



Benefits of Open Access to Scholarly Research to the Public Sector

A Research Report to JISC from Rightscom Ltd and Matrix Evidence Ltd.

Hugh Look and Dr Kevin Marsh

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UK Open Access Implementation Group



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Benefits of Open Access to Scholarly Research Outputs to the Public Sector

A report for the Open Access Implementation Group

Final Report: 12 March 2012

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1 Introduction

1.1 Objectives of study

The objective of this project was to synthesise and generate evidence on the benefits that Open Access to scholarly research outputs has generated to the public sector, and to provide case studies of organisations that have realised such benefits.

The project considered the benefits of Open Access for researchers in public sector organisations. It did not aim to be comprehensive in its coverage of the public sector, as there are many organisations for which research is only a very small part of their activity, and has only very limited impact on their policies and decisions.

We have also focused on Open Access to research articles, as these still make up the largest proportion of research outputs used in analysis, policy and decision-making: research data is becoming more important but is still nascent in its influence in the organisations we surveyed. These organisations in any case often generate their own data through commissioned surveys and other tools as their needs tend to be very specific.

The objectives were to:

1. Identify and collect as much evidence as possible that direct and indirect benefits could reasonably be traced to Open Access to university research outputs for the public sector (beyond Higher Education)
2. Identify any common enabling processes that occurred in creating the opportunity for these benefits to be realised,
3. Where possible, quantify the direct benefits (savings in time and money) and indirect benefits (realised with the application of research information)
4. Describe the ways in which these benefits were realised in three or four case studies, in such a way as to enable generalisations to be made. Such models should be carefully defined and typologised where possible.
5. Give an indication of the timescale over which the benefits were realised, recognising short and longer term for both direct and indirect benefits
6. Present the findings both as evidence of the benefits of OA, and as guidance for HEIs and national organisations that, if followed, would lead to greater and more open engagement between HEIs and the wider economy and society.
7. Draw from the research literature, in particular that relating to translating research findings into improved practice and policy, science and technology studies, and to scholarly communication.

1.2 Policy background

The context for this project is to inform and to demonstrate to a range of policymakers (in research funding, in government and in HE itself) that the advantages of Open Access affect society and the economy as a whole, and not just the researchers who are the main creators of research outputs.

This work is undertaken in response to the Open Access Implementation Group's requirement to take the outcome of the Houghton report further, and develop a detailed analysis of benefits to public sector organisations (excluding Higher Education.) This report is one of three sectoral reports: the others being a study of the benefits to the private sector and one of benefits to the third sector.

1.3 Introduction to research and findings

1.3.1 Research

The data available to estimate the benefits of OA is limited. Thus, our approach was fourfold:

- To work with JISC to ensure a clear and focused scope for the project.
- To summarise the best evidence on OA, including the generation of a typology of value.
- To construct economic models of the value generated by OA.
- To supplement the existing data through a number of data collection exercises, including:
 - Organisational surveys to determine the demand for and implications of OA.
 - Case studies of organisations that have realised the benefits of OA.

We focused our surveys and case studies on particular areas of the public sector which we believed would yield the greatest benefits. These included:

- National Health Service
- Departments of State with major requirement for economic and social research (Treasury, Home Office, Defence, BIS, Communities and Local Government, Work and Pensions, Health, Transport)
- Scottish Executive

As well as the organisations where i) Open Access has had a significant impact, and ii) that impact can be estimated to a reasonable degree, there are other public sector organisations which will have also benefited from Open Access, and have been considered when constructing the typology of value described below.

1.3.2 Findings

Our main findings are summarised in Chapter 5. We found that:

The total cost to the public sector of accessing journal papers is around £135 million per annum. The direct cost savings that accrue from the availability of Open Access articles (using both Green and Gold routes) amount to £28.6 million (£26 million in access fees and £2.6 million in time savings).

The *indirect* benefits were not quantifiable as within the scope of the study the impact of Open Access cannot be traced through to better decisions, analysis or policymaking in such a way that a figure could be put to them. However, we did identify ways in which Open Access has the potential to create quantifiable indirect benefits if sufficient research effort was given to the issue. These include lessened risk in decisions and advice and ability of researchers keep up to date with developments in their field more effectively.

2 Previous attempts to estimate the economic value of Open Access

The concept of Open Access and its impact on academic and non-academic users has been studied previously. User surveys have been used to gain insight into the extent of use, the factors that facilitate access, and barriers to access, both for researchers in scholarly communication and small and medium sized enterprises. However, this research has tended to focus on the benefits of Open Access to the academic and private sectors.

Table 1 summarises some key economic studies on the benefits of Open Access. The main body of evidence relates to the direct benefits of Open Access, i.e. cost savings and increased efficiency. Wider (i.e. indirect) benefits have been explored through return on R&D expenditure.

Table 1: Studies quantifying the economic benefits of Open Access

Study	Focus	Direct benefits covered	Indirect benefits covered
Houghton, Swan and Brown (2011)	Small and Medium sized Enterprises	Time cost of accessing academic material	Development of new products
RIN (2011)	Scholarly communication	All	Return on R&D expenditure
Houghton et al (2009)	Scholarly communication	All	Return on R&D expenditure

No research has been identified on the public sector specifically; though the economic value of Open Access to the academic and private sectors have some overlap with that to the public sector. For instance, the direct benefits of reduced time and money required to access research materials will apply to all users of Open Access. However, other direct benefits are less transferable to the public sector. Furthermore, estimates of the indirect benefits of the use of Open Access research materials focus on improved sales and other economic variables, and are thus also of limited application to the public sector.

Houghton et al (2009) examined the costs and benefits of scholarly publishing under three publishing models: subscription, Open Access and self-archiving¹. A scholarly communication process model was used to identify costs for stakeholders (ranging from funders to publishers) at each stage of the process:

1. Funding of research and research communication
2. Performing research and communication of results
3. Publishing scientific and scholarly works
4. Facilitation of dissemination, retrieval and presentation, and

¹Where *subscription* includes any publishing business model that imposes reader access charges and use restrictions, *Open Access publishing* refers primarily to journal publishing where access is free of charge to readers as authors pay for publication. Use restrictions can be minimal as no access toll is imposed, and Open Access *self-archiving* refers to the situation where academic authors deposit their work in on-line Open Access repositories.

5. Study of publications and application of knowledge.

Activity surveys, tracking studies, and industry consultation were used to populate the model and quantify the total cost under each publishing model. The detailed description and estimation of the costs involved in scholarly communication allows for a thorough comparison of the system-wide cost efficiency of the publishing model scenarios. However, not all of the costs types considered by Houghton et al are relevant to the public sector. Specifically, of the costs considered, those of relevance to the public sector are primarily costs of identification and retrieval of studies.

To estimate the wider economic benefits, the authors estimated the impact of Open Access on accessibility and efficiency of R&D. This is translated into benefits from increased returns to R&D expenditure, i.e. the economic growth that is derived from the country's increased knowledge stock. This offers a high-level estimate of potential benefits from the application of the academic information. The downside of the approach is that it makes it difficult to give detailed examples of how the benefit is realised, and the distribution of the benefits across stakeholders is unclear. In the context of the public sector where research information is used as an input to a variety of outputs rather than creation of further knowledge, such general approach is difficult to implement. It would also ignore benefits such as improved quality of life. These benefits may be significant in the case of some public sector organisations, such as the NHS.

The Research Information Network (RIN, 2011) has commissioned several reports on the benefits of Open Access as a part of their research portfolio on transition in scholarly communication. The economic modelling carried out by CEPA in this context estimated the costs and benefits of several competing models of Open Access. The RIN methodology was an extension of Houghton et al (2009). The model included more refined scenarios of transition to Open Access, including varying levels of access for different user groups which takes into account embargo periods, functionality and version accessed. Wider economic benefits were estimated through increased return to R&D expenditure. More detailed scenarios provided a more complete picture of the relative cost effectiveness of the competing strategies. The inclusion of one-off costs involved in the introduction of Open Access also addressed the question of how Open Access could be delivered in the most cost-effective way.

Houghton, Brown and Swan (2011) studied the use of research material by Danish knowledge-based Small and Medium-sized Enterprises (SMEs). An online survey and interviews were used to gain insight into how knowledge-based firms access research information, how important it is to them and the barriers they face. The following benefits were estimated:

- **The contribution of research information to the development of new products**, based on the respondents' view of the proportion of new products would have been delayed or abandoned without access to academic research, and the average sales value of new products introduced.
- **The avoided delay in development of new products**, estimated based on the respondents' view on the delay that would have been experienced in the absence of research information and the annual sales revenue from new products.

- **The additional cost associated with time spent accessing information that is not readily available**, valued based on the hourly cost of publicly funded research and an estimated by the survey respondents on the incremental time required per article not readily available.²

It may be that the experience of researchers in public sector organisations is closer to the experience of SMEs than to the academic community. This is because most users are likely to have a remit that extends beyond research. It may thus be that the resources dedicated to accessing academic material are more limited as a consequence. The approach adopted by the authors to estimate indirect benefits – estimates of changes in sale figures - is not, however, necessarily transferable to the public sector. Public sector outputs are not as readily measurable in monetary terms.

² Hourly cost of publicly funded research is estimated through R&D expenditure in Denmark in 2008, the number of FTE research staff and the annual number of hours worked.

3 What are the direct cost savings generated by Open Access?

3.1 Direct and indirect benefits

We have considered two types of benefit:

Direct benefits are understood to be defined as those cost savings and efficiency gains that relate to consumption of academic material. These benefits are derived through change in the method of access and not a change in the level of consumption. This means that in the estimation of direct benefits, it is assumed that the academic material is accessed regardless of Open Access. These benefits are discussed in this chapter.

Indirect benefits are those benefits which are realised once the research information is applied. To date the literature has estimated the value of such benefits as the impact on economic growth of the application of knowledge generated through research (see for instance, Houghton et al, 2009). The benefit generated by the application of research will manifest itself differently, as improvement in decision making. For instance, a General Practitioner may prescribe differently if he/she has access to research on the relative effectiveness of treatments. Generally, these better decisions would be expected to result in better outcomes being achieved within the public sector budget.

For indirect benefits, the method through which the information is acquired is not relevant. Therefore, Open Access could generate indirect benefits if it resulted in decisions being informed by more or better research than would otherwise have been the case.

The user surveys were used to identify researchers who thought that Open Access may generate indirect benefits. These respondents indicated were followed up and, where they were willing, interviewed to identify examples of indirect benefit being created in practice. Despite very clear and direct questioning on indirect benefits, none of the case study interviews was able to identify specific cases where there had been an impact or a case where using Open Access articles had improved quality or advice or practice. In the cases discussed, Open Access articles were not relevant to the issue in hand and so did not contribute to improvements. It was, as expected, not possible to build models of the economic value of the indirect benefits of Open Access. We have, however, identified the various non-quantifiable benefits in the Case Studies (See Appendix 5: Case studies).

This section therefore summarises our estimates of the direct cost savings to the public sector generated by current Open Access to journal articles. Direct cost savings are defined as savings in the time and money required to access journal articles. For instance, if in the absence of Open Access a user would have to access an article via pay per view, then Open Access will save the user's money. Equally, if in the absence of Open Access a user would instead spend time browsing the web for a free copy of the article, then Open Access would save the user's time.

The remainder of this section outlines the approach taken to estimate the direct cost savings generated by Open Access and the findings of this part of the research (further detail on the method can be found in Appendix3), and is divided into the following sub-sections:

- The current cost of accessing journal articles.

- The cost of accessing journal articles in the absence of Open Access.
- The sensitivity of estimates of the direct cost savings generated by Open Access to changes in model parameters.
- The cost savings that could be generated by extending Open Access further.

Indirect benefits are discussed in the Conclusions (especially section 5.2) and examples are given in the case studies (Chapter 4).

3.2 The current cost of accessing journal articles

Estimating the current cost of accessing journals comprised three steps:

- Determining the number of articles accessed by public sector workers.
- Determining the routes by which they accessed these articles.
- Estimating the cost of accessing an article via each route.

The total number of articles accessed by public sector workers was estimated by multiplying the total number of public sector researchers by the average number of articles accessed by each researcher.

Whilst the focus of this study is on research use of the public sector as a whole, the total number of users was defined as being researchers in the public sector. It was decided to focus on just researchers, as the majority of survey respondents were researchers (see Appendix 3). On the basis that public sector researchers were more likely to access research than other public sector workers, using the responses of researchers would have overestimated the costs of accessing research for the public sector as a whole.

Based on estimates of the total number of people employed in the NHS, the civil service, local government, as well as the proportion of economic activity dedicated to research and development, it was estimated that there were just over 100,000 public sector workers in research positions (see Appendix 4 for further detail).

Responses to the user survey were used to estimate that on average 210 articles were accessed per user per annum. This is in the same range as estimates obtained elsewhere in the literature. For instance, Houghton et al (2009) estimates that researchers in UK Higher Education read between 270 and 280 articles per annum, and that researchers in industry read 130 articles per annum. RIN (2008) estimates that researchers in higher education read between 197 and 258 articles per annum.

It was estimated that public sector researchers access journal articles over 21 million times per annum. In order to get a sense of the validity of this measure, based on an annual total number of reads of journal papers of 1.8 billion (Houghton et al, 2009), this would imply that the UK public sector accounts for 1% of global reads of journal papers.

By what routes are these articles accessed? The following routes were considered:

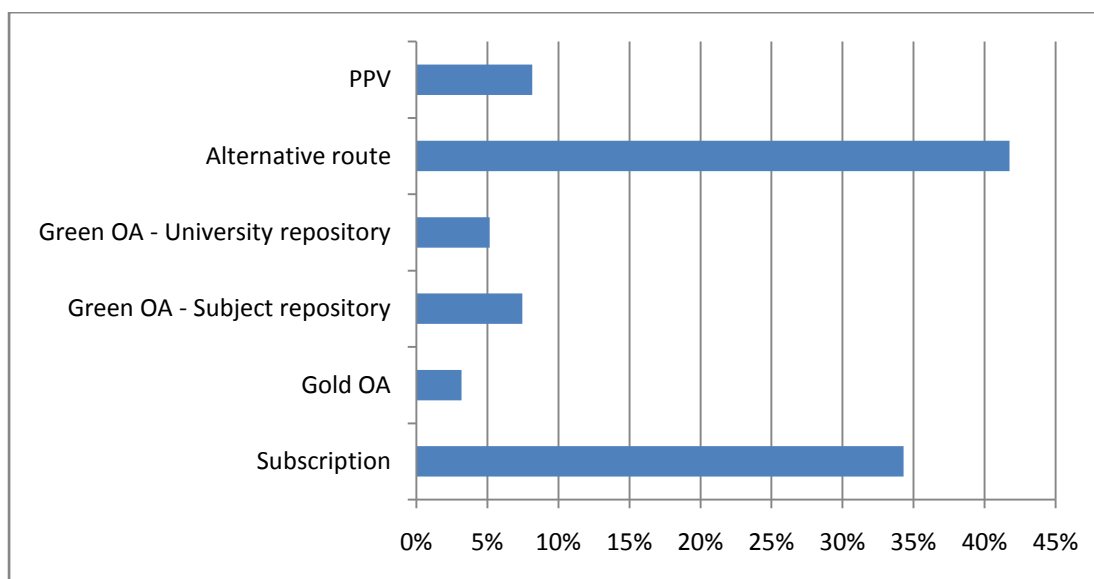
- Paid subscription: Articles purchased through journal subscriptions.
- Gold Open Access: Articles obtained free of charge as authors pay to make it available.

- Green Open Access: Articles obtained free of charge as authors deposit them in online repositories.
- Pay per view: Articles purchased not through journal subscriptions.
- Other forms of free access, including browsing the web to locate free copies (e.g. on an author's personal web-page) and contacting authors

A survey of research information users in the public sector was used to determine the proportion of articles accessed via each route (see Appendices 1 and 3). Figure 1 summarises the results of this survey. It demonstrates that the largest share of articles (42%) is obtained via the 'alternative route'. That is, users browsing the web for free copies of articles or contacting authors. Subscriptions account for 34% of articles accessed, Green Open Access for 13% of articles, pay per view for 8% of articles, and Gold Open Access for only 3% of articles.

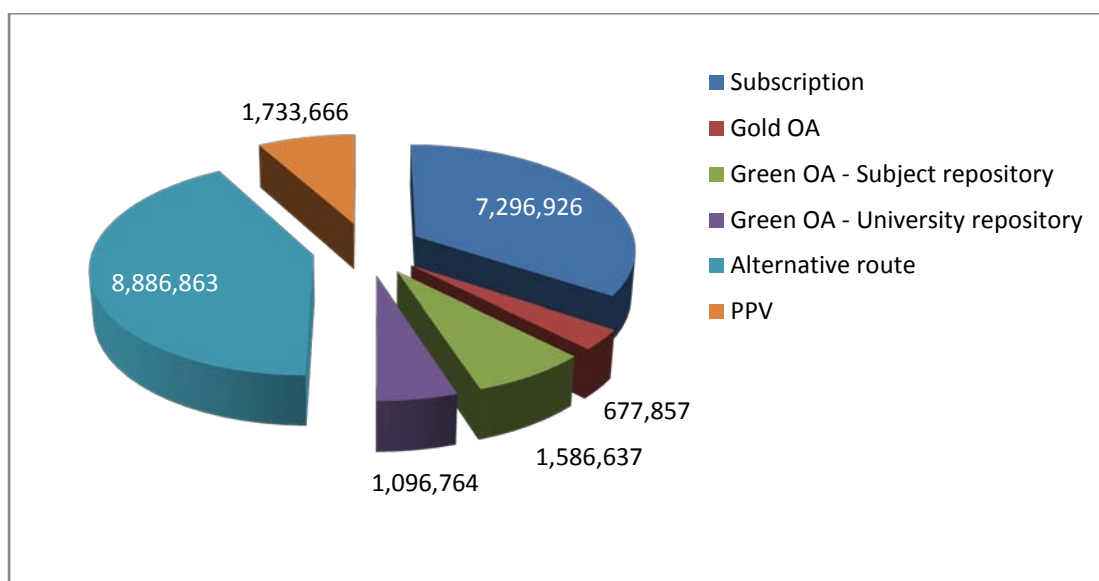
It was not always possible for survey respondents to know whether articles they access via subscription are available through Gold Open Access. Thus, in order to separate out the articles obtained via Gold Open Access from those obtained via conventional subscription, based on Björk et al (2010) it was assumed that 8.5% of articles that respondents stated were obtained via subscriptions were obtained via Gold Open Access to articles in hybrid journals.

Figure 1: Proportion of articles accessed via different routes (source: survey)



Applying the routes of access summarised in Figure 1 to the total number of journal articles accessed in any one year, it is possible to estimate the number of articles accessed via each route, summarised in Figure 2.

Figure 2: Total number of academic articles accessed by public sector researchers per annum, by route



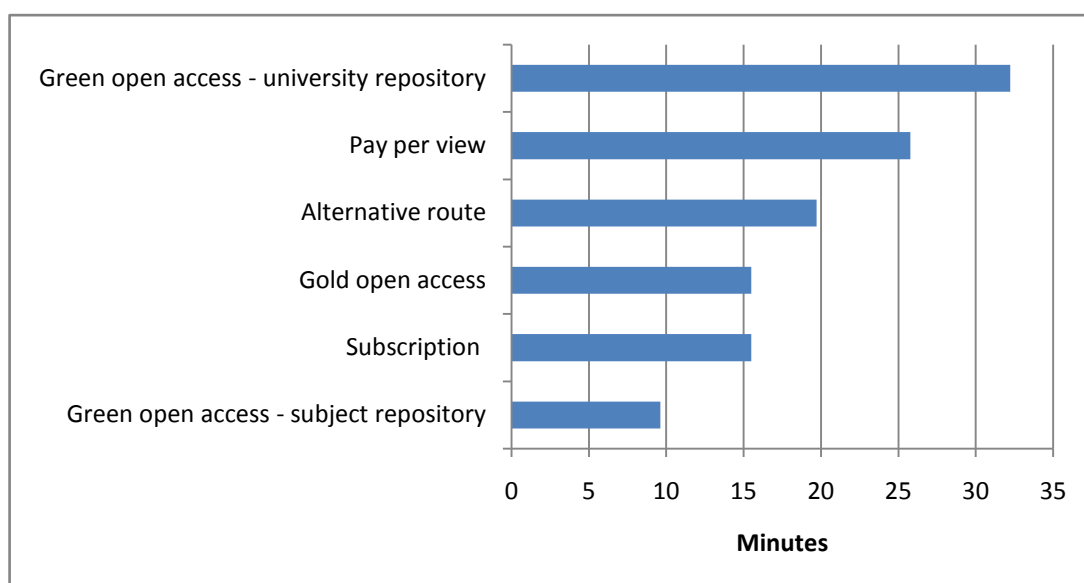
What is the cost of accessing an article via each route?

Librarians reports of subscription costs and the number of articles downloaded via these subscriptions implied a cost of £3.50 per journal paper accessed. This significantly exceeds previous estimates in the literature. For instance, Houghton (2009) estimates the average variable subscription cost per article at £0.68. It may be that a higher rate would be expected in the public sector than the average rate estimated elsewhere in the literature, as public sector bodies would have a lower intensity of use and thus not benefit from the same economies of scale as those in higher education. However, given the small sample size in the librarian's survey, in order to be cautious it was thus decided to substitute the cost estimates emerging from the survey with that from RIN (2008), who estimated that the total (fixed and variable) cost of accessing a journal article at £1.67 (£1.80 in 2011 prices).

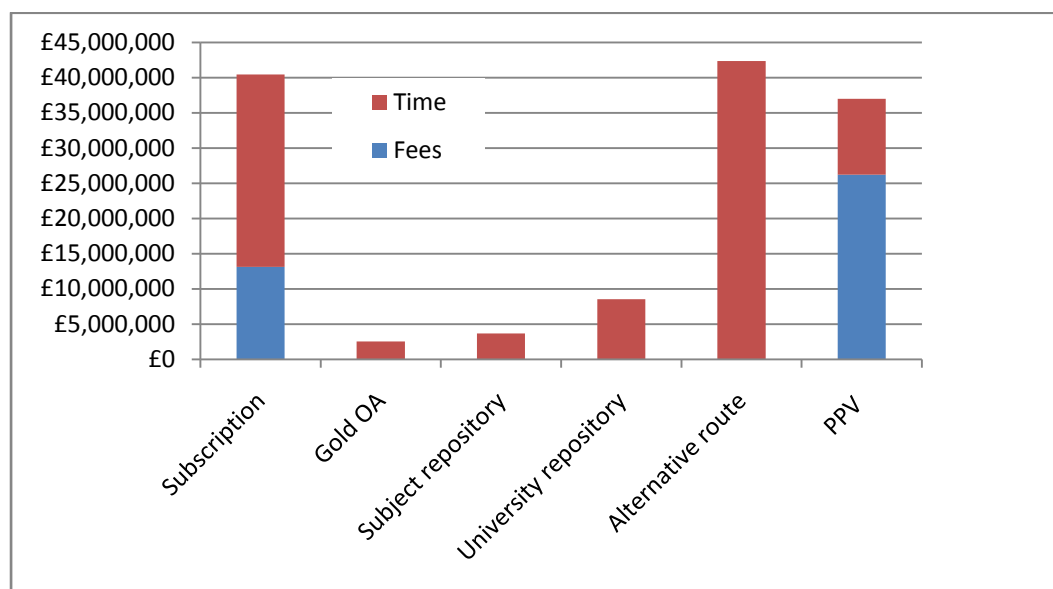
Based on this estimate and the above usage data, it is estimated that the annual cost of subscriptions to the public sector is £14.1 million. This compares with estimates from RIN (2006) of between £9.6 million and £19.6 million.

On average users paid £15 to access an article via pay per view.

Figure 3 summarises the amount of time that users took to access journal papers via different routes. This shows that university repositories and pay per view are the most time consuming routes to access journal articles. This is due to the fact that these routes are accessed following attempts to access articles via subscriptions should they be available, and browsing of the web. For instance, it is assumed that the time to access articles via Green Open Access includes a proportion of people having initially checked their subscriptions, time to browse for the article and thus find the repository, and time on the repository itself. It is likely that this approach will overestimate the time required to access articles via Green Open Access. This is, however, a conservative approach in that it will tend to underestimate the benefits of Open Access.

Figure 3: Time to access journal articles via different routes

Combining the above estimates allows us to estimate the total annual cost to the public sector of accessing journal articles. This is summarised in Figure 4. It demonstrates that the total cost to the public sector of accessing journal papers is £135 million per annum. This is primarily composed of the time spent browsing for free articles on the web (£42m) and browsing for articles available via subscription (£27m), as well as the fees spent on subscription (£13m) and pay per view (£26m).

Figure 4: The cost to the public sector of accessing journal papers by route (£2011)

3.3 The cost savings associated with Open Access

In order to estimate the cost savings generated by current access to journal articles through Open Access, it was assumed that the same number of articles would be accessed, but that the route of access would change.

Specifically, in the analysis reported above 680,000 journal articles are accessed via Gold Open Access and 2.6 million articles are accessed via Green Open Access. Table 2 summarises how these articles are assumed to be obtained other routes in three scenarios:

- No Gold Open Access
- No Green Open Access
- Neither Gold nor Green Open Access

Table 2: Alternative routes to access articles currently identified through Open Access

	Subscription	Gold OA	Subject repository	University repository	Alternative route	PPV
Gold Open Access	10.00%	-	0.00%	8.42%	8.16%	73.42%
Green Open Access	40.00%	3.72%	-	-	12.16%	44.13%
Neither Gold nor Green Open Access	36.34%	-	-	-	11.52%	52.13%

The following logic is applied to arrive at the estimates of the number of articles obtained through alternative routes in Table 2:

- Articles currently available through Gold Open Access. It is assumed that:
 - 10% of these articles will be obtained through subscriptions.
 - Articles will be obtained from university repositories in the same proportion as articles currently are.
 - 10% of the remaining articles are obtained through web browsing.
 - The remaining articles are obtained through pay per view.
- Articles currently available through Green Open Access:
 - 10% of articles previously obtained via subject repositories are obtained through web browsing.
 - The remaining articles are obtained through subscriptions and pay per view are obtained in the same proportions as currently.

Figure 5 summarises the alternative route used to access articles if they were not accessed through Open Access as they are at the moment. It demonstrates that:

- The availability of Gold Open Access reduces the number of articles that are accessed through pay per view by over 500,000.
- The availability of Green Open Access reduces the number of articles that are accessed through each of pay per view and subscription by almost 1.2 million.

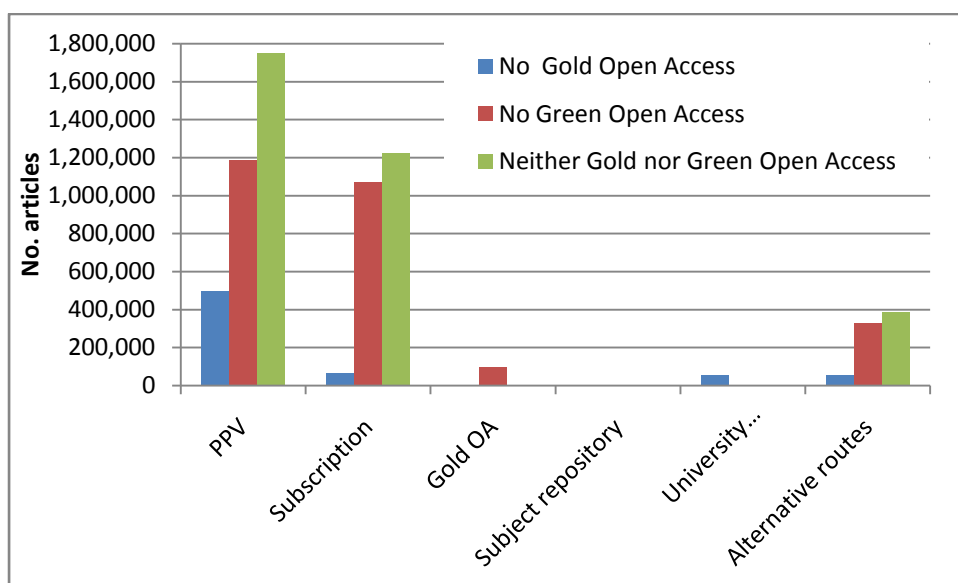
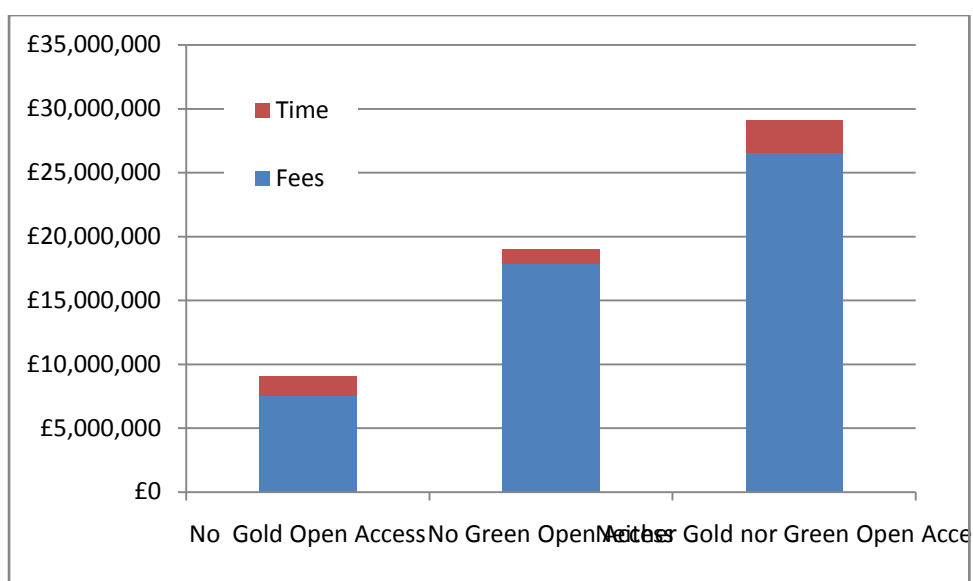
Figure 5: Alternative routes to access articles available through Open Access (number of articles)

Figure 6 summarises the cost of accessing articles through alternatives routes in the absence of Open Access. It demonstrates that:

- The availability of Gold Open Access saves users £7.5 million in access fees and £1.5 million in time.
- The availability of Green Open Access saves users £18 million in access fees and £1.1 million in time.
- In total Open Access saves users £26 million in access fees and £2.6 million in time.

Figure 6: The cost of accessing articles through alternatives routes in the absence of Open Access (£2011).

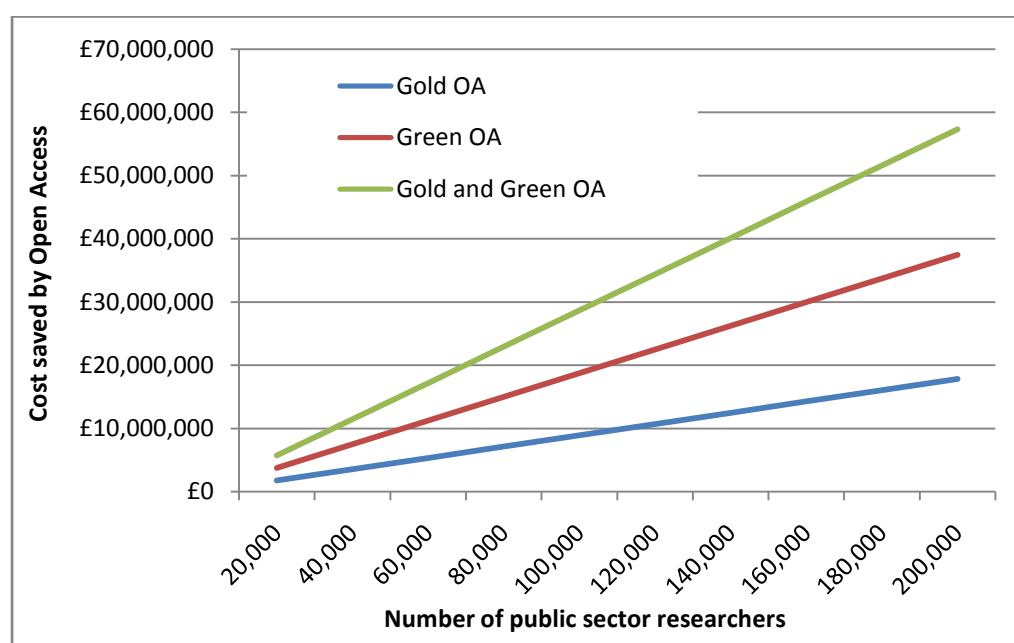
3.4 Sensitivity analysis

The evidence on which the above analysis was based has a number of limitations. Following best practice, the implications of the uncertainty in the data for the conclusions of the analysis was explored using sensitivity analysis. That is, key and uncertainty parameters were varied to determine whether they had a material impact on results of the analysis.

For instance, a key driver of the cost savings to public sector researchers is the number of public sector researchers. It was not possible to identify data on the proportion of the public sector workforce with a research responsibility. It was this necessary to assume that the proportion of the public sector workforce conducting research was the same as the proportion of economic activity more generally dedicated to research and development (1.84%).

It is, therefore, important to consider how our estimates of cost savings will vary with the size of the public sector research workforce. This is summarised in Figure 7. It demonstrates that, even if the public sector research workforce was a fifth of that included in the analysis (c20,000), Open Access would still provide a cost saving of about £5 million.

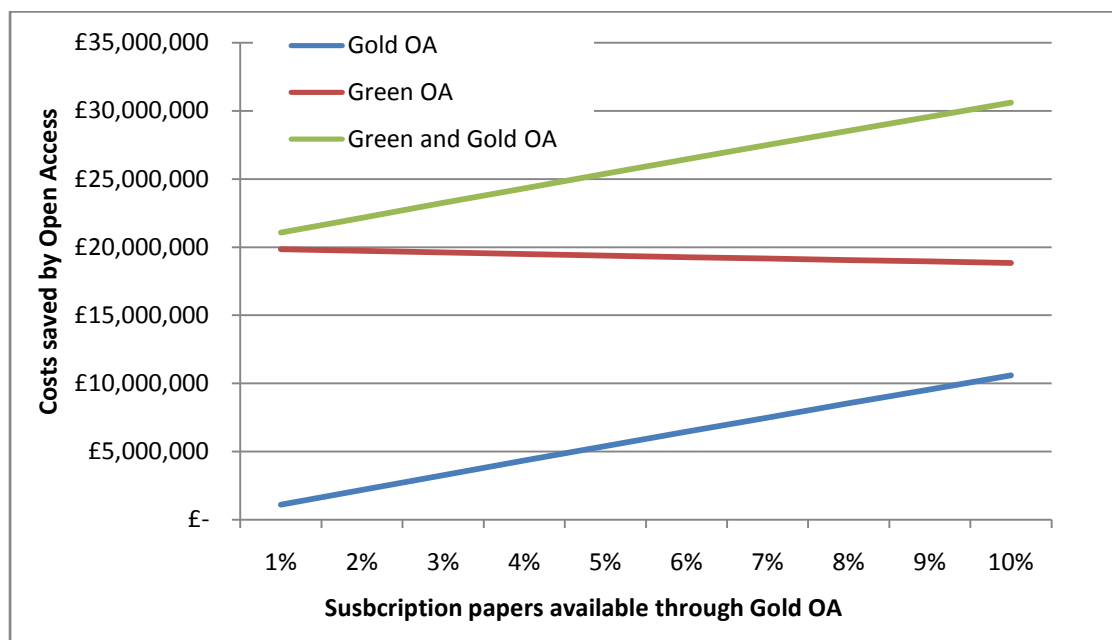
Figure 7: Change in the cost savings associated with Open Access with the number of public sector workers (£2011)



Another gap in the existing data was the proportion of articles that the public sector access through subscriptions that are available through Gold Open Access. Following Björk et al (2010) it was assumed that that 8.5% of subscription articles are available through Gold Open Access. However, other values have been considered in the literature. For instance, RIN (2008) estimated this proportion to be only 2%. Figure 8 demonstrates how varying the estimate of the proportion of subscription articles available via Gold Open Access will influence the total savings generated by Open Access. As expected, a reduction in the proportion of subscription articles available via Gold Open Access will reduce the cost savings associated with Open Access. The impact of having subscription articles available through Gold Open Access is not on the costs or time to those with subscriptions, but on the cost and time to those without subscriptions. This group may access the

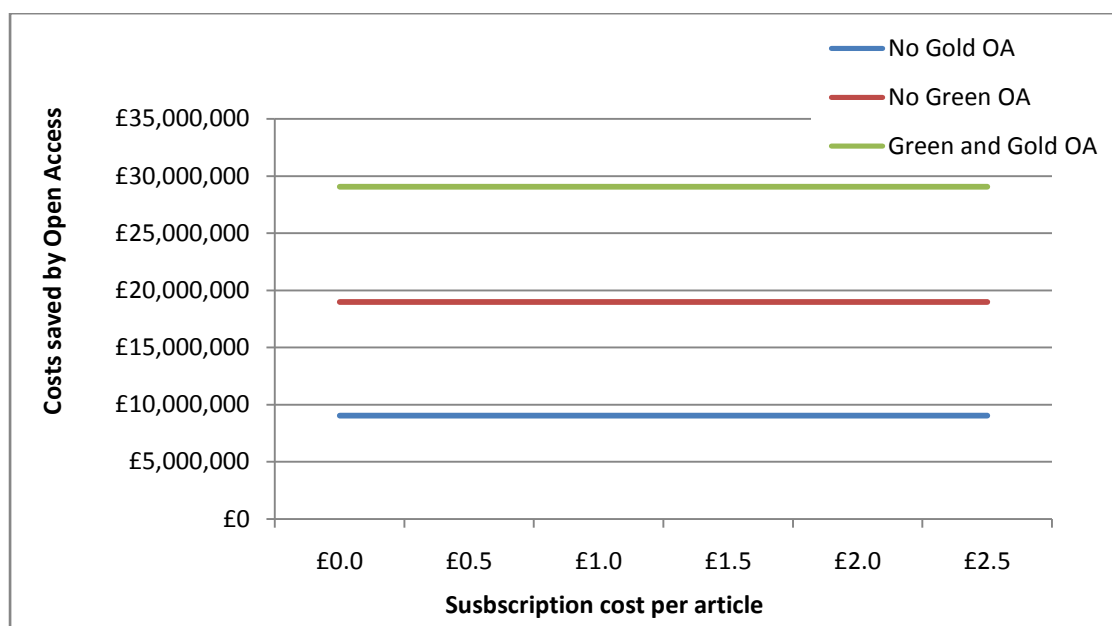
article through journal websites if it is available through Gold Open Access. If it not available through Gold Open Access, they will spend more time finding a free copy available through alternative routes, or may end up paying to view the article.

Figure 8: Change in the cost savings associated with Open Access with the proportion of subscription articles available via Gold Open Access (£2011)



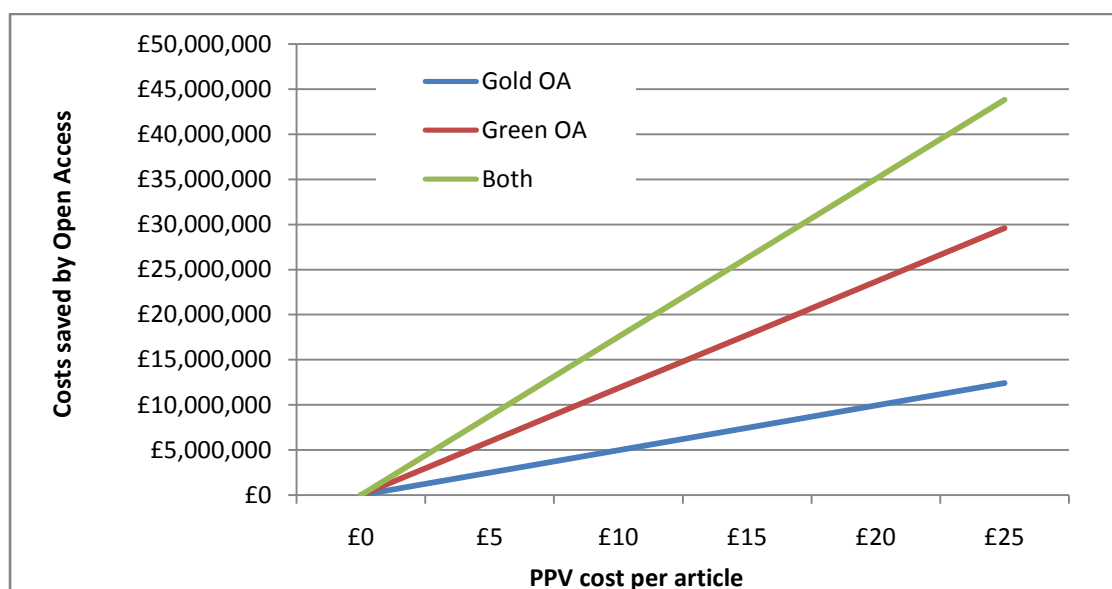
The results of the librarian's survey suggested that the cost of subscription was higher than that previously quoted in the literature. The librarians estimates of subscription costs and number of downloads suggested an average subscription cost of £3.50 per article, while the highest estimate identified in the literature was £1.80. Given the limited sample size achieved in the librarian's survey, the estimate from the literature was used in the analysis. Figure 9 demonstrates, however, that the choice of subscription cost will not influence the estimates of the cost savings generated by Open Access. This is because the analysis assumes that marginal changes in Open Access will not influence the number of journal subscriptions in the public sector. For larger changes in Open Access, and in the longer-term, it may be expected that the number of subscriptions may reduce. Thus, the assumptions made in the analysis would tend to be conservative – underestimating the benefits of Open Access.

Figure 9: Change in the cost savings associated with Open Access with the cost of subscriptions (£2011)



While the number and cost of subscriptions are assumed not to vary with marginal changes in the availability of Open Access articles, the number and cost of articles obtained through pay per view will vary with the availability of Open Access. Figure 10 demonstrates how the estimate of the cost savings generated by Open Access are sensitive to the cost of an article obtained through pay per view. This is unsurprising given the proportion of the cost savings generated by Open Access that are attributed to avoiding paying fees for articles. It is assumed that the same number of articles are accessed regardless of the extent of Open Access. Thus, if articles are not available via Open Access, those accessing the article will do so via an alternative route. In most instances it will take longer to access the article, and in some instances users will be required to pay to view the article.

Figure 10: Change in the cost savings associated with Open Access with the cost of PPV articles (£2011)



The proportion of the cost savings generated by Open Access that is attributable to reductions in the amount of time spent identifying articles is relatively low. It is, thus, unsurprising that the cost savings generated by Open Access are relatively insensitive to changes in the amount of time required to identify articles via different routes. This is demonstrated in Figures 11 to 15, which show how these cost savings vary with the time required to identify articles through different routes.

Figure 11: Change in the cost savings associated with Open Access with the time required to identify an article via PPV (£2011)

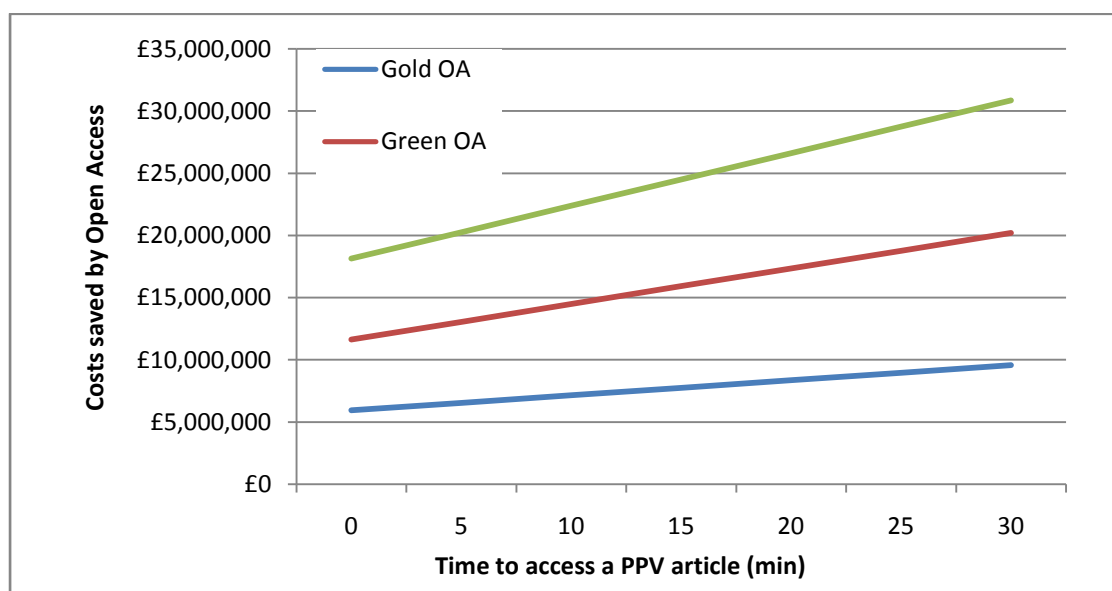


Figure 12: Change in the cost savings associated with Open Access with the time required to identify an article via a university repository (£2011)

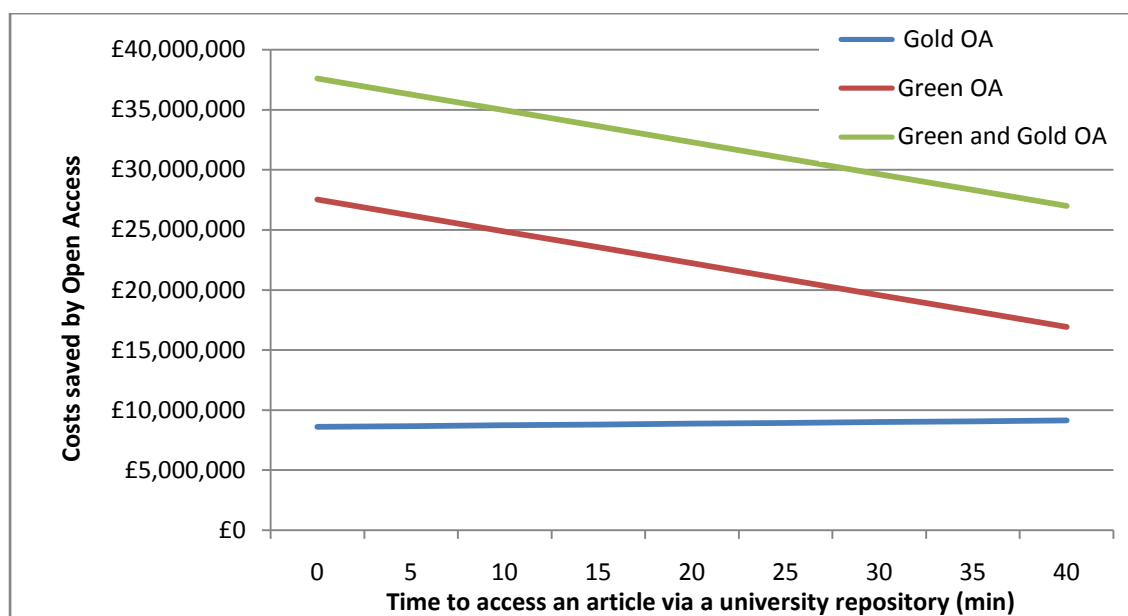


Figure 13: Change in the cost savings associated with Open Access with the time required to identify an article via a subject repository (£2011)

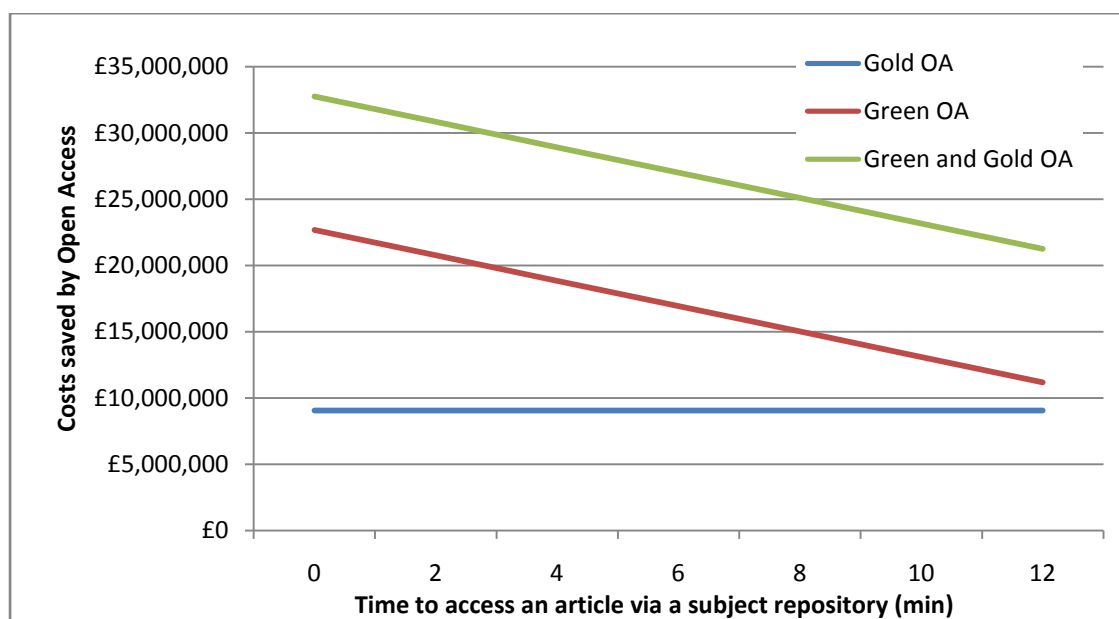


Figure 14: Change in the cost savings associated with Open Access with the time required to identify an article via subscription (£2011)

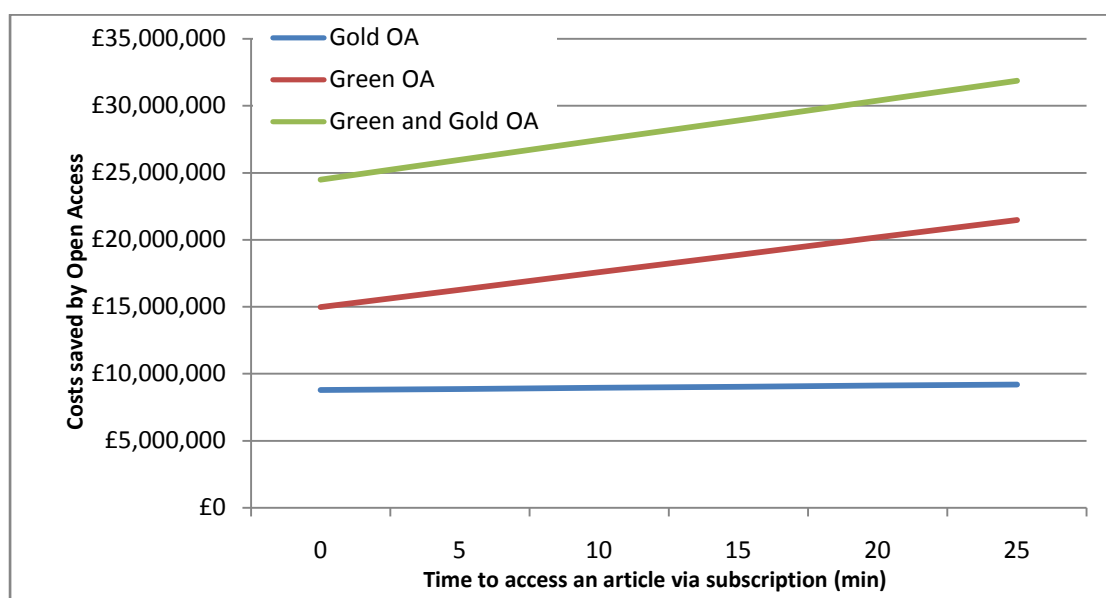
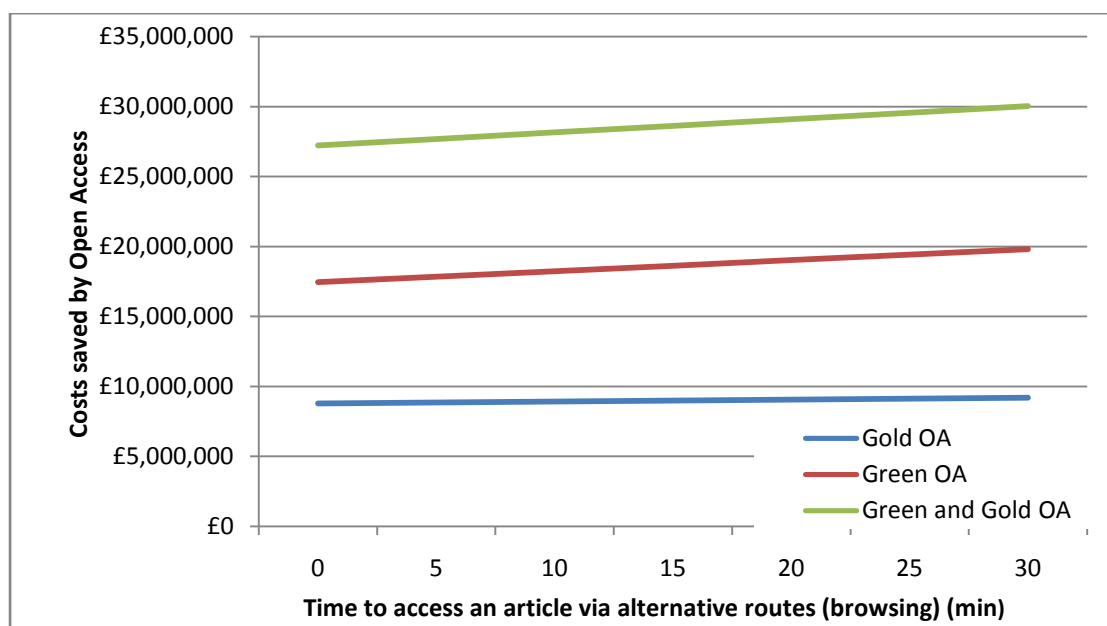


Figure 15: Change in the cost savings associated with Open Access with the time required to identify an article via browsing (£2011)



3.5 The cost savings from extending Open Access

Figure 16 summarises the further cost savings that could be generated if the number of articles accessed through Open Access was extended further. It is not certain how research users would respond to being able to access more journal articles through Open Access. Thus, in order to estimate the potential cost savings of extending Open Access, the following assumptions were made:

- The unit costs (both fees and time) of accessing an article through a particular route would remain constant.
- The extension of Open Access would not reduce the fees that the public sector pays in journal subscriptions.
- Journal papers now accessed through Open Access when they would not have been previously will be accessed through either Gold Open Access or Green Open Access in proportion to the current distribution of papers obtained through these routes.
- Journal papers now accessed through Open Access when they would not have been previously would have been accessed through either internet browsing, pay per view or subscriptions in proportion to the current distribution of papers obtained through these routes.

Figure 16 demonstrates that each extra 5% of journal papers accessed via Open Access would save the public sector £1.7 million, even if no subscription fees were to be saved.

Figure 16: Cost savings generated by extending the number of articles accessed through Open Access (£2011)

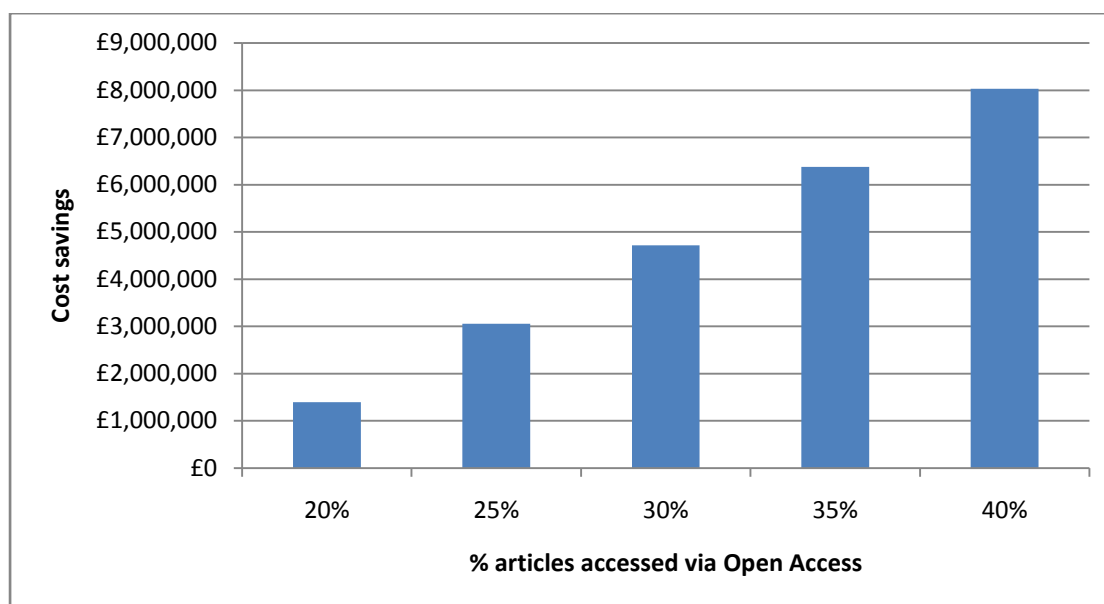
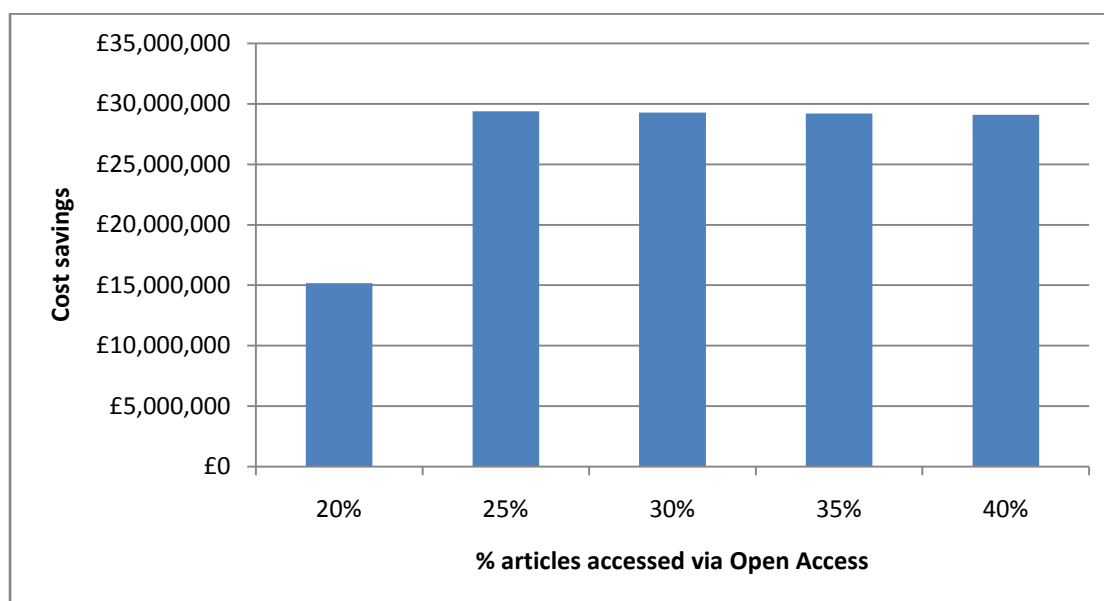


Figure 17 presents the same scenarios with the assumptions modified. It is assumed that journal papers that are now accessed through Open Access are firstly those that would have been accessed through pay per view, and, once all pay per view articles have been reallocated to Open Access, those that would have been accessed either through internet browsing or subscriptions. In this instance, the potential cost savings are higher, as the fees for pay per view articles are avoided. Specifically, increasing the number of journal papers accessed through Open Access to 25% (from the current 15.80%) would save the public sector an extra £29 million.

Figure 17: Cost savings generated by extending the number of articles accessed through Open Access – update assumptions (£2011)



Increasing the number of articles accessed through Open Access beyond 25% of articles accessed would slightly reduce these cost savings. This is because all papers previously accessed through pay per view are now accessed through Open Access. Thus, Open Access is now substituting for subscription access rather than PPV. As the total cost of subscription is assumed to be constant, no fees are saved. Further, as some Open Access papers are accessed through the relatively inefficient university repositories, the cost of time required to identify and access these papers is likely to be greater than that associated with subscription.

4 Synthesis of case studies and survey comments

Note: a selection of case studies can be found in Appendix 5.

4.1 Anonymity

Case study participants were promised anonymity at all stages. In one or two cases, that has meant that they could not be included in the candidates for being written up, as any level of detail would have made the organisation concerned immediately identifiable.

4.2 Researchers

Researchers raised many common issues through comments and in telephone interviews. Most notable among these were:

- Awareness that they were not able to access the full range of articles they had identified as relevant
- Awareness that they may be missing other articles altogether
- Impact on their research and the advice they give or decisions they make:
 - Delay
 - Inability to advise or decide as evidence incomplete
- Time and cost of alternative routes to access
- Cost of PPV downloads
- Time spent visiting libraries to obtain photocopies or printouts
- Difficulty of identifying article as relevant from the abstract alone
- Difficulty of managing authentication at multiple sites
- Harder to keep up to date by reading around the subject

4.3 Libraries

Libraries also identified a range of common issues:

- Open Access is becoming more important as subscriptions become more expensive
- Open Access allows the library to provide articles to the user much more rapidly: this is an important consideration for almost all libraries responding
- It is impossible for all but the largest libraries to maintain a comprehensive collection of journals, print or electronic
- Research staff are not skilled at resource discovery
- Libraries are spending time looking for Open Access versions of articles to avoid putting further pressure on ILL and PPV budgets
- Open Access is allowing libraries to help other libraries by making articles available without infringing subscription terms and conditions

4.4 General comments from the surveys

These comments are indicative extracts from the open-ended sections of the survey responses. They are broadly representative of comments on Open Access made in the survey. However, only a minority of respondents included detailed comments for these sections.

The comments refer to both the direct and the indirect benefits arising from Open Access.

4.4.1 Librarians

“We get complaints from users when they can't access the journals they want. They wonder why we don't have the same content as the universities when we're a much larger organisation. What they don't realise is that the NHS budget for journal subs is much smaller than that of most major universities and that we have to provide for a much wider breadth of users. I can understand the frustration of users who are unable to access the content they need to improve evidence-based practice and stay up-to-date with new research.” (*NHS Trust*)

“Open Access has made more knowledge available at the desktop as and when the user required it. We heavily use PMC, HighWire Press, DOAJ, and post embargoed content via our link resolver service.” (*NHS Acute Hospital Trust*)

“Generally given the particular nature of the organisation we will find a workaround if access is not readily available. We are also still in the fortunate position of being relatively well resourced compared to some other organisations, although our budgets are diminishing. Potentially a lack of access to research information can diminish the quality, comprehensiveness and/or speed of the service we are able to provide.” (*Major government institution*)

“[Using Open Access] we have been able to provide information requested by a user within a very short period of time. We are able to forward the article or a hyperlink to the user to enable them to have access from home.” (*NHS Trust*)

“[I] search NHS Evidence, then the internet to see if article is available free, then the web to see if a few to access copy is available for a repository or has been loaded on the web without restrictions. The last resort [is] ILL.” (*NHS Trust*)

“Information in the form of research articles impacts on patient care, service delivery and learning and development. For the user the route of access is irrelevant - often they will not be aware whether research paper is Open Access or paid subscription. The benefit is the completely seamless download - saves time.” (*NHS Trust*)

“[Open Access has] Saved us money! Fewer subscriptions and reduced inter-library loan costs.” (*Devolved government science library*)

4.4.2 Researchers

“Specific articles/reports being inaccessible[sic] under short deadlines meaning policy development or advice was unable to reflect details of the work or even overall findings.” (*Policy lead, large department of state*)

“[To obtain an important article] Used my old university library, which needed a whole day out of the office to travel there, and find the article (and a number of other ones for colleagues).” (*Scientist, large department of state*)

“Open Access to research information and published articles is invaluable for my work. Policy making is in large part based on information gained from research conducted within and outwith government. Quick access to such material is essential for our ability to respond effectively to changing policy demands.” (*Researcher, department of devolved government*)

"It always seems to be the really interesting paper that is either hard to find, download, or needs to be bought!" (*Team leader, specialist government laboratory*)

"Output was not as broad-based and robust as it might have been." (*Principal engineer, specialist laboratory of large department of state*)

"We end up buying articles, but because of the cost implication we buy a lot less than we would like. Open Access would allow a lot more speculative reading and reading around the subject which is really useful for a holistic and high quality view to be developed." (*Senior Scientific Officer, large department of state*)

"Regularly, as we have no subscription access, we have to get authorisation to buy each and every article. We have a library service but they can only get 1-2 articles per month per person and can take up to a month to receive. This has a big impact on how much time we spend trying to get articles which means not as much information makes it into reports as could do." (*Scientific Officer, large department of state*)

"Usually time pressures mean an article only available for purchase which takes days to arrive is not used to inform the advice that was being developed. If possible the article is obtained from Departmental library service, but in many cases the time taken to do this means the information becomes irrelevant by the time it is obtained." (*Policy lead, large department of state*)

"We have identified many articles related to our work which are not covered by our organisation's subscription. This has led to frustration, and has reduced the rate at which our work progresses." (*Research leader, government agency*)

"It means that we are unable to give guidance on new developments, and might not be meeting our obligations to reduce safety risk to the lowest level reasonably practicable." (*Policy manager, large department of state*)

"I have spent time going down to the British Library to read a paper I have requested the previous week but our own inter-library service has not been able to provide me with. This took an afternoon of my work time, but also meant that I had to find the articles in my own time at home as in common with many sites the library request website does not work on our government intranet." (*Scientific Officer, large department of state*)

5 Conclusions and recommendations

Our analysis demonstrates that increasing Open Access to research articles will have direct benefits for the public sector; indirect benefits can be found but they are not as significant and quantifying them would require a much larger project than this one.

This report was written shortly after the Higher Education minister indicated that the government saw advantages to Open Access to the results of research³, and established a working group to “examine how access to research findings can be made more transparent and accessible”⁴. Although the *Innovation and Research Strategy for Growth* emphasises the relationship between research and the private sector as a driver for economic growth, policies on Open Access outlined in the strategy will equally benefit public sector research. In particular, Section 6.8 of the Strategy (page 77) specifies that “Government will work with partners, including the publishing industry, to achieve free access to publicly-funded research as soon as possible and will set an example itself”. If this were to be carried through, the benefits to the public sector that we have identified may be realised on a more consistent and sustainable basis.

5.1 Direct benefits

On the basis of the evidence we have been able to collect for this report, the main benefits of Open Access in the public sector are direct benefits: savings in time and money.

- Researchers lose time spent trying to locate copies of articles.
- They pay some PPV or ILL charges.
- Librarians also spend time trying to locate copies of articles
- ILL charges are borne by the library as well as users.
- Some libraries pay subscriptions for low-use journals

All of these can be ameliorated to some extent through increased availability of articles through either form of Open Access, and increased use of Open Access articles.

The total cost to the public sector of accessing journal papers is around £135 million per annum. The savings that accrue from the availability of Open Access articles (using both Green and Gold routes) amount to £28.6 million (£26 million in access fees and £2.6 million in time savings).

Extending the number of articles available through Open Access further increases the potential for savings. Each extra 5% of journal papers accessed via Open Access would save the public sector £1.7 million, even if no subscription fees were to be saved. Increasing the number of journal papers accessed through Open Access to 25% would save the public sector an extra £29 million.

However, increasing the number of articles accessed through Open Access beyond 25% of articles accessed would reduce these cost savings as all papers previously accessed through pay per view would then be accessed through Open Access. Thus, Open Access is now substituting for subscription access rather than PPV. As the total cost of subscription is assumed to be constant, no fees are saved. As some Open Access papers are accessed through university repositories, the cost

³ <http://www.official-documents.gov.uk/document/cm82/8239/8239.pdf>

⁴ <http://nds.coi.gov.uk/content/detail.aspx?NewsAreaId=2&ReleaseId=421232&SubjectId=2>

of time required to identify and access these papers is greater than that needed for articles available through subscriptions.

5.2 Indirect benefits

Indirect benefits are those benefits which are realised with the application of research information. We had not expected to be able to quantify such benefits within the scope of this study, but have aimed to identify where they might be found and analysed in future. As expected, we have not found substantial, quantifiable examples of indirect benefits of Open Access itself. However, the survey and interviews did reveal a number of indirect impacts of lack of access that might be improved by Open Access.

Some respondents noted that they had either submitted analysis or made decisions on the basis of potentially incomplete research as they had not been able to review all the relevant articles they had identified. It should be emphasised that this was not in the sense that they might have missed a relevant article (although that was expressed), but rather in the definite knowledge that there had been articles identified in searches that appeared highly relevant but that they had not been able to access through lack of subscription or other purchasing budget. However, although they are aware that they are missing some information, they nevertheless do not think that at present it has had a serious impact on the quality of their output. This view could not be tested as it would have required a direct comparison of decisions made with and without access to the unavailable articles that could not be recreated during the study.

However, the study did reveal a potential for significant indirect benefit: the inefficiencies inherent in obtaining information where desktop access to paid-for subscription are not available may mean that advice is not given at all. For example, a team of epidemiologists working in areas with a high public profile was often contacted by news media. The requests for information often had to be met very quickly, and the inefficiencies arising from the limitations of the subscription and other services available to them meant that they had not been able to obtain evidence to support a statement to the media, and had therefore not been able to answer questions at all. This clearly has an impact on the quality of reporting and therefore the overall benefit to the public⁵.

Issues also raised by researchers responding to the survey were the impact of access to research information causing delays in decisions or policymaking and increased risk in decisions or policymaking. Respondents also indicated that on occasion they had not been able to provide any guidance to decision-makers as the necessary information was not available in time.

At the same time, researchers are aware that barriers to accessing research information are increasing as budgets and staffing are reduced and some noted that they had concerns about the impact of this in the future. In particular, comparing a range of articles on the same subject from different perspectives can be an important stage in both decision-making and policy development, and limitations in the range of subscriptions would inhibit this.

Finally, a number of the people responding to the survey indicated that they had problems keeping up to date as it was increasingly hard to “read around” the subject; without subscription access scanning journals is difficult as even if an abstract is available it is often not informative enough for

⁵ See Case Study 4, page 93

the reader to know if the article is worth purchasing. It should be noted that the delay created by the embargo period that some publishers require for Green OA may make Green OA less relevant as a solution to the current awareness problem than Gold OA.

The options for indirect benefits for librarians are more limited. They do not make decisions that are affected by the quality of information available to them, although the quality of service they provide to researchers has an overall effect. However, this is considered as part of the indirect benefits to researchers. The main indirect benefit to libraries is in perception of quality of service: if they are able to identify and provide a wider range of articles for researchers, their services will be perceived as more valuable and thus more worth funding.

5.3 Recommended actions

Our recommendations are to:

- The public sector research community;
- Librarians in the public sector;
- The HE sector.

5.3.1 Actions for public sector research

Public sector researchers would benefit from greater awareness of Open Access to articles and how to locate articles that are available through Open Access. Librarians can offer some help, but with widespread use of desktop access to electronic information there are fewer contact opportunities for librarians to communicate with researchers directly: indeed, many of the public sector organisations we considered no longer have any kind of library provision. It was clear from interviews and questionnaire responses that researchers take a rather ad-hoc approach to resource discovery. Managers in research teams in the public sector might therefore consider enhanced training in searching for and using information for their teams.

It may be useful for public sector researchers to communicate their experiences and views to the independent working group the Minister has established; the academic sector is represented directly on the group, and the needs of the private sector are an important focus for policymaking. However, the needs of the public sector have not been so strongly articulated.

This report did not explore the benefits to public sector researchers outside HE of making their outputs available as OA, but based on the evidence of indirect benefits uncovered during this research, we would expect to see advantages to this strategy and consider that it would be worthy of detailed further investigation to quantify the benefits.

5.3.2 Actions for public sector librarians

Librarians in the public sector may be better informed than researchers about the principles and scope of Open Access, as it has been a much-discussed topic in the profession for some time. Librarians may be able to help researchers by indicating where an article they are providing to a researcher has been supplied through an Open Access route.

Librarians should be encouraging the adoption of Open Access internally and making clear the research staff the value of Open Access resources.

We recommend that librarians should be promoting the sensible use of search tools such as Google Scholar to identify Open Access version of relevant articles.

5.3.3 Actions for HE sector

It is clear that researchers in the public sector are not widely aware of Open Access and its benefits.

HEIs and other HE organisations (such as Research Councils and funding councils) should consider a campaign to promote the value of the information they create and the best routes to obtain it, including Open Access. There are specific channels such as CILIP's Government Information Group, which they can use, but they also need to make the location of content in repositories more co-ordinated across their websites (for example, although individual academics often link to their papers from their personal web pages, the links are often to the published version rather than a repository even when one exists)).

Many users of research information maintain contact with academic researchers (including former colleagues) through traditional routes such as conferences. This offers another channel for such communication. There is a developing understanding of the use of social networking tools such as Twitter and LinkedIn and this should be encouraged for its benefits to relationships between academic and public sector research.

The recent policy announcements by the Higher Education minister and the establishment of the Finch committee on Open Access should help to raise awareness of the benefits of Open Access outside HEIs themselves. Research funders and HEIs are already committed to expanding the number and range of articles available through OA, and the extra stimulus and wider publicity provided by the government's interest could provide impetus to communicate with researchers in the public sector and increase their awareness of Open Access in general and accessing Open Access articles in particular.

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7 Appendix 1: Users and librarian surveys

Surveys of users and librarians were used to collect data to populate the economic model (see Appendix 2) as well as explore the ways in which people access research material and the barriers they face in doing so.

The sample frames for the surveys were any potential users of research in the public sector and librarians working in the public sector. Given the lack of a contact list for either of these sample frames, a list was constructed from the existing networks of the team members and our colleagues, potential respondents identified through stakeholder engagement early in the project, and pearl growing as contacts passed the survey to their colleagues. In total 53 users and 24 librarians responded.

Table 3 and figures 18 to 20 summarise the distribution of responses.

Table 3: Survey responses by sector

	NHS	Central Government
Users	2%	98%
Librarians	63%	37%

Figure 18: Survey responses by role, research users

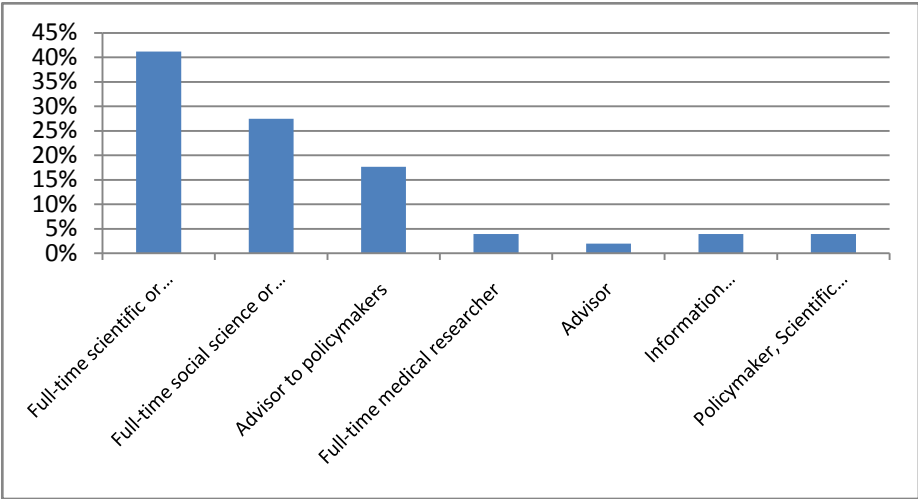


Figure 19: Survey responses by role, librarians

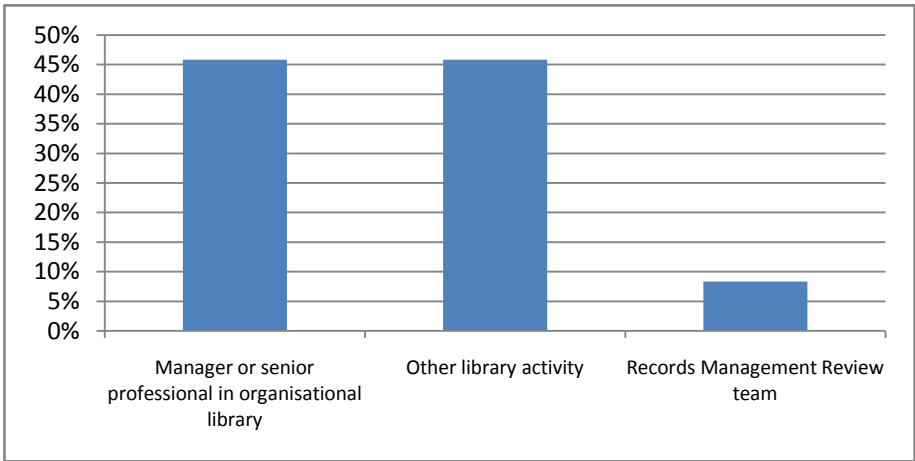
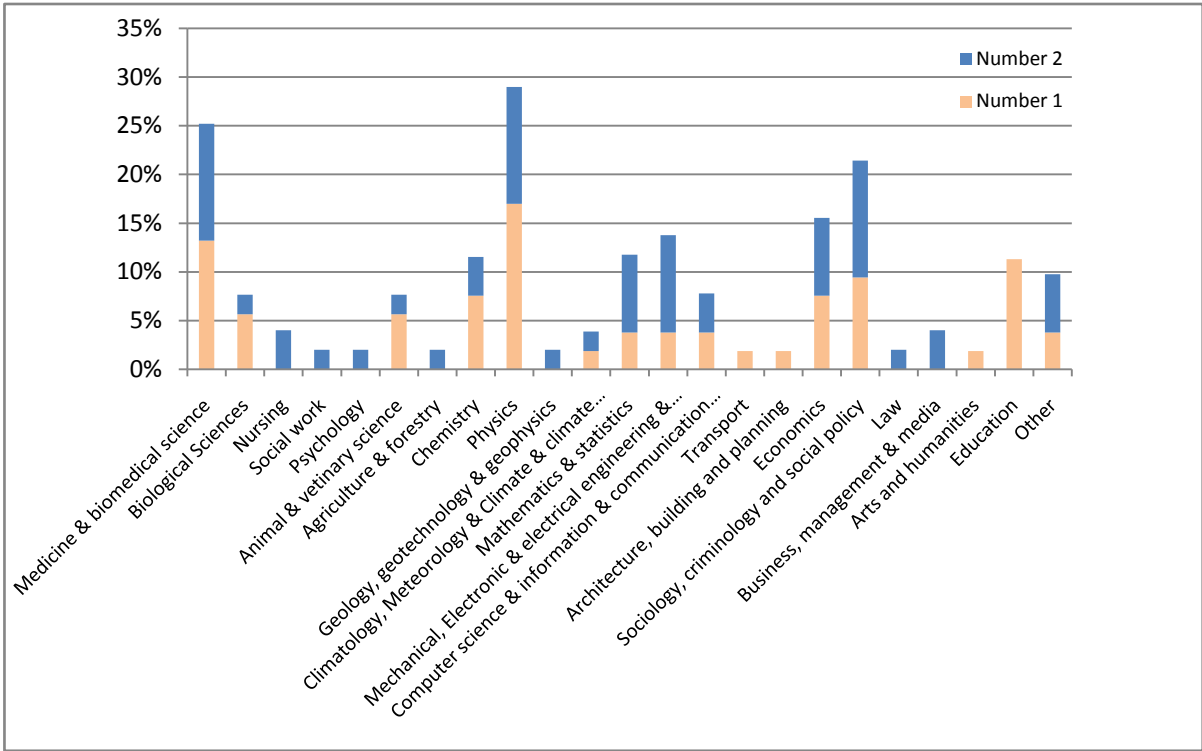


Figure 20: Survey responses: the two most important subject areas for which research information is most used (1=most important)



Appendix 3 summarises the questions asked in the surveys.

7.1 Issues in contacting stakeholders

Our overall focus, as set out in the project plan, was to concentrate on parts of the public sector which we knew made use of a significant amount of research information.

We found that both researchers and librarians in the public sector were difficult to reach. Many did not respond to first or even repeated emails; others agreed to do things such as distribute details of the study but did not do so. However, some others offered considerable assistance.

We consider it likely that the main reasons for this are time pressures and a lack of awareness of the importance of Open Access, something that also emerged from some survey responses and interviews.

7.2 Survey distribution

7.2.1 Website

We created a small website using Wordpress (<http://publicsectoroa.wordpress.com/>). This contained information about the project, links to information about the OAIG and the project partners, and links to the two survey tools. The website received over 290 visits, with peaks in line with the distribution of emails to relevant groups. The most visited pages were "about the project" and "taking part in the study."

7.2.2 Libraries

7.2.2.1 *Strategic Health Authority Library Leads*

The SHALL group co-ordinator circulated information about the survey to the group, and several responses to the survey were received as a result.

7.2.2.2 *Cilip Government Information Group*

We identified the membership of this group as relevant. Messages about the survey were posted to its LinkedIn group, and Cilip itself was emailed to ask for assistance. No response was received from the Cilip secretariat, but we believe that the posting to the LinkedIn group produced several responses to the survey.

7.2.2.3 *Network of Government Library and Information Specialists*

This covers libraries at many major government departments, and some smaller ones. Members of the group were emailed individually, and we believe that this produced useful responses to the survey.

7.2.3 Researchers

We used several networks to contact researchers; the two most significant were our own existing contacts and the Chief Scientists from government departments. We contacted all the Chief Scientists we were able to identify directly, including those responsible for equivalent function in Scotland and Wales. A number responded directly and several circulated the survey details through their departments.

The next appendix summarises the questions asked in the surveys.

8 Appendix 2: Survey forms

8.1 Research Users Survey

1. Your name

2. The organisation or type of organisation you work for *

3. Job title *

4. Email (we will only contact you in the event of a query about your response or if you would like to be notified when the report is published)

Your email address (optional, but we will need your email address to enter you in the draw to nominate a charity)

Would you like to be notified when the report is published?

☐ Yes

☐ No

5. Telephone number

6. Which of these best describes your role? *

☐ Scientific or engineering researcher

☐ Medical researcher

☐ Social science or economics researcher

☐ Policymaker

☐ Advisor to policymakers

☐ Manager

☐ Other (please specify)

false

7. Do you use research information in your work?

"Research information" means the outputs of research being carried out in universities and other research organisations.

Please tick all that apply

- ☐ No
- ☐ Information about current research projects (e.g. found on university websites or researchers' personal web pages)
- ☐ Peer-reviewed research articles resulting from university or other high-level research
- ☐ Conference papers and proceedings
- ☐ Data generated by research projects
- ☐ Databases that index research literature
- ☐ Books or book chapters
- ☐ Other (please specify)

false

8. Please select the two most important subject areas where you use research information

(1=most important)

Subject area 1 (most important)

Subject area 2

false

9. How much of your working time do you spend on tasks for which you use research information?

*Estimate**

- ☐ None
- ☐ 1-10%
- ☐ 11-25%
- ☐ 26-50%
- ☐ More than 50%

false

10. What do you use the information for?

Please tick all that apply

- ☐ To identify and contact relevant experts
- ☐ As part of my own research
- ☐ To help develop methodologies
- ☐ To help provide advice or guidance to help other people with their own jobs
- ☐ To help provide evidence, advice or guidance to senior managers or policymakers
- ☐ To help answer questions from people outside the organisation
- ☐ To help answer questions from the public
- ☐ Other (please specify)

false

11. How important is research information to your work? *

- ☐ Vital
- ☐ Important
- ☐ Useful
- ☐ Not important

false

12. How many items of research information do you use in a typical month?

Estimate

How many different published research articles would you use in a typical month?

How many different unpublished research articles would you use in a typical month?

How many different books or book chapters would you use in a typical month?

How many different conference papers would you use in a typical month?

[illegible]

14. If you included "other" in the previous question, please list the resources you use:

15. If you search subject repositories, please say which ones:

16. Accessing paid-for information

Do you pay for individual articles when you need them (e.g. through a publishers' website or document delivery service)?

☐ Yes

☐ No

If yes, how many articles would you estimate you buy in a typical month?

If you have paid for an article, what was the typical price? (in £ sterling)

For the articles you do not pay for directly: are any of these articles available to you as part of a subscription paid for by you or by someone else in your organisation (e.g. a library or information centre; from a departmental budget)

☐ Don't know

☐ All

☐ Most

☐ Some

☐ None

17. Accessing free information

Do you download articles from authors' or university websites or from university repositories?
Estimate

☐ One or more times a month

☐ Every two or three months

☐ Once a year or less

☐ Never

Do you download articles from subject websites or from subject repositories?

Estimate

- ☐ One or more times a month
- ☐ Every two or three months
- ☐ Once a year or less
- ☐ Never

If you have downloaded articles from subject websites or repositories, please list those you can recall using.



Have you contacted an author to ask them for a copy of one of their articles?

Estimate

- ☐ One or more times a month
- ☐ Every two or three months
- ☐ Once a year or less
- ☐ Never

Please describe any other way you have used to obtain a copy of a research article?



false

18. Time and resources needed to obtain articles*Estimate*

	% of articles obtained this way	How much of your time does it take to obtain an article (minutes)	How long does it take to obtain the article from the time you have identified it (days)?
Paying for individual articles when you need them (e.g. through a publishers' website or document delivery service)?	<input type="text"/>	<input type="text"/>	<input type="text"/>
Searching for a free copy?	<input type="text"/>	<input type="text"/>	<input type="text"/>
Searching for an article available to you as part of a subscription paid for by you or by someone else in your organisation (e.g. a library or information centre; from a departmental budget)	<input type="text"/>	<input type="text"/>	<input type="text"/>
Downloading articles from authors' or university websites or from university repositories?	<input type="text"/>	<input type="text"/>	<input type="text"/>
Downloading articles from subject websites or from subject repositories?	<input type="text"/>	<input type="text"/>	<input type="text"/>
Contacting an author to ask them for a copy of one of their articles?	<input type="text"/>	<input type="text"/>	<input type="text"/>

19. Have you encountered any barriers or difficulties in getting hold of research information?

Please select all that apply

	Never a problem	Always	Frequently	Sometimes	Occasionally
I could not identify any relevant articles	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I could not locate a copy of an article that I had identified or been told about by a user	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The article was not covered by a subscription and we had to buy a one-off copy of the article for the user	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Never a problem	Always	Frequently	Sometimes	Occasionally
The article was not covered by a subscription and we could not afford to buy a one-off copy of the article for the user	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I was able to locate an article but the search took too long	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I was able to locate an article but obtaining the article itself took too long	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other barrier or problem	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

false

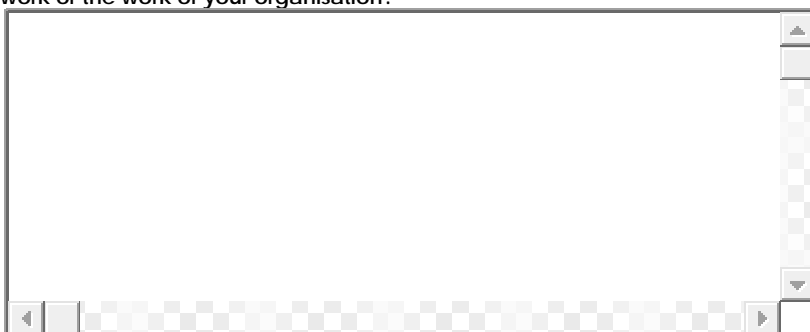
20. What impact did these barriers or difficulties have on your work?

Please tick all that apply

	Low	Moderate	Severe
Absorbed time that could have been spent on other aspects of my work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Reduced the quality of my research	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Reduced the quality of my practice	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Reduced the quality of advice given to others	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Increased risk in my own practice	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Increased risk in advice given to other people	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

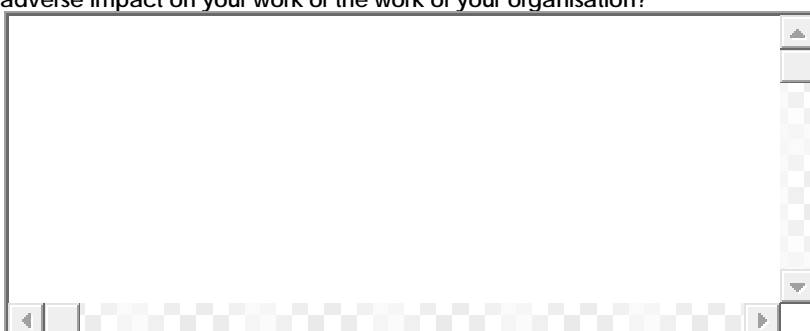
false

21. Can you give one example of how Open Access to research information has benefited your work or the work of your organisation?



false

22. Can you give one example of how lack of access to research information has had an adverse impact on your work or the work of your organisation?



false

23. What process did you follow and what was the outcome on the last occasion on which you needed to identify and obtain a research article?



false

24. Would you be willing for your experience to be explored in more detail as a case study for the report? **This would only be after further discussion with you.**



No



Yes

☐ Yes, if anonymised

false	25. Do you have any other comments or questions?
<div></div>	

8.2 Librarian Survey

1. Your name

false

2. The organisation or type of organisation you work for *

false

3. Job title *

false

4. Email (we will only contact you in the event of a query about your response or if you would like to be notified when the report is published)

Your email address (optional, but we will need your email address to enter you in the draw to nominate a charity)

Would you like to be notified when the report is published?

☐

Yes

☐

No

false

5. Telephone number

false

6. Your role *

☐

Manager or senior professional in organisational library

☐

Manager or senior professional in information centre (i.e. where printed stock is low priority compared with digital information and answering users' enquiries)

☐

Other

false

7. What proportion of your time do you spend on the following activities (*estimate only needed*):

Budgeting and/or authorising purchases

Responding to users' enquiries by identifying resources

Responding to users' enquiries by carrying out research yourself (e.g. to provide statistics or news analysis)

Your own research projects

8. How many users do you provide services for?

- ☐ 1-10
- ☐ 11-50
- ☐ 51-150
- ☐ 151-500
- ☐ More than 500

9. How many of those are users of research articles?

Estimate

- ☐ None
- ☐ 1-10%
- ☐ 11-25%
- ☐ 26-50%
- ☐ More than 50%

10. Which of these describes your users' roles?

Please tick all relevant roles.

- ☐ Scientific or engineering researcher working for a public sector organisation
- ☐ Medical researcher working for a public sector organisation
- ☐ Social science or economics researcher working for a public sector organisation
- ☐ Policymaker
- ☐ Advisor to policymakers

☐ Other (please specify)

11. Do you provide your users with research articles, conference papers, books or book chapters?

Approximate annual number of each:

Conference papers and proceedings	<input type="text"/>
Research articles in print	<input type="text"/>
Research articles downloaded by users	<input type="text"/>
Research articles downloaded by you/your team and sent to users	<input type="text"/>
Books	<input type="text"/>
Book chapters	<input type="text"/>
Other	<input type="text"/>

12. Do you help your users identify relevant research articles using these tools (rank in order of importance from 1 to 8, with 1 being the most important)
Leave blank if you don't do this for your users

	1	2	3	4	5	6	7	8
Search Google	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Search Google Scholar	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other internet search engine	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Search publishers' databases (Science Direct, Interscienceetc)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Search university websites and repositories	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Search subject repositories such as Social Science Research Network, PubMed Central or ArXiv	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Search specialist indexing services and search engines such as Web of Science, Chemical Abstracts, Education Abstracts	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Other (please specify below)



13. If you included "other" in the previous question, please list the resources you use:

false

14. If you search subject repositories, please say which ones:

false

15. Subscription and other costs

(costs related to total number of users quantified in Question 8)

Estimated annual cost of electronic subscriptions (£)

Estimated annual cost of book purchases (£)

Estimated annual cost for document delivery or pay-per-view article downloads (£)

false

16. Is the general trend in your organisation to:

- ☐ Increase the number of journal titles to which we subscribe
- ☐ Maintain the number of journal titles to which we subscribe
- ☐ Decrease the number of journal titles to which we subscribe

false

17. What proportion of your users would you estimate are aware of Open Access to research articles?

- ☐ Can't say
- ☐ None
- ☐ 1-10%
- ☐ 11-25%
- ☐ 26-50%

☒ More than 50%

☐ false

18. Have you been able to provide them with information about Open Access?

☒ Yes

☒ No

☐ false

19. How have you provided your users with information about Open Access?

Choose all that apply

☐ Links to Open Access journals on library web page or portal?

☐ Links to subject repositories on library web page or portal?

☐ Links to university repositories on library web page or portal?

☐ Sent information in email updates

☐ General information about Open Access on web pages?

☐ Presentations to users?

☐ Conversations with users?

☐ Other (please specify)

☐ false

20. Which of these scenarios best describes the availability and use of Open Access for your users?

☒ Little or no quality content is available through Open Access

☒ Some quality Open Access content is available, but it is only used by a few people

☒ Some quality Open Access content is available and there is growing awareness and use

☒ Some quality Open Access content is available, but after initial interest usage is declining

☒ A significant minority of quality content is available through Open Access and usage is growing substantially

☒ It is important: much high-quality content is available through Open Access and it is used regularly by researchers

☒ Don't know

false

21. Do you know if any of your users have downloaded Open Access articles?



No way to tell



No users



A few users



A significant minority of users



Most users

false

22. What proportion of research articles downloaded by your users would you estimate are Open Access?



No way to tell



None



1-10%



11-25%



More than 25%

false

23. Please select the three most important areas that your users work in (1=most important)

Subject area
1 (most
important)

-- Please Select --

Subject area
2

-- Please Select --

Subject area
3

-- Please Select --

false

24. For your choice for subject area 1 in Question 23, please estimate:

% of your journal subscription costs

-- Please Select --

% of downloads that are Open Access

-- Please Select --

% of users working in this area

-- Please Select --

false

25.

For your choice for subject area 2 in Question 23, please estimate:

% of your journal subscription costs

-- Please Select --

% of downloads that are Open Access

-- Please Select --

% of users working in this area

-- Please Select --

false

26.

For your choice for subject area 3 in Question 23, please estimate:

% of your journal subscription costs

-- Please Select --

% of downloads that are Open Access

-- Please Select --

% of users working in this area

-- Please Select --

false

27. Have you encountered any barriers or difficulties in getting hold of research information for

your users?

Please tick all that apply

	Never a problem	Always	Frequently	Sometimes	Occasionally
I could not identify any relevant articles	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I could not locate a copy of an article that I had identified or been told about by a user	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The article was not covered by a subscription and we had to buy a one-off copy of the article for the user	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The article was not covered by a subscription and we could not afford to buy a one-off copy of the article for the user	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	Never a problem	Always	Frequently	Sometimes	Occasionally
I was able to locate an article but the search took too long	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I was able to locate an article but obtaining the article itself took too long	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other barrier or problem	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

false

28. What impact did these barriers or difficulties have on your work?

Please tick all that apply

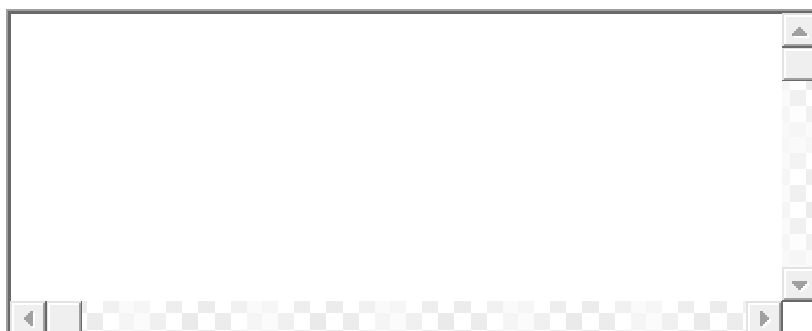
	Low	Moderate	Severe
Absorbed time that should have been spent on other aspects of my work	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Reduced the quality of service	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Reduced the quality of information given to other users	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Increased risk in advice given to other people	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other (please specify)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

false

29. Can you give one example of how Open Access to research information has benefited your work or the work of your organisation?

false

30. Can you give one example of how lack of access to research information has had an adverse impact on your work or the work of your organisation?



false

31. What process did you follow and what was the outcome on the last occasion on which you needed to identify and obtain a research article for one of your users?



false

32. Would you be willing for your experience to be explored in more detail as a case study for the report? **This would only be after further discussion with you.**



No



Yes



Yes, if anonymised

false

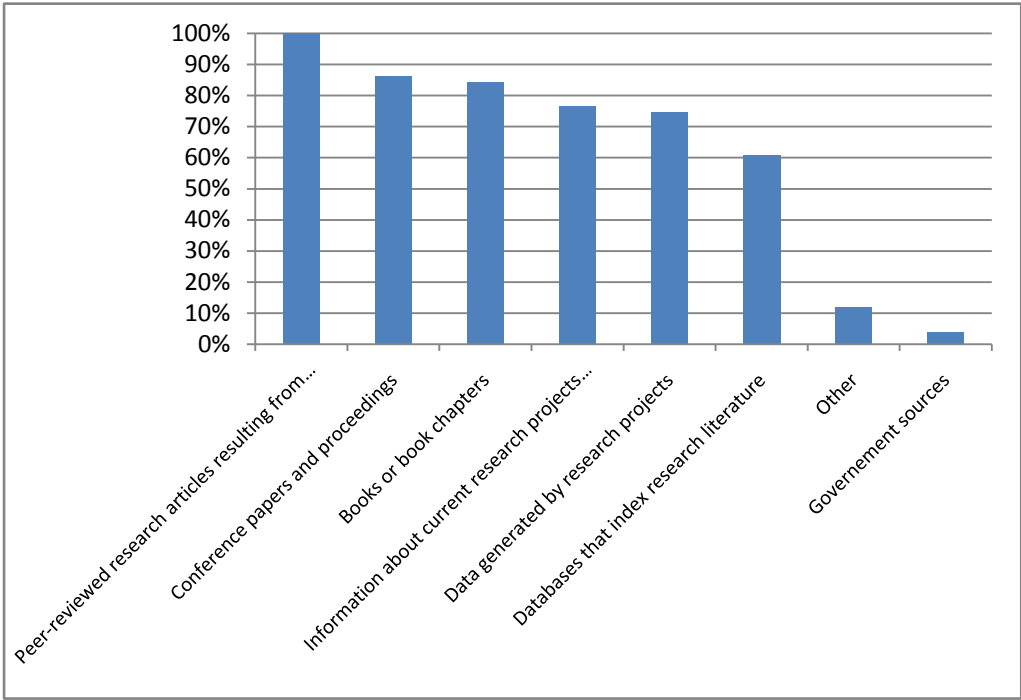
33. Do you have any other comments or questions?



9 Appendix 3: Survey responses

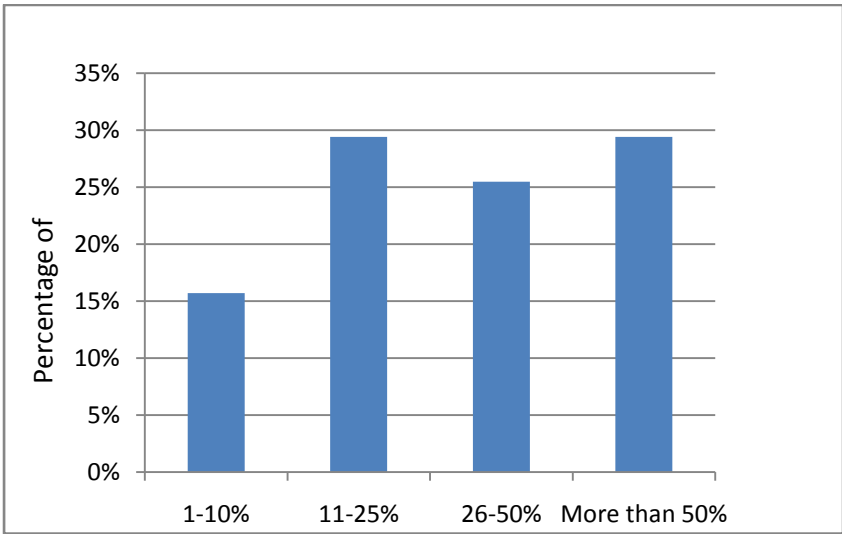
9.1 User Survey

Question 7 :Do you use research information in your work? “Research information” means the outputs of research being carried out in universities and other research organizations. Please tick all that apply



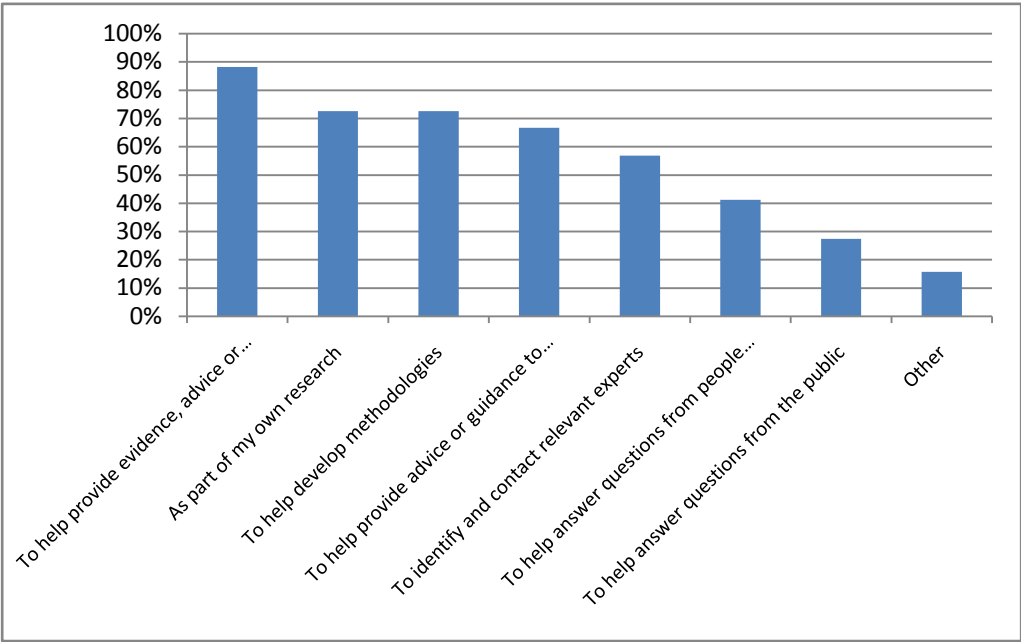
(n=51)

Question 9:How much of your working time do you spend on tasks for which you use research information? Estimate



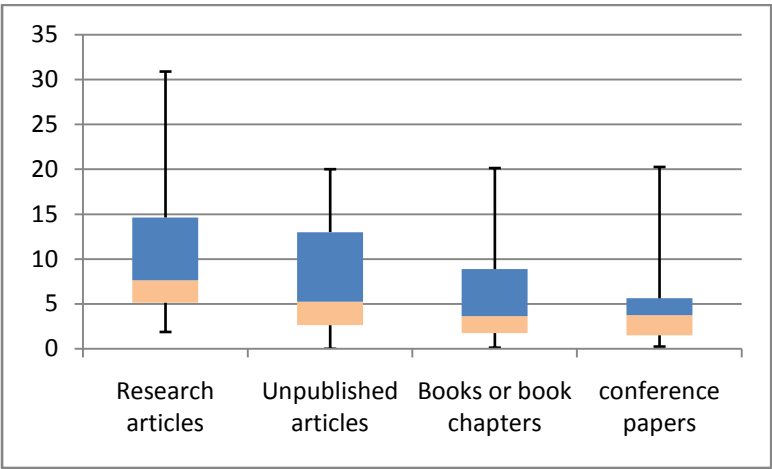
(n=51)

Question 10:What do you use the information for? Please tick all that apply



(n=51)

Question 12:How many items of research information do you use in a typical month? Estimate



	Research articles	Unpublished articles	Books or book chapters	Conference papers
Average	10.14	7.71	5.65	4.85
Stnd Dev	8.99	6.88	6.13	5.84

(n=51)

Question 13: Do you use any of these tools to identify relevant research articles (rank in order of importance from 1 to 8, with 1 being the most important)

	Average	Maximum observations per category							
		Category 1	Category 2	Category 3	Category 4	Category 5	Category 6	Category 7	Category 8
Search Google	5.63	16	12						
Search university websites and repositories	5.38				11	9			
Search specialist indexing services and search engines such as Web of Science, Chemical Abstracts, Education Abstracts	5.50			10					
Search subject repositories such as Social Science Research Network, PubMed Central or ArXiv	4.88						10	7	
Search publishers' databases (Science Direct, Interscience etc)	5.29								
Other	7.50								8
Search Google Scholar	4.63								
Other internet search engine (please specify)	4.50								8

(n=51)

Question 14: If you included "other" in the previous question, please list the resources you use:

Mentioned Sources:

Cochrane
 Dstl internal reports database
 Specific suggestions/recommendations of authors and institutions from advisers with particular domain expertise
 Nice guidelines
 NHSEED
 HEED
 Talking to colleagues and contacts. Reading other articles.
 Email alerts on working papers
 Internal information service team conduct detailed literature searches
 Web of Knowledge
 Ebsco
 IEEEExplore
 NHS Evidence
 Science news websites

(n=16)

Question 15: If you search subject repositories, please say which ones:

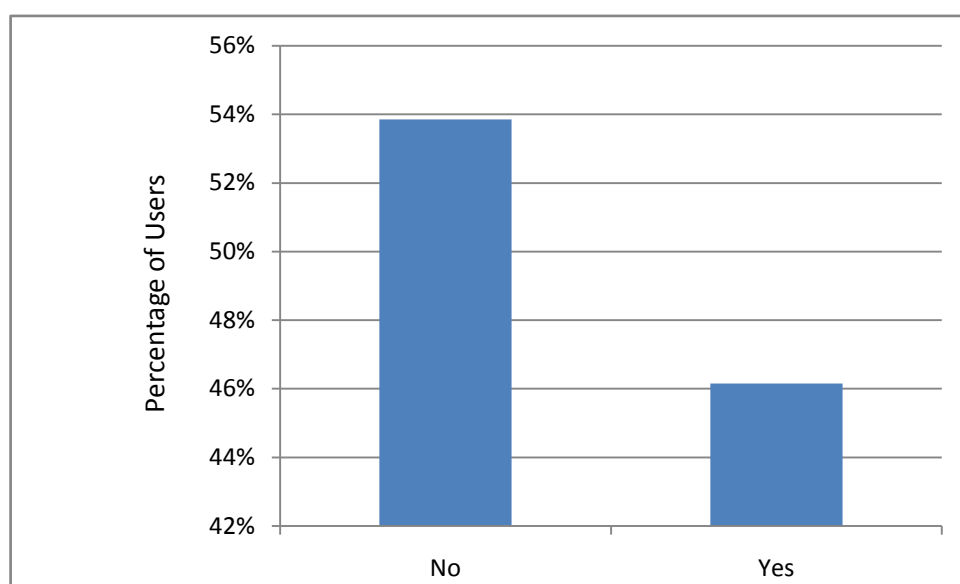
Mentioned sources:

PubMed
Athens Medline
Cochrane library
ArXiv
SSRN
EBSCOHost
Health and Safety
Executive Health
protection agency
SSRN
CiteseerX
EconLit
PHD Date
Ethos
NDLTD
NDLTD
Open DOAR
BioMed

(n=21)

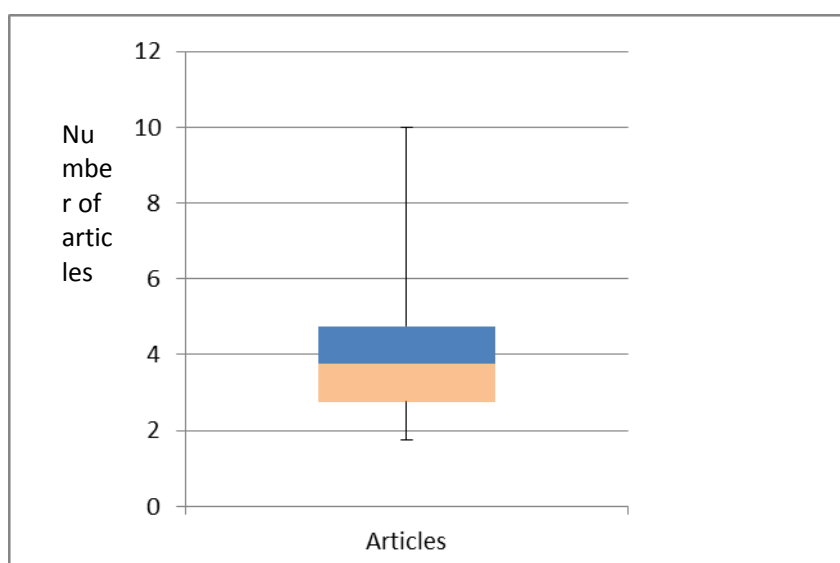
Question 16: Accessing paid-for information

Do you pay for individual articles when you need them (e.g. through a publishers' website or document delivery service)?



(n=50)

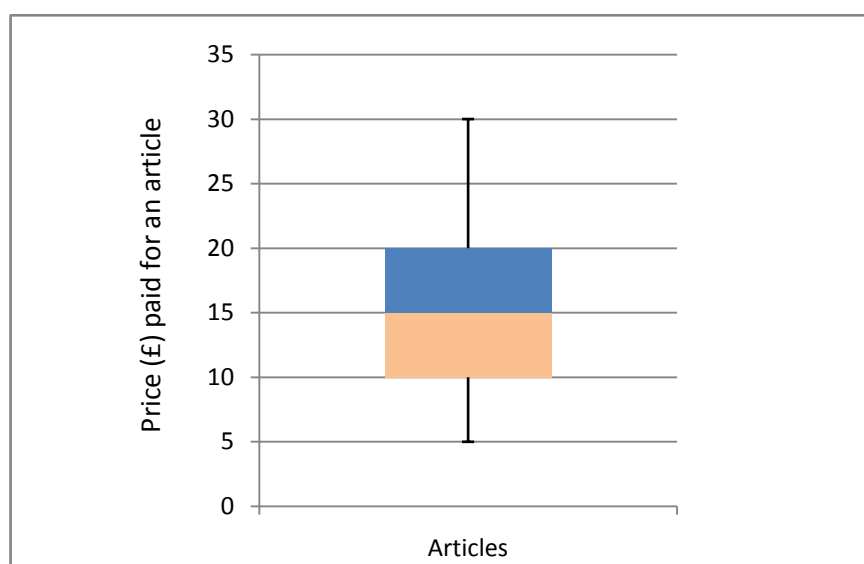
If yes, how many articles would you estimate you buy in a typical month?



Average	2.81
Standard Deviation	2.56

(n=25)

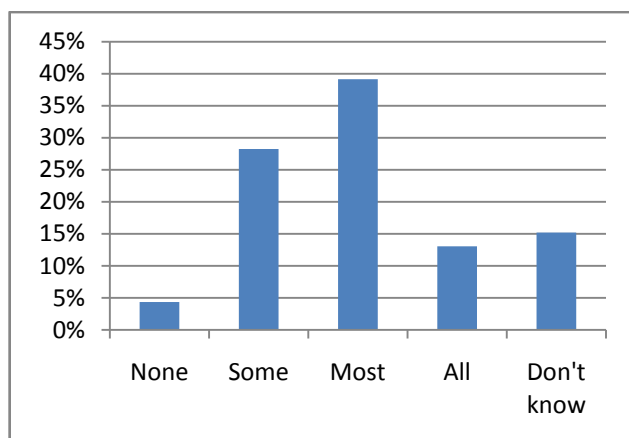
If you have paid for an article, what was the typical price? (in £ sterling)



Average	15.12
Standard Deviation	7.78

(n=19)

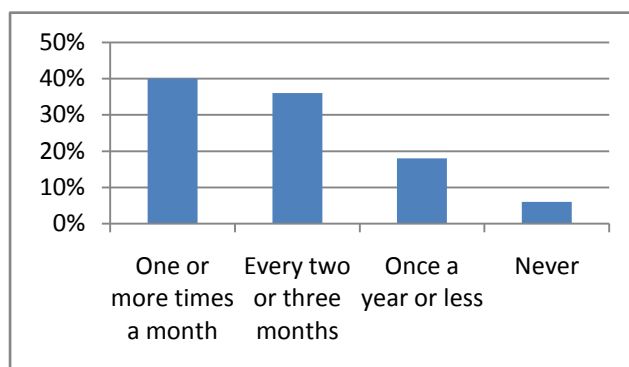
For the articles you do not pay for directly: are any of these articles available to you as part of a subscription paid for by you or by someone else



(n=46)

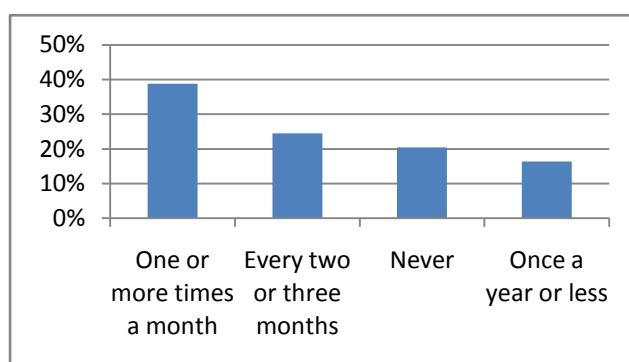
Question 17: Accessing free information

Do you download articles from authors' or university websites or from university repositories?



(n=50)

Do you download articles from subject websites or from subject repositories?



(n=49)

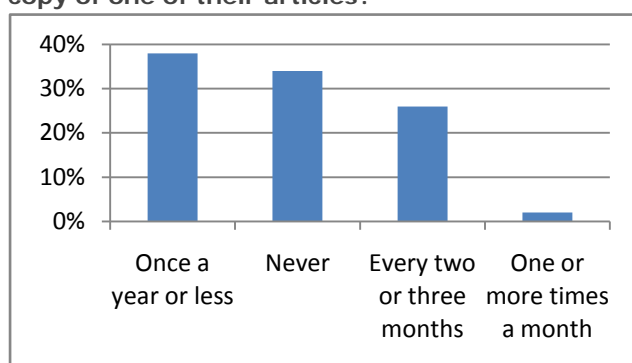
If you have downloaded articles from subject websites or repositories, please list those you can recall using.

Mentioned sources:

PubMed
 Web of Science
 Cochrane library
 ArXiv
 Jstor
 EBSCOHost
 JSTOR
 SSRN
 CiteseerX
 Government department
 Websites
 BMA
 Lancet
 NHS Evidence Ethos
 ND LTD
 Open DOAR
 BioMed
 OpenAccess BMC

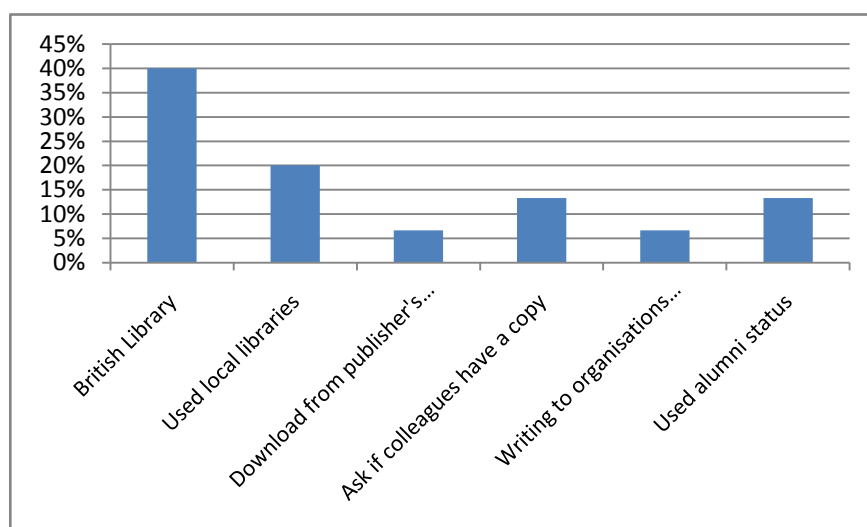
(n=14)

Have you contacted an author to ask them for a copy of one of their articles?



(n=50)

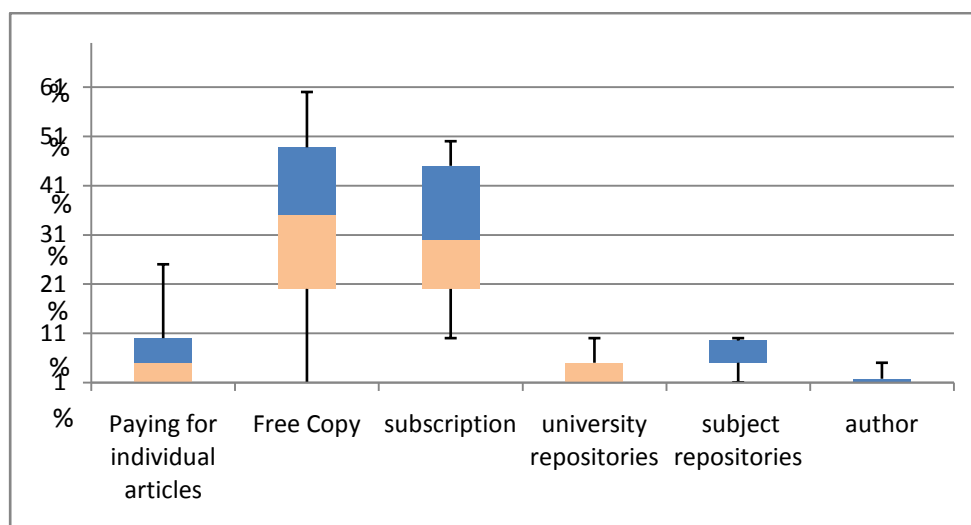
Please describe any other way you have used to obtain a copy of a research article?



(n=17)

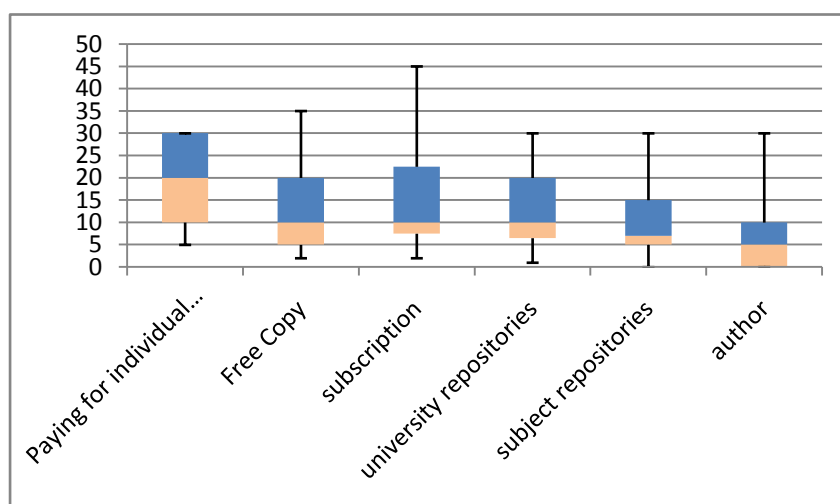
Question 18: Time and resources needed to obtain articles Estimate

% of articles obtained this way

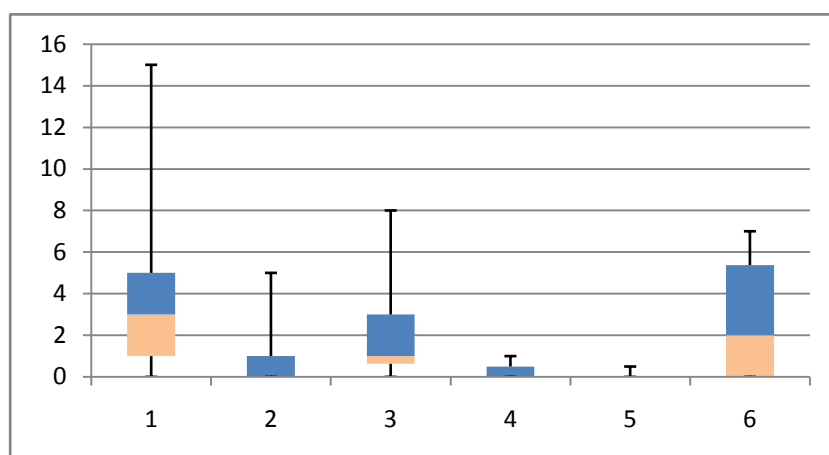


	Paying for individual articles	Free Copy	Subscription	University repositories	Subject repositories	Author
Average	6.84	33.85	31.48	4.33	6.26	1.23
Stnd Dev	8.28	16.57	12.63	3.76	2.66	1.77

(n=43)

How much of your time does it take to obtain an article (minutes)

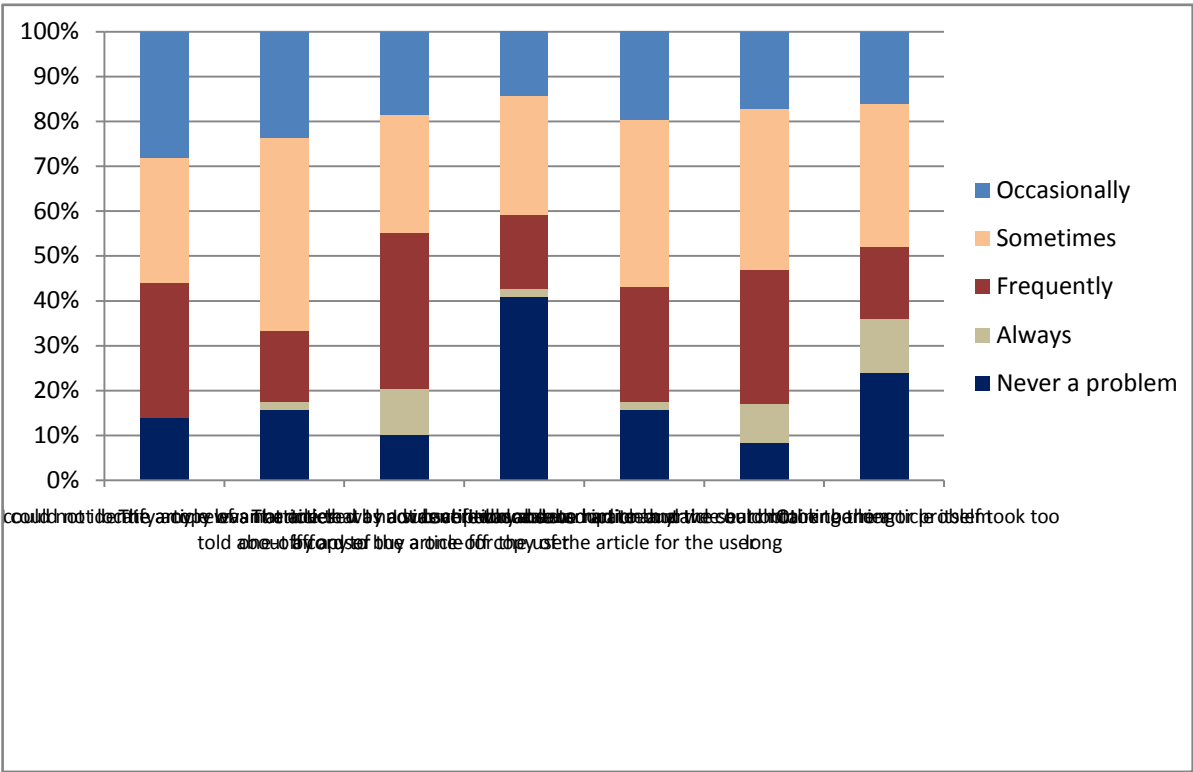
	Paying for individual articles	Free Copy	Subscription	University repositories	Subject repositories	Author
Average	19.50	14.81	15.48	13.54	9.62	7.22
Stnd Dev	9.58	10.20	12.24	8.67	8.16	8.67

(n=43)**How long does it take to obtain the article from the time you have identified it (days)?**

	Paying for individual articles	Free Copy	Subscription	University repositories	Subject repositories	Author
Average	3.53	0.60	2.29	0.27	0.07	2.92
Stnd Dev	3.56	1.11	2.57	0.43	0.18	2.91

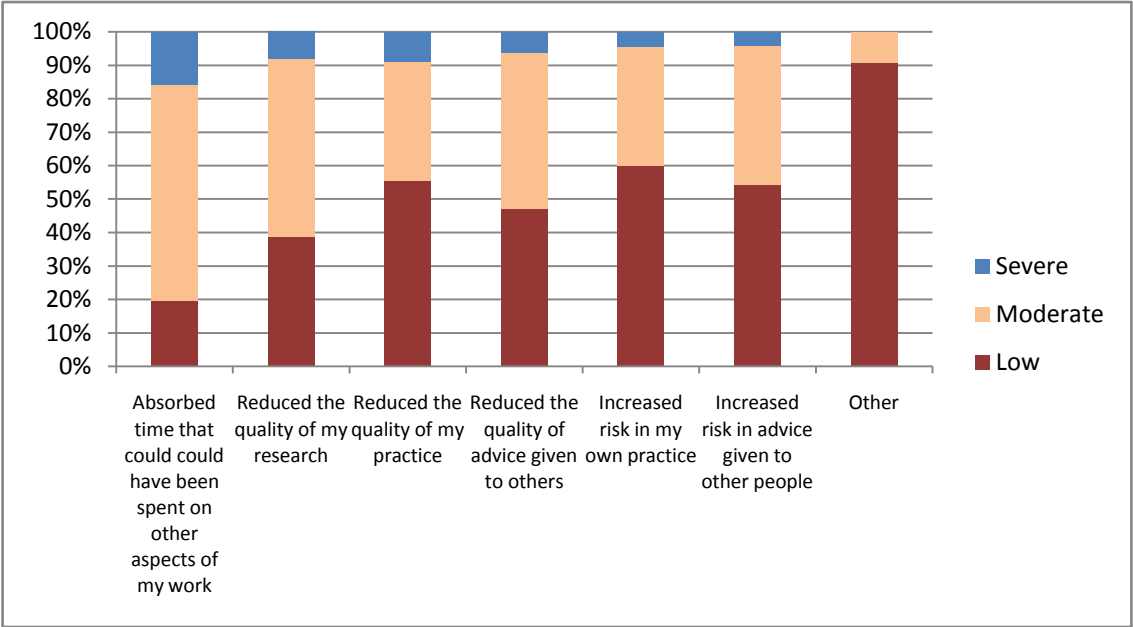
(n=43)

Question 19:Have you encountered any barriers or difficulties in getting hold of research information? Please select all that apply



(n=51)

Question 20:What impact did these barriers or difficulties have on your work? Please tick all that apply

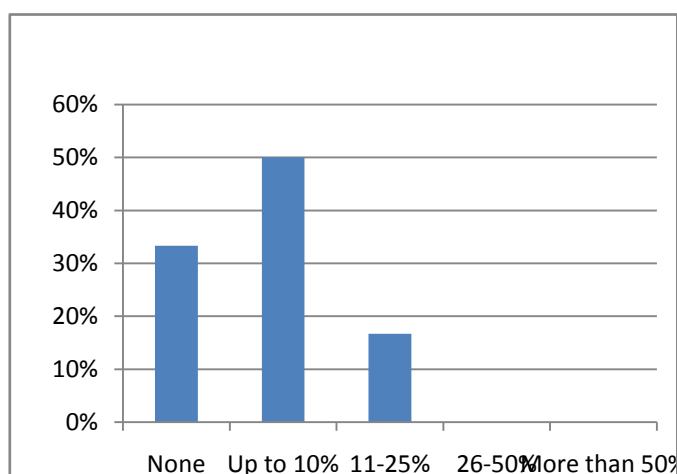


(n=51)

9.2 Librarian Survey

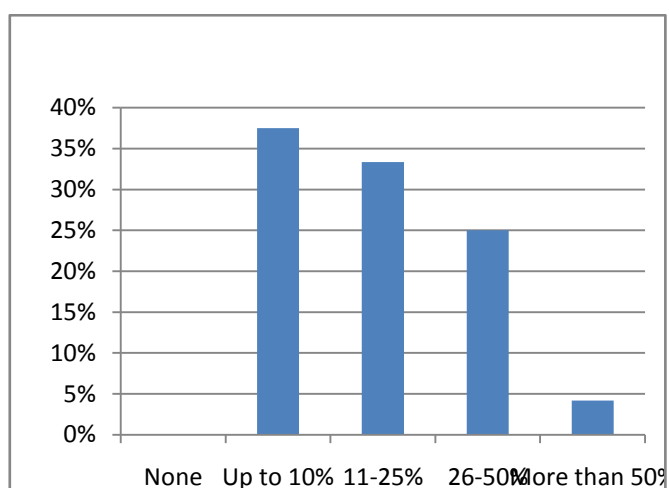
Question 7: What proportion of your time do you spend on the following activities?

Budgeting and/or authorising purchases



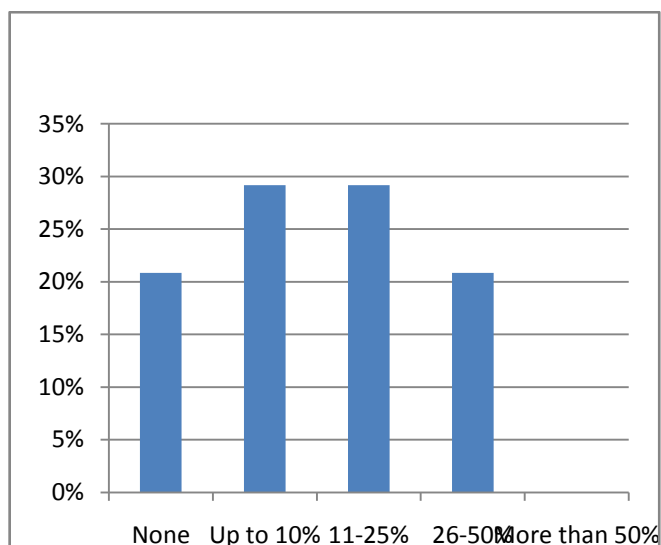
(n=24)

Responding to users' enquiries by identifying resources



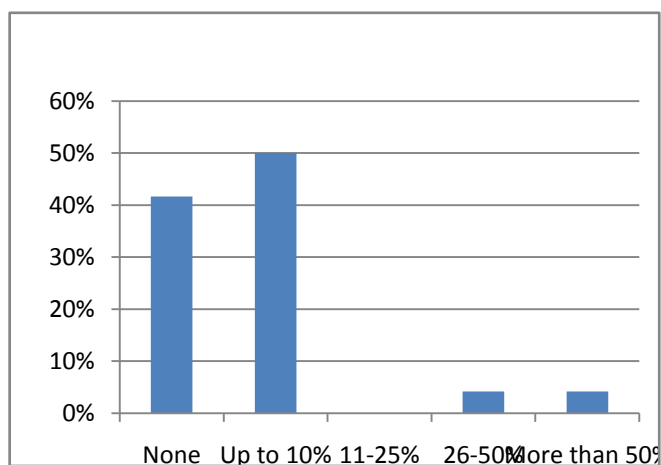
(n=24)

Responding to users' enquiries by carrying out research yourself (e.g. to provide statistics or news analysis)



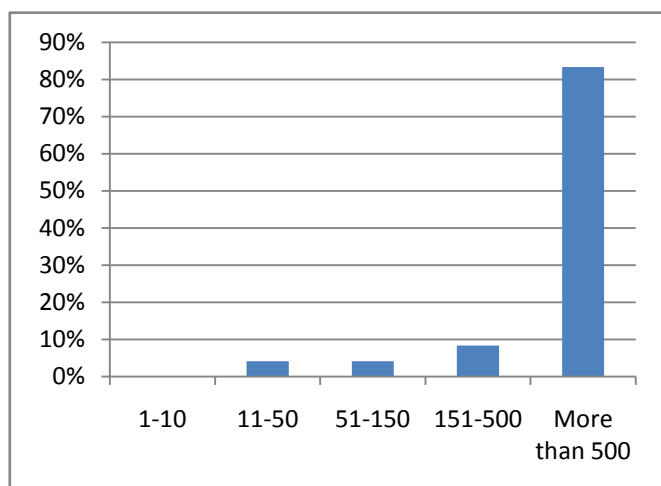
(n=24)

Your own research projects



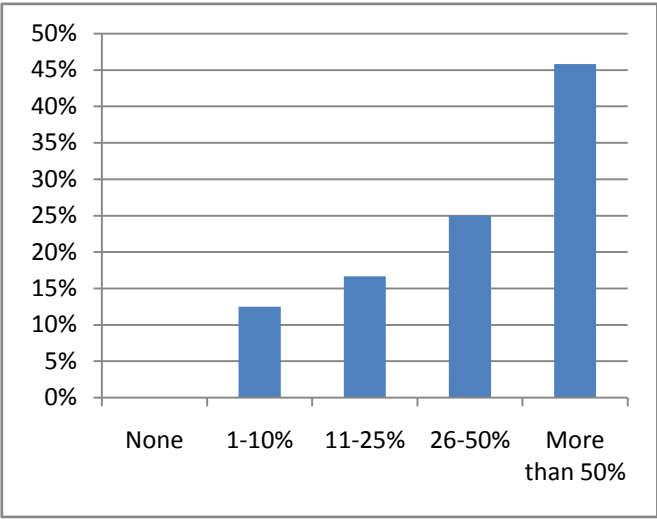
(n=24)

Question 8: How many users do you provide services for?



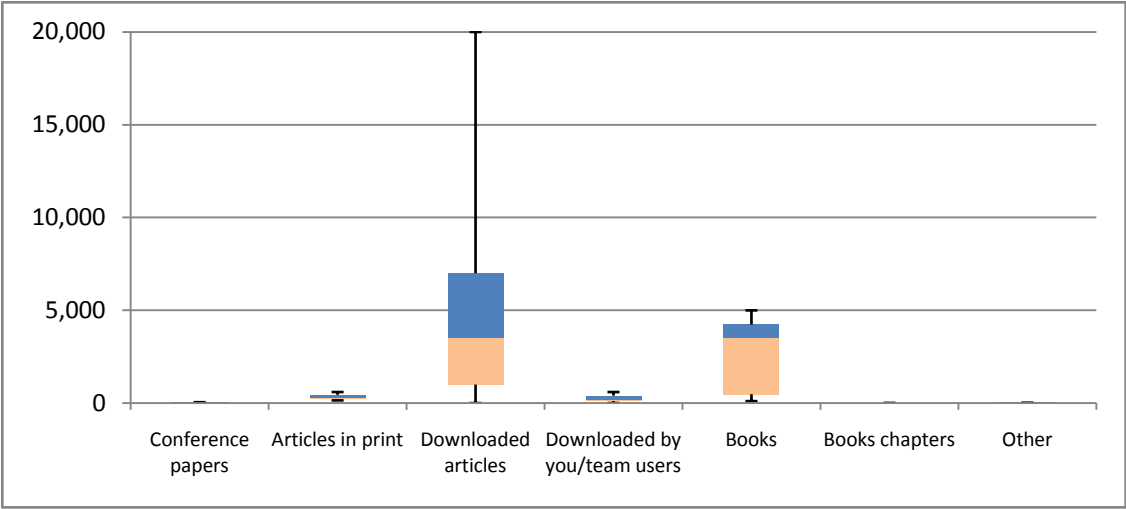
(n=24)

Question 9:How many of those are users of research articles?



(n=24)

Question 11:Do you provide your users with research articles, conference papers, books or book chapters? Approximate annual number of each:



	Conference papers	Articles in print	Downloaded articles	Downloaded by you/team users	Books	Books chapters	Other
Average	13.30	350.00	6301.00	260.00	2576.57	3.50	10.00
Standard Deviation	15.24	229.13	8119.99	231.66	2128.14	2.12	14.14

(n=11)

Question 12: Do you help your users identify relevant research articles using these tools (rank in order of importance from 1 to 8, with 1 being the most important)

	Maximum observations per category								
	Average	Category 1	Category 2	Category 3	Category 4	Category 5	Category 6	Category 7	Category 8
Search subject repositories such as Social Science Research Network, PubMed Central or ArXiv (please specify which repositories)	2.83						4		
Search publishers' databases (Science Direct, Interscience etc)	2.50			5					
Search specialist indexing services and search engines such as Web of Science, Chemical Abstracts, Education Abstracts, (please specify which)	2.38		4						3
Search Google	2.43				4				
Search university websites and repositories	1.88					4			
Search Google Scholar	3.00							4	
Other internet search engine (please specify)	5.67	9							

(n=23)

Question 13: If you included "other" in the previous question, please list the resources you use:

Mentioned sources: _____

NHS

Cochrane

Ebsco

HDAS

TRIP database

Scirus

OVID

Health care databaes _____

(n=13)

Question 14: If you search subject repositories, please say which ones:

Mentioned sources:

PubMed Central

NHS Evidence

Pubmed

SSRI

Web of Science

IRISS

SSRN

Biomed Central

CVR

Medline

Cinahl

EmBase

NDLTD

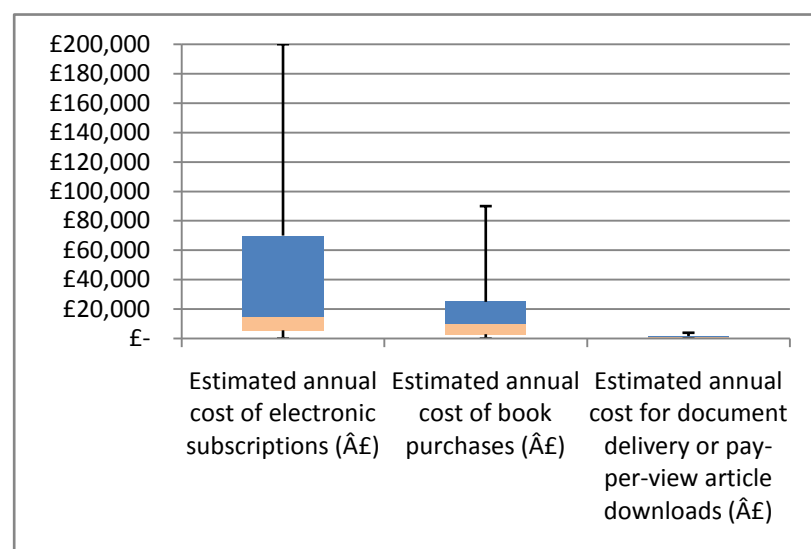
Open DOAR

BioMed

OpenAccess BMC

(n=12)

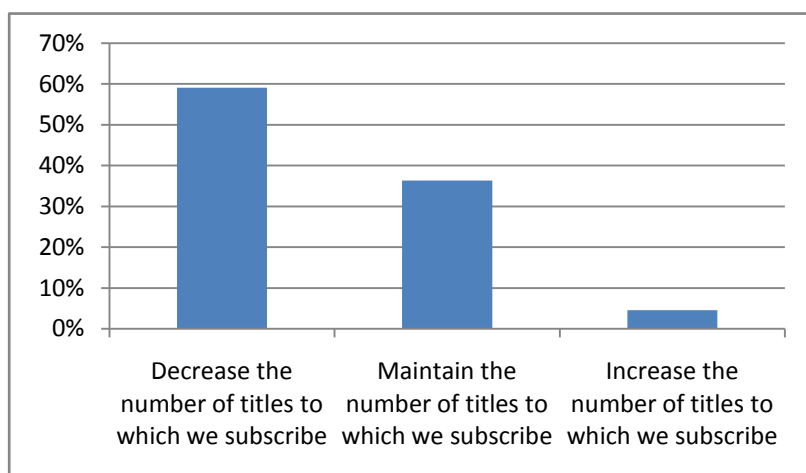
Question 15: Subscription and other costs



	Estimated annual cost of electronic subscriptions (£)	Estimated annual cost of book purchases (£)	Estimated annual cost for document delivery or pay-per-view article downloads (£)
Average	44617.45	17515.38	1234.44
Standard Deviation	62714.38	24154.08	1385.43

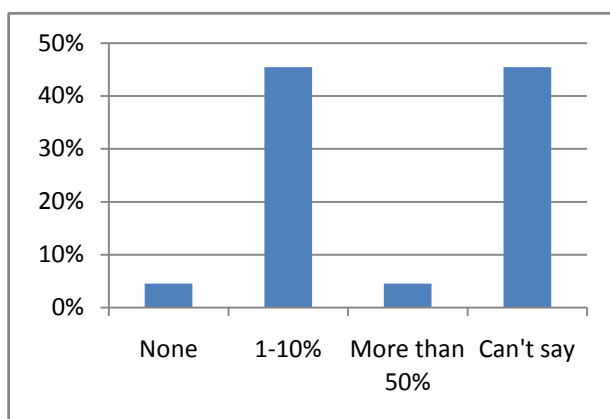
(n=15)

Question 16: Is the general trend in your organisation to:



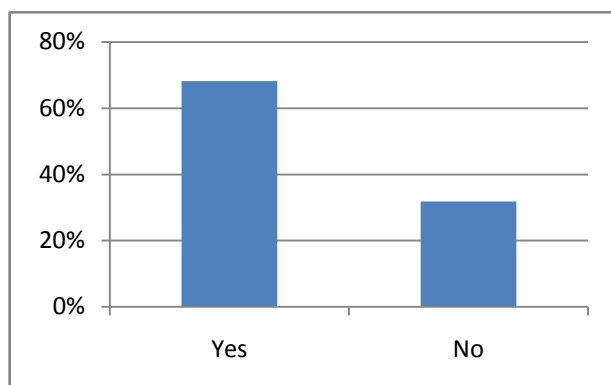
(n=22)

Question 17: What proportion of your users would you estimate are aware of Open Access to research articles?



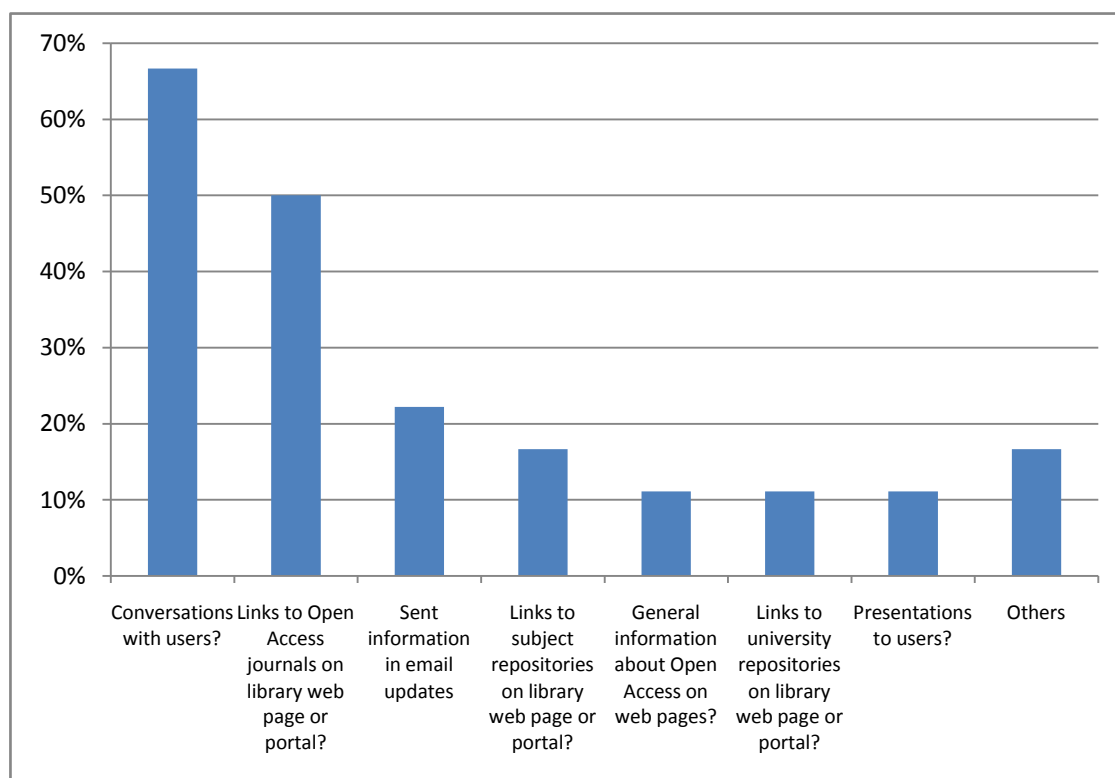
(n=22)

Question 18: Have you been able to provide them with information about Open Access?



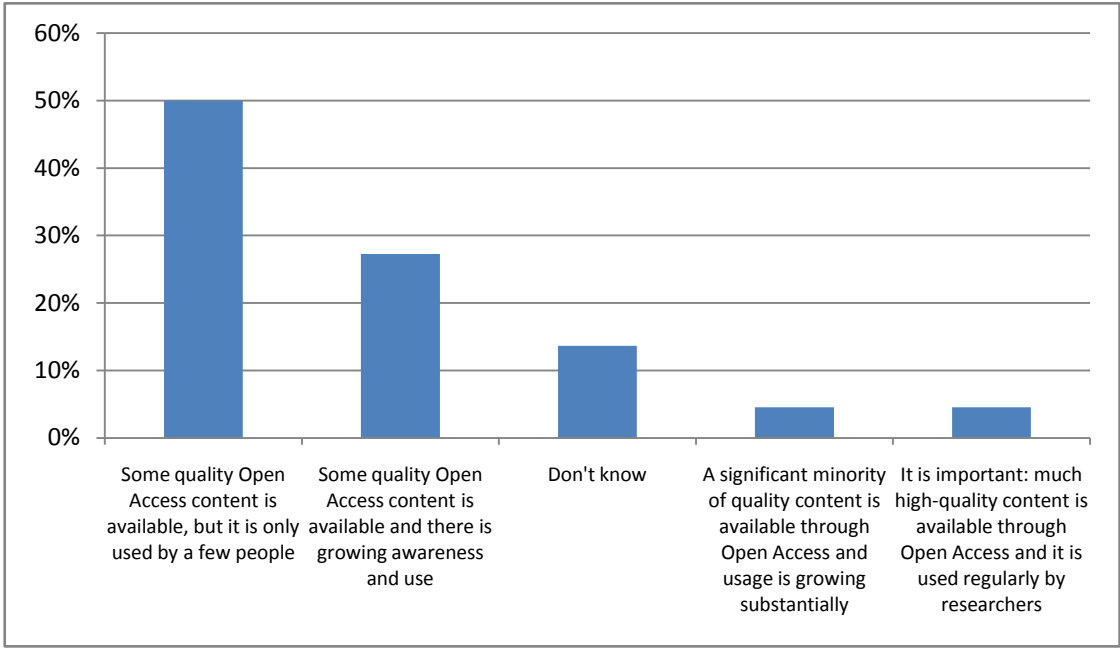
(n=22)

Question 19: How have you provided your users with information about Open Access? Choose all that apply



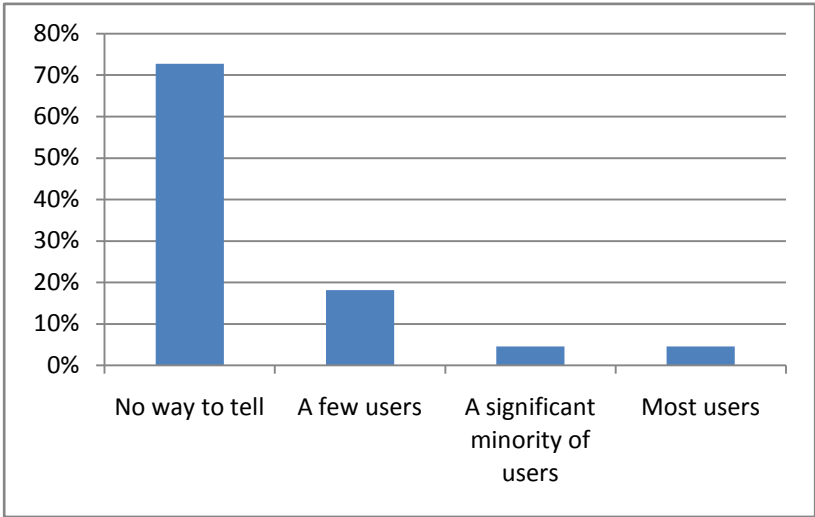
(n=18)

Question 20: Which of these scenarios best describes the availability and use of Open Access for your users?



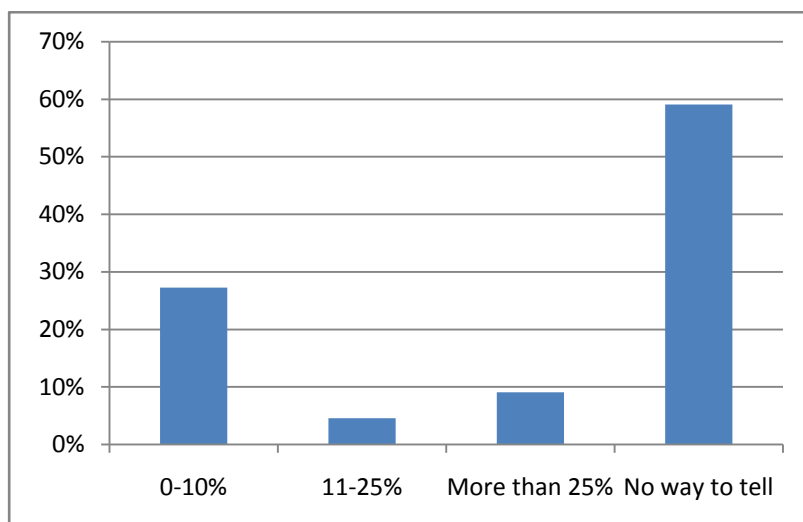
(n=22)

Question 21: Do you know if any of your users have downloaded Open Access articles?



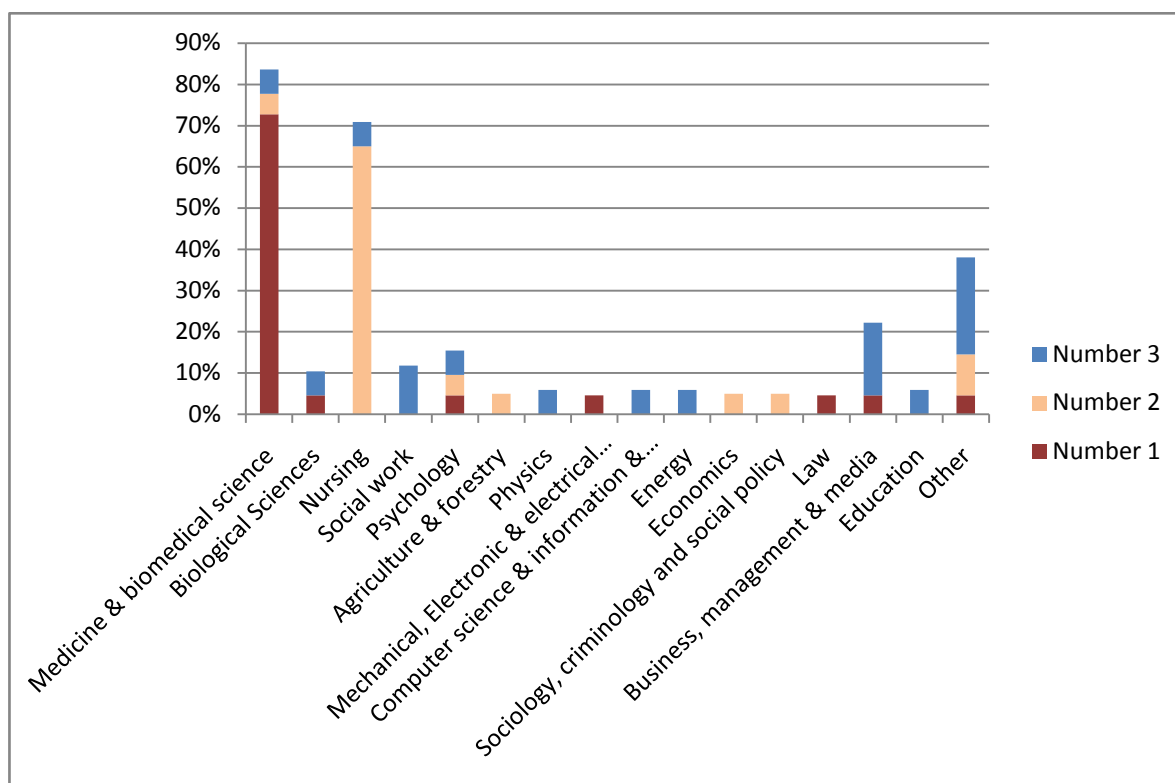
(n=22)

Question 22: What proportion of research articles downloaded by your users would you estimate are Open Access?



(n=22)

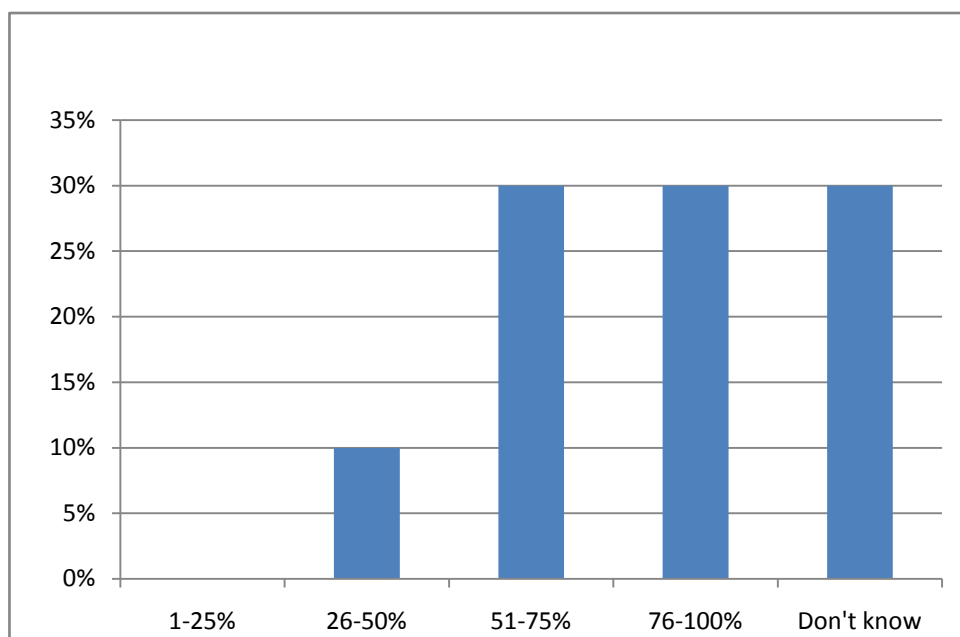
Question 23: Please select the three most important areas that your users work in (1=most important)



(n=22)

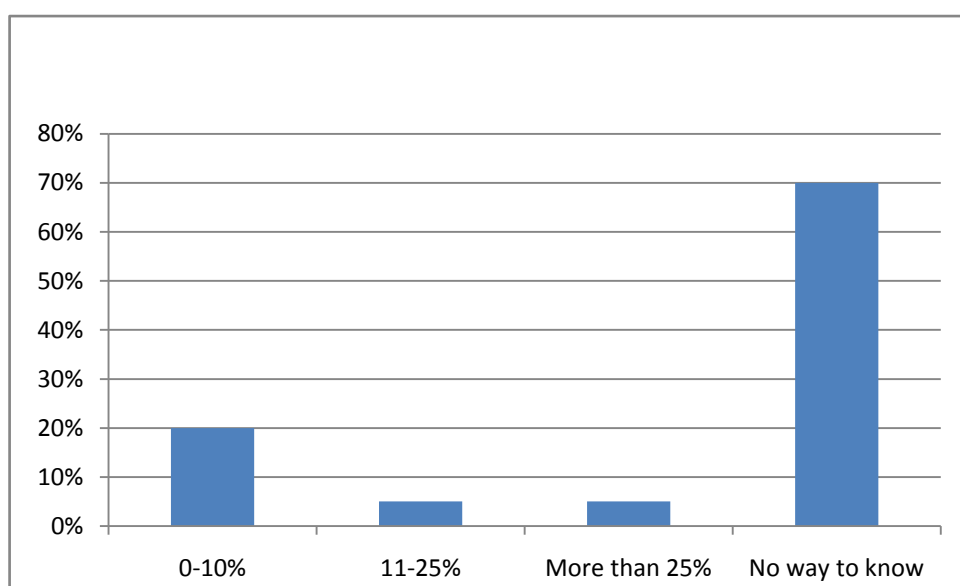
Question 24: For your choice for subject area 1 in Question 23, please estimate:

% of your journal subscription costs



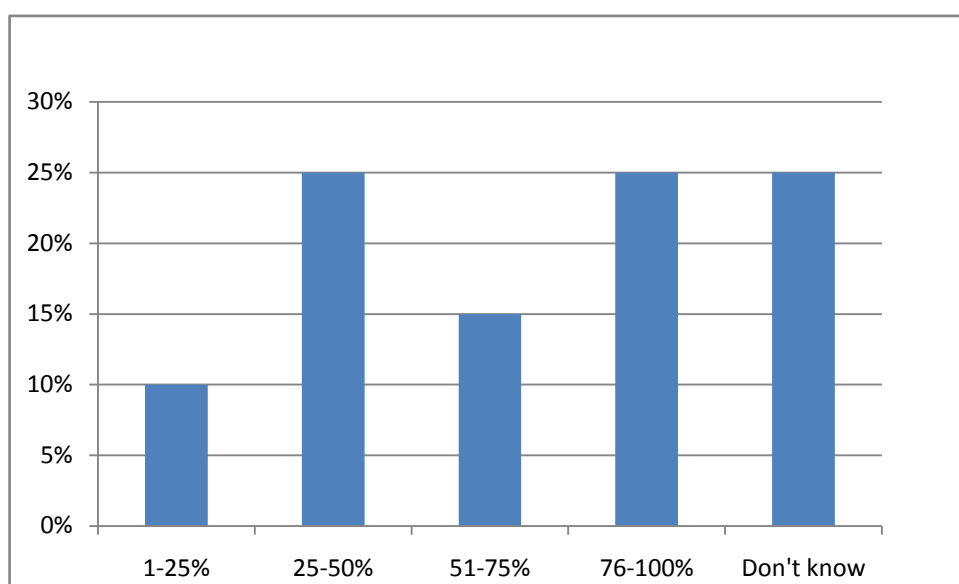
(n=20)

% of downloads that are Open Access



(n=20)

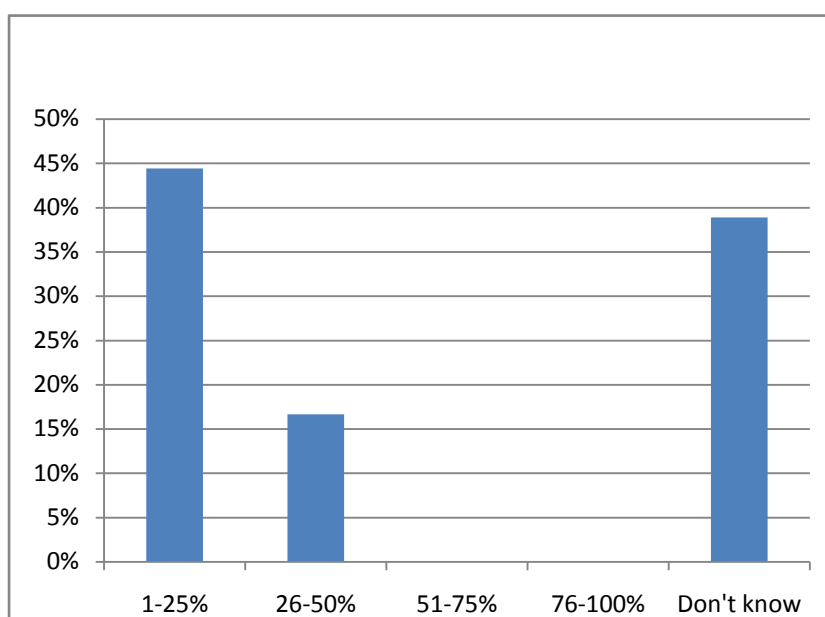
% of users working in this area



(n=20)

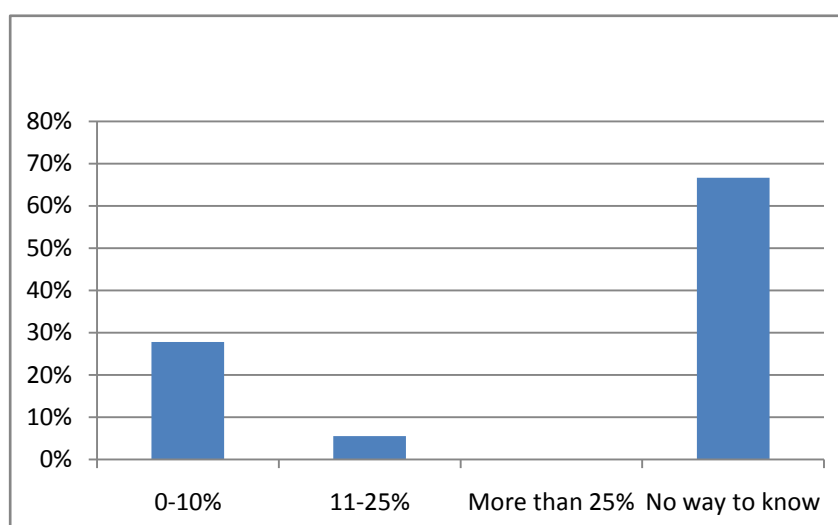
Question 25: For your choice for subject area 2 in Question 23, please estimate:

% of your journal subscription costs



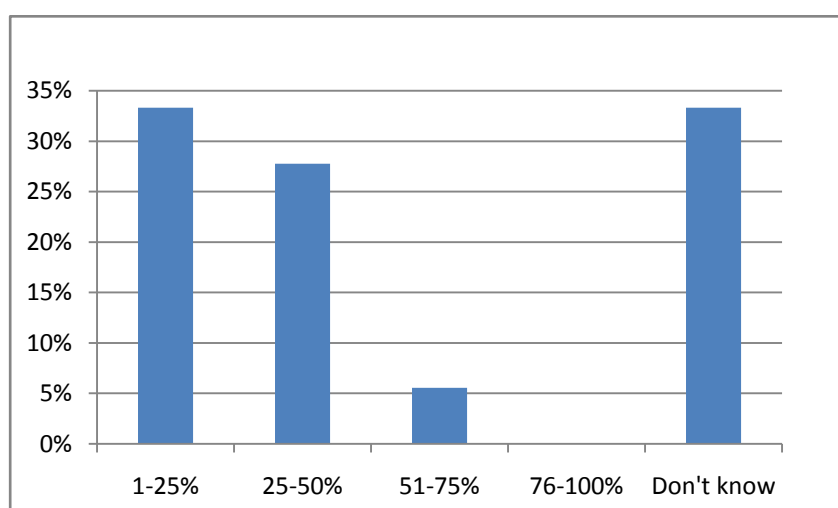
(n=18)

% of downloads that are Open Access



(n=18)

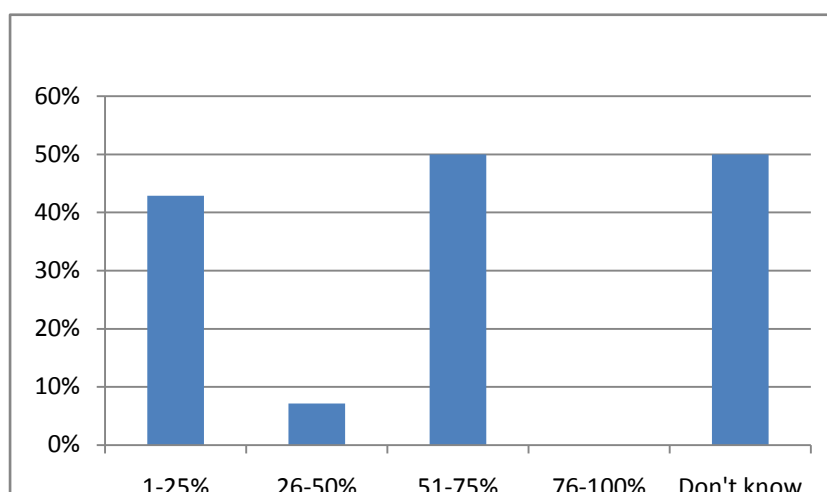
% of users working in this area



(n=18)

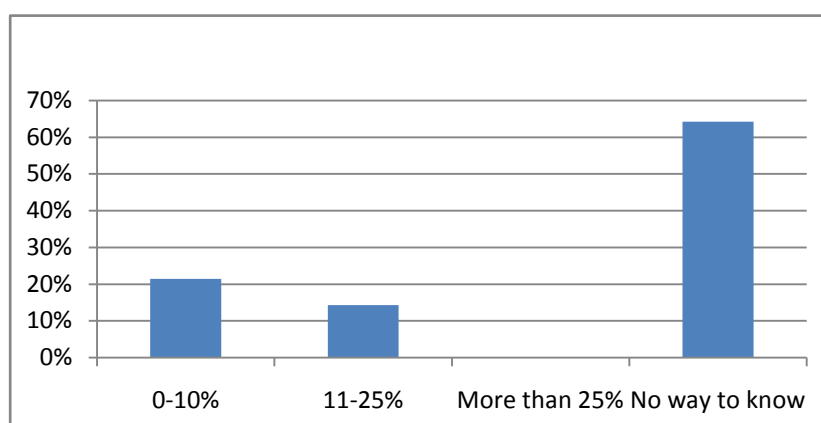
Question 26: For your choice for subject area 3 in Question 23, please estimate:

% of your journal subscription costs



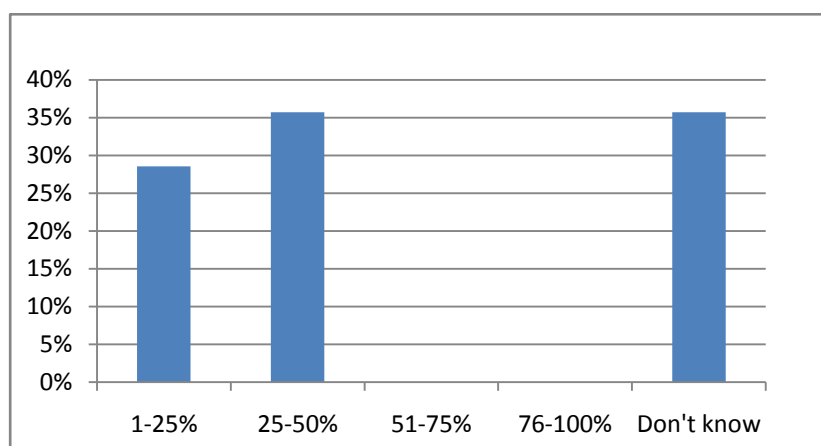
(n=14)

% of downloads that are Open Access



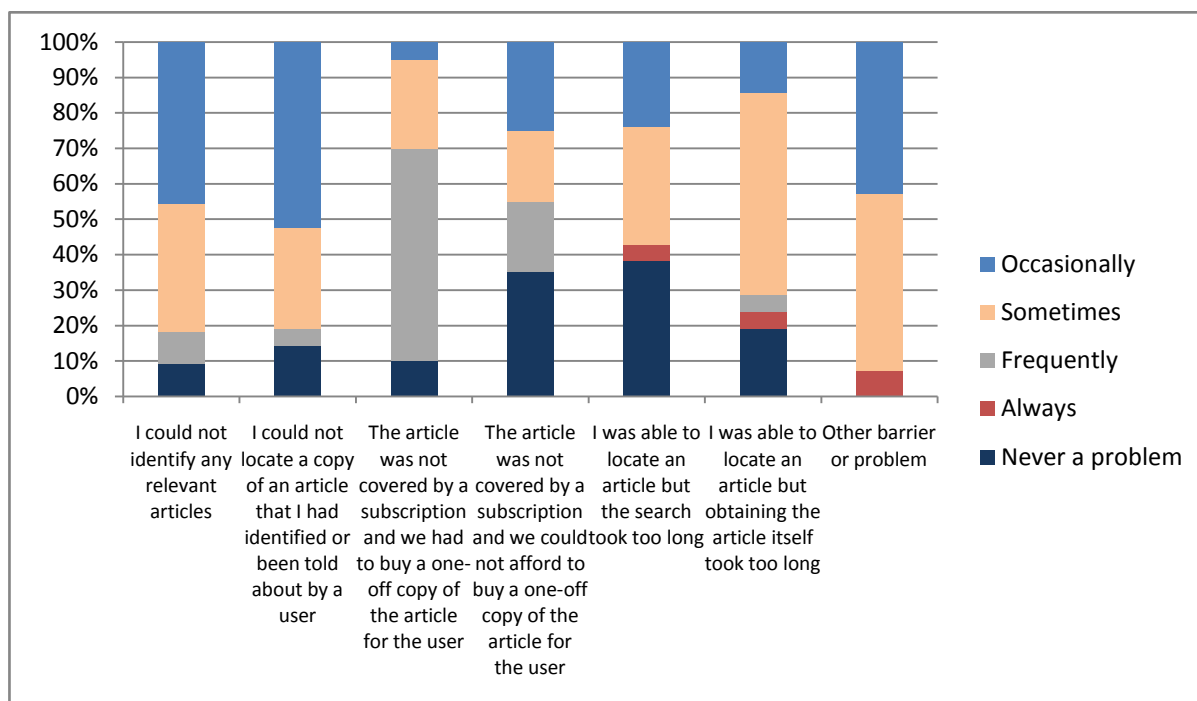
(n=14)

% of users working in this area



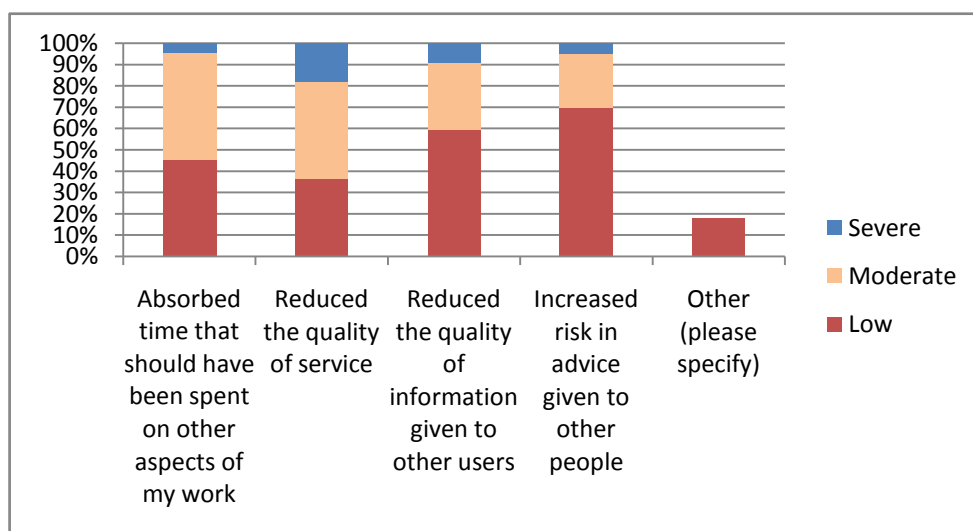
(n=14)

Question 27: Have you encountered any barriers or difficulties in getting hold of research information for your users? Please tick all that apply



(n=22)

Question 28: What impact did these barriers or difficulties have on your work? Please tick all that apply



(n=22)

10 Appendix 4: Economic model

10.1 The current cost of accessing journal articles

Figure 21: Model of the cost of current routes of access for journal articles (£2011)

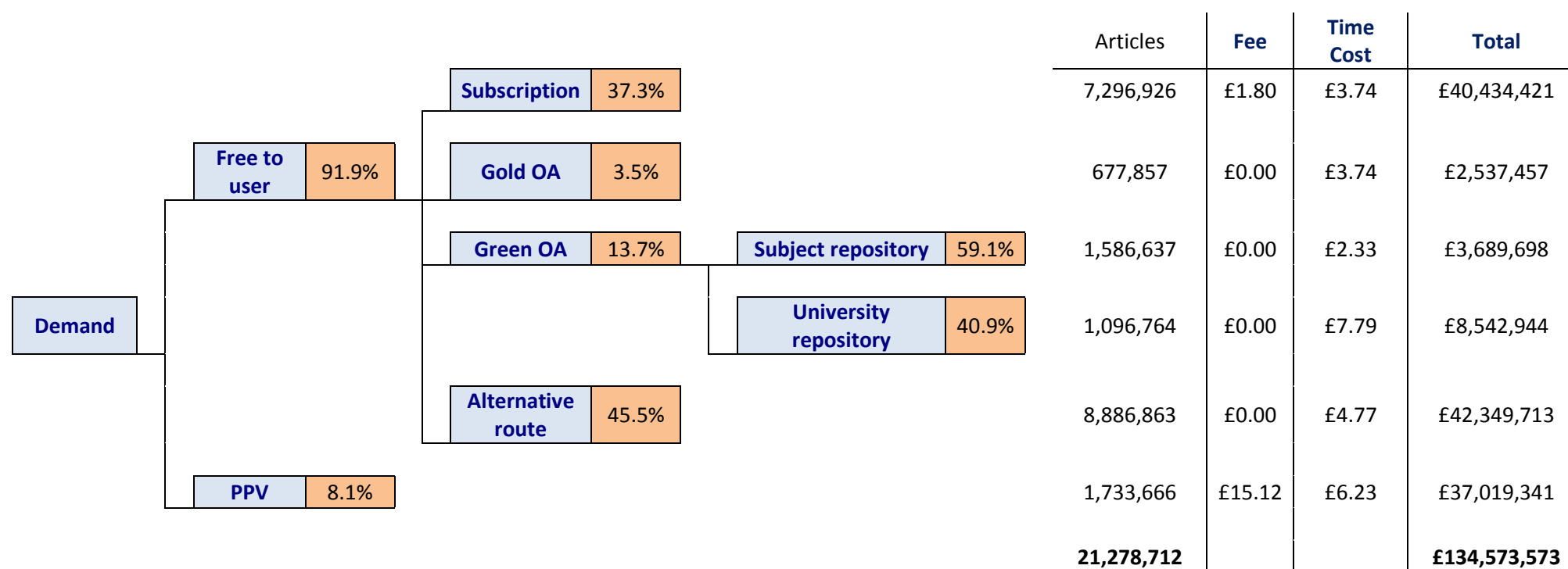


Table 4: Data used to populate the model of the current cost of accessing journal articles

Parameter	Value	Calculation	Source
Baseline			
Volumes			
Number of users of academic literature	101,384		http://www.civilservice.gov.uk/about
Number of downloads per user	210	Monthly average of published research articles*12	Users Survey
Demand for academic literature, articles	21,278,712	Number of downloads per user*Number of users of academic literature	Calculation
Probabilities			
Free for the user	92%	%Subscription+%Gold OA+%Subject rep+%University rep+Searching for free copy+%Contacting author	Users Survey
PPV	8%	100-(%Free for the user)	Users Survey
Articles accessed through organisation subscription	37%	Articles accessed through organisation subscription *(100%-% of subscription articles available as Gold OA)	Users Survey
Articles accessed through Gold OA	3%	Articles accessed through organisation subscription *8.5%	Users Survey, Björk et al (2010)
Articles accessed through Green OA	14%	100-(%Articles accessed through subscription+%Articles accessed through GoldOA+Alternative route)	Users Survey
Articles accessed through Green OA - subject rep	59%	%Articles accessed through subject rep/(%Articles accessed through subject rep+%Articles accessed through university rep)	Users Survey
Articles accessed through Green OA - university rep	41%	%Articles accessed through university rep/(%Articles accessed through subject rep+%Articles accessed through university rep)	Users Survey
Alternative route	45%	%Searching for a free copy+%Contacting the author	Users Survey
Cost			

Cost of academic article through subscription, per article	£1.80	n/a	RIN (2008) uplifted to 2011 prices
Cost of PPV/document delivery per article	£15.12	Q16	Users survey
Cost of Gold OA	£0.00	n/a	Assumption
Cost of Green OA	£0.00	n/a	Assumption
Cost of Green OA subject rep	£0.00	n/a	Assumption
Cost of Green OA university rep	£0.00	n/a	Assumption
Cost of Alternative route	£0.00	n/a	Assumption
Time required for Green access subject rep (min)	9.62	Q18 (time)	Users Survey
Time required for subscription (min)	15.48	Q18 (time)	Users Survey
Time required for Gold access (min)	15.48	n/a	Assumption - the same as for subscription
Time required for Alternative route (min)	19.71	Time for searching for a free copy+Time to contact author+(Time for subscription*% of users searching through subscription before going through alternative route (<i>Assumption</i>))+Time for subject rep *% of users searching through subject repository before going through alternative route(<i>Assumption</i>))	Users Survey, Assumption
Time required for PPV	25.78	Time for PPV+(Time for subscription*% of users searching through subscription before PPV(<i>Assumption</i>))+Time for subject rep *% of users searching through subject repository before PPV(<i>Assumption</i>))+Time for searching for a free copy*% of users searching for a free copy before PPV(<i>Assumption</i>))	Users Survey, Assumption
Time required for Green access university rep (min)	32.22	Time for university rep+(Time for subscription*% of users with subscription that use university repository(<i>Assumption</i>))+Time for searching for a free copy	Users Survey, Assumption
Unit cost of time	£0.24	Median public sector pay*Average weekly hours	Based on median annual earnings for civil servants and the average actual hours worked for public sector and administration

10.2 The cost of accessing journal articles without Gold Open Access

Figure 22: Model of the cost of routes of access for journal articles without Gold Open Access (£2011)

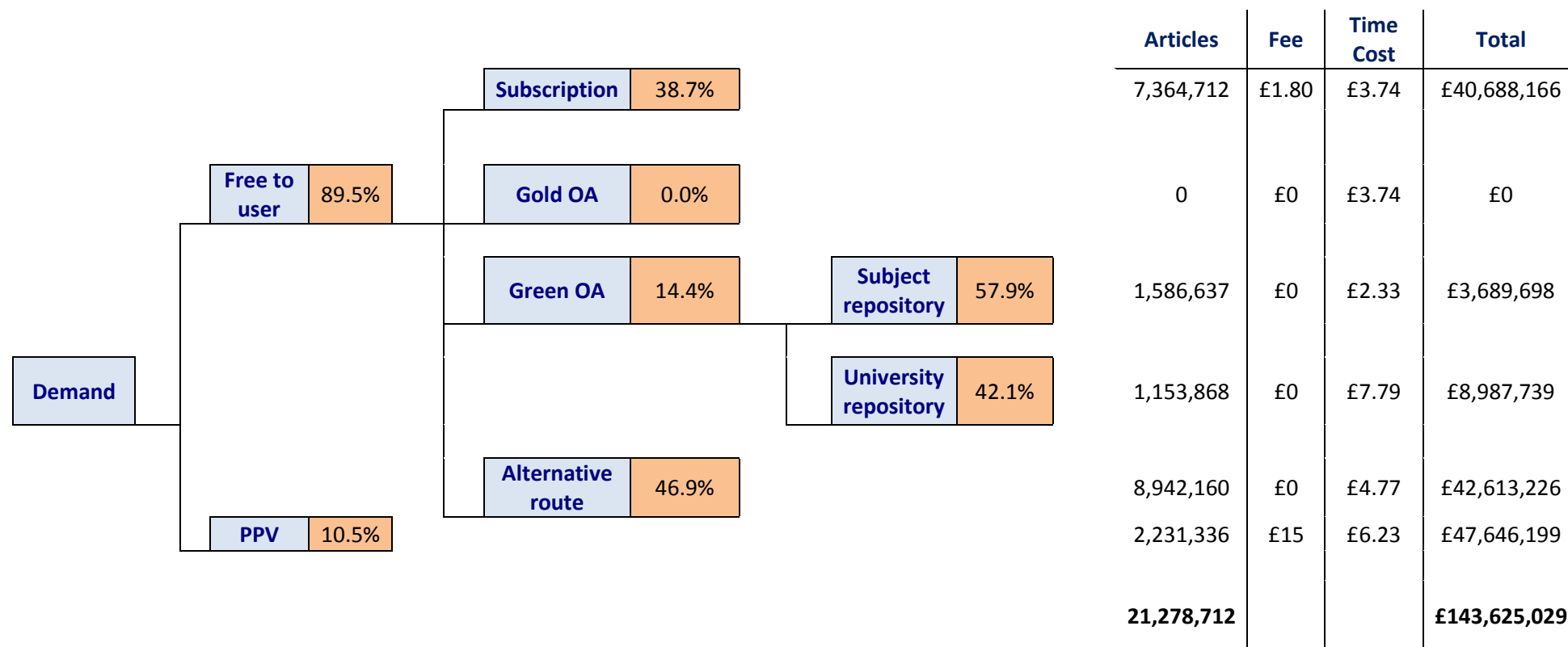


Table 5: Data used to populate the model of the cost of accessing journal articles without Gold Open Access (parameters different from those in Table 4).

Parameter	Value	Calculation	Source
<i>Probabilities</i>			
Free for the user	90%	%Subscription+%Gold OA+%Subject rep+%University rep+Searching for free copy+%Contacting author	Users Survey
PPV	10%	100-(%Free for the user)	Users Survey
Articles accessed through organisation subscription	39%	Articles accessed through organisation subscription *(100%-% of subscription articles available as Gold OA)	Users Survey
Articles accessed through Gold OA	0%	Articles accessed through organisation subscription *8.5%	Users Survey, Björk et al (2010)
Articles accessed through Green OA	14%	100-(%Articles accessed through subscription+%Articles accessed through GoldOA+Alternative route)	Users Survey
Articles accessed through Green OA-subject rep	58%	%Articles accessed through subject rep/(%Articles accessed through subject rep+%Articles accessed through university rep)	Users Survey
Articles accessed through Green OA - university rep	42%	%Articles accessed through university rep/(%Articles accessed through subject rep+%Articles accessed through university rep)	Users Survey
Alternative route	47%	%Searching for a free copy+%Contacting the author	Users Survey

10.3 The cost of accessing journal articles without Green Open Access

Figure 23: Model of the cost of routes of access for journal articles without Green Open Access (£2011)

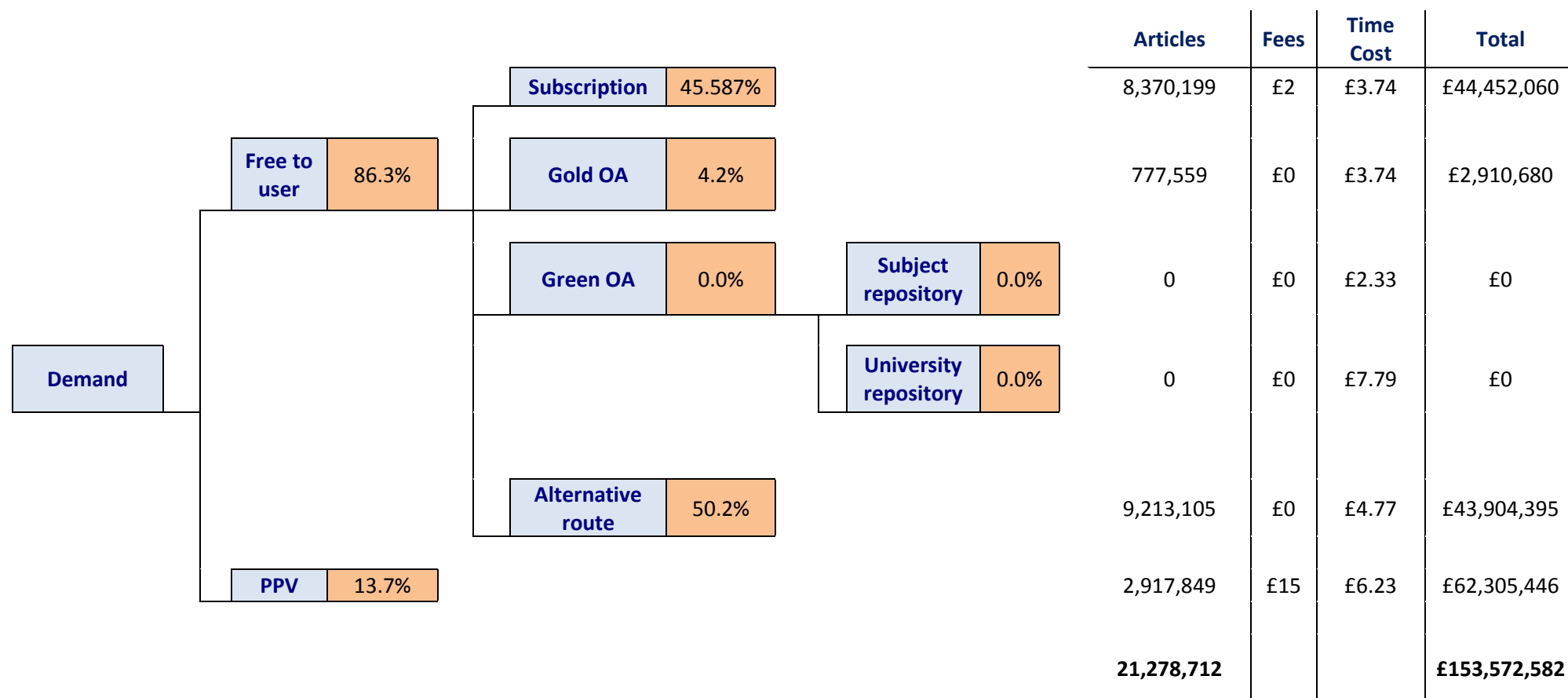


Table 6: Data used to populate the model of the cost of accessing journal articles without Green Open Access (parameters different from those in Table 4).

Parameter	Value	Calculation	Source
<i>Probabilities</i>			
Free for the user	86%	%Subscription+%Gold OA+%Subject rep+%University rep+Searching for free copy+%Contacting author	Users Survey
PPV	14%	100-(%Free for the user)	Users Survey
Articles accessed through organisation subscription	46%	Articles accessed through organisation subscription *(100%-% of subscription articles available as Gold OA)	Users Survey
Articles accessed through Gold OA	4%	Articles accessed through organisation subscription *8.5%	Users Survey, Björk et al (2010)
Articles accessed through Green OA	0%	100-(%Articles accessed through subscription+%Articles accessed through GoldOA+Alternative route)	Users Survey
Articles accessed through Green OA-subject rep	0%	%Articles accessed through subject rep/(%Articles accessed through subject rep+%Articles accessed through university rep)	Users Survey
Articles accessed through Green OA - university rep	0%	%Articles accessed through university rep/(%Articles accessed through subject rep+%Articles accessed through university rep)	Users Survey
Alternative route	50%	%Searching for a free copy+%Contacting the author	Users Survey

10.4 The cost of accessing journal articles without Gold or Green Open Access

Figure 24: Model of the cost of routes of access for journal articles without Gold or Green Open Access (£2011)

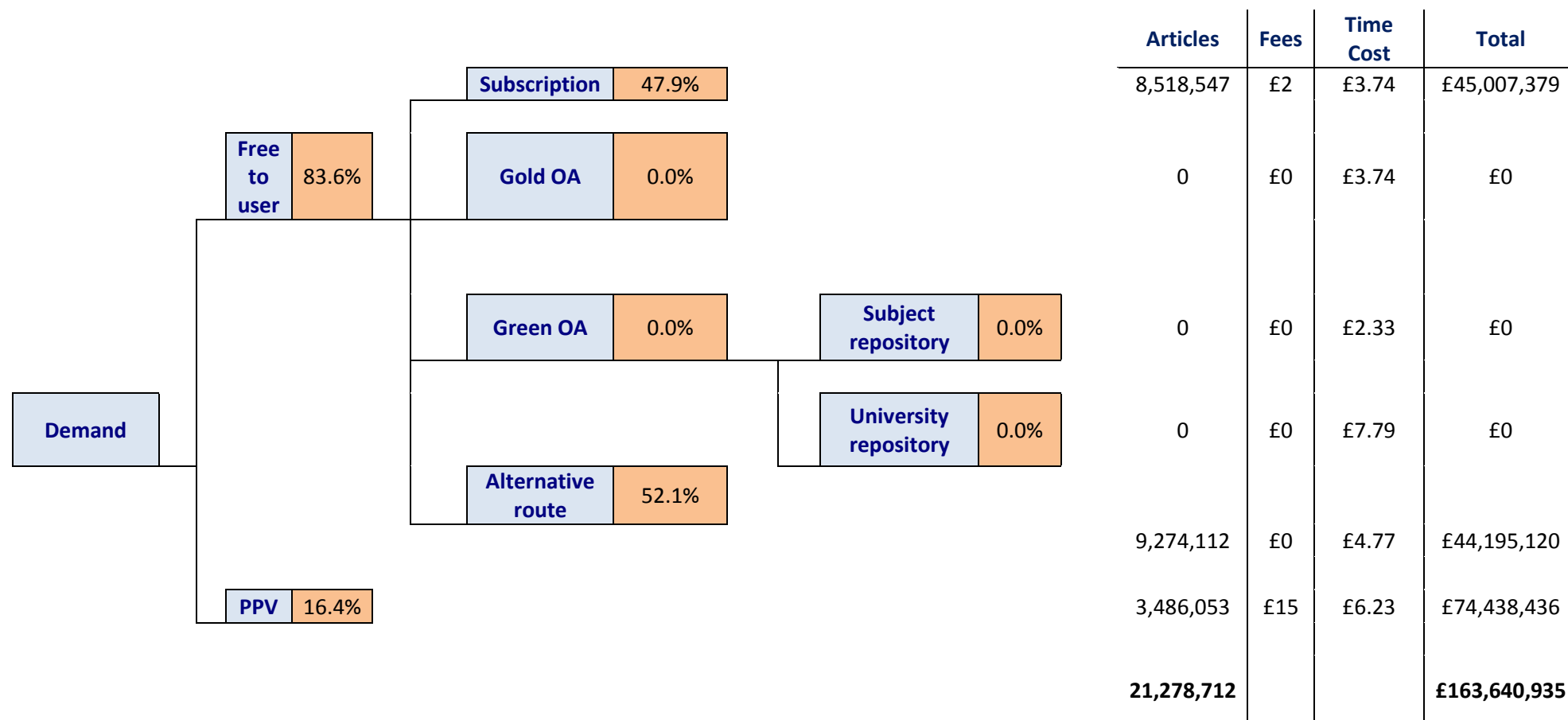


Table 7: Data used to populate the model of the cost of accessing journal articles without Gold or Green Open Access (parameters different from those in Table 4).

Parameter	Value	Calculation	Source
<i>Probabilities</i>			
Free for the user	84%	%Subscription+%Gold OA+%Subject rep+%University rep+Searching for free copy+%Contacting author	Users Survey
PPV	16%	100-(%Free for the user)	Users Survey
Articles accessed through organisation subscription	48%	Articles accessed through organisation subscription *(100%-% of subscription articles available as Gold OA)	Users Survey
Articles accessed through Gold OA	0%	Articles accessed through organisation subscription *8.5%	Users Survey, Björk et al (2010)
Articles accessed through Green OA	0%	100-(%Articles accessed through subscription+%Articles accessed through GoldOA+Alternative route)	Users Survey
Articles accessed through Green OA-subject rep	0%	%Articles accessed through subject rep/(%Articles accessed through subject rep+%Articles accessed through university rep)	Users Survey
Articles accessed through Green OA – university rep	0%	%Articles accessed through university rep/(%Articles accessed through subject rep+%Articles accessed through university rep)	Users Survey
Alternative route	52%	%Searching for a free copy+%Contacting the author	Users Survey

Table 8: Assumptions used in the analysis

Assumptions	Value of assumptions
% of articles obtained via PPV that first involve a search of a subject repository	10%
% of articles obtained via PPV that first involve a search of a subscription	20%
% of articles obtained via PPV that first involve a search for a free copy via alternative routes	15%
% of articles obtained via alternative routes that first involve a search of a subscription	25%
% of articles obtained via alternative routes that first involve a search of a subject repository	10%
% of articles obtained via alternative routes that are accessed via contact with the author	1%
% of users accessing via university repository who first try to access via a subscription	25%
% of subscription articles that are paid for	91.5%
% of subscription articles available as Gold OA	8.5%
% Gold OA available through subscriptions	10%
% Gold OA not available through subscriptions and available via searching	10%
% subject repository articles available via searching	10%

11 Appendix 5: Case studies

11.1 Libraries

11.1.1 Case study 1: A Strategic Health Authority Information Service

Strategic Health Authorities SHAs are responsible for:

- Developing plans for improving health services in their local area
- Making sure local health services are of a high quality and are performing well
- Increasing the capacity of local health services so they can provide more services
- Making sure national priorities (for example, programmes for improving cancer services) are integrated into local health service plans

SHAs manage the NHS locally and provide a link between the Department of Health and the NHS. There are 10 SHAs.

The library provides support to librarians in their area: for the most part they do not have a large end-user community: end-users are largely located in Primary Care Trusts and Hospital Trusts.

The library has access to subscriptions arranged through NHS Evidence. It operates a portal that now includes Open Access journals alongside traditional subscription and hybrid journals. However, a general drop in the use of full text has been noted: even when articles are available free to use as part of a subscription, in common with other libraries across the NHS, the library has noted that users are often getting as far as the abstract but not downloading the full text. The reasons for this are not fully understood, but it is thought to be related to time pressure.

Although the library service can currently provide all the main journals that are needed, restricted budgets are beginning to affect the position and cancellations are anticipated. Open Access may help to fill gaps in the longer term.

11.1.2 Case study 2: NHS Acute Trust

The library serves mainly hospital consultants, doctors and other professional staff who are dealing with many patients. This creates a demand for rapid access to information: speed can be more important than comprehensiveness. The library has a limited range of subscriptions and limited budgets for PPV or ILL, and reports that staff regularly end up paying for an article download themselves as it is the quickest way to access it. When articles are not available on subscription, users have walk-in access to a local university library that has some relevant subscriptions.

Consequences of problems with access include:

- Users restrict the number of articles that they request from the library themselves
- Time is taken to make extensive checks on other resources, such as availability through regional networks and British Library, as well as local universities

Open Access has helped the library to reduce the impact of these problems. It has been able to supply users with requested articles more rapidly, which is a key factor in users' perception of the service they receive from the library. In turn, this has encouraged use of both the library and recommended databases.

Open Access has also helped the library to help other libraries by making articles available to their users without infringing subscription terms and conditions.

11.2 Researchers

11.2.1 Case study 1: senior researcher in health issues

Uses research articles to help analyse effectiveness of treatments and procedures and develop national guidance about which to use. Typically, would search abstracts and scan other reliable information sources: the information services team would then be asked to obtain relevant articles. Researchers themselves would never know whether an article provided was part of a subscription, pay-per-view or Open Access. However, the information team has been dissolved and researchers now have to start obtaining papers themselves. This takes time; typically 150 papers to be obtained and reviewed. Knowledge in this field changes very quickly and keeping up to date is very important.

Open Access meant that they could be accessed much more quickly. Articles that had to be obtained via the British Library could take up to two weeks to arrive (and in some cases never arrive); a report might often be required in eight weeks so the extra time could have a significant impact. Some articles might therefore not be included in the evidence review, and in turn this would affect the quality of the advice and analysis provided. In the extreme, advice could be different as a result, but this would be very unusual (perhaps less than once per year). The additional time spent by the research team in locating articles has also had an impact on the amount of work it can get through.

11.2.2 Case study 2: Team Leader, specialist science-based agency

Uses research to help form response to both ongoing and urgent issues in animal health. This will usually take the form of evidence for government departments who need to make policy in this area. The agency also has a small chain of laboratories that provide primary evidence from testing. The agency monitors developments in its field to provide advance notice of potential problems and issues in order to intervene early when necessary. It also provides advice to relevant sections of the community. Scientific knowledge in the field is constantly evolving, but at a manageable pace (although this is getting faster). The agency has strong international connections in its field, and attends conferences and keeps contact with key researchers.

Journal articles are the most important resource used in this work. The agency has a library that maintains relevant subscriptions, and pays for services such as inter-library loans. Open Access is mainly useful to speed up the process of obtaining articles that are not included in a subscription. The most common case of information being required very urgently is to provide evidence for a ministerial brief; this sometimes has to be done within the day so anything that slows down the acquisition of information is a problem. To mitigate this, the researcher will ask colleagues for copies of articles not in the agency's subscription

collection, but does not have time to do much else. The agency has access to its departmental knowledge management system, but this contains complete answers rather than individual articles.

Pubmed Central is preferred to Web of Science as it is generally easier to search and often yields relevant articles very quickly: these can then be accessed simply and directly. Using Web of Knowledge, once an article has been identified it can take some time to find a way of accessing it; multiple authentications might be required and journals databases search again to find the article referenced on WoK.

11.2.3 Case study 3: Researcher, scientific branch of large department of state

The team's work often leads to advice to government on large procurement decisions or to policy advice on the management of large-scale risks.

Research topics are often unpredictable and respond to demand created by changing events. Areas will often be outside the direct expertise of the team and so require extensive reading in a short period of time, as answers are often needed very rapidly. Access to information is always difficult: the unit is small and cannot afford subscriptions to large online journal services. The library cannot handle large numbers of ILL requests, so team members will often go to university libraries and pay for photocopies (even though they are not based near a suitable university) or buy access through PPV mechanisms. Neither is cost-effective (especially as visiting a university library requires travel) but are the quickest route when time is critical. PPV purchases have to be authorised each time.

A small number of university researchers act as consultants to the team, and they have occasionally helped to identify and supply relevant articles, but this is not a reliable route. From time to time, the team has taken on students who are finishing their PhDs and this has also provide an occasional route to accessing information, including articles. A team member also has a partner who is an academic, and on rare occasions the partner has downloaded articles using her university access.

Open Access to a much wider range of journals would save time and allow the team to focus on its main responsibility, actual research. It might also help to identify more articles than those currently used in projects. Money and time are spent on acquiring articles that may not be relevant to the actual problem; citation indexes and other abstracting services often do not give a clear understanding of articles' scope or depth.

11.2.4 Case study 4: Epidemiologist, government agency

The person's job is to provide credible advice for policymaking. They may also be asked to answer questions from the media, as the areas the team works in are often high-profile. Was used to wide range of access whilst a university researcher. There is an information centre within the agency, and this provides access to journal articles. However, articles have to be requested through the centre and are not available directly to the researcher. This process can take several days, and in one recent case meant that the researcher was not able to answer a specific press enquiry in time. Open Access articles can be accessed directly, however.

Wider access to articles would not necessarily change the advice given, but would make the researcher more confident that the advice given was reliable.

However, on occasion the delays in obtaining access have meant that the team was not able to answer a media request for information or comment reliably, and therefore was not able to provide information at all. Had relevant articles been available immediately, an answer supported by reliable evidence could have been given. There was therefore a risk that incomplete or misleading information could appear in the press.