



What's Keeping Women out of Data Science?

Background information for journalists

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Methodology

- Online survey of STEM¹ students to understand the parameters of students' choice of career path as well as their perceptions and preferences of data science
- Evaluation: Why do so few STEM women enter the field of data science, and what are the underlying differences across countries?
- Goal: To understand what companies can do better to attract and recruit female STEM talent to data science
- Sample size: More than 9,000 STEM men and women from Australia, Canada, China, France, Germany, India, Japan, Spain, the United Kingdom, and the United States (800-1,000 per country)
- Condition: Under-35s either currently completing a STEM degree at a university or who have recently completed a STEM degree and have entered the workforce (in a data-science-related role² or in some other field)

1. STEM: Sciences, technology, engineering and mathematics

2. Range of roles in scope: From data scientist or analytics architect to data engineer or machine-learning engineer to analytics software or analytics UX/UI engineer

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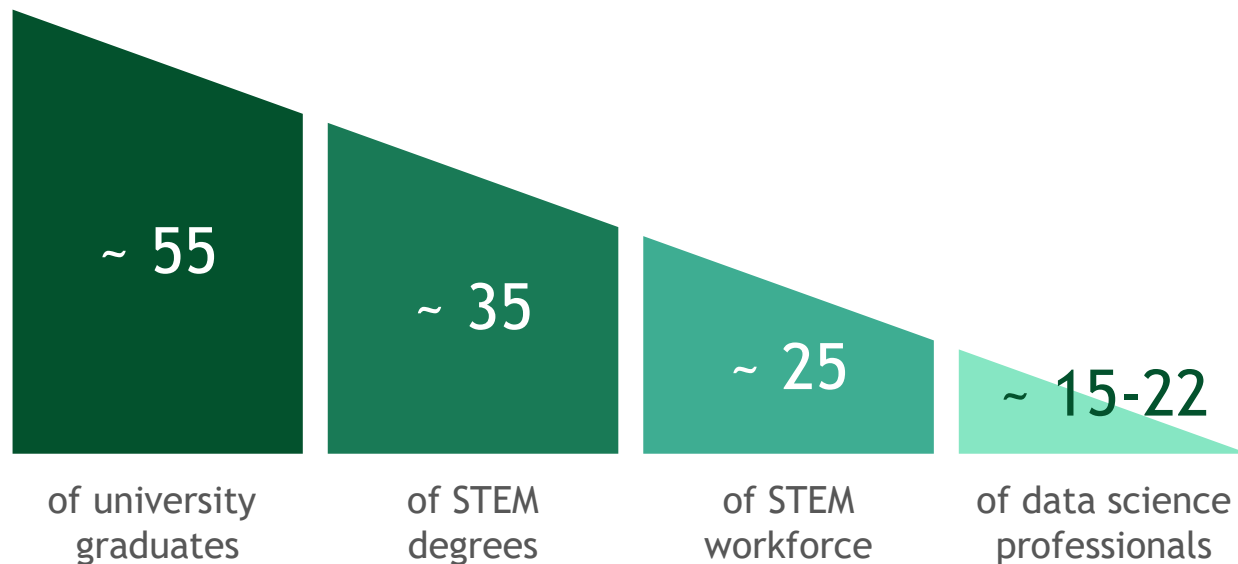
Results at a glance

- Data science is one of the hottest and fastest-growing fields in companies around the world. But it remains a highly **male-dominated** field, with **women making up as few as 15% of data science professionals** globally. This gender imbalance is a significant **threat** to sustainable growth and to unbiased, safe AI
- Responses to a BCG global survey of over 9,000 current and former students across 10 countries make it clear that a significant share of the **problem lies in the hands of companies** themselves
- Despite the hype around AI, **data science has an image problem** with many students. Almost 50% of women studying for a relevant degree perceive the field as theoretical and low-impact, or as “nerdy” and uncomfortably competitive. Students are simply picking up on an **unfortunate reality** in the market: Far too many **companies still continue to struggle to create real impact with AI**, and many companies still fail to instill a culture of collaboration and inclusion in their analytics teams
- Given the many negative perceptions, active and open communication is key. But almost **50% of all female students surveyed feel poorly informed** about their data science career options. Companies tend to emphasize the technical side of data science without addressing the practical and cultural issues that women in particular highlight as critical
- **Relying on the hype around AI is not enough.** Companies must pay attention to how they “live” and present their own data science cultures: **celebrating real business impact**, not just technical skills; and creating a work culture that is **visibly collaborative** rather than artificially competitive. And they must bring this transparency directly to students with **tangible examples** of real-life data science content and ways of working

Data science struggles with a massive gender gap: Risk for competitiveness and quality of AI

Share of women at each stage of the STEM talent funnel (in %)

Women make up ...



- Data scientists are in extremely high demand across industries, with companies striving to harness the transformative potential of AI
- Diversity is a critical factor in this rapid growth
 - Attracting the best talent to the field to support the rapid growth
 - Building algorithms and AI which avoid dangerous biases
- But data science still struggles with a massive diversity problem—women only make up 15% to 22% of data science professionals
- Significant gap between women trained in STEM/data science and women working in data science
- At risk: Slow growth, competitive disadvantage, biased AI

Three reasons the field of data science struggles to attract STEM women



Many women see data science as **theoretical** and **low-impact**



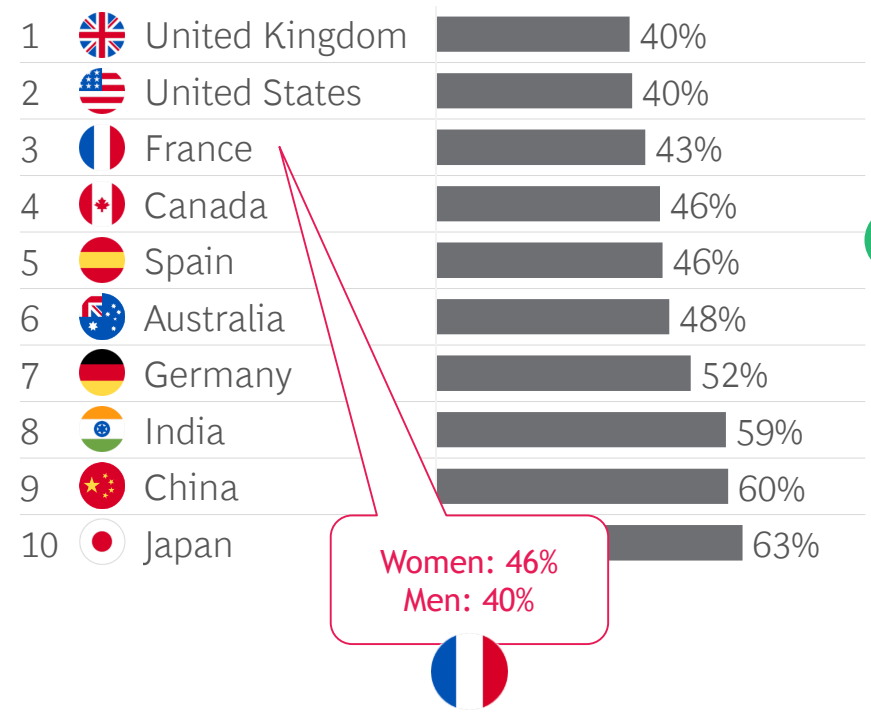
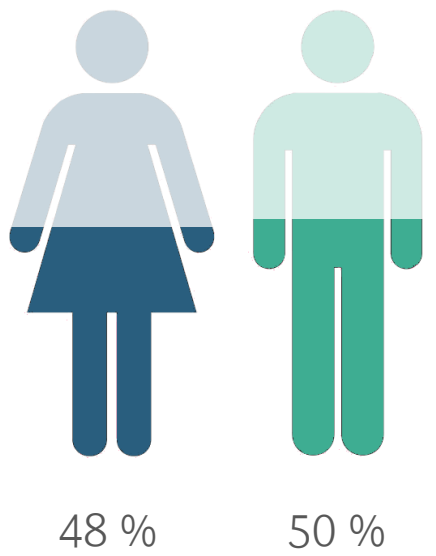
Many women see data science as "nerdy" and **competitive**



STEM women feel **poorly informed** about data science careers

Data science has an image problem: Negative perceptions of data science are widespread among many students

Share of students who view the field of data science as abstract and of low tangible impact (in %)

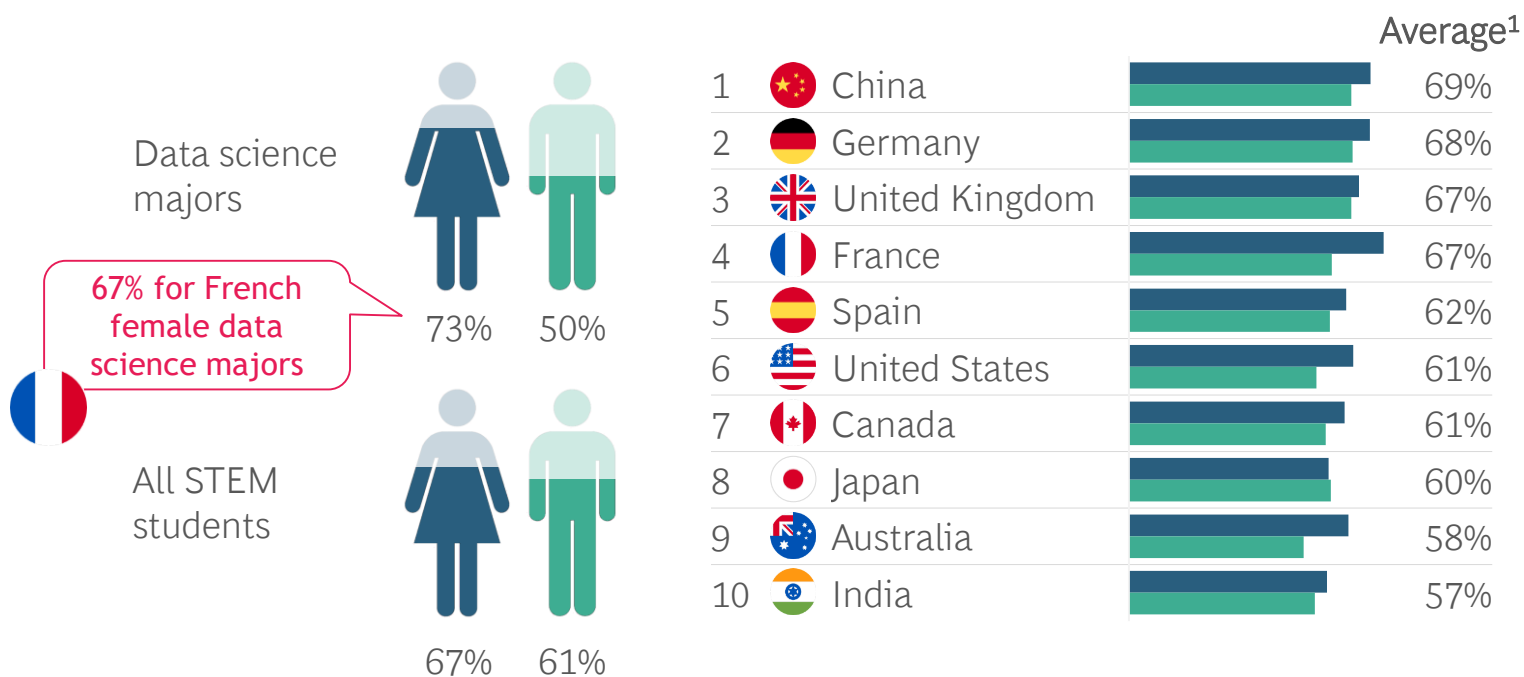


- **Bad rap:** Many STEM men and women have a negative perception of the field as **abstract, theoretical, lacking impact and purpose**
- Students are **simply picking up on the reality**, with **many companies still struggling** to drive impact with AI¹
- Companies are **not doing enough to spotlight the purpose** and value-add of data science in their businesses
- Students in Japan and China have the strongest view of data science as theoretical and low-impact (with ~60% each)

1. See also the 2019 MIT Sloan/BCG joint report "Winning with AI" (<https://sloanreview.mit.edu/projects/winning-with-ai/>)
Source: BCG Women in Data survey 2020

These perceptions fuel the gender gap: Differences in preferences cause women to be deterred disproportionately

Share of students with a work preference for applied problems with high tangible impact (in %)

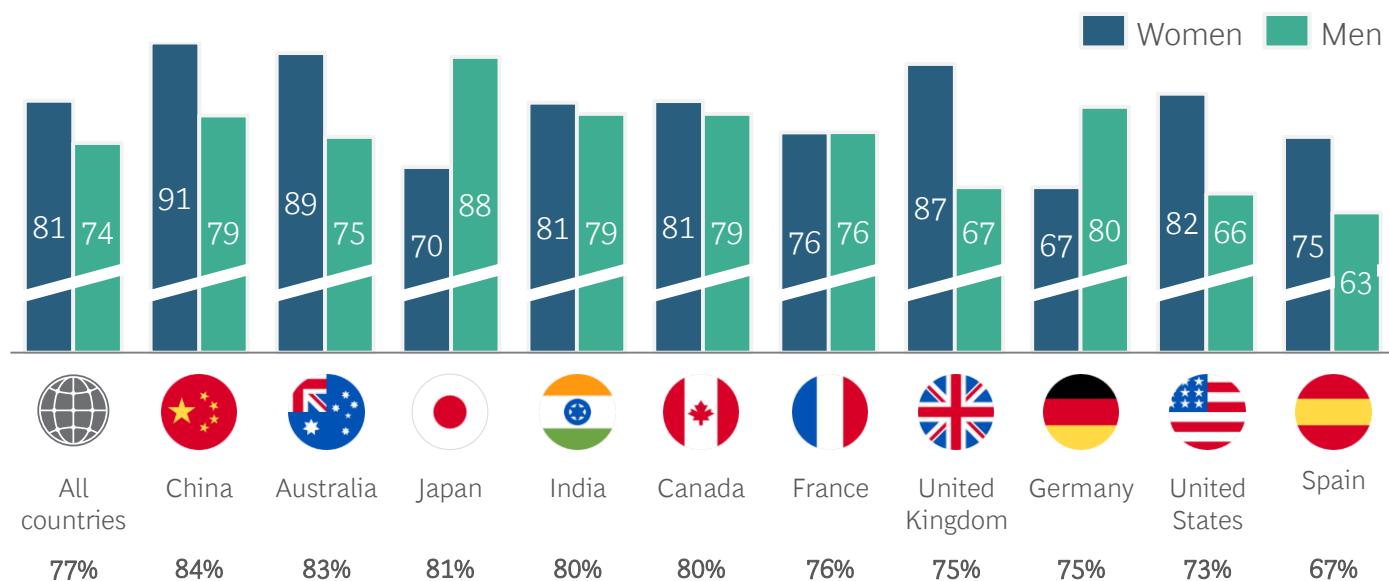


- Work preferences differ significantly between STEM men and women
- The negative perception of data science as low-impact and theoretical is 50% more likely to be at odds with personal work preferences for women data science majors than for men
- China and Germany are at the critical end of both lists, having both a high share of negative perception and strong personal preference for impactful work

1. All STEM students
Source: BCG Women in Data survey 2020

Data science culture is seen as "more competition-based" than other jobs, a strong disincentive for many STEM women

Share of students¹ who view data science culture as significantly more competitive than other jobs (in %)



- Across countries surveyed, **81% of women** and 74% of men pursuing a data-science-related degree view the field's work culture as **significantly more competitive**²
- Here too, students are **picking up on the reality** of how many employers present data science to them:
 - Frequent emphasis in recruiting on **coding competitions**
 - Recruiting "**hackathons**" with a boiler-room atmosphere

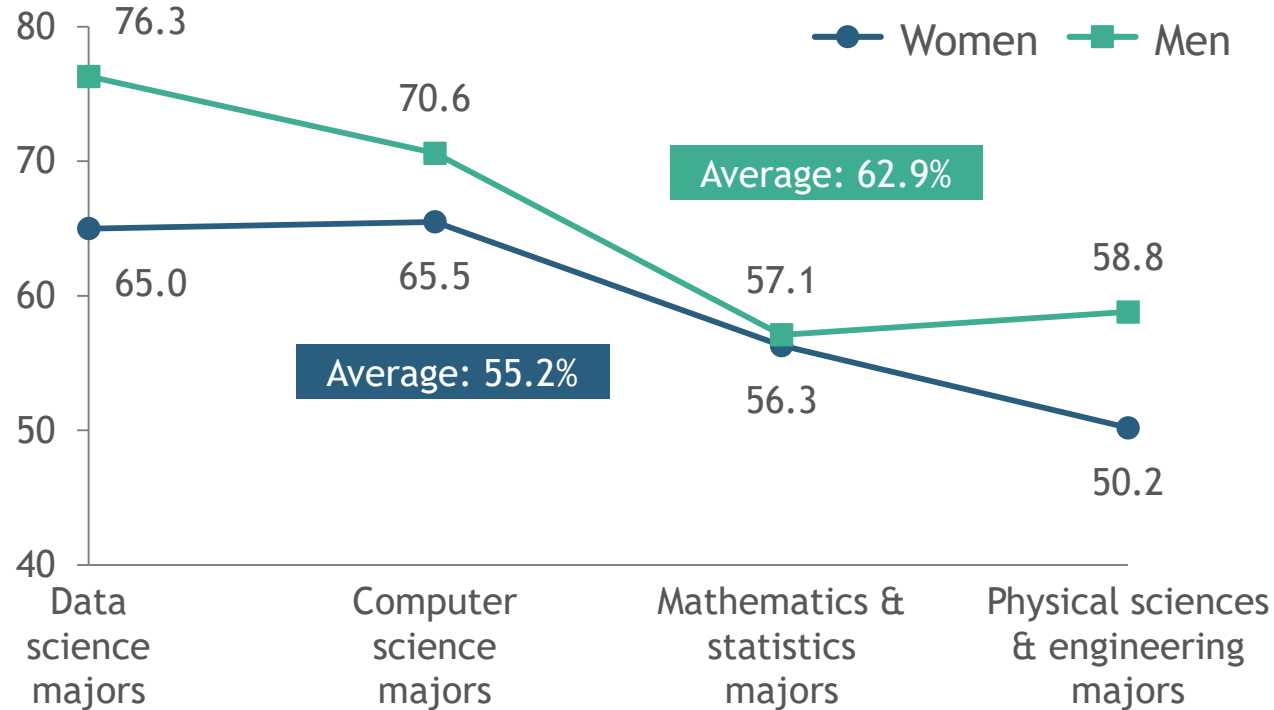


Significant level of perceived competitiveness for French students (76%), though with no difference across genders

1. Only students pursuing a data-science-related degree 2. with employees seen to be working in competition with one another rather than collaboratively
Source: BCG Women in Data survey 2020

Companies must "sell" the field more tangibly: Many students feel underinformed on data science

Share of students claiming a good understanding of data science as a career option (in %)



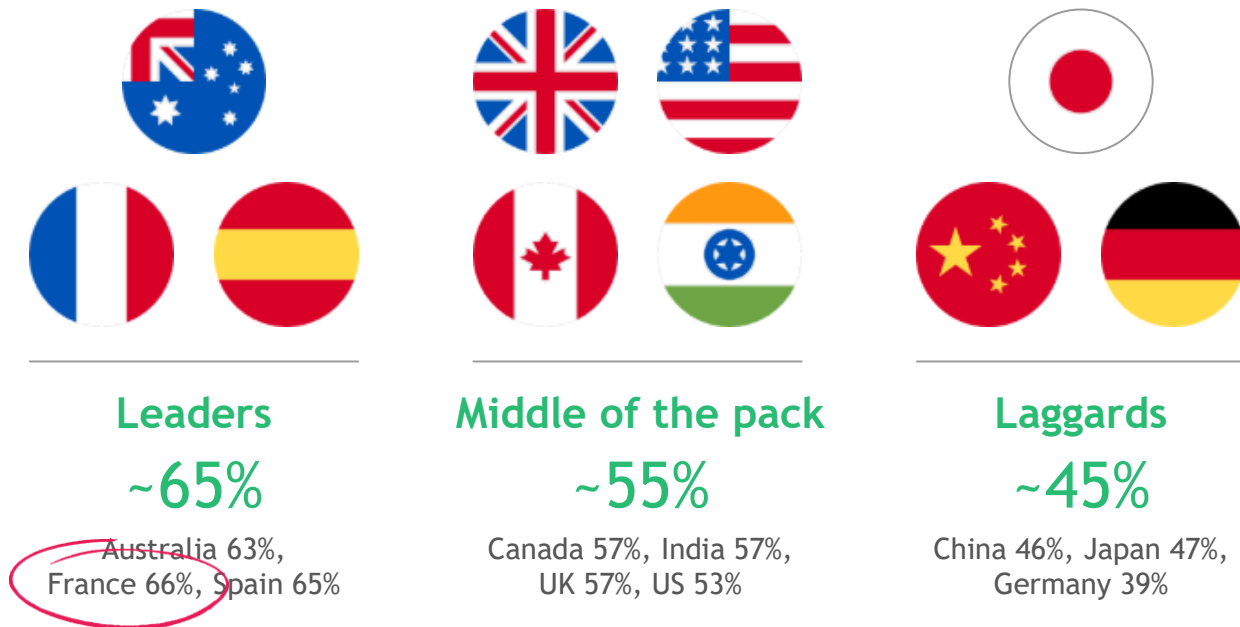
- Many students do not have a good understanding of what the day-to-day work of a data scientist in the workplace entails
- Women feel less well-informed than men: 45% of female STEM students do not feel well-informed about data science jobs
- Even among data science and computer science majors—who are naturally closest to the topic—still 35% of women feel that they have a poor understanding



Levels of students with good understanding in France (67% women, 64% men) lie above the international average (with little statistical difference across genders)

Some countries are leading the way on making data science careers transparent to women

Share of female students claiming a good understanding of data science (in %)



- We examined **career transparency across three dimensions**: Understanding of the workplace role, qualifications, and career path options
- **Australia, France, and Spain rank highest**—STEM students there feel best-informed about data science careers—while Germany, Japan, and China lag behind
- **A virtuous cycle?**: Countries with a higher share of women already in tech jobs¹ (e.g., Australia at 28%) lead the list, while countries with a low current share (e.g., Japan at 13%) are also least successful at informing students

Companies must actively do more to make data science attractive



Make data science impact and purpose more visible

- First and foremost: Building an own company culture that celebrates concrete business impact from AI and data science
- Actively sharing business impact stories externally (e.g., recruiting website)
- Codifying purpose beyond "we are clever with data"



Foster a culture of non-competition

- Building a company analytics culture that shuns the "my model is stronger than your model" approach to development and that celebrates diverse collaboration
- Avoiding recruiting instruments that highlight competition (e.g., coding competitions, "hackathons")



Focus on info-sharing with students (online, on campus) on tangible, real-life examples

- Bringing real use cases: Why? How? What was the impact? What did we achieve?
- Bringing real data scientists who can highlight ways of working, not just recruiters



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