Eurostat: Stats in a Wrap

Looking at data on women in research and innovation

Release date: 26 September 2025

SPEAKERS
Marina Perez Julian (Eurostat), Daniela Enache (Eurostat), Anne Laure Humbert (senior academic researcher and expert), Oriane Gilloz (European Commission – Directorate-General for Research and Innovation), Jonathan Elliott (host)

Jonathan Elliott
Stats in a Wrap, the podcast series from Eurostat.

Jonathan Elliott
Hello and welcome to Stats in a Wrap, the podcast all about statistics from Eurostat, the statistical office of the European Union. I'm Jonathan Elliott, your host for this episode, and if you're a regular listener, you'll know that we think data are delicious! And there's nothing we like more than slicing and dicing them into delicious morsels here at our wrap café. And we also like to show that official stats give us fascinating insights into the world around us, a lot of it deeply mystifying.

In this episode, we're donning our data detective hats and diving into a long-standing mystery. Why do careers in science and innovation still look so different for women and men? Why are successful inventors almost always men. And why are 90% of patent applications from men only or men majority teams? It turns out, the clues have been there all along – in numbers, trends and hard evidence collected across Europe by none other than Eurostat, the EU's statistical powerhouse.

In this podcast, we'll be hearing how Eurostat is driving a better understanding of the inequalities behind the working lives of men and women in the EU – whether its gender gaps in pay, access to leadership roles, or how care responsibilities quietly shape entire career paths. We know the numbers never lie, and statistics give us the tools not just to measure inequality, but to understand it and maybe equip us to make badly needed changes.

And we'll be meeting the people behind one of the big users of Eurostat's data, a project produced every 3 years called 'She Figures', the European Commission's flagship report tracking gender equality in specifically research and innovation. With the help of experts from Eurostat and academia, we'll explore how gender plays out across the full arc of a scientific career – from early education to professorships and patents, from labs to boardrooms.

But before we talk to our experts, let's step out of the wrap café for a minute and talk to some people on the street to find out what they think is behind the different experiences of men and women in science and innovation careers.

Person on Street 1
I think, like, part of it is sort of like a historical trend of men having, like, the higher paid jobs and getting more managerial positions. I think some of, like, the things that cause that is, like, I think a big thing is, like, family and childcare.

Person on street 2
Personally, I find that it's a shame because there is absolutely no reason for that, and women should be paid exactly the same amount of money as men. Personally, that's my opinion, but I don't even see a reason, really.

Jonathan Elliott
Today we have four experts who can guide us on how statistics reveal the ways that careers in research and innovation develop differently for men and for women. So, let's meet them. They are: Daniela Enache, who is a statistician at the Science, Technology, Innovation and Digitalisation unit at Eurostat. Daniela, welcome.

Daniela Enache
Hello, it's great to be here. Thank you.

Jonathan Elliott
Thanks Daniela, and joining her is Professor Anne Laure Humbert, who is a professor of gender and statistics at the University of Gothenburg and lead researcher on the She Figures Index. Anne, welcome.

Anne Laure Humbert
Thank you. Very happy to be here.

Jonathan Elliott
And beside her is Oriane Gilloz, who is a policy officer at the gender sector of the European Commission's Directorate-General for Research and Innovation. Oriane, welcome.

Oriane Gilloz
Thank you so much, and I'm happy to be here as well.

Jonathan Elliott
Lovely. And finally, we have Marina Perez Julian, a statistician and gender statistics coordinator at Eurostat. Marina, welcome.

Marina Perez Julian
Thank you, Jonathan, it's a pleasure to be here today.

Jonathan Elliott
Daniela, If I can come to you know, what inspires you to work on gender equality through statistics?

Daniela Enache
I have been working in statistics for more than 25 years, and I know that the statistics and data are powerful tools that are used to reveal important information and also hidden patterns, challenges

assumptions and hold systems accountable. In the context of gender equality, the statistics can show where inequalities persist, who is being left behind and what interventions are working.

Personally, I find it deeply meaningful to contribute to a future where opportunities in research and innovation are truly inclusive and equitable. And statistics, it's one of the most powerful tools that can support us to reach gender equality.

Jonathan Elliott
Fantastic. Okay, well, let's just dive into the topic here. Oriane, perhaps we could talk a little bit about the She Figures report. What is it and why does the European Commission produce it?

Oriane Gilloz
The first edition was published in 2003. Since then, it's published every 3 years, with the latest edition published in ‘24 and we use a wide range of gender disaggregated data with more than 80 indicators. And the main objective it's to cover the chronological journey of women in sciences, in other words, the different stages of research and innovation career as a student, researcher, PhD holder, decision-maker, and so on.

Jonathan Elliott
Fantastic, and your role puts you at the centre of that network, coordinating all the different parts and players and the different inputs. Can you just also set out for us your relationship with Eurostat and what Eurostat does for She Figures and how you work together.

Oriane Gilloz
Out of the 80 indicators in She Figures about 50 come from Eurostat. We work closely with them, not only to keep existing indicators up to date, but also to explore whether new ones can be included. And since She Figures mainly relies on their data, this collaboration is really important. The rest of the data comes from our network of national statistical correspondents who are key actors collecting country specific data to complement Eurostat indicators.

Jonathan Elliott
Daniela, I just wanted to come to you here, because you're at Eurostat, you're on the other side of the fence, you're supplying the data, and you are part of that relationship. Perhaps you could give us Eurostat's point of view, just tell us why it's particularly useful for this project compared to say, national surveys. What are you able to do at Eurostat that makes it particularly useful for this report?

Daniela Enache
Eurostat data gives a complete picture that shows more than what individual national surveys could reveal. I would say that Eurostat data on gender are essential for this report, because Eurostat data uses harmonised methodologies across statistical data providers, and that enables direct comparisons between the countries. The fact that the harmonised methodologies are used reveals regional disparities but also highlights best practices.

With consistent data collections over time, Eurostat data on gender allows for a robust trend analysis. This helps to track the long-term impact of gender equality policies, which the national surveys that are often more short term or ad hoc might miss. In addition, Eurostat data can highlight structural

inequalities, such as gender gaps in STEM education, which is the acronym of teaching and learning in the field of science, technology, engineering and mathematics.

These gaps often lead to imbalances in the research and development workforce, that may not be visible in localised or sector specific data collections. I would also like to mention that Eurostat's indicators are aligned with the EU policies, and that makes them especially relevant for evidence-based policymaking at the EU level.

Jonathan Elliott
Well, what we love doing on Stats in a Wrap, is looking at the amazing array of interesting tools statisticians and data scientists have for understanding the world. Professor Anne Laure Humbert was tasked with creating the composite index for the She Figures report.

Now, a composite index is a particular kind of way of handling large quantities of data and funnelling them down into one significant figure that can then be observed and tracked. It's fantastically useful, but very tricky to put together. Anne, could you explain for people who have no idea what a composite index is, what it is and why it's useful?

Anne Laure Humbert
Yes, absolutely. The idea is simple: it's to try and summarize the complexity of a multi-dimensional phenomenon into one single number. And that allows us to say quite a lot, but at the same time, it's just to lose some of the complexity in the process. It's something that is very useful, because it allows us to say something about how a particular phenomenon – here, gender equality in research and innovation – is making progress over time, or how it compares across different Member States.

And people have seen many different indices, just the most famous one, even though people don't recognise it as a composite indicator all of the time is, of course, GDP; but many other listeners might be familiar with other famous composite indicators, such as the HDI, the Human Development Index, or other gender related indexes such as the GDI, the Gender Development Index, and so on.

Jonathan Elliott
Now, your work was to create the composite index for She Figures, which was used in the report. I'm just interested in the craft, I guess you could almost call it, of what you had to do. I mean, you had to sit down and design it from scratch. Just tell us what that entailed.

Anne Laure Humbert
Yes, I was very happy to come in and work on She Figures, because I have been a user of She Figures for the past 2 decades. And for somebody like me working on gender equality in different areas, it's just really the go-to report for information on gender equality in research and innovation. I have a long-standing interest and a lot of experience in building composite indicators, so this was not my first one.

So, when I had the opportunity to bring my skills in developing an index and working with She Figures, it was an opportunity I really couldn't pass. So, when you develop an index, what is really important is that you are trying to summarise the complexity of a phenomenon – here, gender equality in research and innovation.

So, you have to do this on the basis of very rigorous statistical considerations, as well as having a very strong, robust and a conceptual framework that is agreed with stakeholders. And the difficulty of building an index is that you have to balance these considerations – so making sure that it is statistically rigorous, while at the same time theoretically and conceptually valid.

And overall, it's, it can be a very, very difficult exercise. One of the situations that I've often seen in building an index is that it becomes a bit of a shopping list for indicators. And many people are asking why you're not including this and this and this and this, and you always have to push back in relation to 'I'm sorry, it just doesn't work with the statistical correlation structure'.

Marina Julia Perez
If I may add something, in Eurostat we usually do not engage in composite indicators. We usually rely on scoreboard of indicators. We always recommend as a good practice when producing this kind of composite indicators to produce them with modifiable and transparent weights by the user, depending on the user needs or focus, and remind that the results will differ for each user and may have a subjective component of the weighting. One example of the modifiable weights by user is the Better Life Index from the Organisation for Economic Co-operation and Development, OECD.

Person on street 3
I had the chance to work on a really important financial company, and I know that they took care about the percentage of women that are working in highest position, we can say. So maybe this is one of the small pieces that they have made it part of the company to improve these kinds of statistics. So…

Person on street 4
I have nothing against women being a CEO or being my team leader, for instance. Never had the problem with that. But I have a problem when somebody is feeling entitled to complain and not having the data, not having the knowledge and just hearing by passive society: ah, women are like this, the men are like that. And you know, that's a very divisive, it's not inclusive.

Jonathan Elliott
Marina, I want to come to you in a minute and talk about the gender pay gap and the indicators for that whole field. But before, we need to go to Oriane, just ask what are the key takeaways from the last report, the 2024 one. Oriane, could you just highlight what you thought were the key takeaways from that report? What was new?

Oriane Gilloz
We can see some positive signs: when we look at leaders and board members in research organisation, women now make up 38%, which is a 7-point increase since 2021. When we look at top academic positions, 30% of full professors are women, which is a 4-point improvement. But it's true, the report also features some concerning figures, and some of them have not changed in a decade.

For instance, women still make up only 9% of all innovators, and in some domains, we are even going backwards. For instance, the number of women doing PhD has dropped in half of the science, technology, engineering, mathematics and informatics fields since 2018. So, in fields where we need diversity to tackle global and societal challenges.

For instance, in mathematics and statistics, it fell from 33% to 29%, in architecture and construction, from 44% to 41%. So, it shows that women still face systemic obstacles. It's harder for them to get into research and innovation careers, to stay in and to move up.

Jonathan Elliott
It is very striking how few women inventors there are, and few all-female inventor teams. It's quite extraordinary. The figures are weirdly low, particularly given that women are actually highly represented in education, more so than men. And yet, when it comes to actually inventing patentable products, there's this extraordinary gap.

Person on street 5
I generally think that the gender pay gap in certain work, it's not fair. I have no idea why this is actually occurring.

Person on street 6
My friend and I work at the same place, but he gets 50 euros more than me – for some reason, I don't know why – and for some reason, they think that women are less competent than men.

Jonathan Elliott
Which brings me to Marina and the gender pay gap. Just tell us a bit about your work there. We've been talking about, well, research and innovation, and the differences in progression that men and women experience. What's the connection with pay exactly?

Marina Perez Julian
Gender pay gaps are linked to the choices women make, often influenced by gender stereotypes: on what to study, where to work and what kind of job to take, along with the care responsibilities that can affect their career and then lead to differences in pay. Fields like STEM generally lead to better paying jobs. The gender pay gap shows how much less women earn compared to men, calculated by looking at their average hourly pay.

However, when we compare men and women employees, it's like comparing apples to oranges, because these groups have different composition. For instance, we often see more women as nurses and more men working in IT, and this is known as segregation of the labour market.

In Eurostat, we created different indicators to understand the gender pay gap using data from the structure of earnings survey, applying sophisticated methods - regression models - and it helps to disentangle which part of the differences in the pay between men and women is explained by differences in the available characteristics of both.

Like, for example, the type of contract they have, economic activity or occupation of the post, working time…and that cannot be explained by different characteristics. The remaining part is called the 'unexplained gender pay gap' and helps us to make a fairer comparison. So, in 2022 the standard gender pay gap was 12.2%.

There was almost 2% of it that could be explained by factors, mainly 3: economic activity, educational level and occupation; and the remaining unexplained gender pay gap in the EU was 10.3%. This means that on average, in 2022 women earned still 10.3% less than men.

These gender pay gaps during working life continue into old age, affecting pensions. So according to EU SILC, which is our European survey on income and living conditions, in 2024 on average in the EU, women over 65 had pensions that were 24.7% lower than men's.

Jonathan Elliott
There's another thing which we should not call ‘unpaid care’ – some people call it that – it's actually better known as ‘care’. Could you explain why the care burden is an important part in trying to understand some of the drivers for inequality?

Marina Perez Julian
Yes, so the role of women in the care economy is indeed crucial when explained in gender inequality. Time is a limited resource for all of us, and care responsibilities require time and has a clear impact in the choices of the time use and the careers. In Eurostat, we have a vast collection of high-quality data that can help us understand the impact of the care responsibilities for men and women.

In particular, we could underline 3 relevant household surveys: the EU-LFS (European labour force survey), that helps us to understand the situation and trends in the labour market. Thanks to it, we know that on average, in 2024, 7 out of 100 men were working part-time, while this was the case for women 27 out of 100, and the main reason they reported for doing so was care responsibilities.

Also, we could mention that during the Covid pandemic confinement periods, the working hours of women had a steeper fall because of the care burden. We also have a second survey, EU SILC, survey on income and living conditions, that helps analysing economic disparities. And for example, in 2022 on average in the EU among the population of 16-44 years old the share of women indicating lack of time as a reason for not reading books in the last months was 10% points higher than that of men.

And only after, above the age of 65 this share is close to equal. The third one is the EU Time Use Survey, which is a good instrument to capture unpaid care work, and in the last wave in 2010 showed a disproportionate share of care responsibilities shouldered by women.

Jonathan Elliott
So, these are yet more tools, lenses, if you like, that we can use to scrutinise the data, to unpick, to find out what's really holding women back from rising to their full potential in research and innovation. It's important, of course, to say also here that gender inequality is not only a justice issue, which is not really our field here in Stats in a Wrap, but it's also a loss of productivity across the whole working population.

There are people who could be doing high value work who aren't doing high value work. And that doesn't mean that that work is being done by the wrong people. It could also mean that the work is not being done at all, and that means we all suffer.

I just want to come to Anne here as well to unpack something else, and that is that if we only look at equality of opportunity through the lens of gender, then we're missing some things, aren't we? And that brings us to this thing called ‘intersectionality’. What a word! Tell us, Anne, what intersectionality is, and how the statistics on that can help us.

Anne Laure Humbert
Here, we have been talking about gender; we have this tendency to fall back when we talk about gender to very binary consideration of gender, so usually looking at women and men, but we need to recognise that they are other gender identities that exist. Intersectionality builds upon that and is just the idea that as groups of women, as groups of men, we might not all have the same experiences, and this on the basis of many different things.

So, it could be other characteristics based on sociodemographic characteristics: it could be related to ethnicity, it could be related to age, to disability, but it could also be different experiences that are related to functional diversity. So, for example, whether you're working in junior or senior positions, and so on. What is really important to remind ourselves of is when we talk about intersectionality, it's not only the effects that we might see in relation to individual characteristics.

So, if we talk about the gender pay gap, for example, what we see is that women overall tend to be paid less than men overall. But of course, this gender pay gap might be much greater if you are, for example, a black woman compared to a white woman. So, this might just exacerbate these inequalities, but it's not only the effect of – here, sex or race – that might come into play, but instead the structural inequalities that related to this.

So not sex, but also sexism, not only race, but also racism, and so on. So just when we talk about intersectionality, I want to remind all listeners that we talk about individual level inequalities, but also the structural inequalities that we all experience in society.

Oriane Gilloz
Indeed, just to follow up, if we focus only on gender, we miss the big picture. One of the risks is that at the policy level, we end up designing solutions working well for some people but leaving others behind. And that's why we need intersectional data to really understand who succeeds in research and innovation, who is excluded, and what specific challenges researchers and innovators face. It's the only way to design change that will reach people who need it the most.

Jonathan Elliott
Daniela, you are one of the major engines of this research project, helping to drive it forward, giving the information, supplying the data from Eurostat. Just tell us what you think could be done to improve data quality and coverage in gender statistics.

Daniela Enache
Eurostat is in continuous contact with the different users in order to understand what the data gaps are and to improve data quality and statistical coverage. We try to fill the data gaps via voluntary data collections or with new regulatory instruments.

We also monitor and check the data on gender and also the metadata that are sent by the data providers, and we publish our analysis like – just to give an example – the summary quality report that was published last year for the research and development statistics. We also produce manuals and methodological guidelines, here I could give also an example, is the manual for research and development statistics that it's used by the data providers to guide them in the production of statistics.

I would also like to add that Eurostat has recently started discussions with the European Patent Office about the possibility to disseminate on Eurostat websites some new indicators, like the number of inventors by gender, and this would be for all EU Member States.

Marina Perez Julian
I would like to add to what Daniela mentioned, that there is a global work within Eurostat to move forward inequality data and in mainstreaming gender statistics. So, we have been working together with the Commission, with NSI's, important stakeholders like the Fundamental Rights Agency, the European Institute for Gender Equality, to develop guidelines for equality data collection in the EU, ensuring they are aligned in data protection regulations, and improve consistency in statistical language.

This is very important when we are talking about gender equality. We are also working in recommendations to expand our data coverage, to identify gaps in the European statistical system and to improve the overall data quality, and as my colleagues mentioned, intersectionality is very important to better understand the gender pay gaps. We coordinate, we align efforts in this field, also with other important stakeholders, like UNECE, United Nations Economic Commission for Europe.

Jonathan Elliott
Let’s just look at the way that statistics on gender are communicated now. Everyone's used to having a more real time flow of constant information, aren’t they. So, Marina, in response to that, tell us about your ideas to communicate Eurostat’s work on stats in this area.

Marina Perez Julian
In today's data driven world, we want to remain in official statistics and Eurostat the go-to source for quality information; and to ensure the effective communication we are tailoring our products, we are diversifying, so we adapt our language, we try to engage all users. For example, we are posting infographics, news items in some social media like LinkedIn, so it can engage a lot of users, no matter their statistical literacy.

And then if they are interested, they click on the link and then they can navigate through our website where we have dedicated sections, like the one on equality and non-discrimination. But we can also find reports which are more detailed for maybe more advanced users. We can find data tables with all the metadata, so it is fully transparent the way we have produced the data, so we have the highest quality and users can trust.

Jonathan Elliott
Fine. I mean, this is worth mentioning. I'll just come to Oriane now. I'd like to look forward to the next report. It's every 3 years, isn't it? So, She Figures 2027 is the next one. I know you can't talk too much about that report. Perhaps you could just give us a little bit of an idea of what's coming up and what might be innovative or different about this next report in 2027?

Oriane Gilloz
Yes. So, for the next edition, which should be published in 2027 we are advancing in two equally important directions: first, we want to bring a stronger focus on intersectionality, because, as we said, gender alone does not tell the whole story. So, we will go through all our indicators with a critical lens to

see where we can bring in this intersectional dimension, so that’s the first main point we want to improve.

And the second one – we would like to focus much more on innovation and explore new, robust indicators. So, for instance, on women led startups – in particular, in the deep tech sector – also women's participation as investors, decision-makers in finance, including venture capitalists and so on.

Jonathan Elliott
Well, we've run out of time, alas, and it only remains for me to say a huge thanks to our wonderful contributors today, Professor Anne Laure Humbert from the University of Gothenburg. Thank you so much.

Ann Laure Humbert
Thank you.

Jonathan Elliott
And to Marina Perez at Eurostat. Thank you very much for joining us.

Marina Perez Julian
Thank you very much.

Jonathan Elliott
And Daniela Enache, also at Eurostat. Thank you for joining us today.

Daniela Enache
Thank you.

Jonathan Elliott
And finally, Oriane Gilloz, thank you so much for joining us in the wrap café today.

Oriane Gilloz
Thank you.

Jonathan Elliott
It was a pleasure indeed – thank you very much, everybody. If you've enjoyed Stats in a Wrap, don't forget to follow us on the streaming platforms, where the show can be found on Spotify, Apple and YouTube, and share our adventures with friends and colleagues.

And if you'd like to know more about the topics covered in this podcast and practically every aspect of statistics in the EU, you should make your way to Eurostat’s amazing educational resource Statistics Explained, it's really worth checking out.

And of course, come to the wrap café in the next edition, in which we'll be digging into the power of the very small, the so called ‘microdata’, which gives statisticians the kinds of detail they might once have only dreamed about. It's powerful, but it has huge challenges for privacy and confidentiality. Find out how Eurostat is dealing with that in the next edition of Stats in a Wrap, but for now, goodbye.