
Well-being in astronomy

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Introduction

Astrophysics is an exciting subject that attracts many young people

Many rewards to be had in research in astrophysics :

- intellectual challenge
- interacting with knowledgeable and fascinating colleagues
- creativity
- discovering new things
- travel,

Discouragement noted in a significant fraction of students & post-docs

In some, the feelings are tending towards distress

We have seen that the distress can have terrible consequences

Recent mental health studies of researchers

Woolston, 2019, Nature, *PhDs: the torturous truth* <https://www.nature.com/articles/d41586-019-03459-7>

Poll of >6000 PhD students (all subjects, varying countries) by Nature

36 % respondents sought help for anxiety/depression caused by PhD

Only 12 % in the 2017 survey (but bias in way the question was posed)

An international survey (Auerbach et al, 2018, *J. Abnorm. Psychol.*, 127, 623) by the *World Health Organisation* found 31% students showed signs of major depression, general anxiety disorder or panic disorder etc, in previous 12 m

Prevalence of mental health issues in post-docs documented but less studied (e.g. <https://www.sciencemag.org/careers/2014/07/stressed-out-postdoc>

<https://www.theguardian.com/science/head-quarters/2017/aug/10/the-human-cost-of-the-pressures-of-postdoctoral-research>)

International colleagues starting to talk about these issues (sessions at the EAS meetings, during other national astronomy meetings, <https://www.astrobetter.com/wiki/Mental+Health> etc)

Understanding the current situation in France

To understand (and subsequently improve) the situation in France, we launched a survey, aimed (not exclusively) at younger colleagues

Announced via SF2A (National astro.) Newsletter, in French astrophysics laboratories, a couple of Swiss/Canadian institutes and some IN2P3 institutes

Anonymous survey (French & English) ran from 29th March – 3rd May 2021

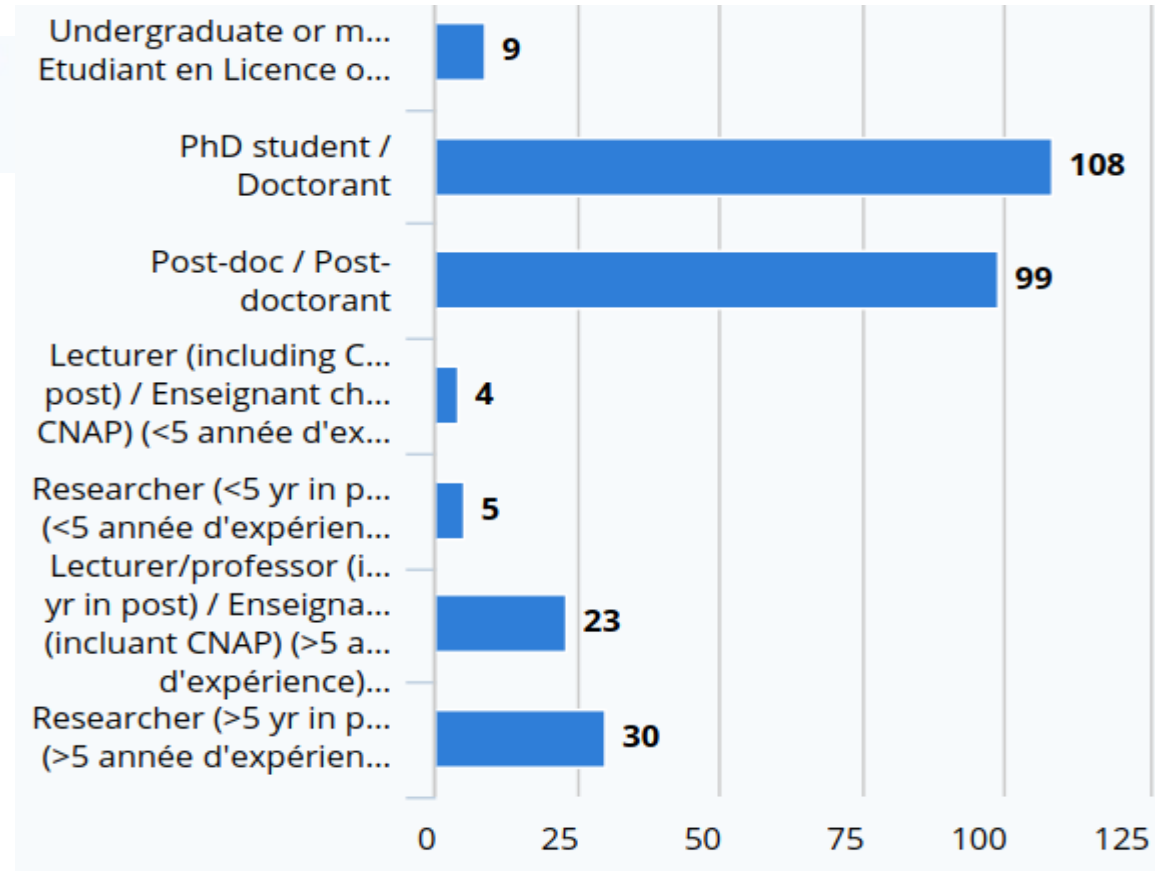
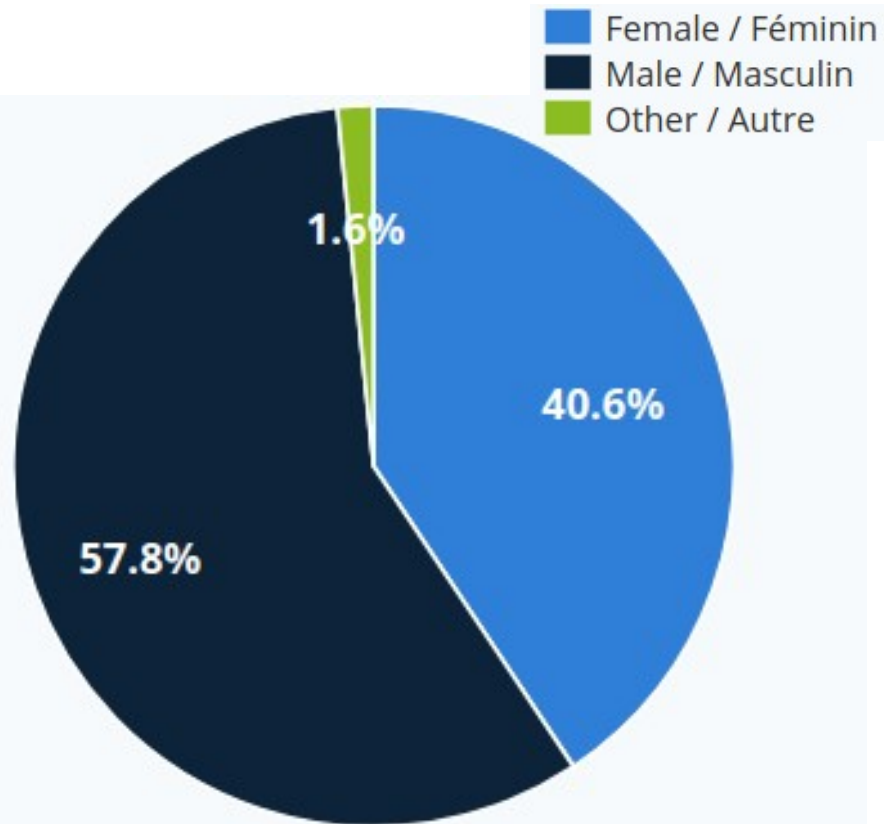
None of the questions were obligatory

Addressed questions about :

- Work (Favourite aspects, hours worked, external constraints, future plans)
- Colleagues (harassment/discrimination)
- Mental health (before and since working in astrophysics)
- Improvements to be made (suggestions and positive feedback)
- Demographics (age, position, current country, nationality)

Survey results - demographics

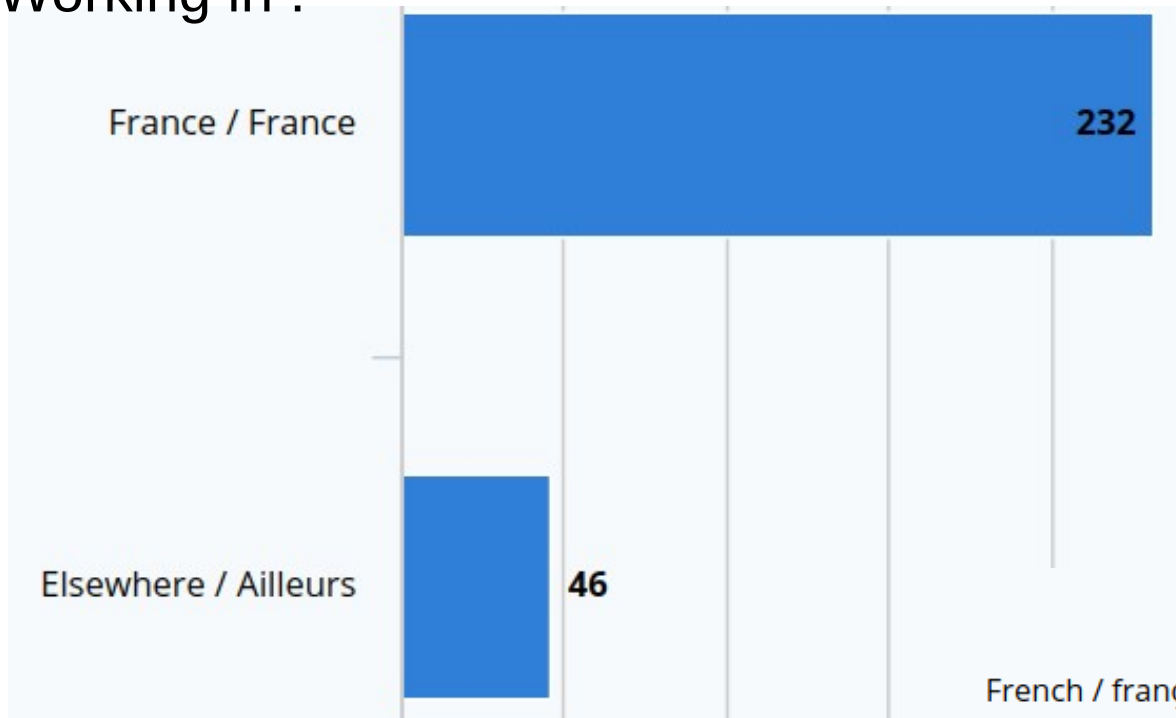
276 respondents



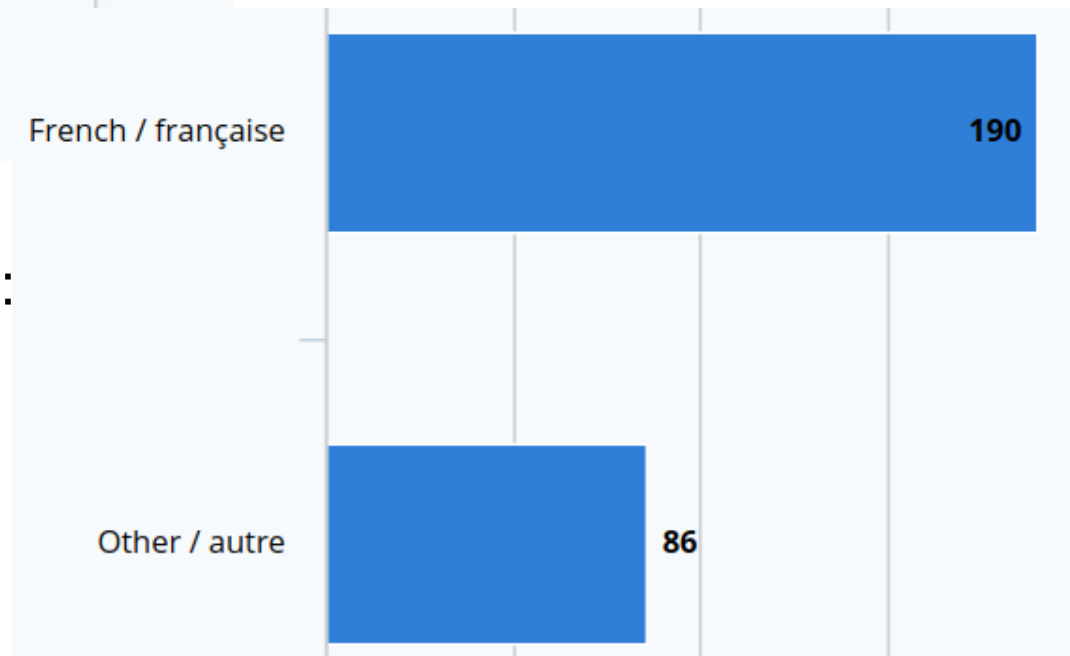
~25 % French astrophysicists are female (no information on PhD students/post-docs)

Survey results - demographics

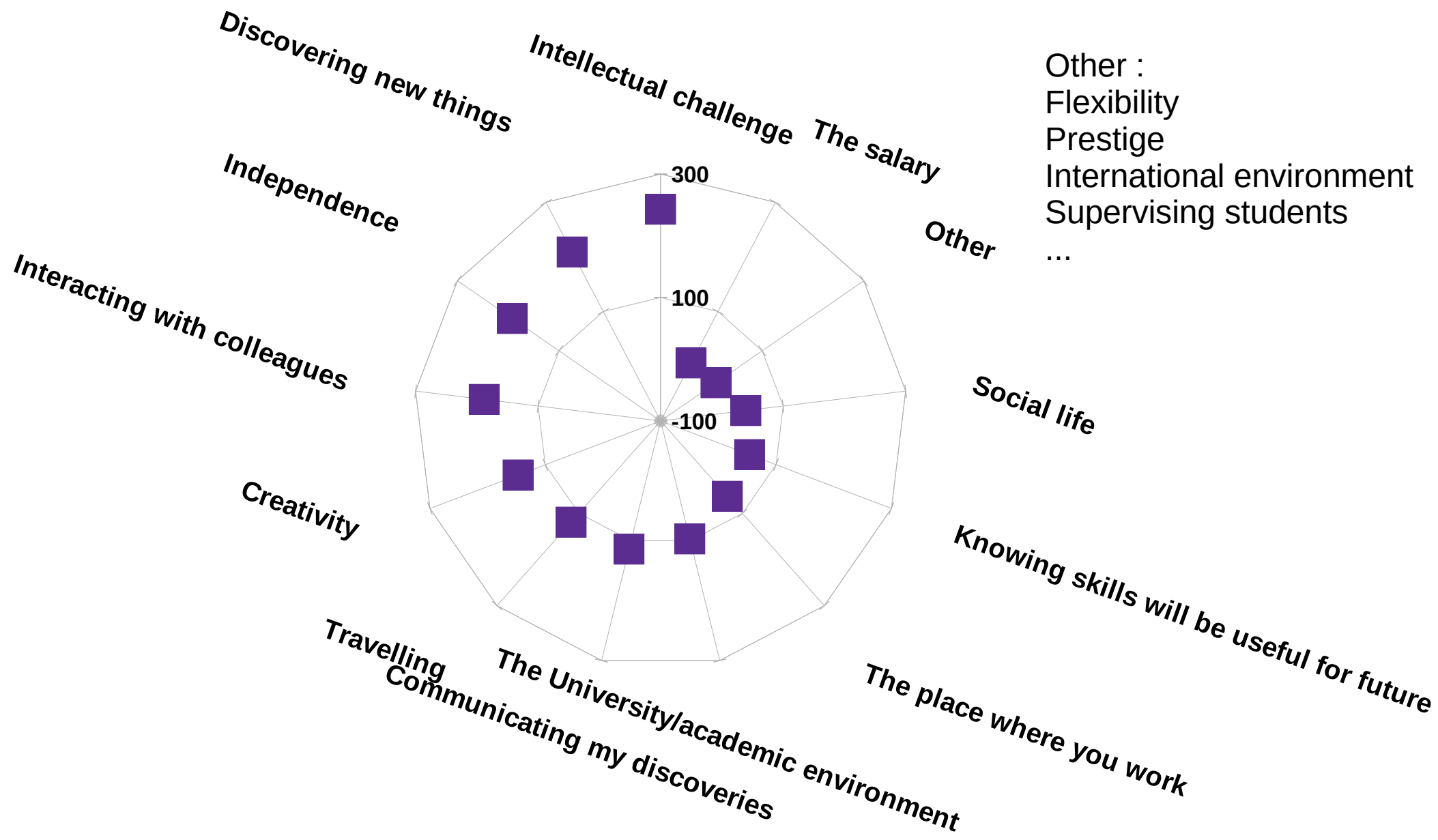
Working in :



Nationality :

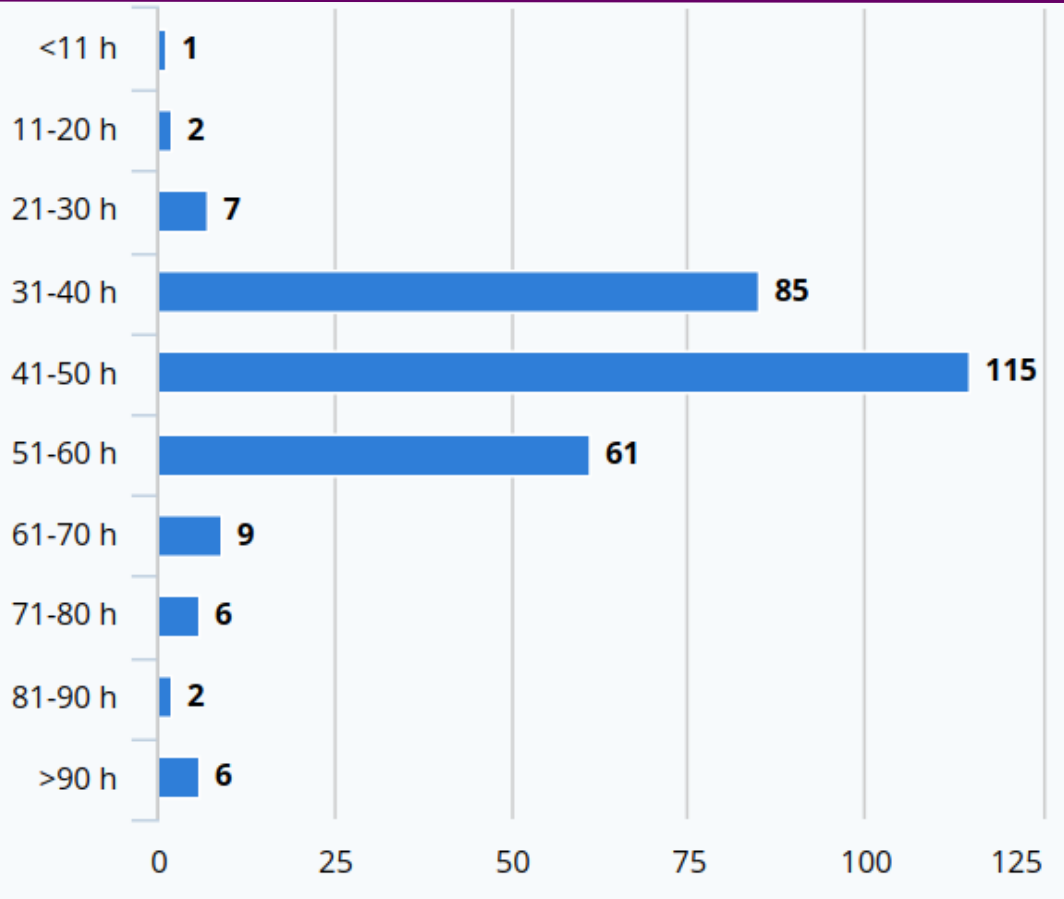


Survey: what do you like most about your job ?



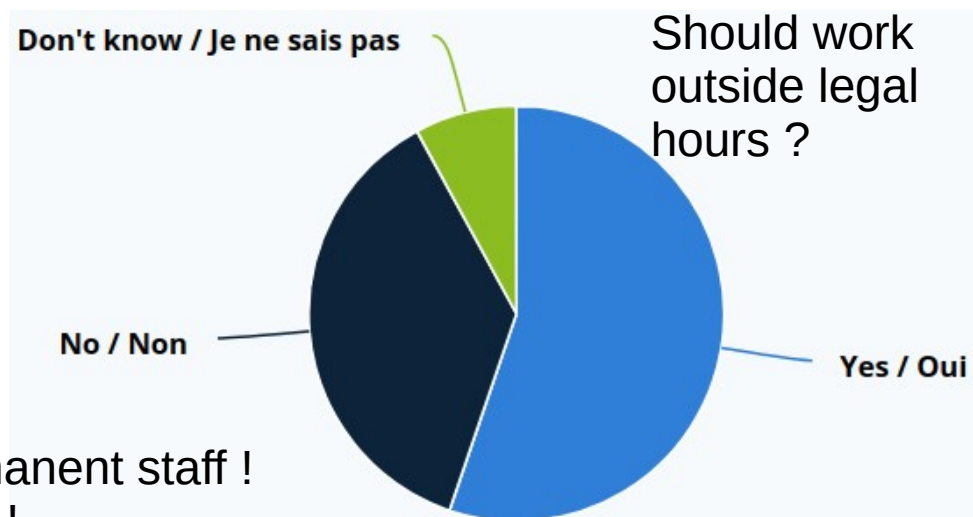
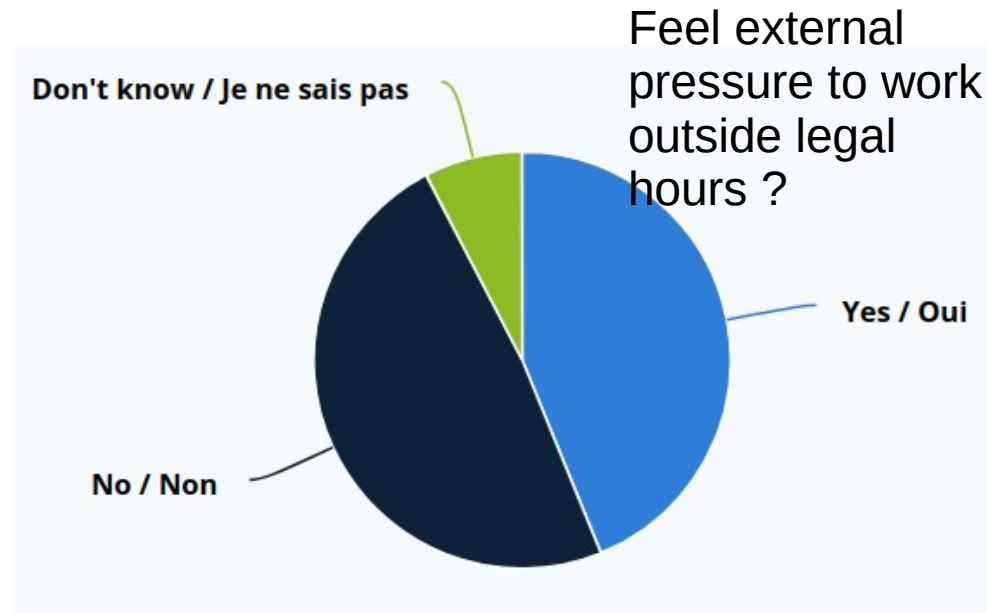
Other :
 Flexibility
 Prestige
 International environment
 Supervising students
 ...

Survey results : hours worked per week



Why long hours ? (examples)

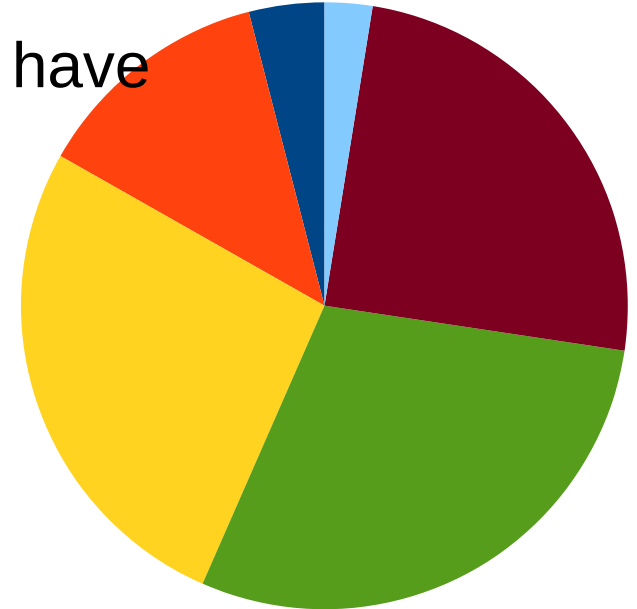
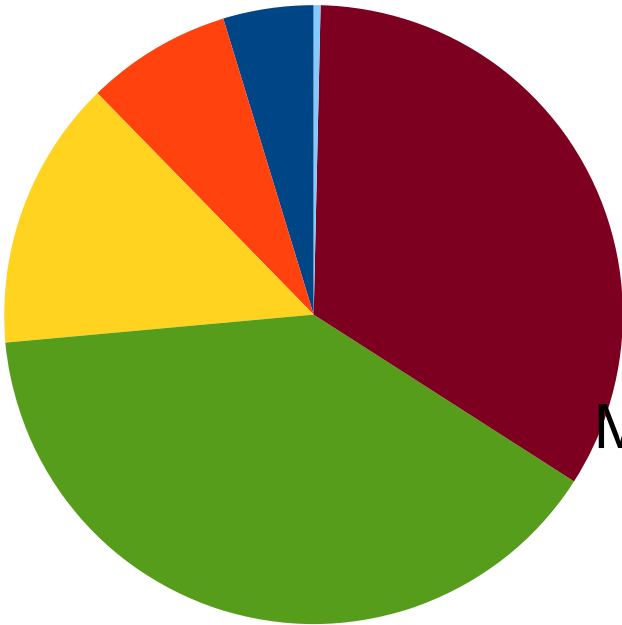
- Be competitive/obtain post
- Like to work more hours
- Can't achieve work required in legal hours
- Can't « switch off »
- Expect more work from post-doc/PhDs than permanent staff !
- Most others work outside legal hours, so should I !



Survey results : job satisfaction

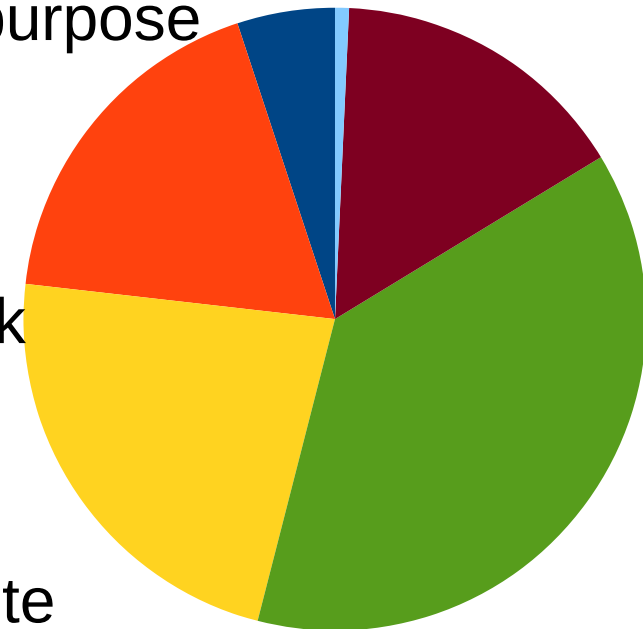
Research is the best job that you can have

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly Agree
- Non-applicable



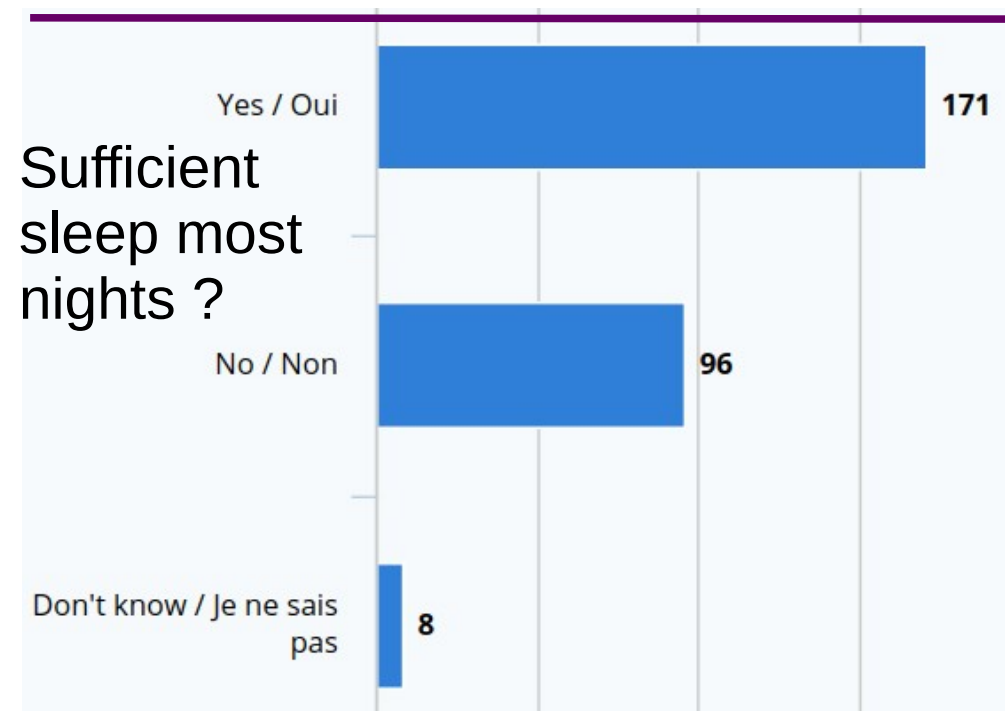
My work gives me a sense of purpose

I look forward to every day at work

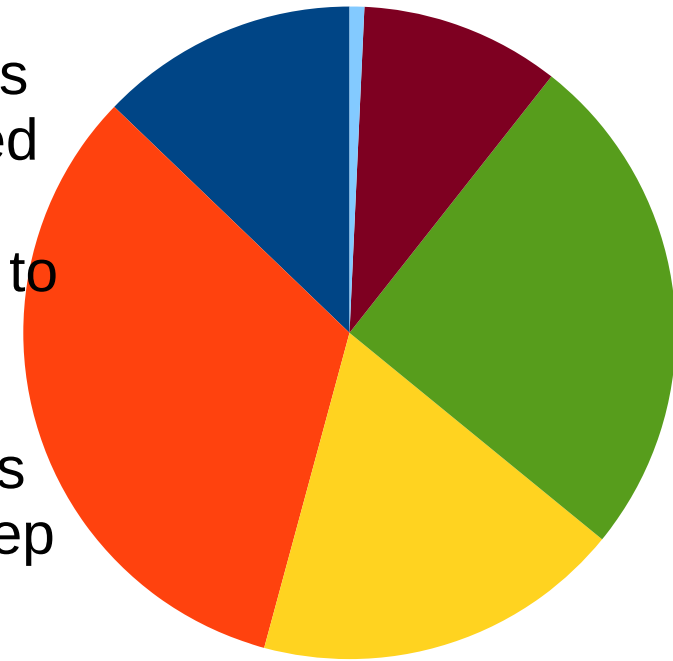


The large majority feel well integrated in their institute

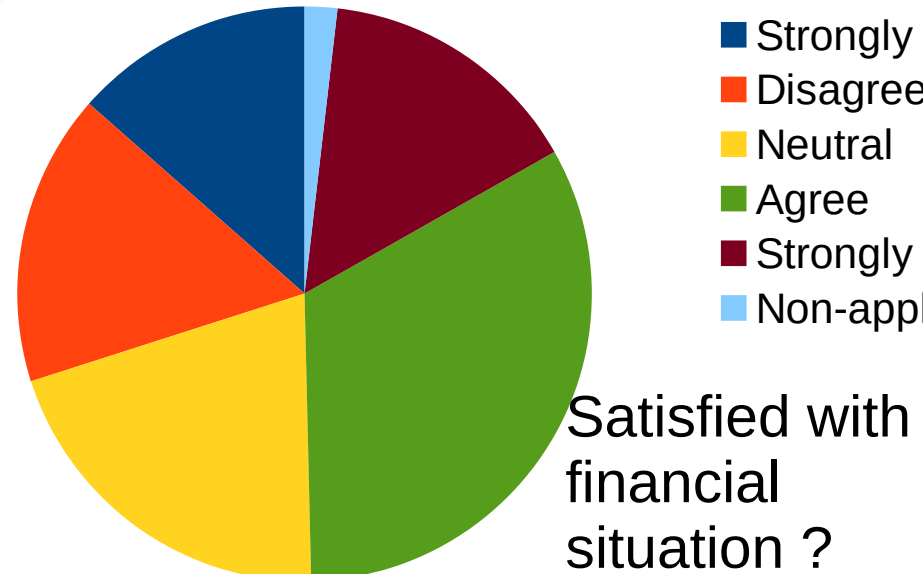
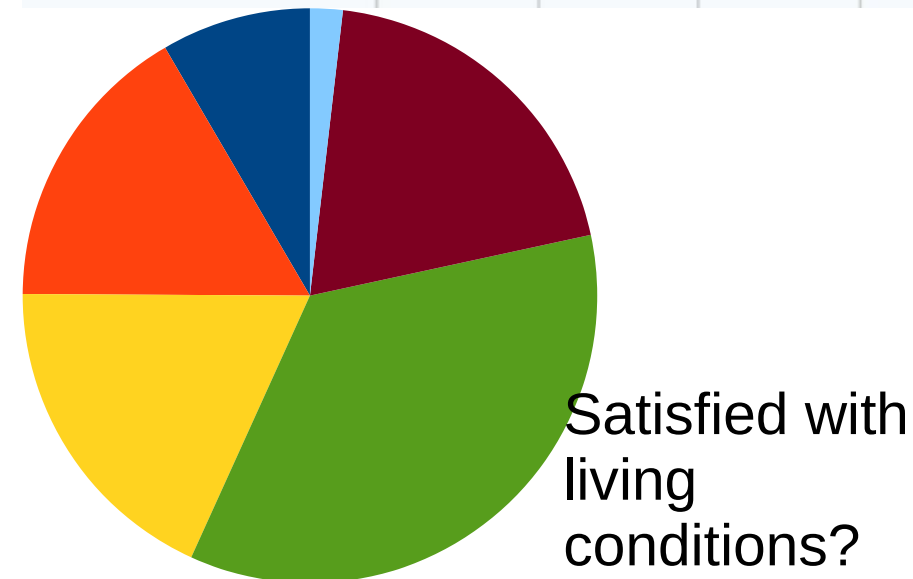
Survey results : work-life balance



My life is balanced with respect to work, outside activities and sleep



- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly Agree
- Non-applicable



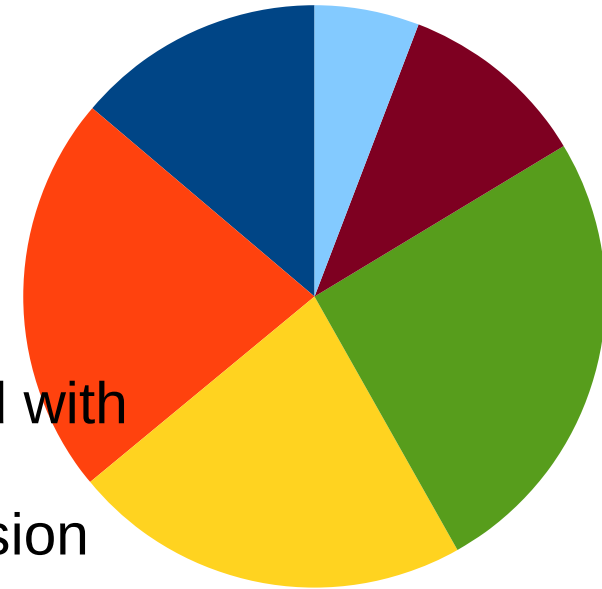
Survey results : academic career

The majority felt that :

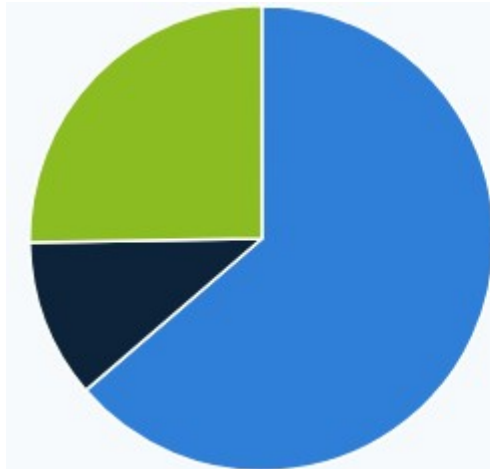
- the environment in which they work inspires them
- senior colleagues are there for them when needed
- they handle setbacks well



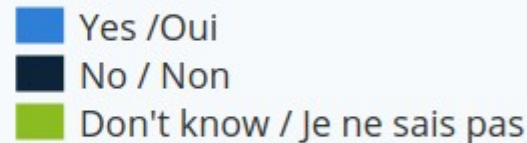
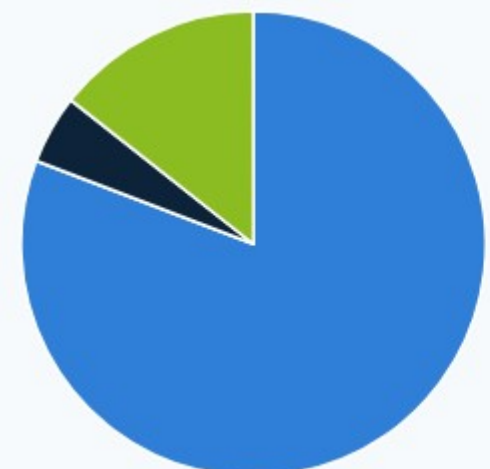
Satisfied with
career
progression



Planning to stay in academia :



Would stay if guaranteed job :



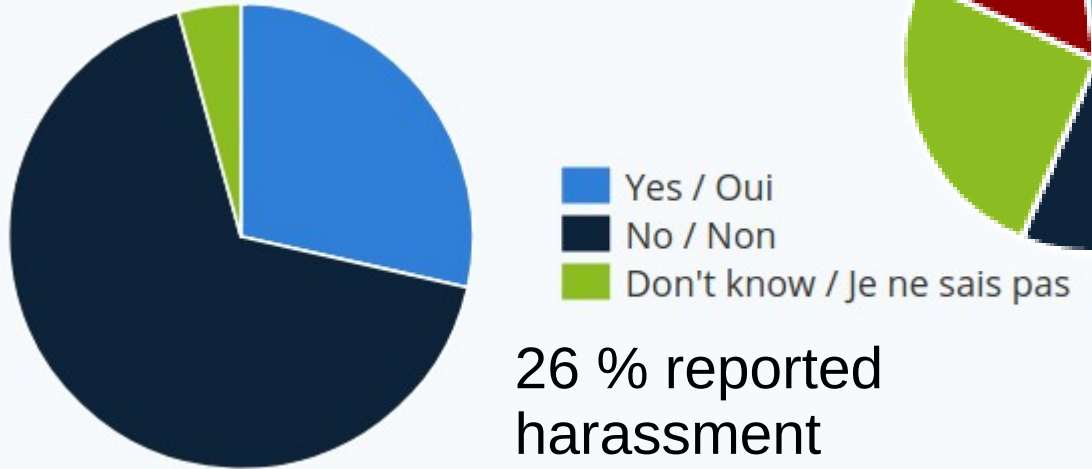
Difficulties in academia raised by respondents

Recurrent difficulties in academia expressed by the respondents :

- **Precarity**
- Geographical instability
- Pressure to publish
- Younger colleagues often feel undervalued
- General disregard for well-being
- Supervisors with (very) poor management skills
- Impossible to compete with child-free colleagues
- Petty, self-supporting networks of mediocre people in positions of power
- No guidelines describing non-academic areas of research
- Bureaucracy

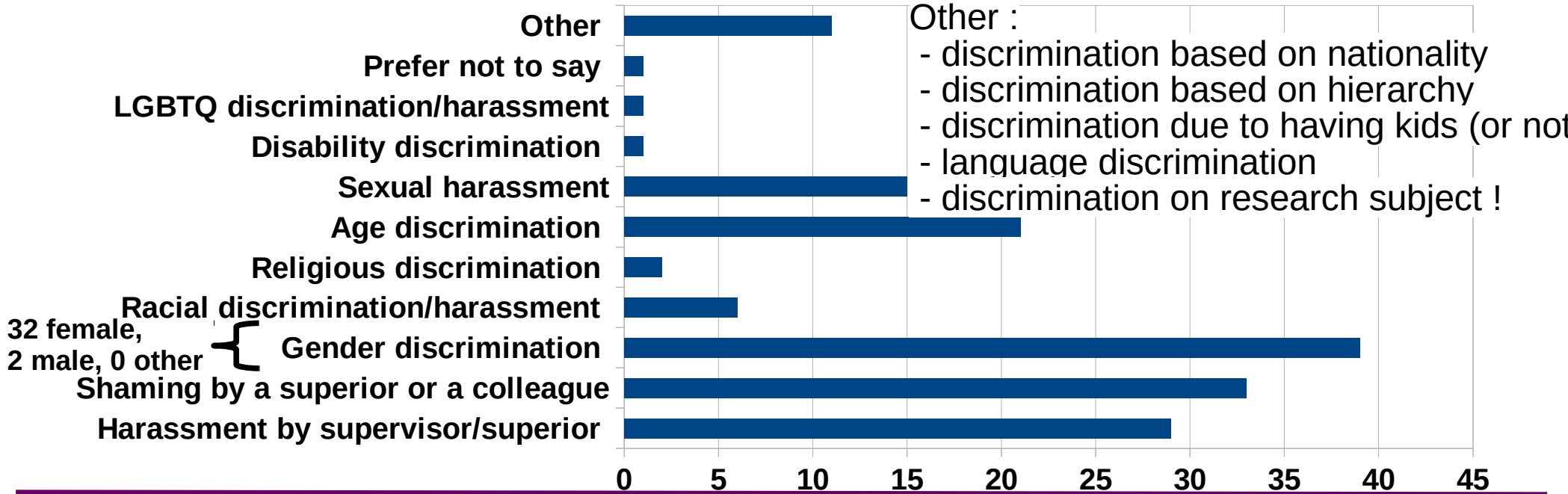
Survey results: harassment & discrimination

Experienced harassment/discrimination in research



26 % reported harassment

Didn't report because :



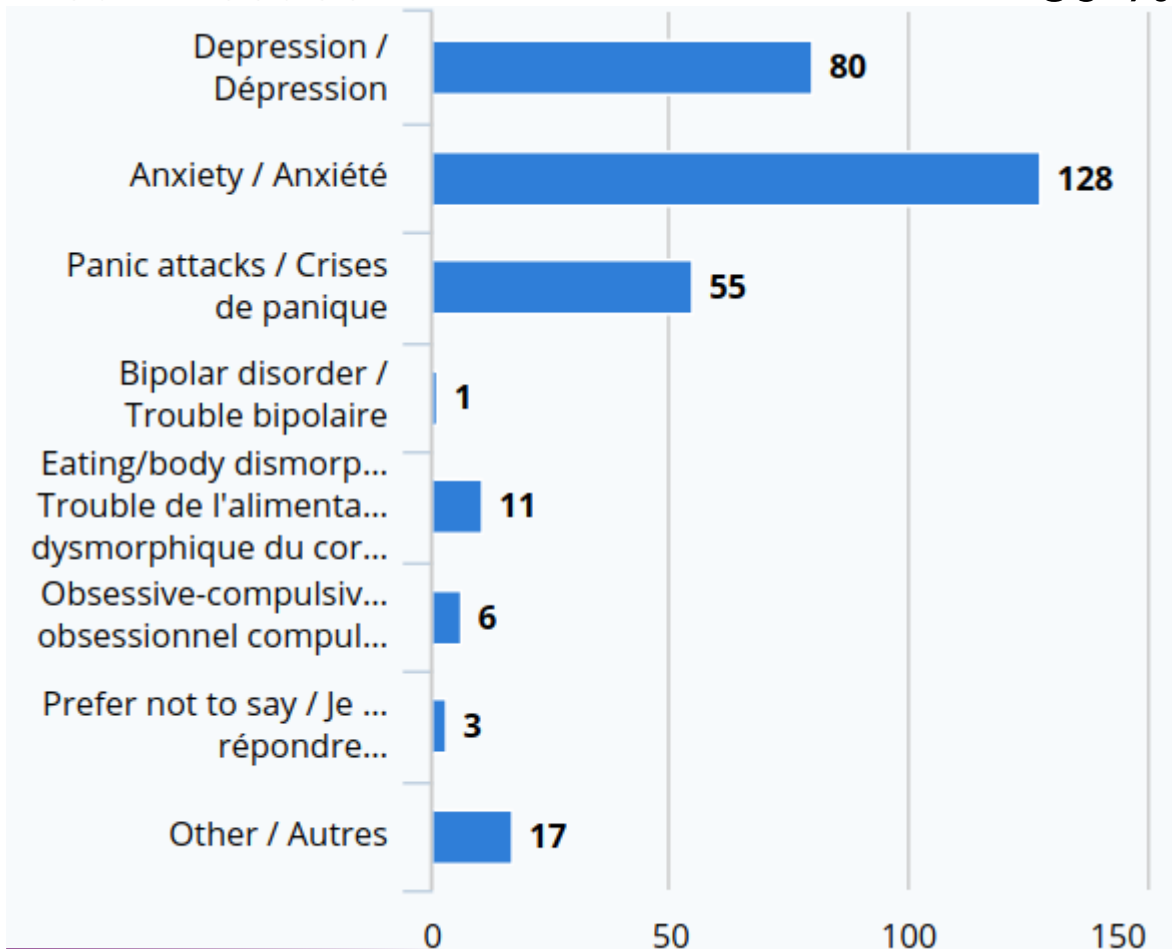
32 female, 2 male, 0 other

Survey results: mental health issues due to career

20% suffered mental health issues before starting career in astrophysics

~45% suffer with mental health problems since starting in astrophysics

Health issues :



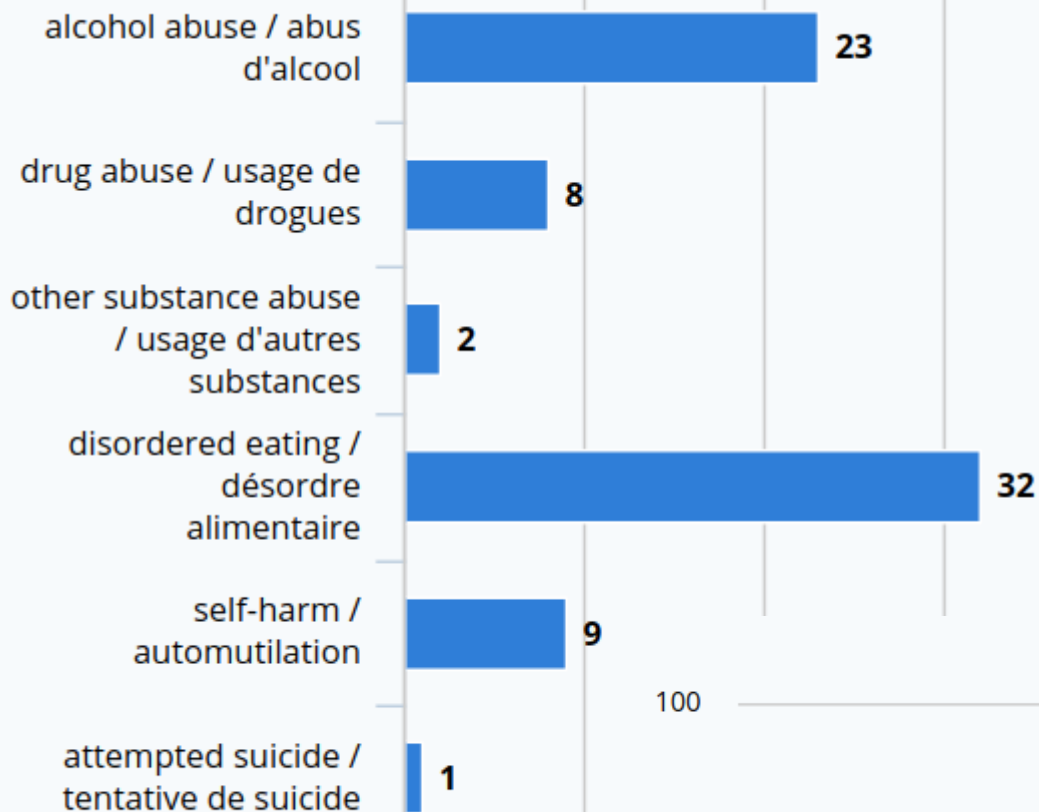
59 % have not sought help because :



- Embarrassed / stigma / Gêne / stigmatisation
- Don't feel that someone would listen / Je n'ai pas l'impression que quelqu'un m'écouterait
- Other people have worse problems / D'autre personnes on des problèmes bien pires
- Don't know where to go for help / Je ne sais pas où trouver de l'aide
- Language barrier (I don't speak the local language) / Barrière de langue (je ne parle pas la langue locale)

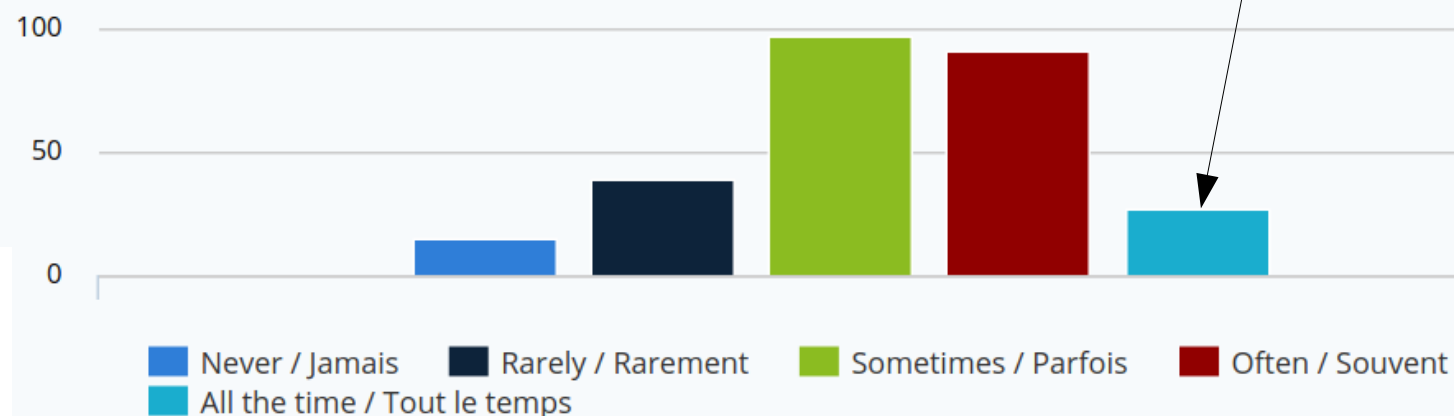
Survey results: mental health issues due to career

Problems have caused 51 colleagues (~18 % respondents) to turn to :



None of these are permanent staff

Colleagues have felt overwhelmed by work :



Survey results : most positive experiences

Scientific discussions International conference
International connections
Constructive feedback Press release
Supervising New discovery
Outreach
Interdisciplinary work
Getting PhD Launch satellite
Observing Learning Collaboration
Great ideas Promotions Teaching
Accepted proposals Independance
Sharing success Working abroad
Publishing work
Meeting people
Changing domains
International recognition
Contribute to big projects

Outcome and recommendations

- Results presented at the SF2A week of astrophysics (June 2021)
 - 4 h workshop also held to discuss the problems, 2nd workshop in June 2022
 - Paper published (Webb et al., 2021, Proc. Ann. Meet. French Society Astr. & Astrophysics, p. 35-40)
 - Recommendations drawn up for institutes, masters programmes/doctoral schools and governing bodies
 - Some recommendations already in place in some institutes
 - Seemingly minor improvements can make a big difference
-
- A lot of help already available, but often not known. Putting in to place a single webpage (via the French astronomy society, SF2A) of all useful help + info
 - Created a working group through the SF2A to work on the issues raised
 - New, wider survey to be carried out in 2023

Recommendations for institutes

- Provide paperwork in English/help out with translating, hold discussions in English
- Prepare arrival (office, intros, etc), provide information booklets and introductory meetings for new hires on institute/surroundings (opening a bank account, finding an apartment, organisation within institute, access to intranet, mailing lists, etc) in English
- Update available information !
- Organise scientific/non-scientific events to facilitate meeting colleagues and create a team spirit
- Provide (local) mentor programme
- Open discussion of problems (imposter syndrome, well-being, hours worked, racism, sexism,) at dedicated coffee/discussion sessions
- Provide information and help for finding jobs outside academia
- Contact with previous-researchers now in industry (alumni prog., PhD day, etc)

Recommendations for masters/doctoral schools

- Provide realistic information during masters about chances of staying in academia
- Reinforce links with industry
- Talk more about bad practice (supervisors requiring replies to emails late at night or at the weekend, long working hours, etc)
- Training during Masters/PhD programmes to take into account the majority of students will not work in academia over the long term

Recommendations for governing bodies

- Post-doc positions could be increased in length (ideally >3 yr)
- Post-doc salaries should be harmonised and provide for salary evolution
- Everyone working in astrophysics should be trained in well-being, harassment, discrimination etc, using online courses with tests, to be passed every x years
- Every institute should have a clearly identified person properly trained to deal with harassment (not direct superior of anyone in the institute) – put into place by INSU

Ultimately, improve the PhD & post-doc (& career) experience

For everyone

Because treating people fairly often means treating them differently.



Final words

Many others have had the same experiences as you and can (and would like to) provide support and advice

Please ask for help before you become overwhelmed

Astrophysics is great – but so are many, many other types of jobs !

Look for the best in opportunities and take care !

Thanks to :

Those who helped put the survey together

Those who answered the survey

Those of you who will take on board what is said

Those who will help make everyones lives better in the future

Aswell as Framaforms, Topcat, Excel

We remember our colleagues that departed too soon, your memory will help us strive towards a better tomorrow

Additional slides

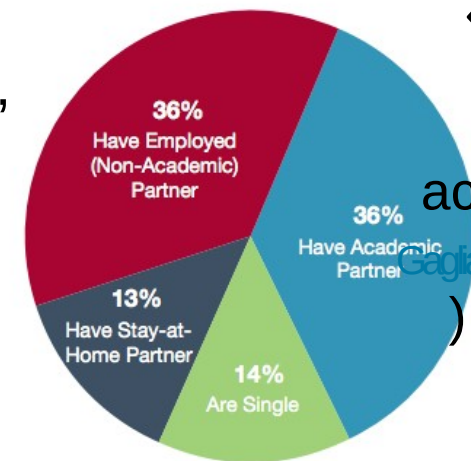
Additional slides

Common problems encountered in research

- Precarity
 - Living away from family (partner/children/parents): removes support network
 - Cultural & administrative problems: paperwork, language barrier (difficulty seeking medical help), insufficient information on institute practices
 - Financial difficulties

FIGURE 1: PARTNER STATUS OF U.S. ACADEMIC WORKFORCE^{^**}

9,043 Full-Time Faculty from 13 Leading Research Universities



« Two-body » problem frequent in academia (e.g. [Gagliano Tallon, 2021, Nature](#)), affects up to 36% researchers

- Work-related stress/imposter syndrome : an “internal experience of intellectual phoniness” (or fraud) in some who are highly successful (think it’s due to luck not true abilities)

- Relationship (supervisor, colleagues, ...) problems

- (COVID-19-related stress): Loss of motivation, poor internet access, loss of data/experiments/simulations, access to lab./supervisors limited, loneliness

Seventy-two percent of full-time faculty in this study have employed partners. Thirty-six percent have academic partners.

[^] All data derive from the Clayman Institute's Managing Academic Careers Survey until 2019. ^{*} Percentages do not add to 100% due to rounding. [†] See Appendix B for methods notes.

- Harassment / discrimination

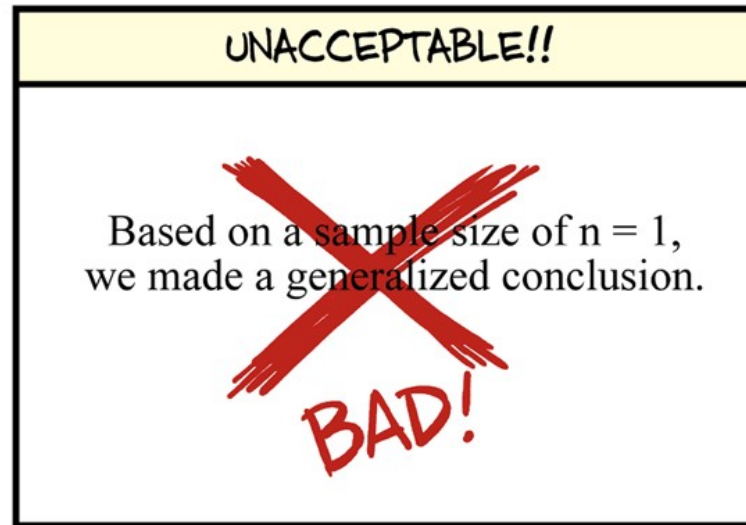
Harassment/Negative Acts

Behaviors Measured by the Revised Negative Acts Questionnaire (N=389)

Dimensions	Variable of bullying	M±SD	Total
Personal related bullying	2) Being humiliated or ridiculed in connection with your work	1,66±0,82	1,42±0,50
	5) Spreading of gossip and rumours about you	1,42±0,65	
	6) Being ignored, excluded or being 'sent to Coventry'	1,41±0,68	
	7) Having insulting or offensive remarks made about your person (i.e. habits and background), your attitudes or your private life	1,40±0,70	
	8) Being shouted at or being the target of spontaneous anger (or rage)	1,65±0,85	
	11) Repeated reminders of your errors or mistakes	1,52±0,74	
	12) Being ignored or facing a hostile reaction when you approach	1,41±0,72	
	13) Persistent criticism of your work and effort	1,29±0,57	
	14) Having your opinions and views ignored	1,45±0,64	
	17) Having allegations made against you	1,33±0,56	
Intimidation related bullying	18) Excessive monitoring of your work	1,30±0,66	1,20±0,41
	20) Being the subject of excessive teasing and sarcasm	1,24±0,59	
	9) Intimidating behaviour such as finger-pointing, invasion of personal space, shoving, blocking/barring the way	1,21±0,57	
	10) Hints or signals from others that you should quit your job	1,14±0,46	
	15) Practical jokes carried out by people with whom you don't get along	1,16±0,46	
Work-related bullying	19) Pressure not to claim something which by right you are entitled to (e.g. sick leave, holiday entitlement, travel expenses)	1,29±0,67	1,75±0,67
	22) Threats of violence or physical abuse or actual abuse	1,19±0,53	
	1) Someone withholding information which affects your performance	1,89±0,98	
	3) Being ordered to do work below your level of competence	1,70±1,02	
	4) Having key areas of responsibility removed or replaced with more trivial or unpleasant tasks	1,60±0,86	
	16) Being given tasks with unreasonable or impossible targets or deadlines	1,35±0,66	
	21) Being exposed to an unmanageable workload	2,21±1,27	

Reminder !

ACADEMIC CONCLUSIONS



WWW.PHDCOMICS.COM

Other suggestions : precarity

Limited number of new jobs - but you can maximise chances of being hired :

- ✓ Prepare your application with the people in the lab. you want to be hired in
- ✓ Demonstrate in the application how you will work with the people in your chosen lab
- ✓ Show how you independantly conduct research projects
- ✓ Prepare your application in advance and get different people to read it (specialist, non-specialist) and provide feedback
- ✓ In France, it is not necessary to have a very long list of publications
- ✓ Ask a previously successful candidate to show you their application
- ✓ In your application, show your contribution clearly (but do not overclaim)
- ✓ Stick to the guidelines provided
- ✓ Run a spell checker and proof read

Keep an open mind, there are many other fascinating jobs out of academia

Other suggestions : precarity

Permanent research jobs in France :

In France : CNRS / CNAP / University

CNRS, primarily sections 17 & 18, but also 1, 2, 4, 7

University : primarily section 34, but also 35, 28-30, ...

Example for 2021 : CNRS section 17 (CR) : 5 posts

CNAP (Astronome-adjoint) : 5 posts

Lecturer (section 34) : 3 posts + 2 (section 29/34, cosmo/astro)

It is also possible to become a Research engineer (IR)

There are also jobs in other countries

Non research jobs : IT, big data, aerospace industry, teaching, public outreach, scientific writing, medical imaging, ... (see list in extra slides)

Remember : moving out of academia does not constitute a failure

Other suggestions: imposter syndrome & stress

- Talk to colleagues, many have felt the same at some point in their career
- Don't listen to people who tell you: you received this competitive grant/you got your position because you're a woman (or other minority)...
- Teaching may help for postdocs?

4 ways to deal with stress

In the long-term

- ✓ Exercise regularly
- ✓ Eat well
- ✓ Practice Mindfulness
- ✓ Practice relaxation techniques

In the short-term

- ✓ Take a walk
- ✓ Practice deep breathing
- ✓ Use aromatherapy
- ✓ Get a hug from a loved one

Home

- ✓ Express yourself
- ✓ Take action
- ✓ Get organized
- ✓ Create your own space

Work

- ✓ Understand the expectations
- ✓ Avoid multitasking
- ✓ Minimize conflict
- ✓ Get comfortable

Relationships

- ✓ Remove external stressors
- ✓ Get to the root of the problem
- ✓ Save time for yourself
- ✓ Improve your communication skills

Other suggestions: harassment

- ❖ In academia, recognizing oneself as target of negative behavior is often linked to a sense of shame, personal failure, or at risk for more targeting.
- ❖ Culture of silence (slowly changing) remains (anonymous questionnaires reveal ~20-40% of academic personnel have been harassed, and 50% have witnessed it, Keashly 2019)
- ❖ Organisation Codes of Conduct are becoming more common
- ❖ Positive conflict management practices that include procedures and dedicated committees, ombudspersons. Listening, finding common ground, leading towards collaborative solutions
- ❖ Some collaborations/organisations have trained teams (allies) to observe interactions and help identify improvements
- ❖ Training and dedicated talks to raise awareness and give all collaboration members the background to create a positive environment

Local resources : Information on posters around the institute +

<https://www.irap.omp.eu/egalite/homepage/lutte-contre-les-violences/lutte-contre-les-violences-sexistes-et-sexuelles-dispositifs-existants/>

Where to get help in Toulouse

Obviously, try to avoid letting things overwhelm you. To do that, try to

- keep a balanced life – have an interest outside of work (good for the CV too!)
- get enough sleep
- keep communication open with your hierarchy, the majority really do want the best for you
- if not possible, speak with an intermediary (someone you trust)
- ask for support from family and friends – everyone goes through bad patches and people are willing to help

If things are bad :

- speak to your doctor
- speak to the University/ CNRS support services

CNRS

Preventative medicine, including stress related issues, find your contact here :

http://www.dgdr.cnrs.fr/SST/CNMP/med_prev_serv/annu-serv.htm

http://www.dgdr.cnrs.fr/drh/protect-soc/fiches_rps.htm

Where to get help in Toulouse

University

<https://welcomedesk.univ-toulouse.fr/le-service-interuniversitaire-de-m-decine-preventive-et-de-promotion-de-la-sant-simpps>

Preventative medicine (some English speaking staff)

- Generalist doctors, Gyneacologists, vaccinations
- Social services (help with university, family, personal, administrative & financial problems)
- Psychiatrists and psychologists
- Nutritionists, sexologists, doctors to help with addiction

See also resources here :

<https://www.astrobetter.com/wiki/Mental+Health>

Widening your options, some transferrable skills

- Collaboration
- Statistical methods
- Numeracy
- Programming/coding
- Data management and analysis
- Simulations/Modelling
- Autonomy
- Motivation
- Note taking
- Prioritising
- Resolving problems
- Fluent English (and other languages!)
- Written communication
- Public speaking
- Project management
- Leadership
- Critical thinking

Options open to you....

Information technology

Statistician

Researcher

Critical thinking, problem solving
Collaboration and team leading
Mental agility and adaptability

Teacher

Big data

Initiative and entrepreneurial skills
Efficient communication
Access and analyse information

Work in the aerospace industry

**Imaging/
Medical techniques**

Curiosity and imagination

**Scientific
Writing/communication**

Places actively recruiting PhDs and postdocs

Big groups in Aeronautics/Aerospace

CapGemini (Engineering) (previously Altran) <https://www.capgemini.com/fr-fr/>

CS Group <https://www.csgroup.eu/fr/>

ALTEN <https://www.alten.com>

AKKA <https://www.akka-technologies.com>

EXPLEO <https://www.joinexpleogroup.com>

Smaller businesses "fournisseur de service" (Toulouse)

CELAD www.celad.fr

HEDON Technologies <https://www.hedontechnologies.com>

Businesses focussed on artificial intelligence :

Elter <https://elter.fr/en/home/>

Datalab by Extia - <https://www.extia.fr/assets/pdf/datalab.pdf>

LumenAI (à Pau) <http://www.lumenai.fr/>

Datactik <https://www.datactik.com/>

Delair.A <https://delair.aero/delair-ai-visual-intelligence-for-enterprise-asset-management/>

Places actively recruiting PhDs and postdocs

Other subjects:

WeatherForce <https://weatherforce.org/>

CLS Group (Collecte Localisation Satellites) <https://www.cls.fr/en/>

Continental <https://www.continental.com/fr-fr>

Thales <https://www.thalesgroup.com/>

Noveltis <https://www.noveltis.fr/en/home/>

Some Start-ups (Toulouse) : <https://www.toulouseisai.fr/referencer-sa-structure>

How to get recruited

Make an attractive CV that is oriented towards industry/engineering
Put it on the website APEC (www.apec.fr)