain*; <http://www.city.ac.uk/vco/davidrhind/expectations.html>

*Is the data coming out of universities immediately useful? Not to us. We don't want to wade through 30 pages of heretofore-mentioned scholarly papers. Particularly economic analysis is done by think tanks etc much better than academic institutions. **Independent researcher***

*Apart from academics themselves there are 3 different audiences for research with possibly different needs: Policy makers; Professionals [i.e. practitioners]; Business. The biggest challenge facing social science as a community is making people believe it has something to offer. If anything can address the problems of the 21st century it is social science. Science was good at solving 19th and 20th century problems but AIDS, pandemics, obesity, religious and ethnic conflict all need social science perspective. The key skill to develop is to be able to marshal into clear and simple narrative a huge variety of funded research. To perform "meta-analyses" of "the research" on topics. Short, powerful. Need to be able to counter popular non-evidential thinking with the results of research ... one example is that a meta review of testing in primary education showed that it has negative effects on both motivation and achievement, particularly amongst girls. Where is that research impacting on policy? **Patricia Broadfoot**⁶⁵*

The information environment for social scientists is not common to all researchers. They work together on projects, commission each other to do work etc, but they don't see the same things.

*ESRC has made a good start with the provision of IBSS free to researchers. However, IBSS is of most use to the researchers themselves but the users of research have virtually no access to any database. Their managements are reluctant to provide funds for subscriptions – so AgeInform Chiddata, SPP, etc etc have only limited success in selling to the potential user (not helped by many university libraries also not subscribing which does not help those who are taking further qualifications through universities whilst employed as social workers etc). **Survey respondent***

Systematic reviews are suffering because of this lack of access. One interviewee, an expert in the field, reported seeing high profile "systematic reviews" which

*... were not proper reviews and were wholly unsystematic – the authors missed whole sources of information and when asked said they had never heard of them. **Interviewee***

Vanessa Pittard from BECTA agrees:

We see a lot of literature reviews and often they are flawed – out of date, with gaps, lack of analysis, a tendency to reproduce other researchers' summaries, and terrible mistakes around referencing and attribution.⁶⁶

Knowledge translation should encompass translation of material outside your immediate speciality. At least two interviewees also articulated a need for spokespeople for social science – perhaps this could be met by a secondment scheme where a small number of experienced researchers with good communication skills and a broad interest in the social sciences would be replaced for six months in order to train in the skills necessary to become a knowledge translator and a spokesperson for social science.

The RAE is perceived as a stumbling block, not only to the establishment of open access:

*Open access will never happen while we have the RAE. **Comment at resource directors' meeting***

but also to dissemination and knowledge transfer:

*The bigger problem is the academic system of RAE which continues to drive academics towards talking to each other in esoteric journals, rather than publishing in formats which policy makers read. When under pressure of time it is simply not possible to do both to the satisfaction of those in the university who wish to prioritise the RAE. Speaking for myself and colleagues I know, this is a major factor compromising the ability to get results across not only to user audiences, but also to students and general readers. Other academics clearly do also suffer from a lack of skills in communicating with these audiences. But I have the skills and cannot focus adequately on this due to lack of time and "academic" pressures. **Survey respondent***

⁶⁵ Professor Patricia Broadfoot, Pro-Vice-Chancellor, University of Bristol and chair of ESRC Research Resources Board

⁶⁶ Vanessa Pittard, Director of Research, British Educational and Communications Technology Agency (BECTA)

The resources should be far more integrated and enlisted into meeting the challenge of effective dissemination:

The ESRC funded resources should be seen as the laboratory of the social sciences. The ESRC has done very well on maintaining the high quality of funded research and quite well at making academics aware of that quality and of the current issues in social science research. It needs to explain to people outside of academia what ESRC is and what is social science and what use it is. They may still not know. Patricia Broadfoot⁶⁵

It is also worth noting that a small but articulate minority think that dissemination is not the ESRC's job and that all funding should go to researchers and not to Society Today or other services. Perhaps they need a clear short explanation as to why the council sees this as a priority?

The priority is to fund the best possible research and see that results are disseminated to peers. If they are seriously relevant they will be disseminated in other ways too or filter through. Most "official" dissemination with which I have been involved was a monumental waste of time and resources. On the other hand I have disseminated research results successfully when left to own devices. Survey respondent

8.1 Recommendations from this section

Recommendation 7: The ESRC should actively investigate the best way to create both knowledge translators and spokespeople for social science research. One idea is a secondment scheme where a small number of experienced researchers with good communication skills and a broad interest in the social sciences could be replaced for a period in order to train. There will be other ideas within the community and the council.

Recommendation 8: The ESRC should provide a clear, short and cogent explanation as to why the council places a high priority on dissemination of research results outside the academic community, and particularly to policy makers.

9 Technology issues: the future

In this section we touch on some of the major changes which are taking place in the technology domain, and comment on the impact these may have on the information environment for social scientists, and on the practice of social and economic researchers.

Worldwide, over one billion people are internet users, and by 2015 nearly half the world's population are likely to be users. "Moore's Law", which, crudely applied, asserts that computing power, storage capacity, and bandwidth per unit cost will grow exponentially, doubling roughly every 18 months, continues to hold true.

The ICT infrastructure through which UK researchers access information and each other continues to develop rapidly. Specifically, the range of devices through which users interact with the information environment is becoming more diverse, as is the range of places from which they can do it. It is now normal for a UK researcher or research user to have reasonably fast access to the internet (and through it to their organisation) from home as well as from work, and very possibly using wireless technologies as well. Meanwhile organisational infrastructure continues to improve, with, for example, single sign-on and authentication to an institution's own and subscribed-to digital resources and services becoming commonplace. Thus, many researchers can now access the information environment over the internet seamlessly, at any time, from more or less anywhere.

9.1 Search and its consequences

Browser-based searching using generic tools like Google, or offshoots thereof, such as Google Desktop, rather than site- or service-specific interfaces, is becoming the dominant way in which people "find things out".

*Use of a web search engine (Google, principally), is becoming **the** dominant way in which researchers (and people in general) look for information. The stark implication of this change is that if a resource (or its catalogue entry) is not "on the web" then people will not find it, and the resource will not be used. Thus getting the offline resources online and exposed to search engines has to be a central priority for those in control of offline resources. William Dutton⁶⁷*

⁶⁷ Director of the Oxford Internet Institute

As the amount of data owned or aggregated by suppliers of generic search services grows, and its range broadens to include scholarly material, including books, often in multiple languages, the range and power of the services which Google and others offer will increase, and become more relevant to social and economic researchers, with usage of these sorts of services likely to grow very quickly from a standing start after launch⁶⁸.

For example, it is widely hinted that Google's access to a large corpus of translated texts will soon enable it to offer a really high quality real-time machine translation service. And Google's recent acquisitions of companies specialising in GIS technologies is likely to enable it to offer additional services that facilitate the integration of location, temporal and economic data.

Finally, Google aggregates a mass of data about who is searching for what, from where, using what terms, and when. Several respondents to our survey and several interviewees made mention of the new form of "mass observation" which such aggregation will enable.

9.2 The grid

Sometimes the grid is called the next-generation Web. The Web makes information available in a transparent and user-friendly way. On the other hand the grid goes one step further in that it enables members of a dynamic, multi-institutional virtual organisation to share distributed computing resources to solve an agreed set of problems in a managed and coordinated fashion. With the grid, users should be unaware whether they are using the computer or data on their own desktop or any other computer or resource connected to the international network. Users get the resources they need, anytime, and from anywhere, with the complexity of the grid infrastructure being hidden from them. Tony Hey and Geoffrey Fox⁶⁹

Much is made of "the grid" for social sciences, but our informants think it will be some time (years not months) before it has a major impact:

This is a longish term project (e.g. one or more decades), and will require a culture change for most social scientists to participate. There are real opportunities for social science to greatly improve here, but it will take a lot of inward and outward investment for this to come to be. Michael Fischer⁷⁰

Changes are taking place at the interface between data and technology – colloquially referred to as "the grid" – which will enable social scientists to base their research on the integration of huge distributed data-sets generated and maintained by entities like the NHS, DWP, and ONS, rather than using a conventional sample survey approach. Leaving aside the technical and organisational issues which need solving before use of these data-sets by social science researchers is a practical reality, there are even bigger ethical, legal and institutional issues to be addressed, not least because protecting citizens' anonymity may in practice be impossible, and because the commercial value of the data could be enormous. William Dutton

The important thing is to build infrastructure and put assets on it, making it "look like the web", so that the technical complexities don't get in the way. This is what NCeSS is seeking to do, so as to show how the grid can be an effective research tool for social scientists. Building this new infrastructure will require significant investment, but we are missing a trick if the dominant model remains that of a social scientist doing quantitative research with SPSS and a PC. ESRC needs to work with the other UK Research Councils to take some leadership on this. Rob Procter⁷¹

9.3 The data deluge⁷²

Tony Hey and Anne Trefethen coined the phrase data deluge in relation to "big" physical science⁷³. But the term is now applied much more generally to digitised artefacts, documents, still and moving images and audio, as well

⁶⁸ Google Scholar was launched on November 2004. By November 2005 our survey respondents placed it as their third most *regularly used* information resource, after Google, and Web of Science

⁶⁹ Hey, Tony, Fox, Geoffrey; Mar-03; *Everything You Always Wanted to Know about GRID and Never Dared to Ask*; <http://academia.web.cern.ch/academia/lectures/grid/>

⁷⁰ Director of the Centre for Social Anthropology and Computing, University of Kent

⁷¹ Director of Research at the National Centre for e-Social Science

⁷² This section of the report draws on Lynch, Clifford; Educause; Oct-05; *The Data Deluge Hits Campus*; http://www.educause.edu/content.asp?page_id=666&ID=EDU05033&bhcp=1, last accessed 3/11/2005

⁷³ http://www.rcuk.ac.uk/escience/documents/report_datadeluge.pdf

as to “research data proper”. Digitised film, video and audio assets may be stored on deteriorating media, and may only be accessible using vintage software and/or devices. Some of the digitised or to-be-digitised assets are irreplaceable, and of major importance to social science. How successfully to manage the conversion of these assets to digital form, and how subsequently to archive and curate them, and migrate them from format to format, are important challenges, which are outside the scope of this report.

The data deluge will not be decreasing. In fact well-informed sources predict it will grow rapidly. As a plethora of new instruments are installed which are capable of measuring and storing data and transmitting it to the web (from climate control and energy systems to closed circuit TV cameras), and as the amount of research-relevant content in wikis, blogs, and bookmarking systems like Connotea⁷⁴ and del.icio.us⁷⁵ grows, there will be huge amounts of new data which might interest social scientists. Individual researchers need now and will certainly need in the future a personal strategy to filter and keep up to date with this deluge, whilst avoiding being washed away by it.

With regard to future developments in the information environment, we need to note here that:

- there is an explosion in the volume of data relevant to the social sciences;
- this data will form an increasingly important part of the information environment for which a long-term, sustainable, coordinated development strategy will be required;
- social science researchers will increasingly need to know how to make appropriate use of the data, using fit-for-purpose software tools (whose development and curation is as important as the curation of the data itself!).

9.4 The semantic web

Proponents of the semantic web assert that the application of semantic web technologies will transform for the better the information environment:

*The Web is already an information source of choice for many learners and researchers. A more structured and directed approach to managing this information space, both within institutions and across the whole community, can make this information more useful, with less wasted effort, and more capacity to measure the quality of information. [...] The impact on digital libraries, combined with the Open Access Initiative and the rise of open archiving is likely to be quite profound. Libraries become “value-added” information annotators and collators rather than the archivists of externally published literature and the holders of the published output of institutions. **Brian Matthews**⁷⁶*

Others are rather more cautious:

*The basic idea of the semantic web is sound, and many of the tools are becoming impressive. [...] Five years is perhaps a timetable for something useful happening (even very useful), but we are again looking at a scale of a decade or more for the semantic web to fulfil its promise. And it will never be all that its supporters believe. Knowledge, its structure and its capacity for instantiation cannot be contained within such a limited vehicle. **Michael Fischer***

*I am very skeptical about the semantic web as a panacea and about how quickly many of the underlying technologies will deploy. And note that even if the technologies deploy, it's not clear we can get the right incentives to get competent people to create all the relevant metadata. **Clifford Lynch***

Our conclusion is that the semantic web, as foreseen by some its proponents, will have a rather limited impact on the information environment for social science research in the near future. What we do expect to see is a dramatic increase in services using a changing mixture of technologies to supply information based on its meaning and in the process accomplishing some semantic-web-like things.

⁷⁴ <http://www.connotea.org/>

⁷⁵ <http://deli.cio.us/>

⁷⁶ Matthews, Brian; Apr-2005; *Semantic Web Technologies*; http://www.jisc.ac.uk/index.cfm?name=techwatch_ic_reports2005_published; CCLRC Rutherford Appleton Laboratory, last accessed 6/12/2005

9.5 Mix and match

Paul Miller writes that the changes we will see in the near future (referred to by the contested term "Web 2.0") will not be powered by a new blockbuster technology, but rather by a "mix and match" selection of different small technology innovations to discover, select and re-present data:

*Web 2.0 presages a **freeing of data**, allowing it to be exposed, discovered and manipulated in a variety of ways distinct from the purpose of the application originally used to gain access ... there is no need for some new Web 2.0 technology in order for the previously locked away to be made public. Some of the work at backstage.bbc.co.uk is relevant here, and the BBC is to be commended for taking the step they did. **Paul Miller**⁷⁷*

On the same platform, Peter Rip writes:

*The potential losers are the legacy vendors with their "software mainframes". The winners will be the companies that package componentized functionality with light, maybe even non-procedural, methods of stitching together flexible Web applications quickly. **Peter Rip**⁷⁸*

Our interpretation of this techno-business-speak is that the big change required will be in the attitude of service providers. *One marvellous interface to serve all users* becomes much less important and will be replaced by the ambition to provide data so that it can be exposed in a multitude of interfaces (home made or professional, free or paid-for, well-designed or not). In case this sounds like a piece of sharing evangelism which has no grounding in reality, Richard Akerman notes that, as well as the BBC, Amazon, Google and Yahoo are embracing this opening of data to repackaging and re-presenting (sometimes known as "mash-ups"):

*Besides speeding up the experience, the shift makes it easier for outsiders to add their tweaks, says Google Maps product manager Bret Taylor. The appeal for Web sites? Mash-ups offer a way for them to tap the creativity and hard work of the masses, who do the work and get out the word -- and the software -- through blogs and Web sites. "We want to encourage community participation," says Paul Levine, general manager of Yahoo! Local. "It's essentially research and development and marketing for us." **Richard Akerman**⁷⁹*

Bill Gates seems to agree:

*The broad and rich foundation of the internet will unleash a "services wave" of applications and experiences available instantly over the internet to millions of users. ... This coming "services wave" will be very disruptive. We have competitors who will seize on these approaches and challenge us ... The next sea change is upon us. We must recognize this change as an opportunity to take our offerings to the next level. **Bill Gates**⁸⁰*

⁷⁷ http://paulmiller.typepad.com/thinking_about_the_future/2005/08/thinking_about_.html

⁷⁸ http://earlystagevc.typepad.com/earlystagevc/2005/10/enterprise_web_.html

⁷⁹ http://scilib.typepad.com/science_library_pad/2005/08/rethink_your_mo.html

⁸⁰ http://news.com.com/Gates+memo+Brace+for+services+wave/2100-1016_3-5942191.html

10 Conclusions and recommendations

There was a lot of praise for the ESRC from our respondents and interviewees. One got the impression that most people think that there is a lot the ESRC do rather well and they could do more to let the world know about it. In general the advice was often to build on what the council already does well and not to overreach into areas outside the core expertise. In the information environment the primary aim should be to eliminate sources of friction and bring about steady improvement in those parts which ESRC can influence. The feedback from interviews and surveys suggests that the ESRC should build on its areas of expertise, promote the excellent funded work and give that work, its results and the services and resources which the ESRC funds a much higher profile. Professional development needs featured prominently in our feedback, as did the unequal access to research results between sectors and institutions. The ESRC-funded information services generally got a good press, though problems with the search facilities on Society Today were highlighted by many.

10.1 Exposing assets and services through search engines

The ESRC (like all public funders of research) have a responsibility to ensure that the outputs of the research they fund is presented in a form that is usable by researchers and research users. Creating a shop window for the work itself is also important, and that is what Society Today has started to do, with some success. But taking the outputs of ESRC funding, be they through research projects, services, centres, programmes, resources or postgraduate training, and making them visible through a million other shop windows must be a high priority. Currently, this means exposing it to search engines and whatever other mechanisms are appropriate. We understand that ESDS are already doing this, although we have not spoken to them directly about this.

Recommendation 1: The ESRC should make a very high priority of exposing the hidden records (or metadata associated with them) of resources to search engines, particularly Google. Society Today, IBSS and SOSIG are prime candidates but all ESRC resources should look at it urgently.

10.2 Library catalogues

We note that when library catalogues were first put online this led to an increase in the use of the physical volumes. Now that library catalogues are beginning to be opened up to Google, it is likely that millions of books will get indexed and that this will prove to be a leap forward in promoting and "releasing" the books off library shelves. It will also provide a rich new research resource for social researchers by opening books of all sorts to text mining techniques.

Recommendation 2: The ESRC should use its influence with leading UK social science research institutions to encourage similar initiatives to the OCLC and Google collaboration, i.e. opening library catalogues to indexing in order to promote and "release" research resources (in their physical and online manifestations).

10.3 Society Today – federated search

Recommendation 3: The ESRC should replace the default Society Today search with a more tightly controlled search of social science relevant, high quality material (we suggest just a search of the corporate information, ESRC information services such as IBSS and SOSIG, other high quality databases such as [Rowntree](#) and ESDS and the awards database) to provide the quality and relevance people expect and need from the ESRC web site. In addition a clearly marked search of the corporate web site only should be available. The complete federated search could be offered from the Advanced Search screen, until the federated search has proved that it can provide what people expect and need from the ESRC web site.

10.4 ESRC resources – interoperability and integration

The ESRC and its investments should be committed both to working towards interoperability and to the adoption and application of open standards. The ESRC resources should be more integrated and make every effort to inform their users of other ESRC resources. As a start:

Recommendation 4: All ESRC resources should be mandated to produce RSS feeds for latest news and most popular resources (or equivalent RSS feeds as they see fit). Society Today should host a page bringing together these feeds so that there is an ESRC Resources page on Society Today with current information and news on each of the ESRC funded resources.

10.5 Consistency and quality of web presence

ESRC centres and programmes should have consistent and high quality web sites with up to date information and basic information such as currency and date of last update always available. This does not mean they all have to look the same. It is not about branding, it is about quality. This needs to be maintained throughout the life of the investment, not just at the beginning, and after its funding ceases. The ESRC will need to decide whether to have some constraint over such sites and/or to mandate working to prescribed document structures and standards and whether a third party such as MIMAS should monitor and take measures if standards are not maintained. Specific recommendations could be made on content and maintenance of these web sites and something could be included within the contractual obligations to reinforce this. It may also be appropriate to conduct a one-off exercise requesting hosting sites to update or remove out of date sites from past investments and for Society Today to take responsibility for such sites after the institutional commitment has elapsed.

Recommendation 5: The ESRC should take measures to ensure its investments have consistent high quality web sites and that past investments are adequately represented.

10.6 Regular consultation with the community

Recommendation 6: Building or improving on the hastily assembled methods used in this study, the ESRC should put in place regular consultation mechanisms with the community, collecting comparable data on an annual or biennial basis which should also be open for the community to analyse. Standing focus groups might be used for users of the information environment to provide the ESRC with feedback and ideas. Mandating services and research resources to encourage their users to participate in such mechanisms would also be useful. Allowing room for some "over the shoulder" observation of user behaviour would also be valuable.

10.7 Knowledge translation

Recommendation 7: The ESRC should actively investigate the best way to create both knowledge translators and spokespeople for social science research. One idea is a secondment scheme where a small number of experienced researchers with good communication skills and a broad interest in the social sciences could be replaced for a period in order to train. There will be other ideas within the community and the council.

10.8 Explaining why dissemination is important

Recommendation 8: The ESRC should provide a clear, short and cogent explanation as to why the council sees dissemination of research results outside the academic community, and particularly to policy makers, as an urgent priority.

10.9 Information skills training

For want of a better title, though any initiatives should take note of the breadth and the specificity of feedback from our respondents and interviewees on this subject.

Recommendation 9: The ESRC should bring together people from the Virtual Training Suite, the ESRC NCRM, the Researcher Development Initiative, the Evidence Network and SOSIG to discuss and make proposals for the creation of an online tutor-less course with milestones and completion record (requiring two days' concentrated effort) which should be compulsory for ESRC-funded postgraduates and open to all.

Recommendation 10: The ESRC should ensure that research methods training offered by institutions includes search and discovery skills and awareness raising of key generic and subject-specific information sources.

Recommendation 11: The NCRM should build on its successes in reaching researchers from government to offer broader information skills and search and discovery skills training to researchers from outside academia.

10.10 Training and guidance in metadata creation

Recommendation 12: All ESRC resources, together with major ESRC investments, should be offered training and guidance in metadata creation – this might be done within the community where the skills exist.

10.11 Integrating results from information and data services

Although our brief specifically excluded looking at the ESRC data services, it was clear that there is a demand from users to be able to access all aspects of information and data about funded research. At present, this is not possible.

Recommendation 13: The ESRC should fund a pilot project to present to users from one interface: research results, summaries in plain English, the data used and created during the research, publications, interviews and other outputs.

10.12 Open access

Recommendation 14: The mandatory deposit in open access repositories of all ESRC research results is supported by the community and should be pursued with vigour.

Recommendation 15: The ESRC should make available a corpus or "subject view" of all such deposits and investigate the feasibility of linking them to awards data, other publications and outputs, plain English summaries and datasets both used and created in the research.

10.13 Explaining the advantages of open access

Recommendation 16: The ESRC should provide a simple explanation of the advantages of open access publication, particularly aimed at the senior researchers who seem the most out of sympathy with anything other than publishing in top flight subscription-only journals.

10.14 Access to subscription databases and journals

Most freely accessible databases have a North American bias – several excellent databases and services which have comprehensive coverage of UK research are currently not accessible to researchers and research users inside and outside government because they require a subscription. There is also a clear problem of unequal access to journals and databases between institutions and even between government departments. The ESRC should take some short-term steps to alleviate this but also use its influence to press the government to take medium-term wide-ranging measures to improve access and therefore the competitive advantage of UK-based researchers in all sectors and their ability to collaborate with each other and with international colleagues.

Recommendation 17: The ESRC should approach JISC and publishers/database providers to negotiate access for all ESRC-funded researchers and their research assistants for the duration of their funding.

Recommendation 18: The ESRC should engage in a dialogue with publishers and database providers about the feasibility of allowing paid-for short-term (i.e. 24 hour or seven-day) access to their products.

Recommendation 19: The ESRC should use its influence to encourage government directly to fund or subsidise databases which showcase and focus on UK research or to follow the excellent example of IBSS and to negotiate deals allowing access to all researchers in academia and government (see following recommendation).

Recommendation 20: The ESRC should act with RCUK and JISC to encourage government to examine a longer term, wide ranging and strategic approach such as that taken by Iceland, where the entire population have access to key journals and databases from leading international publishers.

10.15 Simplification of access to IBSS for government departments and research institutions

Although freely available access to IBSS for researchers within government and recognised research institutes is very welcome, many researchers and research users are unaware of it and access is not always straightforward, with a protracted dialogue between researcher, local IT support staff and IBSS often necessary to sort it out.

Recommendation 21: IBSS should promote awareness both among government researchers but also amongst their IT support staff.

10.16 PhD theses

Recommendation 22: The ESRC should ensure that all PhD theses resulting from ESRC funding are available online and should press leading UK social science research institutions to ensure that all PhD theses whether ESRC funded or not are available online. These will be essential components of any subject-based repository.

10.17 Grey literature and non-digitised resources

The British Academy report suggests that making available digital catalogues for non-digitised resources should be a priority before digitising the resources themselves. Our respondents seem to back this up but with one proviso – if the (non-digitised) resources themselves are not freely and easily accessible then the cataloguing of them may only increase frustration of isolated researchers or researchers at poorly provided institutions. The two following recommendations should also be considered in the light of other national digitisation initiatives (e.g. http://www.jisc.ac.uk/index.cfm?name=digitisation_home) and the ESRC's participation in the digitisation strand of the *International Partnerships of Research Excellence* led by Professor Sir Gareth Roberts.

Recommendation 23: Where substantial and unique collections of grey literature exist in non-digitised form, the ESRC should consider working collaboratively with other organisations such as JISC and with the holders, e.g. the British Library, to enable the creation of a digital catalogue for such resources, with the proviso that any such funding should be conditional on open access for researchers from all sectors to the physical resource and its digital manifestations, if any.

Recommendation 24: Where important social and economic resources exist in smaller collections which are not digitised and are not likely to be so, then the ESRC should consider working collaboratively with other organisations such as JISC to fund the creation of a digital catalogue for such resources, with the proviso that any such funding should be conditional on open access for researchers from all sectors to the physical resource.

10.18 The importance of printed resources

Printed resources, including journals, books, periodicals and newspapers, continue to form a central part of the information environment, despite the dominance of “search” in the discovery of such resources.

Recommendation 25: The ESRC should treat predictions of, calls for or strategies based on the abandonment of print with extreme caution.

10.19 Sustainability and research and development for IBSS and SOSIG

Recommendation 26: IBSS and SOSIG should be funded in the future on a sustainable basis so that regular crises involving staff redundancy notices do not occur and so that the services have room for research and development and are not technically “frozen”. The ESRC should work to promote the services throughout the community, showcasing them at appropriate events and ensuring individual staff promote them in their contacts with the community.

10.20 Community involvement in Society Today

Recommendation 27: Society Today should consider more community involvement in the creation and dissemination of content. The SOSIG section editors are a valuable model in this regard, and ALISS⁸¹ (Association of Librarians and Information Professionals in the Social Sciences) may also be worth investigating.

10.21 Community expertise in quality selection

Recommendation 28: If the ESRC is to be a trusted mediator in the future world of peer review it will need to maintain and foster networks of community expertise in quality selection, systematic review and information skills training and to monitor technology developments closely.

10.22 Performance indicators for ESRC information services

Recommendation 29: The ESRC information services Society Today, IBSS and SOSIG should all have performance indicators linked to the feedback from the community gained in such consultations. PIs based on the reuse, re-presentation and integration of data from the services into other services and interfaces should also be considered.

10.23 Collaboration with RDN/JISC over funding

The relationship between, for example, the ESRC and the RDN should be handled at a JISC level so that jointly funded initiatives get a consistent message. For example, we have concluded above that all SOSIG records should be exposed to Google as a high priority; in our opinion this should be made as a recommendation through the RDN, especially as SOSIG will be using new RDN software in the future. Our discussions with Caroline Williams indicate that the new software will include this in its features but will not be ready until the summer of 2006. Our discussions with Debra Hiom (SOSIG) indicate that a temporary measure may be possible until then – they will be looking at it in January 2006.

Recommendation 30: The relationship between the ESRC and the RDN should be handled at a JISC level so that jointly funded initiatives get a consistent message.

10.24 Closer collaboration between BL and ESRC

We noted that the AHRC has a close working relationship with the BL and the ESRC is beginning to establish one. We would encourage enhancing the scope, quality and depth of ESRC-funded research by specifically exploiting British Library collections and resources.

Recommendation 31: The ESRC and the British Library should examine the potential for enhancing the scope, quality and depth of ESRC-funded research by specifically exploiting British Library collections and resources.

10.25 Closer collaboration between BL and ESRC information services

The British Library is clearly central to the UK research information environment, both in provision of paper copy and electronic services. There is room for closer collaboration between it and ESRC-funded services such as SOSIG – they are working in similar areas and have pools of expertise which would be useful to each other. The focus group we held at the British Library illustrated that there is an appetite for awareness-raising amongst potential user audiences for the BL and ESRC services.

Recommendation 32: ESRC information services and the British Library should examine areas of potential collaboration and expertise sharing; they should also examine the potential for holding awareness-raising events aimed at specific target audiences such as NGOs, charities and not-for-profit organisations, as well as local and national government researchers.

⁸¹ http://www.lse.ac.uk/library/other_sites/aliss/

10.26 Closer collaboration between Society Today and SOSIG

SOSIG offer services such as Grapevine and Likeminds, linked to the SOSIG classification scheme. Society Today is also encouraging users to create logins in order for the service to know them better and to create a community of users, with discussion topics, groups of expertise etc. Email alerting services and colleague and expert finding services could be integrated. It is clear that there is a potential demand for such services, especially if they were integrated, approved and promoted by the ESRC. Existing arrangements should not be dismantled until a successor service has been tried and tested.

Recommendation 33: Society Today and SOSIG should actively collaborate to discuss possibilities for their authenticated services, investigate integration and ensure that there is no unnecessary duplication of effort or confusion in the minds of users over such services. They should also investigate the possibility of having a common username and password for both services.

10.27 Closer collaboration between IBSS and SOSIG

Recommendation 34: IBSS and SOSIG should meet regularly and investigate where there are possibilities for closer collaboration – one possibility is to make one available from inside the other in the way that Elsevier have integrated SCOPUS and SCIRUS.

10.28 Mapping needs to resources

Society Today should look at having a section which maps needs to resources – effectively saying: “if you are looking for X then this is what we have got”. This could be complemented by some kind of paper visual roadmap or fold-out leaflet. Ideally the paper version should be designed to work as a desktop aid which can be folded and refolded, but also as an attractive visual aid which could be displayed on the walls at departments and libraries. It could primarily be aimed at postgraduates but also be useful for mid-career researchers who may be unaware of specific services.

Recommendation 35: There should be a visual roadmap matching needs to resources – appearing on Society Today and possibly as a card leaflet or mouse-mat.

10.29 Social bookmarking systems

Recommendation 36: The ESRC should ask the National Centre for e-Social Science to investigate the extent to which social bookmarking systems such as Connotea are used by researchers for resource discovery. In the light of the results, the ESRC should then consider whether or not an application with similar functionality to Connotea should be provided as a service for social and economic researchers within ESRC Society Today.

11 Annexes

Annex 1 – Data from survey

This Annex contains tables and graphs created from data collected using a web survey implemented in Survey Monkey. The content of the survey was agreed with the project advisory group prior to issue. The survey was publicly available between 1 and 21 November 2005, having been publicised by email through a wide range of channels within the UK social science community. The survey was completed by 342 individuals.

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Figure 1 Survey respondents by role and sector

Your main role (please select only one statement; if you have multiple roles please select the one which you consider will give us most insight for this survey) [n=342]	Response Total	Academic	Public including local and national government	Charity / NGO / not-for-profit	Business / commercial / consultancy	Other
I am a research supervisor and do my own research	122	104	16	2		
I am a postgraduate student	85	84	1			
I am an active researcher or research assistant	56	40	14		2	
I work in research support (information services staff librarian subject support staff intermediary etc)	46	44	1	1		
I am or work for a resource provider	11	8	2			1
I am a user of research	9	1	7	1		
Other	13	2	9			2
Total Respondents	342	283	50	4	2	3

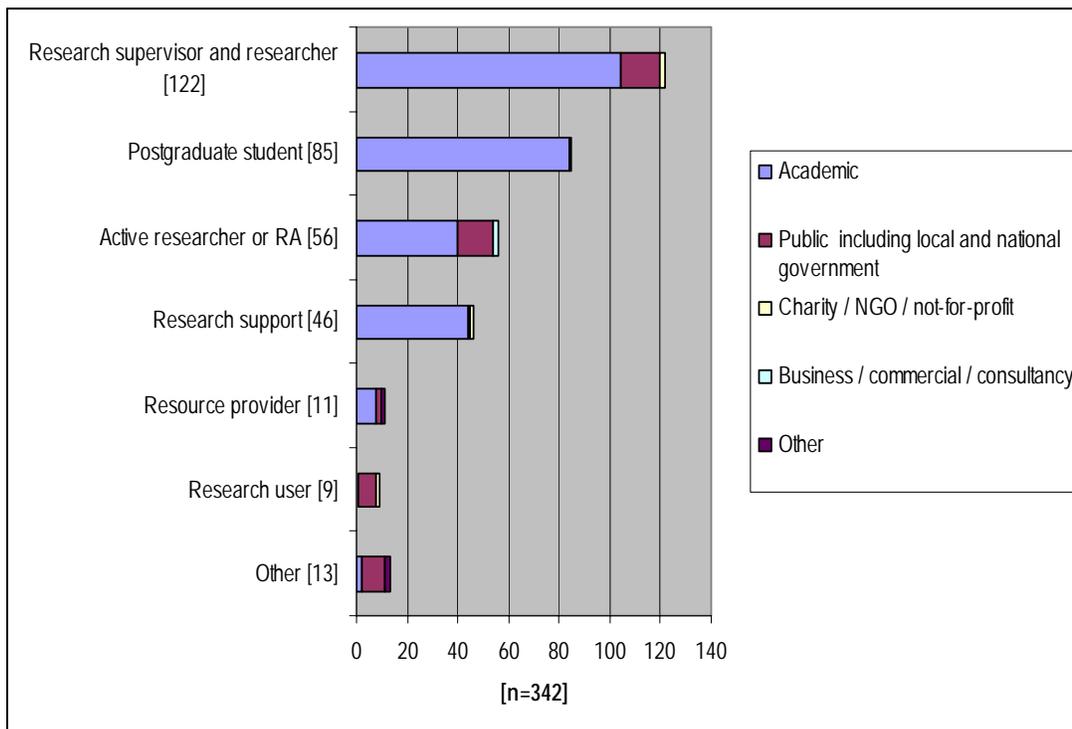


Figure 1 shows the breakdown of survey respondents by role and sector. The number of responses from outside the academic and public sectors is small. Respondents self-categorised between seven broad role categories, and five employment sector categories. Over one third of respondents were research supervisors and researchers in academia.

Figure 2 Survey respondents by discipline and sector

From this list please choose the one discipline / subject area which most closely matches your specialist area or the majority of your research or research use [n=342]	Response Total	Academic	Public including local and national government	Charity / NGO / not-for-profit	Business / commercial / consultancy	Other
Social Policy	49	27	20	1	1	
Sociology	33	30	2			1
Political Science and International Studies	31	29		2		
Psychology	30	29	1			
Economics	26	21	3	1		1
Education	25	20	5			
Human Geography	22	21	1			
Management and Business Studies	22	22				
Statistics Methods and Computing	21	13	8			
Socio-Legal Studies	15	14	1			
Social Anthropology	14	14				
Economic and Social History	8	8				
Demography	7	3	3		1	
Science and Technology Studies	5	5				
Area Studies	4	4				
Linguistics	3	3				
Environmental Planning	3	2	1			
Social Work	1	1				
None of the above apply	23	17	5			1
Total Respondents	342	283	50	4	2	3

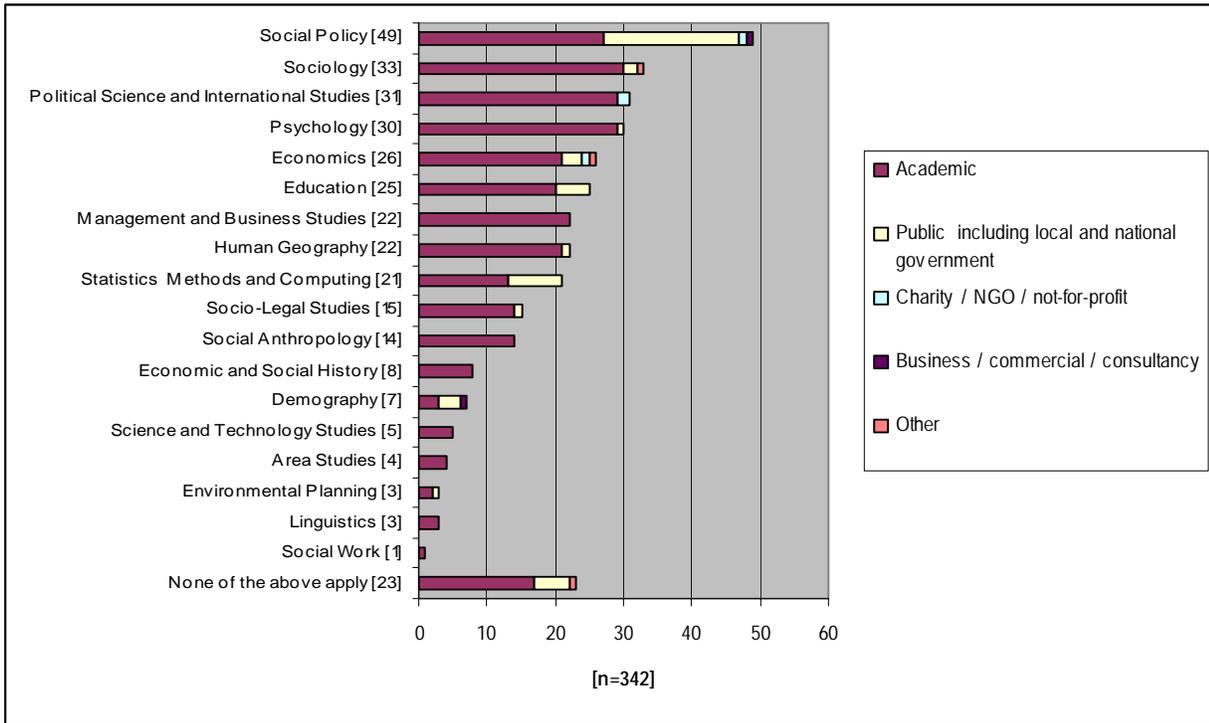
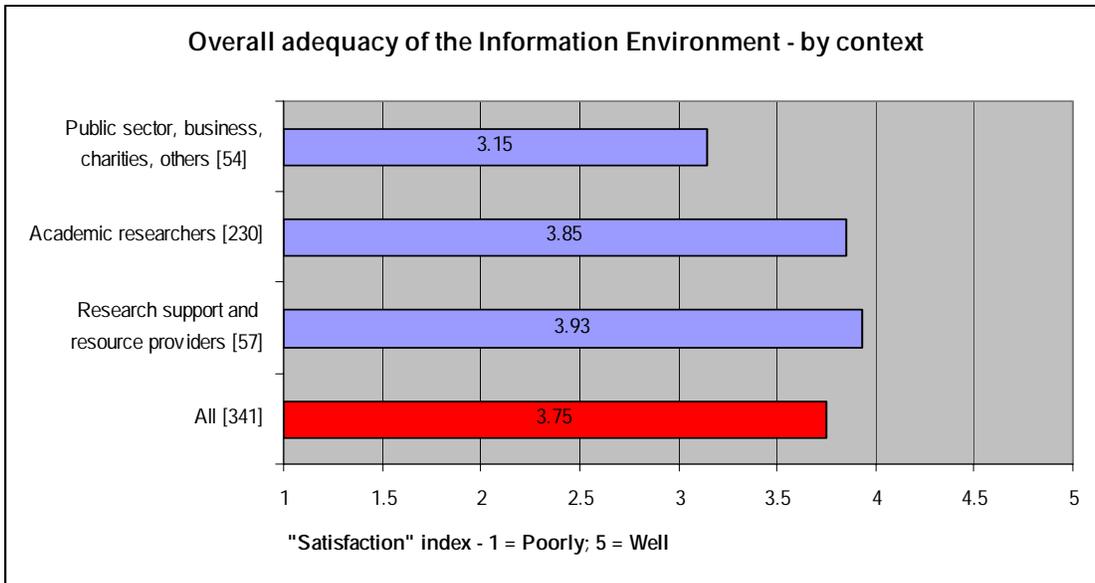


Figure 2 shows the breakdown of respondents by sector and discipline. Three big disciplines – Management and Business, Education, and Psychology – are substantially under-represented (with half to one third of the expected proportion of respondents). Two medium-sized disciplines – Economics and Sociology – are somewhat over represented (with ~1.5 times the expected proportion of respondents). Social Policy researchers were heavily represented amongst respondents from the “public, including local and national government” sector.

Figure 3 How well does the information environment meet your needs? (Context)⁸²



⁸² In discussion with the client we decided to base some of our analysis on three “contexts” not originally envisaged in the design of the survey, namely:

- Academic researchers;
- Research support and resource providers (irrespective of sector);
- Public sector, business, charities, other (excluding those in research support or resource provision).

Figure 4 How well does the information environment meet your needs? (Academic role)

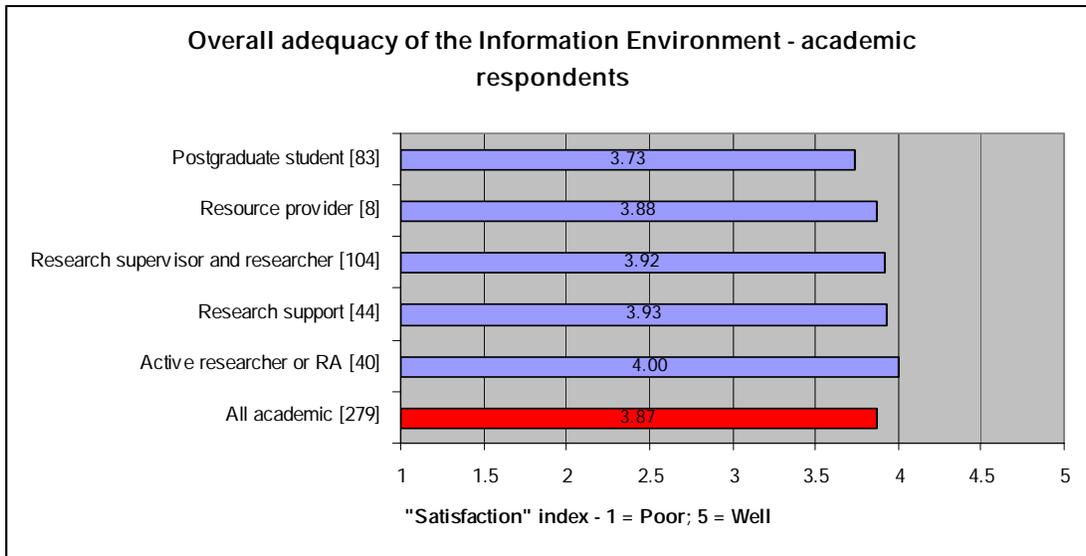
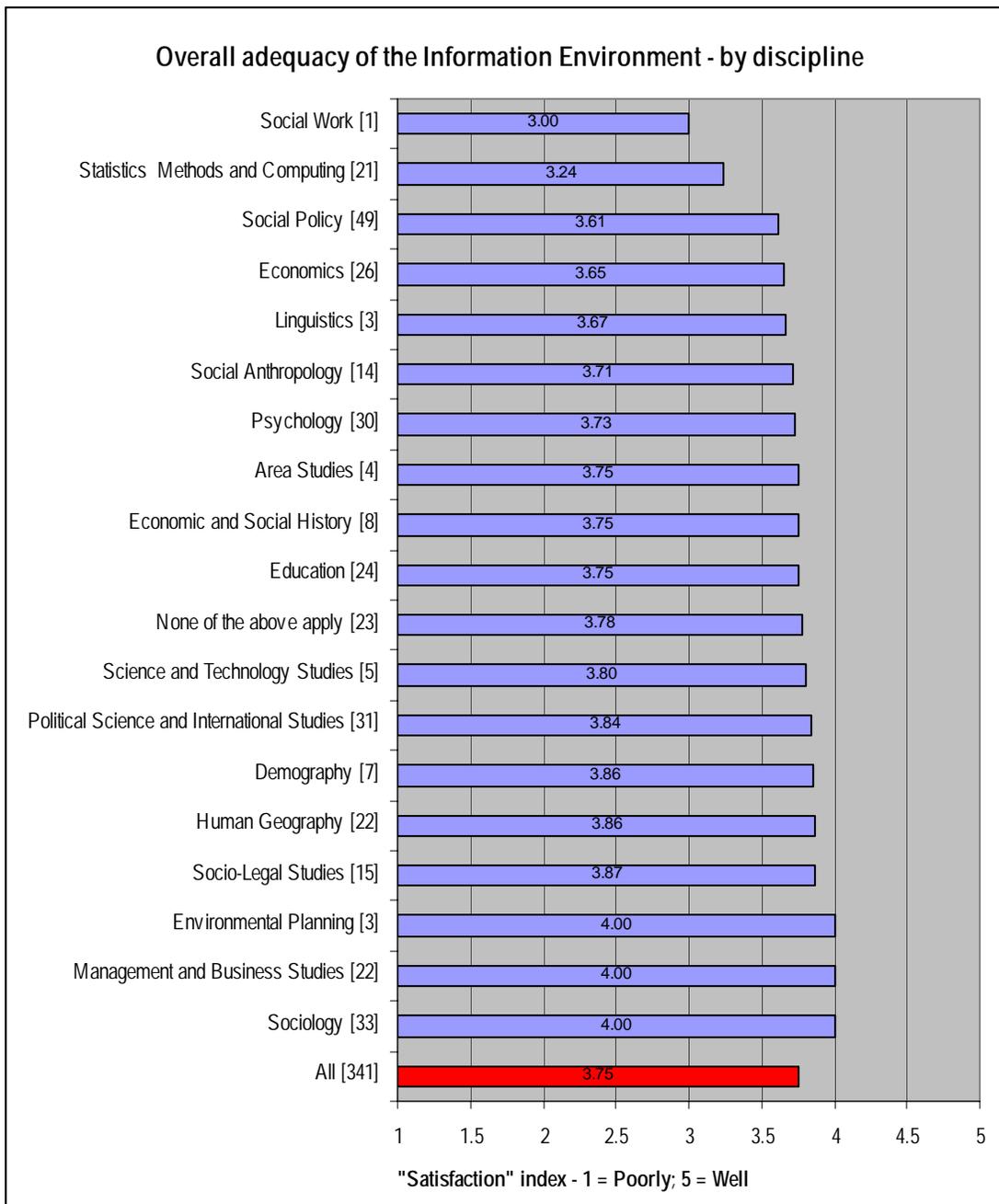


Figure 5 How well does the information environment meet your needs? (Discipline)



Figures 3 to 5 use a "satisfaction" index, a weighted average of the responses to the five-point likert scale, with "Well" given a value of 5 and "Poorly" a value of 1. If responses were symmetrically distributed around "Adequately" the satisfaction index would be 3.00. A score approaching 4.00 can probably be taken to mean "little overall cause for concern". From these Figures we conclude that:

- respondents from the public, local, national government sector are less satisfied with the information environment than are respondents who are academics;
- postgraduates are the least satisfied of academic respondents (3.73), and researchers/RAs the most satisfied (4.00), with little difference between other categories (research supervisors - 3.92, and research support - 3.93);
- respondents in "social work" (3.00) and "statistics, methods, and computing" (3.24) are easily the least satisfied discipline.

Figure 6 Recognition and use of resources (Most recognised - all respondents)

Please indicate whether you have heard of or used in your research or in the support of other people's the following resources - all [n=341]	Not heard of it	Heard of it but never used it	Used it once or a few times	Occasionally use it	Regularly use it	Response Total
Google	0%	0%	2%	8%	90%	341
Web of Science	25%	14%	12%	16%	33%	341
Google Scholar	25%	16%	14%	19%	26%	341
The International Bibliography of the Social Sciences (IBSS)	15%	18%	18%	23%	25%	341
The Social Science Information Gateway (SOSIG)	17%	19%	24%	24%	17%	341
The UK Data Archive / Economic & Social Data Service	14%	40%	22%	13%	11%	341
COPAC	54%	16%	10%	9%	11%	341
ESRC Society Today	20%	28%	28%	15%	9%	341
The Census Programme	31%	45%	12%	6%	6%	341
ESRC National Centre for Research Methods	22%	49%	15%	10%	4%	341
The Question Bank (CASS)	55%	27%	9%	7%	2%	341
A2A	90%	5%	3%	1%	1%	341
ESRC National Centre for e-Social Science	39%	43%	11%	6%	1%	341

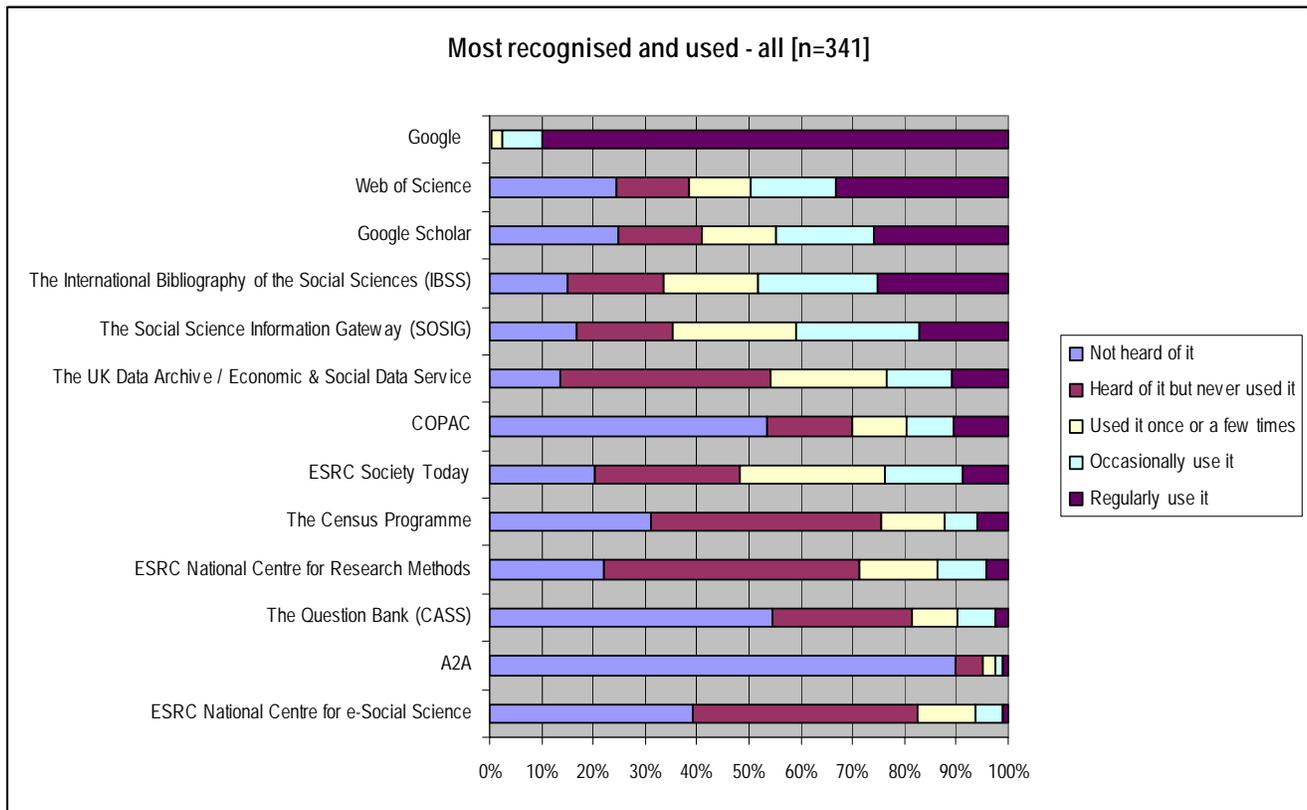


Figure 7 Recognition and use of resources (Least recognised – all respondents)

Please indicate whether you have heard of or used in your research or in the support of other people's the following resources - all [n=341]	Not heard of it	Heard of it but never used it	Used it once or a few times	Occasionally use it	Regularly use it	Response Total
A2A	90%	5%	3%	1%	1%	341
The Question Bank (CASS)	55%	27%	9%	7%	2%	341
COPAC	54%	16%	10%	9%	11%	341
ESRC National Centre for e-Social Science	39%	43%	11%	6%	1%	341
The Census Programme	31%	45%	12%	6%	6%	341
Google Scholar	25%	16%	14%	19%	26%	341
Web of Science	25%	14%	12%	16%	33%	341
ESRC National Centre for Research Methods	22%	49%	15%	10%	4%	341
ESRC Society Today	20%	28%	28%	15%	9%	341
The Social Science Information Gateway (SOSIG)	17%	19%	24%	24%	17%	341
The International Bibliography of the Social Sciences (IBSS)	15%	18%	18%	23%	25%	341
The UK Data Archive / Economic & Social Data Service	14%	40%	22%	13%	11%	341
Google	0%	0%	2%	8%	90%	341

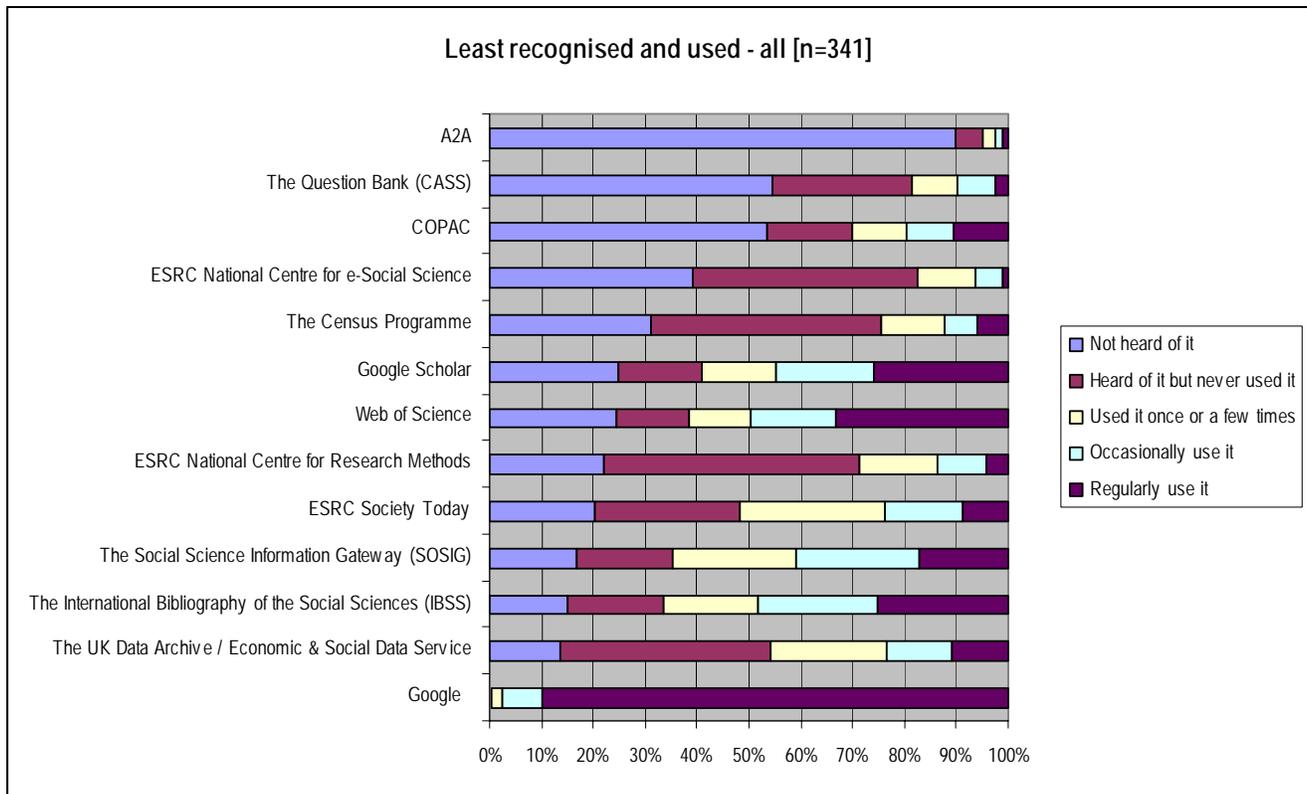


Figure 8 Recognition and use of resources (Most recognised - academic researchers)

Please indicate whether you have heard of or used in your research or in the support of other people's the following resources - academic researchers [n=230]	Not heard of it	Heard of it but never used it	Used it once or a few times	Occasionally use it	Regularly use it	Response Total
Google	0%	0%	2%	6%	92%	230
Web of Science	20%	14%	13%	16%	37%	230
Google Scholar	23%	15%	13%	18%	31%	230
The International Bibliography of the Social Sciences (IBSS)	13%	19%	18%	24%	26%	230
The UK Data Archive / Economic & Social Data Service	17%	43%	16%	13%	11%	230
ESRC Society Today	15%	27%	31%	17%	10%	230
The Social Science Information Gateway (SOSIG)	16%	23%	23%	27%	10%	230
COPAC	57%	19%	11%	6%	6%	230
ESRC National Centre for Research Methods	21%	51%	15%	8%	4%	230
The Census Programme	32%	48%	8%	8%	3%	230
The Question Bank (CASS)	61%	25%	7%	5%	2%	230
ESRC National Centre for e-Social Science	37%	46%	10%	7%	1%	230
A2A	92%	4%	2%	0%	1%	230

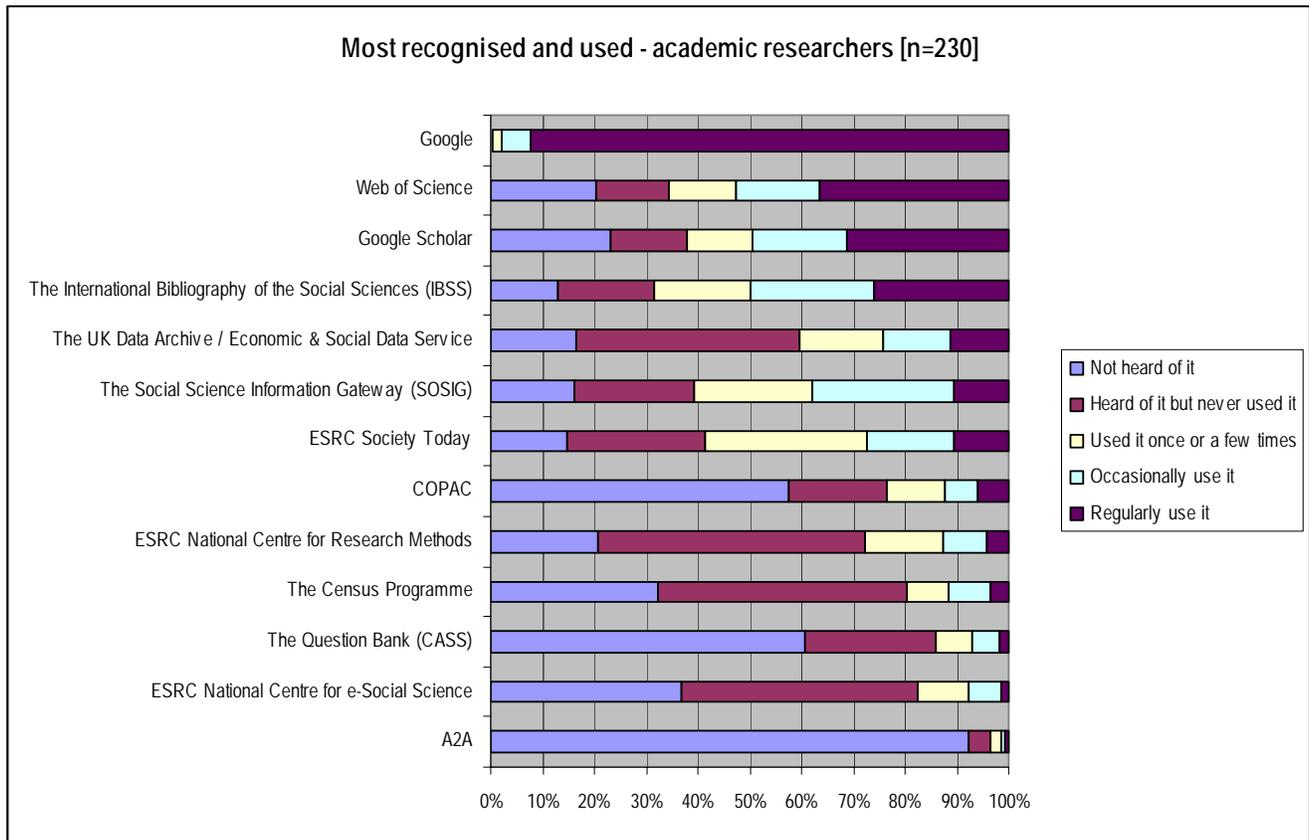


Figure 9 Recognition and use of resources (Least recognised - academic researchers)

Please indicate whether you have heard of or used in your research or in the support of other people's the following resources - academic researchers [n=230]	Not heard of it	Heard of it but never used it	Used it once or a few times	Occasionally use it	Regularly use it	Response Total
A2A	92%	4%	2%	0%	1%	230
The Question Bank (CASS)	61%	25%	7%	5%	2%	230
COPAC	57%	19%	11%	6%	6%	230
ESRC National Centre for e-Social Science	37%	46%	10%	7%	1%	230
The Census Programme	32%	48%	8%	8%	3%	230
Google Scholar	23%	15%	13%	18%	31%	230
ESRC National Centre for Research Methods	21%	51%	15%	8%	4%	230
Web of Science	20%	14%	13%	16%	37%	230
The UK Data Archive / Economic & Social Data Service	17%	43%	16%	13%	11%	230
The Social Science Information Gateway (SOSIG)	16%	23%	23%	27%	10%	230
ESRC Society Today	15%	27%	31%	17%	10%	230
The International Bibliography of the Social Sciences (IBSS)	13%	19%	18%	24%	26%	230
Google	0%	0%	2%	6%	92%	230

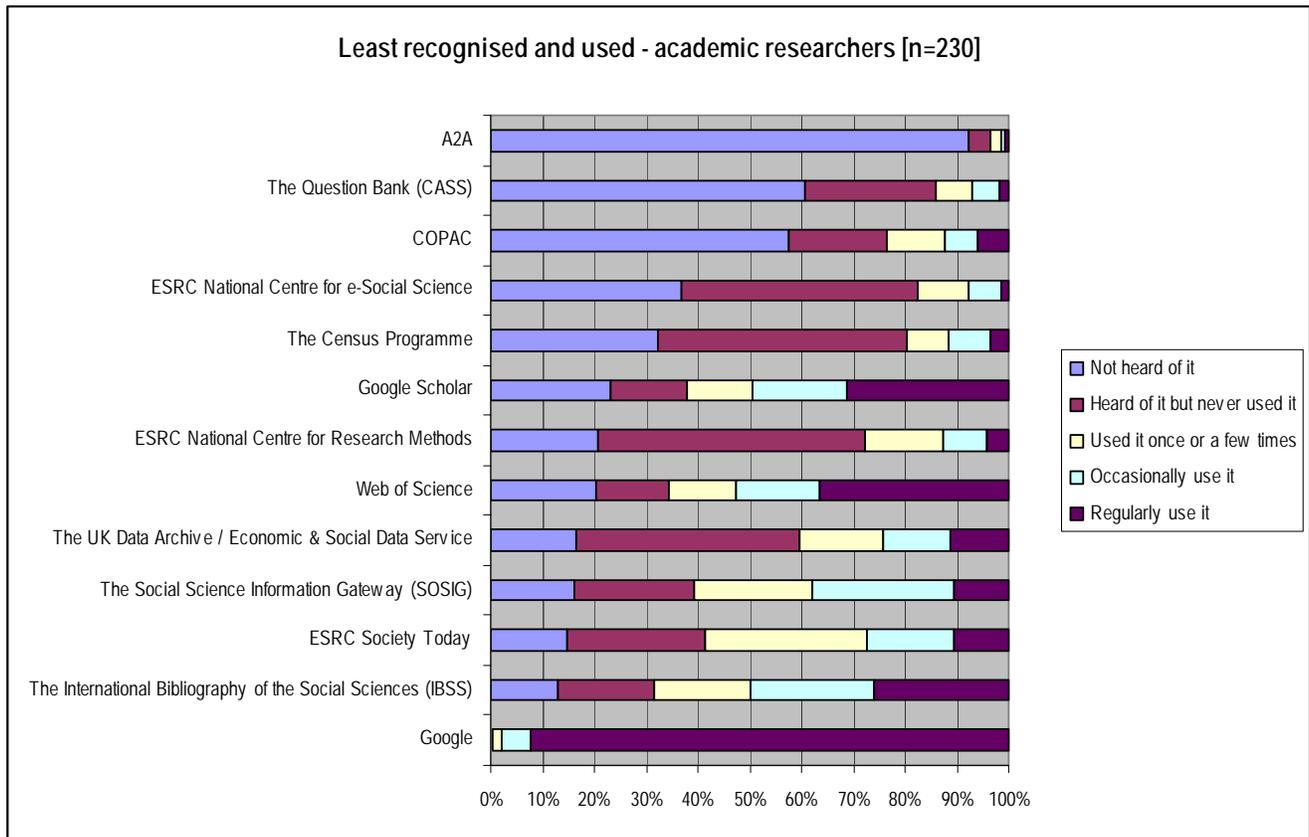


Figure 10 Recognition and use of resources (Most recognised – support providers)

Please indicate whether you have heard of or used in your research or in the support of other people's the following resources - support providers [n=57]	Not heard of it	Heard of it but never used it	Used it once or a few times	Occasionally use it	Regularly use it	Response Total
Google	0%	0%	2%	18%	81%	57
The Social Science Information Gateway (SOSIG)	0%	2%	19%	26%	53%	57
Web of Science	7%	7%	11%	28%	47%	57
The International Bibliography of the Social Sciences (IBSS)	5%	7%	14%	33%	40%	57
COPAC	5%	12%	14%	30%	39%	57
Google Scholar	5%	16%	28%	32%	19%	57
The UK Data Archive / Economic & Social Data Service	5%	30%	40%	12%	12%	57
The Census Programme	18%	42%	28%	0%	12%	57
ESRC Society Today	25%	25%	26%	14%	11%	57
A2A	75%	9%	7%	5%	4%	57
ESRC National Centre for Research Methods	30%	42%	18%	7%	4%	57
The Question Bank (CASS)	49%	30%	12%	7%	2%	57
ESRC National Centre for e-Social Science	35%	40%	19%	5%	0%	57

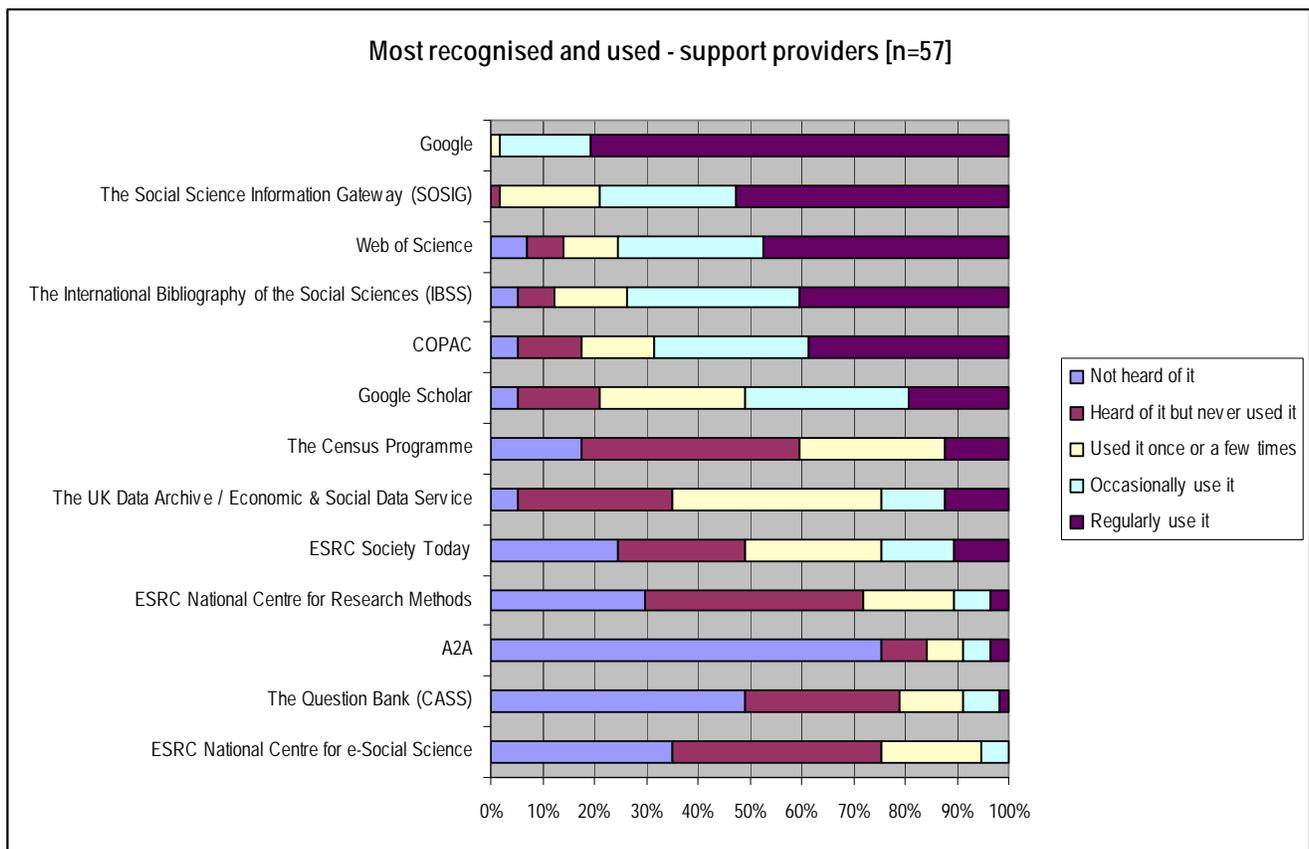


Figure 11 Recognition and use of resources (Least recognised – support providers)

Please indicate whether you have heard of or used in your research or in the support of other people's the following resources - support providers [n=57]	Not heard of it	Heard of it but never used it	Used it once or a few times	Occasionally use it	Regularly use it	Response Total
A2A	75%	9%	7%	5%	4%	57
The Question Bank (CASS)	49%	30%	12%	7%	2%	57
ESRC National Centre for e-Social Science	35%	40%	19%	5%	0%	57
ESRC National Centre for Research Methods	30%	42%	18%	7%	4%	57
ESRC Society Today	25%	25%	26%	14%	11%	57
The Census Programme	18%	42%	28%	0%	12%	57
Web of Science	7%	7%	11%	28%	47%	57
The UK Data Archive / Economic & Social Data Service	5%	30%	40%	12%	12%	57
The International Bibliography of the Social Sciences (IBSS)	5%	7%	14%	33%	40%	57
Google Scholar	5%	16%	28%	32%	19%	57
COPAC	5%	12%	14%	30%	39%	57
The Social Science Information Gateway (SOSIG)	0%	2%	19%	26%	53%	57
Google	0%	0%	2%	18%	81%	57

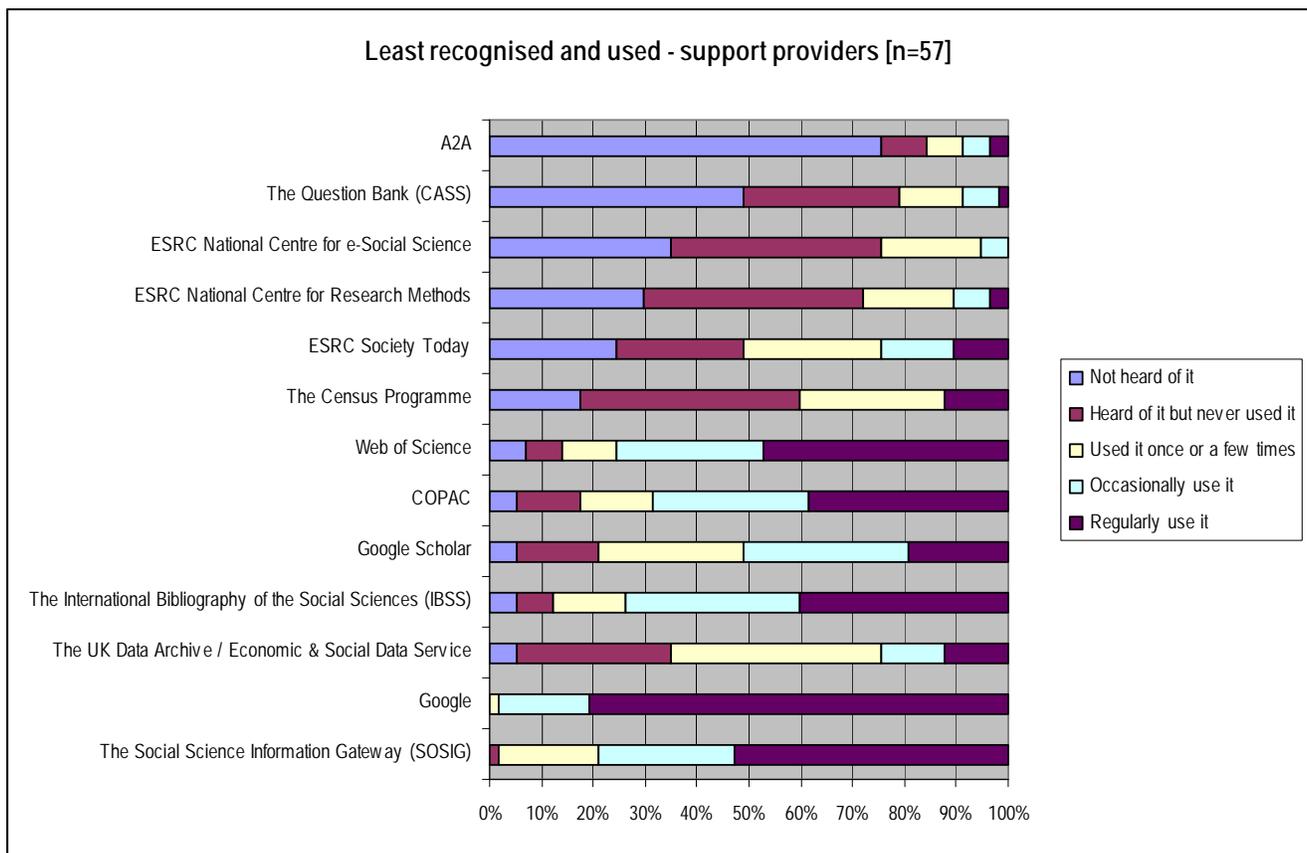


Figure 12 Recognition and use of resources (Most recognised - public, business, charities etc)

Please indicate whether you have heard of or used in your research or in the support of other people's the following resources - public, business, charity etc [n=50]	Not heard of it	Heard of it but never used it	Used it once or a few times	Occasionally use it	Regularly use it	Response Total
Google	0%	0%	4%	7%	89%	54
The Census Programme	41%	31%	13%	6%	9%	54
Google Scholar	54%	22%	6%	9%	9%	54
The UK Data Archive / Economic & Social Data Service	11%	41%	30%	11%	7%	54
The Social Science Information Gateway (SOSIG)	37%	19%	31%	6%	7%	54
The International Bibliography of the Social Sciences (IBSS)	33%	30%	22%	9%	6%	54
The Question Bank (CASS)	33%	31%	13%	17%	6%	54
Web of Science	61%	20%	9%	6%	4%	54
ESRC National Centre for Research Methods	19%	48%	11%	19%	4%	54
ESRC Society Today	39%	37%	17%	7%	0%	54
COPAC	89%	9%	2%	0%	0%	54
A2A	94%	6%	0%	0%	0%	54
ESRC National Centre for e-Social Science	52%	37%	9%	2%	0%	54

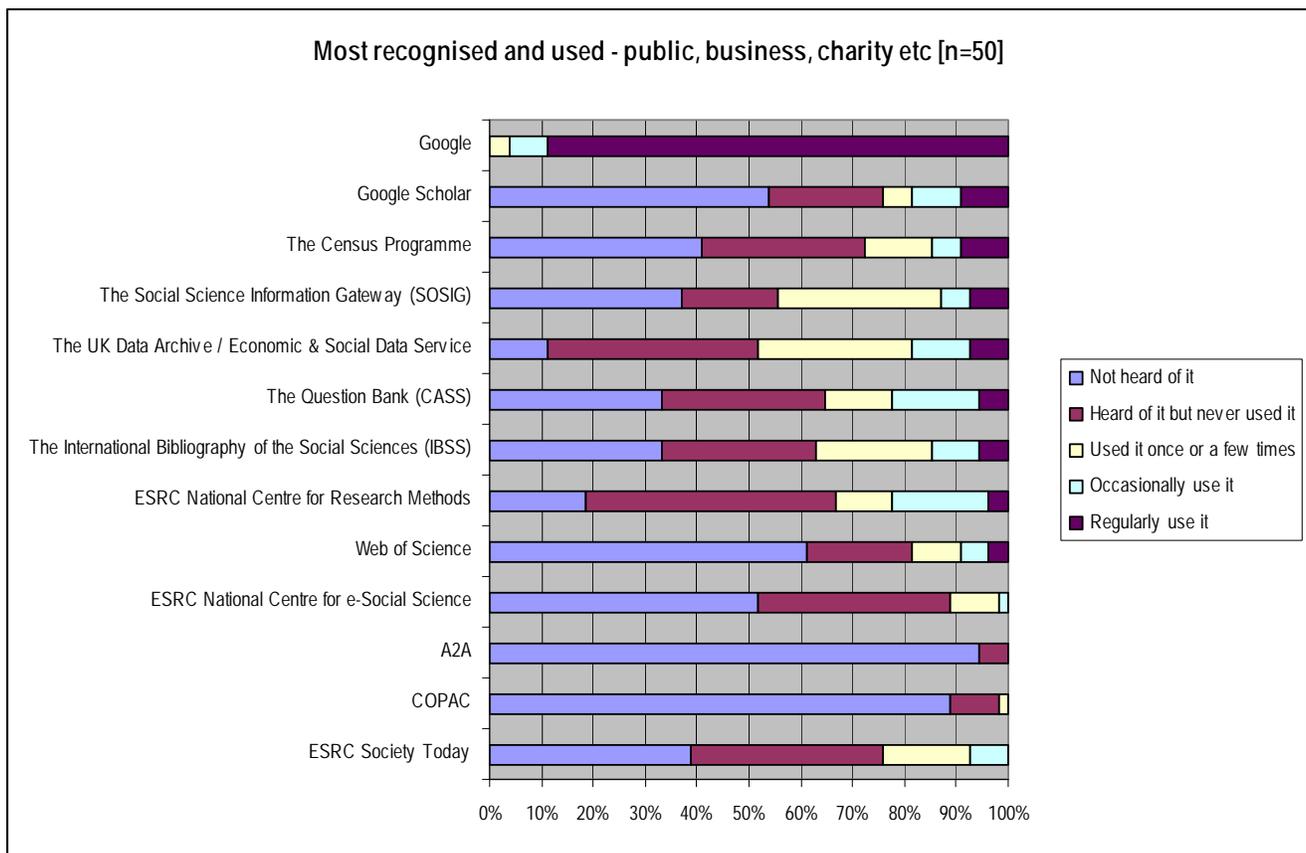
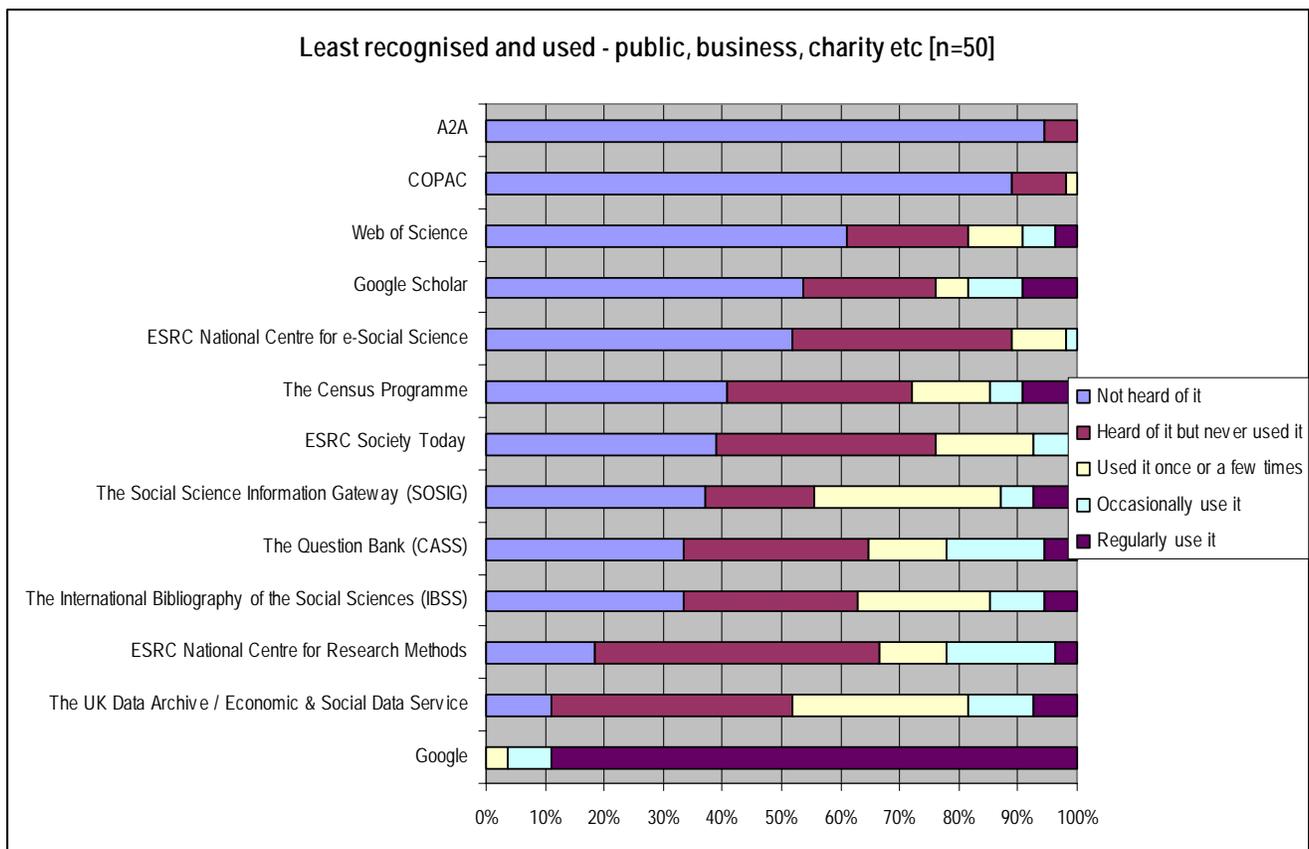


Figure 13 Recognition and use of resources (Least recognised - public, business, charities etc)

Please indicate whether you have heard of or used in your research or in the support of other people's the following resources - public, business, charity etc [n=50]	Not heard of it	Heard of it but never used it	Used it once or a few times	Occasionally use it	Regularly use it	Response Total
A2A	94%	6%	0%	0%	0%	54
COPAC	89%	9%	2%	0%	0%	54
Web of Science	61%	20%	9%	6%	4%	54
Google Scholar	54%	22%	6%	9%	9%	54
ESRC National Centre for e-Social Science	52%	37%	9%	2%	0%	54
The Census Programme	41%	31%	13%	6%	9%	54
ESRC Society Today	39%	37%	17%	7%	0%	54
The Social Science Information Gateway (SOSIG)	37%	19%	31%	6%	7%	54
The International Bibliography of the Social Sciences (IBSS)	33%	30%	22%	9%	6%	54
The Question Bank (CASS)	33%	31%	13%	17%	6%	54
ESRC National Centre for Research Methods	19%	48%	11%	19%	4%	54
The UK Data Archive / Economic & Social Data Service	11%	41%	30%	11%	7%	54



Figures 6 to 13 show that:

- Only Google is regularly used by more than half of all respondents (90%), followed by Web of Science (33%), Google Scholar (26%), IBSS (25%) and SOSIG (17%).
- Web of Science (49%), Google Scholar (45%), IBSS (48%) and SOSIG (41%) are regularly or occasionally used by approaching half of respondents.
- ESRC Society Today is regularly used by 9% of respondents, and regularly or occasionally used by less than 25% of respondents (26% in the case of academic respondents, and 6% in the case of public sector respondents).
- Only Google, Web of Science, Google Scholar and IBSS show regular users outnumbering occasional users, and occasional users outnumbering those who report using it only once or a few times.
- The recognition and use pattern of respondents in research support is rather different from other groups, with a smaller proportion (80%) making regular use of Google, and with over 70% making occasional or regular use of SOSIG (87%), Web of Science (82%), COPAC (72%) and IBSS (82%).
- And in this group, COPAC and SOSIG, as well as Google, Web of Science, Google Scholar and IBSS, show regular users outnumbering occasional users, and occasional users outnumbering those who report using it only once or a few times.
- ESRC Society Today is regularly used by 7% of these respondents (9% all), and regularly or occasionally used by 24% (25% all).
- Some services (A2A, CASS, COPAC) have generally low recognition, but there is a pronounced difference between the public and academic sectors in their recognition and use of CASS, which 60% of academics have not heard of, compared with 30% in the public sector, and which 7% of academic respondents occasionally or regularly use, compared with 26% in the public sector.

Figure 14 Where would you go to first to find high quality research information? Which information sources do you find particularly useful or productive overall? (All)

Where would you go to first to find high quality research information? Please select from the list below to indicate the information source(s) which you typically go to first. If none of the options are relevant to you select I use none of the above - all [n=341]	Response Total	%	Which information sources do you find particularly useful or productive overall? Please select from the list below. If none of the options are relevant to you select I use none of the above - all [n=341]	Response Total	%
Locally supplied resources (institution's own library, library catalogue, e-resource gateways, portals)	235	69%	Locally supplied resources (institution's own library, library catalogue, e-resource gateways, portals)	214	63%
Google	200	59%	Google	206	60%
Major journal services (e.g. EBSCOHost, Blackwells, Elsevier)	177	52%	Major journal services (e.g. EBSCOHost, Blackwells, Elsevier)	160	47%
My own books or journals	153	45%	My own books or journals	156	46%
ESRC-funded information resources such as Society Today, SOSIG or IBSS (please specify which resource below)	98	29%	My own fieldwork	95	28%
Major databases (eg Ageinfo)	93	27%	Major databases (eg Ageinfo)	91	27%
My own fieldwork	82	24%	ESRC-funded information resources such as Society Today, SOSIG or IBSS (please specify which resource below)	89	26%
Google Scholar	80	23%	Google Scholar	73	21%
British Library	72	21%	British Library	63	18%
Institutional repositories	49	14%	ESRC-funded data resources such as the Data Archive or the Census Programme (please specify which resource below)	50	15%
ESRC-funded data resources such as the Data Archive or the Census Programme (please specify which resource below)	47	14%	Institutional repositories	50	15%
Other internet sources (please specify below)	44	13%	Other internet sources (please specify below)	40	12%
Other UK data resources (please specify which resource below)	43	13%	Other UK data resources (please specify which resource below)	29	9%
Subject repositories	29	9%	Subject repositories	28	8%
International data resources, e.g. ICPSR	23	7%	International data resources, e.g. ICPSR	16	5%
Public library	19	6%	Public library	13	4%
Other commercial search engine (please specify below)	12	4%	Other commercial search engine (please specify below)	13	4%
I use none of the above	2	1%	I use none of the above	2	1%

Figure 15 Where would you go to first to find high quality research information? Which information sources do you find particularly useful or productive overall? (Academic researchers)

Where would you go to first to find high quality research information? Please select from the list below to indicate the information source(s) which you typically go to first - academic researchers [n=230]	Response Total	%	Which information sources do you find particularly useful or productive overall? Please select from the list below - academic researchers [n=230]	Response Total	%
Locally supplied resources (institution's own library, library catalogue, e-resource gateways, portals)	159	69%	Locally supplied resources (institution's own library, library catalogue, e-resource gateways, portals)	149	65%
Major journal services (e.g. EBSCOHost, Blackwells, Elsevier)	131	57%	Google	137	60%
Google	131	57%	My own books or journals	128	56%
My own books or journals	124	54%	Major journal services (e.g. EBSCOHost, Blackwells, Elsevier)	121	53%
My own fieldwork	67	29%	My own fieldwork	80	35%
Google Scholar	63	27%	Google Scholar	58	25%
ESRC-funded information resources such as Society Today, SOSIG or IBSS (please specify which resource below)	61	27%	ESRC-funded information resources such as Society Today, SOSIG or IBSS (please specify which resource below)	55	24%
Major databases (eg Ageinfo)	51	22%	Major databases (eg Ageinfo)	48	21%
British Library	39	17%	British Library	39	17%
ESRC-funded data resources such as the Data Archive or the Census Programme (please specify which resource below)	29	13%	Institutional repositories	32	14%
Other internet sources (please specify below)	27	12%	ESRC-funded data resources such as the Data Archive or the Census Programme (please specify which resource below)	30	13%
Institutional repositories	27	12%	Other internet sources (please specify below)	27	12%
Other UK data resources (please specify which resource below)	23	10%	Other UK data resources (please specify which resource below)	15	7%
International data resources, e.g. ICPSR	14	6%	Subject repositories	13	6%
Subject repositories	13	6%	International data resources, e.g. ICPSR	8	3%
Public library	10	4%	Public library	8	3%
Other commercial search engine (please specify below)	5	2%	Other commercial search engine (please specify below)	7	3%
I use none of the above	2	1%	I use none of the above	0	0%

Figure 16 Where would you go to first to find high quality research information? Which information sources do you find particularly useful or productive overall? (Support providers)

Where would you go to first to find high quality research information? Please select from the list below to indicate the information source(s) which you typically go to first - support providers [n=57]	Response Total	%	Which information sources do you find particularly useful or productive overall? Please select from the list below - support providers [n=57]	Response Total	%
Locally supplied resources (institution's own library, library catalogue, e-resource gateways, portals)	42	74%	Locally supplied resources (institution's own library, library catalogue, e-resource gateways, portals)	40	70%
Major databases (eg Ageinfo)	32	56%	Major databases (eg Ageinfo)	34	60%
ESRC-funded information resources such as Society Today, SOSIG or IBSS (please specify which resource below)	31	54%	Google	31	54%
Major journal services (e.g. EBSCOHost, Blackwells, Elsevier)	31	54%	Major journal services (e.g. EBSCOHost, Blackwells, Elsevier)	30	53%
Google	24	42%	ESRC-funded information resources such as Society Today, SOSIG or IBSS (please specify which resource below)	28	49%
British Library	21	37%	British Library	19	33%
Other UK data resources (please specify which resource below)	12	21%	ESRC-funded data resources such as the Data Archive or the Census Programme (please specify which resource below)	11	19%
ESRC-funded data resources such as the Data Archive or the Census Programme (please specify which resource below)	10	18%	Other UK data resources (please specify which resource below)	10	18%
Subject repositories	9	16%	Google Scholar	9	16%
Google Scholar	8	14%	Institutional repositories	9	16%
Other internet sources (please specify below)	8	14%	Other internet sources (please specify below)	8	14%
Institutional repositories	7	12%	Subject repositories	8	14%
International data resources, e.g. ICPSR	6	11%	International data resources, e.g. ICPSR	6	11%
My own books or journals	4	7%	My own books or journals	4	7%
Public library	3	5%	Other commercial search engine (please specify below)	4	7%
Other commercial search engine (please specify below)	3	5%	My own fieldwork	2	4%
My own fieldwork	2	4%	Public library	2	4%
I use none of the above	0	0%	I use none of the above	1	2%

Figure 17 Where would you go to first to find high quality research information? Which information sources do you find particularly useful or productive overall? (Public, business, charity etc)

Where would you go to first to find high quality research information? Please select from the list below to indicate the information source(s) which you typically go to first - public, business, charity etc [n=54]	Response Total	%	Which information sources do you find particularly useful or productive overall? Please select from the list below - public, business, charity etc [n=54]	Response Total	%
Google	45	83%	Google	38	70%
Locally supplied resources (institution's own library, library catalogue, e-resource gateways, portals)	34	63%	Locally supplied resources (institution's own library, library catalogue, e-resource gateways, portals)	25	46%
My own books or journals	25	46%	My own books or journals	24	44%
Major journal services (e.g. EBSCOHost, Blackwells, Elsevier)	15	28%	My own fieldwork	13	24%
Institutional repositories	15	28%	Major journal services (e.g. EBSCOHost, Blackwells, Elsevier)	9	17%
My own fieldwork	13	24%	Major databases (eg Ageinfo)	9	17%
British Library	12	22%	Institutional repositories	9	17%
Major databases (eg Ageinfo)	10	19%	ESRC-funded data resources such as the Data Archive or the Census Programme (please specify which resource below)	9	17%
Google Scholar	9	17%	Subject repositories	7	13%
Other internet sources (please specify below)	9	17%	Google Scholar	6	11%
ESRC-funded data resources such as the Data Archive or the Census Programme (please specify which resource below)	8	15%	ESRC-funded information resources such as Society Today, SOSIG or IBSS (please specify which resource below)	6	11%
Other UK data resources (please specify which resource below)	8	15%	Other internet sources (please specify below)	5	9%
Subject repositories	7	13%	British Library	5	9%
ESRC-funded information resources such as Society Today, SOSIG or IBSS (please specify which resource below)	6	11%	Other UK data resources (please specify which resource below)	4	7%
Public library	6	11%	Public library	3	6%
Other commercial search engine (please specify below)	4	7%	Other commercial search engine (please specify below)	2	4%
International data resources, e.g. ICPSR	3	6%	International data resources, e.g. ICPSR	2	4%
I use none of the above	0	0%	I use none of the above	1	2%

Figures 14 to 17 show that:

- For respondents overall, there is little difference between the way they valued the information sources investigated as "first ports of call" and as "particularly useful overall". Perhaps unsurprisingly "My own field work" was felt by more respondents to be "particularly useful or productive overall" (28%) than as "first port of call" (24%).
- Locally supplied resources, Google, major journal services and respondents' own books and journals were the clear favourites both as "first ports of call" and as "particularly useful overall".
- ESRC-funded **information** resources were identified as "first ports of call" by 29% of respondents, and as "particularly useful overall" by 26% of respondents. The equivalent figures for Google Scholar were 23% and 21%, and for ESRC-funded **data** resources, 14% and 15%.

Comparing the responses from the "academic" sector with those from the "public" sector, there is a relatively greater reliance on Google, which is the most frequently cited by public sector respondents as a first port of call and as particularly useful overall; but the second or third most frequently cited source for academic respondents. The pattern of responses from respondents in research support contrasted strongly with that from others, with less emphasis on Google, and rather more emphasis on ESRC-funded services and the British Library.

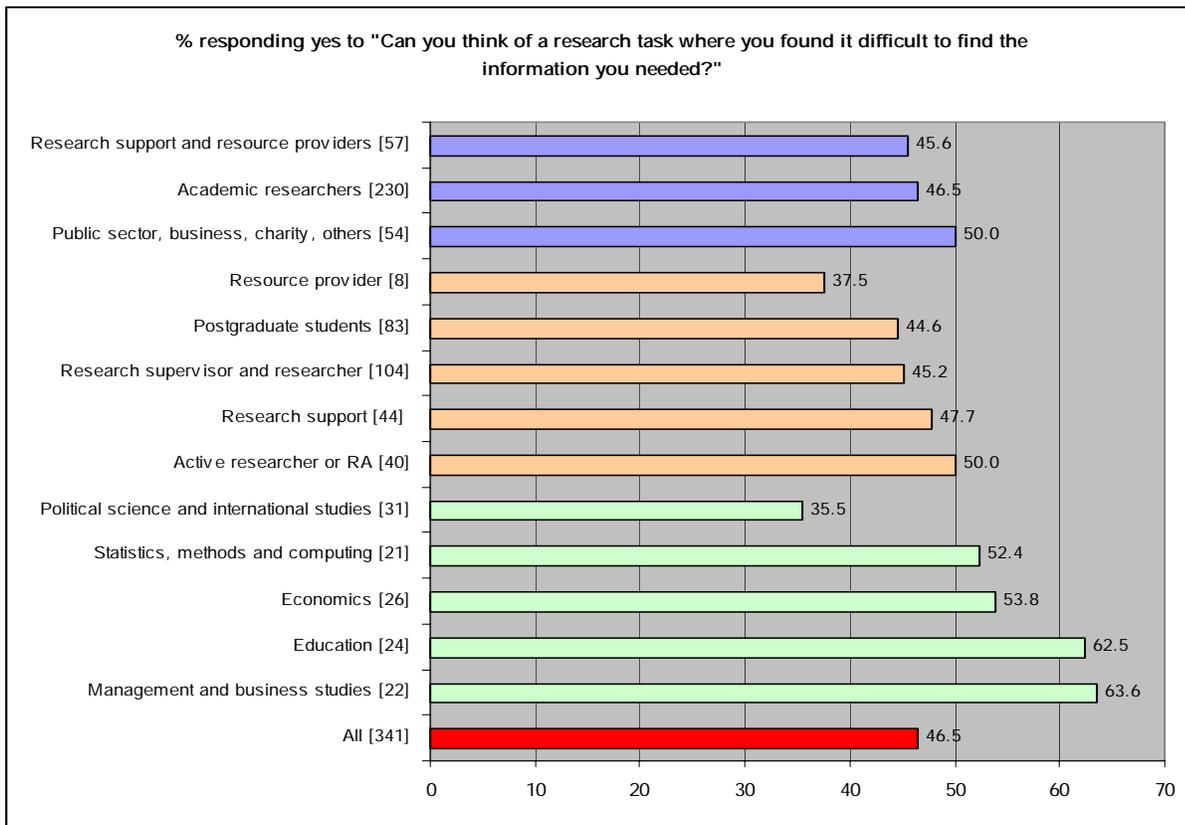
Figure 18 Most useful information sources for different disciplines

Which information sources do you find particularly useful or productive overall? Please select from the list below.	+/- % points variation from the "All respondents" average, by discipline					
	Economics	Education	Management and Business Studies	Political Science	Statistics, Methods, Computing	All respondents
Locally supplied resources (institution's own library, library catalogue, e-resource gateways, portals)	6	4	10	-1	-25	63%
Google	1	2	-10	-22	25	60%
Major journal services (e.g. EBSCOHost, Blackwells, Elsevier)	26	3	30	-2	-28	47%
My own books or journals	-15	0	9	6	7	46%
My own fieldwork	-16	22	13	1	-14	28%
Major databases (eg Ageinfo)	8	-14	-4	-14	-12	27%
ESRC-funded information resources such as Society Today, SOSIG or IBSS (please specify which resource below)	-11	-1	-3	16	-2	26%
Google Scholar	6	-1	-12	8	-7	21%
British Library	-3	-10	13	11	-14	18%
ESRC-funded data resources such as the Data Archive or the Census Programme (please specify which resource below)	5	-10	8	-2	23	15%
Institutional repositories	-3	2	-1	5	-5	15%
Other internet sources (please specify below)	4	-3	-3	1	3	12%
Other UK data resources (please specify which resource below)	-5	4	5	-5	6	9%
Subject repositories	-1	0	1	5	-3	8%

International data resources, e.g. ICPSR	15	-1	4	-5	10	5%
Public library	4	-4	1	-1	1	4%
Other commercial search engine (please specify below)	-4	-4	1	-1	-4	4%
I use none of the above	-1	4	-1	-1	-1	1%
Number of respondents	26	24	22	31	21	341

Figure 18 indicates that there are quite wide variations between disciplines⁸³ in how respondents view the utility of different information sources. For example, the political scientists in our sample find Google much less useful (though Google Scholar more useful) than average. Those in statistics, methods and computing find Google and ESRC-funded data resources much more useful (though major journal services much less useful) than average.

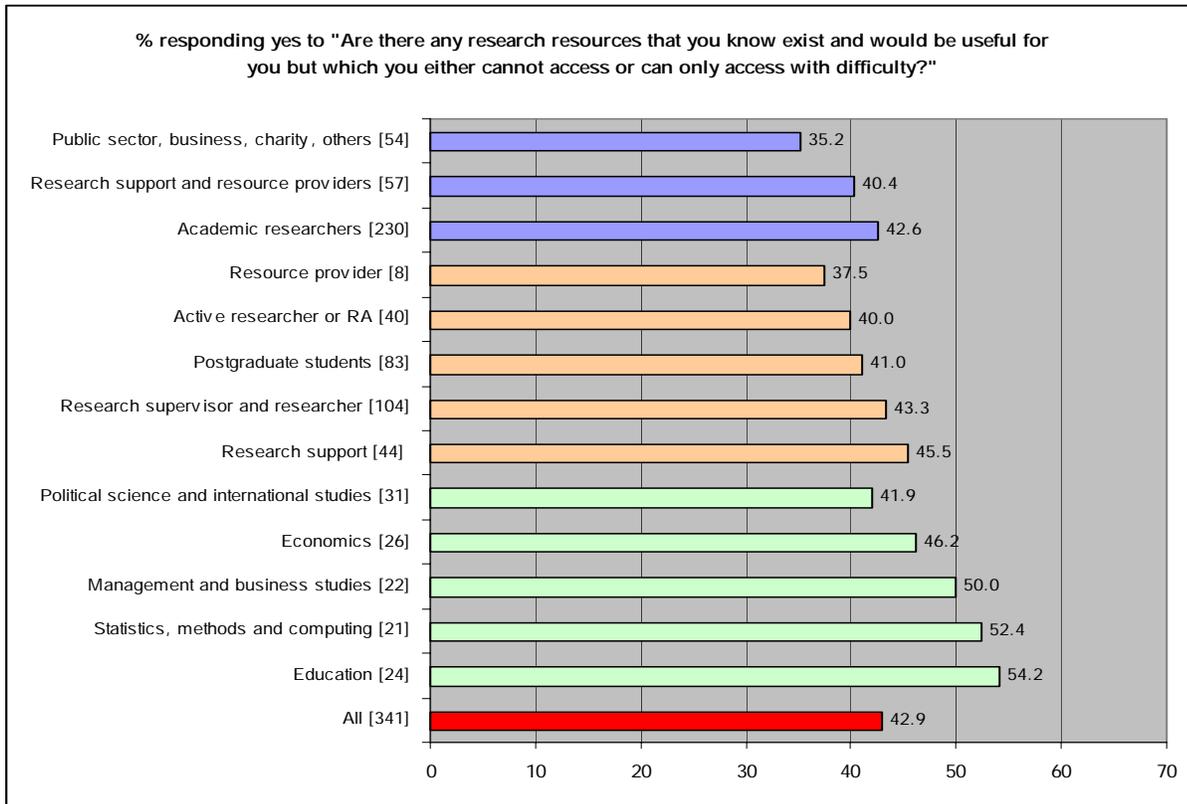
Figure 19 Difficulties in finding information (by context, role, and discipline)



⁸³ At the client's request we agreed to concentrate some of our analysis on five particular disciplines:

- Economics;
- Education;
- Management and business studies;
- Political science (including international studies);
- Statistics, methods, and computing.

Figure 20 Difficulty in accessing research resources (by context, role, and discipline)



Figures 19 and 20 show that between one third and two thirds of respondents (average 46.5%), depending on category, can think of a research task where it was difficult to find the information needed, and that between one third and just over a half of respondents (average 42.9%), depending on category, report that there are “hard to get but useful” research resources. Surprisingly, whereas a below average (35.2%) proportion of public sector respondents report difficulties with accessing “hard to get” resources, an above average (50%) proportion of them report difficulties in finding the information needed. Within the five specifically analysed disciplines, the proportion of respondents reporting difficulties under both questions varies widely. It is fair to say that most problems are being experienced by researchers in Education, Management and Business Studies, Statistics & Computing and Economics, and roughly in that order.

Figure 21 Keeping up to date (by context)

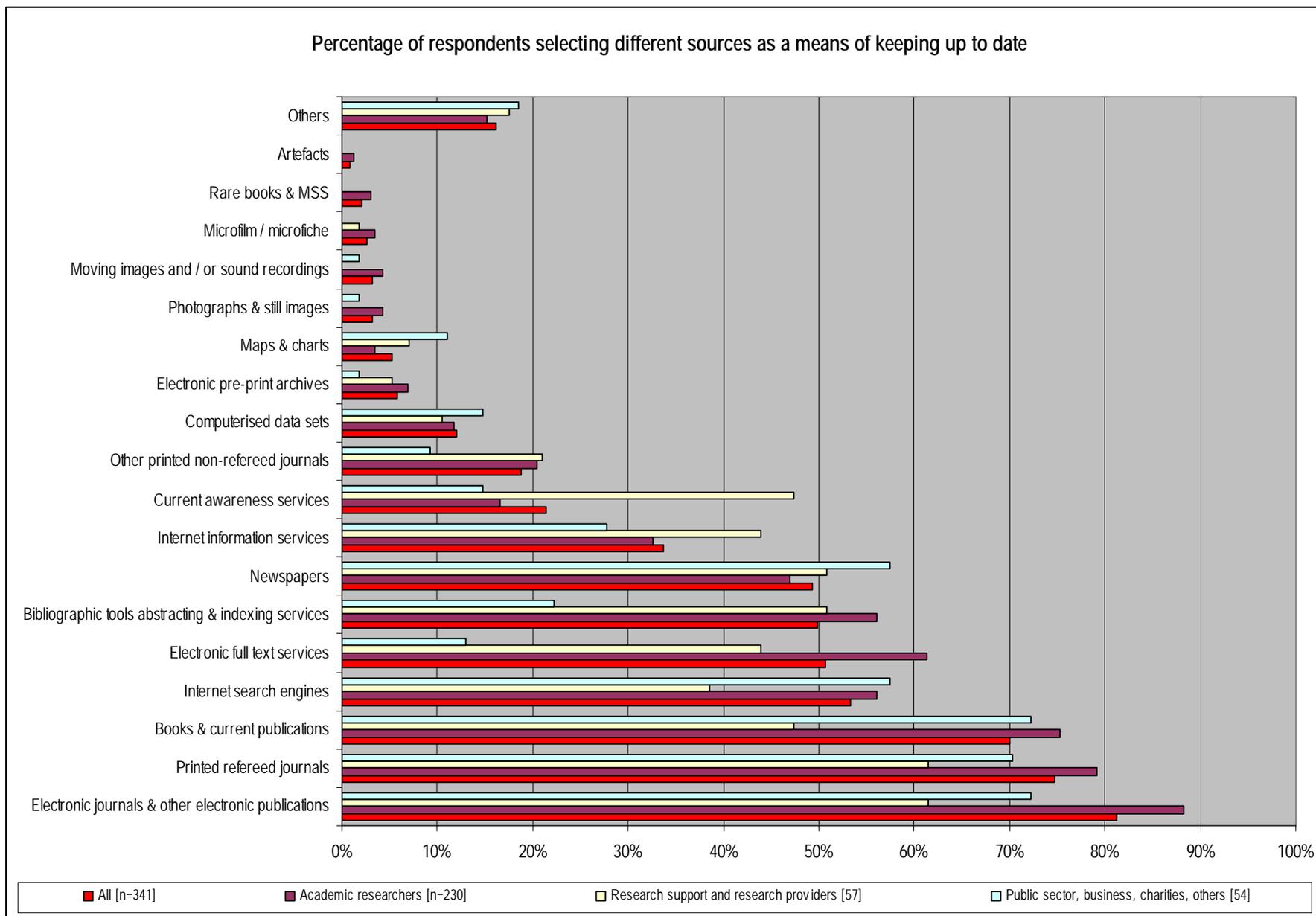
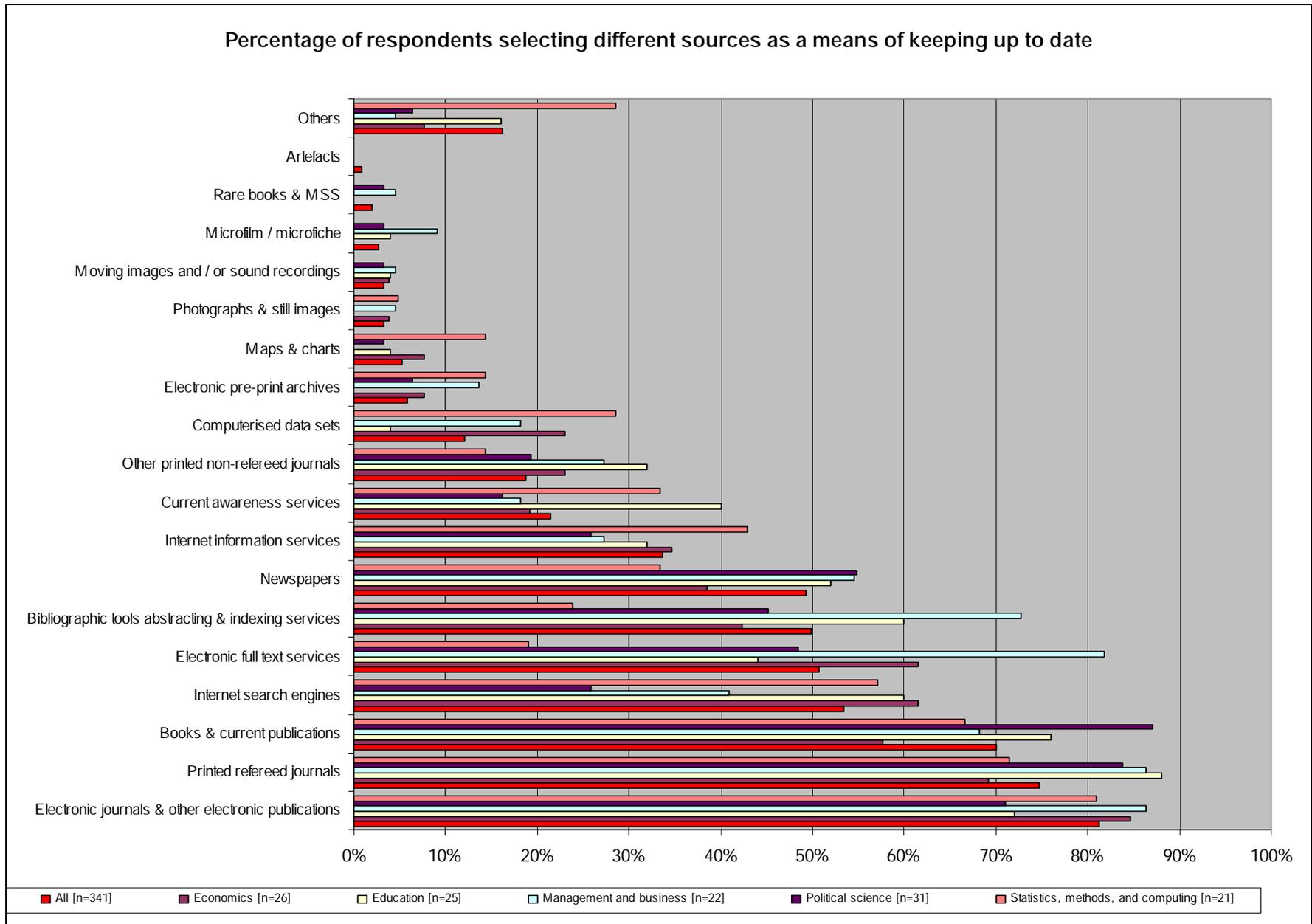


Figure 22 Keeping up to date (by selected discipline)



Figures 21 and 22 concern how respondents keep up to date in their disciplines. Of the seven sources referred to by more than half (>49%) of all respondents, three are printed sources, rather than digital. Interestingly, internet search engines are cited by over 53% of all respondents as updating tools; and to the extent that very few respondents, or for that matter interviewees, made reference to their use of Google’s powerful alerting tool, we surmise that respondents are keeping up to date during their day to day use of Google for search, and that they see “search” (which in this context, as we mention in the body of report, probably involves serendipitous browsing too) as a means to keep up to date. Figure 21 shows that respondents from research support and service provision keep up to date in a markedly different way from those in either of the other two contexts, with relatively greater reliance on bibliographic tools, full text services and current awareness services, and relatively less reliance on books and current publications and on internet search engines. Figure 22 compares how respondents in different disciplines keep up to date. Whilst the pattern is broadly similar between the disciplines analysed, it is worth noting the following:

- Respondents in management and business report making relatively greater than average use of electronic text services and bibliographic tools.
- Political scientists report making relatively less use of internet search engines (25% vs. 53%).
- Respondents in education report making nearly twice the average use (50% vs. 22%) of current awareness services.

Figure 23 Professional development needs

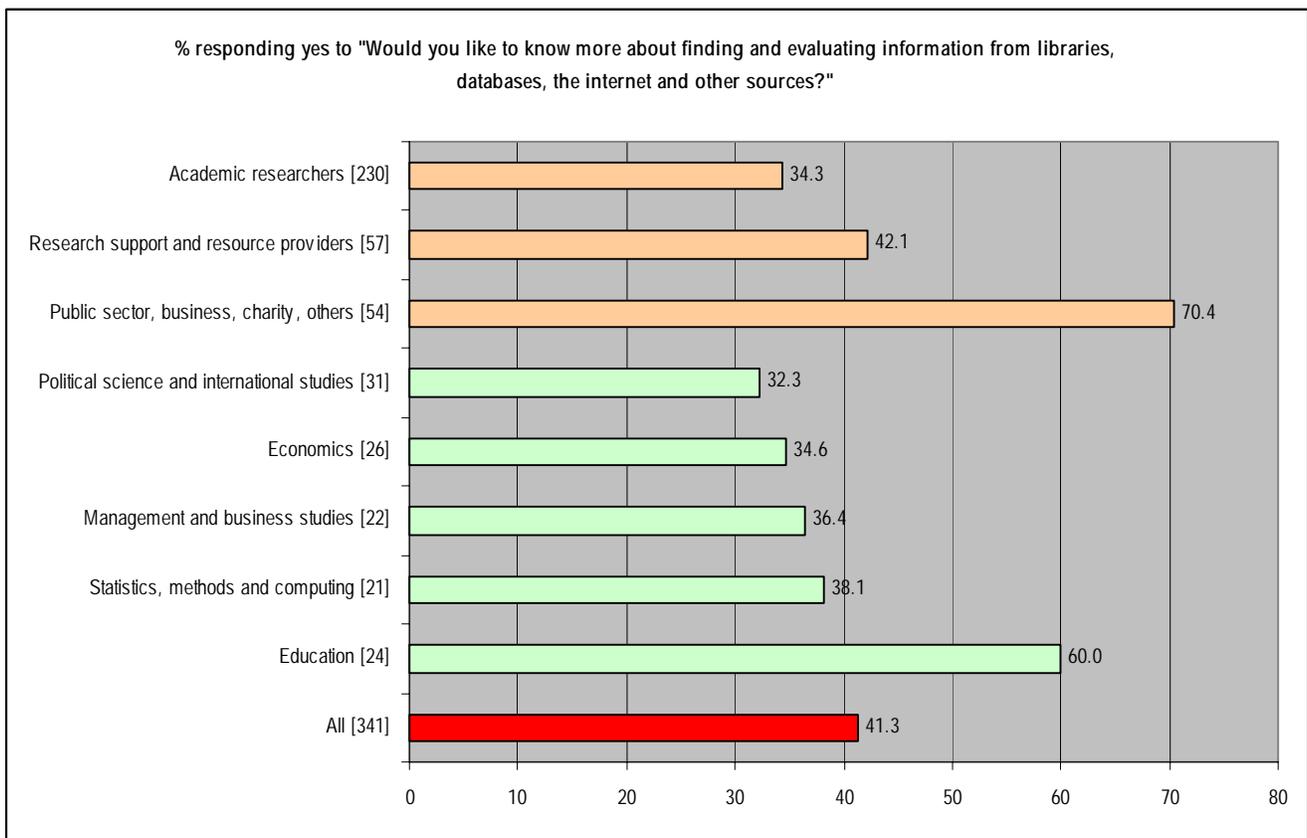


Figure 23 sheds light on respondents’ perceptions of their professional development needs. Over 40% of all respondents, and a much larger proportion (70%) of those outside academia, want to know more about finding and evaluating information. There are wide variations between the five analysed disciplines, with over 60% of respondents in education, and 32% of respondents in political science, wanting to know more. We conclude from this that there is a strong and amongst some groups a very strong underlying demand for professional development concerning finding and evaluating research information.

Figure 24 Discovery skills, by context

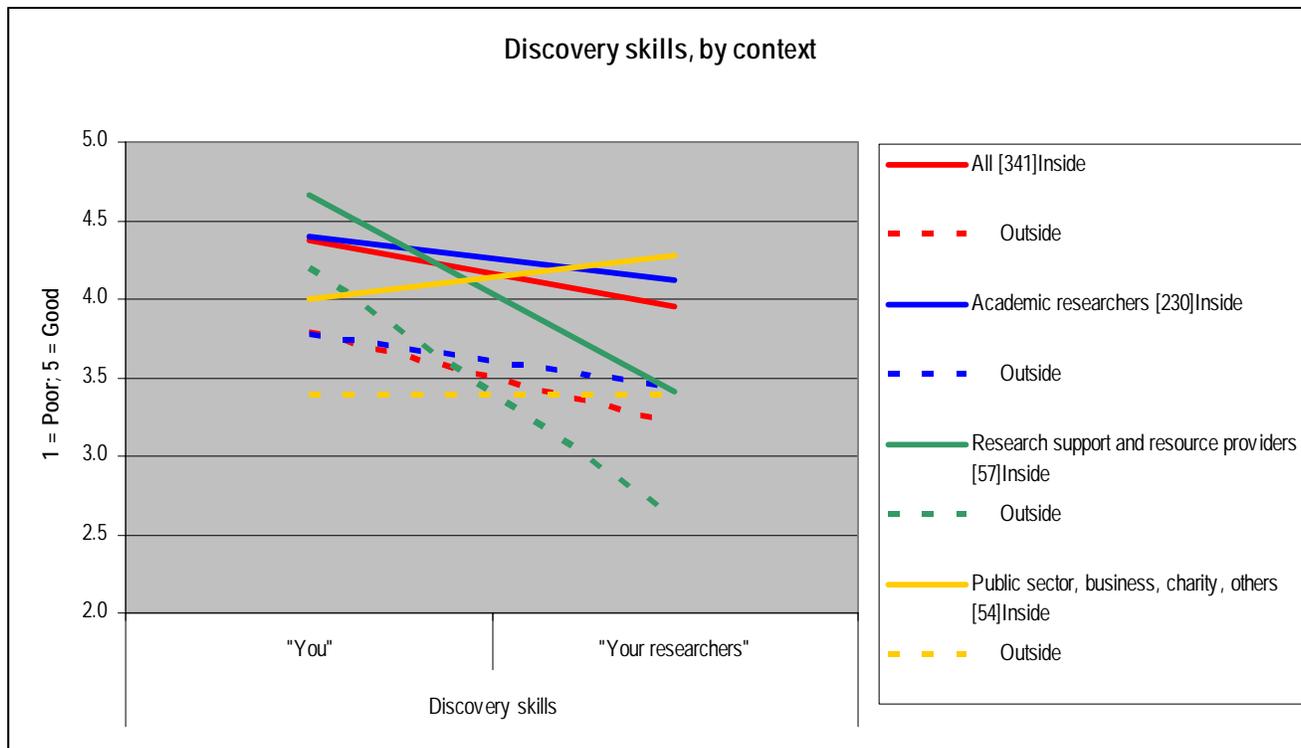


Figure 25 Discovery skills, by discipline

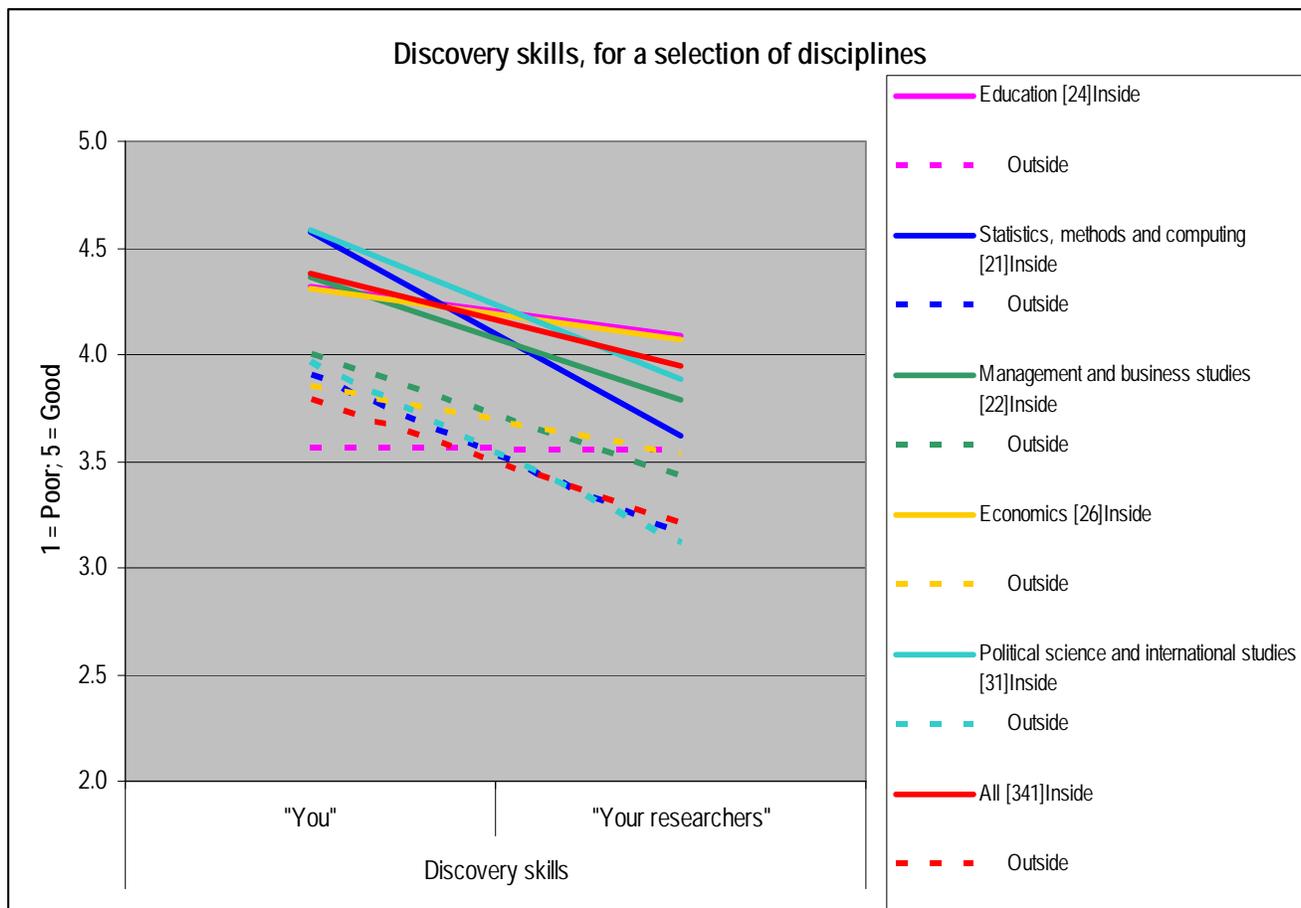


Figure 26 Assessment skills, by context

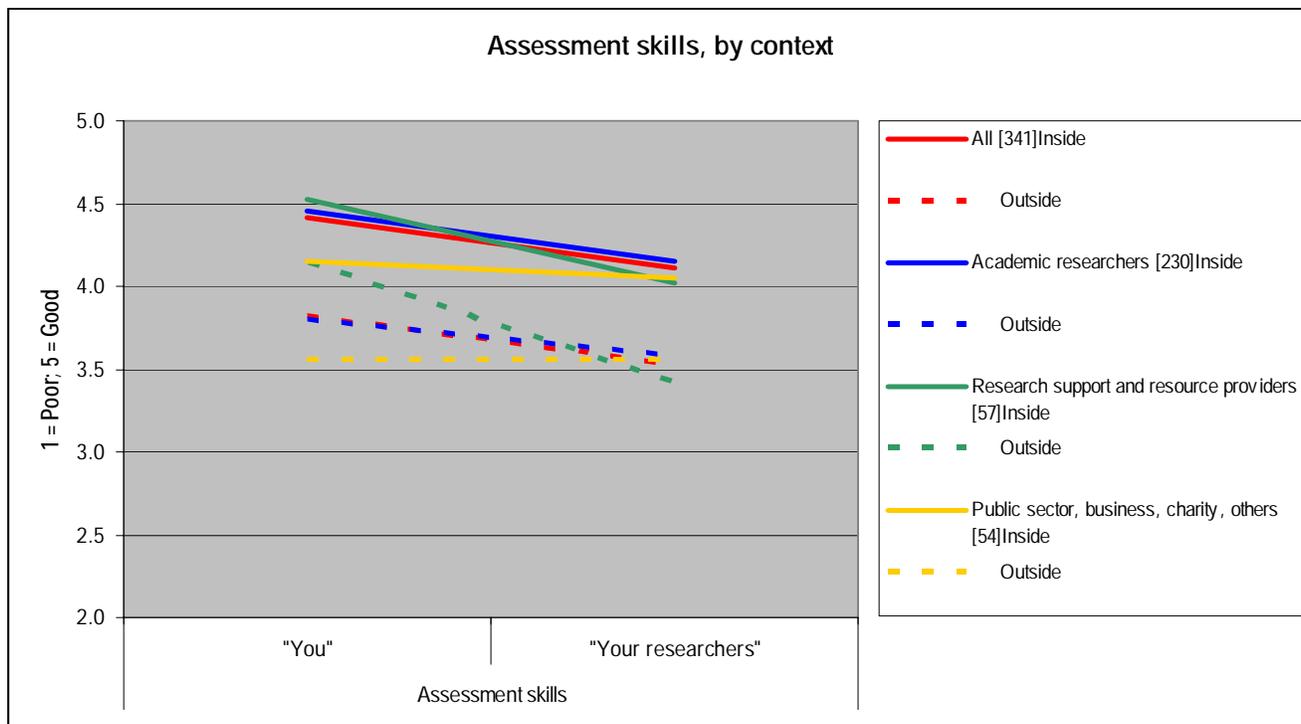


Figure 27a Assessment skills, by discipline

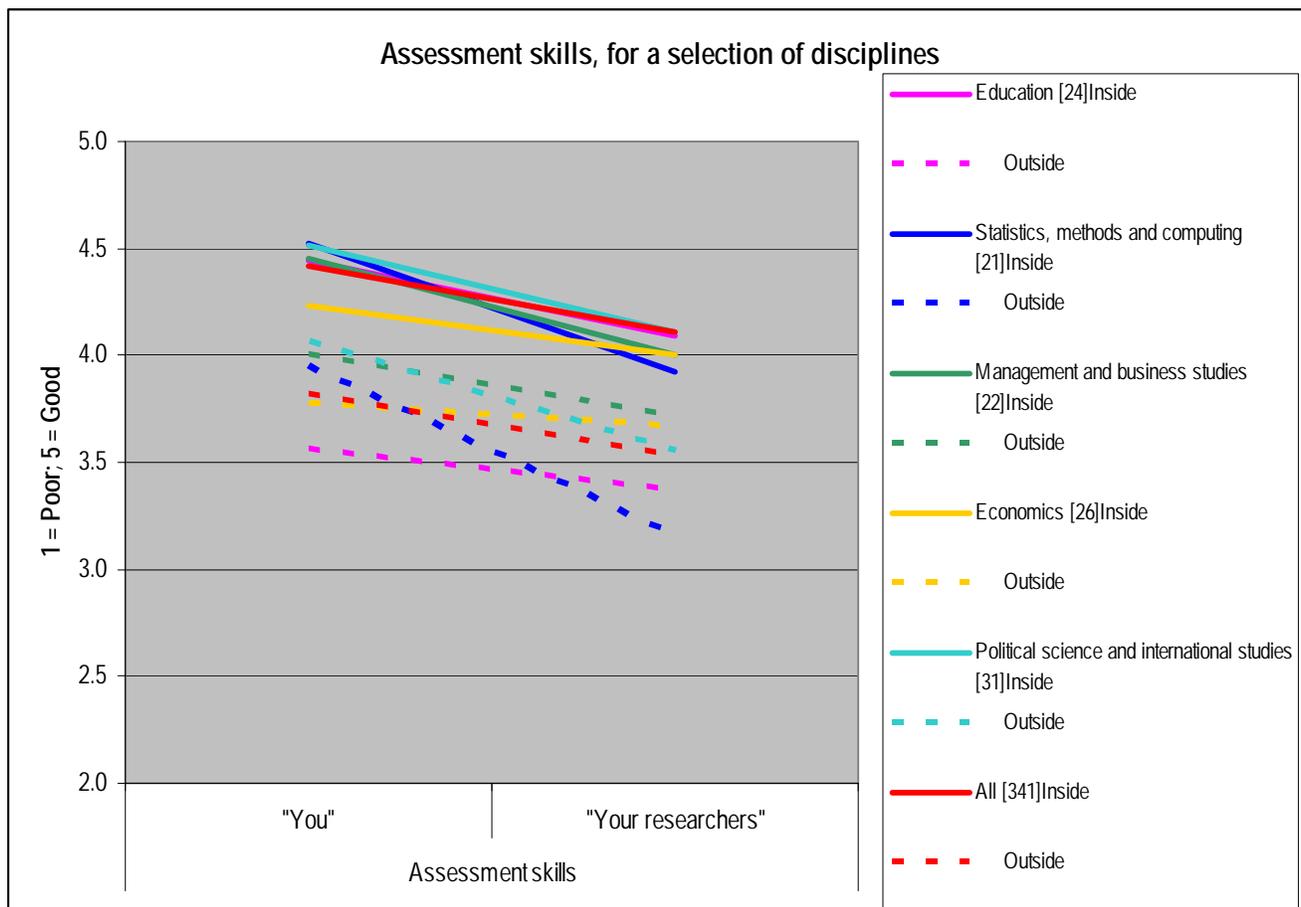


Figure 27b Discovery and assessment skills – tabulation by discipline and context

Discovery and assessment skills		Discovery skills		Assessment skills	
		"You"	"Your researchers"	"You"	"Your researchers"
[Good = 5; Poor = 1]					
All [341]	All [341]Inside	4.4	3.9	4.4	4.4
	Outside	3.8	3.2	3.8	3.8
Academic researchers [230]	Academic researchers [230]Inside	4.4	4.1	4.5	4.5
	Outside	3.8	3.4	3.8	3.8
Research support and resource providers [57]	Research support and resource providers [57]Inside	4.7	3.4	4.5	4.5
	Outside	4.2	2.6	4.1	3.8
Public sector, business, charity, others [54]	Public sector, business, charity, others [54]Inside	4.0	4.3	4.1	4.1
	Outside	3.4	3.4	3.6	3.6
Education [24]	Education [24]Inside	4.3	4.1	4.4	4.4
	Outside	3.6	3.5	3.6	3.6
Statistics, methods and computing [21]	Statistics, methods and computing [21]Inside	4.6	3.6	4.5	4.5
	Outside	3.9	3.2	4.0	4.0
Management and business studies [22]	Management and business studies [22]Inside	4.4	3.8	4.5	4.5
	Outside	4.0	3.4	4.0	4.0
Economics [26]	Economics [26]Inside	4.3	4.1	4.2	4.2
	Outside	3.8	3.5	3.8	3.8
Political science and international studies [31]	Political science and international studies [31]Inside	4.6	3.9	4.5	4.5
	Outside	4.0	3.1	4.1	4.1

Figures 24 to 27a show variations in respondents’ assessments of their own and their researchers’ skills at discovering and assessing research information inside and outside their main disciplines, using the data in Figure 27b. (Note that the lines in Figures 24 to 27a are **not** plots of variables; rather they provide a visual means of displaying some quite complex quantitative information, with the end-point of each line representing how the group of respondents rates its own or its researchers’ skills.) With the notable exception of respondents in the “public, business, charity, other”, all categories of respondent assess their own skills as superior to those of their researchers. In all cases respondents assess their own and their researchers’ discovery and assessment skills inside their discipline as superior to those outside it; and in general they assess assessment skills (their own, as well as their researchers’) as slightly superior to discovery skills. The general picture which emerges is that researchers are confident of their own discovery and assessment skills, especially in their own discipline, and rather less confident of their researchers’ skills, especially in relation to discovery.

Figure 28 Use of intermediaries

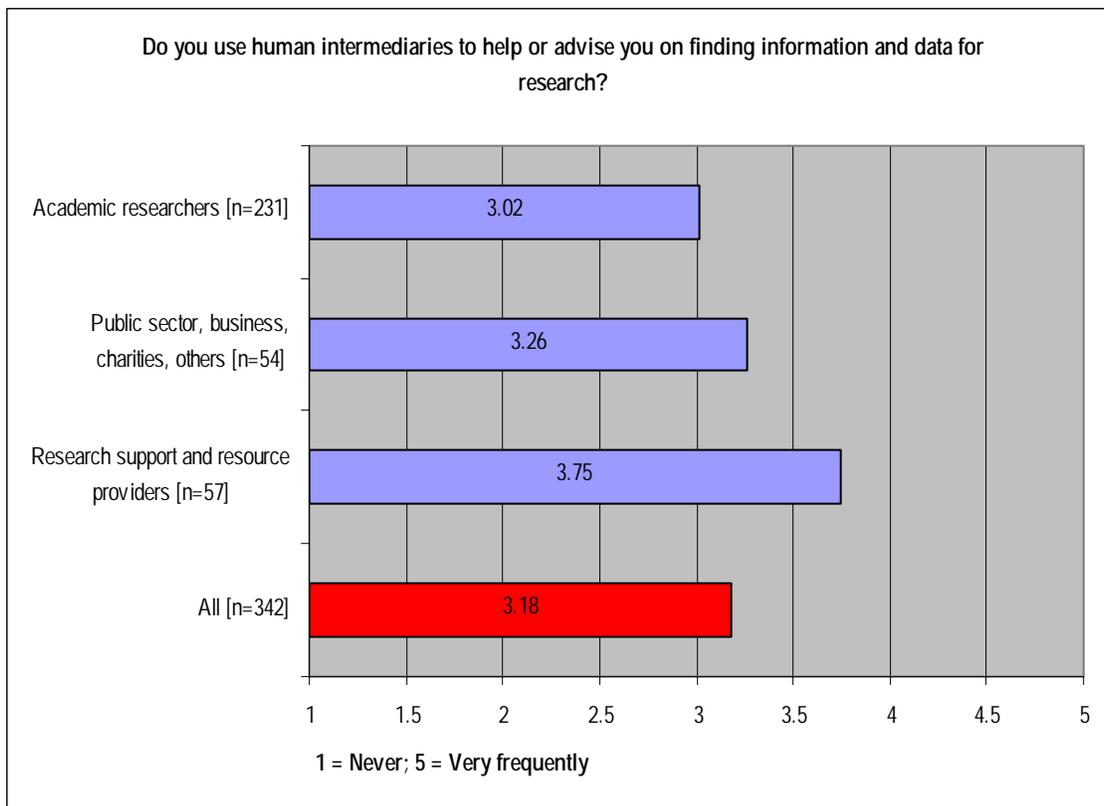


Figure 29 Use of intermediaries, by role

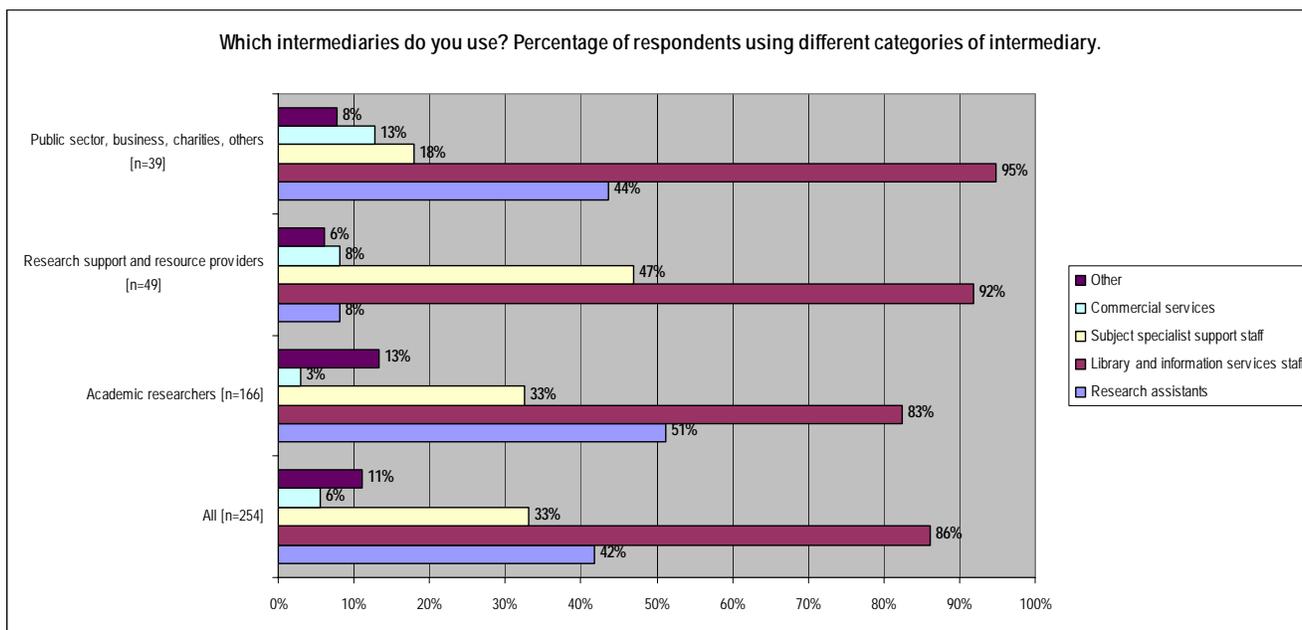
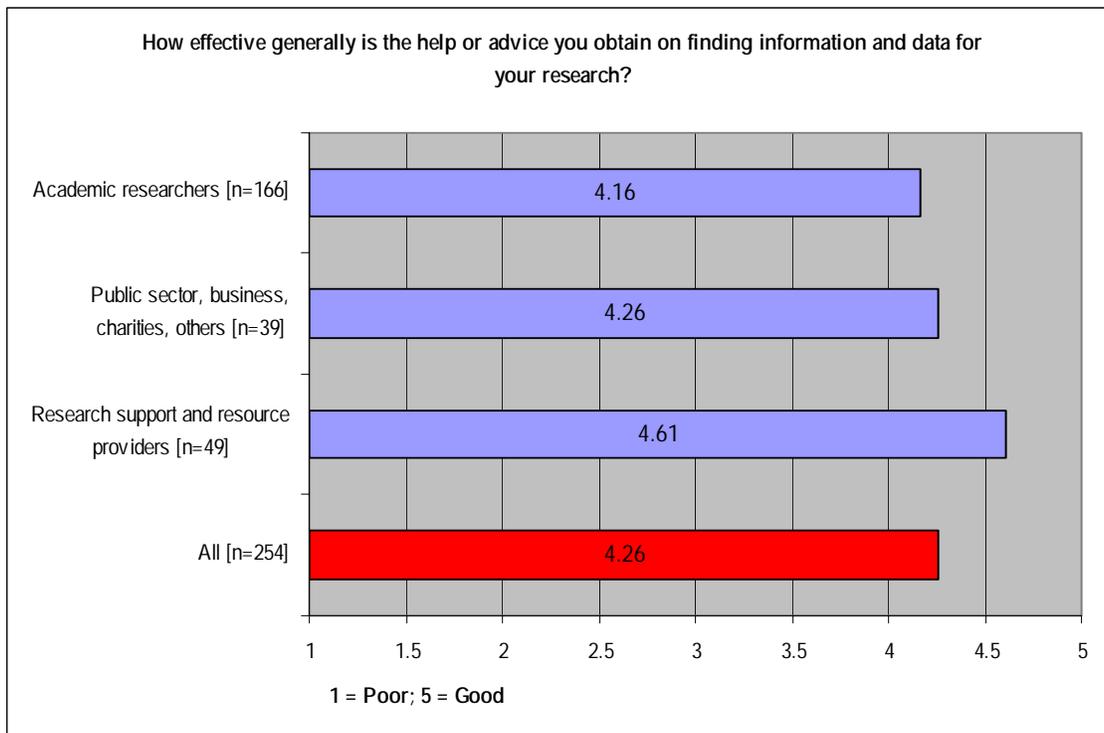


Figure 30 Effectiveness of the support of intermediaries, by context



Figures 28 to 30 show the extent to which researchers make use of intermediaries, when finding research information, the types of intermediaries used and the effectiveness of the help or advice received. Figure 29 shows how the use of different intermediaries varies. Predictably, in all cases, library and information services staff are the most widely used intermediaries, with the use made of other intermediaries appearing largely to reflect the variation in their availability in different contexts. Figure 30 shows that respondents generally consider the support provided by intermediaries to be effective (“satisfaction” index 4.26), with academic researchers marginally less satisfied (4.16) than those in the public sector etc context (4.26). Those working in research support and research provision are most satisfied with the effectiveness of the support received (4.61).

Figure 31 Attitudes towards being published in open access journals

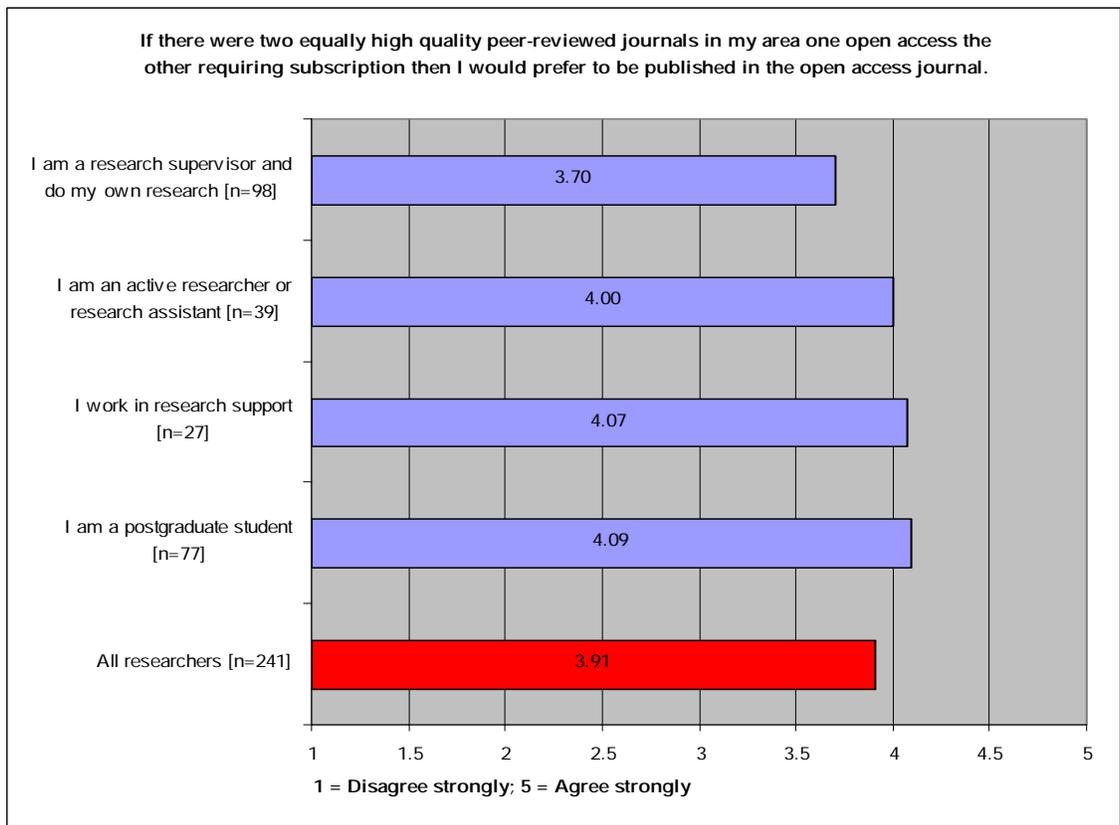


Figure 32 Attitudes towards ESRC decision to allow publication costs to be met from within an ESRC grant

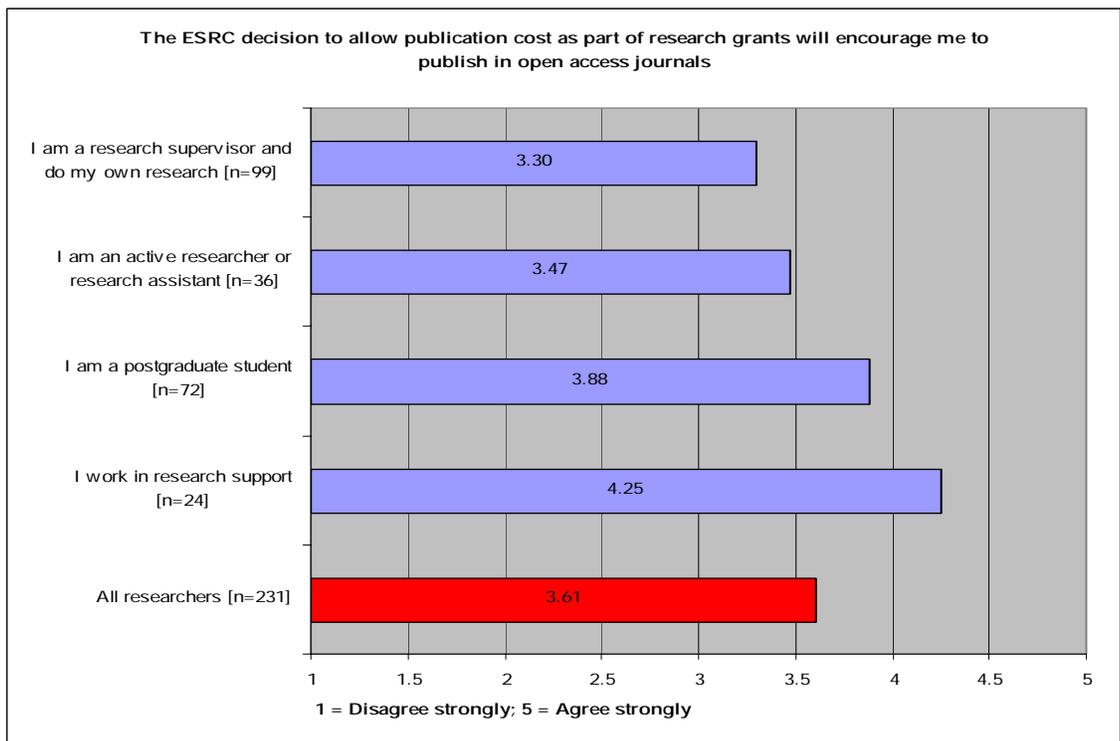
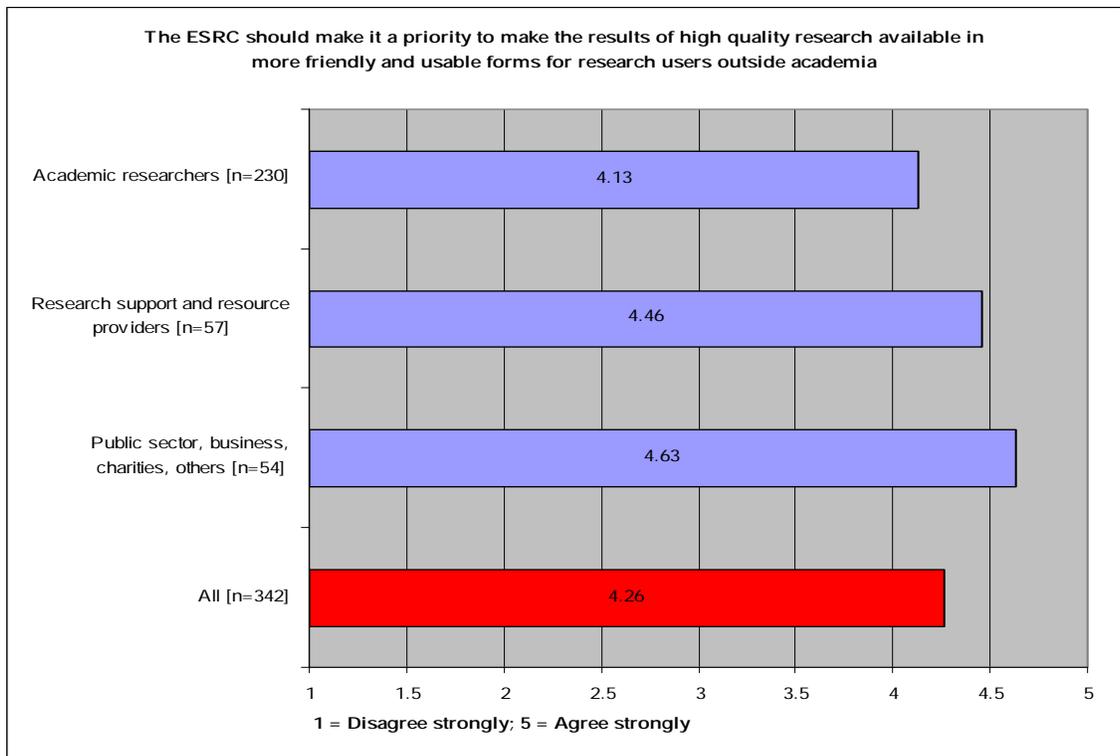


Figure 33 Making research results available for research users outside academia



Figures 32 and 33 concern respondents’ attitudes to open access publication. Figure 32 shows that respondents support the principle of open access publication, though not particularly strongly, and subject to the (currently unrealistic) proviso concerning “equal quality”. Support is least strong amongst more senior researchers (3.30), and strongest amongst postgraduates (4.09). Figure 33 shows that respondents support, weakly, ESRC’s decision to allow publication costs as part of research grants, with support for ESRC’s decision much stronger amongst those working in research support.

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Annex 3 – Definitions and acronyms

Acronym or term	Definition	URL (web address) where applicable
A2A	A2A is the English strand of the UK archives network. It allows you to search and browse for information about archives in England, dating from the 900s to the present day.	http://www.a2a.org.uk/
algorithm	A finite set of well-defined instructions for accomplishing some task, often as part of a computer program, and commonly used to refer to a set of rules that a search engine uses to rank and present the listings contained within its index, in response to a particular query.	
Athens	The Athens Access Management system provides users with single sign-on to numerous web-based services throughout the UK and overseas.	http://www.athens.ac.uk/
back end integration	Connecting, interfacing and/or integrating databases and other hardware or systems which hold data.	
blog	A weblog (usually shortened to blog, but occasionally spelled web log) is a web-based diary, journal (or newsletter) that is frequently updated and intended for public consumption.	
Connotea	<i>See social bookmarking system</i>	
COPAC	Copac is a union catalogue. It provides free access to the merged online catalogues of 24 major university research libraries in the UK and Ireland plus the British Library, the National Library of Scotland and the National Library of Wales.	http://copac.ac.uk/
Evidence Network	An initiative of the ESRC UK Centre for Evidence Based Policy & Practice	http://www.evidencenetwork.org/
ESDS	The Economic and Social Data Service (ESDS) is a national data service that came into operation in January 2003.	http://www.esds.ac.uk/
ESRC	The Economic and Social Research Council, UK	http://www.esrc.ac.uk/
ESRC Society Today	ESRC Society Today consolidates the ESRC's web presence by combining the organisation's previous http://www.esrc.ac.uk/ and http://www.regard.ac.uk/ websites and offering a wider search facility.	http://www.esrc.ac.uk/
Flash	Macromedia Flash – a vector graphic animation technology that requires a plug-in but is browser-independent. Macromedia were recently acquired by Adobe.	http://www.macromedia.com/
Google Desktop	A desktop search application that provides an integrated full text search over local hard disks or the web.	http://desktop.google.com/about.html
Google Scholar	A search engine that indexes the full text of scholarly literature across an as yet incomplete array of publishing formats and scholarly fields. Results in Google Scholar are ranked by "relevance", which is based largely on the number of times the scholarly works have been cited in other works, taking account of the ranking of the "citing" work.	http://scholar.google.com/
GSR	The Government Social Research service, led by the Chief Government Social Researcher and supporting office (GSRU). The Government Social Research Unit will be moving from the Cabinet Office to HM Treasury in the near future.	http://www.gsr.gov.uk/
HMT	H M Treasury	http://www.hm-treasury.gov.uk/
hidden web	Files on the World Wide Web that are not indexed by search engines, either because they are not linked to by other files (for example dynamically generated pages based on responses to database queries), or because access is otherwise prevented (typically through registration).	
IBSS	International Bibliography of the Social Sciences.	www.lse.ac.uk/collections/IBSS/
ICPSR	The (US) Inter-university Consortium for Political and Social Research maintains and provides access to a vast archive of social science data for research and instruction, and offers training in quantitative methods to facilitate effective data use.	http://www.icpsr.umich.edu/org/index.html

JISC	The Joint Information Systems Committee.	http://www.jisc.ac.uk/
JSTOR	Archive of scholarly journals.	http://www.jstor.org/
Leverhulme	The Leverhulme Trust makes awards for the support of research and education. In 2004 total expenditure was £29 million.	http://www.leverhulme.org.uk/
MIMAS	MIMAS is a JISC-supported national data centre providing the UK higher education, further education and research community with networked access to key data and information resources to support teaching, learning and research across a wide range of disciplines. MIMAS services are available free of charge to users at eligible institutions – site licence and/or user registration may be required.	http://www.mimas.ac.uk/
MSS	Manuscripts	
NCRM	ESRC National Centre for Research Methods.	http://www.ncrm.ac.uk/
Nuffield	The Nuffield Foundation is a UK-based charitable trust set up to “advance social well being”, particularly through research and practical experiment. The Foundation "aims to achieve this by supporting work which will bring about improvements in society, and which is founded on careful reflection and informed by objective and reliable evidence". The Foundation's income (around £9m a year) comes from the returns on its investments.	http://www.nuffieldfoundation.org/
OCLC	Online Computer Library Center.	http://www.oclc.org/
RAE	Research Assessment Exercise – a peer review exercise conducted every few years to evaluate the quality of research in UK higher education institutions.	http://www.rae.ac.uk/
RCUK	Research Councils UK is a strategic partnership through which the UK’s eight research councils work together to champion the research, training and innovation they support.	http://www.rcuk.ac.uk/
RDI	The Researcher Development Initiative	http://www.rdi.ac.uk/
RDN	The Resource Discovery Network is the UK's free national gateway to internet resources for the learning, teaching and research community. The service currently links to more than 100,000 resources via a series of subject-based information gateways (or hubs). The RDN is primarily aimed at internet users in UK further and higher education but is freely available to all.	http://www.rdn.ac.uk/
recommender systems	Recommender or recommendation systems are programs which attempt to predict items (movies, music, books, news, web pages) that a user may be interested in, given some information about the user's profile.	
RIN	The Research Information Network	http://www.rin.ac.uk/
Rowntree	The Joseph Rowntree Foundation is a social policy research and development charity spending about £7 million a year on a research and development programme that seeks to better understand the causes of social difficulties and explore ways of overcoming them.	http://www.jrf.org.uk/
RSLG	Research Support Libraries Group.	http://www.rslg.ac.uk/
RSS	Rich Site Summary, or Really Simple Syndication, is a family of file formats for web syndication used by news web sites and weblogs. They are used to provide items containing short descriptions of web content together with a link to the full version of the content.	
semantic web	The semantic web is a project that intends to create a universal medium for information exchange by giving meaning (semantics), in a manner understandable by machines, to the content of documents on the web. Currently under the direction of its creator, Tim Berners-Lee of the World Wide Web Consortium.	http://www.semanticweb.org/
social bookmarking system	A web-based online reference management system which can be shared with other researchers. Examples include the Open Source Connotea, from the Nature Publishing Group, and del.icio.us.	http://www.connotea.org/ http://del.icio.us
SOSIG	The Social Science Information Gateway.	http://www.sosig.ac.uk/

SSCI	The Social Sciences Citation Index® (SSCI®) and Social SciSearch® provide access to current and retrospective bibliographic information, author abstracts and cited references	http://scientific.thomson.com/products/ssci/
VTS	The RDN Virtual Training Suite – a set of free online tutorials designed to help students, lecturers and researchers improve their internet information literacy.	http://www.vts.rdn.ac.uk/
Web of Knowledge	The ISI Web of Knowledge Service for UK Education provides a single route to all the Thomson Scientific products subscribed to by an academic institution. More details and access for those outside of UK academic institutions can be found at http://www.thomsonisi.com/	http://wok.mimas.ac.uk/
Web of Science	Related product to Web of Knowledge.	http://scientific.thomson.com/products/wos/
wiki	A web site or similar online resource which allows users to add and edit content collaboratively.	

Annex 4 – Advisory group

**Lynne Brindley
(Chair)**

Chief Executive, British Library

Michael Bright

ESRC

Cormac Connolly

ESRC

Chris Rusbridge

Director, Digital Curation Centre

Astrid Wissenburg

ESRC

David Zeitlyn

**Reader in Social Anthropology,
The University of Kent, Canterbury**

Annex 5 – Focus group findings

The focus group for government researchers at the British Library was fully subscribed within a day and a half. It was very popular for a number of reasons, including the venue, the chance to get "behind the scenes" at the British Library and because it gave researchers an opportunity, after we had discussed their awareness of current services and resources and their current and future needs, to find out more about resources available from the ESRC and the British Library. In the discussion, several interesting points emerged:

1. Movement of researchers between government and academia should be encouraged – it brings advantages to both spheres: a clearer view of policy imperatives to academic work, a critical view of evidence and knowledge about resources and sources to policy work:
In the crime and criminal justice field there are quite a lot of academics who have been government researchers and vice versa. This gives them insights into how government works and gives senior officials and politicians confidence in them.
2. There is very patchy access to key resources within government departments – the cabinet office seems well provided:
I do have access to any number of databases from my own desktop ... I also use HMT library ... I can use any of their databases.

but others less well so:

I feel very restricted by no longer having access to the resources I used to have when I was in academia. I now have to use an intermediary.

3. Many researchers frankly admitted they had not heard of IBSS, SOSIG, Society Today or several other of the resources mentioned in our questionnaire:
I am quite new to social research and in your questionnaire there were loads of resources mentioned I'd never heard of.
It's not only not having access that's my problem – it's knowing what I should be asking for access to in the first place.
4. Many were also unaware of the government's own initiatives for joining up information from and between departments, such as The Policy Hub, <http://www.policyhub.gov.uk/>
5. Permanent secretaries and heads of departments are working towards better sharing of data within government, but it has not yet reached researchers. They are frustrated by their inability to get hold of each other's data.
6. Paper still has an important role to play:
We used to have journals coming past our desks which I would at least scan read but now it is all on the internet I don't have time to look for it.
7. Many articulate a need for professional development, but there is some confusion over how this might be provided:
There is so much that I need to know about and I do not know what it is.
I'd like to echo that point. It is very difficult to know where to start. But then what? A brainstorming session?
I know I could find about these things for myself, but it is more helpful to do workshops in which you are guided.
I do not know much about them [research resources]. We need workshops about this stuff.
Information professionals say that when they offer things no-one turns up.
The library runs workshops for the Department as a whole, but these are not tailored for social researchers. If they were they'd be more useful.
8. Many use Google as a first port of call or for "scanning the field":
It is very useful for scoping an area. If not for finding the information itself, then the organisations.
Google is good for finding a particular titled document.

There was general agreement that many site search tools were inadequate; several said that they used Google for searching sites in preference, including their own departmental sites.

Annex 6 – ESRC-funded research resources

British Election Study 2005/06	http://www.essex.ac.uk/bes/
Centre for Economic Policy Research (CEPR)	http://www.cepr.org/
Centre for Longitudinal Studies	http://www.cls.ioe.ac.uk/
<i>Millennium Cohort</i>	http://www.millenniumcohort.org/
<i>National Child Development Study (NCDS)</i>	http://www.cls.ioe.ac.uk/studies.asp?section=000100020003
<i>1970 British Cohort Study (BCS70)</i>	http://www.cls.ioe.ac.uk/studies.asp?section=000100020002
Demonstrator Scheme for Qualitative Data Sharing and Research Archiving (QUADS)	http://quads.esds.ac.uk/
Economic and Social Data Service (ESDS)	http://www.esds.ac.uk/
<i>European Social Survey</i>	http://www.europeansocialsurvey.org/
ESRC Society Today	http://www.esrc.ac.uk/
ESRC UK Centre for Evidence Based Policy	http://www.evidencenetwork.org/
ESRC/JISC Census Programme	http://census.ac.uk/
International Bibliography of the Social Sciences (IBSS)	http://www.lse.ac.uk/collections/IBSS/
National Centre for e-Social Science (NCeSS)	http://www.ncess.ac.uk/
National Centre for Research Methods	http://www.ncrm.ac.uk/
Research Methods Programme	http://www.ccsr.ac.uk/methods/
Scottish Longitudinal Studies Centre	http://www.lscs.ac.uk/
Social Science Information Gateway (SOSIG)	http://www.sosig.ac.uk/
The Question Bank; Social Surveys and Research Questionnaires Online	http://qb.soc.surrey.ac.uk/
UK Longitudinal Studies Centre (ULSC)	http://www.iser.essex.ac.uk/ulsc/
<i>British Household Panel Study (BHPS)</i>	http://www.iser.essex.ac.uk/ulsc/bhps/
Workplace Employment Relations Survey (WERS)	http://www.dti.gov.uk/er/emar/wers5.htm

Annex 7– New or potential resources

A list of 81 suggestions for "new or potential resources or ways of improving access to existing resources and services" received from respondents has been supplied separately to the ESRC. A list of 90 suggestions for "skills and/or sources about which you would like to know more" has been supplied separately to the ESRC.

Annex 8 – Participants in interviews and Future Look consultation

Name	Role and/or organisation
Alison Alden	Director of Information Service, University of Bristol, member of the Research Resources Board
Adrian Alsop	Director of Research, Training and Development, ESRC
Phil Bannister	Head of Evidence and Analysis, British Educational and Communications Technology Agency (Becta)
Salina Bates	Information Manager, Social Care Institute for Excellence (SCIE)
Bahram Bekhradnia	Director, Higher Education Policy Institute (HEPI)
Michael Bright	Senior Policy Manager (Research Resources) , ESRC
Ian Brinkley	Chief Economist, Trades Union Congress (TUC)
Patrica Broadfoot	Pro-Vice-Chancellor, University of Bristol and chair of ESRC Research Resources Board
Rachel Bruce	Programme Director, JISC Information Environment
Robert Burgess	Vice-chancellor, University of Leicester; chair, RIN advisory board
Julie Carpenter	Education for Change
Andrew Chesher	Professor of Economics, UCL
Keith Cole	Deputy Director of National Dataset Services Group and MIMAS Service Manager
Louise Corti	Associate Director, UK Data Archive (UKDA)
Angela Dale	Director, ESRC Methods Programme
Phil Davies	Deputy Director of the UK Government Social Research Unit
Heather Dawson	Assistant Librarian, BLPES, LSE
Rosemary Deem	Professor of Education and Graduate Dean, University of Bristol
Stephen Downes	Senior Researcher, Canadian National Research Centre
Karen Dunnell	National Statistician, Director of the Office for National Statistics (ONS)
William Dutton	Director, Oxford Internet Institute
Peter Elias	ESRC strategic advisor, data resources
Richard Exell	Senior Policy Officer, Trades Union Congress (TUC)
Michael Fischer	Director Centre for Social Anthropology and Computing, University of Kent
Andrew Fleming	Project Manager – Evidence and Analysis, British Educational and Communications Technology Agency (Becta)
Jane Foot	Independent Researcher

Ian Gibson	Member of Parliament
Stephane Goldstein	Planning and Project Officer, RIN
David Green	Global Publishing Director for Taylor and Francis Journals
David Guy	Head of Knowledge Transfer, ESRC
Margaret Haines	Director of Information Services and Systems, King's College London
Peter Halfpenny	Executive Director, ESRC National Centre for e-Social Science (NCeSS)
Brian Hayes	Chief Executive of Charnwood Borough Council
Debra Hiom	Director, SOSIG
Keith Hoggart	Vice-Principal, Kings College London
Neil Jacobs	Programme Manager, JISC Information Environment
Heather Joshi	Director, Centre for Longitudinal Studies
Michael Jubb	Director, RIN
Marion Lacey	Research Manager, Scottish Council for Voluntary Organisations (SCVO)
Eric Lease Morgan	Head, Digital Access and Information Architecture Department (DIAD), University of Notre Dame, Indiana, USA
Clifford Lynch	Director of the Coalition for Networked Information (CNI)
Stuart Macdonald	Assistant Data Librarian, Edinburgh University Data Library
Sima Maqbool	Senior Research Officer - Cabinet Office
Luis Martinez	Data Librarian, LSE
Stan Metcalfe	Professor of Political Economy, University of Manchester; co-director ESRC CRIC
Sally Morris	Chief Executive of the Association of Learned and Professional Society Publishers (ALPSP)
Victoria Morris	Senior Policy Manager, ESRC
Jeremy Neathey	Associate Director, Research Resources and Training, ESRC
Hugh Neffendorf	ESRC consultant
Sarah Phibbs	Humanities & Social Science Journals Editorial Director, Blackwell Publishing Ltd
Vanessa Pittard	Director of Research, British Educational and Communications Technology Agency (Becta)
Emma Place	Service Manager, RDN Virtual Training Suite (VTS)
Martin Poulter	HEA Economics
Rob Procter	Research Director, ESRC National Centre for e-Social Science (NCeSS)

Jane Roberts	Data Manager for Social Sciences, Oxford University Department of Politics and International Relations
Gareth Roberts (chair)	International Partnerships of Research Excellence Meeting
Joe Saxton	nfpSynergy
Harry Scarbrough	Director of the Evolution of Business Knowledge (EBK) Programme
Chris Skinner	Director of the National Centre for Research Methods (NCRM)
Geoff Smith	Retired: formerly Head of Co-operation and Partnerships, British Library
Karen Sparck Jones	British Academy
Oscar Struijve	Education for Change
Jean Sykes (and team)	Director, IBSS
Joyce Tait	Director, ESRC Innogen Centre
Sue Timmis	Research Fellow, IRLT
John Tuck	Head of British Collections, British Library
Rose Wiles	Principal Research Fellow, NCRM
Caroline Williams	Executive Director of the Resource Discovery Network (RDN)
Astrid Wissenburg	Director of Communications and Information, ESRC
Stephen Yeo	Chief Executive Officer, Centre for Economic Policy Research
Anonymous	Senior Consultant, private sector research company