RSE Landscape Review

Our Research Software Engineer (RSE) Community

Our membership consists of more than 500 members of the Society of Research Software Engineering. However, the community we are part of is much larger than this. It also includes our Slack workspace (more than 3500 members), our Twitter followers (more than 5800), participants of our events - in particular the RSE conference, and all the other people we interact with. Within this community, there are various groups, such as national and regional RSE networks, the International Council or RSE Associations, the RSE Leaders Network as well as the International RSE Leaders, etc.

RSE Role Landscape

In our community, there are diverse RSE roles and career trajectories that highlight the importance of RSE skills. Our [case studies website](#) provides a glimpse into the variety of RSE careers, which include dedicated RSE positions, data scientists, computer scientists, infrastructure engineers and digital scholarship librarians. [Vanessa Sochat's RSE stories](#) showcase even more "ways of being an RSE".

Over the past year (2021-2022), we have run RSE landscape surveys that look into the different variants of RSE jobs, employment and how RSE would like to develop their role. The first was run in March 2021 at the [SSI Collaboration Workshop](#) with 39 responses (including those gathered by posting the survey also to CW21 attendees who did not take part in our workshop), and is summarised in this [blog post by Teri Forey](#) . A second similar, but not identical workshop was run at the [SeptembRSE online conference](#) in September 2021. Further answers to our questions about RSE careers were gathered by posting our survey on the RSE Slack. These two latter surveys together got 32 responses. All of these surveys were open to an international audience, although they might be skewed towards UK-based participants due to the organisers of the events being from the UK.

Although these survey responses are not a representative sample of our community, they show the spectrum of RSE jobs, types of employment and motivations. In contrast to the Collaboration Workshop survey, the latter two surveys were published in settings where most people identify as RSEs or RSE leaders.

The plots below show the responses of this survey participant group. More than half of them were based in an RSE group and the majority at a university, with the embedded RSEs in a research group outnumbering those in a central group. Encouragingly, a large percentage of the respondents had permanent or open-ended contracts and there were no zero-hours contracts.

The answers to the question about appraisal shows that the RSE career path still is very varied and no common form has emerged. This wide variety of career paths does not need to be seen as something negative - but on the other hand may get in the way of career

progression of individuals, and delay adoption of sustainable career paths as institutions re-invent the wheel and fight similar battles again and again.
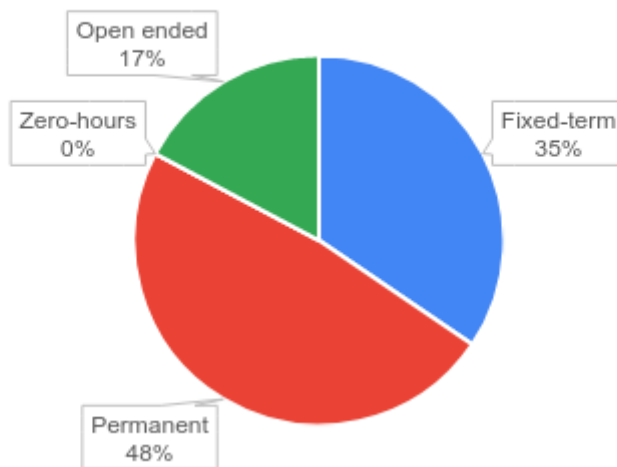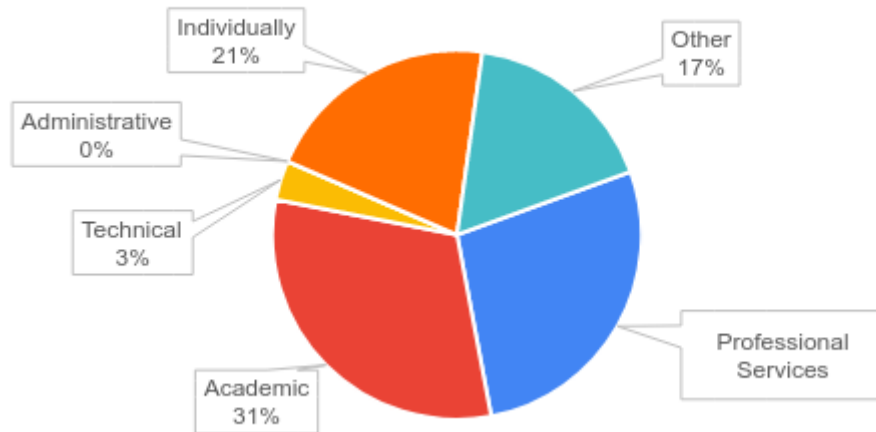
Where are you based?
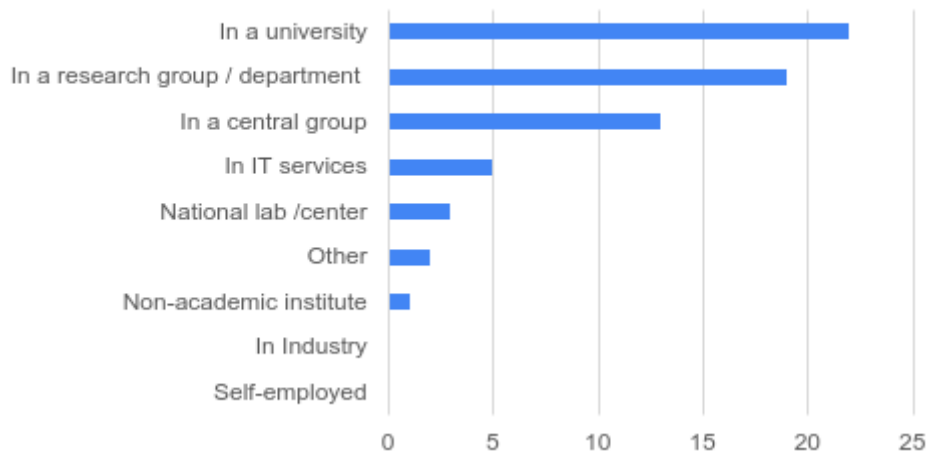
Are you in an RSE group?
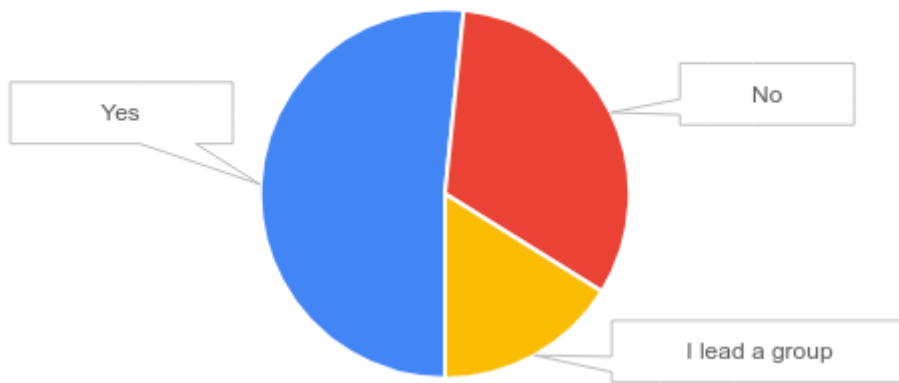
## What type of contract do you have?

How are you appraised?

The participants' relationship with software and research is also very varied, as the following plots show. As to expect from the target audience, the respondents use, maintain and write software in different complexities. With respect to research, though, there is a split between those with their own research questions and those who support other people's research, with a number of respondents doing both.

What is your relationship with software?

What is your relationship with research?
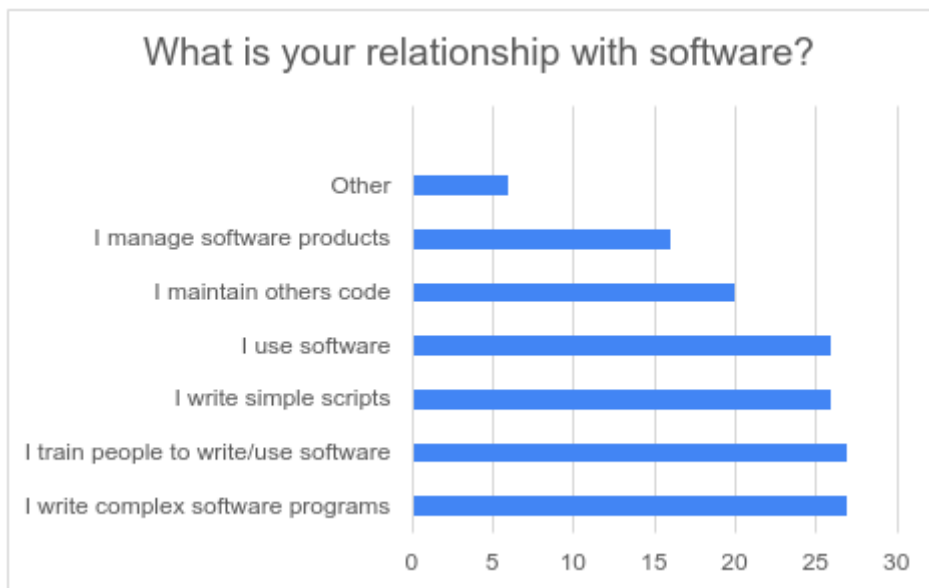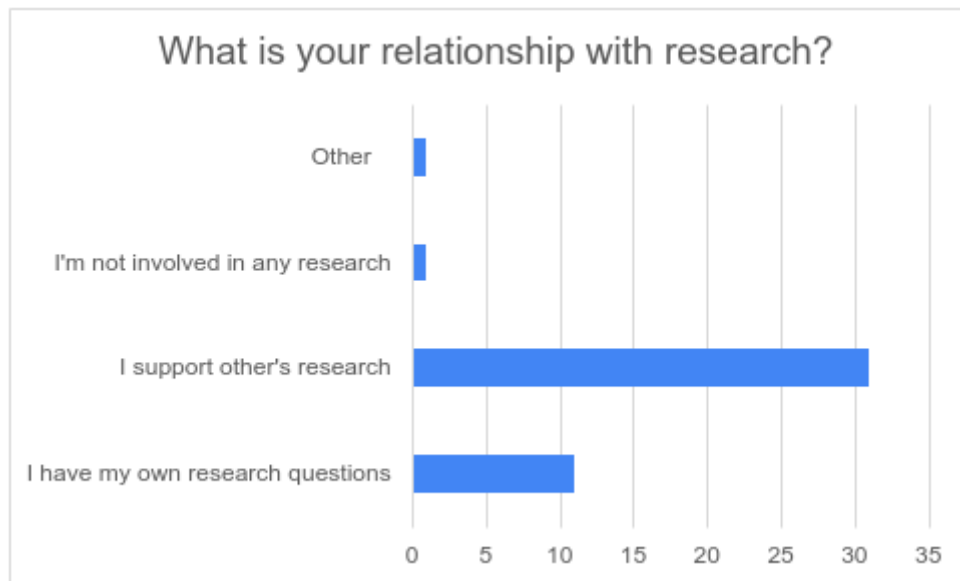
Other responses from the survey show that RSEs are often involved in grant writing, either as named or unnamed researcher, and they have a large range of different job titles.

The community seems to be split between people seeing themselves more as software developers and those seeing themselves more as academics/researchers (and choosing respective alternative job titles), but in general they would prefer their daily work to go more towards research than it does currently.

One notable outcome of the survey is that, although the RSEs largely feel relatively secure in their current employment, they feel significantly less secure when we ask about career progression. This is reflected in the free text answers, where they ask the RSE Society to work on career paths, professional development and funding. There is also interest in alternative RSE roles (such as freelance RSEs) and "post-RSE career paths".

Interestingly and notably, there are also still people who are not sure whether they can consider themselves to be RSEs

RSE EDIA Landscape

The paper "Understanding Equity, Diversity and Inclusion Challenges Within the Research Software Community" by N.P. Chue Hong, J. Cohen and C. Jay points out that the RSE community, as surveyed by the Software Sustainability Institute in 2018, is even less diverse in terms of gender, disability and ethnicity compared to other classical STEM fields such as Physics or Computer Science. Ethnic diversity is particularly low in the community compared to, for example, IT professionals in industry. This study focuses mainly on UK data.

In our 2021/22 RSE Community survey we asked our community members a range of questions regarding their gender, ethnicity, sexual orientation, age and disabilities, whether they feel supported and represented by the Society, and what could be improved.

Unfortunately, the number of responses we got does not allow for a conclusive EDIA analysis of our community. However, we can look at this as anecdotal evidence and see the free text responses as helpful suggestions and feedback.

Of 34 responses, only 1 responded as non-white and 1 preferred not to say. 21 respondents are male, the others split between 11 female/woman, 1 non-binary and 1 preferred not to say. 32 respondents do not identify as trans with the remainder preferring not to say. Sexual orientation was split between 26 respondents identifying as heterosexual, 1 gay, 3 bisexual and 4 preferring not to say. 19 respondents are between the ages of 35 and 44, 7 between 25 and 34, 2 between 45 and 54, 3 between 55 and 64 and 1 over 65, with 2 preferring not to say. 27 do not consider themselves disabled, while 5 do, although only 1 respondent chose to report that they have accessibility needs.

To summarise the minority groups associated with each question, 3% of respondents are non-white, 36% are non-male, no respondents identify as trans, 13% identify as not heterosexual, 40% are outwith the majority age-range of 35-44, 15% consider themselves disabled and 3% report having accessibility needs. Compared to values reported in the above paper (Chue Hong et al. 2021), our respondents are less diverse than the general UK workforce in gender balance and ethnicity, but typical for the proportion that report disability. There are mixed results when compared to the more general software developer population and academic populations. However, our respondents are generally at least as diverse as those of the similar survey of RSEs reported in (Chue Hone et al. 2021). While these numbers cannot be used to infer trustworthy facts about the RSE population as a whole (given our sample is only 35) it provides useful context for the free-text responses summarised below.

Only 53% of respondents reported that they feel valued in the community and 65% that they feel represented by the Society. The free-text responses suggest that RSEs in industry (as opposed to academia) are not well-represented, there is a lack of local community for some RSEs and there is too much emphasis placed on centralised RSE groups. This is also reflected in responses to other questions in non-EDIA parts of the survey. There is additionally an impression that the Society is untransparent and unclear in its direction, however it's unclear from the limited responses if this is a widely-held view.

38% of respondents consider the RSE community to be diverse and inclusive, with 11% reporting they think it is not. Many of the free-text responses consider this to be a problem not with any lack of friendliness or inclusivity in the community itself, but instead a reflection of the population from which RSEs are typically hired (i.e. STEM fields within academia). Suggestions to improve this include more outreach in schools and (undergraduate) university, encouraging more RSEs from social sciences and other non-STEM fields, collaborating with affinity groups such as UK Black Tech and encouraging case studies from those with more diverse backgrounds.

Outlook

We are seeking to continue and intensify collecting data and information on the RSE community and EDI therein. In our Equality, Diversity, Inclusion and Accessibility (EDIA)

[Strategy](#), which is a living document and as such subject to continuous updates, we outline how we are aiming to address issues that became apparent in this landscape review, in the short, medium and long term.