

How to stay in science workshop & Summary of survey results



28th of May 2021

How to stay in science workshop

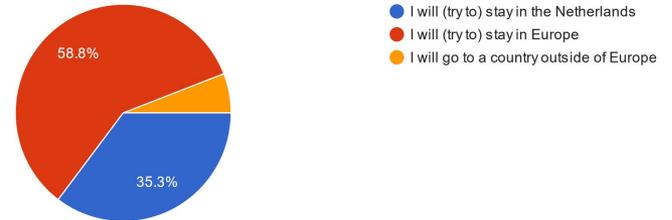
- Started with surveys among PhD candidates and senior staff
- Questions and speakers proposed by PhD candidates
- Start with a summary of the survey results
- Full survey responses of the senior staff will be send after this meeting
- Four speakers with different backgrounds

PhD survey results

- Living location and getting a job in the same field prioritised by ~ same number of people
- Living location does not have to be home country or the Netherlands, but Europe is preferred

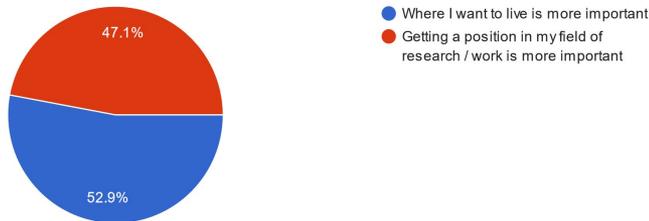
Are you planning to stay in the Netherlands / in Europe after the end of your PhD?

17 responses



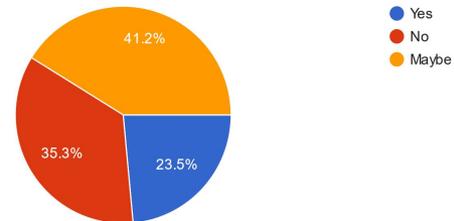
Would you prioritise being able to choose where to live over your research / working field?

17 responses



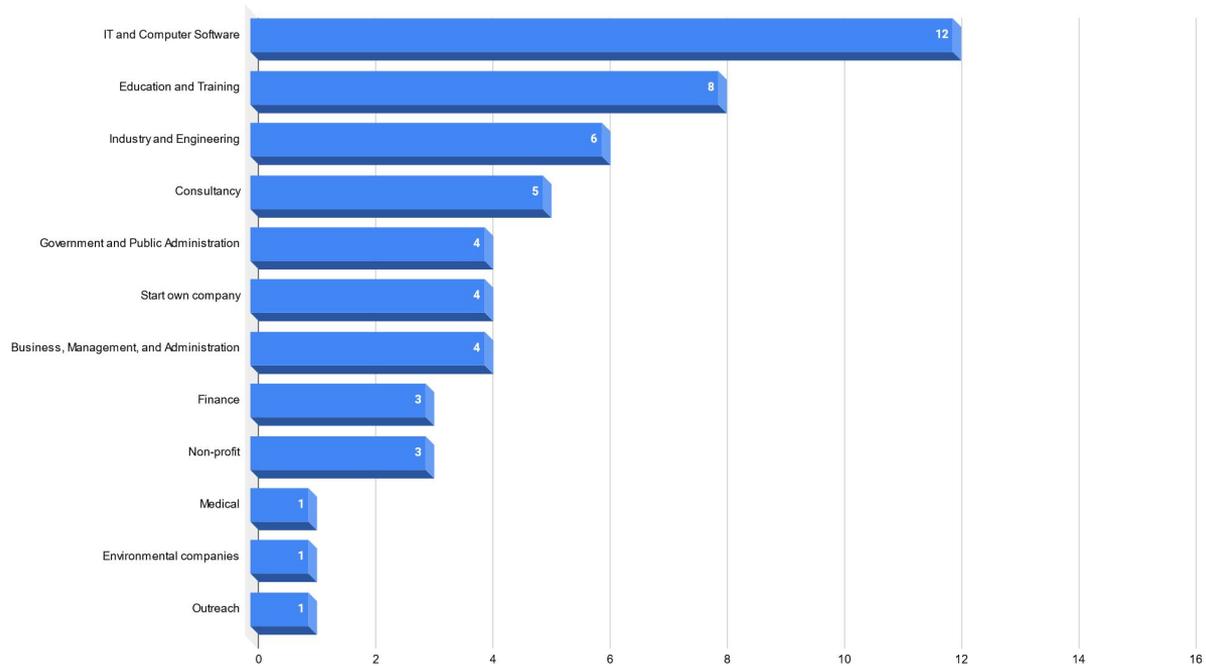
Is the country you will stay / go to in the question above your home country?

17 responses



PhD survey results

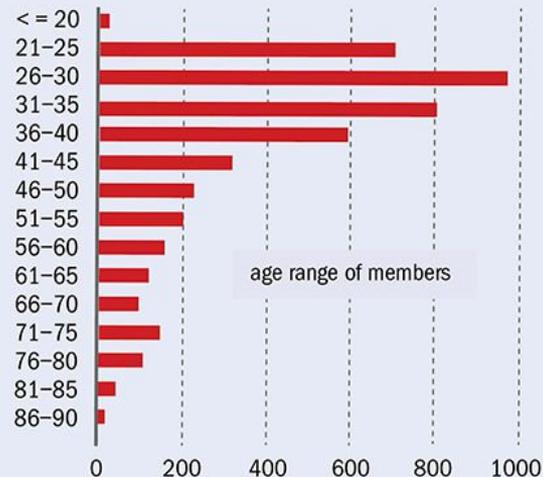
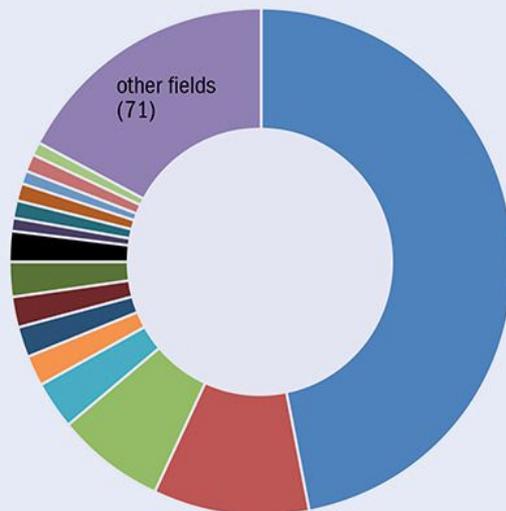
What sectors are you most interested in for a job outside of science?



Cern alumni jobs

in decreasing order:

- research
- higher education
- computer software
- information technology and services
- financial services
- government administration
- management consulting
- internet
- mechanical or industrial engineering
- telecommunications
- defence and space
- electrical/electronic manufacturing
- semiconductors
- aviation and aerospace
- computer and network security



How do you decide if you want to continue with a postdoc and where do you go?

- Motivation is key

"Do you like what you are doing so much that you think you can have a career in science?"

"Ask yourself for what kind of work you are most motivated, is it science?"

"Motivation and creativity can be more important than your scientific track record (like your number of publications)"

- What are your expectations?

"A postdoc is different from a PhD: you need to be much more independent and be ready to be proactive and take initiative."

- Should you do it?

"If you enjoy your work and are good at it (preferably others agree with that evaluation) you should consider doing a postdoc."

"Are you among the best 10-20% of the PhD students?" ← Should you be?

- Tips

"You should be aware that even if you get a postdoc position, this is not a guarantee that you will land a tenure-track job."

"Look around for postdoc positions but also other kind of jobs. Go talk to companies that you think might be interesting. Go talk to companies that you think are not interesting and think about why that is."

"A postdoc is a good opportunity to switch scientific topics if you want to explore something beyond your PhD. My advice is to take time to talk to (senior) people, also outside of your subfield. Many will be happy to talk to you."

How do you decide if you want to continue with a postdoc and where do you go?

"Go to a different country, to an institute that is not in the collaboration that you are working in now, and work on a different experiment than you are doing now. You have to go to a new environment, learn new things, meet new people."

"Choose a place which is really renown for the specific research you're interested in, with an eye on people as well. For Europeans, I would really recommend the US."

"If you get an offer, choose mostly on the possibility for scientific growth, less so for "nice place"."

"Don't be too strategic, go somewhere because enjoy the work. Not enjoying it is a recipe for burnout or other mental problems. However, not being strategic may decrease your options later on."

"Take the opportunity to get a CERN fellowship. I went to CERN"

Where do you go?

"Many ingredients:

-the topic (you don't want to enter a field with mainly old people, with not much future),

-location (do I want to live there? what options are there for my partner?),

-the network of the group (are they invited for important conferences? if I search for a job afterwards, can this person help me?)."



How far do I need to plan my career ahead? Should I find a position that seems good for now, or should I focus on where I want to be in ten years?

- Don't plan too far ahead, live your life now, do things you like
- Think broadly about where you want to go, but take into account you also need luck

"Only 1 step."

"I think knowing where you want to be in 10 years is very difficult. Part of landing a tenure track position in science is ""luck""."

"I did not. I went to the place that looked most fun. (I was lucky to often get what I wanted.)"

Focus on where you want to be in ten years time. Make you sure you learn new skills. This will make your life more interesting and will help you to find a job after your post-doc.

"Follow your heart. Don't make a choice only because 'you think it will look better on your cv'. It will wear you out in the end. Your choice is not 'for life'. Career paths are often not straight."

"I would suggest to make a long term plan, with some flexibility indeed, but not to be obsessed by it, and not at too early a stage. There is a time for everything."



How do you know you're good enough? Or do you always keep feeling like an impostor?

- Ask people like your supervisor for feedback and if they think you are good enough. Ask them to be honest.

<- Their opinion might still be biased!

- Almost all senior staff members that mention the impostor syndrome say they still experience it!

"Yes, always like an impostor :-) even though by now I think I cannot be that bad..."

"The impostor syndrome is eternal."

"Speaking from my own experience, the impostor syndrome will stay: after being a senior professor/group leader for many years, it is still there. It's ok, though."

"I still feel like an impostor, but consciously know that I am good enough."

"I still feel an impostor, but a pretty well paid one. Only 10 years from retirement and hoping not to be unmasked. Seriously: some doubts on your abilities are a plus. It keeps you sharp.."



If you are not good at research but at other parts of academic work what are the options to stay in/near academia?

We have received some answers to the question above

- Teaching (high-school, HBO)
- Science journalism
- Administration/politics/policy

And more questions:

- Can you become better at research?
- Why focus on academia then?

Which are the key skills to work on in order to have a career in academia?

- Being a group leader/professor: investing both in Physics and people
- Being proactive
- Building relationships
- Communication:
 - Oral
 - Visual
 - Writing (including grants)
 - Having charisma
- Leadership and management
- Teaching
- Creating opportunities
- Independence: put the person here and good things will happen
- Passion

Do you see anything interesting here?

When looking for tenure candidates, what are the criteria according to which the search committee chooses the shortlisting?

- Research quality and *broad interests*
- Teaching

Character traits/behaviour:

creating opportunities
building relationships
passion
independence
being proactive

“Human”/“soft” skills:

communication
leadership
management

Do you think it is still smart to pursue a career in science or is it better to go for a different career if you don't want struggle for a permanent position until you are 60?

- Depends on your motivation
 - Luck
 - What does a career outside of science look like?
- If you're passionate, go for a science career! Industry jobs will always be available
- Even permanent positions change over time, e.g. new institutes emerge and old ones disappear. People jump from permanent to permanent
- Yes it is smart, but be flexible to switch tracks
- Leaving science != failing in science! Or just try academia for a while? Even in industry people hob jobs and try things out
- Have an exit strategy and deadline. At some point you are too experienced as a postdoc
- It is a valuable skill not to worry about tomorrow and ask if you are happy today

If you could choose again; would you choose an academic career again? And why?

- Yes, I never considered industry. I like my job.
- I would, I like working with students and young people
- 100% would choose it again. The freedom one has in research is amazing. Also I love doing something new or different every day
- Not sure... during shitty periods I wondered what industry looks like
- Not sure... who knows how I could have spent my time trying to get where I am now..
- Yes I would. I did have an opportunity to join a hedge fund and become very rich (a colleague of mine said yes and I said no). This was during my second postdoc. If I got to repeat the experiment, I might say yes this time just to see how that would turn out. I do not regret having said no.
- I don't feel like I have chosen it. It was on my path and I took the road. There were many opportunities along the way and there still are.

Did you know from the start of your doctoral studies that you wanted to pursue a career in research?

- No
 - I didn't think about it too deeply
 - I followed the opportunities
 - I was interested in many things
 - I actually didn't like the stuff I was doing at the time of my studies
 - The career path developed along the way
- Yes
 - Plainly yes
 - Yes, being realistic at the same time
- Not sure
 - I hesitated during tough times in my PhD
 - I didn't like the specialized postdocs, but ran into a field which I liked
 - I was attracted, but was clueless about academic and non-academic jobs..
 - Doubtful whether I was good enough, did not think about the long term

How many PhDs and postdoc positions did you apply for?

- Multiple applications to make a thoughtful choice

Even 120 applications!

“My PhD position and first and second postdoc were offered to me without applying [...]”

- The importance of the *discussion* and *networking* in research

*“ I picked places where I really wanted to go. [...] Based on having met people at meetings.
Message: talk to people :) ”*

- Rejection: do not despair!

*“**Failure** is a very common part of research and very often not spoken about [...]”*

Did you move to many different groups? How did this affect your career and personal life?

- In general: from 2 up to 5 different groups

Is it?

"It was the key enabling me getting a permanent position. [...] I really enjoyed getting around and it really widens ones horizon."

- Several **positive aspects**:

- How to achieve results in **different** way
- Enriching personal and career experience (**motivation**, **networking**)
- A **plus** in front of the eyes of a selection committee
- It's **fun**!

"You need to learn new things and regain visibility"

- But, **on the other hand**... it's really challenging!

...and the **"impostor"** is always there!

"At some point, I started looking for places near 'home'"

How many of the students that you supervised are now tenured scientists? How many switched to industry?

- Common answer: academia seems to be the choice of less people

" I would say 25 % tenured positions, 25% in academic research (temporary contract), 50 % to research in industry (and it is important to note that [these] are equally or even more happy in industry than they were in academia".

- But not only "industry"...

...software R&D,

finance,

artistry,

medical science...

Is it the technical challenge, the instability, or not enough passion?

How many papers published during PhD?

- Large variance (from none to several dozen)
- Number of papers depends on:
 - The type of work (experimental / theoretical)
 - For experimentalists: the status of the experiment (in commission / taking data / decommissioned)
 - The number of people involved (e.g. large international collaborations vs. small experiments or theory groups)
- Typical answer:
 - 1-3 papers as major contributor



How do our speakers think about this?
Is this representative?

“I do not care for papers and certainly not nowadays when the results are known long before they appear in print. And papers with 100+ authors are of course crazy and I do not rate prospective candidates based on their h-index, number of papers, ...”

How to know if a career in science is right for you

- Ties closely to personal feelings and outlook
 - Does your current work make you happy? Do you enjoy what you are doing?
 - “You buy yourself nothing by being unhappy.”
- “Avoid the **sunken cost fallacy**”
 - If working in science no longer feels right, don’t hesitate to look elsewhere, even if you already invested a lot of time/money/effort
 - “If you think that life is only paradise when you become a professor, you are in for a disappointment”
- “In the end, I think it is better to think that you stayed too long in science than to always wonder if you could have succeeded.” → speakers opinion?
- “(...) one aspect people don’t talk much about [in the context of] succeeding in academia is **the luck factor**”
 - “(...) you have to be lucky enough to be the right person, with the right skills, at the right time, with the right group hiring”
- “I’m still not sure if it is the right thing.” → even permanents can doubt

Quantifying the need for personal/team work and luck

- Again, large variety:
 - According to some, personal effort, team-work and luck contribute equally
 - Some say personal work is the most important
 - Others indicate luck accounts for >50%
- The need for each can shift throughout your career
 - “In (...) undergrad and beginning grad it was more hard work than teamwork.”
 - “As I get older, the balance shifts more towards teamwork ability.”
- **“Luck is not something that you should depend on.”**
 - Even if luck is a big factor in success, don’t rely on it!
 - “The options never come at the moment that you need them, but they may come at unexpected moments and then you need to know if you want to take up on them.”
- Don’t forget teaching and presentation skills

The role of gender

- Most interviewees (male?) indicate their gender at least “did not make it harder” to land a career in academia
- Gender seems to play the role of a double-edged sword in today’s hiring:
 - “(...) I suspect it **helped me get a tenured position** (I’m a woman).”
But: “(...) it made the **finding of PhD/postdoc positions harder** because of **inappropriate remarks** from potential future supervisors (I had to turn down a position).”
 - “If I were a woman, it would have been **easier to get tenure** (then again I **don’t know if I would have been treated differently by my co-workers** and would have had the same opportunities).”
- The two-body problem and parenthood:
 - “When I was young, partners were more likely to leave their career to follow their male partner to unknown destinations ... That is very different nowadays.”
 - “The time at which I would have had to take **maternity leave** (if I had been the mother instead of father) were **at pretty crucial parts of my career.**”

Life-work balance - Family

More progress in career path —————> More responsibilities on your shoulders

- How to deal with the daily stress of meetings, deadlines, fundraising?
- How to balance personal life and keeping the drive to academic achievements?
- Family and children - mixed impact
 - “My kids and family “organize” my balance”
 - “My partner and myself are very much free to pursue what we want”
 - “You must respect both aspects, and your partner”
 - “Both sides - family and work - should be able to give and take”
 - “Having kids was not good for my career but I enjoy having them”
 - “My partner had a hard time during the first 20 years of our marriage”
- Alternative career paths
 - “I bet the same - strain in marriage - would have happened in I had pursues a career in industry”
 - “I don’t know if there is much difference in this regard between an academic career or in industry”

Life-work balance - Issues and advices

- Acknowledging problems
 - “I clearly work too much”
 - “Bad balance - in favour of academia”
 - “I have put in many hours and weekends”
 - “I fear I did very badly (in the balance) since I loved my work”
- General advice
 - “It is a challenge, it took me some time, make sure to find a balance”
 - “Be gentle on yourself”
 - “Listen to the people around you”
 - “My main goal is to have a job that I like”
 - “”Drive” and “achievement” are s*** words, you should not live your life like that, trust me!”
 - “Be aware, listen to what your body is telling you. A burnout is what your body does to rectify the balance when you don’t listen to it”

How are you personally supporting students that want to continue within academia?

Honesty

Find out what their drive is

Good reference letter

Visits to top foreign places

Advice on where to (and not to) apply

Networks

Keep in touch

Tell them to have faith and refrain from telling them academia is the best of the best

Listen to their needs

Is there something that you would like to give as advice to PhD students who want to pursue a career in academia?

If you don't shoot you'll never win

Go for it!

Leaving academia is not failing

Think of a plan B

Ask for feedback

Believe in yourself

Don't listen to or abide by unwritten rules

Try to reject the pressure of always performing/competing

Do not forget to write grant proposals!

Your life and work should contribute to your happiness

Don't stress over things which are out of your control

Find inspiring supervisors who help you become a better physicist

First speaker - Marcel Merk

- Professor at VU Amsterdam, Maastricht University
- LHCb programme leader at Nikhef

Second speaker - Gideon Koekoek

- Assistant professor at Maastricht University
- Gravitational waves and fundamental physics, LIGO/Virgo

Third speaker - Juan Rojo

- Associate Professor at VU Amsterdam
- Theory group at Nikhef

Fourth speaker - Pamela Ferrari

- Senior researcher at NIKHEF
- Physics coordinator Atlas

Debate / discussion questions

Only the best PhD candidates should continue in science

Debate / discussion questions

You and your family need to be mobile for a career in science

Debate / discussion questions

Staying in one field/experiment is bad for your career

Debate / discussion questions

You should do other things than research to get recognition

Debate / discussion questions

It is possible to have a career in science if you want it enough

Debate / discussion questions

Relocation is necessary for a career in science

Debate / discussion questions

It is good / you need to switch topics after your PhD

Debate / discussion questions

How important are publications during your PhD?

Debate / discussion questions

How important are talks / presentations in getting recognized and building a network?