

# Working as a postdoc - a survey

## 1. Introduction

Postdoctoral positions are fixed-term positions for individuals that already have doctoral degrees and who aim to acquire further academic qualifications. A postdoctoral appointment is primarily aimed at research. According to the central collective bargaining agreement [1], an individual is eligible for a postdoctoral position if they have obtained their doctoral degree at most three years before the deadline for the application. The position can then be held for up to three years. Postdoc positions have become increasingly common in academia in the last few decades, having more than doubled in Sweden since 2010 [2], and are now by far the most common form of career-development position (meriteringsanställning) in Sweden [3], outnumbering Assistant Professor (biträdande lektor) by a factor of three. The working conditions of postdocs have been less studied compared to other groups due to the relative novelty of this kind of position. In many fields, a postdoctoral assignment represents a crucial step in the academic progression, which makes the question on which factors affect postdoc working conditions and career perspectives increasingly relevant. In addition, with the recent constitution of dedicated associations for postdocs at various universities and at the national level in 2018 [4], as well as the service of postdocs in academic professional organizations and unions, postdocs are gaining a central role as *actors* in the Swedish academic system.

Postdocs as a group present some peculiar characteristics as compared to other academic positions. For example, according to Statistics Sweden (Statistiska centralbyrån - SCB), academic employees in a career-development position (a group composed of 75% of postdocs) are the group with the largest percentage of individuals with a foreign background. They have also been particularly affected by the pandemic as a result of the limited duration of their positions. Postdocs themselves are a heterogeneous group in which some individuals have formal employment contracts,

while others are recipients of tax-exempt stipends. The latter have been missing from some statistics from universities and the Swedish Higher Education Authority (UKÄ) [5], and are considered particularly vulnerable as they are typically not covered by illness and unemployment insurance, do not receive pension or parental benefits, and are not protected by the Employment Protection Act (lagen om anställningsskydd, LAS). Postdocs on stipends are estimated to account for approximately 20% of postdoctoral assignments in Sweden [5].

It is not surprising that professional associations have recently started investigating the work environment and career perspective experienced by postdocs. Most prominently, Nature conducted a survey on postdoc conditions in 2023 [6], whereas in the Swedish context, surveys dedicated to postdocs have been disseminated by the Karolinska Institute Postdoc Association (KIPA) [7] and other similar postdoctoral associations. The KIPA survey's aim was to analyze and improve the working conditions of the postdocs working at the Karolinska Institute, while the survey conducted by Nature tried to probe the career perspectives and mental status of postdocs in the post COVID era, as well as understand how the challenges that postdocs are presented with leave a different impact with the age of the respondents. Topics such as working hours, well-being of the postdocs and mental health are investigated by both surveys.

With the aim of conducting a similar enquiry into the conditions experienced by postdocs at Uppsala University (UU), the working group on Competences and Careers of SULF at Uppsala University designed and circulated a survey at the end of 2023.

With it, we wished to get an overview of conditions experienced by postdocs at UU, and more specifically answer the following questions:

1. Which factors correlate with the well-being and career perspectives experienced by postdocs?
2. What are the main challenges experienced by postdocs as a group?
3. Are there significant differences between postdocs on employment and postdocs on stipends regarding wellbeing or career perspectives?

This study is meant to serve as a pilot and to pave the way to a revised version of the survey to be circulated more broadly.

## 2. Methods

The survey was created by the Competences and Careers working group of SULF\Uppsala as an instrument to measure the postdocs' wellbeing and working conditions. The survey was set up on Uppsala University's internal survey platform Kurt, and circulated between November and December 2023. All postdocs in the mailing list of the UU Postdoctoral Association received an invitation to participate in the survey. The data was collected and stored anonymously. Some of the survey's questions were inspired by the similar questions from the KIPA survey [7].

The survey comprised 48 questions divided into seven sections: Demographics, Recruitment and choice of research group, Contract and funding, Career development, Career outlook, Wellbeing and Diversity. Some questions were grouped in one of these three scales: wellbeing, inclusive work environment and supportive work environment (see tables 1,2,3). All other questions were treated as standalone questions.

Questions in wellbeing scale
How would you rate your overall wellbeing when at work? (Very good/Good/Neutral/Bad/ Very bad)
In the last 12 months, how often have you felt tired or exhausted? (All the time/Often/ Sometimes/Rarely/Never)
How often have you worried about your physical health? (All the time/Often/ Sometimes/Rarely/Never)
How often have you worried about your mental health? (All the time/Often/ Sometimes/Rarely/Never)

Table 1. Questions in wellbeing scale

Questions in supportive environment scale
How would you rate the support from your supervisor for the aspects below? (scale of 1-5, with 1 being "Very bad" and 5 "Very good")
Annual leave
Parental leave
Sick leave
Working hours flexibility

How well structured is your Postdoc project plan? (Very well/Sufficiently well/Not very well/I do not have a formal plan)
How supportive of your project plan is your PI / advisor? (Extremely supportive/Very supportive Supportive/Somewhat supportive/Not supportive/My PI is not aware of my project plan)

Table 2. Questions in supportive environment scale

Questions in inclusive workplace scale
Do you feel that your workplace at UU is doing enough to promote:
a. A safe environment for you to express your identity (Yes, No, do not know)
b. Accessibility / disability equity
c. An inclusive work environment
d. Diversity in the workforce
e. Ethnic / racial equality
f. Gender equality

Table 3. Questions in inclusive workplace scale

The questions in the three scales were analyzed with linear models, using *demographic information*, *type of assignment* (employment/stipend), *residence status*, and *having experienced/observed discrimination* as potential explanatory variables.

As part of the data preprocessing for the linear model, gender and residence status were turned into binary variables<sup>1</sup>: residence permit by grouping together the options with and without a residence permit, and gender by differentiating between male and non-male participants.

In addition, a standalone question about career perspectives was also analyzed with linear regression. Results from the other questions are presented with descriptive statistics. Finally, we looked for factors correlated with some important binary questions: being a stipend holder, having experienced or observed discrimination, and being a union member. In these cases we report on the Pearson correlation test, but we also used non parametric correlation tests (Kendall and Spearman) to confirm the results.

<sup>1</sup> We acknowledge that with these transformations we may lose a dimension in the analysis of the results, but the basis of this separation was to have two categories that, on average, are clearly differentiated in being more and less, or not at all, challenged or discriminated by their status.

Parametric and non parametric tests give the same results unless otherwise indicated. R was used to carry out the regression and correlation analysis.

### **3. Results**

#### **Respondents demographics**

Ninety-seven postdocs in UU responded to our survey, among which 49 were women, 44 were men, 3 were non-binary, and one preferred not to reveal their gender. Forty participants were at the ages of 31-35. The second largest group was people aged 26-30, with 29 individuals. Seventeen participants were from the age group of 36-40. Only one was below 26 years old, another one preferred not to disclose, and nine were over 40 years old.

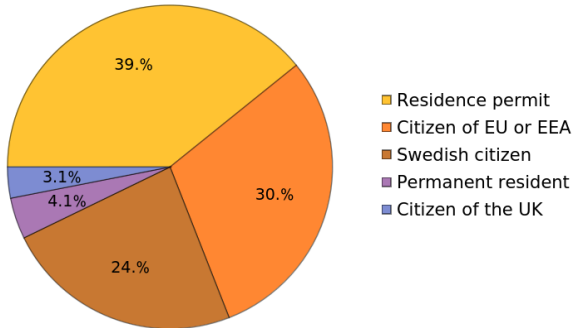
The participants in the survey were a strongly international group. Only 15 of the surveyed postdocs completed their PhD at UU itself, with an additional 14 earning their degrees at other institutions within Sweden. Thirty-five received their PhDs from another institution within EU/EEA, while 33 received their PhD from institutions outside of the EU/EEA.

Concerning participants' residency status in Sweden, 23 postdocs who participated in this survey were Swedish citizens. Twenty-nine of the participants were citizens of the EU or EEA, 4 with a permanent residency in Sweden, and 3 British citizens. Meanwhile, 37 were holders of temporary work/research residence permits and one person had a residence permit as a family member (see Figure 1a).<sup>2</sup>

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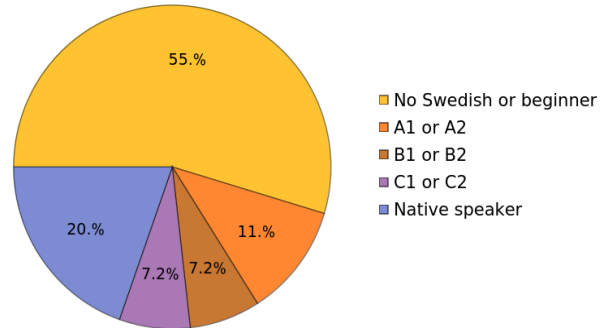
<sup>2</sup> Participants could only select one answer in the questions about residence status, so postdocs that had a temporary permit and postdocs that had a permanent permit were analyzed as two separate groups.

What is your residence status?



(a)

What is your current level of Swedish?



(b)

Figure 1. Pie charts for (a) residence status and (b) Swedish knowledge of the respondents. "Residence permits" group temporary permits for study, research or as a family member.

Participants' Swedish levels varied. Only nineteen of them were native speakers, while 53 either had zero or beginner knowledge of Swedish. From the remaining twenty-five people, 11 ranked their Swedish level between A1 and A2, while the rest had B1–C2 knowledge (see figure 1b).

There were 69 participants who did not have any children, while 27 had one or more. Fifty persons had worked 1-2 years at UU after their PhD. 39 of the participants had worked under 1 year at UU after their PhD. There were only 8 people who had worked 3-4 years after their PhD at UU.

## Motivations for taking the postdoc

The motivations that brought respondents to UU indicate a variety of reasons. In a multiple-choice question, over half of the respondents (54) stated that they took the position to gain further training in their primary research area. Another high-ranked reason (with 43 tallies) was that it was a necessary step towards a permanent academic position. These answers are in line with postdoctoral positions being the prevalent form of career-development positions in the Swedish academic system. Concerningly, a smaller group (11) reported taking the position because they could not find a different position.

The open-text responses under "Other" revealed some more insight into the less common reasons. Three participants indicated, respectively, that they took the position

because they like doing science, that a postdoc is an “easy” way to get paid for doing research, or that they wanted to continue doing research. One respondent saw the postdoc as a way to re-enter academia after a break. Others were drawn by the work conditions at UU or considered the postdoctoral position an excellent funding opportunity.

When selecting a lab or research group, participants took into account a range of factors. The most highly rated reasons included the PI’s academic reputation and expertise in a specific field or topic (mean ratings of 4.1 and 4.2, respectively, on a 5-point scale). Collaborative opportunities, location, access to specific resources, academic success of former group members and being offered a contract instead of a stipend also played a role. Looking further into the open-text responses participants provided, nine answered that they only took the specific postdoc because they got accepted at that one (either as a first acceptance or only option). For another twelve, the primary reason was the PI themselves or the access to their research group, facilities, or academic networks. Two participants accepted the postdoc as a way to reunite with their family members in Sweden, and another two had brought their own funding into the postdoc.

## Postdoc workload, vacation, and working hours

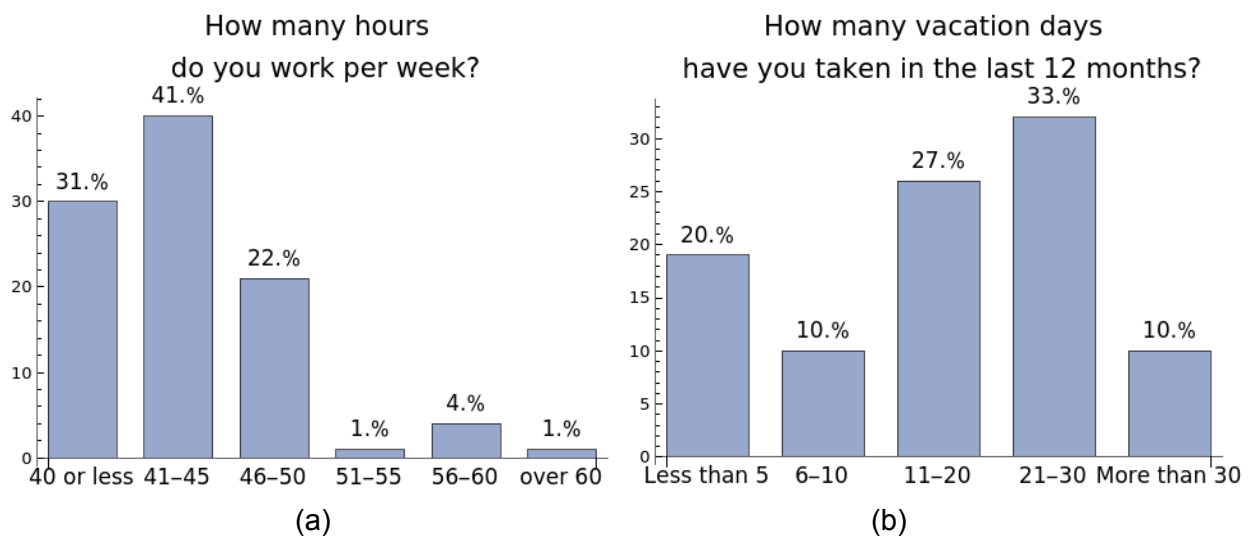


Figure 2. Charts with (a) hours worked and (b) days of vacation taken.

Most postdocs reported working beyond the standard 40-hour week. Only 30 said they worked 40 hours or fewer, while 40 reported working 41–45 hours per week, and another 21 worked up to 50 hours. Six postdocs indicated working over 50 hours a week (see figure 2a).<sup>3</sup> These figures underscore how postdocs are on average a group of overworked employees, and are in line with results from similar surveys in both international and Swedish contexts.

Vacation days taken in the last year offered a similar picture. Alarming, 19 respondents indicated having taken less than 5 vacation days in the last year, while 10 took between 6 and 10 vacation days and another 26 took between 11 and 20 vacation days (see figure 2b). According to the national collective agreement, employees are entitled to either 28, 31 or 35 vacation days, depending on their age.

## Contractual conditions: employment vs stipends

The majority of postdocs (72) were on regular employment contracts<sup>4</sup>, while 25 respondents - a substantial minority - were funded through stipends. Being a stipend holder correlated with worse career perspectives (coeff= -0.212, p=0.044). There was also a borderline correlation with a lower likelihood of being a union member (coeff=-0.197, p=0.062).

While 28 respondents indicated that their income or salary had been negotiable, 51 reported it was not, and 18 said they did not know. Only 43 participants said they had been informed in advance whether salary negotiations were possible.

Contract length also varied. Twenty-two respondents reported a duration between 25 and 36 months, while 55 postdocs indicated a duration between 19 and 24 months. Others reported shorter arrangements: 18 indicated that the duration of their position was 12 months or less, and two had a contract between 13 and 18 months. Given that the national contract stipulates a minimum duration of two years for a postdoctoral position, this figure may also reflect either some ambiguity in the way the question was

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<sup>3</sup> Interestingly, hours worked does not significantly correlate with age, gender, being on a residence permit, employment vs stipend, and years spent at Uppsala university.

<sup>4</sup> From these 72, 1 was a MSCA contract, 1 was an hourly-paid contract, and 3 had answered “I do not know” when asked about their contract type, but after cross-checking their contract length, compensation, and research duties, we inferred they are also on a standard postdoc contract.



formulated, or some respondents reporting a researcher position as a postdoc assignment.<sup>5</sup>

## Compensation and responsibilities

Salary levels among postdocs showed a wide spread. The largest group of employed postdocs —23 respondents—earned between 36,000 and 37,000 SEK before taxes (see Figure 3). A majority of stipend recipients – 18 respondents – indicate a stipend lower than 30,000 SEK. Stipends are not taxed in Sweden. As a comparison, a salary of 36,500 SEK before taxes corresponds to 28,600 SEK after taxes [8].

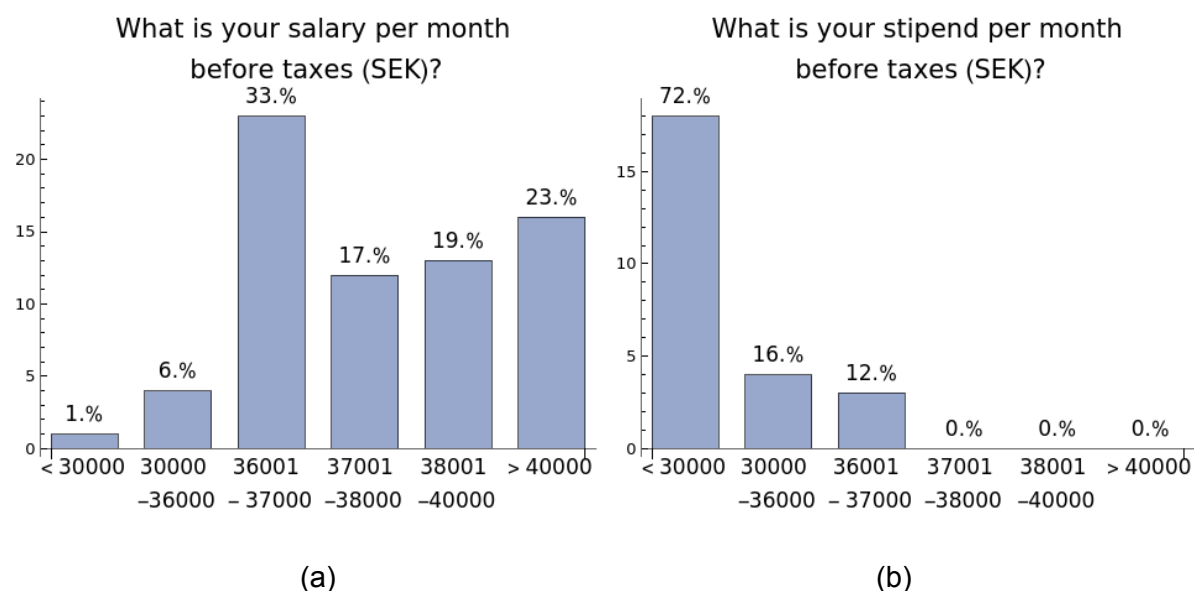


Figure 3. Charts with compensation for postdocs with employment and stipends.

Postdoc assignments were primarily focused on research. Two-thirds (67 participants) reported they spend at least 95% of their time on research. However, 36 participants reported having teaching duties. Worryingly, among these 36 participants, at least two were postdoc with stipends.<sup>6</sup> These responses potentially indicate a violation of the

<sup>5</sup> It is also in principle possible that a respondent resigned from their position before the end of the two years (e.g. for accepting a permanent position).

<sup>6</sup> A third respondent indicated holding a stipend and having teaching responsibilities, but also reported working full time in question 11. The fact that the survey was administered

terms that render stipends not taxable: according to the Swedish tax agency, in principle, a stipend is always taxable if it requires some form of work to be performed in exchange (sv: "motprestation") [9].

## Career development: need for structure, support and mentorship

Postdoctoral researchers at UU reported a mixed experience when it comes to structuring and progressing their careers. Onboarding appeared to be lacking. 30 respondents reported not having received any form of onboarding by the head of department, HR, or similar upon starting their position, while 13 said they were not sure.

While 51 participants indicated that their postdoc project plan was sufficiently well or very well structured, a notable portion—30 individuals—reported having no formal plan at all.

Supervisory support appears relatively strong, with more than half of respondents describing their principal investigator (PI) as “extremely” or “very” supportive of their project plans (see Figure 4a). However 8 respondents reported that their PI was unaware of the project plan altogether.

A strong desire for more structure was evident: 74 participants indicated that they would appreciate clear and unified UU guidelines for the postdoctoral phase, while 62 postdocs would find it helpful to have better access to courses/training. This may suggest that postdocs as a group tend to be left to themselves, and reveals ample room for improving the institutional frameworks and support structures relevant for postdocs.

When it came to mentorship, only 34 postdocs stated that they had a non-peer scientific mentor they trust other than their PI. An additional 50 respondents said that they would like to have such a mentor, but they do not at the moment. This suggests that postdocs may be considerably dependent on their supervisors, which can put them in a vulnerable position. Awareness of available mentorship programs within UU was low. Just 35 participants indicated they were aware of such initiatives, while the remaining 62 had no knowledge of mentorship schemes.

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anonymously has prevented us from collecting further information about these three individuals and confirming that they were indeed teaching while fully on a stipend.

## Career perspectives

Career perspectives appeared to be another critical area with room for improvement. While about one half of respondents (47) felt better or a lot better about their career prospects after they started their postdoctoral position at UU, 30 respondents reported no change, and 17 indicated that their prospects were worse or a lot worse (see Figure 4b).

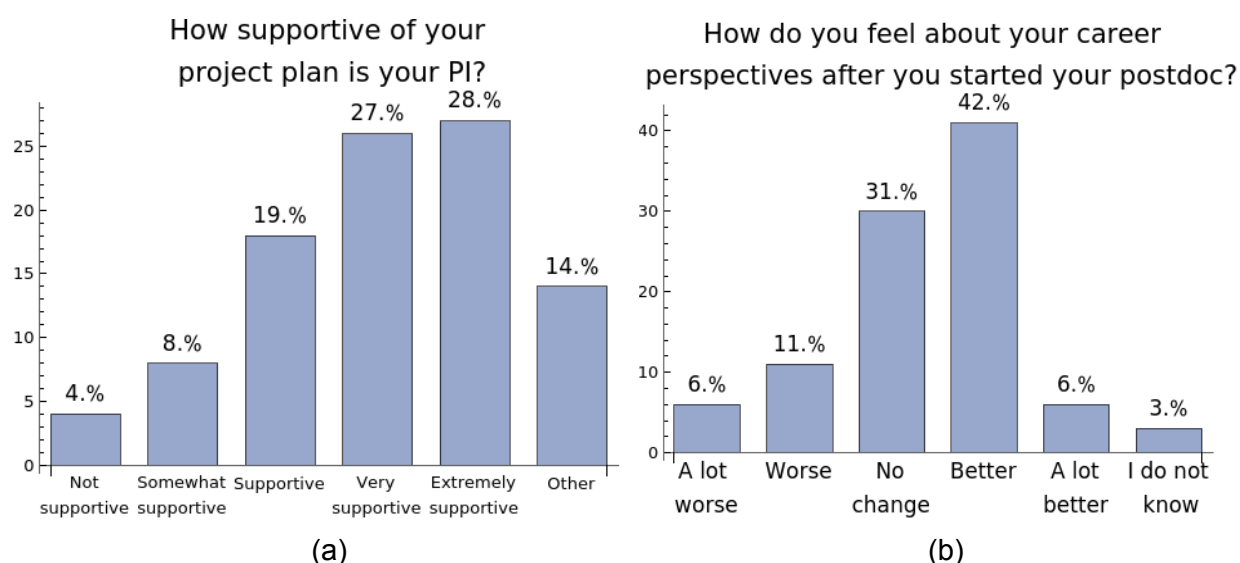


Figure 4. Charts on (a) support from PI and (b) career perspectives.

We used a linear model to probe correlation of feeling on careers perspective after starting the assignment at Uppsala university with other factors (see Table 4). The postdocs whose career prospects were reported as “worse” were associated with having a stipend instead of employment, and with having spent a longer time at Uppsala university. We saw no statistically significant correlation with age, gender, and having a residence permit.

	Estimate	Std.	p-value
Intercept	3.61	0.908	1.5e-4 ***
Age	0.00238	0.0224	0.916

Years at UU	-0.251	0.117	0.034 *
Gender (man/not man)	0.225	0.20591	0.278
Residence permit (Yes/No)	0.227	0.19974	0.259
Stipend (Yes/No)	-0.574	0.261	0.0304 *

Table 4: details on linear model with career perspectives as dependent variable.

More nuance is provided by the open-text answers left in the career perspectives and guidance part of the survey. One of the respondents shares: *“As a stipend holder, I feel really alone, as UU doesn’t even recognize people under stipends, we don’t exist to them. Even with the postdoc association and so on, I am happy to know that people gather and try to change things (and thanks to them for that), but as long as stipends exist this will take time to change. Once you know you won’t have anything in terms of financial help, you just do not want to spend time and energy to fight for that as you already have your postdoc to work on. It is simply too much, too much frustration and you feel tired. The only positive thing is having the understanding from others, and the best support comes from them, as well as from your own decision to find another postdoc position with a real contract and salary, and never again find yourself on a stipend.”*<sup>7</sup>

## Wellbeing: high levels of exhaustion and health concerns

The reported wellbeing of the postdocs was overall mixed, with some concerning findings. While 69 respondents rated their overall wellbeing when at work as good or very good, 18 respondents rated their wellbeing as neutral and 10 as bad or very bad. Forty-seven respondents indicated that in the last 12 months they have felt exhausted often or all the time. Additionally, 29 respondents indicated that they have been worried about their physical health often or all the time, and 37 respondents reported that they have been worried for their mental health often or all the time. These four questions were grouped together in a wellbeing scale (see Figure 5). Given the number of postdocs worrying about their physical and mental health, it is somehow surprising that many respondents would perceive their wellbeing at work as good. This might indicate an overall tendency toward tolerating suboptimal working conditions.

<sup>7</sup> This quote has been slightly reworded for clarity.

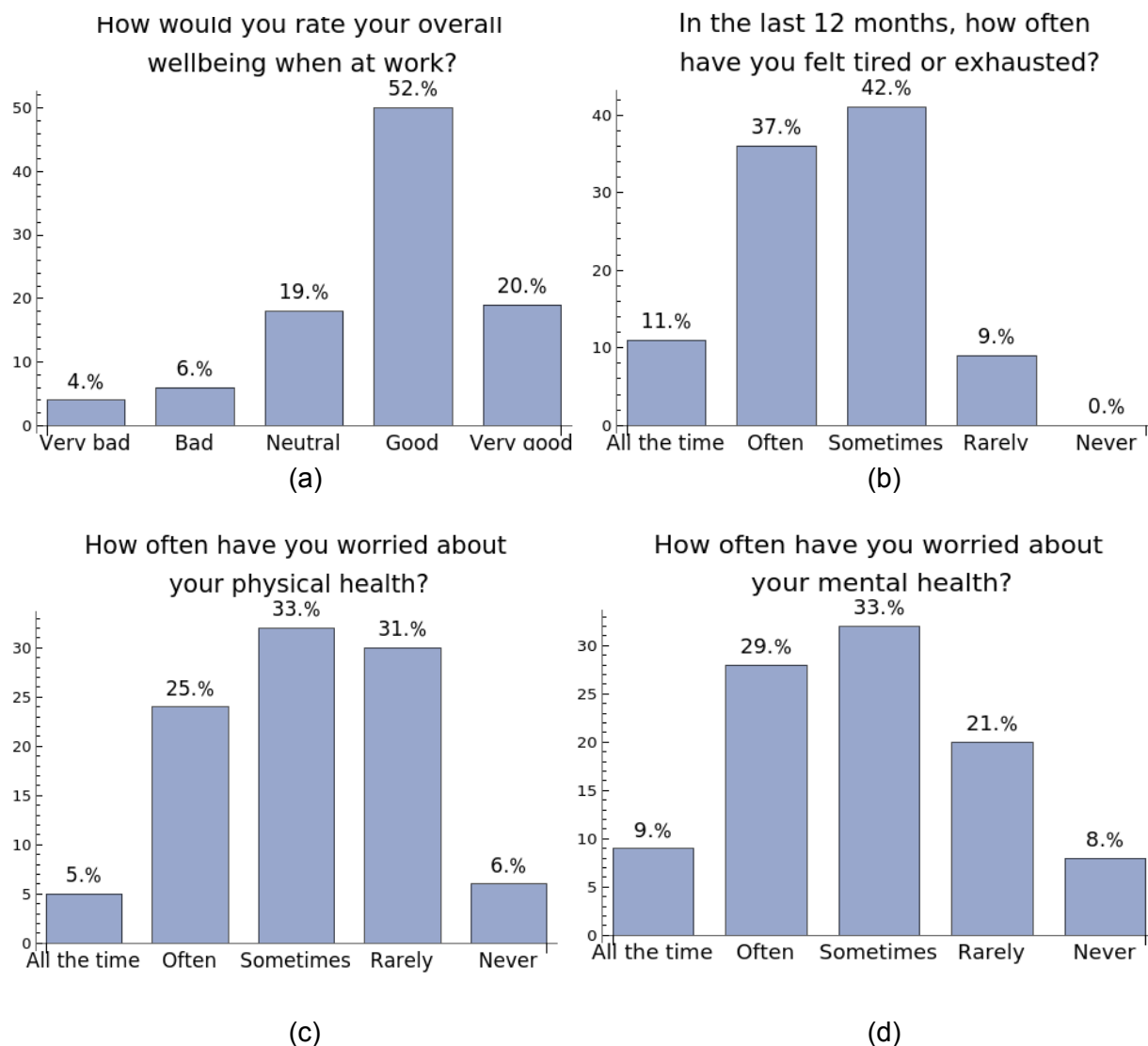


Figure 5. Charts on (a) wellbeing, (b) exhaustion, (c) concern for physical health and (d) concern for mental health.

People's openness in communication with supervisors was another question with very mixed answers. While 38 participants said they felt comfortable discussing stress with their supervisor often or all the time, 34 reported that they feel comfortable rarely or never. Notably, five respondents said they do not talk to their supervisor about stress at all but instead turn to friends, partners, or peers.

A linear model was used for correlating the total score of the wellbeing scale with potential explanatory factors. A higher score on wellbeing was correlated with a

supportive environment (as measured by the supportive environment scale), whereas a lower score was correlated with having experienced or observed discrimination in the workplace. Finally, we observed a statistical correlation with years spent at Uppsala University, where the postdocs that had been around for longer reported a worse overall wellbeing. Details of the model are in Table 5. No correlation was seen with gender, holding a residence permit and having a stipend vs employment.<sup>8</sup>

	Estimate	Std.	p-value
Intercept	3.28	0.831	1.6e-04 ***
Age	-0.0287	0.0153	0.064
Years at UU	-0.172	0.0841	0.044 *
Gender (man/nonman)	0.0239	0.143	0.868
Supportive-environment scale	0.492	0.104	8.3e-06 ***
Residence permit (Yes/No)	-0.166	0.140	0.237
Stipend (Yes/No)	-0.220	0.185	0.238
Experienced or observed discrimination	-0.475	0.214	0.0291 *

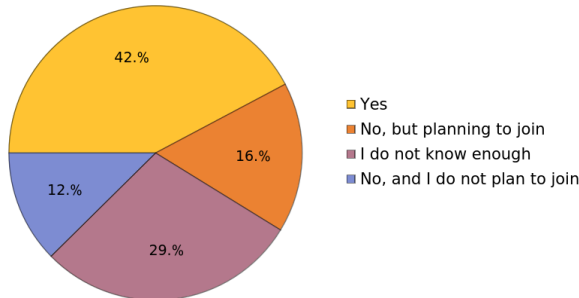
Table 5. Details on linear model for wellbeing scale.

## Union membership among postdocs

The survey showed a mixed relationship between postdocs and union representation. Forty-one respondents reported being union members, among which 26 were SULF members (followed by Naturvetarna and ST, with 5 and 4 members). Another 16 indicated they plan to join a union, while 12 said they had no intention of doing so. Almost a third of the participants - 28 postdocs - stated they did not know enough about unions to make a decision (see Figure 6a).

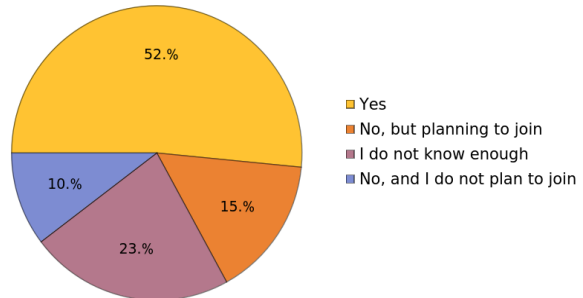
<sup>8</sup> A similar model considering worked hours as an additional explanatory variable gives identical results, with no significant effect from working more or less hours.

Are you a member of a trade union?



(a)

Are you enrolled in an A-kassa?



(b)

Figure 6. Pie charts for membership in (a) a union and (b) A-kassa.

These numbers indicate a definite need for more information about unions. It is also interesting that a sizable group reported planning to join without having done so already. This delay between taking the decision to join and submitting a membership application should be taken into account in our recruitment strategies — it is quite possible that some postdocs are just waiting for a reminder.

Being a member of a union correlated significantly with years at UU (coeff=0.279,  $p=0.0074$ ), and had borderline correlations with age (coeff=0.198,  $p=0.060$ ), gender (coeff=0.203,  $p=0.054$ , women and non-binary people were more likely to be members), holding a residence permit (coeff=-0.202,  $p=0.055$ ) and holding a stipend (coeff=-0.197,  $p=0.062$ ).

Enrolment in Sweden's unemployment insurance system (A-kassa) was similarly divided: half of the respondents were enrolled, while the rest were either planning to join, had no plans, or lacked sufficient knowledge about it (see Figure 6b). Enrollment in A-kassa correlated significantly with years at UU (coeff=0.231,  $p=0.028$ ), age (coeff=0.233,  $p=0.026$ ) and holding a residence permit (coeff=-0.318,  $p=0.0021$ ).

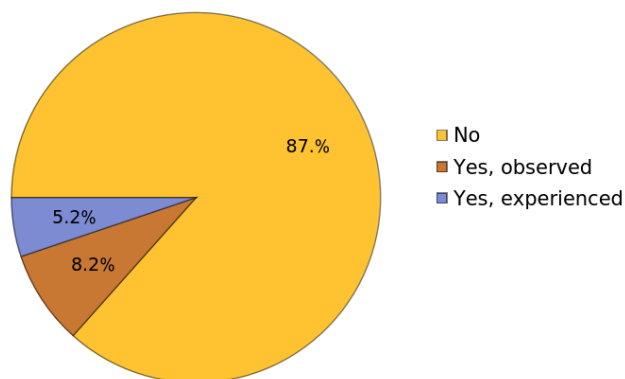
Awareness of the union's role in supporting those who experience discrimination was overall good, with sixty participants knowing that they could seek union help in case of discrimination, and 37 that did not. However, only five individuals had actually used union services for counseling or support.

These numbers were inverted when it came to UU's occupational health services—just 33 respondents acknowledged knowing that these services were available for both work-related and personal matters.

## Discrimination and inclusion at the workplace

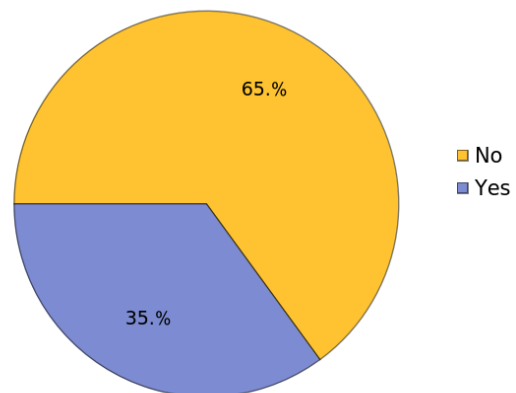
Alarming, 13 respondents reported either observing or personally experiencing discriminatory behavior at UU in the last year (see Figure 7a). The most commonly cited bases for discrimination were employment status (particularly being on a stipend), ethnicity, nationality, and gender identity. Respondents noted both individual and structural causes—ranging from exclusion by colleagues to systemic limitations placed on stipend-funded researchers. Having experienced or observed discrimination correlated with years spent at UU (coeff=0.229,  $p=0.029$ ), with individuals who have been around for longer being more likely to have encountered discrimination.

Have you observed or experienced  
discrimination at UU in the last year?



(a)

Do you know how to  
report discrimination at UU?



(b)

Figure 7. Pie charts for (a) observing or experiencing discrimination and (b) knowing how to report discrimination.

When asked about the perpetrators of discrimination, most respondents cited supervisors or peers, although some highlighted that the discrimination was embedded in policies and administrative practices. In terms of response, only 5 respondents had formally reported the incidents to the closest manager. Other 13 respondents indicated



not having reported the incident.<sup>9</sup> Another particularly alarming result is that a majority of respondents, 63, report not knowing how to report discrimination at UU. Despite these results, a majority of respondents felt that UU is doing enough to ensure a safe space for identity expression and many felt that the university promotes an inclusive culture. This denotes an interesting trend in the survey as many respondents report concerning aspects of their workplace experiences while maintaining an overall positive perception of the actions of the employer as a whole.

## 4. Discussion

This survey has highlighted some of the major challenges experienced by postdocs and painted a mixed picture of UU as a workplace. We can also compare, on a national level, the results from this survey to the survey conducted by KIPA and, on a broader scale, with the survey conducted by Nature. As the three surveys aimed to answer different questions, a direct comparison is not straightforward, but the information provided was still highly valuable. All surveys ultimately investigated a variety of issues related to the working environment of postdocs as well as their overall wellbeing: their career prospects, their relationship with their supervisor and colleagues, their outlook on life and work future after the postdoc, and their general mental and physical health.

Postdocs at UU appear to be overworked and overstressed. A majority of respondents indicated working more (in some cases, significantly more) than 40 hours per week. In addition to the unbalanced working hours, many of the respondents also indicated having taken very few vacation days in the past year. This finding highlights the considerable discrepancy between the contractual rights and the reality of the academic workplace.

The most direct comparison among the surveys regards the amount of out-of-contract working hours. On average, all three surveys showed that postdocs work more than the agreed working hours, with comparable numbers regarding the amount of people that add up to 10 hours to their working time. However, the situation in Sweden appeared slightly less alarming than the global average, as more postdocs worked exactly the

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<sup>9</sup> The number of postdocs who indicated either having reported or not having reported an occurrence of discrimination they had observed is 18, while only 13 respondents reported having observed or experienced discrimination in one of the previous questions. This might suggest that some respondents did not consider some behaviours as discriminatory until pointed out as such in the survey examples.

agreed amount of hours, and less worked more than 10 hours above it. On a global level, only 13% of the postdocs did not exceed the working hours established by their contracts, while in Sweden those numbers were higher, reaching up to 46.5% of postdocs in the KIPA survey but only to about 30% in the case of Uppsala University. This difference becomes smaller when counting all of the people who worked up to 50 hours per week, with 53% globally, 42% for KIPA and 63% for UU. Finally, the amount of people working more than 10 hours above their weekly quota was about 23% globally, but much lower in Sweden, with values of 10% for KIPA and 6% in UU.

The postdocs' increased workload was accompanied by feelings of exhaustion and concerns about mental and physical health. While it is not a surprise that health concerns were present, the magnitude of the effect is staggering. Respectively 38% and 30% of respondents to our survey reported being worried about their mental and physical health "often" or "all the time". These numbers were slightly lower in the KIPA survey, with 27% and 18% worrying significantly about their mental or physical health respectively. As the Nature survey did not address directly the wellbeing of postdocs, no direct comparison is possible, however, 21% of Nature respondents reported that they would have liked to receive mental health support.

These findings are compounded by the reports of people's exhaustion levels registered in the KIPA and UU surveys - about 78-79% of the respondents have felt exhausted a significant amount of time (sometimes or often), with numbers ranging around 10-15% for feeling exhausted rarely or all the time<sup>10</sup>.

The career perspectives of postdocs are another area for concern, particularly given the intended role of a postdoctoral position as a stepping stone towards more permanent positions. While a majority of postdocs were positive about the effect of their position at UU on their career perspective, there was a sizable group that did not share this view. 17% of respondents report worse career perspectives, and 33% indicated no change. Interestingly, the data indicates that having a stipend instead of employment correlates with worse reported career perspectives, which is a theme we see throughout the survey's results.

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<sup>10</sup> It is concerning to see how much postdocs as a group internalize their poor health and wellbeing as a common and natural part of their career. Despite the alarming figures about their exhaustion and mental health, around 70% of the respondents in both the UU and KIPA surveys rated their overall wellbeing as positive, and 15-19% rated it as neutral. The Nature survey did not address directly the wellbeing of postdocs, but 54% of participants were satisfied with their postdoc, while 19% were neutral towards it.

In a postdoc assignment, the relationship with the supervisor takes a very central role. A majority of the respondents indicated that they do not have another academic mentor, which suggests that many postdocs might be in a vulnerable and isolated position with their scientific progression depending mainly or solely on one individual. The centrality of the role of the supervisor is further reflected by the observation that support from the supervisor is one of the main factors correlating with better wellbeing. Lack of structure and resources is a closely related theme: a majority of postdocs expressed a desire for more career support and clearer guidelines from the university, and about one third of respondents indicated not having a formal research plan. The fact that postdocs appear to be working without guidelines or formal plans is particularly concerning when coupled with their dependence on their supervisors, and reveal a concrete risk that a postdoctoral position be not primarily used as a step for career development for early stage researchers, but as a way of extracting cheap qualified labor. This risk is particularly pronounced in case of stipends.

A second factor strongly correlating with wellbeing is having observed or experienced discrimination. The number of respondents having observed or experienced discrimination is concerning, and underscores the vulnerability of postdocs as a group. Additionally, a shocking number of postdocs indicated that they do not know how to report incidents involving discrimination and that they do not know that they can contact the union about discrimination problems. This highlights another major recurring theme in the survey's results, as well as a direction for potential improvements: postdocs have very little information about their rights.

An interesting result is that time spent at UU correlates with worse wellbeing and worse career perspectives. While some of these correlations are borderline and more data is needed, they highlight time as a critical dimension for academics in postdoctoral positions. Postdoc positions are by nature limited in time. However, the fact that wellbeing gets progressively worse over time might be a reflection of the unsustainable workload that cannot be maintained for long, as well as a sub-optimal work environment and the disillusionment regarding careers perspectives. Alternative explanations are either some form of survival bias, i.e. that individuals who find better positions leave the respondent pool, or a cohort effect, since postdocs who have been around for longer started their postdoc during the Covid-19 pandemic. Clearly, more data is required to confirm this effect and eventually produce a plausible explanation.

Postdocs on stipend are linked with worse reported career perspectives, but there is no statistically significant difference in wellbeing we could detect with our survey instrument. However, at least two (possibly three) respondents to the survey indicated that they have been given teaching responsibilities without an employment contract (i.e. while fully on a stipend). This is a violation of the terms that render stipends tax-free contributions, and identifies a critical area for union enforcement.

The relationship between postdocs and union membership is another interesting aspect highlighted by the survey. About 50% of respondents are union members, with SULF playing a dominant role among other unions. However, many respondents indicate either that they either plan to join a union, but have not done so already, or that they do not know enough about unions. Hence, there is potential for targeted recruitment efforts. In particular, the delay between the decision to join and its actualization suggests that it might be worth following up individually with postdocs that participate in SULF seminars as well as to give multiple reminders about the need to join the union. Another critical area for union activity is spreading information about e.g. what to do in case of harassment or discrimination.

Our study has several limitations that should be taken into account when assessing its results. First, both the number of responses and the fact that the response rate is difficult to estimate given the way in which the survey was circulated limit the statistical significance of some of the results.<sup>11</sup> Additionally, we did not differentiate between important groups of postdocs, for example with respect to faculties and disciplinary domains. Furthermore, given the structure of the data analysis, it would be preferable to have more questions probing career prospects (creating a scale instead of a single question) as well as to increase the number of questions in the wellbeing scale. Additional questions are also necessary to delve more in depth in some of the themes we have identified. Since we now know that postdocs are often worrying about mental and physical health, we should also inquire on what other issues they are worrying about. Similarly, we should collect more details on the ability of postdocs to save money. Finally, it would be interesting to compare postdocs as a group with both other universities and other academic positions. All these factors suggest that an updated version of the survey should be created and circulated more broadly.

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<sup>11</sup> The fact that the survey was circulated in November might also affect some of the results, e.g. regarding exhaustion and wellbeing.

## APPENDIX

### A. Consistency checks

The quality of the scales we have employed in our analysis can be assessed by calculating their Cronbach alpha, which is found in Table 6. Scores around 0.8 are usually regarded as good.

Scale	Cronbach alpha
Wellbeing scale (Table 1)	0.83
Supportive environment scale (Table 2)	0.79
Inclusive workplace scale (Table 3)	0.79

Table 6. Cronbach alpha scores for scales used in the analysis.

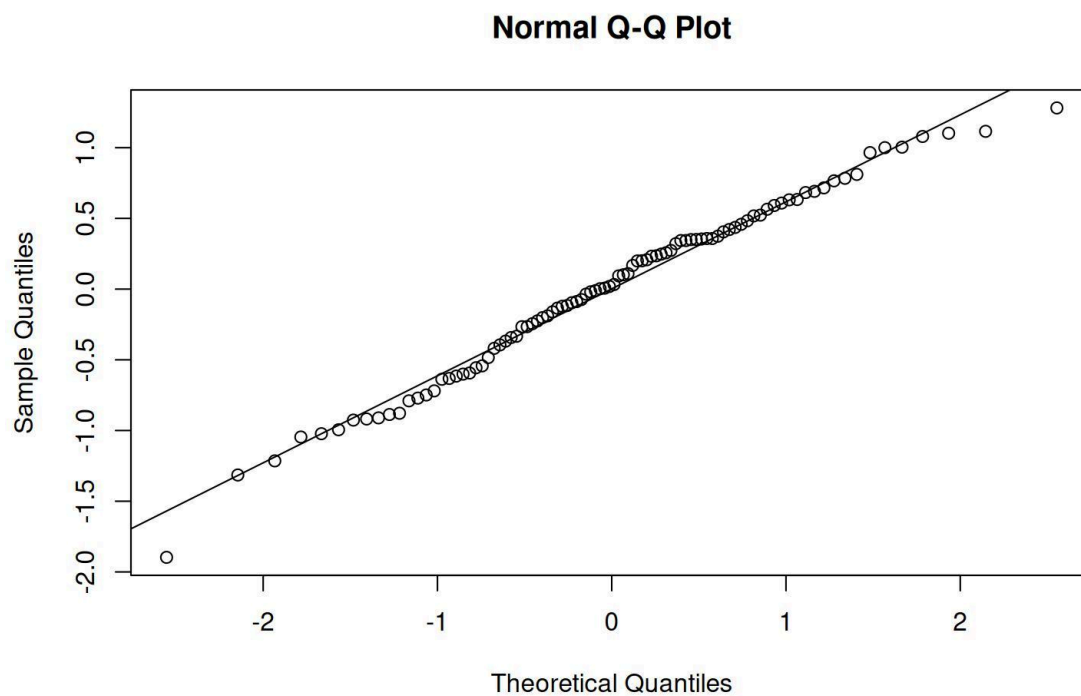


Figure 8. Normal QQ plot for the residuals of the linear model for the wellbeing variable.

A first linear model uses the result of the wellbeing scale as dependent variable and age, years spent at UU, gender (as a binary man/non-man variable), holding a residence permit, holding a stipend, score on the supportive environment scale and having observed or experienced discrimination as potential explanatory variables. The model assumes Gaussianity of the residuals, which can then be confirmed with a Jarque Bera test (p-value of 0.3844). The QQ plot for the model can be found in Figure 8.

A second model used as dependent variable the single question on career perspectives and as potential independent (explanatory) variables age, years at UU, gender, holding a residence permit, and holding a stipend. Here the quality of the data is not as good as in the first model, with a Jarque Bera test equal to 0.059. This is partly a consequence of the fact that we have a Likert question and not a scale. The QQ plot can be found in Figure 9.

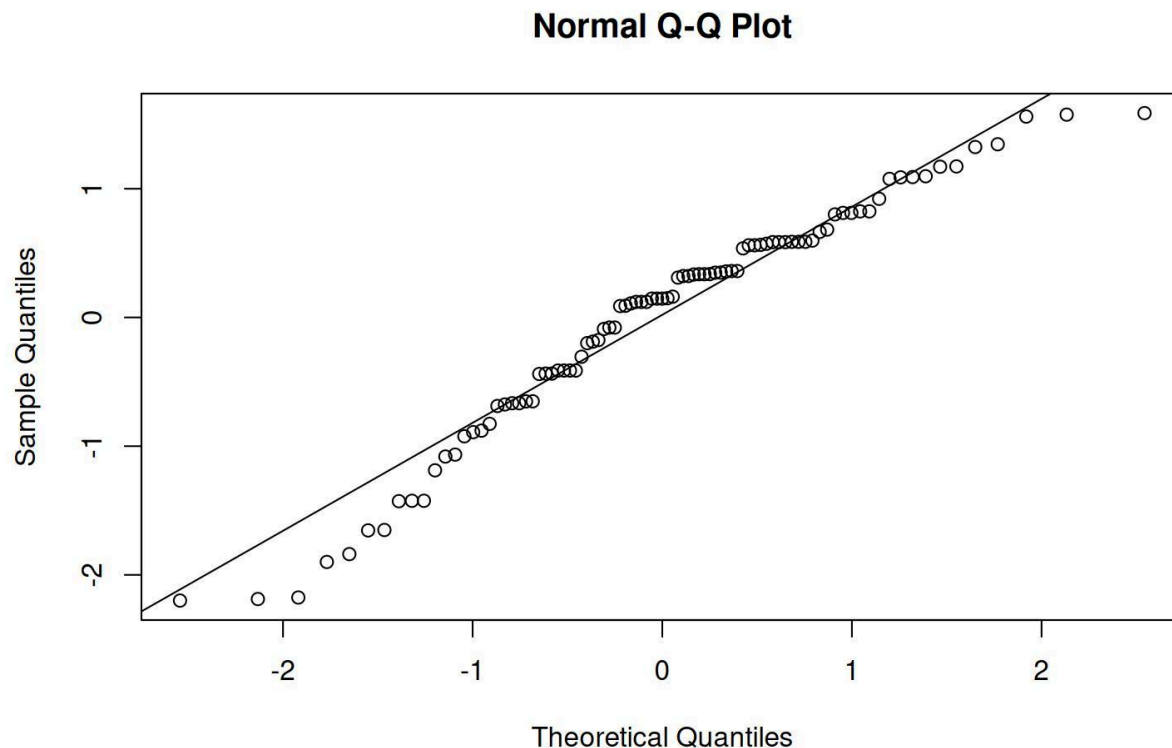


Figure 9. Normal QQ plot for the residuals of the career perspectives linear model.

A third model has the inclusive environment scale as dependent variable and age, years at UU, gender and holding a residence permit as the independent variables. This model does not find significant correlation with any of the variables and has not been presented here.

Finally, we include parametric and non-parametric significance tests for the correlations reported in the main text in Table 8.

<b>Correlation</b>	<b>Pearson</b>	<b>Kendall</b>	<b>Spearman</b>
Being on a stipend vs career perspectives	0.044	0.016	0.015
Being on a stipend vs union membership	0.062	0.062	0.062
Union membership vs age	0.060	0.044	0.043
Union membership vs holding residence permit	0.055	0.055	0.055
Union membership vs gender	0.054	0.054	0.054
Union membership vs years at UU	0.0074	0.0098	0.0090
A-kassa membership vs age	0.026	0.016	0.016
A-kassa membership vs holding residence permit	0.0021	0.0025	0.0021
A-kassa membership vs years at UU	0.028	0.021	0.020

Table 8. Correlation test for results reported in the analysis section.

## **B. Full Survey**

### **Demographics**

1. Which gender do you identify with? [Man / Woman/ Non-binary/Genderfluid/ Prefer not to disclose/ Prefer to self-describe]
2. Which age group do you belong to? [Under 26/ 26-30/ 31-35/ 36-40/ Over 40/ Prefer not to disclose]
3. What is your residence status in Sweden? [Swedish citizen/ Permanent resident / Citizen of EU/EEA / Citizen of the UK / Holder of work/research residence permit / Other]
4. What is your current (estimated) level of Swedish? [No knowledge of Swedish/ Beginner / A1 / A2 / B1 / B2 / C1 / C2 / Native speaker of Swedish]

5. Do you have children? [Yes/No/Prefer not to disclose]
6. Do you plan to start/expand your family during your postdoc? [Yes/No/ I do not know]
7. Where did you receive your PhD? [ UU / Another institution in Sweden / Another institution in EU/EEA / Another institution outside EU/EEA]
8. How many years have you worked at UU after your PhD?  
[ Under 1 year/ 1-2 years/ 3-4 years/ 5-6 years/ 7-8 years / Over 8 years]
9. What is the primary reason you chose to take up a postdoctoral position? [ Required/ To gain additional training in my research area / To gain training outside of my primary research area / It is a necessary step to obtain a desired permanent position / I was unable to find a different position / Other]
10. Please rate the reasons why you initially chose to join your PI's laboratory/research group (scale of 1 - 5, with 1 being "Very bad" and 5 "Very good")
- a. Academic reputation of PI
  - b. Expertise in specific field / topic
  - c. Location requirements or access to specific resources
  - d. Prospects of working with others in the research group
  - e. Success of previous members of the research group
  - f. Offered employment and not stipend
  - g. Other (specify in comment field)

### **Recruitment and choice of research group**

11. According to your contract, do you currently work full-time, part-time, or neither? [ Full-time/ Part-time (50% or more) / Part-time (less than 50%) / No employment (e.g. fully on stipend) / I do not know]
12. How many hours do you work per week? [40 hours or less/ 41-45 hours/ 46-50 hours/ 51-55 hours / 56-60 hours / Over 60 hours]
13. How would you rate the support from your supervisor for the aspects below? (scale of 1 - 5, with 1 being "Very bad" and 5 "Very good")
- a. Annual leave
  - b. Parental leave
  - c. Sick leave
  - d. Working hours flexibility



14. Have you taken a leave of absence due to sickness, parenting, military service, union work during your employment at UU? [ Yes/No]

15. How many vacation days have you taken in the last 12 months? [Less than 5 / 6-10 / 11-20 / 21-30 / More than 30]

### **Contract and funding**

16. What is the total length of your current position in months? (i.e. counting from the first day of work) [ Less than 6 months/ 6-12 months/ 13-18 months/ 19-24 months / 25-36 months]

17. Was your income/salary negotiable? [Yes/ No/ I do not know]

18. Were you made aware whether or not your income/salary would be negotiable? [ Yes/ No]

19. Are you employed on a regular contract or on a stipend? [Regular contract / Stipend / I do not know / Other]

20. What is your salary / stipend per month before taxes (SEK)? [ < 30000 / 30000 - 36000 / 36001 - 37000 / 37001 - 38000 / 38001 - 40000 / > 40000]

21. What percentage of your employment is dedicated to research? [ Under 80% / 80-85% / 86-90% / 91-95% / 95-100%]

22. Do you have any teaching responsibilities? [Yes / No]

### **Career development**

23. How well structured is your Postdoc project plan? [ Very well / Sufficiently well / Not very well / I do not have a formal project plan / I have not been in my postdoc long enough to judge]

24. How supportive of your project plan is your PI / advisor? [ Extremely supportive / Very supportive / Supportive / Somewhat supportive / Not supportive / My PI is not aware of my project plan / Other]

25. Upon the start of your contract, did you receive any kind of onboarding by the head of department, HR, or similar? [Yes/No/Not sure]

26. Would you appreciate clear, unified, UU guidelines for the postdoctoral phase? [ Yes / No / Not sure]

27. Do you feel that better access to courses/trainings would be helpful in reaching your career goals? [ Yes / No / Not sure]

### **Career outlook / guidance**

28. Do you have a non-peer scientific mentor whom you trust (other than PI)? [ Yes, and I trust them / Yes, but I have not yet developed trust / No, but I would like to have / No, and I do not want one]

29. Are you aware of any mentorship schemes offered by various organisations at UU? [ Yes / No ]

30. What are your future career plans? [ Academia (research-focused) / Academia (teaching-focused) / Industrial research / Science policy / Government/non-profit / Science writing / publishing / Research administration / Other / I do not know]

31. How do you feel about your career perspectives after you started your postdoc at UU? [ A lot better / Better / No change / Worse / A lot worse / I do not know]

32. Which of the following provides you personally with the best support / advice for career development? [UU career office / Other researcher organisation / Internet / UUPA / Junior Faculty / Dialogue with supervisor / Discussions with mentor / Informal discussions with supervisor / Informal discussions with colleagues / Other]

### **Wellbeing**

33. How would you rate your overall wellbeing when at work? [Very good / Good / Neutral / Bad / Very bad]

34. In the last 12 months, how often have you felt tired or exhausted? [ All the time / Often / Sometimes / Rarely / Never]

35. How often have you worried about your physical health? [All the time / Often / Sometimes / Rarely / Never]

36. How often have you worried about your mental health? [ All the time / Often / Sometimes / Rarely / Never]

37. When you feel stressed about work, do you feel comfortable talking about the issue with your supervisor? [All the time / Often / Sometimes / Rarely / Never /

No, but I talk to: ]

38. Are you a member of a trade union? [Yes / No, but planning to join one / No, and I do not plan to join one / I do not know enough about trade unions]

39. Are you enrolled in unemployment insurance (A-kassa)? [ Yes / No, but planning to join it / No, and I do not plan to join it / I do not know enough about unemployment insurance]

40. Are you aware of the option to seek advice from a union in case of discrimination? [Yes / No]

41. Have you used the help of a union for support or counseling? [Yes / No / I am not a member of a union]

42. Are you aware of the option to get help from the occupational health services for both work-related and private matters? [Yes / No]

### **Diversity**

43. Do you feel that your workplace at UU is doing enough to promote: [Yes/No/Do not know]

- a. A safe environment for you to express your identity
- b. Accessibility / disability equity
- c. An inclusive work environment
- d. Diversity in the workforce
- e. Ethnic / racial equality
- f. Gender equality

44. Do you know how to report discrimination at UU? [Yes/No]

45. Have you observed or experienced work-related discrimination at UU in the last 12 months? [ Yes, observed/ Yes, experienced/No]

46. When you observed/experienced discrimination at UU, it was based on:  
[Sexual orientation/Gender identity or expression/Religion or other belief/Disability/Pregnancy or parenthood/Age/Nationality status/Ethnicity/Race/Employment status (full-time/part-time)/Other/  
I have not observed or experienced work-related discrimination at UU]

47. When you observed/experienced discrimination at UU, who was the person discriminating?  
[Supervisor / mentor / Colleagues / peers / Administrative staff / Senior colleagues / Higher management / Other / I have not observed or experienced work-related discrimination at UU]

48. When you observed/experienced discrimination, how did it manifest?

[ Violence / Sexual harassment / Assault / Threats / Sabotaging / Lack of accessibility / Reprisals / Neglect / Bullying / offensive behavior / Remarks / mockery / Hostility / Lack of opportunities / Exclusions / Other/ I have not observed or experienced work-related discrimination at UU]

49. When you observed discrimination at UU, have you reported it? [ Yes, to the closest manager or equivalent / Yes, via the reporting system / Yes, other: / No / I have not observed or experienced work-related discrimination at UU]

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