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What invisible (gendered) labour is happening in the UK space sector?

Sarah N. Bentley, Kirsty Lindsay, Lauren Napier, Amelia Bateson, Alex Taylor.

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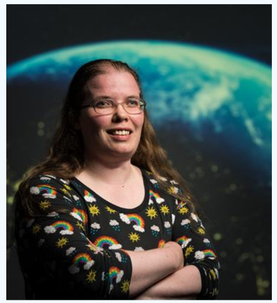
WISPER TEAM

Women in Space: Experiences and Roles

Dr Sarah Bentley



Dr Kirsty Lindsay



Dr Lauren Napier





Amelia Bateson



Dr Alex Taylor

Our work:

Knowledge exchange on policy to improve gendered experiences in space sector.

Historical context

Where are we now?
what does invisible labour mean in the space sector?

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Women in Space: Experiences and Roles



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Today

Where are we now?
what does invisible labour mean in the space sector?

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What is invisible, gendered labour?

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Gendered labour

- Doing certain types of work because of your gender

Invisible labour

- Unseen, unvalued or undervalued work done because of gender, in workplace
- This work is often vital to the workplace, but systematically undervalued and undersupported
- NOT: making the person invisible

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Why should we care?

- This work is often essential to the workplace.
- Only when labour is recognised can it be valued and can people fight for better conditions. Rewards and compensation require visibility.
- People in specific groups are doing additional unpaid work , or being shunted into undervalued work, removing them from decision making and reducing their ability to engage equally.
- It’s can be emotionally draining and make people feel isolated. By discussing these topics, other people can know that they’re not alone.

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Methodology: how to use the resources we have

"What work are women doing and how is it valued in the UK space sector?"

Space sector studies
(including Landmark studies about the experiences of women in global space sector)

Northumbria: variety of space sector disciplines, but too few people for anonymity

Studies on invisible labour in other fields

Scoping review
(find areas of invisible labour that may be relevant)

Questionnaire
Ask industry colleagues which of these are present in UK space sectr

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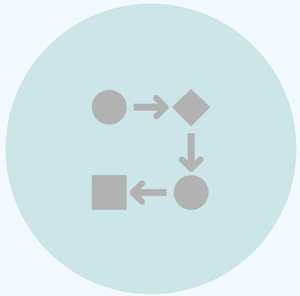
Goals today



Explain the knowledge already available.



Outline pitfalls, where our learning changed our approach.



Highlight the complex, systematic nature of this phenomenon that requires sustained approach.



Validate people - increase belonging, make people feel seen.

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Significant directional changes

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Major change: Let's ***not*** quantify

Most of the quantifiable answers already existed in other forms; no need to quantify again.

Unsafe to quantify extra work.

A large part of gendered invisible labour is internal – quantitative methods unsuitable.

Other changes:

Focus on validation (autoethnographic, sharing qualitative approaches).

Focus on highlighting, translating and building on existing work studying our own disciplines.

Use approaches from social sciences, humanities etc designed for this.

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Significant directional changes

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Mai

"Gender is not a new area of study and gender inclusion is not a new problem … gender studies has existed as a field for at least the last century. Rather than deferring to established and well-researched understandings of gender and its individual and structural manifestations, many astronomers have chosen to attempt to solve problems of gender inclusion without consulting those whose fields have long been focused on this work."

Rasmussen et al., 2019

Other changes:

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Invisible labour scoping review

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Remuneration and recognition

Resources

Identity based labour

Internal identity based labour

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Remuneration and recognition

Similar pay for similar work

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Not subtle → **Subtle**

Gender pay gap

Same role, unequal pay

Awards

Men's work is recognised more (citations, talks, awards) — also true for other underrepresented groups.

This is also true in space science, e.g. Sandhu 2024



Recognition is tied to visibility.

Promotions

Women aren't equally promoted at each career stage.

Agentic leadership traits get women labelled "abrasive" or "opinionated," and their promotion feedback is more likely to be unusable. (Textio, 2024)

"I was told to act more 'masculine' to be promoted"



Occupational feminisation & pay

When more women enter a discipline, its pay and status tend to decline.

"Areas of my discipline are 'hard' or 'soft'. The 'hard' areas are more highly regarded, and have a worse gender balance"



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Remuneration and recognition

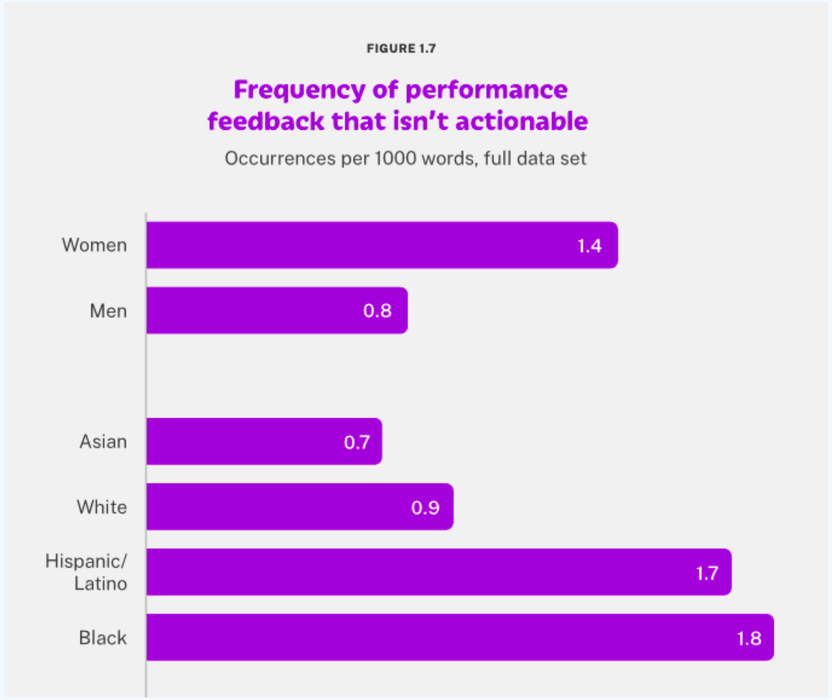
Similar pay for similar work

Promotions

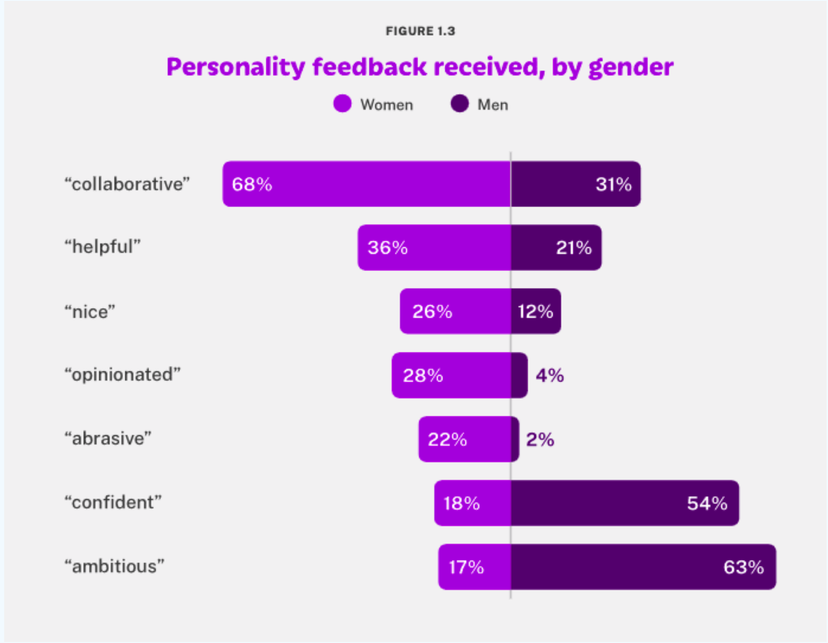
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"I was told to act more 'masculine' to be promoted"



Women are much more likely to get promotion feedback that they can't actually act on. Note also racial component.



Personality feedback is gendered, where leadership traits are viewed positively for men and negatively for women.

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Resources

Is access to necessary resources for the role gendered?

Not subtle — **Subtle**

Protective equipment

Body armour and spacesuits originally designed for men can't be adapted to smaller frames — limiting who can do spacewalks or reach Mars, even when smaller frames would have energy efficiency benefits 🚀

Everyday resources

Stereotypes and historic standards affect access to everyday resources.

"We submitted the same ticket, his was paid attention to but I was just told to "turn it off and on again"."

🚀

Desks, chairs etc still have "men as standard".

Career support

Female engineers took longer to reach their career aims because it was more difficult to envision their goals and because different career goals were projected on them by managers and mentors.

Papafillippou & Bentley, 2017

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Identity based labour

Doing certain types of work because of your gender

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Not subtle — **Subtle**

Secretarial & service roles

Expected to take on secretarial, pastoral or service roles — e.g. a female meeting chair asked to make tea for male attendees 🚀

Equity and inclusion work

Doing EDI work — outreach, panels, being visible, being a role mode — disproportionately. This is often undervalued work and results in time not spent on other work.

Expected to fix the system and be an expert in social systems.

Accessing rights

Having to actively assert or fight for access to basic rights associated with minority identity (e.g. breastfeeding room)

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Internal identity based labour

Doing difficult-to-quantify internal work that is still necessary for a role

Already subtle → **Extremely subtle**

Developing a professional identity

Simultaneously navigating and avoiding assimilation into the dominant culture.

Example: “Leadership” personality qualities; ”just wear a suit”

Professional progression

Extra work to envision and plan a route to future career goals, when advice, role models etc are not relevant to you.

Social identity threat

Interactions that highlight and contrast a social identity with a professional identity (e.g. microaggressions).

Increased such interactions have been shown to lead to burnout in engineers, Hall et al. 2019

Work includes: Experiencing and developing coping strategies for microaggressions; feeling self-consciousness regarding choice of clothing, hairstyle, or manner of speech ; avoiding burnout and stress.

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So… It’s complex

Avoidable?

A lot of these are avoidable, but if they keep happening to the same people then yes, it is labour to manage these.

Presented these today to highlight:		
Complexity	Systematic	“fix the system, not the woman”

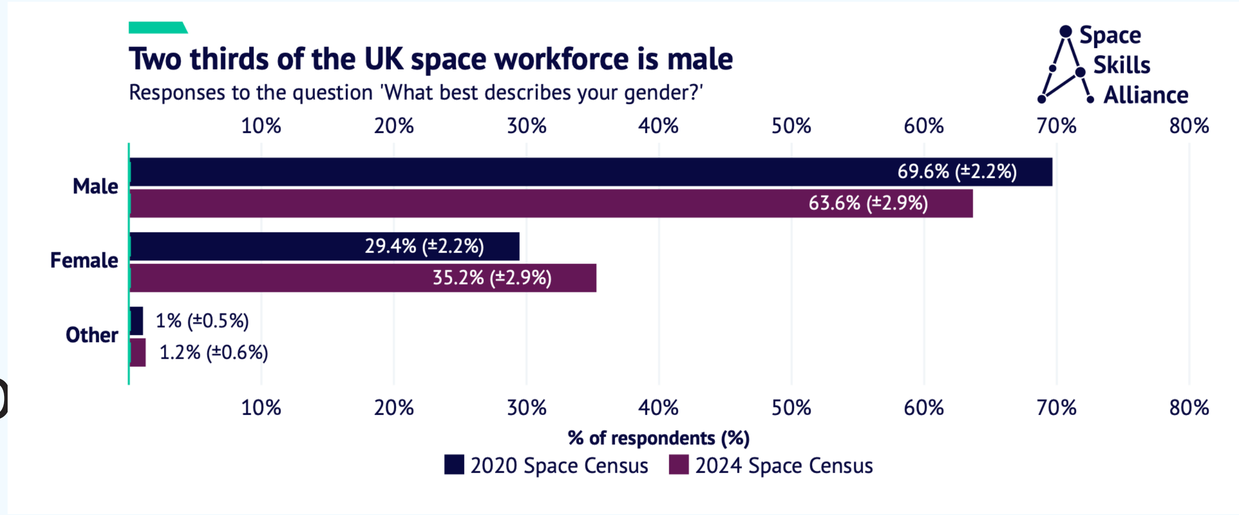
A quote that brings all these areas together:

An engineer describing subtle, hard-to-prove bias: *"work opportunities that just 'happen' to land with my male colleagues, promotions that just 'happen' to always land with my male colleagues instead of me… 'mistakes' being made where I am assumed to be in HR and not an engineer."* 🚀

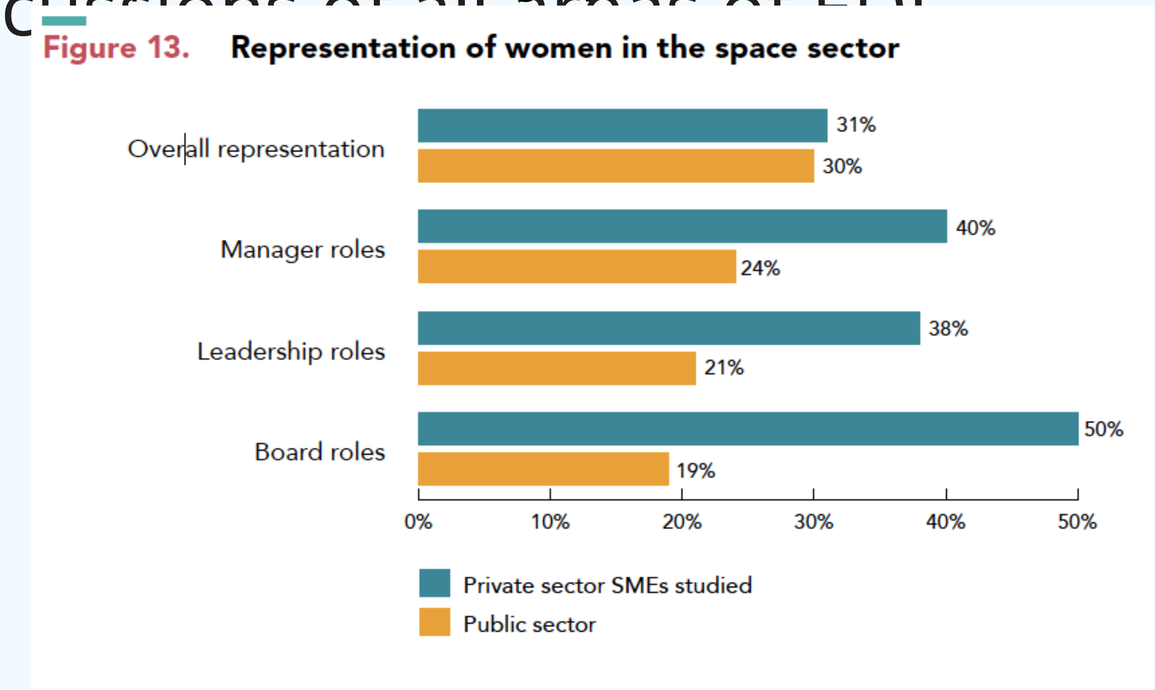
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Something cheerful

- UK numbers for female particip
  Space Sector Demographics)
- I have seen more and more disc
  becoming more mainstream.



UK space sector demographics, 2024



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What can you do about it?

- Treat equity and inclusion as a real problem, wh
  response will improve outcomes for all.
  - Changes backed by long-term investment have been s
  - Small changes are better than none (e.g. an audit of vo
- Look for resources relevant to you: there are di
  individuals, managers, policy setters can do. (Se
- Value expert advice! Employ experts; don't expe
  well as make changes.
- Share knowledge and experiences to improve understanding of work done and to increase belonging.

Take part in our survey!

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UK Space Sector Invisible Labour Questionnaire

UK Space Sector Invisible Labour Questionnaire - Fill in form

https://forms.cloud.microsoft/e/S2fV5MVHQe

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Or drop your business card / sign up

Summary

- We don’t yet know the scale of invisible labour in the UK space sector, we have started to define what this means.
- A lot of the “invisible labour” issues here are ones already addressed by existing schemes (e.g. career support, mentorship)
- … but most of this work is being done by underrepresented groups, with uncertain resources.

- Thank you to those people for getting us this far, I value the work everyone is doing to make our workplace work better for us all, and hope that this talk can help us moving towards

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Useful Resources

- Gender Mainstreaming Toolkit for the Space Sector https://austria-in-space.at/en/publications/gender-mainstreaming-toolkit-for-the-space-sector.php
- Our UN Conference Room Paper, reporting on applying the toolkit https://www.unoosa.org/oosa/en/oosadoc/data/documents/2026/aac.1052026crp/aac.1052026crp.38_0.html
- Landmark studies for women in the global space sector
  - Phase 1 https://www.unoosa.org/images/topics/Space4Women/Space4Women_-_Landmark_Study_on_Gender_Equality_in_the_Space_Sector.pdf
  - Phase 2 https://digitallibrary.un.org/record/4096548?v=pdf
- Textio promotions report https://textio.com/hubfs/Language%20Bias%20in%20Performance%20Feedback%202024.pdf
- Drake report on identity-based labour and academic promotions https://www.drake.edu/diversity/initiatives/identity-basedlabortaskforce/
- One-page visual on the effect of social identity threat https://wwest.mech.ubc.ca/diversity/engineering-exchanges-social-identity-threat-in-the-workplace/
- RAS Bullying and Harassment report https://ras.ac.uk/sites/default/files/2024-05/Final%20RAS%20Bullying%20and%20Harassment%20Report_digital_2024.pdf

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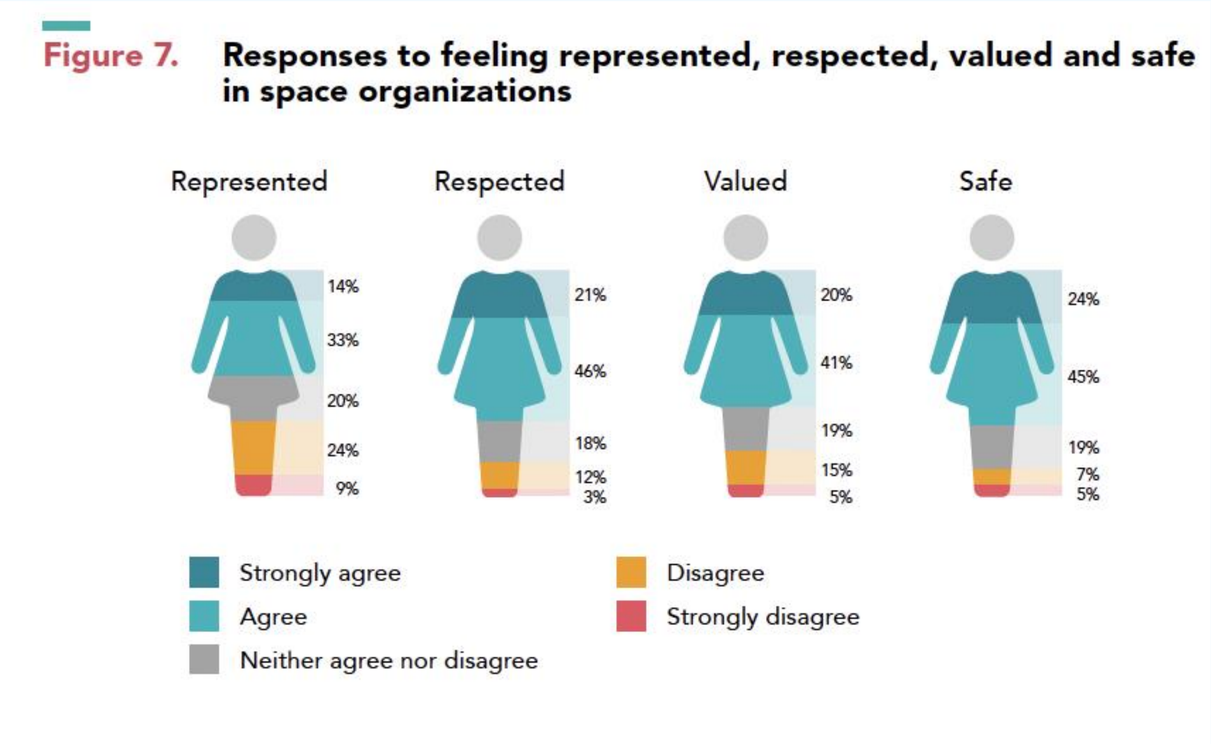
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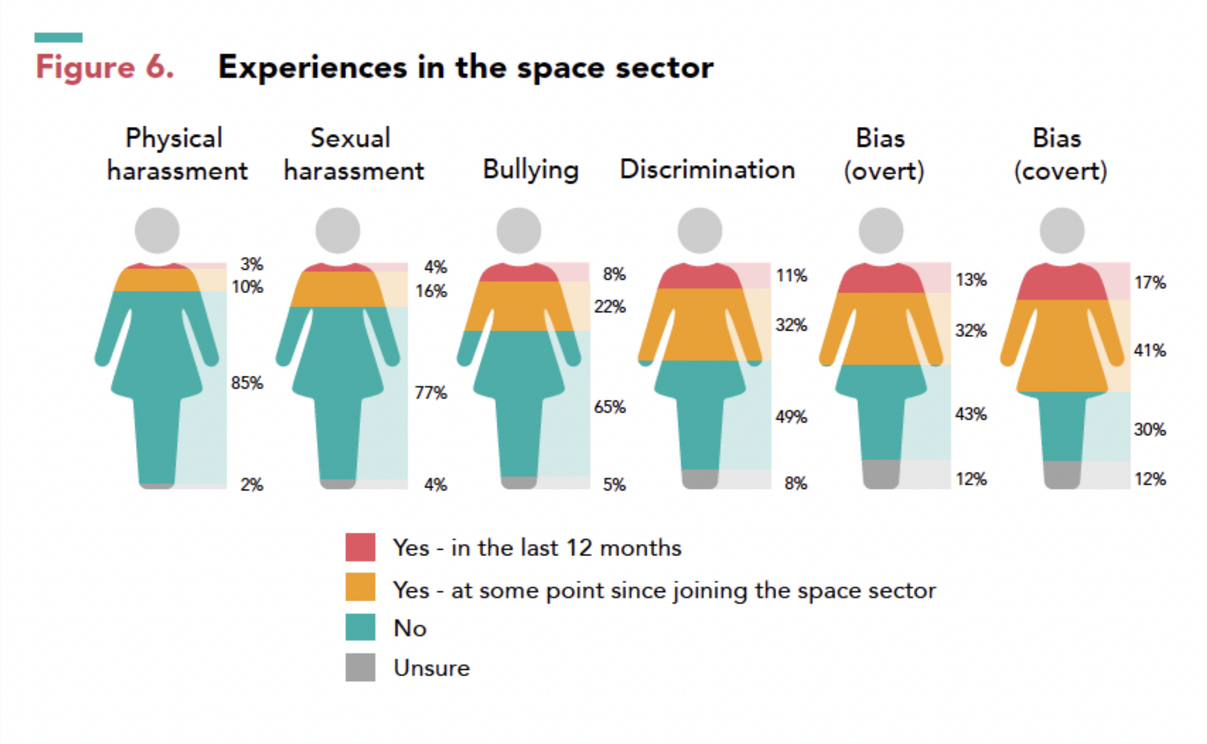
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More Landmark results

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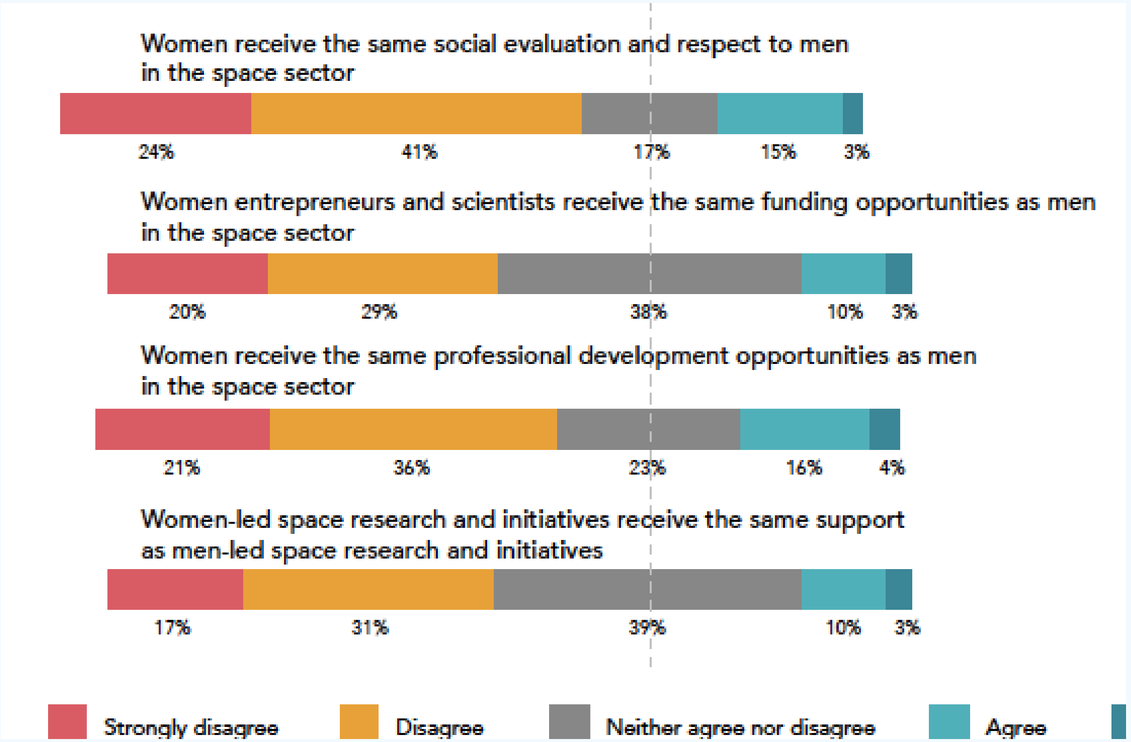
Some results about women's experiences were are pleasant surprise…



… but they are not always consistent with more detailed questions, and …

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More Landmark results



respondents overwhelmingly believed that women received different evaluation and support.

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