DPC Labour Market Analysis

Summary Report

Version 1.0 | September 2020

Contents

1. Introduction

This paper provides an overview of findings from an analysis of digital preservation labour market data gathered from 134 job vacancy postings on the DPC website. The objective of the analysis was to facilitate the career development of members by capturing and sharing information specific to the digital preservation labour market, and use what was found to help develop DPC resources and delivery mechanisms.

The following sections summarise the main findings from the analysis, which employed both quantitative and qualitative analyses. Additionally, earlier findings from a 2018 analysis of postings on the DPC site were also used for comparative analysis and noted where relevant.

1.2 Note on Copyright and Reuse

2. Findings from Quantitative Analysis

2.2 Dates and timing of job postings

Data was collected from 134 job vacancy postings published on the DPC website from October 2018 to May 2020.

Of those 134 postings, 24 were published in 2020, 92 in 2019, and 18 in 2018.

Figure 1 below shows the breakdown of postings published in each month.

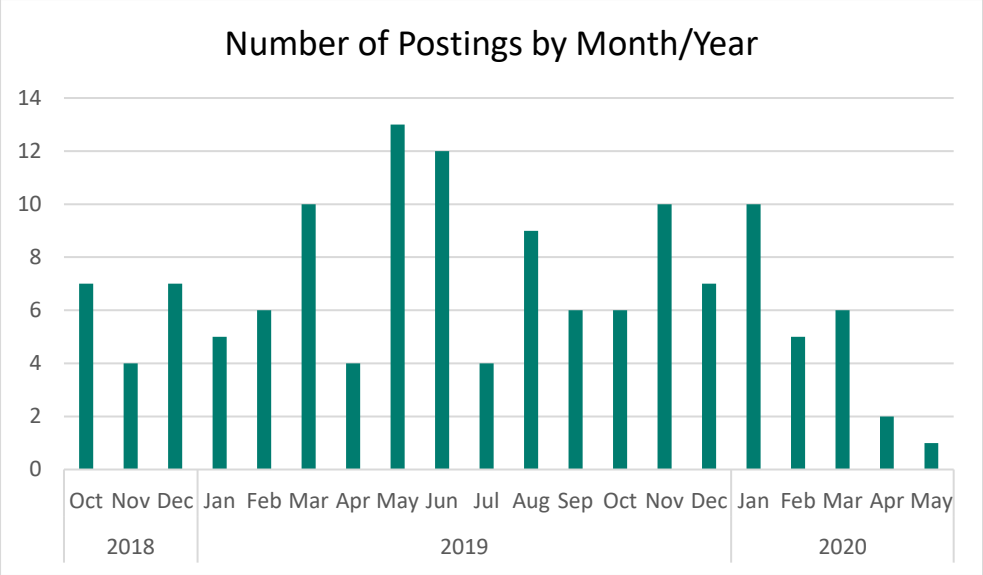

Figure 1. Number of Job Postings by Month and Year

Interestingly, the most popular month was May of 2019 with 13 postings while May of 2020 had only 1 posting.

The deadline for each job application was also collected and compared to the date the posting was published. The average number of days between these two dates was 16.86 days (with a median of 16.16 and mode of 17). In other words, most of the jobs postings gave candidates approximately two business weeks to apply for the post.

2.3 Organizations

70 organizations were represented in the 134 postings. Table 1 below lists the organizations with the most postings.

Table 1. Organizations with Highest Number of Postings

Organization	Number of Postings
The National Archives, UK	24
The National Library of Scotland	6
Preservica	5
The British Library	5
UNHCR	4
Parliamentary Archives	4
University of Bristol	3
University of Cambridge	3
Digital Repository of Ireland	3
Tate	3

There was a range of organizational types across sectors, including national archives, libraries, museums, government bodies and agencies, businesses, higher education and research institutions, and more. Given the range and overlap that can occur with organizational types (e.g. national archive, national library, public library, academic library), the analysis of the 70 organizations first looked at whether they were national, academic, governmental, research, business (for profit),

public or local, and not-for-profit (that does not fit into other categories). Figure 2 below shows the breakdown of the organizations by this first type.

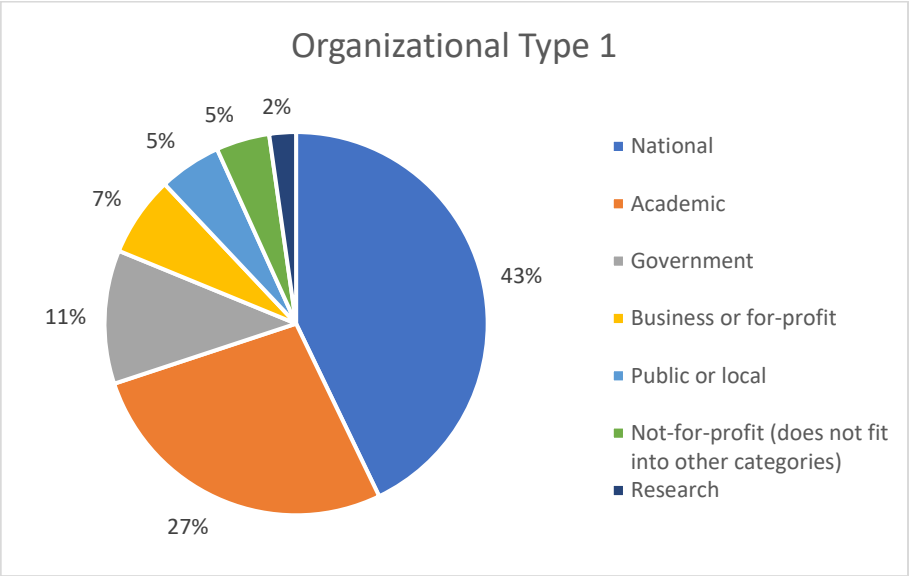

Figure 2. Percentage of Organizations by Organizational Type 1

Over two-thirds were national, academic, and government organizations, accounting for 81% (57 national, 36 academic, 15 government).

Next, the second organizational type looked at whether they were an archive, library, agency or body, repository, corporation, museum, university, institute, and centre (Figure 3).

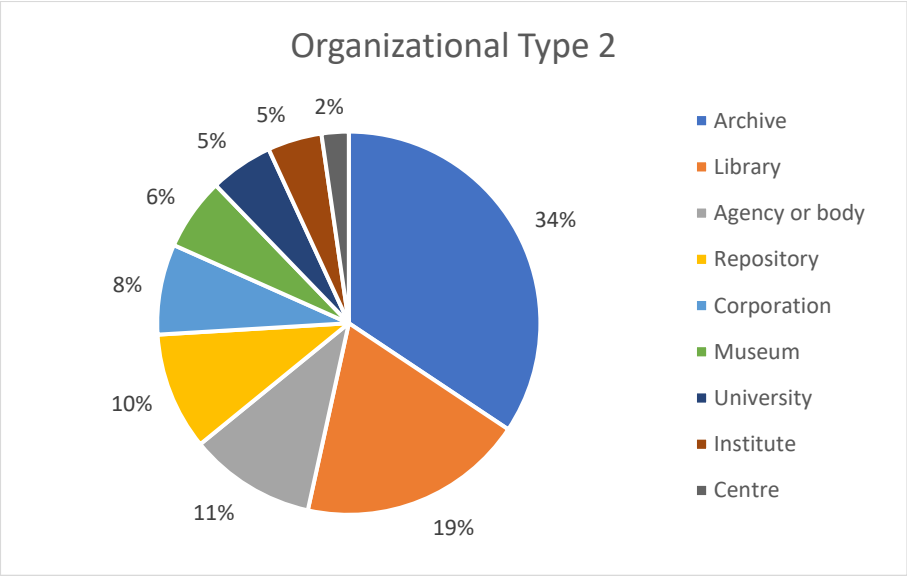

Figure 3. Percentage of Organizations by Organizational Type 2

This found that over half (53%) were either an archive (45) or library (25).

Figure 4 below combines the two sets of findings to show the most common (national archives, national libraries, government agencies, academic repository) as well as illustrate the range among and across the types.

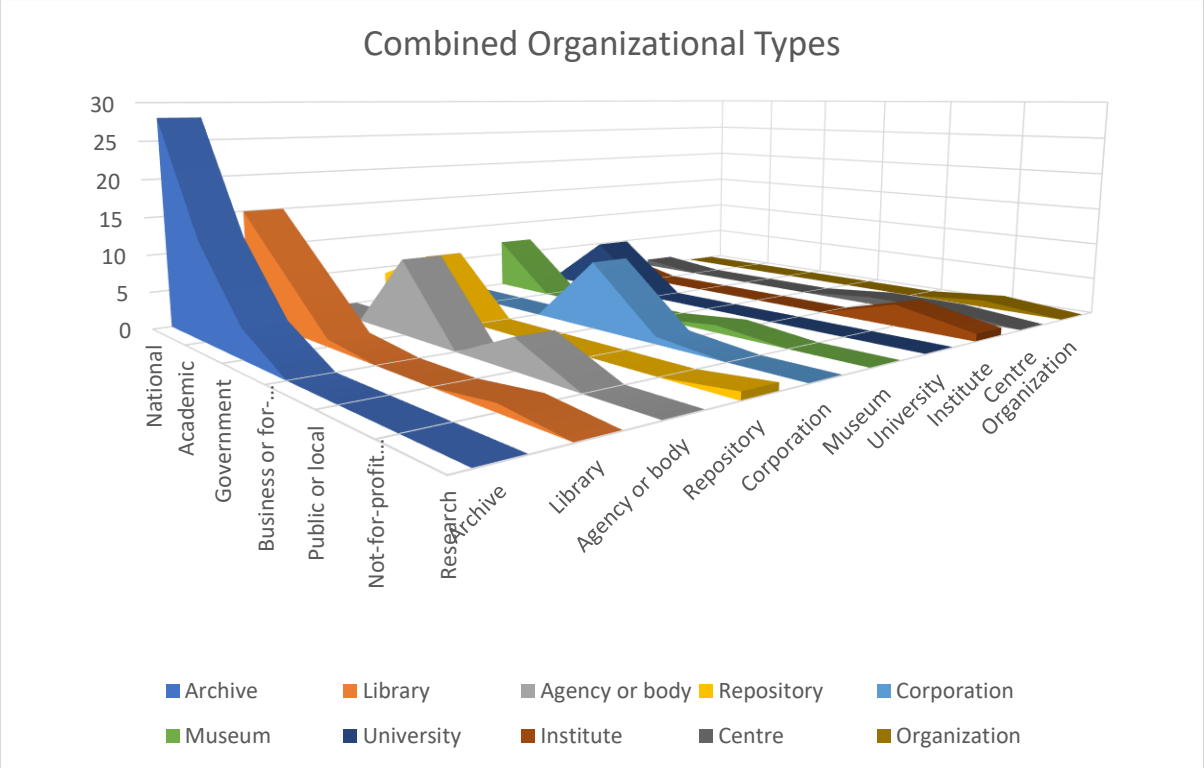

Figure 4. Number of Organizations by Combined Types

2.4 Locations

Countries

The job postings advertised work opportunities in 12 countries, highlighted below.

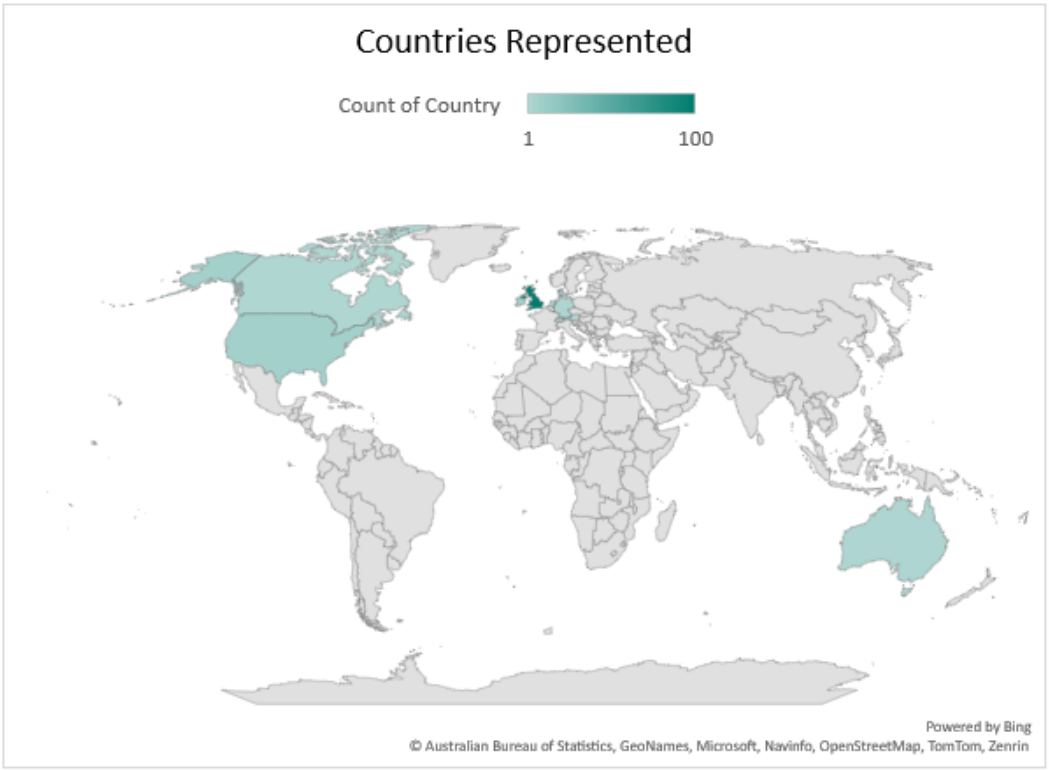

Figure 5. Countries Represented in Postings

The UK, by far, had the most postings (75%), with the total counts per country as follows (Table 2):

Table 2. Countries with Highest Number of Postings

Country	Number of Postings
UK	100
USA	8
Ireland	8
Denmark	4
Netherlands	3
Austria	2
Switzerland	2
Australia	2
Germany	2
Luxembourg	1
Canada	1
Qatar	1

There were the same number of countries (12) represented in the previous 2018 analysis of the job market from the previous 2018 research. The UK, USA, Ireland, Netherlands, Austria, Switzerland, Australia, Germany, and Luxembourg had postings along with Tanzania, Hong Kong, and New Zealand. Denmark, Canada, and Qatar had not posted jobs during that 2015-2018 period.

Cities

45 cities were represented in 134 postings. 27 were in the UK, 8 in the US, and 3 in the Netherlands.

London had the most postings (35%). The other cities with multiple postings include (Table 3).

Table 3. Cities with the Highest Number of Postings

City	Number of Postings
London, UK	47
Edinburgh, UK	9
Dublin, IE	8
Glasgow, UK	7
Copenhagen, DK	4
Abingdon, UK	4
Bristol, UK	3
York, UK	3
Cambridge, UK	3
Vienna, AT	2
Frankfurt, DE	2

UK Regions

As stated earlier, 75% of all the job postings were from the UK (100). To get a better idea of where these jobs were located, data was collected and analysed by UK region with those findings listed in Table 4. below.

Table 4. UK Regions with the Highest Number of Postings

Region	Number of Postings

Greater London	52
Scotland	16
South East	7
South West	7
East of England	6
Yorkshire and the Humber	5
North West	2
West Midlands	2
East Midlands	2
North East	0
Wales	0
Northern Ireland	0
Not listed	1

UK, EU, and non-UK/EU countries

Taking into consideration post-Brexit distinctions between UK and EU countries, the analysis found 100 postings based in the UK (75%), 20 based in the EU (15%), and 14 based in non-UK/EU countries (10%)

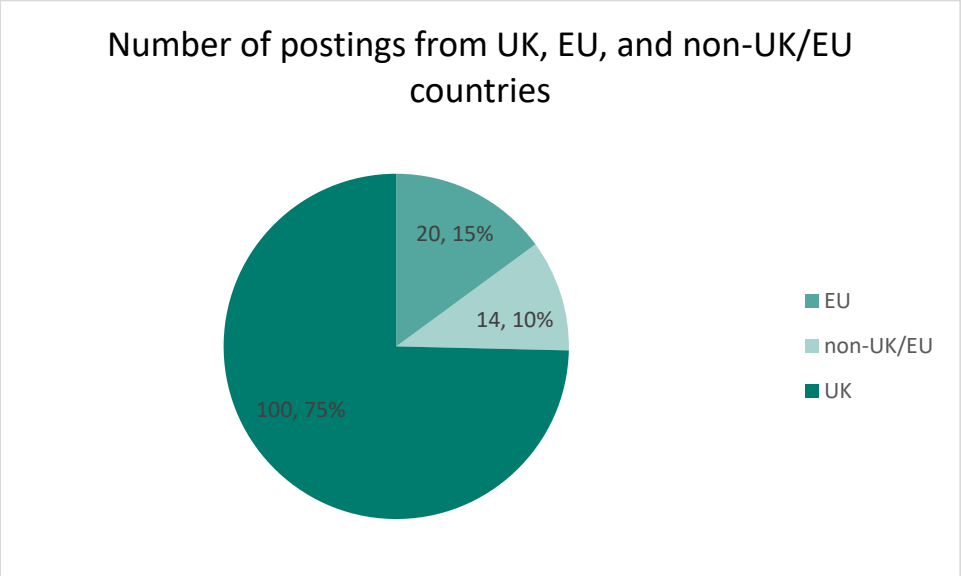

Figure 6. Number of Postings from UK, EU, and non-UK/EU countries

2.5 Job titles

Most popular job titles

There were some common job titles among the postings, as shown in Table 5 below.

Table 5. Job Titles with the Highest Number of Postings

Job Title	Number of Postings
Digital Archivist	6
Digital Preservation Manager	5
Archivist	4
Senior Developer	2
User Interface Designer/Developer	2

Traineeships	2
Research Data Manager	2
User Researcher	2
Software Developer	2
Systems Engineer	2
Preservation Audio Engineer	2

Most common words in job titles

Table 6 below lists the words with the highest frequency in the job titles.

Table 6. Most Frequent Words in Job Titles

Word	Frequency	Percentage
digital	41	30.59%
preservation	20	14.92%
archivist	19	14.17%
manager	18	13.43%
data	17	12.78%
research	16	12.69%
senior	15	11.19%
developer	13	9.77%
special	12	9.70%
specialist	11	8.20%

A number of these words were also found in previous analysis from 2018 (Table 7).

Table 7. Most Frequent Words in Job Titles (2018)

Word	Frequency	Percentage
digital	51	32.69%
manager	27	17.30%
preservation	23	14.74%
archivist	20	12.82%
research	16	10.26%
information	14	8.97%
developer	13	8.33%
software	12	7.69%
head	12	7.69%
officer	10	6.41%
project	10	6.41%

Based on the above, the top terms have remained digital, preservation, archivist, and manager. There have been more job titles with data, special, and specialist and less with information and project.

2.6 Number of posts available

There were 8 postings that advertised a job open to more than one person, 3 of those 8 were open to two or more people (see Figure 7).

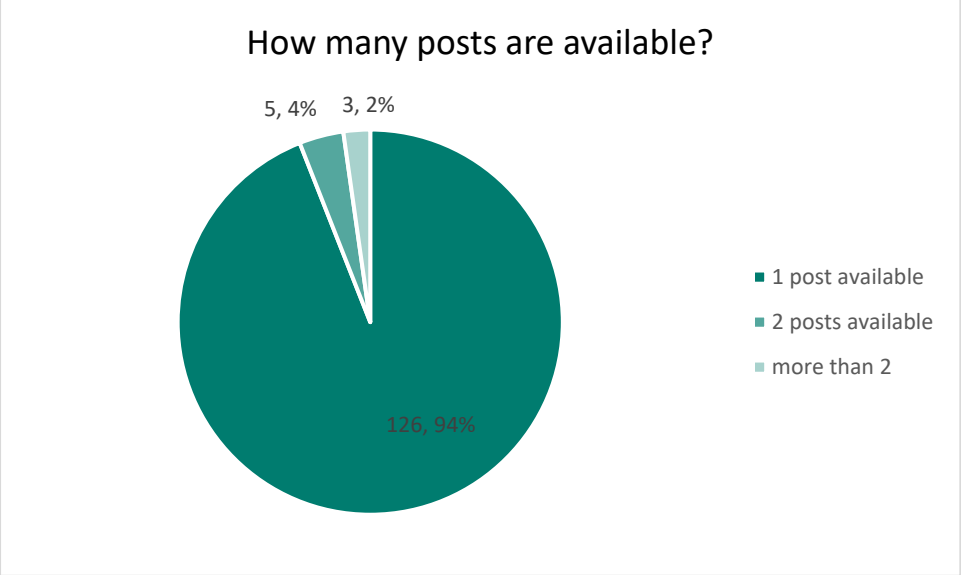

Figure 7. Number of Posts Available as Advertised in Posting

The jobs with multiple posts available included

- Research Data Specialist at the Digital Curation Centre (2 posts available)
- User Interface Designer/Developer at the National Archives (2 posts available)
- Research Data Management roles at University College London (2 posts available)
- Assistant Archivist at University of the Arts London (2 posts available)

Three were traineeships as well

- Bridging the Digital Gap Trainees (8 posts available)
- European Central Bank traineeships (2 or more posts available) – advertised in 2019 and 2020
- Alexander Graham Bell traineeships at the National Library of Scotland (2 posts available)

Although the number of these postings was small (8 total), it is interesting to note that most came from larger organizations. It also makes sense many were traineeships, as will be explained further in the next section.

2.7 Contract types and hours

It was important to look at what types of contracts were offered and the expected full-time or part-time commitments.

Of the 134 posts, there were 69 fixed term (51.5%) and 50 permanent contract types (37.3%), with 15 posts having no information provided about contract type (11.2%).

The previous analysis from 2018 found 57 were fixed term (36.5%), 96 were permanent (61.5%), and 3 with no information provided (2%), suggesting that there has been an increase in fixed term contracts and decrease in permanent contracts.

Of the 69 fixed term posts, 39 specified the length of time of those contracts. As shown in the next table (Table 8) 18.8% of these were for one year while the others ranged from 4 months to 5 years.

Table 8. Length of Contract for Fixed-Term Posts

Length of Contract	Number of Postings
5 years	1
40 months	1
3 years	3
28 months	1
2 years	3
23 months	1
1 year	13
9 months	2
19 months	1
18 months	5
16 months	1
15 months	1
14 months	2
6 to 10 months	1
6 months	2
4 months	1

When available, data was also collected about the expected hours of work per week. There were 113 full-time postings (84.3%), 8 part-time (6%), and 13 categorised as 'no data available / other' (e.g. freelance contracts, tenders) (9.7%).

The graph below (Figure 8) shows the number of full-time and part-time posts by contract type.

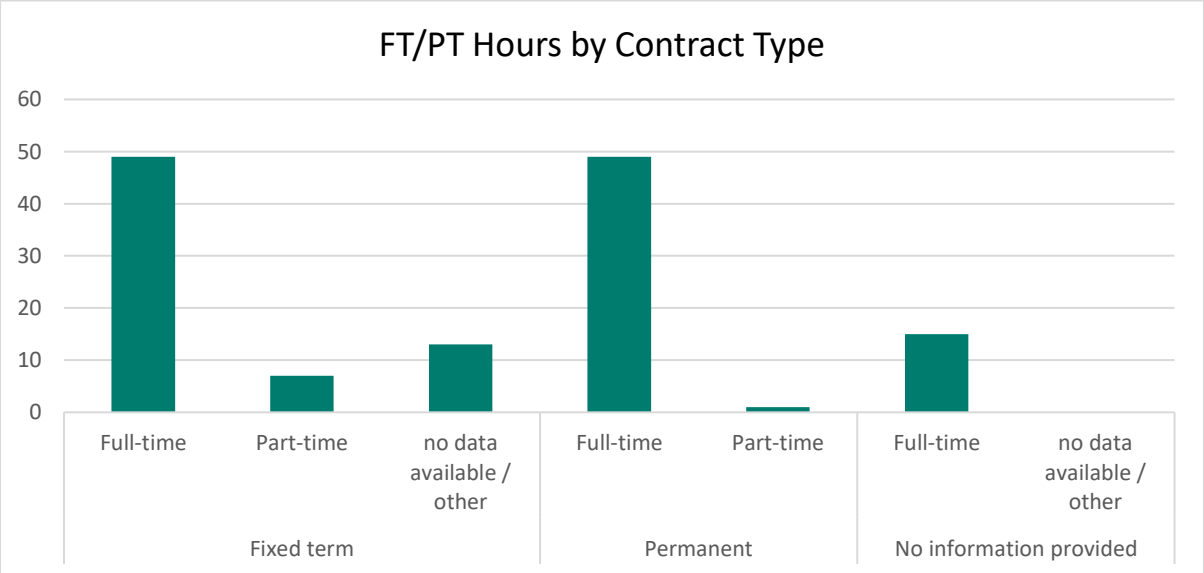

Figure 8. Number of Full-time and Part-Time Posts by Contract Type

The previous 2018 analysis found 140 full-time (89.7%), 14 part-time (9%), and 2 no data available / other (1.3%). Comparison of the two datasets suggests that, although there may be a slight decrease in permanent contracts, there has not been a decrease in full-time hours over the years.

2.8 Salary

Analysis of salaries is crucial when gathering labour market intelligence. However, calculating salaries was somewhat difficult given that the data provided in job postings varied. Some gave a salary ranges, others exact numbers, others had no salary information provided, and there were different currencies for jobs outside of the UK. Nevertheless, it was possible to provide snapshots of salaries as demonstrated in the following summaries. Further analysis of salaries is also provided throughout the rest of the report as it pertains to the other variables.

Salary ranges for different currencies

Salaries were analysed for their range within the currency provided, and by converting them all into GBP to give a rough estimate of mean, median, and mode.

The graph in Figure 9 below shows the salary range in US dollars.

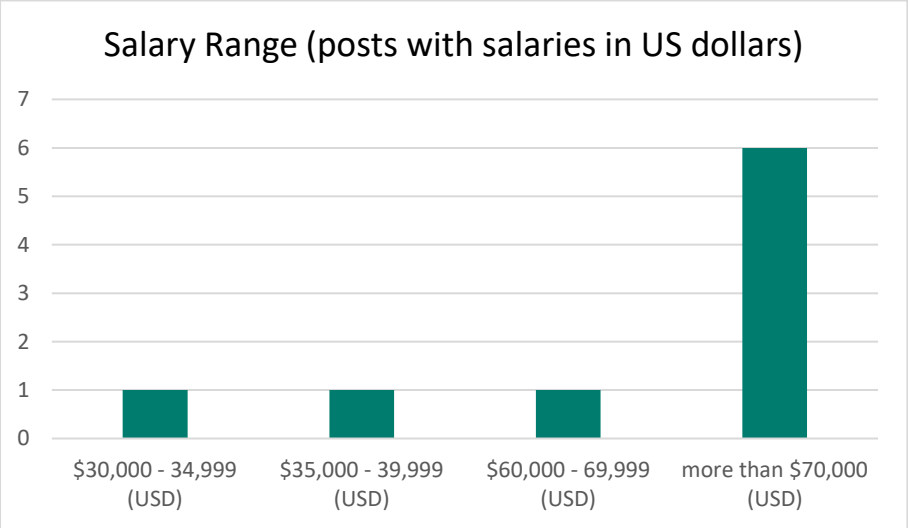

Figure 9. Salary Range in US Dollars

Six of these postings were $70,000 or above. Not all these jobs were based in the US, however; 4 of the 6 postings with more than $70,000 were based in Copenhagen, Denmark and the posting fitting in the $35,000-39,999 range was in Vienna, Austria.

Figure 10 shows the salary range in UK pound sterling.

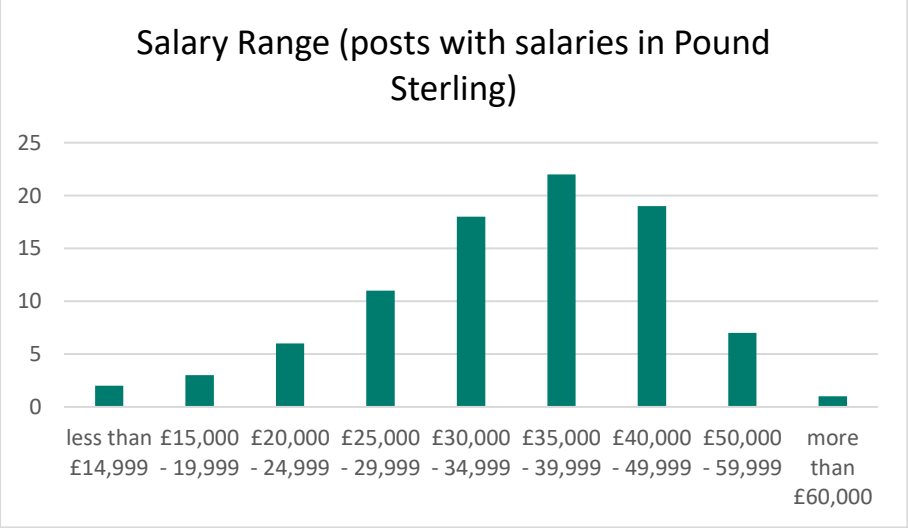

Figure 10. Salary Range in UK Pound Sterling

There were 11 postings in the UK that had no salary listed. Of the remaining 89, the majority ranged from £30,000 to £49,999. All were based in the UK.

Next was the salary range in euros, presented below (Figure 11)

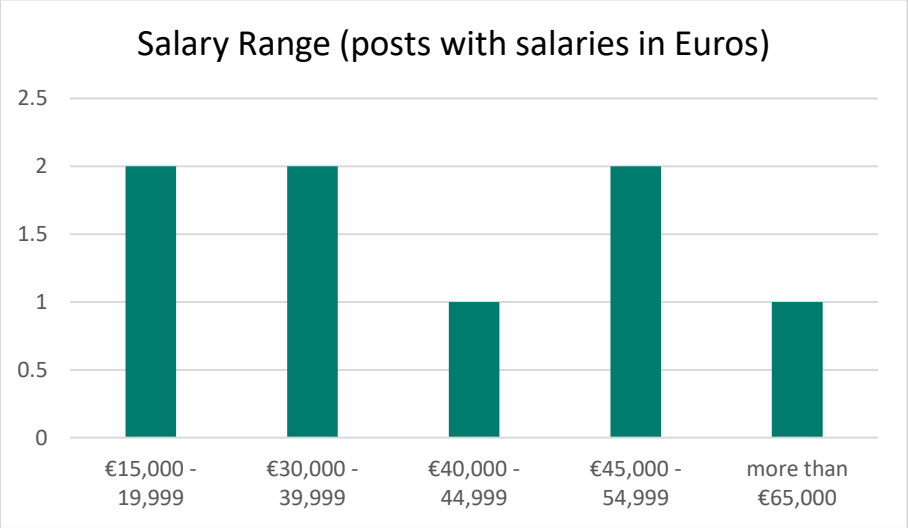

Figure 11. Salary Range in Euros

The 8 jobs with salaries listed in euros were equally distributed across the salary range. They were based in Germany, Ireland, and the Netherlands.

Although there are different like costs of living, healthcare, and other factors tie to location and job title to consider, all the salaries were calculated to British Pound Sterling to roughly see how much they varied in mean, median, and mode.

- Average/mean £38,450
- Median £36,000
- Mode £40,000

It was helpful to also include the minimum and maximum salaries in the dataset, which were

- Min £14,500
- Max $110,869 (USD) | £88,695 (GBP)

While the highest and lowest have almost a £75,000 difference, the calculated standard deviation (about 68% of the set) fit within £14,146 of the average. So, in general, it can be said that the typical salaries for full-time preservation jobs fall somewhere between £20,000 and £50,000.

Average Salaries by Country

Although the number of postings for each country varied, and calculating the average salaries was impeded by the low counts, the following graph gives a snapshot of what was found through this quantitative analysis of minimum, mean, and maximum salaries by country.

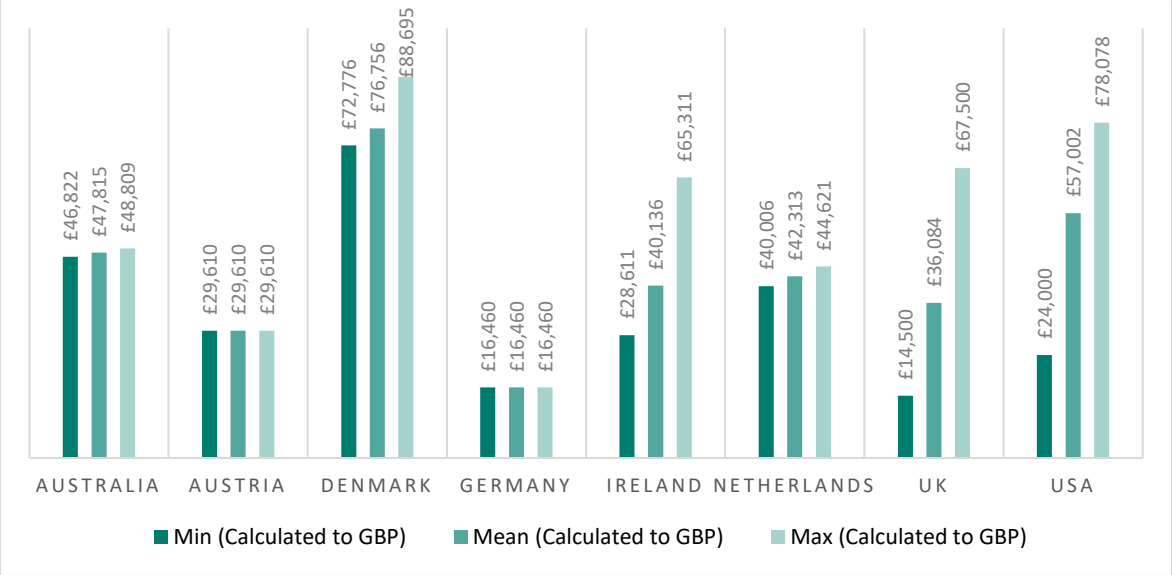

Figure 12. Average Salaries by Country

Salaries in the UK

There were 90 UK postings that provided data on salaries (out of 100 total). The mean, median, and mode were

- Average/mean £36,084
- Median £35,110
- Mode £40,000.

The minimum and maximum salaries in the dataset were

- Min £14,500
- Max £67,500

The UK mean and median salaries were slightly lower than what was calculated from all the postings (£38,450, £36,000) but the mode was the same (£40,000). The standard deviation was much less at £10,257 (£14,146). So, in general, it can be said that the typical salaries for full-time preservation jobs in the UK fall somewhere between £25,000 and £45,000.

The previous 2018 analysis of UK salaries found the mean of £34,528 and median of £33,518, indicating that the average salaries have increased by approximately £2,000. This is also supported by comparing the salary ranges of the UK postings, illustrated by the next graph (Figure 13) showing a slight increase in salaries.

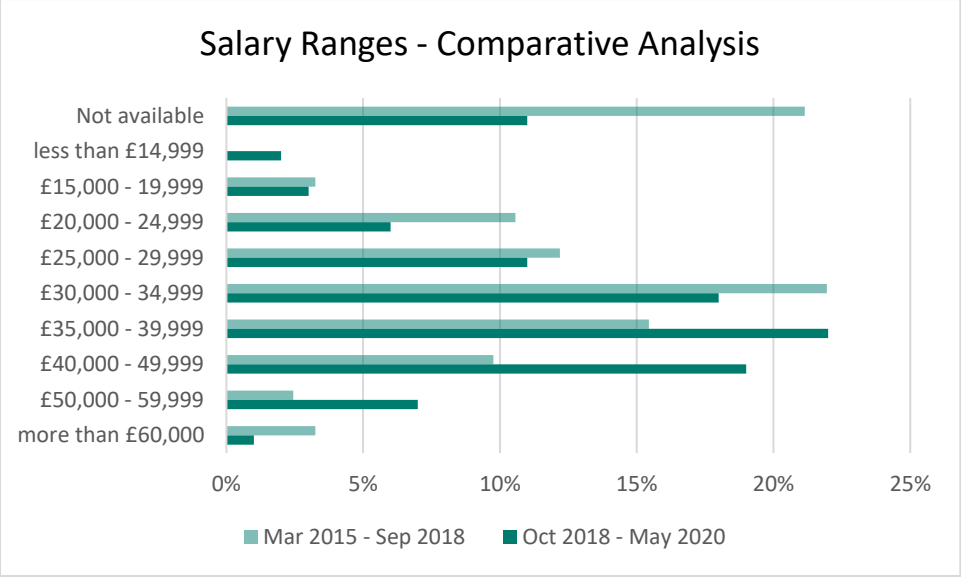

Figure 13. UK Salary Range Comparison

Salaries by UK Region

The salaries were also analysed by UK region with the expectation that those in Greater London would be slightly higher (due to cost of living expenses). However, as illustrated in Figure 14 below, there was not a significant difference in the salary ranges by region.

	less than £14,999	£15,000 - 19,999	£20,000 - 24,999	£25,000 - 29,999	£30,000 - 34,999	£35,000 - 39,999	£40,000 - 49,999	£50,000 - 59,999	more than £60,000
Greater London	1		2	6	11	12	12	3	
Scotland		2	2	3	4	3	2		
South West			1	1	1	1		1	1
South East					1		1	1	
East of England					1	1	2	2	
Yorkshire and the Humber			1	1			2		1
West Midlands						2			
East Midlands	1					1			
North West						2			
	2	**2**	**6**	**11**	**18**	**22**	**19**	**7**	**2**

Figure 14. Salaries by UK Regions

Salaries and job titles

The job titles with the highest salaries were

Table 9. Job Titles with Highest Salaries

Deputy Head of Joint Data Centre	$110,869 (USD)
Innovation Specialist	$86,335 - $112,240 (USD)
Digital Preservation Specialist	$108,422 (USD)
Senior Statistician	$90,970 (USD)
Senior Economist	$90,970 (USD)
Senior Data Scientist	$90,970 (USD)
Keeper of Archives and Special Collections	£57,000 - £78,000 (GBP)
National Open Research Coordinator	€68,310 to €81,830 (EUR)
Senior Developer	£55,000 - £60,000 (GBP)
Head of Digital Services	£54,765 - £58,089 (GBP)

The job titles with the lowest salaries were

Table 10. Job Titles with Lowest Salaries

Archives Assistant Graduate Traineeship	£23,870
Digital Archives Assistant Traineeship	£23,175
Digital Preservation Assistant	£22,929
Video Preservation Technician	£22,929
Digital Archives Assistant	£18,688 - £22,017
Alexander Graham Traineeships	£18,224
Trainee Archival Sound Technician (Alexander Graham Traineeship)	£17,693
PhD Studentship	£14,777
Bridging the Digital Gap technical traineeships in archives	£14,500

The most popular job titles are listed below with the salary ranges each of the posts fits into

- Digital Archivist – 6 postings total
    - 1 posting £35,000 - 39,999
    - 4 postings £30,000 - 34,999
    - 1 posting £25,000 - 29,999

- Digital Preservation Manager – 5 postings total
    - 2 postings £40,000 - 49,999
    - 1 posting £35,000 - 39,999
    - 1 posting £30,000 - 34,999
    - 1 posting no listed salary

- Archivist – 4 postings total
    - 1 posting £35,000 - 39,999
    - 1 posting £25,000 - 29,999
    - 2 postings no listed salary

- User Interface Designer / Developer – 3 postings total
    - 2 postings £35,000 - 39,999
    - 1 posting £30,000 - 34,999

- Senior Developer – 2 postings total
    - 1 posting £50,000 - 59,999
    - 1 posting £40,000 - 49,999

- Research Data Manager – 2 postings total
    - 2 postings £35,000 - 39,999

- Software Developer– 2 postings total
    - 1 posting £40,000 - 49,999
    - 1 posting no listed salary

- Preservation Audio Engineer – 2 postings total
    - 1 posting £35,000 - 39,999
    - 1 posting £25,000 - 29,999

2.9 Traineeships

There were 10 postings for traineeships, illustrated in the graph below.

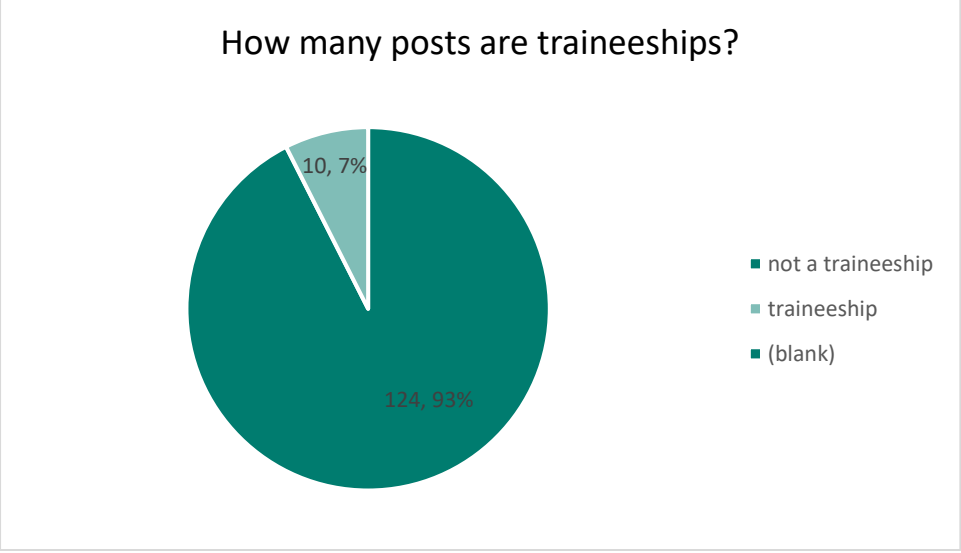

Figure 15. Number of Traineeship Posts

These 10 traineeship postings included:

- Two postings for the Parliamentary Archives
    - Archives Assistant Graduate Traineeship
    - Digital Archives Assistant Traineeship
- Two postings for the National Library of Scotland
    - Alexander Graham Traineeships
    - Trainee Archival Sound Technician (Alexander Graham Traineeship) at the National Library of Scotland

- Two postings for the European Central Bank
    - Traineeships for 2019
    - Traineeships for 2020
- Graduate Intern Program at the Getty
- Bridging the Digital Gap technical traineeships in archives (London and Yorkshire)
- Archives and Records Management Internships at International Atomic Energy Agency
- Digital Archives Assistant at the Archaeology Data Service

As mentioned earlier, the following traineeships offered 2 or more posts.

- Bridging the Digital Gap Trainees (8 posts available)
- European Central Bank traineeships (2 or more posts available) – advertised in 2019 and 2020
- Alexander Graham Bell traineeships at the National Library of Scotland (2 posts available)

It is also important to note that all the traineeships are, by their nature, fixed term.

With the above in mind, below is a breakdown of the traineeship postings:

- 7 were full-time, 2 part-time, and 1 no information available.
    - Two of the full-time specified 41 hours per week
    - Two of the part-time specified 30 hours per week

- The salaries fell into the following ranges
    - Full-time
        - $30,000 - $34,999 USD (1)
        - €15,000 - €19,999 EUR (2)
        - £20,000 - £24,999 GBP (3)
        - Less than £14,999 GBP (1)
    - Part-time
        - £15,000 - £19, 999 GBP (2)

2.10 Academic posts

There was not a significant amount of data for job postings for academic posts (e.g. PhD, lectureship, professorship, researcher)—only 7 fit into this category (see Figure 16).

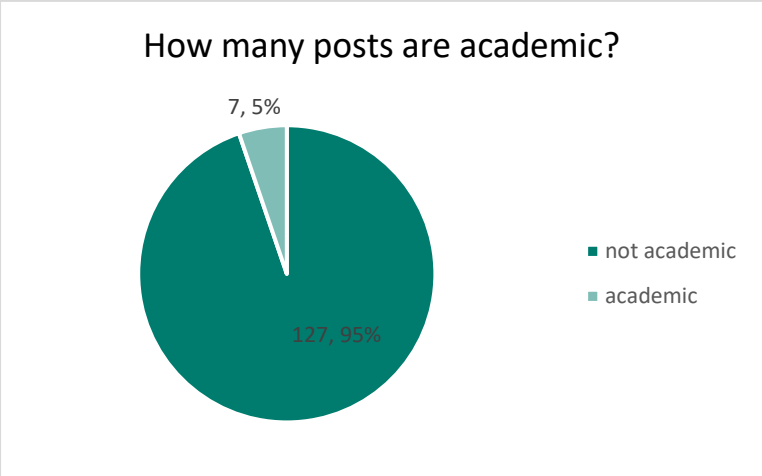

Figure 16. Number of Academic Posts

The posts included

- Lecturer / Senior Lecturer at the University of Glasgow
- Research Assistant/Associate in Data Analysis at the University of Glasgow
- Assistant Professor, Library Chief Data Strategist at the University of Rhode Island
- Lecturer / Associate Professor in Digital Humanities at University College London
- Research Fellow at the University of Warwick
- PhD Studentship at Loughborough University
- Teaching Fellow at University College Dublin

All were full time. The salaries fell into the following ranges.

- €30,000 - €39,999 EUR (1)
- £50,000 - £59,999 GBP (1)
- £40,000 - £49,999 GBP (1)
- £35,000 - £39,999 GBP (1)
- £30,000 - £34,999 GBP (1)
- Less than £14,999 GBP (1) – PhD Studentship
- Not available (1)

2.11 UKVI Considerations

Quantitative and qualitative analysis was needed to look at how the postings fit into new UK visa requirements. The qualitative analysis is still ongoing but below are summaries of what was found from the quantitative analysis.

Approved sponsors

There were 100 job postings from 47 organizations in the UK. Of those 47 UK organizations, 30 were listed on the UKVI list of licensed sponsors (for Tier 2 and Tier 5 visas).

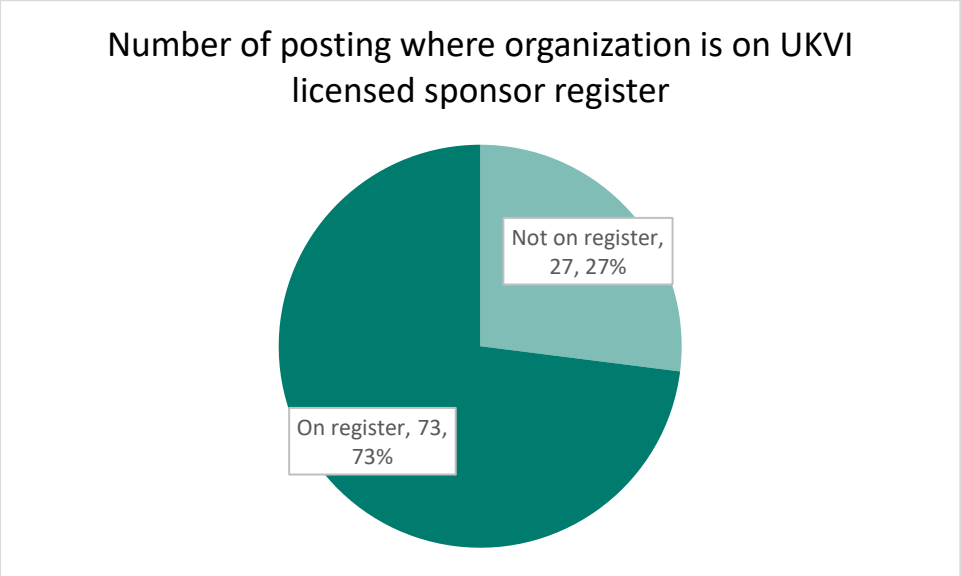

Figure 17. Postings by UKVI Licensed Sponsors

Salary requirement
There are three categories of salary requirements (with points in parenthesis)

- £20,480 to £23,039 (0)
- £23,040 to £25,599 (10)
- £25,600 or above (20)

Most UK jobs met the basic salary requirements, including those at organizations not listed on the register, as illustrated in Figure 18.

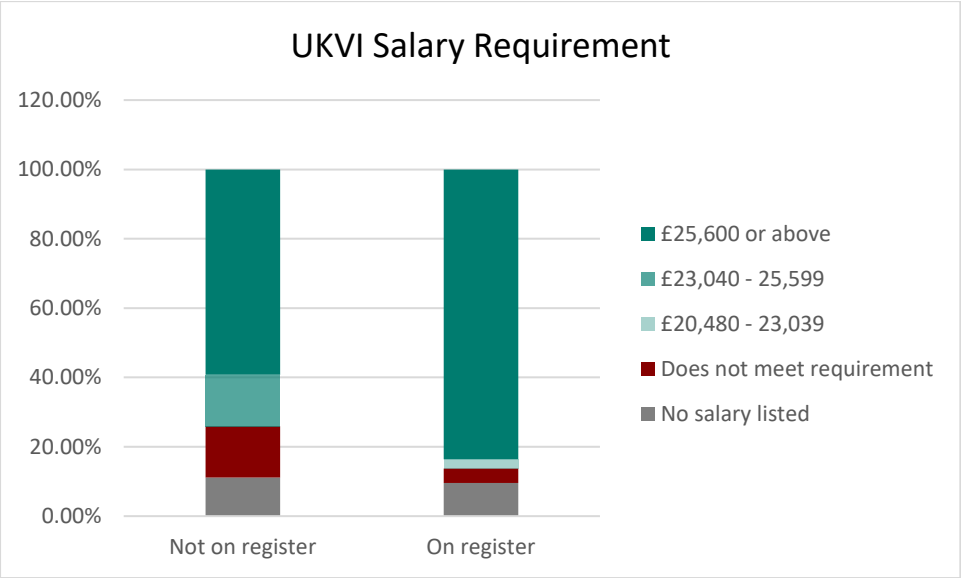

Figure 18. UK Organizations Meeting the UKVI Salary Requirement

3. Findings from Qualitative Analysis

The qualitative analysis reviewed the text from the job summaries provided with each posting on the DPC website, first creating a word cloud to identify the most common words in those descriptions followed by multiple readings and coding of the text to determine the following: key activities and responsibilities: skills, knowledge, and experience; position type and level; and minimum degree level expected (if any).

The coding and analysis of the job descriptions drew from an array of existing studies and frameworks models. It was primarily informed by

- DPC Rapid Assessment Model (RAM), 2019: https://www.dpconline.org/digipres/dpc-ram
- NDSA Staffing for Effective Digital Preservation Report, 2017: https://ndsa.org/documents/Report_2017DigitalPreservationStaffingSurvey.pdf
- DigCurV Curriculum Framework, 2013: https://www.DigCurV.gla.ac.uk/index.html
- NDSA Levels of Digital Preservation 2.0, 2019: https://ndsa.org//publications/levels-of-digital-preservation/
- ARA UK & Ireland Salary Recommendations, 2018: https://www.archives.org.uk/careers/salary-recommendations.html

These resources provided reference points to ensure better coverage for assessment of the key activities and responsibilities; the knowledge, skills, and experience; and position level and type.

The next sections summarise the findings from the qualitative analysis.

3.2 Word Frequency in Job Summaries

The total amount of words aggregated from the text in the 134 job summaries was 24,248 words. Before the job summaries were read, re-read, and coded for analysis, a word cloud was created (see figure below). The word cloud offers an initial snapshot of the most common words used in the summaries to compare later with findings from closer readings and analysis of the text.

Figure 19. Word Cloud Snapshot showing Most Frequent Words in Job Summaries

As shown in the table below, the words digital, research, preservation, archives, data, and archive had the highest word frequency.

Table 11. Most Frequent Words in Job Summaries

Word	Frequency	Percentage (of 24,248 total)
digital	447	1.84%
research	165	0.68%
preservation	161	0.66%
archives	159	0.66%
data	147	0.61%
archive	123	0.51%
services	119	0.49%
experience	104	0.43%
work	103	0.42%
collections	102	0.42%

The words with the most frequency in the aggregated text were comparable to those most frequently found in the job titles. Both had digital at the top of the list with research, preservation, and data appearing in the top ten. Archive, archives, and archivist were similarly prevalent in both summary text and job titles.

Table 12. Most Frequent Words in Job Titles

Word	Frequency	Percentage (of 134 total)
digital	41	30.59%
preservation	20	14.92%
archivist	19	14.17%
manager	18	13.43%
data	17	12.78%
research	16	12.69%
senior	15	11.19%
developer	13	9.77%
special	12	9.70%
specialist	11	8.20%

While the frequency of the words suggests an emphasis on overarching aspects of the jobs, it gives little specificity to particular activities and responsibilities. Therefore, the next stages involved closer readings of the text.

3.3 Activities and Responsibilities

All the job summaries were read and then re-read to note recurring terms or phrases relating to the stated work activities and responsibilities of the job. These key terms and phrases, along with identified areas from previous research and work by NDSA, DigCurV, and DPC RAM, were used to develop a coding system.

The codes for activities and responsibilities were incorporated into a form as a checklist. The items on the checklist ranged from specific tasks (e.g. file format identification and characterization, creation of access copies) to more general groupings (e.g. content preservation, discovery and access). There was also an option to add 'other' to include those that did not easily fit into one of the boxes.

Most Common Activities and Responsibilities

Analysis of the completed forms found that the common activities and responsibilities across the postings were:

Table 13. Most Common Activities and Responsibilities

Key Activities/Responsibilities	Total Counts	Percentage
policy and strategy (general)	58	43.28%
continuous improvement (general)	56	41.79%
acquisition/accession, transfer, ingest (general)	53	39.55%
discovery and access (general)	52	38.81%
administrative duties and support (general)	50	37.31%
education and training within the organization	48	35.82%

community engagement (general)	44	32.84%
content preservation (general)	44	32.84%
bitstream preservation (general)	43	32.09%
metadata management and cataloguing (general)	42	31.34%

The job summaries tended to refer to general groupings rather than specific tasks or duties. At the top of the list was the creation, development, and implementation of policies, strategies, and procedures to govern operations and management of digital preservation. Continuous improvement broadly referred to processes and activities that monitored and assessed current digital preservation capabilities, defining goals, and monitoring progress. Interestingly, the only specific activity in this list, education and training within the organization, fits under the continuous improvement category as it works to improve digital preservation capability through the directed and self-directed training of staff.

Activities and Responsibilities Categories

Additionally, analysis of the activities and responsibilities, informed by DPC RAM, grouped them into the categories of organizational viability; policy and strategy; legal basis; IT capability; continuous improvement; community; acquisition, transfer and ingest; bitstream preservation; content preservation; metadata management; and discovery and access. The findings respective to each group are provided in the tables below.

Organizational Viability

Table 14. Most Common Activities and Responsibilities - Organizational Viability

Key Activities/Responsibilities	Total Counts
administrative duties and support (general)	50
Liaise/engage with internal and external stakeholders	19
budgeting and funding opportunities	14
strategic and operational leadership – of vision, of staff and partners	3

Policy and strategy

Table 15. Most Common Activities and Responsibilities - Policy and Strategy

Key Activities/Responsibilities	Total Counts
policy and strategy (general)	58
research and reporting	38
development of preservation policy and strategy	37
develop and implement workflows	35
project and programme management	1

Legal Basis

Table 16. Most Common Activities and Responsibilities - Legal Basis

Key Activities/Responsibilities	Total Counts
legal requirements and issues (general)	17
copyright and legal issues	3

IT Capability

Table 17. Most Common Activities and Responsibilities - IT Capability

Key Activities/Responsibilities	Total Counts

IT duties and support (general)	38
development/maintenance of software, tools	33

Continuous Improvement

Table 18. Most Common Activities and Responsibilities - Continuous Improvement

Key Activities/Responsibilities	Total Counts
continuous improvement (general)	56
education and training within org	49
tracking progress for identifying errors/gaps for improving workflows	40
benchmarking assessments	27
specific research and analysis projects	25
undertaking directed and/or self-directed informal and formal training	13

Community

Table 19. Most Common Activities and Responsibilities - Community

Key Activities/Responsibilities	Total Counts
community engagement (general)	44
education, training, outreach wider digital preservation community	37
contributing to expert groups, committees, task forces	25
organization of events	22
social media administration and publicity/promotional/marketing materials	17
establishing/organizing community networks	15

Acquisition, transfer and ingest

Table 20. Most Common Activities and Responsibilities - Acquisition, Transfer, and Ingest

Key Activities/Responsibilities	Total Counts
acquisition/accession, transfer, ingest (general)	53
monitor delivery of files from donors/supplies and identify issues arising	33
development of guidelines for content creators	29
support creators/donors/suppliers in acquisition/accession process	21
selection appraisal for preservation	17
digitization	11

Bitstream preservation

Table 21. Most Common Activities and Responsibilities - Bitstream Preservation

Key Activities/Responsibilities	Total Counts
bitstream preservation (general)	43
content replication	10
fixity integrity checksums	6

Content Preservation

Table 22. Most Common Activities and Responsibilities - Content Preservation

Key Activities/Responsibilities	Total Counts
content preservation (general)	44
technology watch to monitor/plan over time	22
transformation and migration	8
file format identification and characterization	7
emulation	1
normalization	3

Metadata management

Table 23. Most Common Activities and Responsibilities - Metadata Management

Key Activities/Responsibilities	Total Counts
metadata management and cataloguing (general)	42
internal guidance and controlled standards/vocabularies employed	21
metadata creation and extraction	11
descriptive cataloguing	7

Discovery and Access

Table 24. Most Common Activities and Responsibilities - Discovery and Access

Key Activities/Responsibilities	Total Counts
discovery and access (general)	52
develop or manage advanced resource discovery and access tools (e.g. faceted searching, custom access via API, visualizations)	24
manage basic discovery and access mechanism	24
creation of access copies	3

3.4 Knowledge, Skills, and Experience

The analysis of knowledge, skills, and experience used the same techniques. All the job summaries were read and then re-read to note recurring terms or phrases relating to the stated knowledge, skills, and experience necessary for applicants to be considered for the post. These key terms and phrases, along with identified areas from previous research and work by NDSA, DigCurV, and DPC RAM, were used to develop a coding system for the next reading.

The coding of activities and responsibilities was incorporated into the same form as a second checklist. The items on the checklist included both general (e.g. subject knowledge – certificate or degree in a relevant area) and specific (e.g. subject knowledge – certificate or degree in archive, library, or information studies) to reflect what was stated in the summaries. The checklist included an option to add 'other' to include those that did not easily fit into one of the boxes.

Most Common Knowledge, Skills, and Experience

The most common knowledge, skills, and experience areas listed in the postings were:

Table 25. Most Common Knowledge, Skills, and Experience

Knowledge/Skills/Experience	Total Counts
communication	66
collaboration and teamwork	62
knowledge of digital preservation standards, best practices, and tools	54
analytical skills	46

technical abilities	45
project planning and management experience	44
training and instruction	39
subject knowledge - certificate or degree in archive, library, or information studies	37
professional experience in archives, library, repository	34
attention to detail	27

Figure 20. Most Common Knowledge, Skills, and Experience

At the top of the list was communication, followed by collaboration and teamwork and knowledge of digital preservation standards, best practices, and tools.

Knowledge, Skills, and Experience Categories

The next stage of analysis grouped the findings on the knowledge, skills, and experience into categories to communicate the broader domain to which the skills belong. The DigCurV framework informed these. They were grouped into subject knowledge and intellectual abilities; personal qualities; ethical and professional conduct; and management and leadership experience. These findings by group are presented in the tables below.

Subject Knowledge and Intellectual Abilities

Table 26. Most Common Knowledge, Skills, and Experience - Subject Knowledge and Intellectual Abilities

Knowledge/Skills/Experience	Total Counts
knowledge of digital preservation standards, best practices, and tools	54
analytical skills	46
technical abilities	45
subject knowledge - certificate or degree in archive, library, or information studies	37
subject knowledge – certificate or degree in relevant area	23
subject knowledge - certificate or degree in computer science or information technology	8

Personal Qualities

Table 27. Most Common Knowledge, Skills, and Experience - Personal Qualities

Knowledge/Skills/Experience	Total Counts
communication	66
collaboration and teamwork	62
organizational skills	26
timeliness	20
adaptability/flexibility	17
passion/motivation for digital preservation	16

Ethical and Professional Conduct

Table 28. Most Common Knowledge, Skills, and Experience - Ethics and Professional Conduct

Knowledge/Skills/Experience	Total Counts
social and ethical responsibility	12
commitment to equality, diversity, and inclusiveness	12

Professional Experience

Table 29. Most Common Knowledge, Skills, and Experience - Professional Experience

Knowledge/Skills/Experience	Total Counts
project planning and management experience	44
training and instruction	39
professional experience in archives, library, repository	34
attention to detail	27
problem solving	26
professional experience - other	26
leadership	18
managing budgets	15
professional experience – in information technology or related area	12
public speaking	7

3.5 Education Level and Formal Qualifications

A little over half (68) of the 134 postings specified a minimum degree or education level required for the position. They included

Table 30. Minimum Education Level or Qualification Required

Qualification Required	Total Counts
GSCE, A Level, or equivalent qualification	5
First degree or equivalent in progress	12
First degree or equivalent qualification	24
Postgraduate degree or equivalent qualification	25
PhD	2

3.6 Position Level and Type

The job postings were next evaluated and assigned one of five position levels corresponding to the level of expertise, experience, and authority associated with the post. These levels considered the

skills and competency levels of the DigCurV framework the five maturity levels of DPC RAM, and NDSA's four levels of preservation. The five levels are presented in Table 31 below:

Table 31. Position Level and Type

Position Level	DigCurV level	RAM
0 - novice, minimal awareness		0 - minimal awareness
1 – beginner, some awareness		1 - awareness
2 – basic, theoretical knowledge but little to no practical work experience	basic - maintains a basic awareness of a given subject area, including basic knowledge of the range of issues that shape developments in the subject area.	2 - basic
3 -intermediate, knowledge and practical work experience with some management responsibilities	intermediate - able to demonstrate an understanding of a given subject area, and possesses some knowledge of the terminology, business processes and tools relevant to the subject area.	3 - managed
4 – advanced, knowledge and practical work experience with management experience and responsibilities	advanced - possesses detailed knowledge of a given subject area, and is able to apply this knowledge to complete tasks on an independent basis.	4 - optimized
5 – expert/leader, established knowledge, practical and management experience, taking on leadership responsibilities		

Postings by Level

With the five levels established and assigned to each posting based on its job description, the majority of the postings (51.5%) were at level 4 followed by level 3 (23.1%) and level 5 (11.2%).

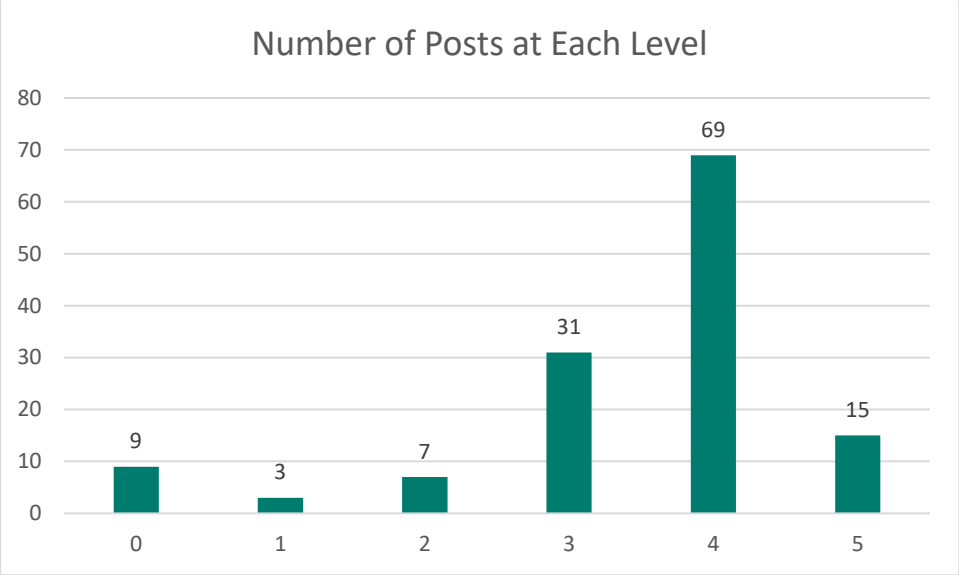

Figure 21. Postings by Position Level

Key Activities and Responsibilities by Level

Given that Level 0 was that of complete novices and trainees, requiring minimal to no previous experience with digital preservation, they were not analyzed for key activities and responsibilities.

Level 1

There was no one most common activity or responsibility for Level 1. Instead, there were the following:

Table 32. Most Common Activities and Responsibilities - Level 1

Key Activities/Responsibilities	Level 1
administrative duties and support (general)	1
policy and strategy (general)	1
develop and implement workflows	1
specific research and analysis projects	1
IT duties and support (general)	1
development/maintenance of software, tools	1
acquisition/accession, transfer, ingest (general)	1
content preservation (general)	1
bitstream preservation (general)	1
content replication	1
metadata management and cataloguing (general)	1
metadata creation and extraction	1
internal guidance and controlled standards/vocabularies employed	1
descriptive cataloguing	1
discovery and access (general)	1
creation of access copies	1

The lack of a clear top activity or responsibility could be due to there only being 3 postings within the Level 1 category and also the beginner level of expertise, experience, and authority associated with the level which could mean a more generalist approach to digital preservation tasks and duties is in place.

Level 2

The most common activities and responsibilities for Level 2 were:

Table 33. Most Common Activities and Responsibilities - Level 2

Key Activities/Responsibilities	Level 2
discovery and access (general)	5
acquisition/accession, transfer, ingest (general)	4
administrative duties and support (general)	4
metadata management and cataloguing (general)	4
research and reporting	4
content preservation (general)	3
bitstream preservation (general)	3
organization of events	3
policy and strategy (general)	2
IT duties and support (general)	2
specific research and analysis projects	2
education and training within org	2
tracking progress for identifying errors/gaps for improving workflows	2
education, training, outreach wider digital preservation community	2
undertaking directed and/or self-directed informal and formal training	2
responding to general enquiries and general user/patron/client support	2

The most common to Level 2—comprised mainly of practitioners—was discovery and access (general). There were only 7 postings within this level, 6 of them having 'assistant' in the title and the other a fixed-term project archivist position. This role of assisting might explain the more user-focused activities associated with responding to general user/patron/client inquiries and providing administrative and/or practice-based support.

Level 3

The most common activities and responsibilities for Level 3 were:

Table 34. Most Common Activities and Responsibilities - Level 3

Key Activities/Responsibilities	Level 3
continuous improvement (general)	14
acquisition/accession, transfer, ingest (general)	14
policy and strategy (general)	13
education and training within org	13
administrative duties and support (general)	13
content preservation (general)	13
bitstream preservation (general)	13
IT duties and support (general)	12
discovery and access (general)	11
research and reporting	10
metadata management and cataloguing (general)	10

Continuous improvement (general) and acquisition/accession, transfer, ingest (general) were tied at the top of the list for Level 3, which included researcher, practitioner, educator, technician, and manager types. Continuous improvement refers to various processes for the assessment of current digital preservation capabilities, the definition of goals and the monitoring of progress, which was an essential part of the job for those taking on basic responsibilities and management of more specialized tasks. Acquisition/accession, transfer, ingest refers to the processes to add content into a digital archive, which frequently involves implementing workflows, documenting work, and monitoring for any errors or issues to amend them. In this way, the two work together, especially when looking at the job titles such as Data Analyst, Audiovisual Digitisation Officer, and Digital Asset Manager.

Level 4

The most common activities and responsibilities for Level 4 were:

Table 35. Most Common Activities and Responsibilities - Level 4

Key Activities/Responsibilities	Level 4
continuous improvement (general)	35
policy and strategy (general)	34
discovery and access (general)	34
acquisition/accession, transfer, ingest (general)	32
education and training within org	30
administrative duties and support (general)	30
tracking progress for identifying errors/gaps for improving workflows	27
content preservation (general)	26
metadata management and cataloguing (general)	26
community engagement (general)	26
bitstream preservation (general)	25

Like Level 3, Level 4 also had continuous improvement (general). Most in this category were managers and technicians responsible for improving digital preservation capabilities through achievable goals and processes.

Level 5

The most common activities and responsibilities for Level 5 were:

Table 36. Most Common Activities and Responsibilities - Level 5

Key Activities/Responsibilities	Level 5
policy and strategy (general)	8
community engagement (general)	8
continuous improvement (general)	6
education, training, outreach wider digital preservation community	6
contributing to expert groups, committees, task forces	6
development preservation policy and strategy	5
development/maintenance of software, tools	4
establishing/organizing community networks	4
Liaise/engage with internal and external stakeholders	4

education and training within org	3
IT duties and support (general)	3
benchmarking assessments	3
procurement, contracts, services with third-party providers	3
budgeting	3

At the top of Level 5's list was policy and strategy (general), something central to executives and senior managers responsible for setting long-term goals and funding vision. It makes sense then why the job titles in this category included the terms Head, Senior, Director, and Executive.

The above assessments of the findings on the key activities and responsibilities particular to each individual level, taking into account the position types and job titles common to each, helps contextualize and elucidate which digital preservation activities are prioritized, and perhaps areas where more training and development is needed.

Comparing and contrasting them is also beneficial. For instance, although policy and strategy (general) was the most common to all the levels combined (58 total), it was not the most common to all the individual levels. It appeared across the levels but it was only Level 5 that had it at the top of the list. This indicates that those in Level 5 hold the main responsibility for creating policies and strategies but also suggests that the effectiveness of those policies and strategies relies on their integration and implementation in the activities of other levels.

Similarly, there are high instances of continuous improvement (general) across Level 3 to Level 5, with it topping the list for Level 3 and Level 4. This could suggest that the monitoring, assessing, and benchmarking activities of continuous improvement processes feed back into the development of effective policies and strategies. Deeper understandings of the overlap and intersections between these and other most common activities can help with future work in digital preservation.

Position Types

Next was assigning position type. The categories started with the three identified by DigCurV—practitioner, manager, executive. However, a number of the postings did not fit into these categories. For this reason trainee, researcher, educator, and technician were added. Technician, which shares some commonalities with practitioner, was assigned to those that were more information technology based rather than information services or management based. Additionally, there was overlap between the distinctions, especially technician, practitioner and manager.

The breakdown of these types is presented in the pie graph below (Figure 22), with most of the posts fitting into the manager, technician, executive, and practitioner types.

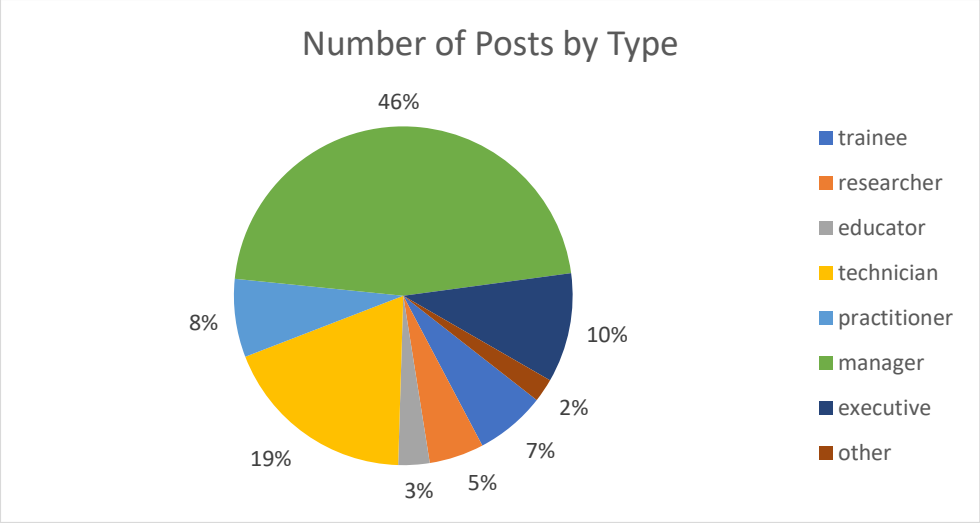

Figure 22. Job Posts by Position Type

Types and Levels

Figure 23 shows the percentage of each position type within each level.

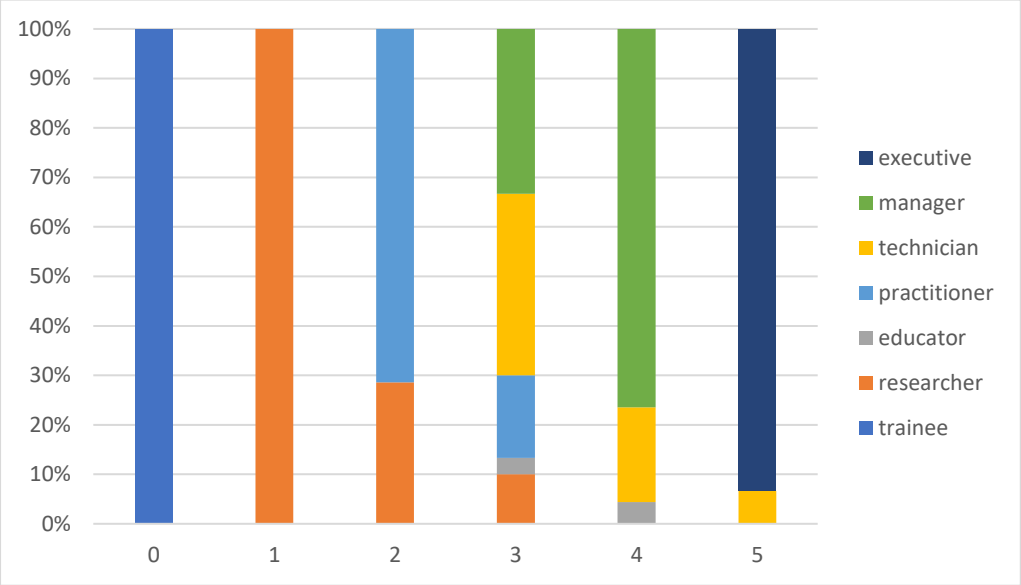

Figure 23. Position Types within Each Position Level

To be expected, trainees were at the lowest level. Researchers, whose positions ranged from PhD Studentship to Project Researcher, ranged from Level 1 to Level 3. Educators fell into Level 3 or Level 4, reflecting the differences of Teaching Fellow to Associate Lecturer. Technicians ranged from Level 3 to Level 5, from Developer to Head of Systems & Services. Practitioners fell into Level 2 and Level 3—from Collections Assistant to Archivist. All executives were at Level 5 (e.g., Head of Sound and Vision, Senior Statistician, Sales Executive).

Salary Ranges for Different Levels and Types

In general, the increase in salary ranges reflects the increase in position level, as shown in Figure 24.

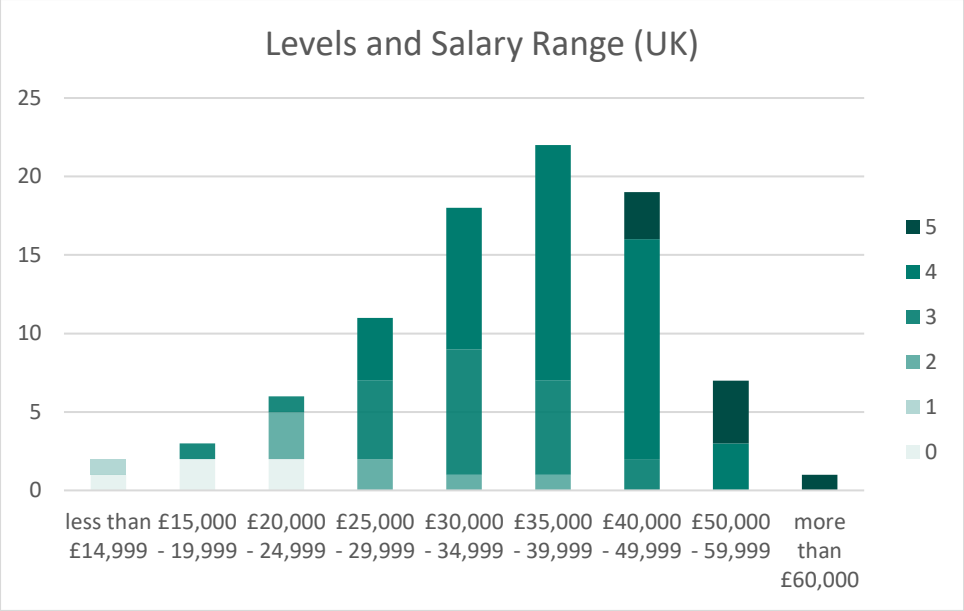

Figure 24. Position Levels and Salary Range

Additionally, Figure 25 shows the distribution of the types within each salary range (UK).

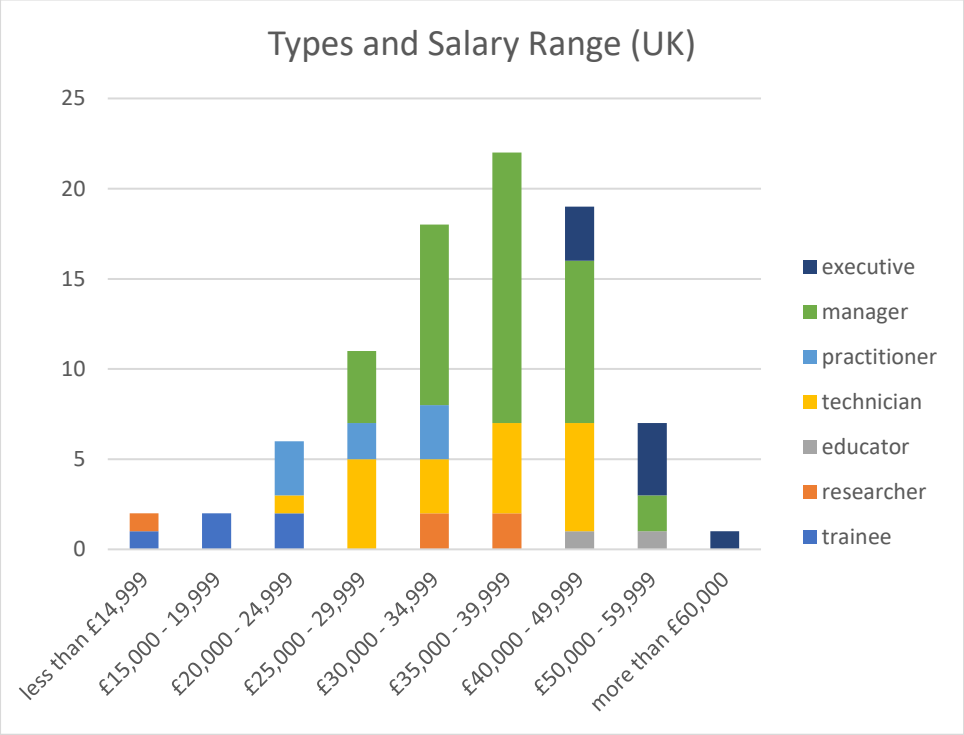

Figure 25. Position Types and Salary Range

For the most part, the salaries correspond to the typical expertise, experience, and authority associated with the six types. Trainees and fixed-term project researchers tend to have lower salaries whereas executives have higher salaries. Those in the middle—practitioners, technicians, educators, and managers—have salaries that range depending on the job specifications and the organization.

4. Conclusion and Next Steps

At its broadest, this research set out to gather basic occupational data on the digital preservation labour market to provide overviews of information relating to job titles, salaries as well as numbers of postings by contract types, organizations, localities, and sectors.

Some of the key findings from the quantitative analysis were

- Most of the jobs posted on the site had 16-17 days between the posting and the application due date.
- There continues to be a range of organizations represented across sectors, including but not limited to national archives, libraries, museums, government bodies and agencies, businesses, and higher education and research institutions.
- The top three job titles are Digital Archivist, Digital Preservation Manager, and Archivist.
- Job titles still vary, but there are clear and common terms to connect them, namely digital, preservation, archivist, and manager. The terms special and specialist are becoming more popular terms.
- Salaries do generally fall within the same range, between £20,000 and £50,000, with a few outliers for those at an early level (e.g. traineeships) and those with higher executive roles (e.g. Deputy Head).
- The mean, median, and mode UK salaries are £36,084, £35,110, and £40,000
- There are slightly more fixed term contract types compared to permanent contracts, but not a significant difference in the ratio of full-time to part-time. The length of fixed contracts varies but 18.8% were for one year.
- Most of the traineeships and jobs with multiple posts available came from larger organizations
- There was not much of a difference in salary for UK jobs in and out of London.

Some of the key findings from the qualitative analysis were

- Just as with job titles, the most common word in the descriptions was digital. Both job titles and job descriptions also shared the common terms of research, preservation, and data.
- Most of the job summary descriptions were general in terms of the day-to-day activities and responsibilities of the job.
- The top three activities and responsibilities were policy and strategy, continuous improvement, and acquisition/accession, transfer, ingest. This emphasizes the importance of proper planning throughout digital preservation activities, and how successful planning is an iterative process that should involve benchmarking and continuous improvement. In other words, digital preservation work is not just about planning and implementing but also monitoring and adjusting. Approximately 40% of the jobs involve the acquisition, transfer, and ingest of digital content. These findings support the more holistic view of digital preservation as a continuous interaction of policy, technology and resources.
- In terms of knowledge, skills, and experience, the most mentioned across the postings were communication; collaboration and teamwork; and knowledge of digital preservation standards, best practices, and tools. These findings show the importance of ‘soft’ skills in advocating digital preservation and working with those in and outside of the organization for it to be effective.

These findings indicate areas where there are current and emerging work opportunities and the knowledge, skills and qualifications needed for these jobs as well as what might—or should—be

required in the future. They confirm areas identified by DPC staff and members such as access and benchmarking through maturity models and suggest others such as what successful stakeholder engagement and access entails. They also show where there might be a need for further clarity on the key activities and skills for IT duties and support and for legal requirements and issues.

In time this information will be used to support the development of further resources from the DPC. These will likely include:

- Resources to aid recruitment, including example job descriptions
- A competency framework for digital preservation, describing common role types
- A skills audit toolkit and accompanying resources to support staff development

Of course, this analysis is from a limited number of job postings during a particular period of time. The next steps will involve the refinement of findings. Recommendations for further research include more data collection, readings of accompanying materials in addition to the job summaries, and deeper investigations into unforeseen events impacting the job market—namely the impact of Brexit and COVID-19.