



2019 Women in Tech Report

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Intro

From the newest discoveries in medicine to the latest advances in renewable energy, software is touching every aspect of people's lives across the globe. Given this, it's vital that the creators of software are as diverse as the populations that will be affected by their work.

For anyone, especially talent leaders like myself, who is invested in building and empowering more diverse teams, HackerRank's 2nd annual Women in Tech report is an invaluable resource.

After surveying more than 12,000 developers who identify as women, we've found eye-opening insights, particularly about Gen Z women (those born from 1997 onward). Our findings will help you better understand Gen Z women developers' skillsets, motivations, and job interests. Unlike other generations, Gen Z women are digital natives — because of this, their interests and values are different from those who came before them.

For years, we've only been discussing Millennials in the workplace but 2019 will be the first year where members of Gen Z will enter the job market en masse. It's now time for us to focus on supporting the next generation of coders who will transform the world!

We'd love to hear your thoughts on the report and how you're working to build and engage diverse teams.

Feel free to [tweet us @HackerRank](#) or send us an email at research@hackerrank.com.



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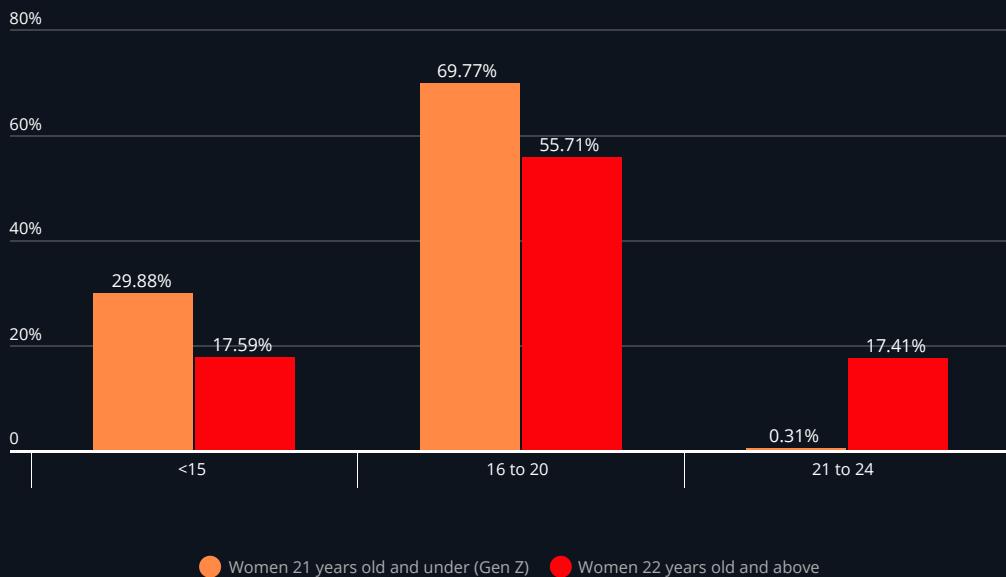


Gen Z women learned how to code and do algebra at the same time

Gen Z women are coding at a younger age than generations before them — almost 1 out of 3 Gen Z women learned to code before they were 16 years old, compared to 18% of women from previous generations.

This can be explained by a rise in the number of educational opportunities that expose more women to coding at an increasingly younger age. Given the rising need for software engineers, schools have begun to offer coding as part of their curricula and the number of organizations dedicated to teaching children to code after school or during the summers has grown. In fact, in the UK and Australia, the fundamentals of coding are now a mandatory part of school curriculums for students as young as 5 years old.

Age women started coding



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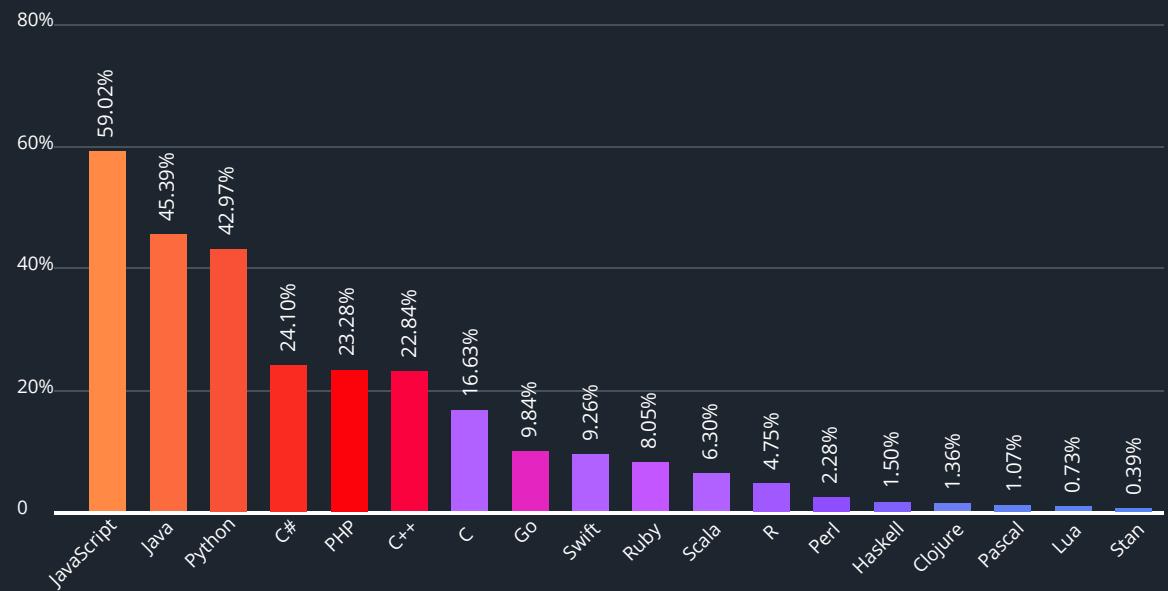
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Speaking their language: Gen Z Women know 2 of 3 languages employers want

As Gen Z women prepare to enter the workforce, they have most of the technical skills that hiring managers look for: JavaScript, Java, and Python proficiency. While half of Gen Z women know JavaScript, the majority of them know Java and Python.

Language proficiencies hiring managers seek



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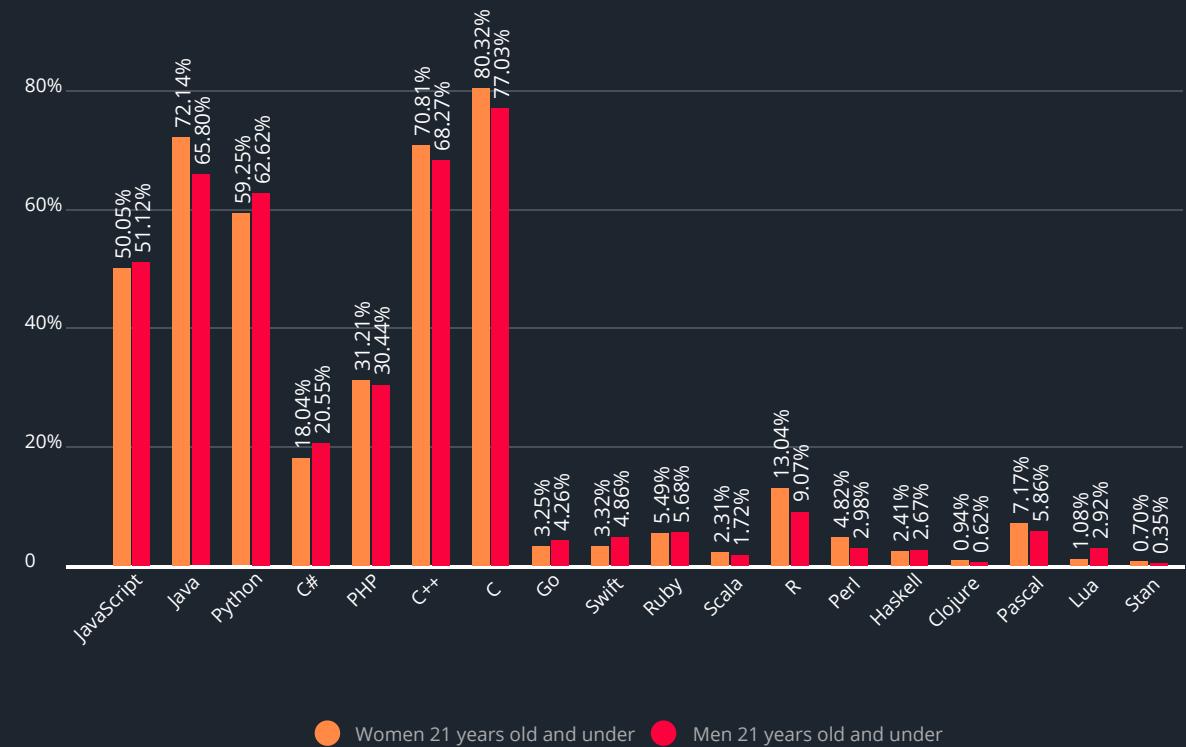
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Gen Z women have similar proficiencies in comparison to Gen Z men. Half of Gen Z men also don't know JavaScript. There are slight differences: More Gen Z women know Java (72%) than Gen Z men (66%) and more Gen Z men (63%) know Python than Gen Z women (59%).

C and C++ also topped the list for women and men under 22 years old. This is likely because C and C++ are some of the first languages taught to students when they are introduced to coding.

Languages Gen Z women and men know



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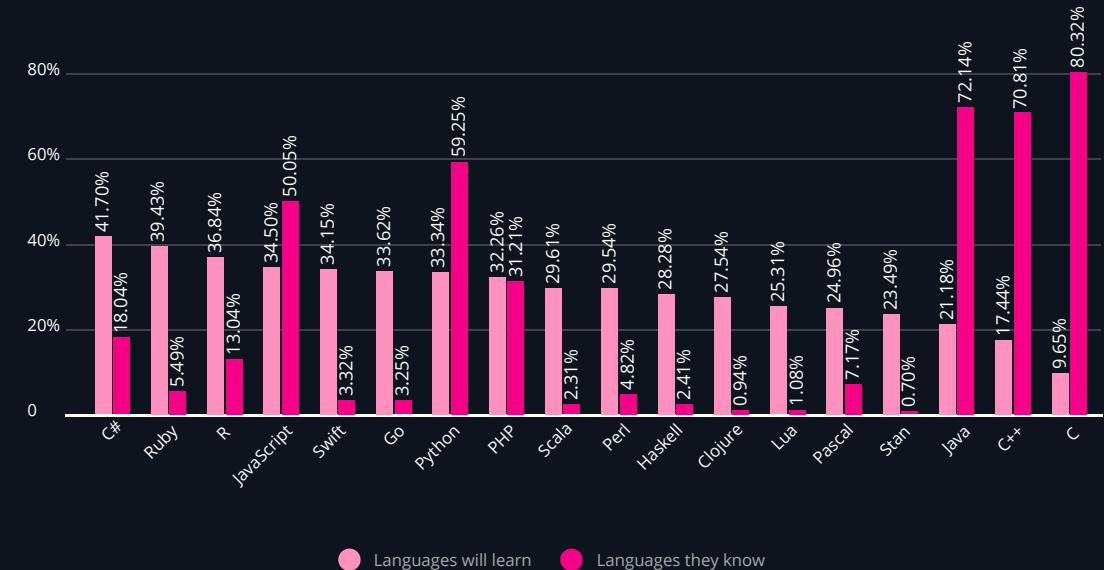
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And plan on quickly closing the gap for languages not known

59% of hiring managers are looking for JavaScript proficiency. And while only 50% of Gen Z women know it, 35% of remaining Gen Z women are planning to learn it this year.

Currently, women in this generation also don't meet hiring managers' needs for C# and Go, but they are working hard to bridge that gap — 42% will be learning C# and 34% will be picking up Go this year.

Languages Gen Z women will learn and languages they know



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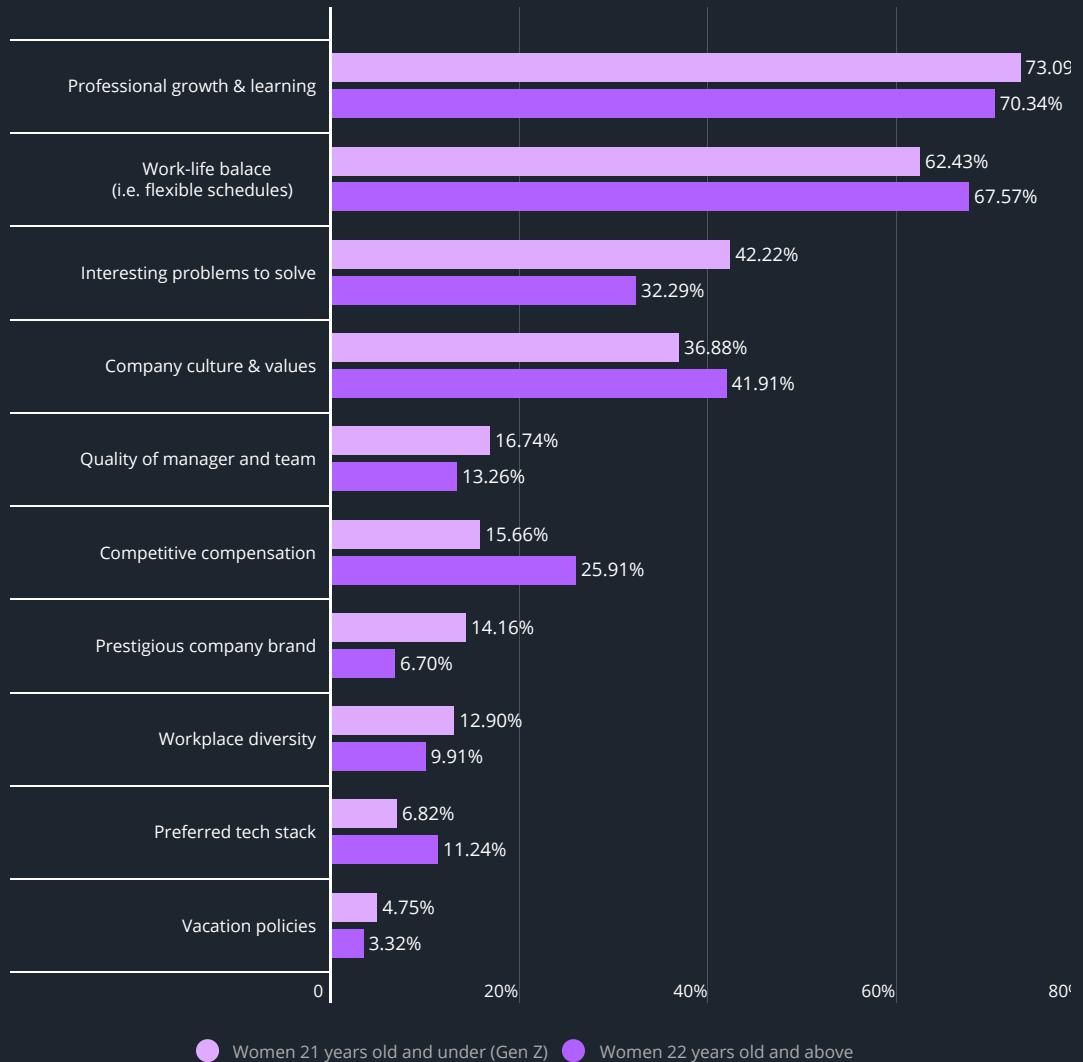
Gen Z women value prestigious company brands twice as much as previous generations

Developers of all ages and gender identities consider professional growth and learning to be the most important aspect of a job.

However, Gen Z women are twice as likely to seek out an employer with a prestigious brand as women from previous generations: 14% of women who are 21 years old or younger think it's important for their future employer to have a prestigious company brand while only 7% of women from previous generations feel the same way. This is likely because as digital natives — 25% of them had smartphones before the age of 10 — they have spent most of their lives surrounded by, and engaging with, prestigious digital brands like Apple, Snap, and Twitter.

Gen Z women also prioritize competitive compensation differently than previous generations — 26% of the latter group consider compensation an important factor in a job while only 16% of Gen Z consider it important. This can be explained by the fact that most Gen Z women currently do not have the same financial obligations that their older counterparts do, and can thus move compensation lower on their list of priorities in favor of other factors like company prestige. This might change as more and more Gen Z women enter the workforce and progress in their careers.

What women developers look for in a job



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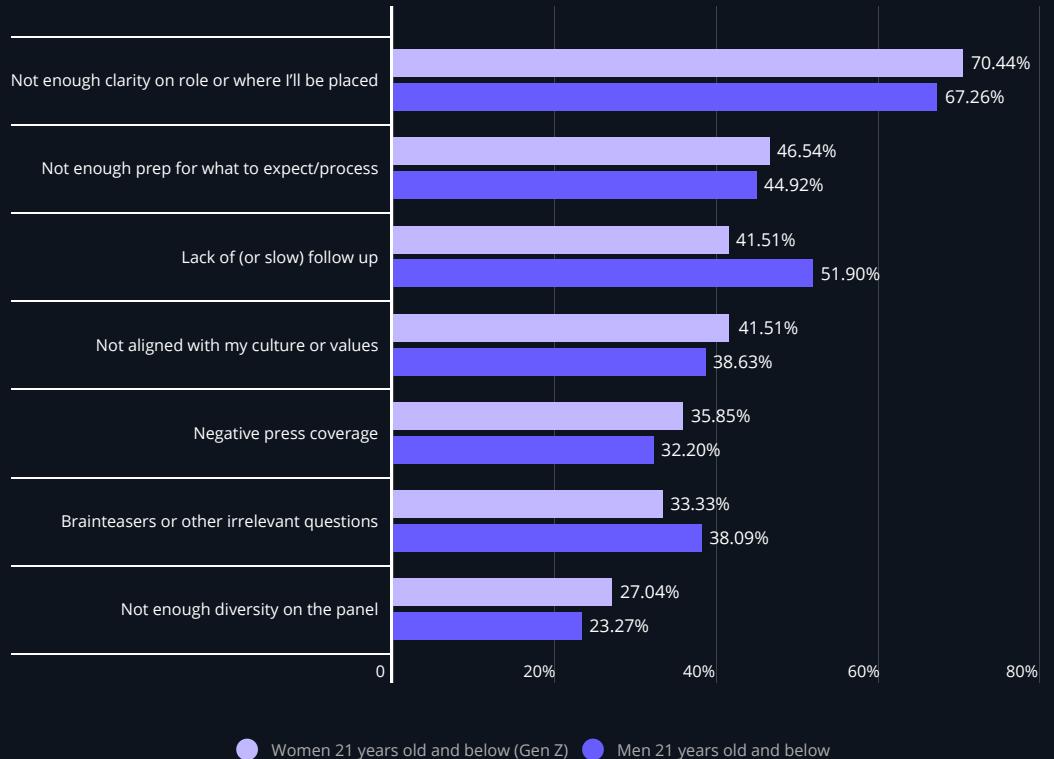
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Lack of interview prep is one of the biggest turnoffs

Like all developers, lack of clarity around open roles is the biggest deal-breaker for Gen Z women and men when interviewing for internships and jobs. However, Gen Z is new to the job market and has limited interviewing experience, which most likely explains why both Gen Z women (47%) and men (45%) are particularly turned off by employers who don't adequately prepare candidates for what to expect during the interview process. In fact, most new grads feel unprepared for job interviews: [66%](#) of university students say they don't feel ready for interviews.

What turns Gen Z developers off from employers



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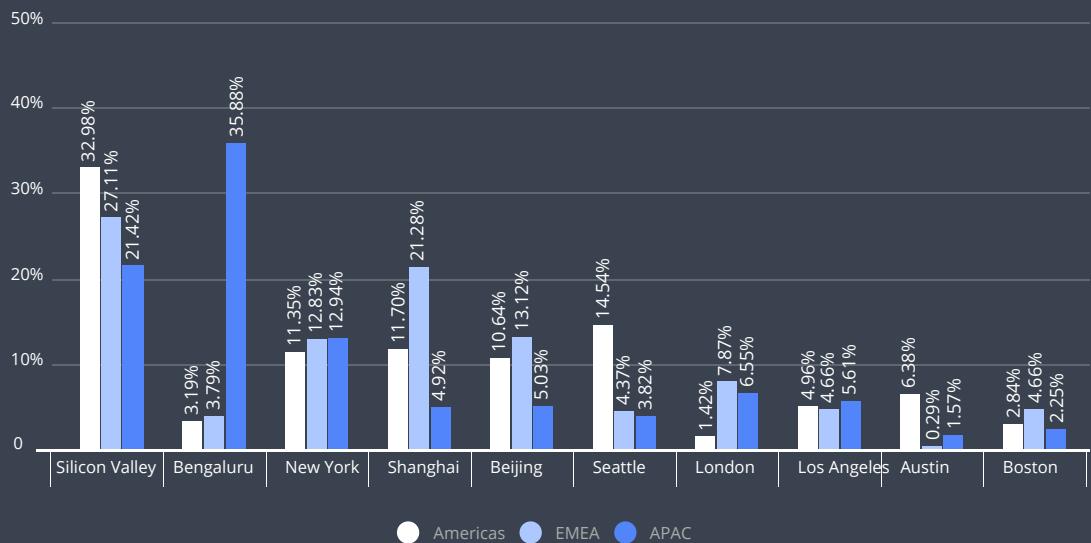
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Gen Z women are less confident in Silicon Valley's future

Silicon Valley was the #1 choice overall for the global center of tech in 5 years for women developers in all regions except Asia-Pacific. However, Gen Z women across all regions are less likely than previous generations to believe that Silicon Valley will remain the epicenter of tech. A declining interest in Silicon Valley could be due to the rising cost of living, which is forcing entrepreneurs and company headquarters to relocate.

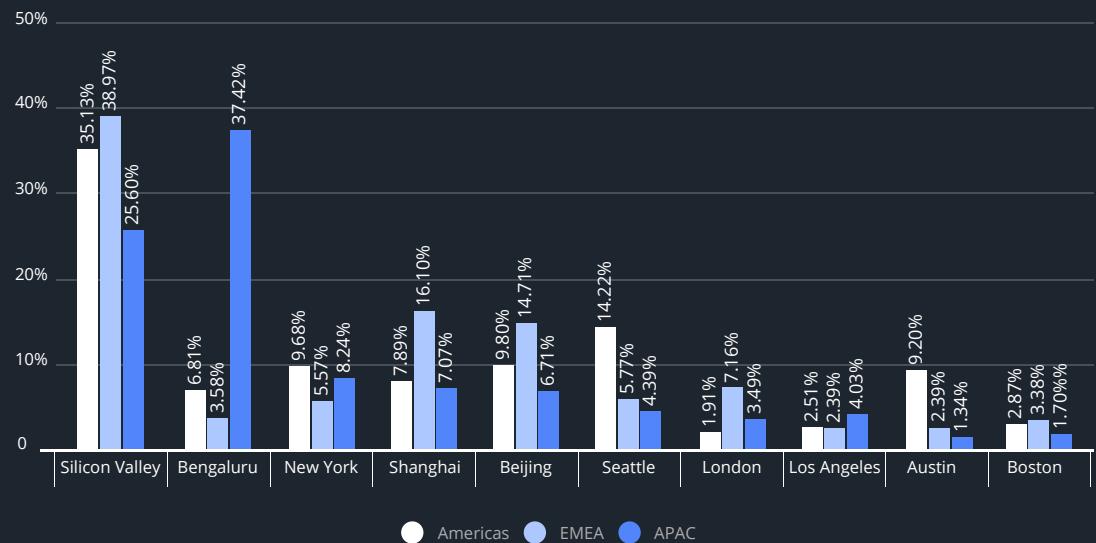
Where women think the global tech hub will be in 5 years (21 years old and under)



Notably, for Gen Z women across all regions, Shanghai was a top choice for the next big global tech hub. Recently China has been strongly focusing on turning Shanghai into a global center of innovation, which is most likely why many are starting to see the country as home to the next big tech hub. In fact, China had more [venture capital money](#) invested in startups than the United States in 2018.

Asian-Pacific Gen Z women also believe that Bengaluru has a high chance of becoming the center of tech in 5 years. Bengaluru's appeal is most likely due to the fact that the number of software developers in India is growing at such a rapid rate that the country is projected to have the largest population of developers in the world by 2023. Bengaluru is also home to the largest number of tech startups in India and [third largest](#) in the world.

Where women think the global tech hub will be in 5 years (22 years old and above)



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Methodology

A total of 12,211 developers who identified as women from over 100 countries took the online survey from November 5 to November 27, 2018. Survey takers who were 21 years old or younger are categorized as belonging to Gen Z in this report.

The survey was hosted by SurveyMonkey and HackerRank recruited respondents via email from their community of over 5 million members and through social media sites.

Tests of significant differences were conducted at the .01 level (99% probability that the difference is real, not by chance). Percentages may not always add to 100% due to rounding.

More Research

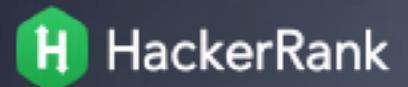


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2018 Women in Tech Report

Insights based on
14,616 developers

Featuring Light Barrier
by Mimi Son & Elliot Woods

Progress

As software is increasingly pervasive in our lives, it's more important than ever for builders to be representative of the people we're impacting. Having spent 10+ years immersed in technical hiring — first as an engineer, then as an author, and now as a tech hiring consultant — there's a lot of work to be done in building a more inclusive culture.

And, no doubt, many people are working hard on this issue. Through anti-bias programs, expanded support for mothers and fathers, diversity-focused networking groups, skills-based screening methods, and even interview trainings, companies are trying to create cultures that welcome diversity in its many forms.

There are signs of progress. According to [HackerRank](#)'s study — which surveyed over 14,000 professional software developers, nearly 2,000 of which were women — the gender gap for when developers learn to code is slowly, but surely, shrinking.

But there's still more work to be done. Engineers, managers, recruiters, and CEOs have an opportunity to drive change for future generations of developers — and therefore the world. It starts with understanding the problem from as many angles as possible. This dataset is one such angle.

We'd love to hear from you — share your thoughts on the findings below, and tell us: What are the largest issues you see facing women in CS? Where should the tech industry go from here? What types of initiatives have been working? Discuss at [/r/compsci](#).



Gayle Laakmann McDowell

Founder / CEO of CareerCup
Author of *Cracking the Coding Interview*

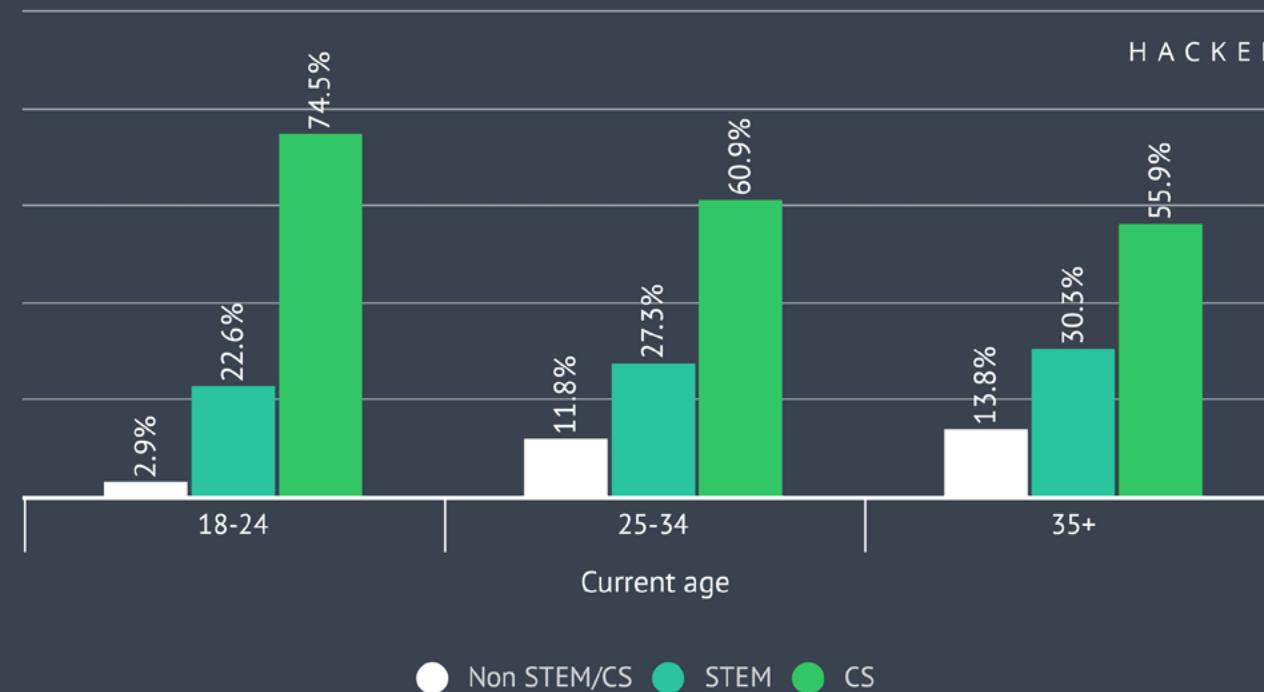
Computer Science (CS) is growing in popularity with young women

It used to be that many female software developers came from a variety of different majors outside of Computer Science and STEM (Science, Technology, Engineering or Math). And men were more likely to take CS than women.

Today that's changing.

When looking at the specialty of degrees, **young women today are 33% more likely to study computer science compared with women born before 1983.**

What's the focus of your degree?



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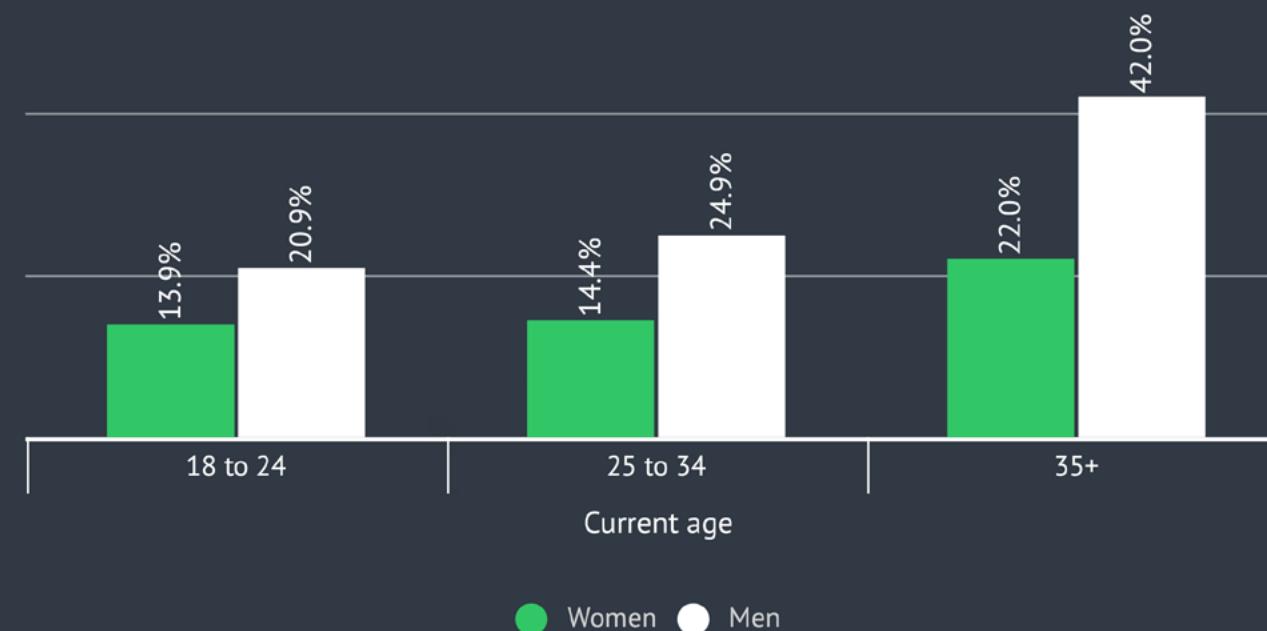
And the gender gap in age of learning to code is shrinking

As a result of the PC Revolution, kids of the 1980s were especially curious to learn how to code at a young age. Over time, as technology has been embedded in society, the drive to start coding before the age of 16 has been declining overall.

Meanwhile, an interesting trend is taking shape in parallel. By the time students enroll in CS 101 today, young men and women more likely to start on equal footing than older generations.

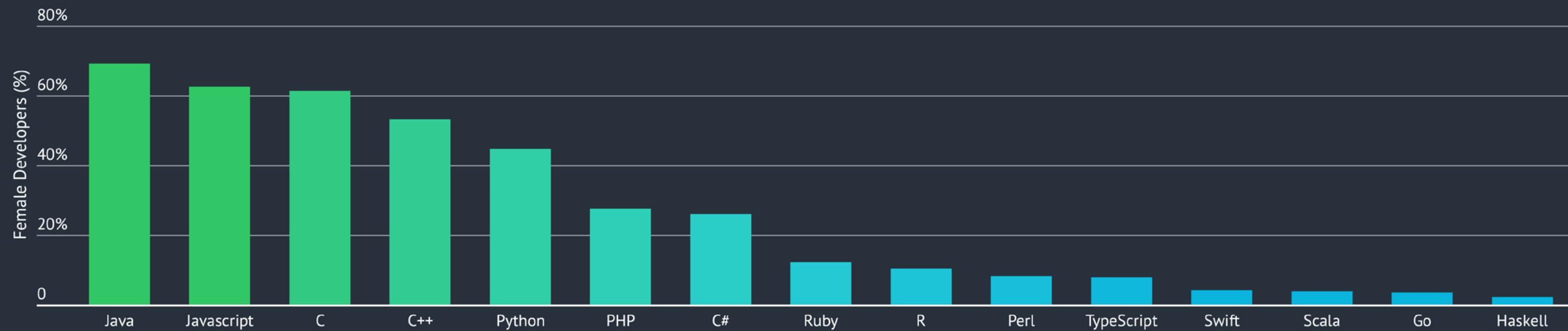
More specifically, there was a 20 percentage point gap between men and women over 35 who began coding before 16 years old. Today that gap has shrunk down to just 7 percentage points.

Did you start coding before you were 16 years old?



Women know in-demand languages across back-end & front-end

Which programming languages do you know?



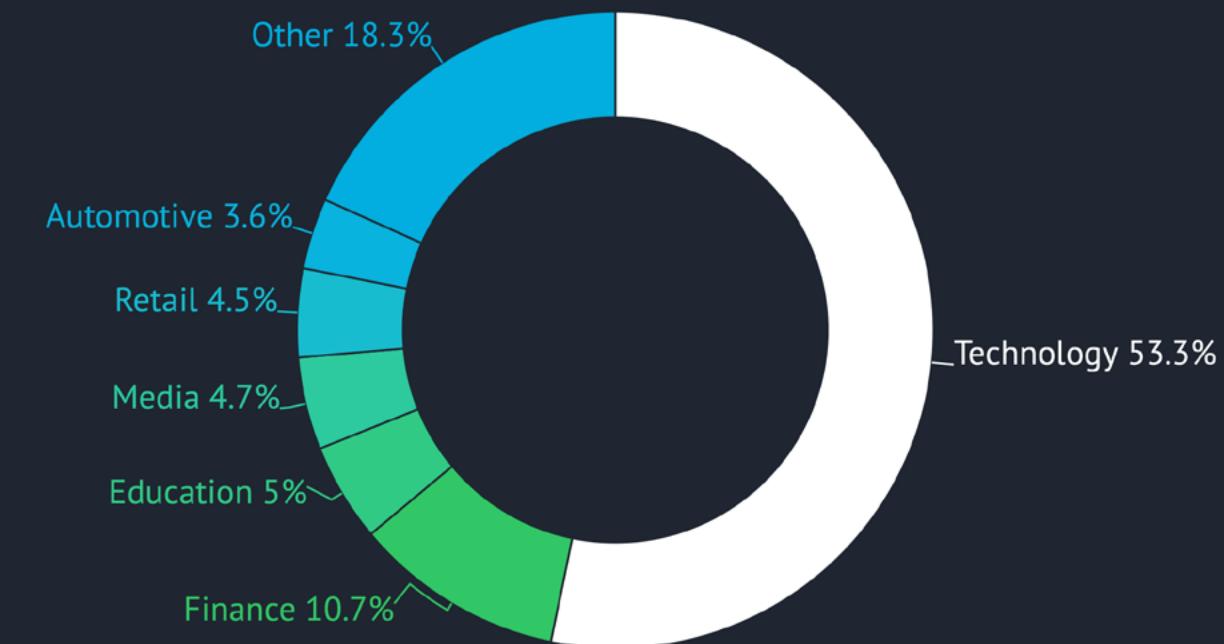
The most common programming languages that women say they have proficiency in are: Java, Javascript, C, C++, and Python. As it turns out, these are the exact same languages that are most in-demand for roles across front-end, back-end, and full-stack, according to our 2018 Developer Skills Report.

And they're working in tech, finance, & education

As every company becomes a software company, women in programming are working on building software across a variety of industries, from technology (which includes hardware and security) to automotive.

The most popular industries are: technology (53.2%), finance (10.7%), and education (4.7%).

Which industry do you work in?



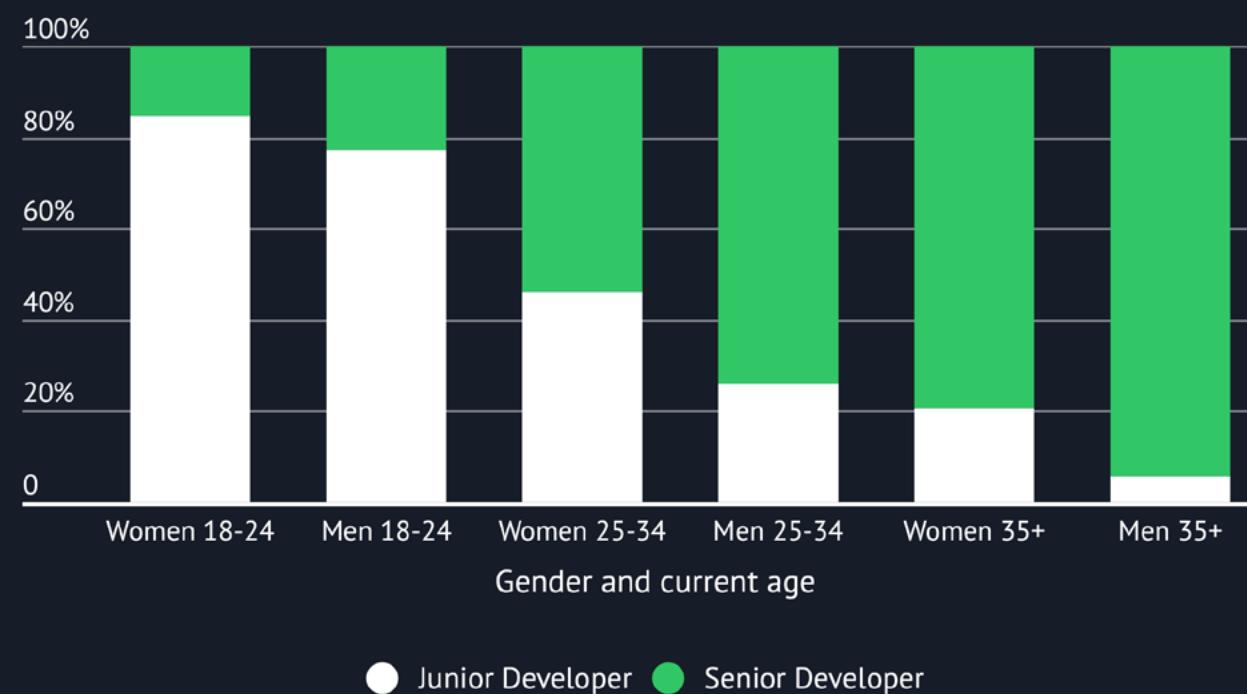
But more women, of all ages, are in junior positions

The tides are turning. But there's one fact that's hard to ignore: Women are by far more likely to be in junior positions than men...regardless of age.

In fact, over 20% of women over the age of 35 are still in junior positions.

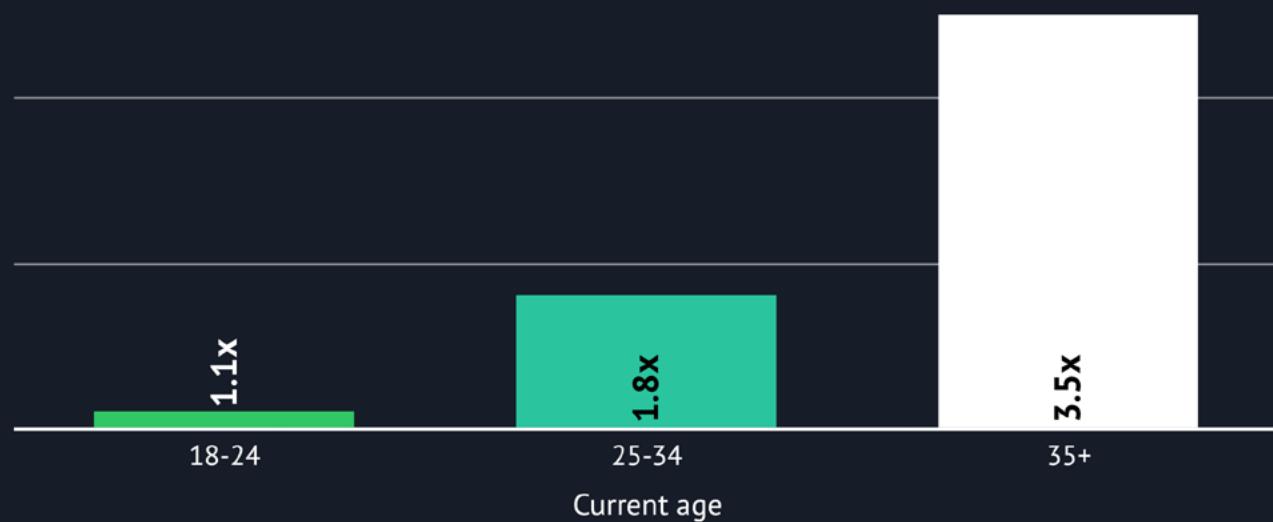
* For clarity, we defined junior developers as Level 1 software engineers. Senior developers are grouped as anyone with the title of senior, manager, director, VP or C-level.

What is your employment level?*



How likely are women to be in junior roles compared to men?

In other words, women over 35 are 3.5x more likely to be in junior positions than men. Although it's not clear when these women started their careers, it is interesting that either women are starting their careers relatively later in life or are, generally, stuck in junior positions.



CALL TO ACTION

What can you do?

Managers, directors, VPs, and C-level execs have an opportunity to accelerate change for a more equal field.

Share which initiatives have worked to help empower more women in tech.
Email us at research@hackerrank.com or we'd love to discuss our findings at [reddit.com/r/compsci](https://www.reddit.com/r/compsci).

Want to see our full dataset? We've open sourced our data on Kaggle, the largest community of data scientists, so anyone can discover more insights.



Methodology

HackerRank conducted a study of developers to identify trends in developer education, skills and hiring practices. A total of 14,616 professional developers (1,981 women and 12,635 men) completed the 10-minute online survey from October 16 to November 1, 2017. Respondents who identify as "non-binary" (N=76) were excluded from the male-female comparisons.

The survey was hosted by SurveyMonkey and HackerRank recruited respondents via email from their community of 3.2 million members and through social media sites.

Tests of significant differences were conducted at the .01 level (99% probability that the difference is real, not by chance). Percentages may not always add to 100% due to rounding.



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HackerRank's mission is to match every developer to the right job. We're driving a new paradigm shift by helping companies evaluate technical skills better and creating opportunities for millions of programmers worldwide. 1,000 companies across industries, including VMware, Twitter and Capital One, use HackerRank to build strong engineering teams. www.hackerrank.com

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