

Perspectives from young scientists



Holly Pacey

Julia Allen, Patrick Dougan, Atanu Modak

R-ECFA UK Visit, 12th September 2024

Typical Academic career in the UK

Undergraduate

- Bachelors 3-4 year; Masters 1 year. Often 4y integrated, ~2months research time.

PhD

- 3.5 years (changing to 4, mostly STFC funded).
- Standard for e.g. LHC students to spend their 2nd year @ CERN. Very positive part!

Post-Doc

- Typically do 2-3 PostDocs before competitive for UK faculty posts.
- PDRAs on project funding, 1-3 years long
- Senior Research fellowships 5-8 years (UKRI, Royal Society), sometimes proleptic to faculty posts.

Permanency

- Lecturer / Assistant Professor roles (5 year probationary period in principle).
- Posts usually only appear when someone retires, post may not stay in the same area.

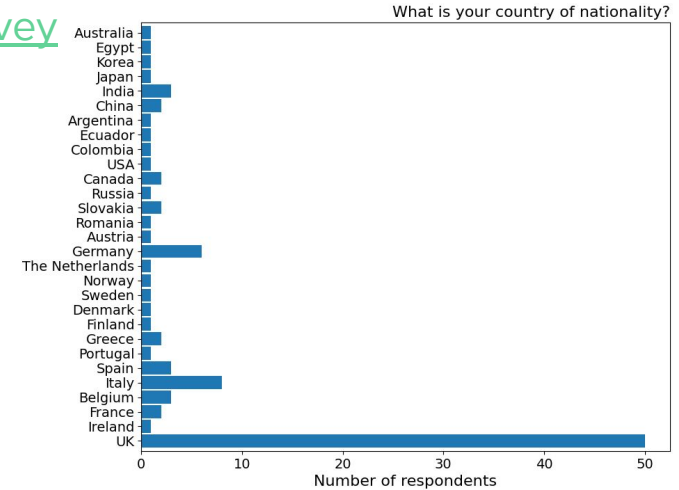
UK Stats since 2014, from another [survey](#) of 33 recent faculty hires:

- ~50/50 coming from PDRA vs Fellowship
- Mode age 31-35, big tail
- <3> institutes from PhD
-> faculty

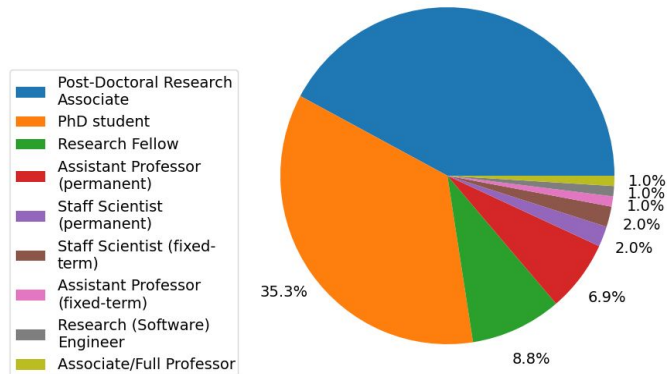
[Link to Survey](#)

Survey Basics

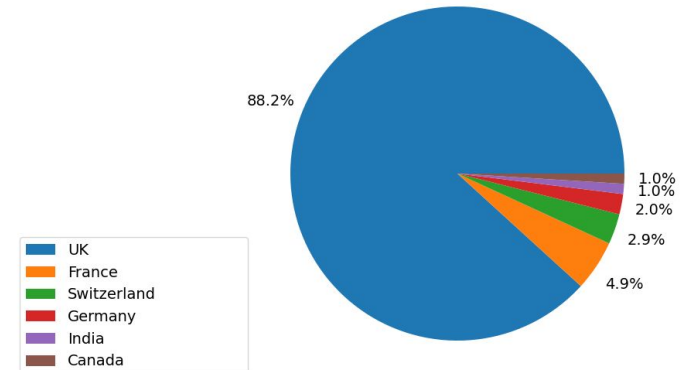
- Distributed around HEP group heads, Experiment & ECR UK mailing lists.
- Open since 19th April 2024, 102 Responses
- 64% Male; 28% Female; 3% other
- 88% live in UK
- 57% UK affiliated whole career so far.
- 7% have children (all as PDRA or above)



What is your current position? (102 answers)

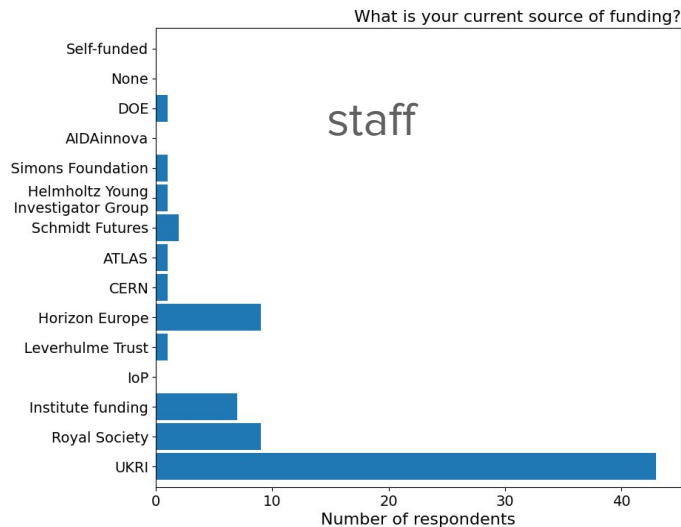
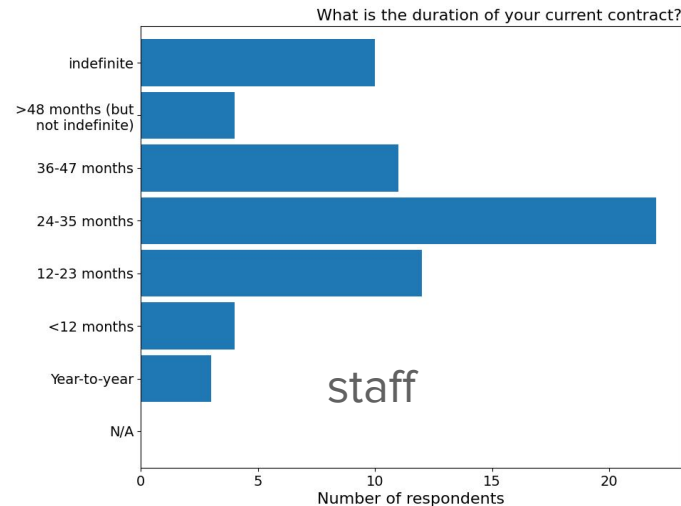
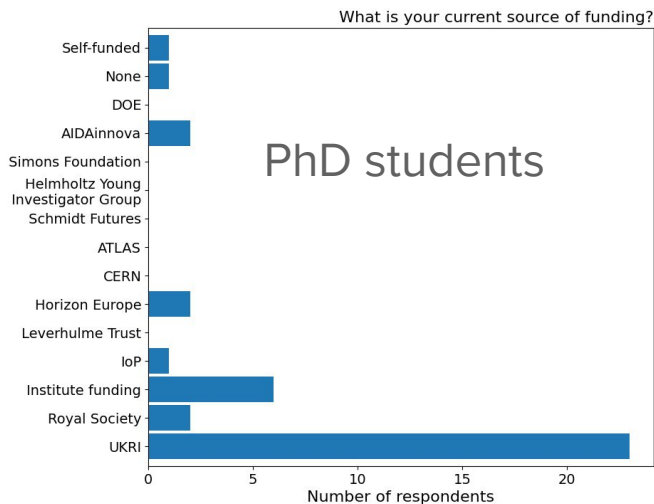


What is your country of residence? (102 answers)



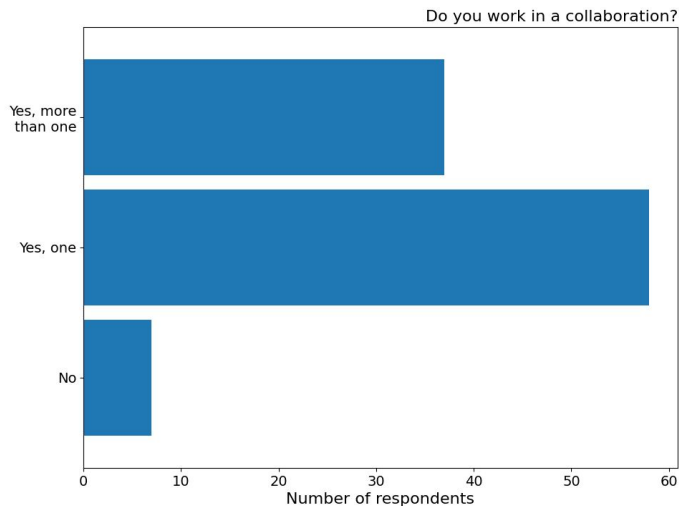
Position and Funding

- UKRI dominates funding
- Mode PDRAs etc. in 2-3 year contracts
shorter than the ave. ATLAS analysis length

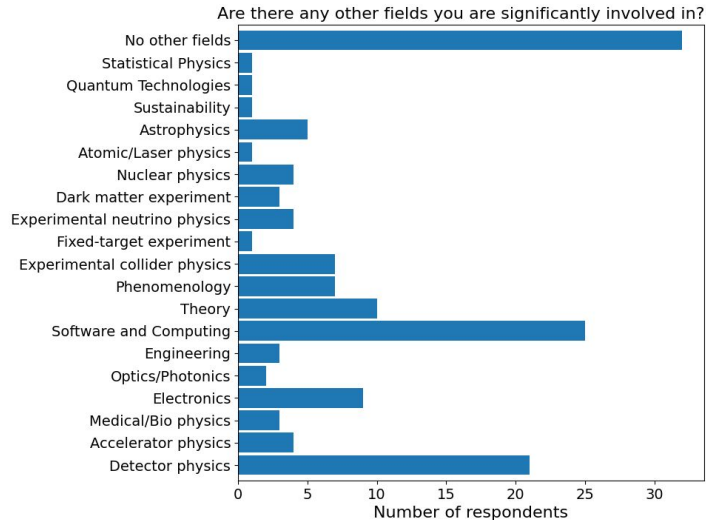
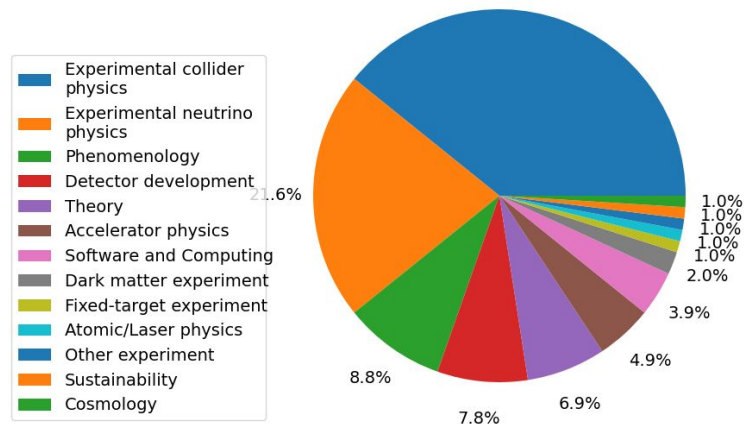


Research Fields

- 23% have changed fields at some point during their career.
- Quite a few work in >1 area/collab.

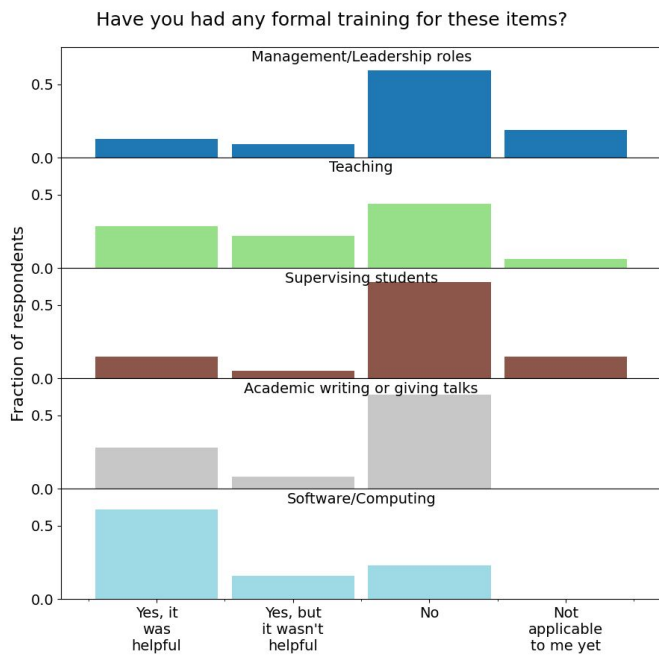


What is your primary field of research? (102 answers)
39.2%

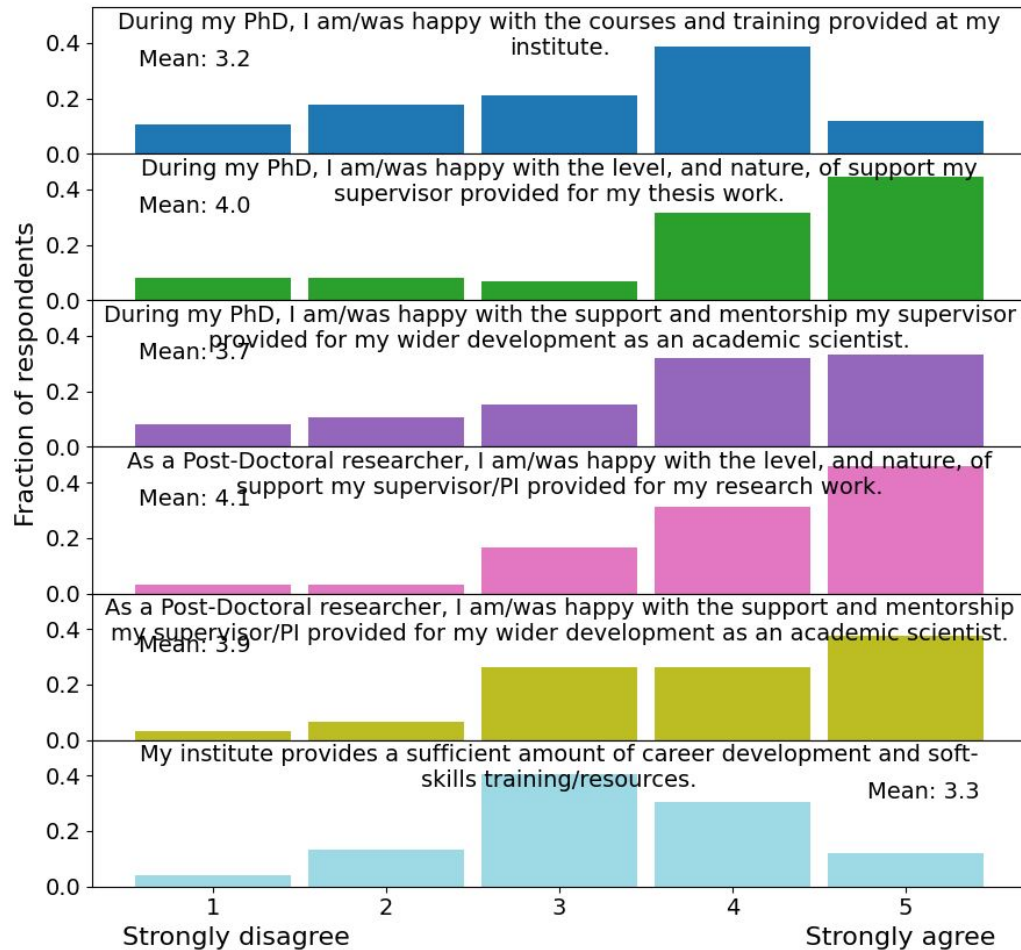


Training

UK [Research Developer Concordat](#) -> unis should have a lot available, maybe not always well-advertised.

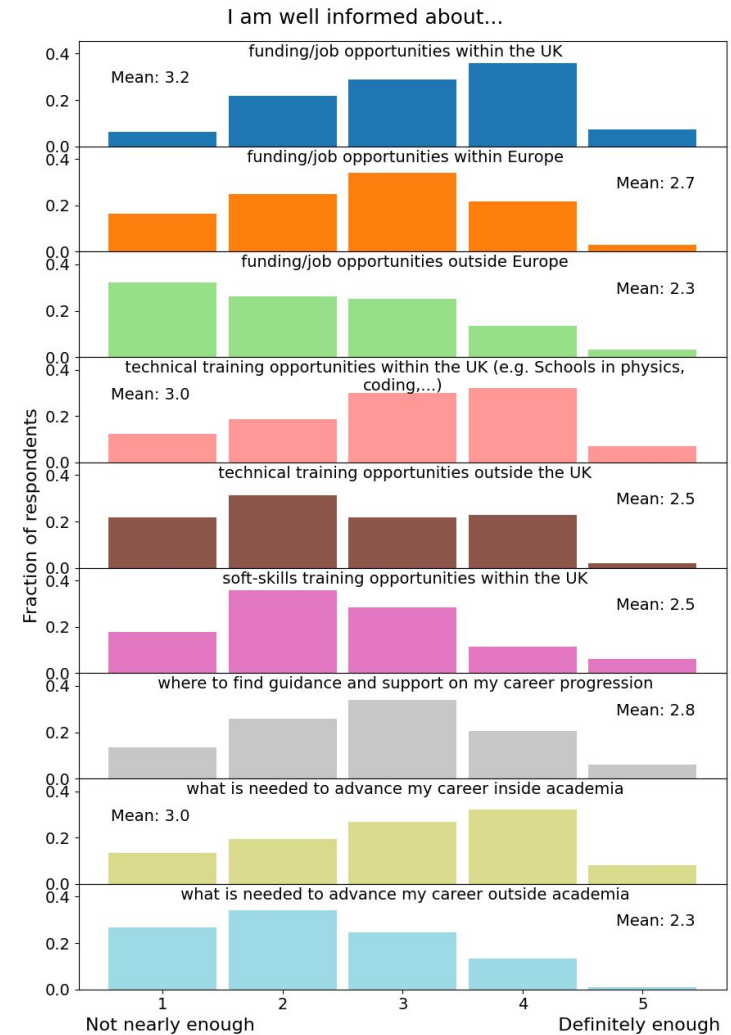
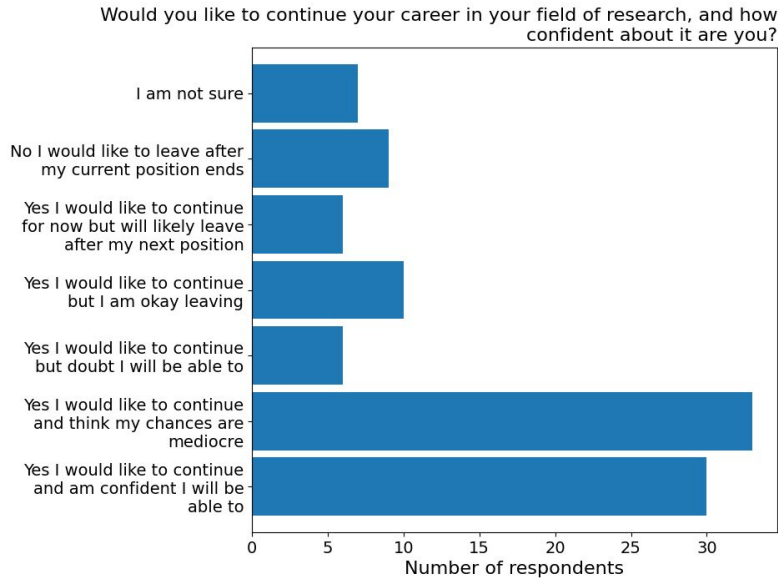


Institute supervision & training



Career Prospects

- Most people want to stay in academia
- Not well-informed about much outside UK

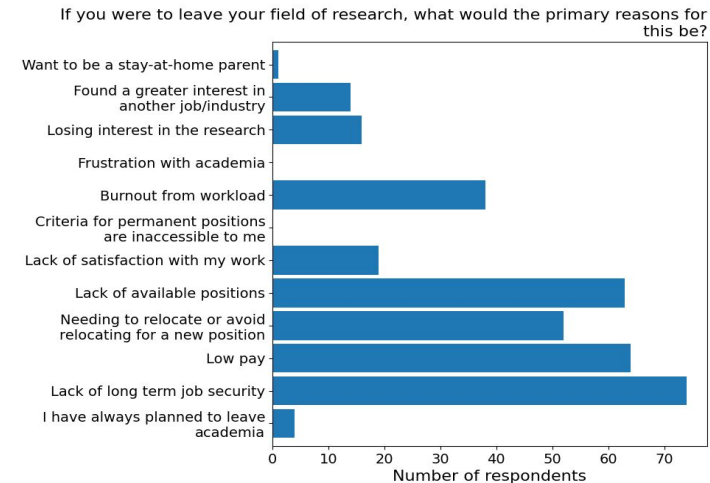
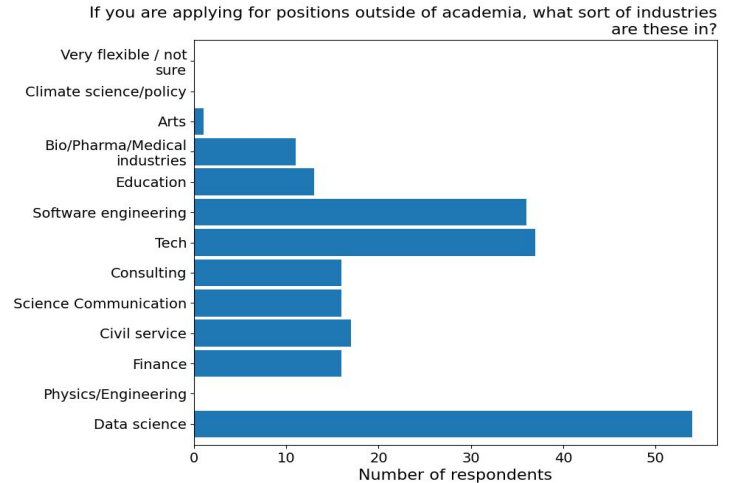


Leaving Academia

Several 'problems' that have grown over time

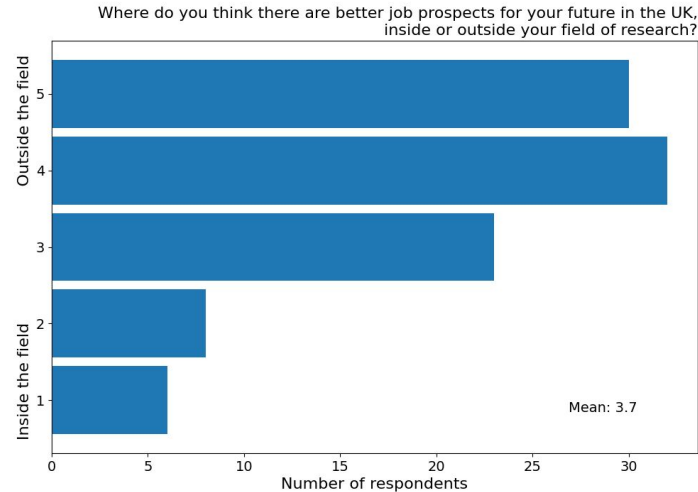
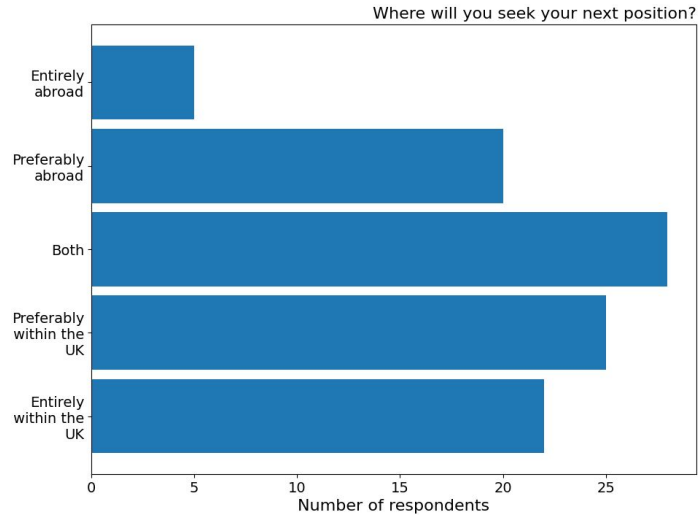
1. More industry jobs using HEP/analysis skills, similar day-to-day work, flexible hours/location, where you receive MUCH better pay, long-term stability.
-> E.g. O(10,000) 'data driven' companies in the UK [[gov](#)]
2. Higher UK cost-of-living, housing, etc. forces Salary to be a higher priority. Academic salary growth < inflation for many years [lots of UCU strikes 2018-2023].
-> Average UK salary needed to buy a house is [£54K](#) -> don't hit this until at least starting a [UK faculty job](#).
3. People re-evaluating priorities during Covid -> more questioning of what sacrifices in personal life are worth it.

We want the people staying in HEP to be the BEST scientists with the most passion for HEP, not the people whose personal circumstances best allow them to survive these challenges.

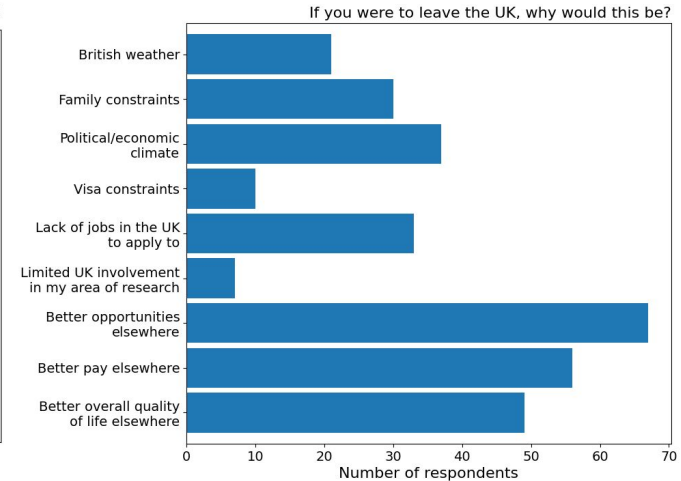
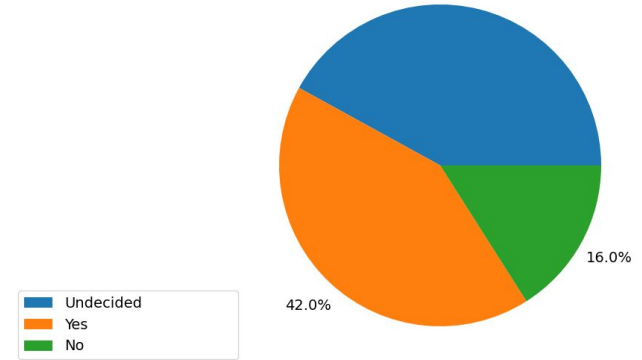


The UK

A lot of desire to stay in the UK, but not much faith in good opportunities in academia here.



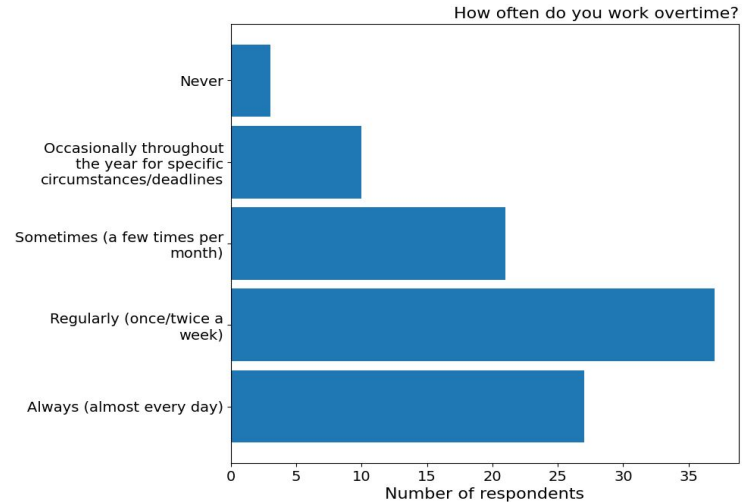
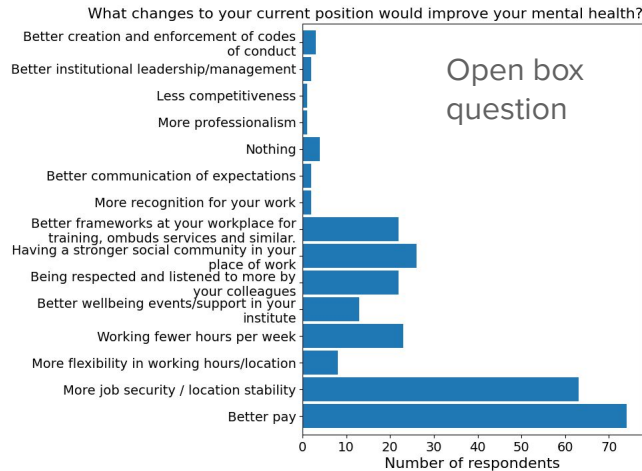
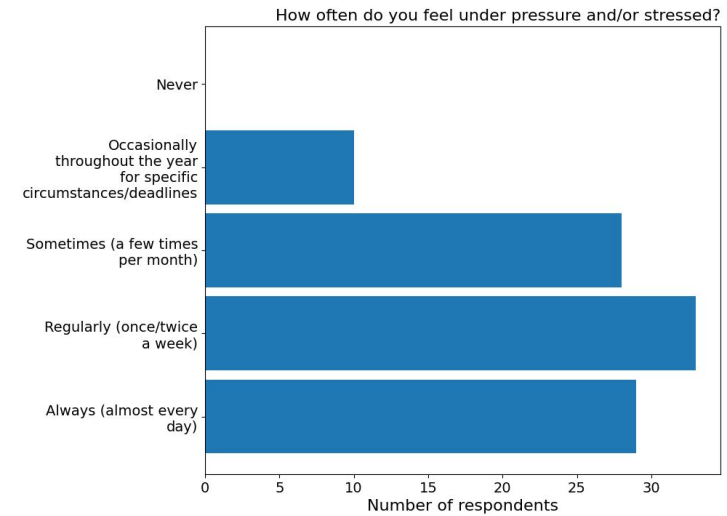
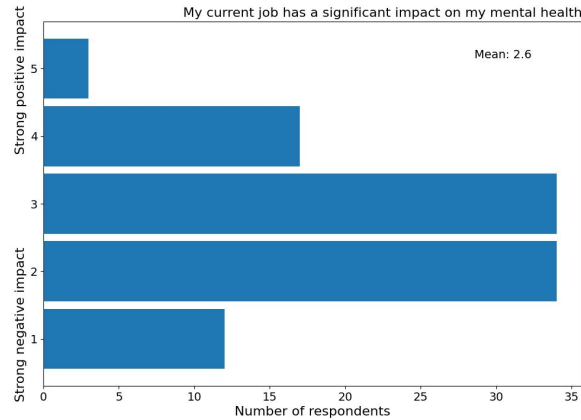
Do you want to stay in the UK in the long-term? (100 answers)



Mental Health

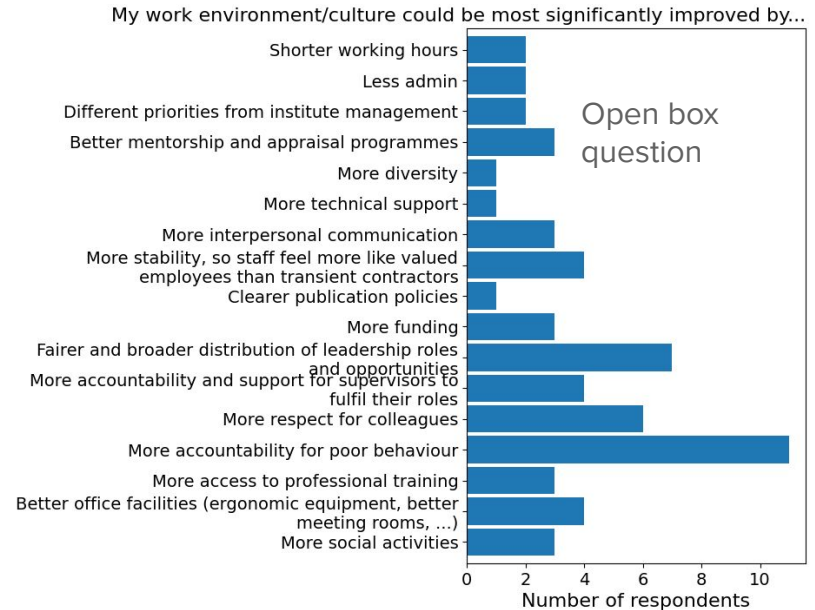
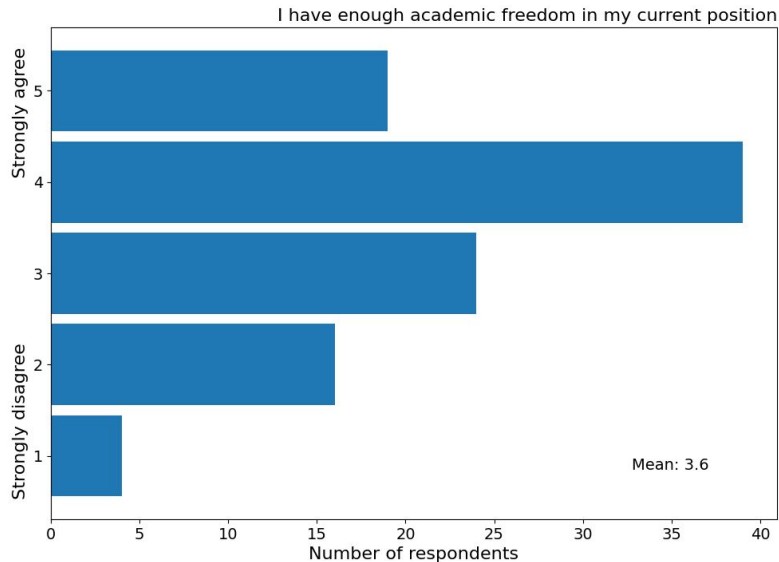
Jobs' impact on mental health more often negative

-> primarily due to existential/life pressure from instability, and need to push so hard to be competitive, not specific day-to-day stressors/deadlines.



Work Culture

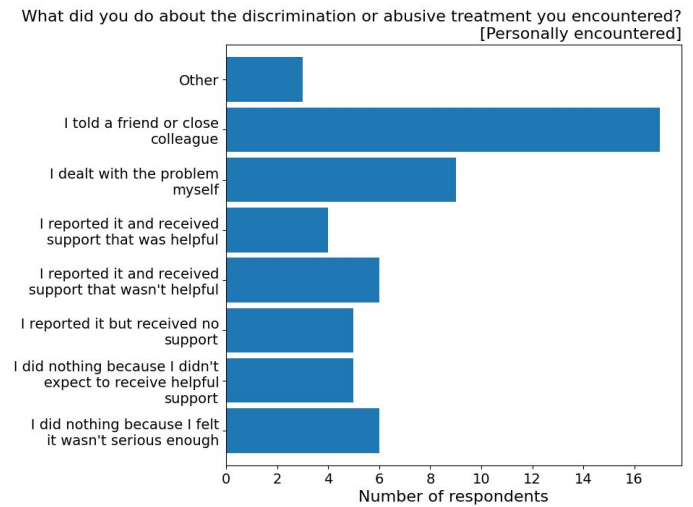
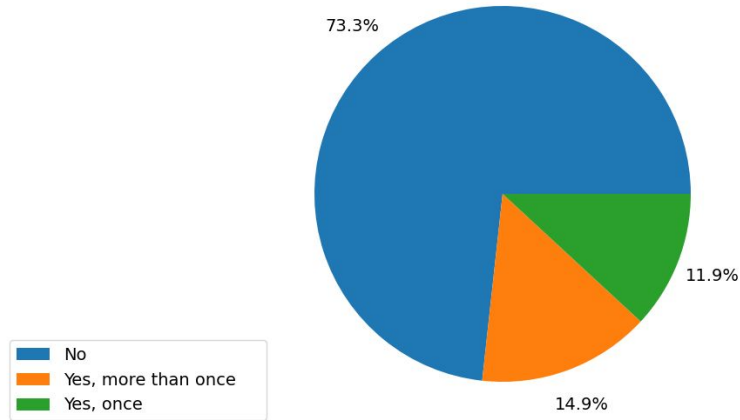
- ~50% work from home ~1 day/week.
- Happy with academic freedom.
- Less happy with training/structures in place to deal with unprofessional behaviour.



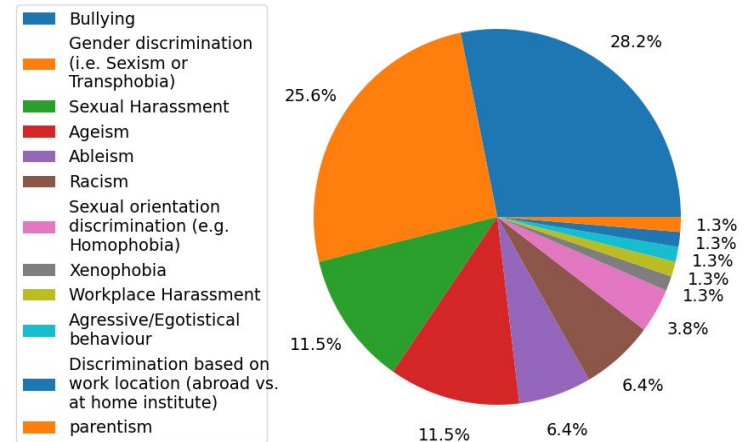
Discrimination / poor treatment

- 25% of ECRs have experienced this, 32% witnessed.
- Lack of faith that reporting a problem is helpful.

Have you encountered discrimination or abusive treatment in your Institute/Collaboration/Research group? [Personally experienced] (101 answers)



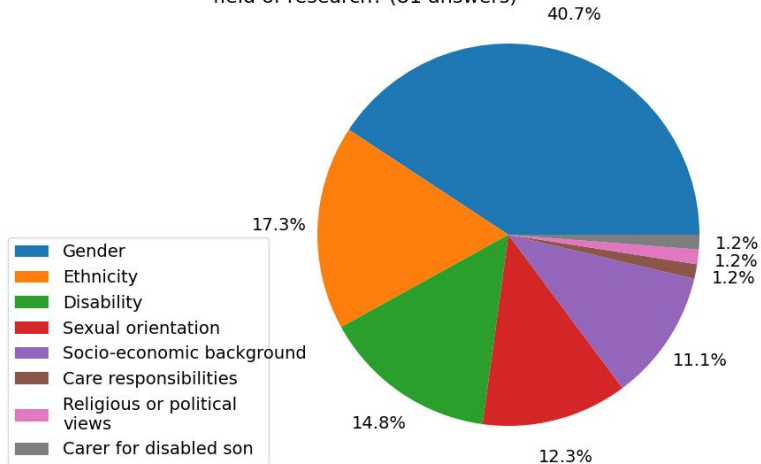
What kind of discrimination or abusive treatment did you encounter? (78 answers)



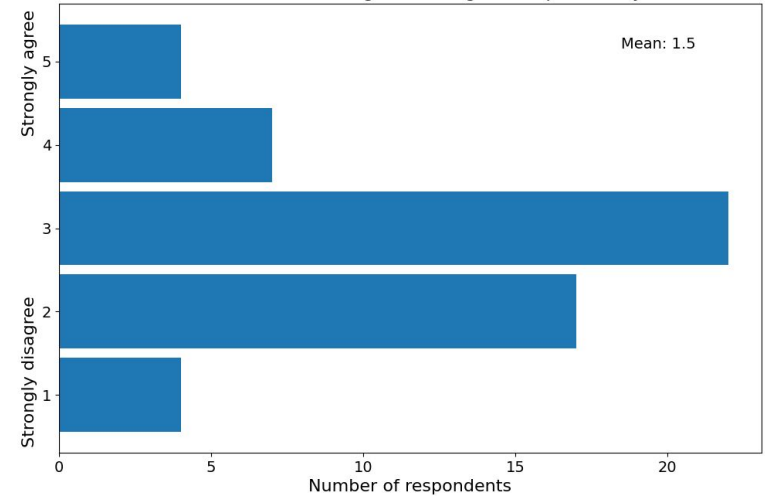
Under-representation

- Range of categories in the UK, mainly gender.
- No huge negative impact seen :)
- Main impact listed was **Not being taken seriously or listened to.**

Through what category do you identify as under-represented in your field of research? (81 answers)



Being part of an under-represented group in my field of research has had a significant negative impact on my career so far.

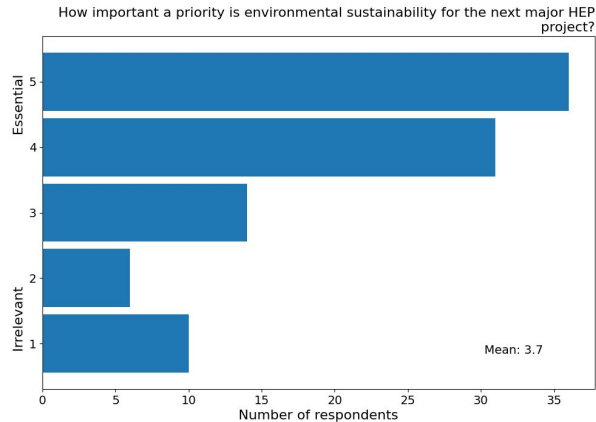


Sustainability & The future

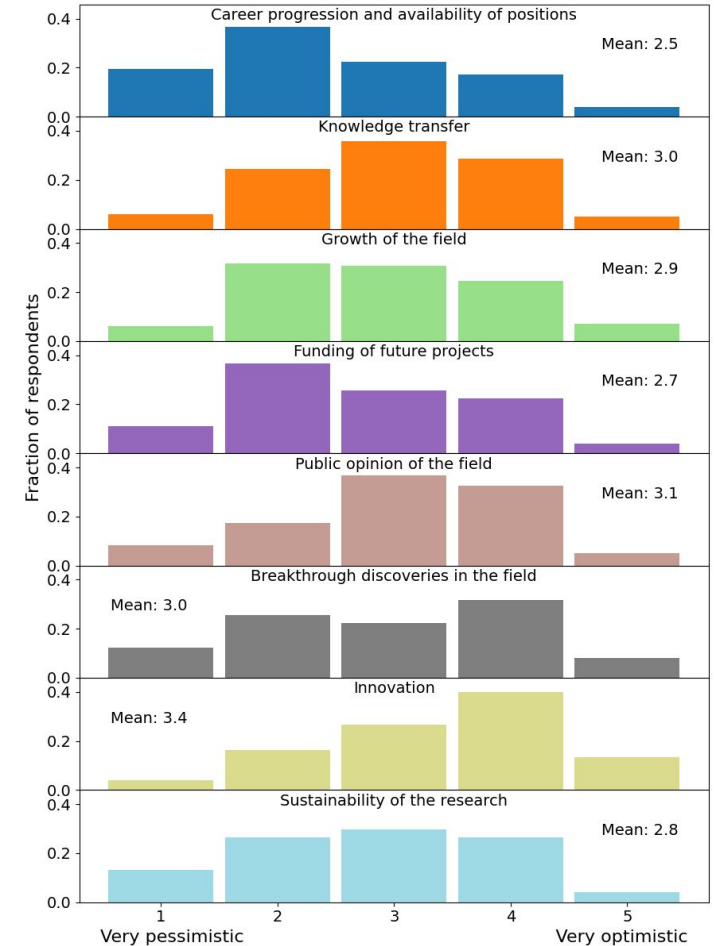
Sustainability of HEP projects very important to ECRs!

Pessimistic about field's funding, growth and jobs.

Optimistic about discovery, innovation



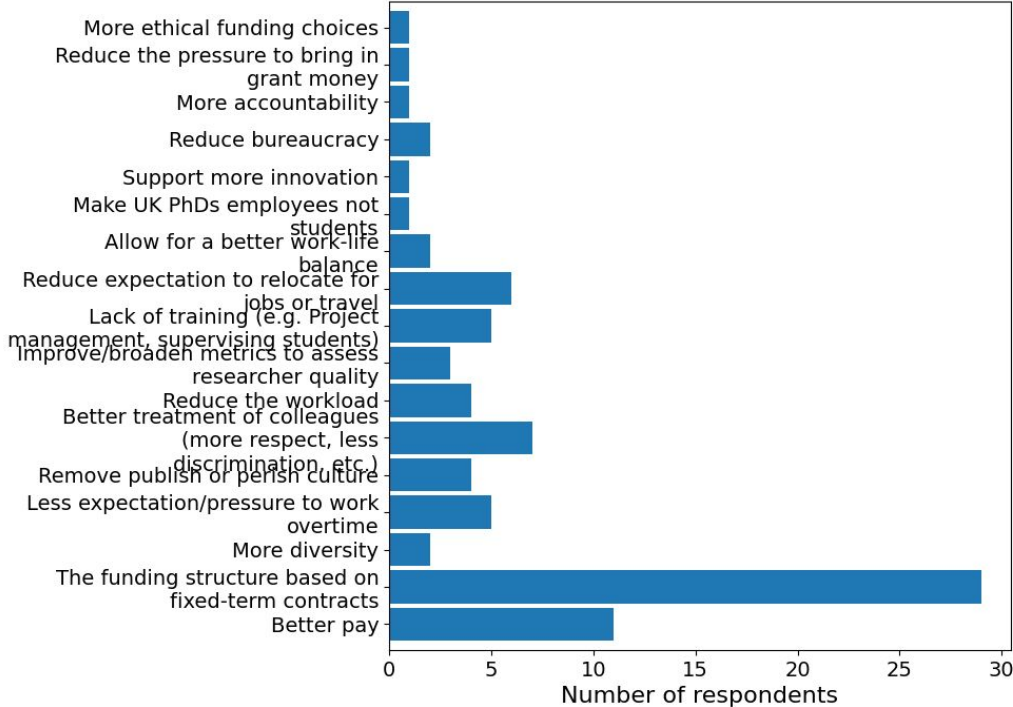
How optimistic do you feel about these aspects of the future of your field of research in the UK?



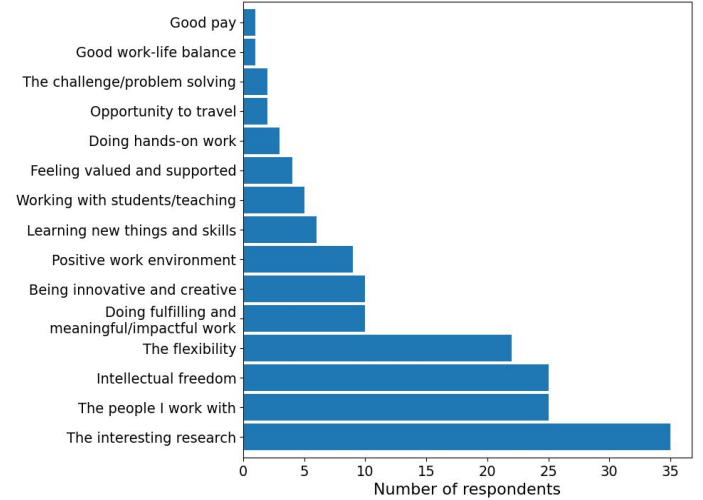
The good and the bad

Open box
questions

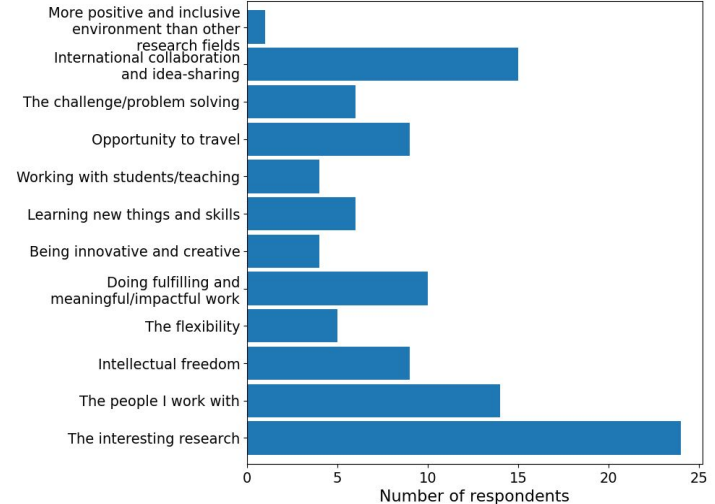
If you could change one thing about academia what would it be?



What are your favourite things about your current job?



What are your favourite aspects of working in academic HEP?



Conclusions

As always, main ECR concerns are (1) lack of job stability, (2) low pay

- Exacerbated by recent UK economic problems, lack of job openings, more alternative career options.

Have to do a lot in a short contract to get your research done & be competitive to get the next job

- More stress and health issues, worse working habits.
- Stifles innovation: harder to make time for riskier work and following whacky ideas.
- Hard to prioritise/fund work that's critical but doesn't give papers e.g. service work.

Lookout for a more in-depth analysis of the survey on arXiv! And more plots in backup :)

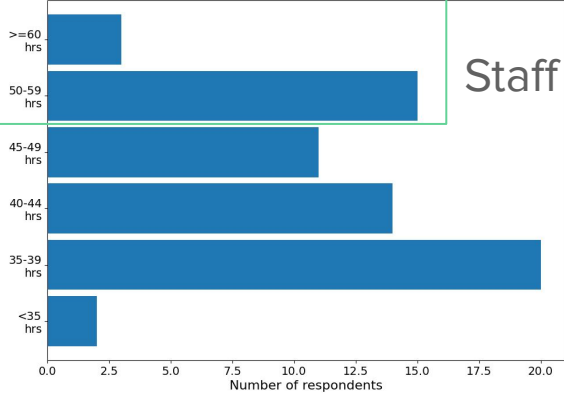
-> compare to global 2022 ECR survey results here: [\[2404.02074\]](#)

Thanks for listening!

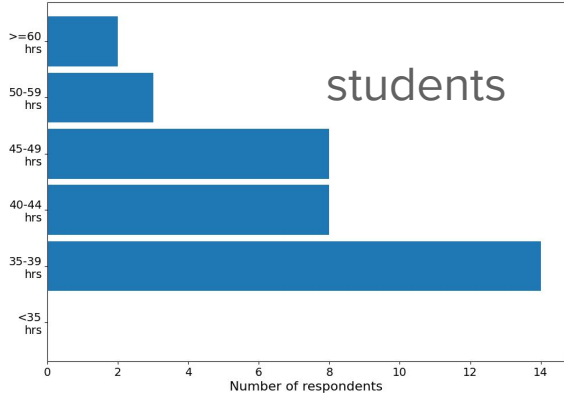
Backup
(will add lots more
plots)

Overworking is bad for people and physics

How many hours do you work per week on average?



How many hours do you work per week on average?



Frequently working long hours (>50-55) is bad for people

- Increased risk of depression, anxiety, sleep deprivation. [[paper](#)], cardiovascular disease and stroke [[WHO](#), [NIH](#)]
- Increased Stress and Burnout, chance of sick-leave [[Slack](#)]

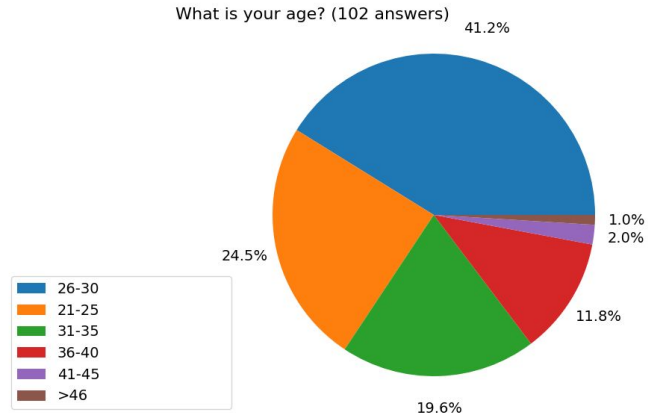
And bad for physics

- Decreased productivity [[Slack](#) study]
 - Increase risk of mistakes [[Harvard B.Rev.](#)][[HBR](#)]
 - Reduced creativity, short-term memory, ability to focus or multitask. [[blog](#) with citations]
- > less good at problem solving, collaborating, or coming up with new ideas. Lower quality work!

Goal: encourage people to be productive, efficient, motivated, well-organised, pushing themselves to do their best and improve, etc. Not to just work all the time.

More demographics

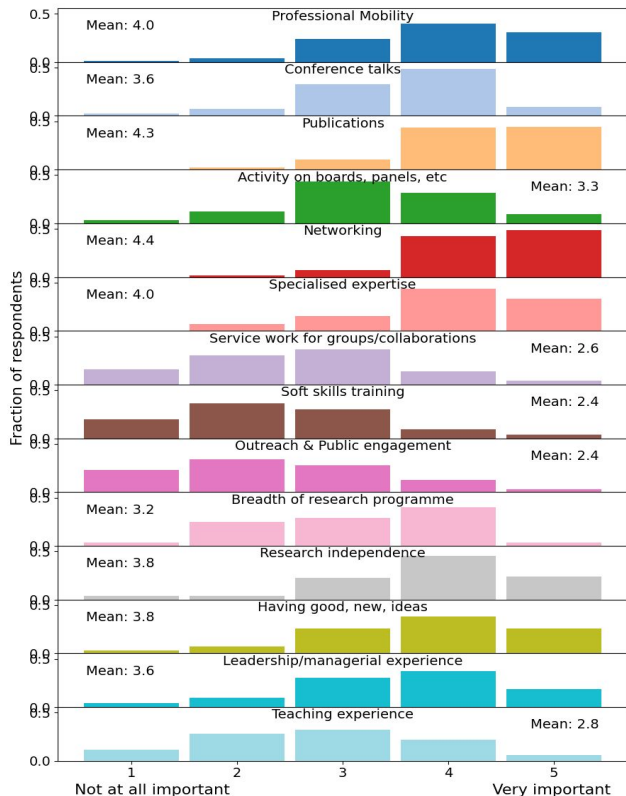
What is your age? (102 answers)



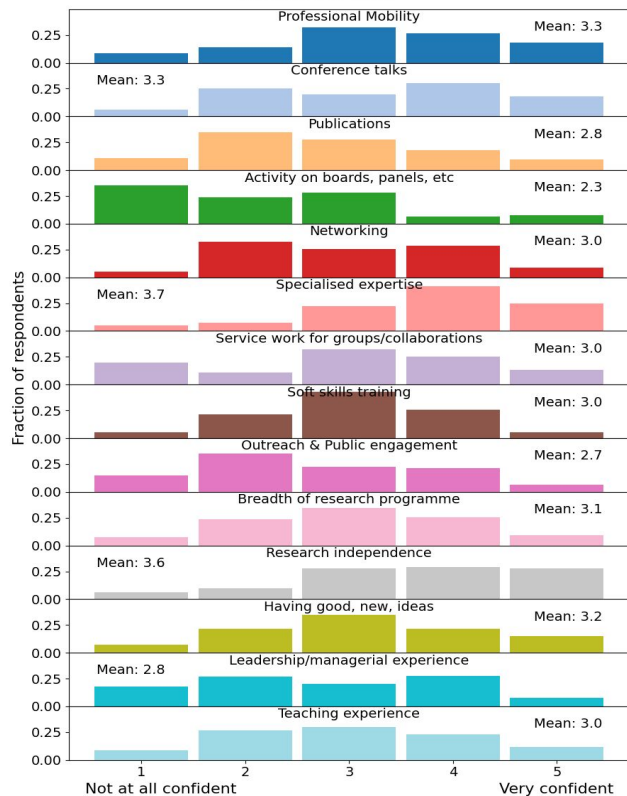
21 What makes a good scientist?

-> misalignment of personal value, perceived value and confidence

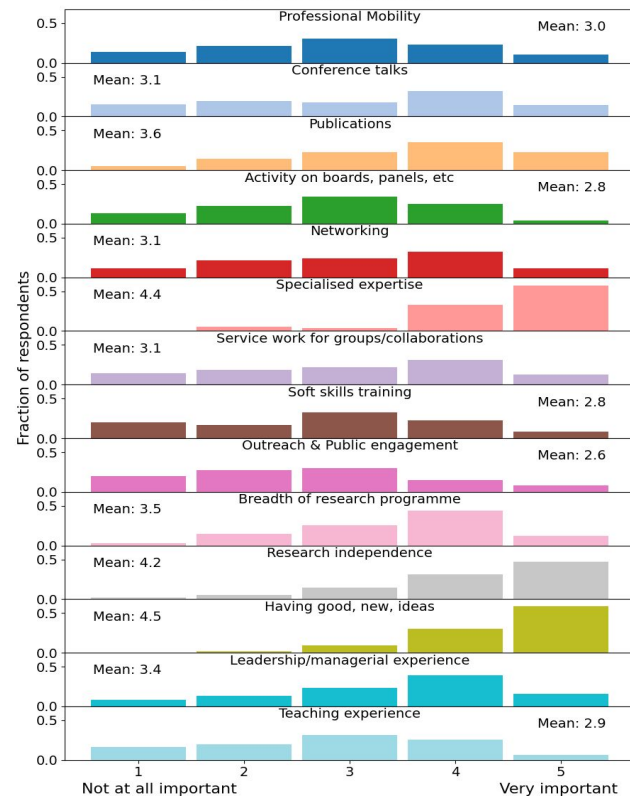
In the UK, how important do you think the following items are for getting jobs in HEP?



How confident are you in the following items in your own academic profile?

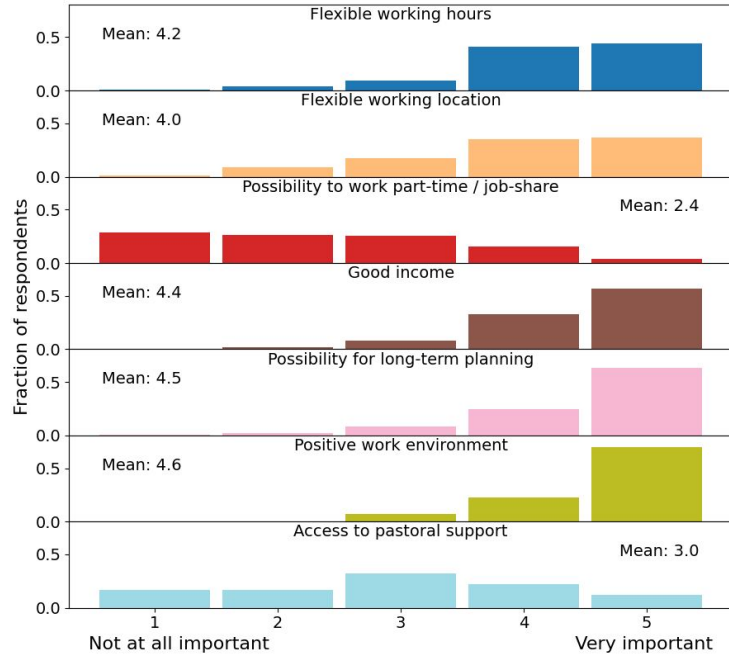


How important are the following items, to you personally, to be a good researcher in HEP?

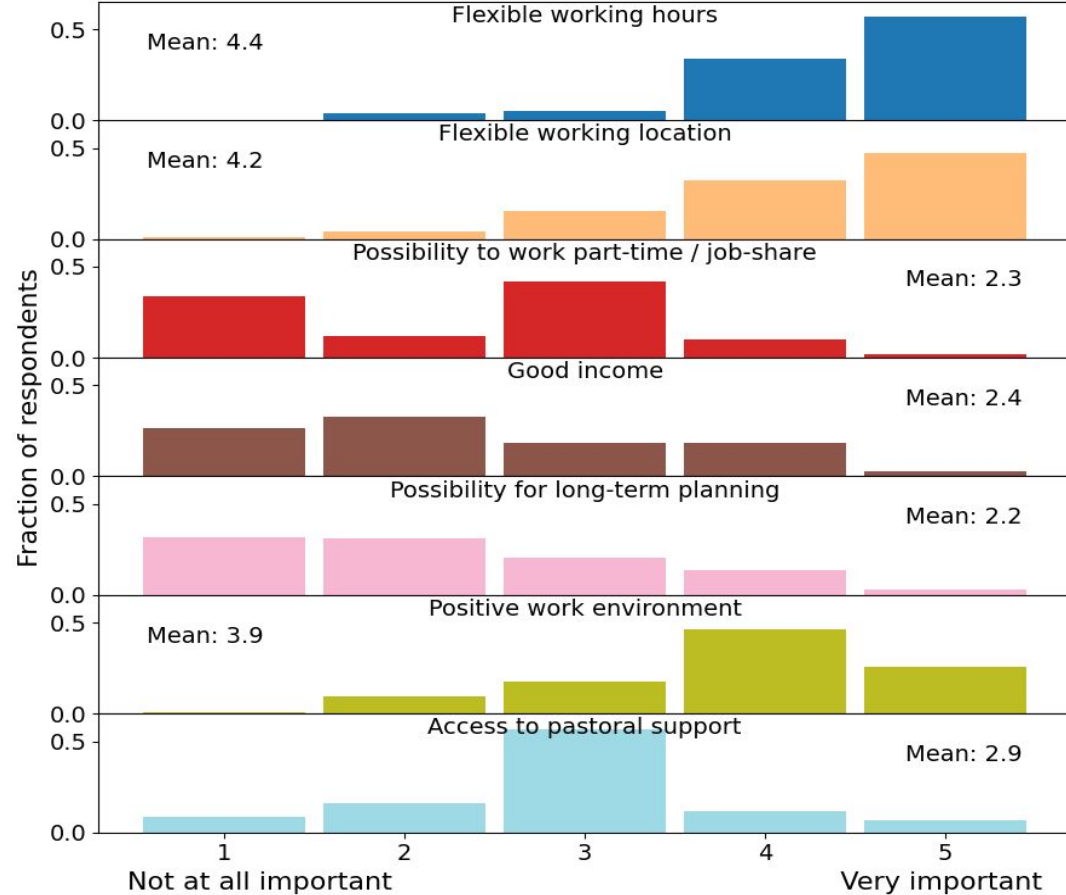


Life outside work

How important are the following items to you in order to maintain a good work-life balance?

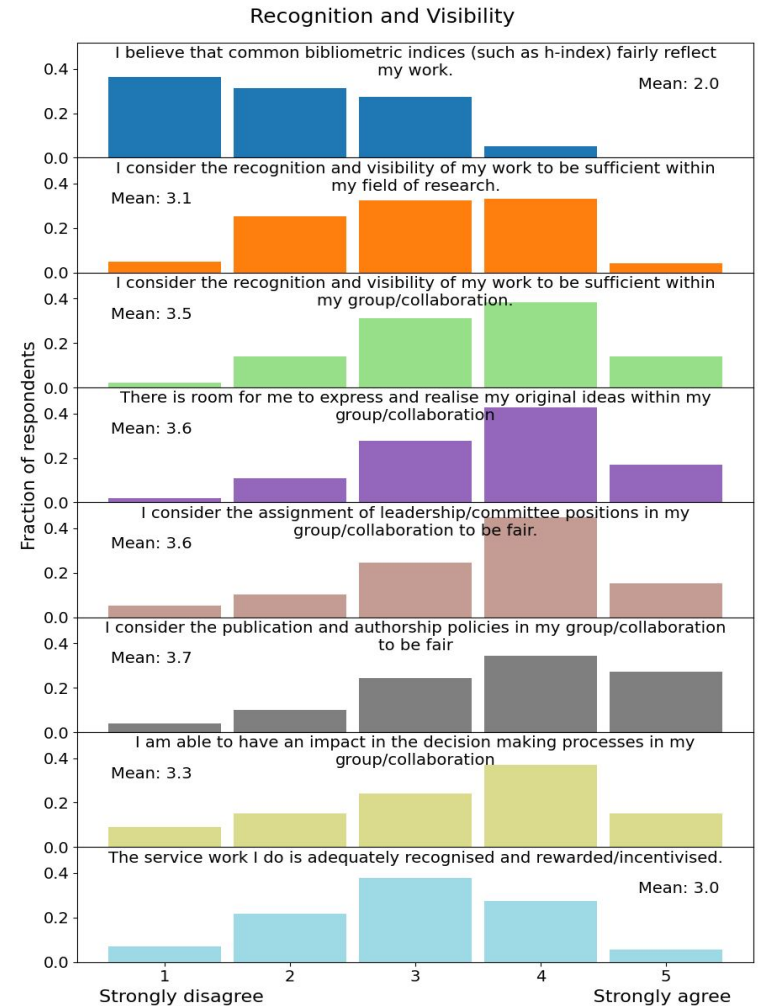


To what extent are these aspects fulfilled in your current job?



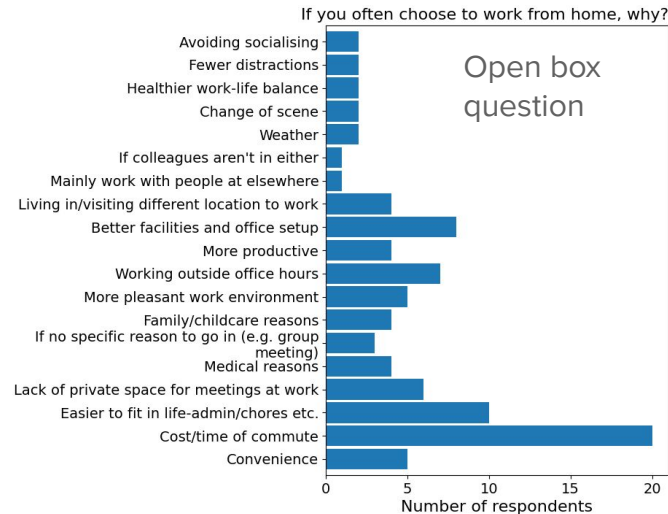
Recognition & Visibility

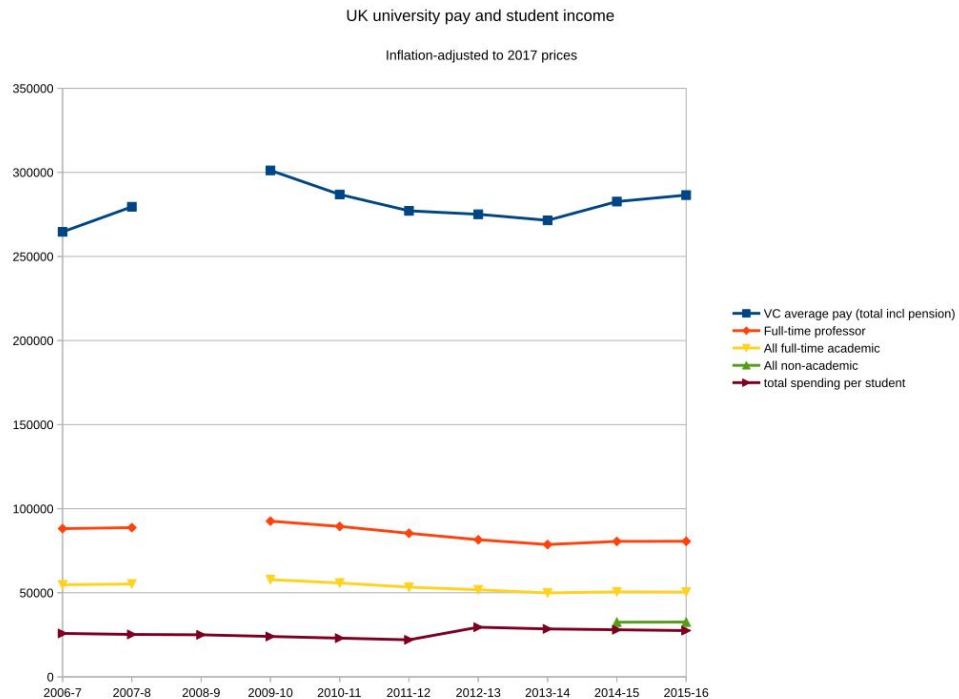
- Bibliometric Indices
 - UK improving here (following [DORA](#)) E.g. UKRI using narrative-CVs ([R4FI](#))
- Positive about collaboration/group policies.
- Neutral about service work



Working from home

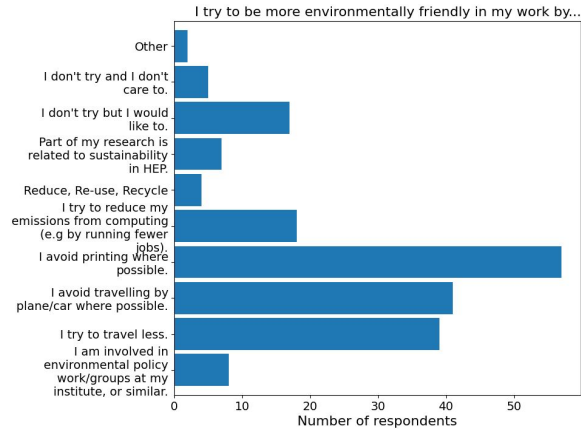
- ~50% work from home ~1 day/week.
~15% never work from home. -> commute main factor.





UK university pay and student income, 2006–16, inflation-adjusted to 2017 prices. Over the period, total spending per student rises by around £2000; vice-chancellors' remuneration rises by £21873; professors' pay falls by £7544; and average pay across all academic staff falls by £4304.

More sustainability + Future



NOTES

- Check pie v hist for each case, -> hist if 'ordered' or need more space for text.
- Check overlapping text in figures
- Refer / compare to europe-wide survey? (still post covid but also before the cost of living got shit)
- Refer / compare to recent-hires survey?
- Get stats/evidence/research to backup work-life balance being important for physics, for the certain less nice members of recfa who don't think that ECRs being happy/healthy/able to enjoy life outside of work or have a family or whatever is important for its own sake.
- Check readability of text
- Backup plots
- Check no chunks of questions have been missed, compared to germany/greece slides.
- Add logos to title slide
- Refere / compare to job talk feedback
- Correlations phd students vs others? (e.g. for #hours worked, contract/funding)
- Data on how pay has changed relative to UK inflation over last decade? PDRA salaries vs other countries?