



2022 State of Software Engineers

Introduction

Key Findings

Top Software
Engineering Skills

Top Software
Engineering Roles

Salary & Demand
Trends by Market

Demand by
Company Size

What Motivates
Software Engineers

What's Next?

Methodology &
Glossary

Overview from Hired's CEO

2

Amid the ongoing tech talent shortage and record-high demands from companies eager to fill open roles, software engineers on Hired received more than twice the amount of interview requests on average in 2021 than they did in 2020.

This competitive hiring market continues to put pressure on companies to offer compelling salaries and benefits and extend their talent search to hire remote software engineers outside of big tech hubs, expanding and distributing teams globally.

For software engineers, upskilling is key to thrive in this global job market and the more specialized their skill set, the higher the demand and salary.



Josh Brenner
CEO of Hired



2022 State of Software Engineers

Introduction

Key Findings

Top Software Engineering Skills

Top Software Engineering Roles

Salary & Demand Trends by Market

Demand by Company Size

What Motivates Software Engineers

What's Next?

Methodology & Glossary

Introduction

In this report, we analyzed data from over 366,000 interactions between companies and software engineers on Hired's marketplace. To uncover the latest trends in the field, we also surveyed over 2,000 software engineer candidates on Hired. We studied the most in-demand skills and roles, salaries across markets, shifts to remote hiring away from tech hubs, and what matters most to software engineers when considering a new job.

We hope this report gives software engineers the insights and resources to advance their careers – or start a career in the field – while providing employers with actionable takeaways on how to better attract and retain tech talent. Here are some of the key findings:



Key findings

Skills are the new currency in this global job market:

For the second year in a row, the most in-demand skill was Go, with “Go-skilled” software engineers receiving 1.8x more interview requests compared to the marketplace average.

- [Here](#) are the top in-demand skills for software engineers and engineering managers, as well as skills to successfully work remotely.

The cybersecurity talent shortage is driving up demand and salaries for security engineers:

The rise of cyber attacks led more companies to prioritize their security strategies. Thus, security engineers are in high demand and currently receive the highest average salary out of all software engineering roles.

- [Here](#) is typical compensation compared to 2020 and the skills needed to become a security engineer.

Companies are hiring more full stack engineers:

They are the highest in-demand role and showed the highest increase in interview requests compared to other software engineering roles. The reason? Companies seek to maximize their engineering team’s efficiency and navigate team fluctuations in this volatile job market and shifting economy.

- Read more about the most demanded roles [here](#).



2022 State of Software Engineers

Introduction

Key Findings

Top Software Engineering Skills

Top Software Engineering Roles

Salary & Demand Trends by Market

Demand by Company Size

What Motivates Software Engineers

What's Next?

Methodology & Glossary

Key findings

Remote salaries increase across all markets with the shift to global hiring:

As software engineers have more options to work for companies across the globe, Canada and the U.K. are catching up to the U.S. to offer more competitive salaries. On the city level, smaller regions also saw higher salary growth compared to big tech hubs.

- [Here](#) is what software engineers make on average in different cities and where they have seen the highest salary growth between 2020 and 2021.

A shift towards hiring remote software engineers in smaller markets:

Software engineers across all markets received more interview requests for remote roles than for local ones in 2021 compared to 2020. When open to remote work, software engineers even received 20% more interview requests overall than candidates who are not.

- [Here](#) are the regions hiring remotely most aggressively and where local talent continues to be in demand.

Increased pressure for enterprises to stay competitive as startups see an unprecedented level of funding and growth:

Smaller companies are quickly catching up with compelling pay and benefits to attract and hire top talent in this competitive market – bringing pay on par with enterprises with an average annual salary of \$155k for software engineers in 2021.

- [Here](#) is the average compensation for software engineers at small, mid-sized, and large companies.



2022 State of Software Engineers

Introduction

Key Findings

Top Software Engineering Skills

Top Software Engineering Roles

Salary & Demand Trends by Market

Demand by Company Size

What Motivates Software Engineers

What's Next?

Methodology & Glossary

Key findings

6

Software engineers want to continuously learn, be challenged in their role, and solve meaningful problems:

Besides solving public health issues amid the ongoing pandemic, software engineers are also excited about enhancing the future of work through technology and providing better access to education and upskilling opportunities.

- [Here](#) is what motivates software engineers the most.

Companies need to prioritize hiring and company culture and embrace flexibility beyond remote work:

Almost all software engineers surveyed said key elements for an ideal work environment are great managers, co-workers they get along with and can learn from, and flexibility around work hours.

- [Here](#) are some tips and tools for companies to improve their interview process and optimize their remote work environment.

The continued shift to non-traditional education:

The number of software engineers who acquire their skills through non-traditional avenues like bootcamps and simply teaching themselves continues to increase steadily every year.

- [Here](#) are some best practices and tools for companies to base hiring on skills over pedigree and to eliminate biases.



Top Software Engineering Skills



2022 State of Software Engineers

Introduction

Key Findings

Top Software Engineering Skills

Top Software Engineering Roles

Salary & Demand Trends by Market

Demand by Company Size

What Motivates Software Engineers

What's Next?

Methodology & Glossary

The hottest* software engineering skills

8

In 2021, software engineers on Hired's platform received nearly double the number of interview requests from 2020. Naturally, having one or more of the top in-demand skills could increase interest from employers. So, what are the skills hiring managers want as they build their teams?

The most in-demand skill in 2021 was Go (also called Golang or Go language), with "Go-skilled" software engineers receiving 1.8x more interview requests compared to the marketplace average. This marks the second year of Go taking the leading position for programming languages.

"Go is seeing more adoption by larger companies such as Uber, Twitch, and Slack. It was designed with simplicity in mind, yet is extremely powerful, making it popular among engineers."
– Dave Walters, CTO at Hired.

Ruby on Rails – the second most in-demand skill – remains one of the most convenient and functional frameworks. It's also used by some big players such as Airbnb, GitHub, and Shopify.

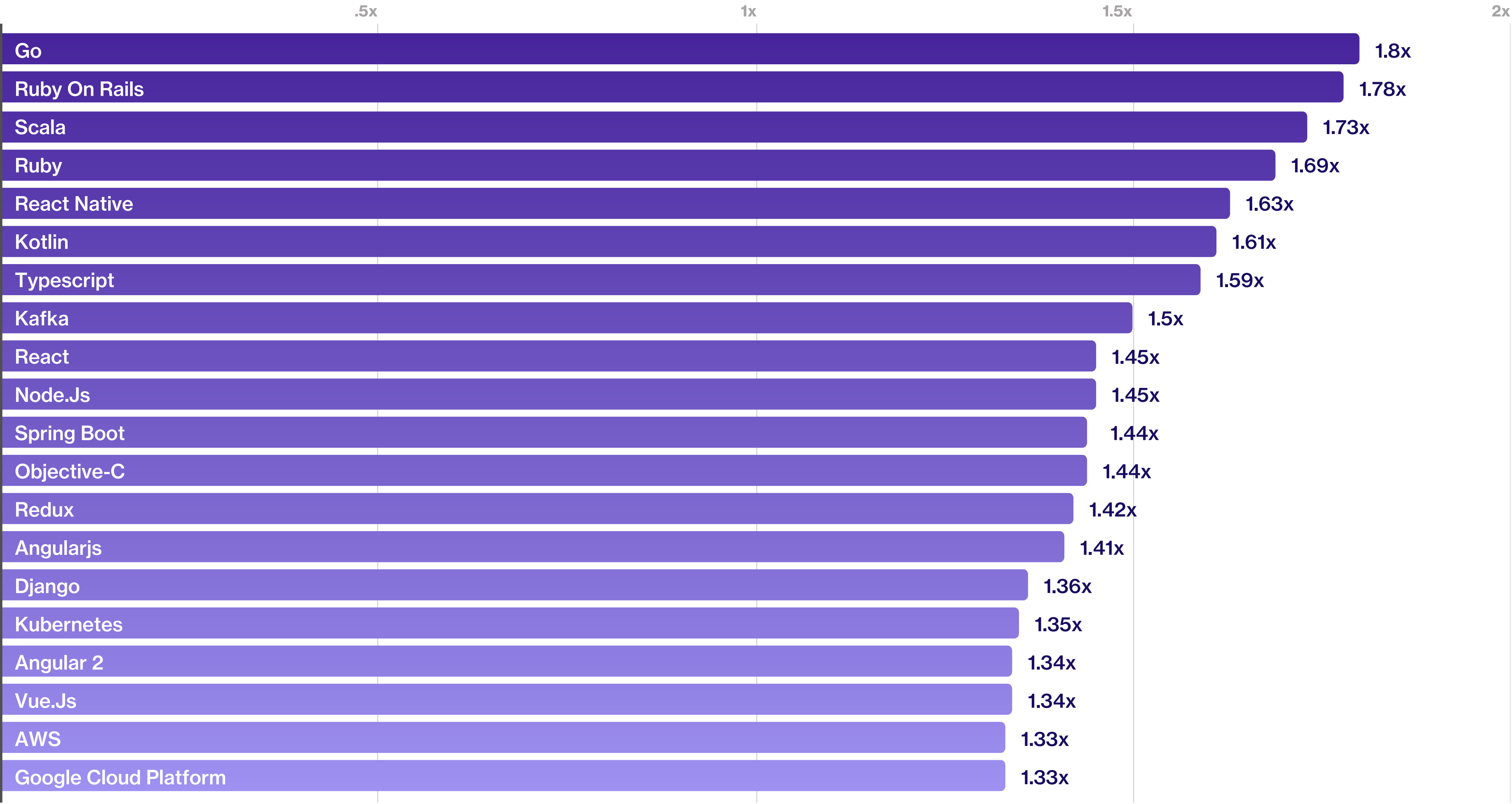
React, the popular front-end JavaScript library, has also stayed in high demand. Both startups and established companies and engineering teams are increasingly moving towards React as an opportunity to re-architect their platforms.

*Note: When we discuss the "hottest skills" in this report, we refer to a combination of the most specialized skills (i.e. fewer engineers have it, so it's in higher demand) and the ones in highest demand from employers (i.e. companies are looking for those skills in candidates, so there are more opportunities for engineers with those skills).



The hottest software engineering skills

Demand by coding skill vs. marketplace average





2022 State of Software Engineers

Introduction

Key Findings

Top Software Engineering Skills

Top Software Engineering Roles

Salary & Demand Trends by Market

Demand by Company Size

What Motivates Software Engineers

What's Next?

Methodology & Glossary

Software engineers' favorite & least favorite languages

Based on our survey of more than 2,000 software engineers, we found engineers continue to favor coding languages such as Python and JavaScript.

Why?

- their useful and well-maintained libraries and packages,
- they typically know them well, which makes them more fun to program in.

Software engineers noted their least favorite languages:

- are not fun to program in,
- are complex and overwhelming, and
- many even had a bad experience working with them.

Favorite languages

- 1 Python
- 2 JavaScript
- 3 Java
- 4 TypeScript
- 5 C#
- 6 Go
- 7 HTML
- 8 C++
- 9 Ruby
- 10 C
- 11 Kotlin
- 12 PHP
- 13 Swift
- 14 Scala
- 15 R
- 16 Objective-C

Reasons for loving the languages

- 64%

The ecosystem (useful and well-maintained libraries and packages)
- 63%

I know it well
- 61%

Resources available for learning and development
- 57%

It is fun to program in
- 49%

Community support (tone of the community, open to newcomers)
- 46%

The programming language is in high-demand
- 34%

Large companies use it
- 26%

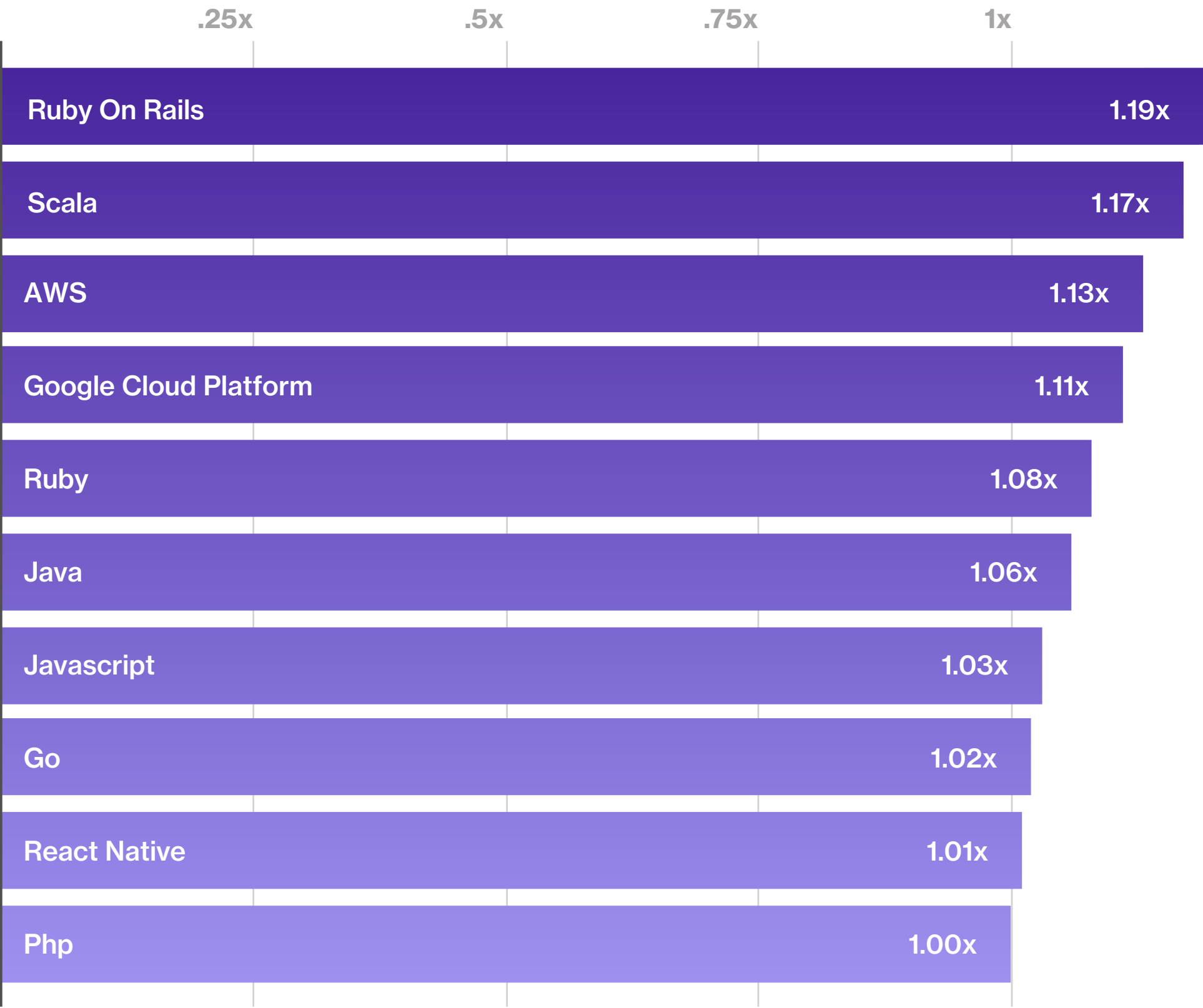
It was the first programming language I learned



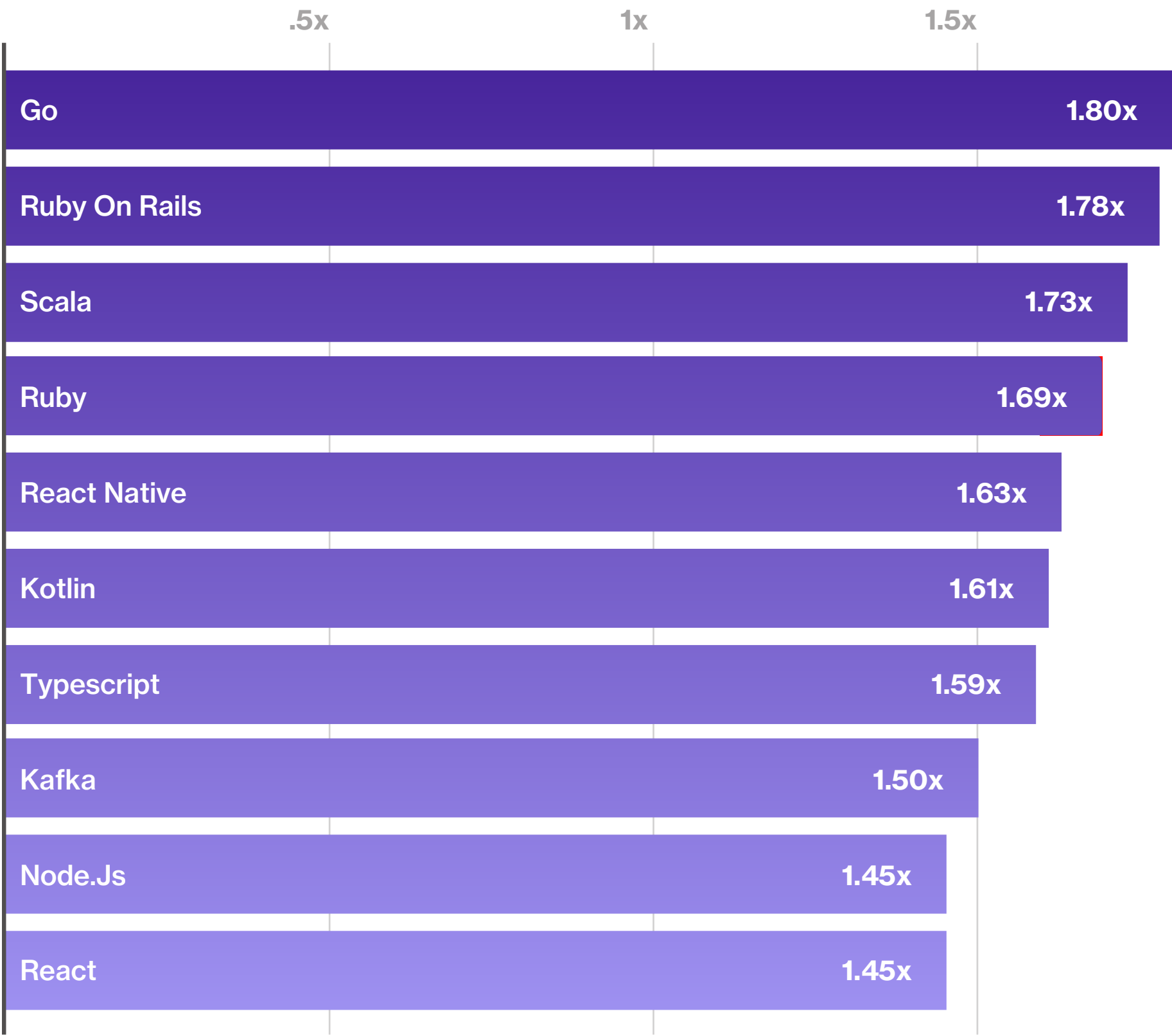
Top skills for engineering managers

It’s more important to be proficient in coding languages and frameworks for software engineers than it is for engineering managers. Knowing the top in-demand skill as a software engineer boosted engineers’ demand from employers by 1.8x, while managers with the top skill, Ruby on Rails, got 1.2x more interview requests – both compared to their respective marketplace averages.

Top skills for managers



Top skills for individual contributors





2022 State of Software Engineers

Introduction

Key Findings

Top Software Engineering Skills

Top Software Engineering Roles

Salary & Demand Trends by Market

Demand by Company Size

What Motivates Software Engineers

What's Next?

Methodology & Glossary

Do Engineering Managers need to be excellent coders, too?

12

Results from an informal poll on Hired's LinkedIn page were split whether coding assignments should be part of the engineering manager hiring process. In general, it leaned slightly toward no.

"As engineering teams grow in size, engineering managers tend to become less hands-on and active in the code. They're able to more easily transfer their skills gained from operating in one language or framework to the leadership of teams and projects in any language or framework.

For employers and hiring managers, it thus becomes less important to have manager candidates take coding assessments and they should instead focus on assessing their ability to lead a team and drive initiatives forward."

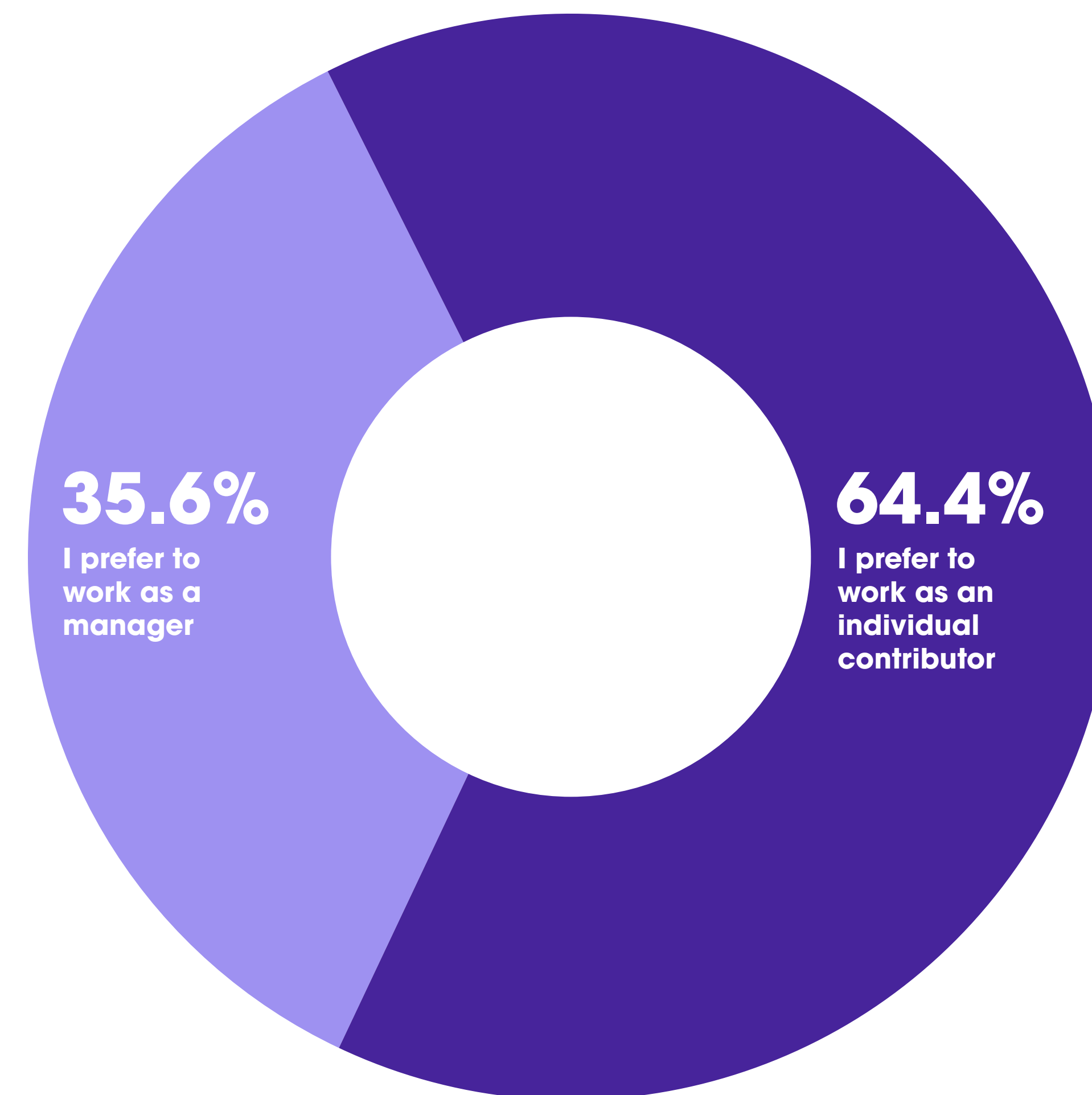
– Dave Walters, CTO at Hired

Cloud environments, such as AWS and Google Cloud Platform, remain in high demand for hosting any type of application. They allow engineering teams to use more specialized tools to do their work compared to traditional data centers, giving them more flexibility.

As engineering managers often work cross-functionally as a solution architect, resource manager, and project manager, it's important they understand the environments their applications are being built within.

Based on our survey, we found the majority prefers to be hands-on in engineering projects, solve problems, and be in the trenches over coaching others and leading teams. In fact, the majority pursue software engineering because they want to solve problems, be creative, and create things through coding. Only a few enter the field already aspiring to be managers.

Do you prefer to work as a manager or as an individual contributor?



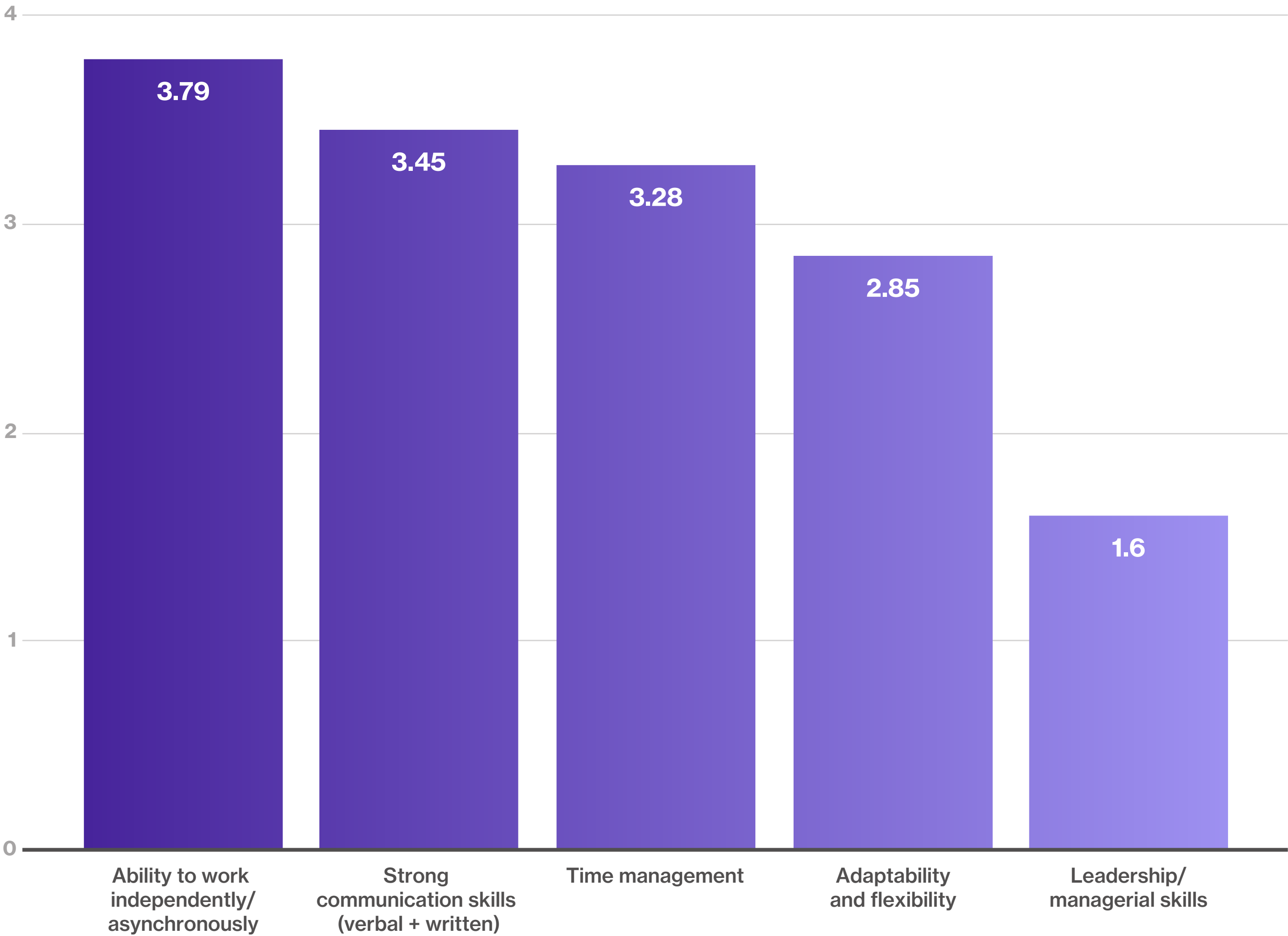


Top skills to successfully work remotely

According to the software engineers participating in our survey, the ability to work independently and asynchronously is most important to successfully work remotely, followed by strong communication skills and time management.

Those so-called “soft skills” are critical for various roles across an organization to thrive in today’s remote and hybrid work environments. To successfully work with a distributed team, software engineers have to adapt to master those skills.

What is the most important skill for software engineers to successfully work remotely?
Score based on respondents' ranking from 1-5, with 5 being the most important





Top Software Engineering Roles: Salaries & Skills



2022 State of Software Engineers

Introduction

Key Findings

Top Software Engineering Skills

Top Software Engineering Roles

Salary & Demand Trends by Market

Demand by Company Size

What Motivates Software Engineers

What's Next?

Methodology & Glossary

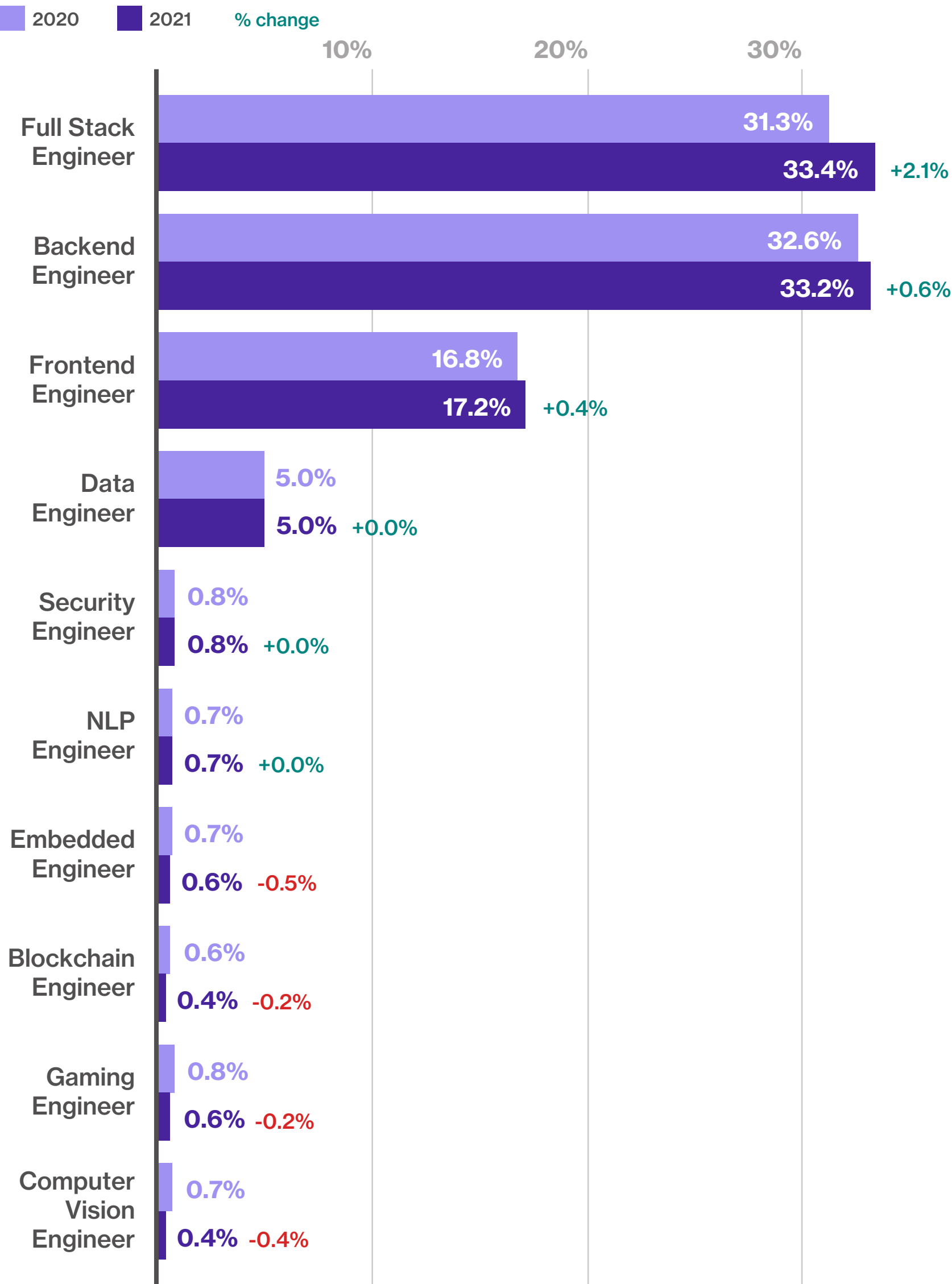
Salary trends by role

Companies have been more aggressively hiring full stack engineers in 2021. Our data revealed full stack engineers showed the highest increase of 2.1% (when comparing 2021 to 2020) in interview requests compared to other software engineering roles.

Why? The simplest answer is to maximize an engineering team’s efficiency and create redundancy to handle team fluctuations. We see this most often in startups and smaller companies with fewer resources.

However, this demand is driven by both sides – employers and employees. As software engineers are aware of the high demand – and thus higher salaries – for full stack engineers, more candidates develop this broader skillset, looking for full stack roles.

% of all interview requests by subrole



Top 10 subroles by supply

- 1 Backend Engineer
- 2 Full Stack Engineer
- 3 Frontend Engineer
- 4 Data Engineer
- 5 Mobile Engineer
- 6 Machine Learning Engineer
- 7 Security Engineer
- 8 Embedded Engineer
- 9 Gaming Engineer
- 10 Computer Vision Engineer



The hottest software engineering roles

2022 State of Software Engineers

- Introduction
- Key Findings
- Top Software Engineering Skills
- Top Software Engineering Roles
- Salary & Demand Trends by Market
- Demand by Company Size
- What Motivates Software Engineers
- What's Next?
- Methodology & Glossary

The rise of cyber attacks since the beginning of the pandemic in 2020 spurred more companies to realize how vulnerable they are to hackers. They reevaluated – and prioritized – their security strategies.

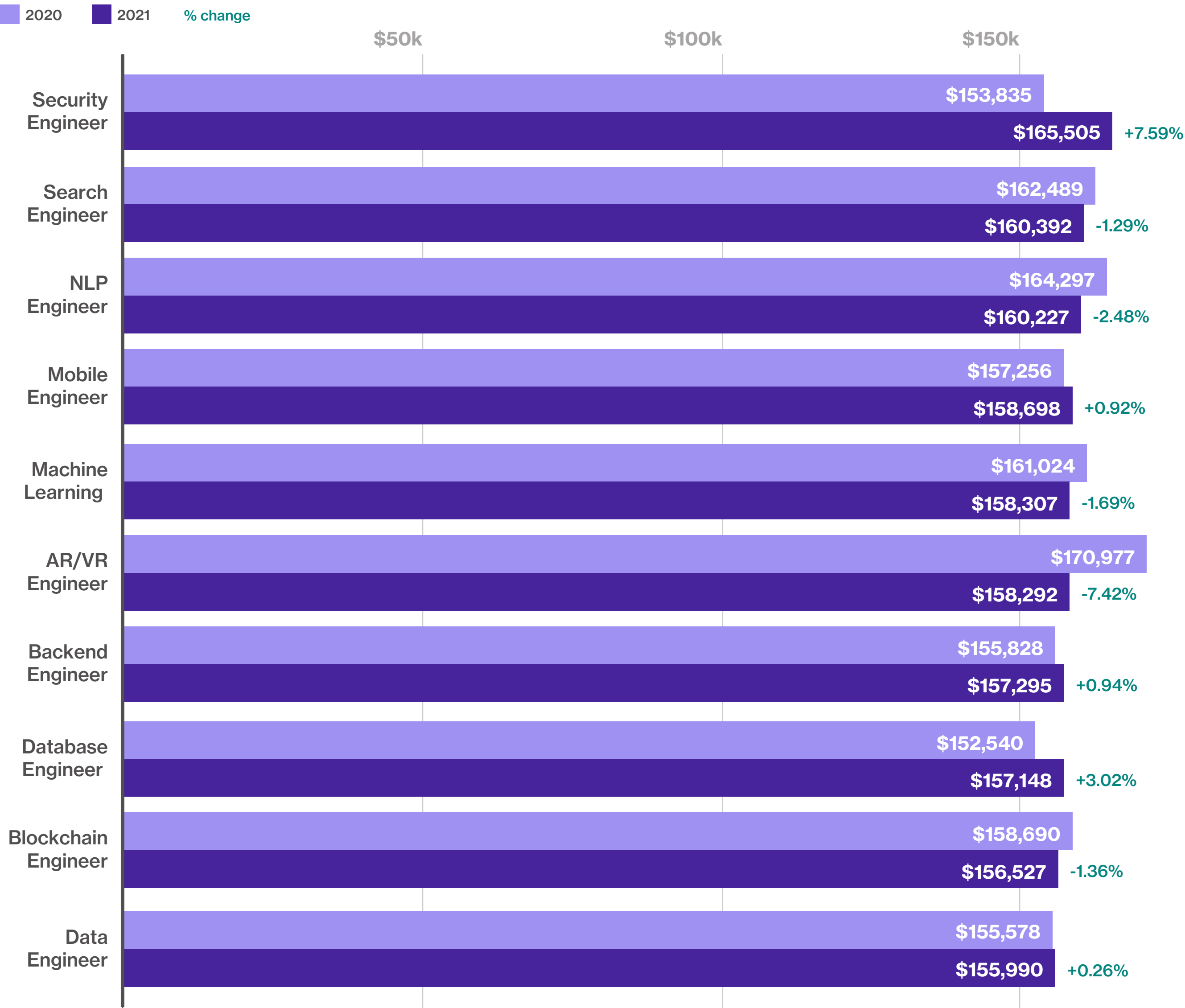
It's no surprise security engineers have been in high demand and now receive the highest average salary with \$165,505 per year. They have also seen the highest salary growth among all software engineers with +7.6% compared to 2020. There continues to be an immense talent shortage in cybersecurity, driving up demand and salaries even further.

Voice, chat bots, and AI-powered transcription have been hot areas in tech as well, leading to high salaries for NLP engineers with \$160,227 on average per year.

AR/VR engineers also make the top 10 list as companies across various industries explore the metaverse. Overall, engineers with specialty skills – from security to mobile, NLP, and AR/VR – continue to see high average salaries.

[Related: Curious about salaries for various tech roles? Check out our updated Salary Calculator](#)

Salaries by top subroles





2022 State of Software Engineers

Introduction

Key Findings

Top Software Engineering Skills

Top Software Engineering Roles

Salary & Demand Trends by Market

Demand by Company Size

What Motivates Software Engineers

What's Next?

Methodology & Glossary

Most Common Engineering Skills by Subrole

Interested in or currently work in any of these subroles? Here are the skills most common among working software engineers in each of these specializations. If you work in one of these, do your skills align? If you're ready to upskill, check out the Hired partners offering bootcamps, courses, and certifications on pages 35-36.

(Lists determined by volume of those skills exhibited by engineers on Hired's platform, not demand).

Top Security Engineer Skills

- 1 Python
- 2 Java
- 3 AWS
- 4 JavaScript
- 5 Linux
- 6 SQL
- 7 C++
- 8 Docker
- 9 C
- 10 Go

Top Backend Engineer Skills

- 1 Java
- 2 JavaScript
- 3 Python
- 4 Sql
- 5 Aws
- 6 React
- 7 Node.Js
- 8 Docker
- 9 C++
- 10 Kubernetes



2022 State
of Software
Engineers

Introduction

Key Findings

Top Software
Engineering Skills

Top Software
Engineering Roles

Salary & Demand
Trends by Market

Demand by
Company Size

What Motivates
Software Engineers

What's Next?

Methodology &
Glossary

Most Common Engineering Skills by Subrole

Top Data Engineer Skills

- 1 Python
- 2 Sql
- 3 Aws
- 4 Java
- 5 Spark
- 6 Docker
- 7 Machine Learning
- 8 Linux
- 9 Scala
- 10 Hadoop

Top Fullstack Engineer Skills

- 1 JavaScript
- 2 React
- 3 Java
- 4 Python
- 5 Node.js
- 6 SQL
- 7 HTML
- 8 AWS
- 9 CSS
- 10 TypeScript

Top Embedded Engineer Skills

- 1 C++
- 2 C
- 3 Python
- 4 Linux
- 5 Java
- 6 Embedded Systems
- 7 JavaScript

Top ML Engineer Skills

- 1 Python
- 2 SQL
- 3 Java
- 4 AWS
- 5 C++
- 6 Tensorflow
- 7 NLP
- 8 Docker
- 9 Deep Learning
- 10 Spark

Top Frontend Engineer Skills

- 1 JavaScript
- 2 React
- 3 Node.js
- 4 HTML
- 5 CSS
- 6 TypeScript
- 7 Java
- 8 Python
- 9 AWS
- 10 SQL

Top Mobile Engineer Skills

- 1 Java
- 2 Swift
- 3 Android
- 4 iOS
- 5 Kotlin
- 6 JavaScript
- 7 Objective-C
- 8 Python
- 9 React
- 10 HTML



Salary & Demand Trends by Market



2022 State of Software Engineers

Introduction

Key Findings

Top Software Engineering Skills

Top Software Engineering Roles

Salary & Demand Trends by Market

Demand by Company Size

What Motivates Software Engineers

What's Next?

Methodology & Glossary

Salary trends by market

20

The U.S. still pays the highest salaries for software engineers overall. The U.K. and Canada are behind (with London and Toronto also paying the lowest average salaries across all markets evaluated), but these regions are catching up, becoming more competitive in compensation. Canada saw the highest growth in average salaries with a 9.2% increase between 2020 and 2021. The U.K. followed with an increase of 2.7% and then the U.S. with 0.8%.

This reflects the increasing shift to remote and global hiring. As talent is able to work for companies across the world, they have more opportunities and access to higher-paying jobs in other regions.

When looking more closely at the different cities across these countries, the data shows a similar trend suggesting a shift away from traditional tech hubs.

While the San Francisco Bay Area still pays the highest average salary (for both local and remote software engineering roles) across all markets, smaller regions are catching up quickly and seeing higher salary growth than the bigger tech hubs year-over-year.

Austin, followed closely by Seattle and Chicago, had the highest increase in average salaries, with a 9% bump from \$139k in 2020 to \$151k in 2021.

This high growth in overall salaries in those smaller markets is mainly driven by their increase in remote salaries – with Austin seeing an 8% increase. On the other side, big hubs such as San Francisco and New York saw the least amount of overall (local and remote) salary growth between 2020 and 2021 (1% and 2% respectively), reinforcing the shift towards hiring remote talent in smaller markets.

It's clear the future is remote for tech professionals who can work from anywhere

Remote salaries grew across all markets between 2020 and 2021, while local salaries saw a slight decrease. This is most notable in some smaller markets such as Los Angeles, Denver, and Dallas (where remote work has increased). To stay competitive with U.S. salaries, Toronto even saw an astounding 14% increase in average remote salaries.

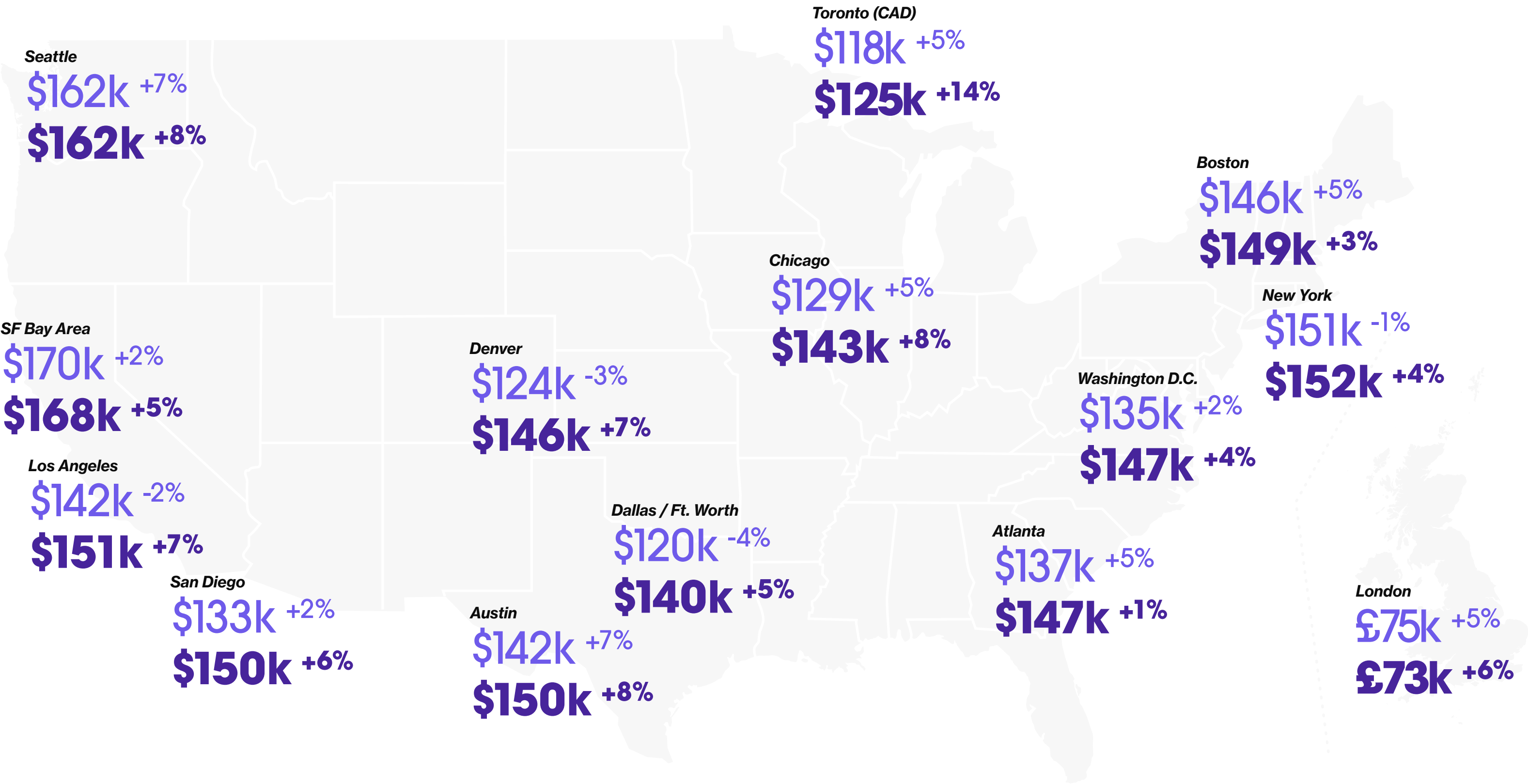
[Related: Check out our 2021 State of Tech Salaries Report](#)



Salary trends by market

Average local and remote salary by market

2021 local average salary 2021 remote average salary 2021 combined average salary



Remote (globally)	\$157k +3%
United States	\$156k +1%
Canada (CAD)	\$128k +9%
United Kingdom	£75k +3%



**2022 State
of Software
Engineers**

Introduction

Key Findings

Top Software
Engineering Skills

Top Software
Engineering Roles

Salary & Demand
Trends by Market

Demand by
Company Size

What Motivates
Software Engineers

What's Next?

Methodology &
Glossary

Demand for remote vs. local roles by market

Across all markets, software engineers have received more interview requests for remote roles than for local ones in 2021 compared to 2020, in line with the shift of companies increasingly hiring for remote roles and less for local positions (even if the candidate is in the same market as the company).

Boston and San Diego saw the most drastic shift from local to remote hiring between 2020 and 2021. Data shows a 39.2% and 37.5% decrease in the percentage of local interview requests within their respective market (while remote ones have increased in the same way).

In San Diego, 66% of the total interview requests received by local job seekers were for remote positions, while the rest (34%) was for local roles. This was the highest percentage across all markets.

In general, smaller markets such as San Diego, Denver, Austin, and Los Angeles have the lowest demand for local

software engineers. Jobseekers in those markets received more than 60% remote interview requests of all interview inquiries sent within their market.

Toronto and London software engineers still get more local interview requests than remote ones within their markets. Data shows only 26.8% and 21.2% remote interview requests respectively out of all requests sent within their market.

Big hubs such as London and the San Francisco Bay Area still have the strongest demand for local software engineering talent, with the highest percentage of local interview requests out of all local ones sent across all markets.

These hubs have also seen slower growth in remote demand compared to other markets which emphasizes the shift to hiring remote talent in smaller regions.



2022 State of Software Engineers

Introduction

Key Findings

Top Software Engineering Skills

Top Software Engineering Roles

Salary & Demand Trends by Market

Demand by Company Size

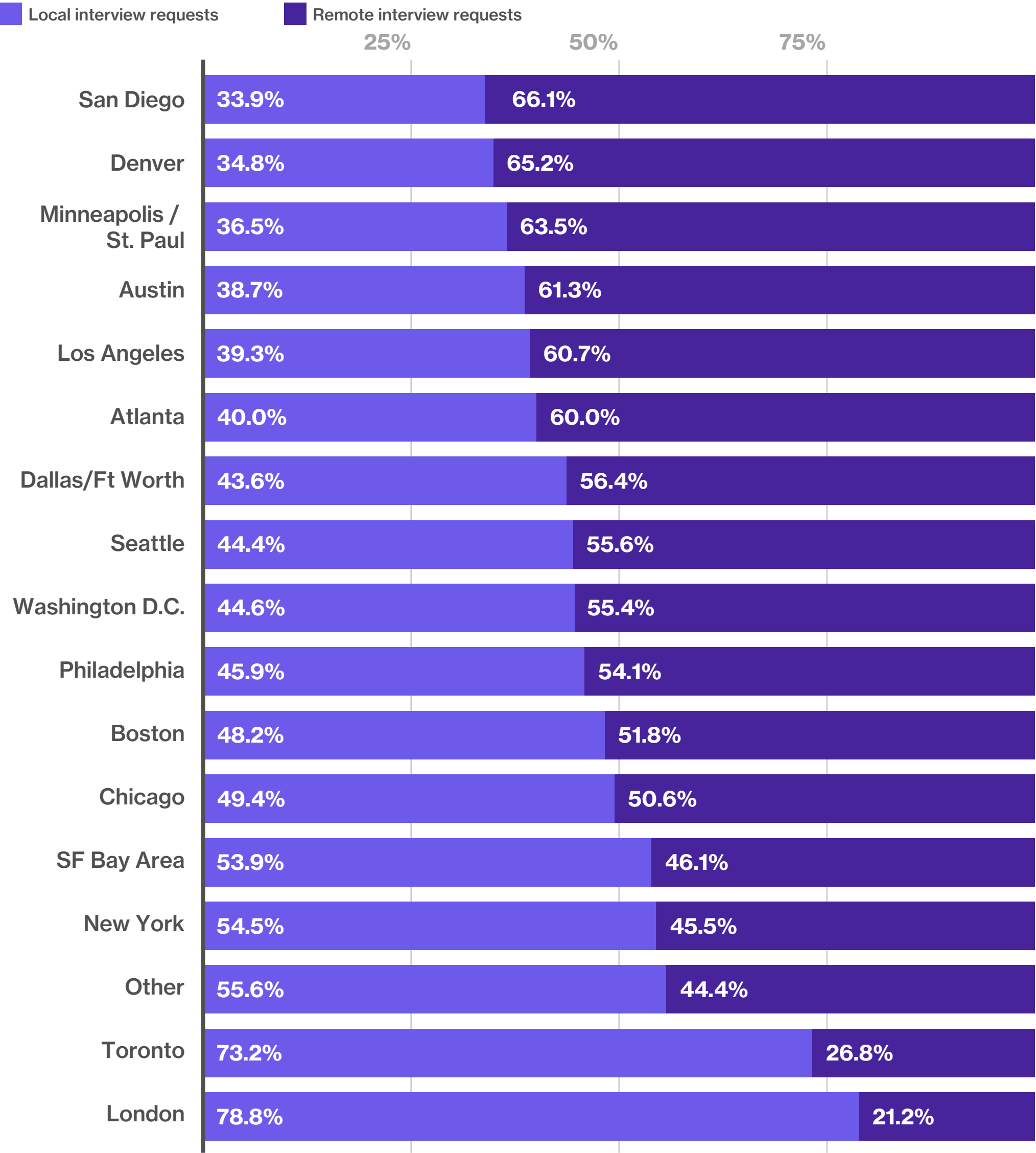
What Motivates Software Engineers

What's Next?

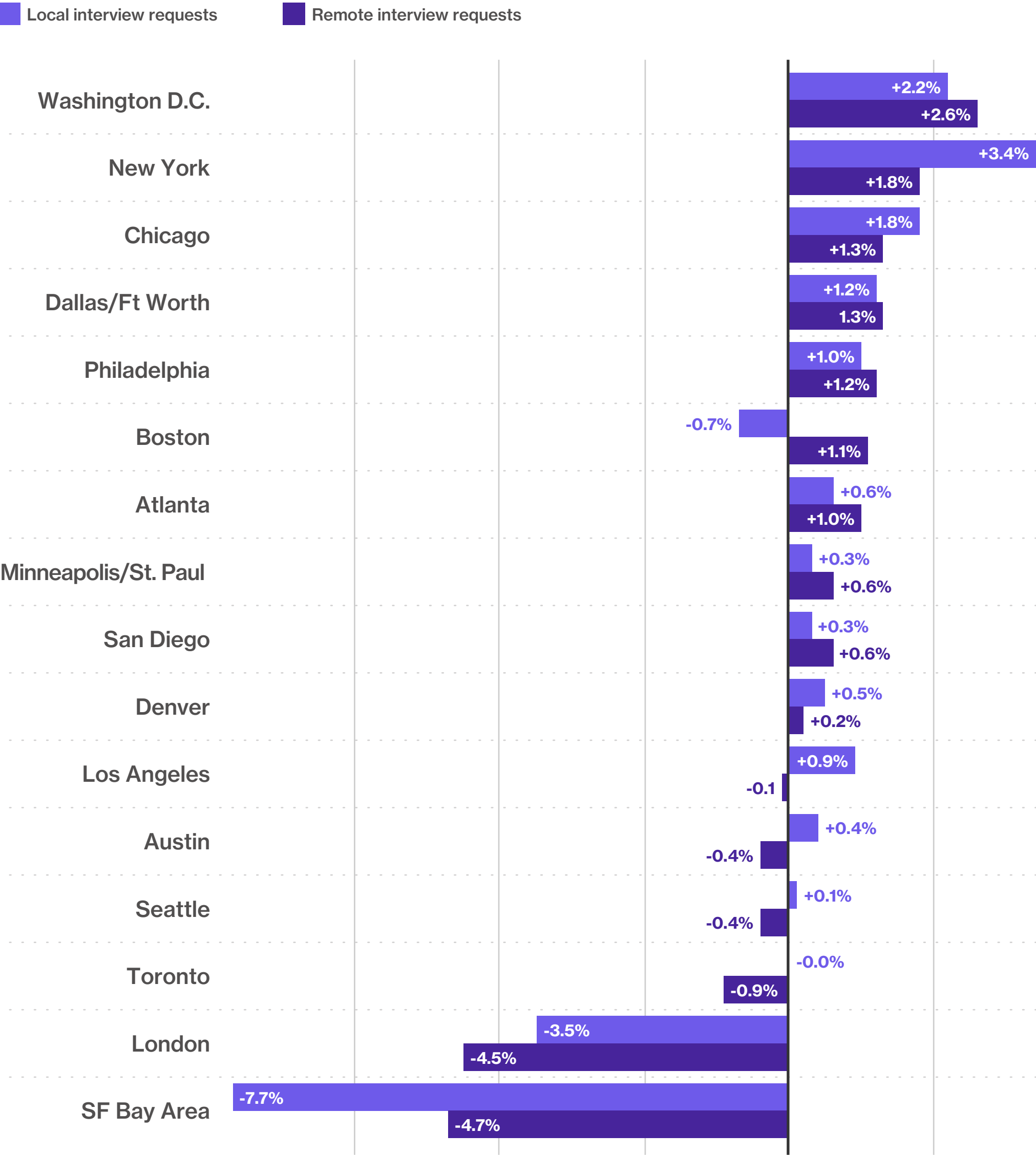
Methodology & Glossary

Demand for remote vs. local roles by market

Local vs. remote interview requests



Change in % share of all interview requests on Hired





Demand by Company Size



2022 State of Software Engineers

Introduction

Key Findings

Top Software Engineering Skills

Top Software Engineering Roles

Salary & Demand Trends by Market

Demand by Company Size

What Motivates Software Engineers

What's Next?

Methodology & Glossary

Small companies in big hubs have accelerated remote hiring

25

While the distribution of local hiring demand has remained pretty similar year-over-year between the different company sizes* across markets, there has been a significant shift within big hubs specifically.

Small companies in big tech hubs have been more aggressive in remote hiring.

Out of all remote interview requests sent from big hubs between 2020 and 2021, small companies' jumped by 15%. Meanwhile, interview requests from enterprises in big hubs declined by 18.5%.

Let's take a deeper look at where companies hire remotely

Companies of all sizes – from small companies to enterprises – are hiring remote talent in smaller markets and are hiring less talent in big tech hubs. However, the shift towards hiring in lower cost of living regions presents as more drastic for mid-sized and large companies compared to small firms. Why? Because small ones have already hired more in smaller markets in previous years.

As we see [talent moving away](#) from big hubs like San Francisco and New York to live in smaller cities, companies are adjusting their recruiting strategies. They're following the talent to where they are now.

*Note: Small businesses = 1-300 employees; mid-sized businesses = 301-1,000 employees; enterprises = 1,001+ employees



Small companies in big hubs have accelerated remote hiring

2022 State of Software Engineers

Introduction

Key Findings

Top Software Engineering Skills

Top Software Engineering Roles

Salary & Demand Trends by Market

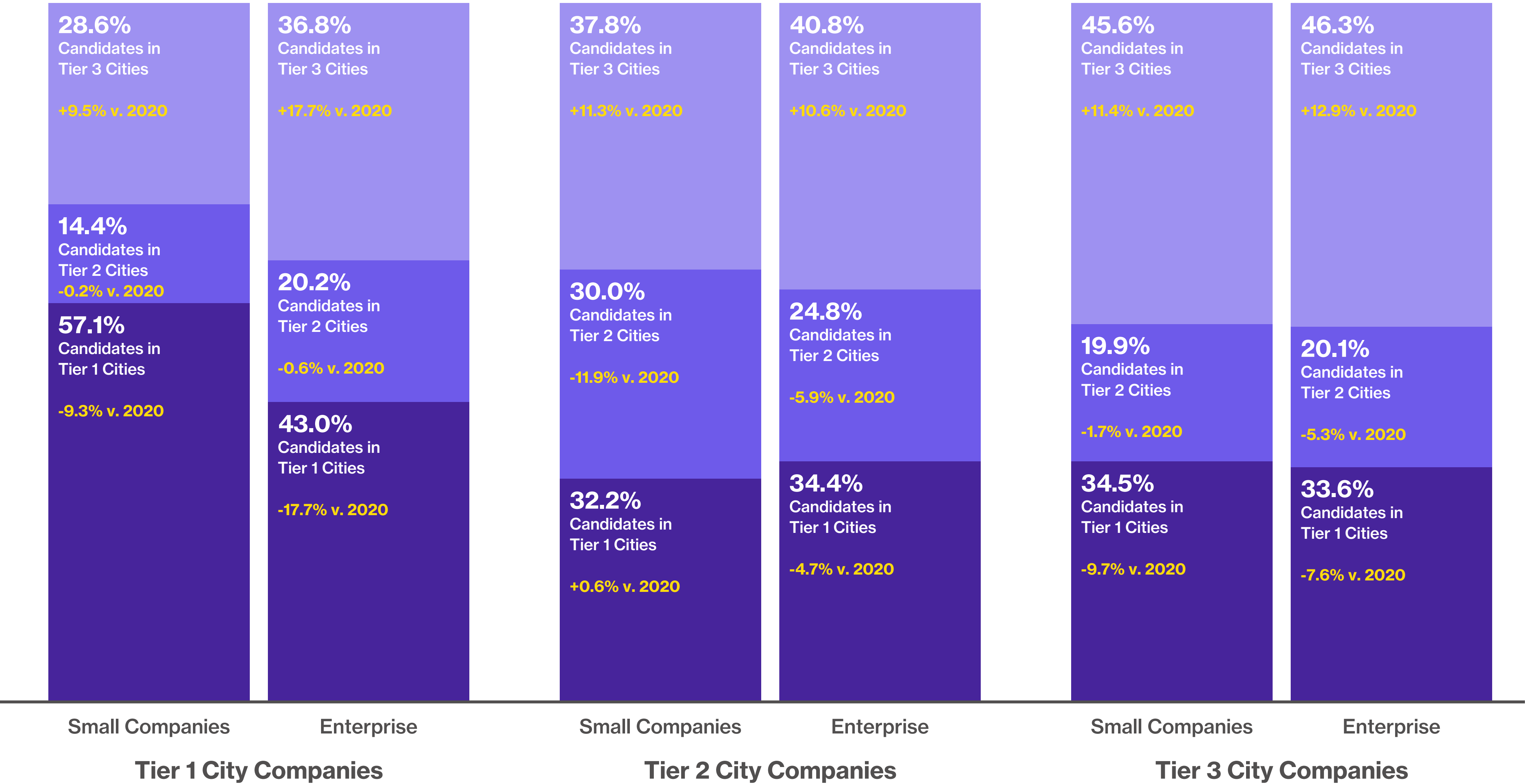
Demand by Company Size

What Motivates Software Engineers

What's Next?

Methodology & Glossary

Where companies are hiring by size and location
see breakdown of [tier 1-3 markets here](#)





2022 State of Software Engineers

Introduction

Key Findings

Top Software Engineering Skills

Top Software Engineering Roles

Salary & Demand Trends by Market

Demand by Company Size

What Motivates Software Engineers

What's Next?

Methodology & Glossary

Top skills by company size

The top in-demand skills remain similar across different company sizes. However, engineers will be more likely to use C# and C++ at mid-sized and larger firms compared to smaller companies and startups.

Top SMB Skills

- 1 React
- 2 Javascript
- 3 Python
- 4 Node.Js
- 5 Java
- 6 Typescript
- 7 AWS
- 8 Ruby On Rails
- 9 Go
- 10 SQL

Top Mid-Market Skills

- 1 React
- 2 Java
- 3 Python
- 4 Javascript
- 5 AWS
- 6 Node.Js
- 7 Typescript
- 8 Go
- 9 Ruby On Rails
- 10 C#

Top Enterprise Skills

- 1 Java
- 2 Python
- 3 React
- 4 Javascript
- 5 AWS
- 6 Node.Js
- 7 Go
- 8 Typescript
- 9 C#
- 10 C++



2022 State of Software Engineers

Introduction

Key Findings

Top Software Engineering Skills

Top Software Engineering Roles

Salary & Demand Trends by Market

Demand by Company Size

What Motivates Software Engineers

What's Next?

Methodology & Glossary

Salary trends by company size

28

Amid the ongoing Great Resignation, there's increased pressure for enterprises to stay competitive as startups are seeing an unprecedented level of funding and growth. As such, smaller companies are quickly catching up with compelling pay and benefits to attract and hire top talent in this competitive market.

Small businesses saw the highest average salary growth from 2020 to 2021 with a 1.7% increase. This brings them on par with enterprises with an average annual salary of \$155k in 2021.

Why? Smaller companies are hiring more remote talent than enterprises – and remote roles have higher salaries. Enterprises hire more local talent where average salaries are stagnant or even decreased in some markets.

Related: [Survey Results: Top 3 Benefits Ranked by Engineers \(Besides Salary\)](#)

Average salary by company size





What Motivates Software Engineers



2022 State
of Software
Engineers

Introduction

Key Findings

Top Software
Engineering Skills

Top Software
Engineering Roles

Salary & Demand
Trends by Market

Demand by
Company Size

What Motivates
Software Engineers

What's Next?

Methodology &
Glossary

Biggest motivators for software engineers

The opportunity to continuously learn and tackle new challenges continues to be the number one reason software engineers enter a career in the field.

The coding love is real. Similar to last year’s findings, almost half of the software engineers surveyed say their biggest motivator to learn a new skill is simply because they enjoy it.

A takeaway for employers?

Offer compelling career development opportunities to attract and retain software engineers and ensure they feel adequately challenged in their role.

Based on our survey of software engineers, more than half said it’s important to them that their employer provides professional development opportunities.

Reasons for learning new skills

64% I enjoy learning new skills

63% My job requires it

61% I know the skill will be in high-demand in the near future

57% My current skills are becoming less relevant

49% A company I am interested in working for requires it



2022 State
of Software
Engineers

Introduction

Key Findings

Top Software
Engineering Skills

Top Software
Engineering Roles

Salary & Demand
Trends by Market

Demand by
Company Size

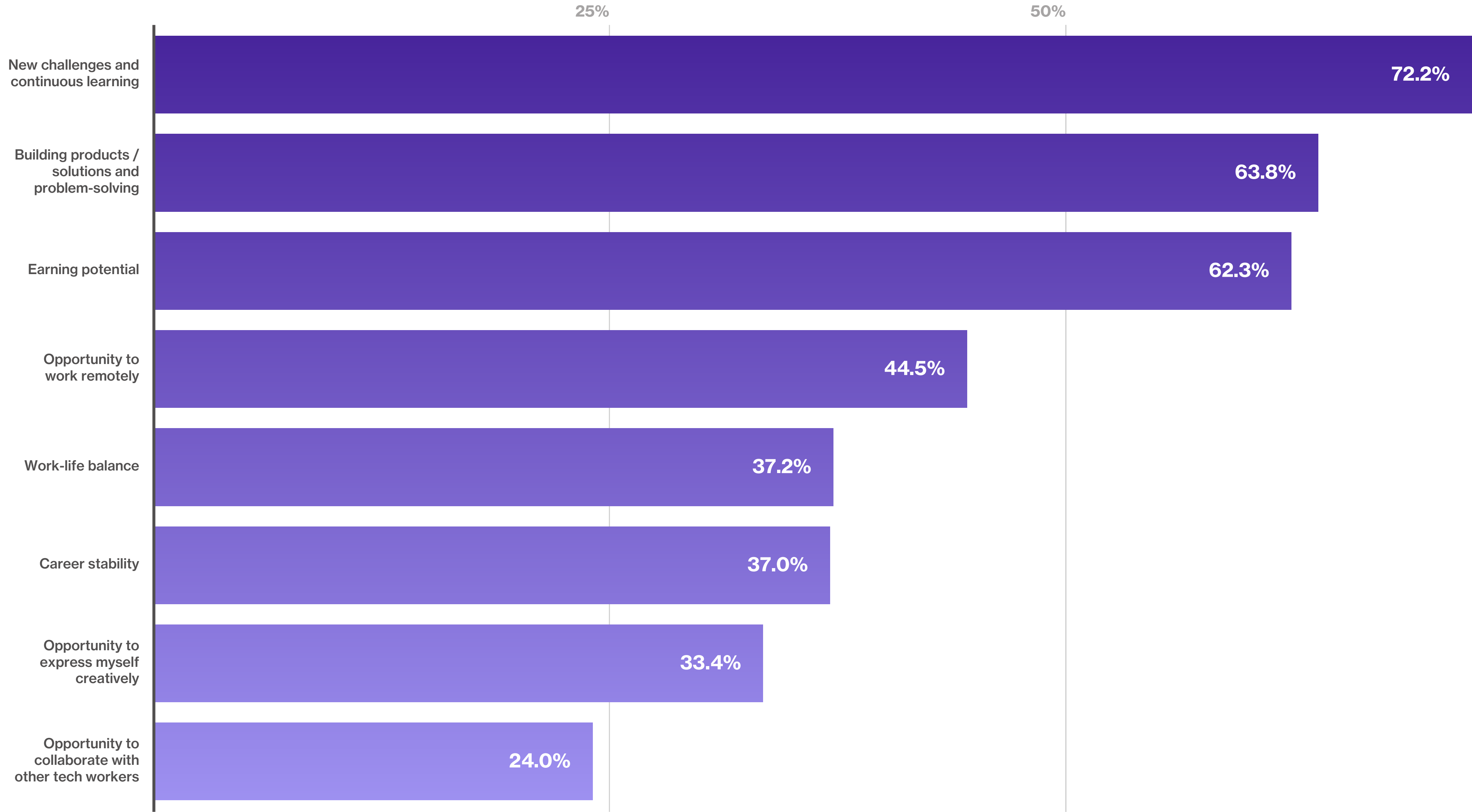
What Motivates
Software Engineers

What's Next?

Methodology &
Glossary

Biggest motivators for software engineers

What most attracted you to a career in software engineering?
(Respondents could provide more than one answer)





2022 State of Software Engineers

Introduction

Key Findings

Top Software Engineering Skills

Top Software Engineering Roles

Salary & Demand Trends by Market

Demand by Company Size

What Motivates Software Engineers

What's Next?

Methodology & Glossary

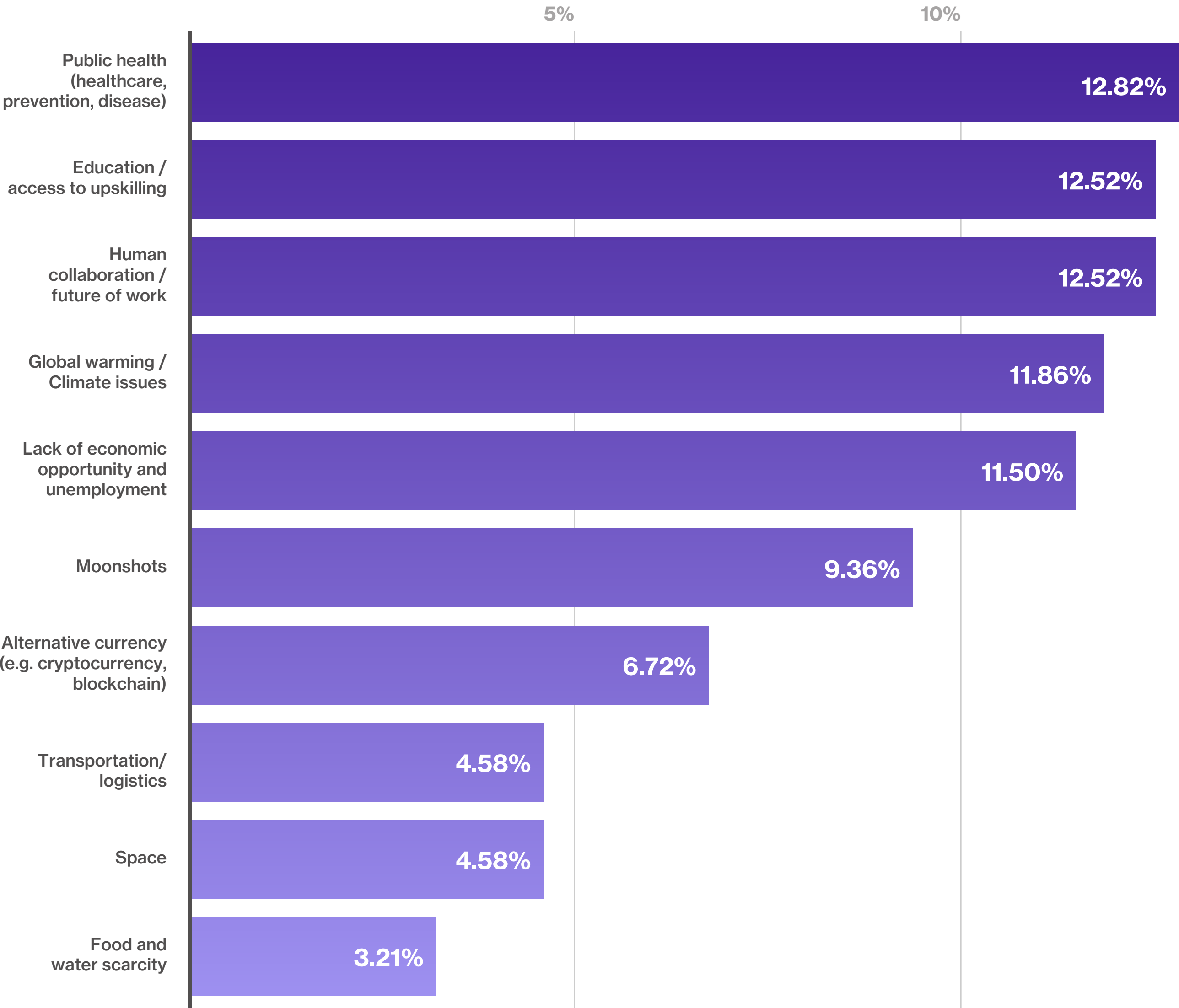
Solving big global issues

As the COVID-19 pandemic carries on, software engineers continue to feel passionate about solving public health issues with their coding skills.

They are also excited about enhancing the future of work through technology. With the shift to remote and hybrid workplaces, the way we work and interact with coworkers has changed dramatically, giving rise to new tools enhancing communication and collaboration.

It’s a competitive, global job market and skills are the new currency. Upskilling and acquiring the most relevant skills are key to advancing in a career – or entering a new industry – as workers are “reshuffling” and changing jobs at record highs. Software engineers want to help level the playing field to provide better access to (non-traditional) education and create new ways of learning.

What are you most passionate about solving with your coding skills?
(Respondents could provide more than one answer)





What's Next?



2022 State
of Software
Engineers

Introduction

Key Findings

Top Software
Engineering Skills

Top Software
Engineering Roles

Salary & Demand
Trends by Market

Demand by
Company Size

What Motivates
Software Engineers

What's Next?

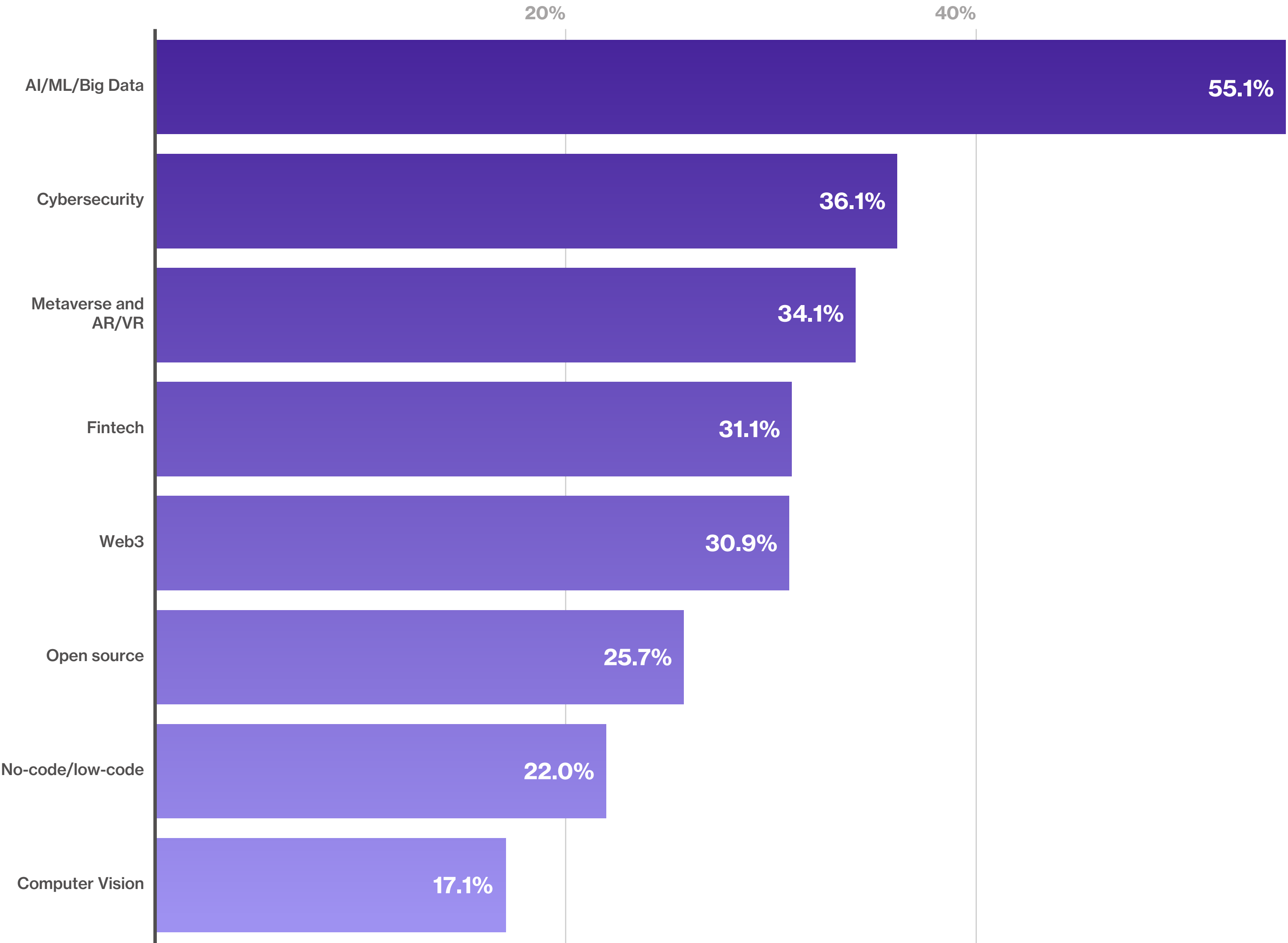
Methodology &
Glossary

The hottest areas to watch in tech

In line with the high demand and increase in salary for security engineers, cybersecurity is one of the hottest areas to follow, according to survey respondents.

With the rise of AR and VR and big tech companies determining how to enter the metaverse, keep an eye out for what’s next in this space, too. Remember – AR/VR engineers are also in high demand and get compelling salaries due to their specialty skill set.

What are, in your opinion, the hottest trends to watch out for this year in your industry?
(Respondents could provide more than one answer)





2022 State of Software Engineers

Introduction

Key Findings

Top Software Engineering Skills

Top Software Engineering Roles

Salary & Demand Trends by Market

Demand by Company Size

What Motivates Software Engineers

What's Next?

Methodology & Glossary

Resources for learning new skills

Great news – the vast majority of software engineers use free online resources to learn new skills. Some also cited books as their main way to stay educated.

As mentioned, skills are the new currency. So if you're an engineer, here are some [Hired partners](#) to help upskill and advance your career. Many offer discounts to Hired candidates!

Ready to find a new engineering role?
[Click here to complete your free profile.](#)

"Even though I have been working in a management role for the last 9 years of my career, I still find it important to stay abreast of the current landscape so I can help make informed decisions. Certifications are a great way to help do that."

– [Jason Awbrey](#), Former Hired candidate and Engineering Manager at Tanium

"I am a proud Makers Academy bootcamp grad, where the emphasis on test-driven development and quality code have enabled me to thrive in the industry. Without it, I wouldn't be an engineer."

– [Paula Muldoon](#), Senior Software Engineer at Zopa



2022 State of Software Engineers

Introduction

Key Findings

Top Software Engineering Skills

Top Software Engineering Roles

Salary & Demand Trends by Market

Demand by Company Size

What Motivates Software Engineers

What's Next?

Methodology & Glossary

Tech communities & networking



Baddies in Tech helps women of color build and grow their careers.



Ada's List is a community for women and non-binary people in tech to connect and progress.



Diversability elevates disability equity as it connects and empowers people of all abilities.



Techqueria is the largest community for Latinx tech professionals.

Workshops and Upskilling



Blockchain Training Alliance is the leading provider of instructor-led Blockchain courses and certifications.



General Assembly offers a variety of online and in-person classes to learn new skills.

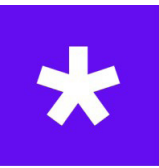


Educative provides interactive courses for software engineers to learn new skills faster and hassle-free.



2U offers certified online short courses from the world's leading universities.

Career Services



Exponent offers interview prep courses, career coaching, and peer-to-peer support.



TopResume is the world's largest resume-writing service.

Bootcamps & coding schools



Makers combines tech education with attractive employment possibilities.



Boolean is an intensive 6-month full-time online course to start your career in software engineering.



Code Your Future trains refugees and other disadvantaged people to become software engineers and helps them find work.



2022 State of Software Engineers

[Introduction](#)[Key Findings](#)[Top Software Engineering Skills](#)[Top Software Engineering Roles](#)[Salary & Demand Trends by Market](#)[Demand by Company Size](#)[What Motivates Software Engineers](#)[What's Next?](#)[Methodology & Glossary](#)

1. Prioritize company culture and hiring great teams

Almost all software engineers surveyed said key elements for an ideal culture and work environment are:

- great managers,
- co-workers they get along with and can learn from, and
- flexibility around work hours.

The majority also ranked opportunities for professional development and career growth as important, as stated previously.

We all know by now that if you don't offer flexibility and remote work, you won't have much luck finding candidates. Opportunities for career advancement have also become a must-have in the tech world.

Beyond that, companies need to refine their recruiting and hiring strategies and provide the best experience for candidates – not only to attract and hire the ideal person for a given role but also to identify whether they're a culture-add and would thrive in your specific work environment.

Start by improving your interview process to make it more inclusive and tailored to each candidate. Here are some recommendations:

- Ebook: [The 15 Minute Technical Phone Screen: How to Vet Candidates Quickly](#)
How to get the most out of this first interview.
- Ebook: [Want to Run Better Interviews? You Need a Pre-Brief Meeting \(Free Template\)](#)
Align teams before interviews begin and improve the candidate experience, too.
- Data Report: [Hired's 2021 List of Top Employers Winning Tech Talent](#)
See how core values and a strong employer brand improve the ability to attract, win, and retain talent.

What makes an ideal company culture and work environment for you?

- 1 Flexibility around work hours, schedule, etc.
- 2 No (or very few) meetings
- 3 Co-workers you get along with and learn from
- 4 Great managers
- 5 Opportunities for professional development and career growth
- 6 Opportunities to solve the most challenging problems
- 7 Strong mission/vision
- 8 Great, exciting product
- 9 Small company and team (startup/entrepreneurial environment)
- 10 Large company and opportunities to work on name-brand product (many teams/more networking)
- 11 Remote perks, such as stipends
- 12 Initiatives supporting DEI



2022 State of Software Engineers

Introduction

Key Findings

Top Software Engineering Skills

Top Software Engineering Roles

Salary & Demand Trends by Market

Demand by Company Size

What Motivates Software Engineers

What's Next?

Methodology & Glossary

2. Optimize your remote work environment

It's no longer enough to simply provide the option to work remotely and avoid a commute. Employers need to embrace flexibility more broadly, providing employees with the freedom to manage their own time and work schedule without the confines of the strict 9-5.

Prioritize autonomy before wellness stipends and other perks that are more of a 'nice-to-have' for most.

In non-stop Zoom meetings most days? Maybe it's time to reassess your meeting policy and take a critical look at which ones are really necessary and what can be done asynchronously instead.

Find the right balance of tools to use internally. Software engineers want to be able to easily and efficiently communicate and collaborate with their colleagues in real-time – but too many tools are overwhelming and harming their productivity.

Try implementing one app for quick communications like Slack, one project management tool like Asana, and one tool to enable asynchronous work like Loom. Keep it simple and listen to what your employees need. Nobody wants to be bogged down monitoring multiple channels of communication.

Experiment with “rules of engagement” determined by each team. What types of communication are suited for each tool? If it's necessary to maintain a “single source of truth” for projects, which channel is it? Does it help team productivity to limit checking emails/Slack/IMs to certain times each day, versus constant disruptions or assumptions of responsiveness? Discuss and work out what's best for specific teams.

What are your favorite (new) remote work benefits?

- 1 More flexibility (e.g. in work hours, schedule, time management)
- 2 Not having to go in an office
- 3 Reimbursements for home office equipment
- 4 Stipends to use for professional development
- 5 Stipends to use for wellness

What are the biggest challenges to your productivity working remotely?

- 1 Too many virtual meetings
- 2 Not having the right equipment and home office set up (extra monitors, etc.)
- 3 More distractions at home
- 4 Difficulty in accessing my colleagues for real-time collaboration
- 5 Too many apps/tools to monitor and switch between



2022 State of Software Engineers

- Introduction
- Key Findings
- Top Software Engineering Skills
- Top Software Engineering Roles
- Salary & Demand Trends by Market
- Demand by Company Size
- What Motivates Software Engineers
- What's Next?
- Methodology & Glossary

3. Hire for skills, not pedigree

The number of software engineers who acquire their skills through non-traditional avenues like bootcamps and simply teaching themselves (e.g. with some of the resources mentioned above) continues to increase steadily every year as more options become available.

We suspect we’ll see even more in the years to come as people graduate and join the tech industry following a career pivot during COVID-19 or through stimulus and reskilling funding.

So in this candidate-driven and competitive hiring market, it’s crucial to prioritize skill-based hiring and not overlook great and qualified candidates who took the path less traveled. [Take Elon Musk’s advice](#) and hire for what matters most: skills. It’s time to [retire pedigree biases](#) for good.

“There’s no doubt to me that more and more companies are willing to hire bootcamp graduates now than ever before.”
– Fahim ul Haq, CEO and co-founder of Educative.

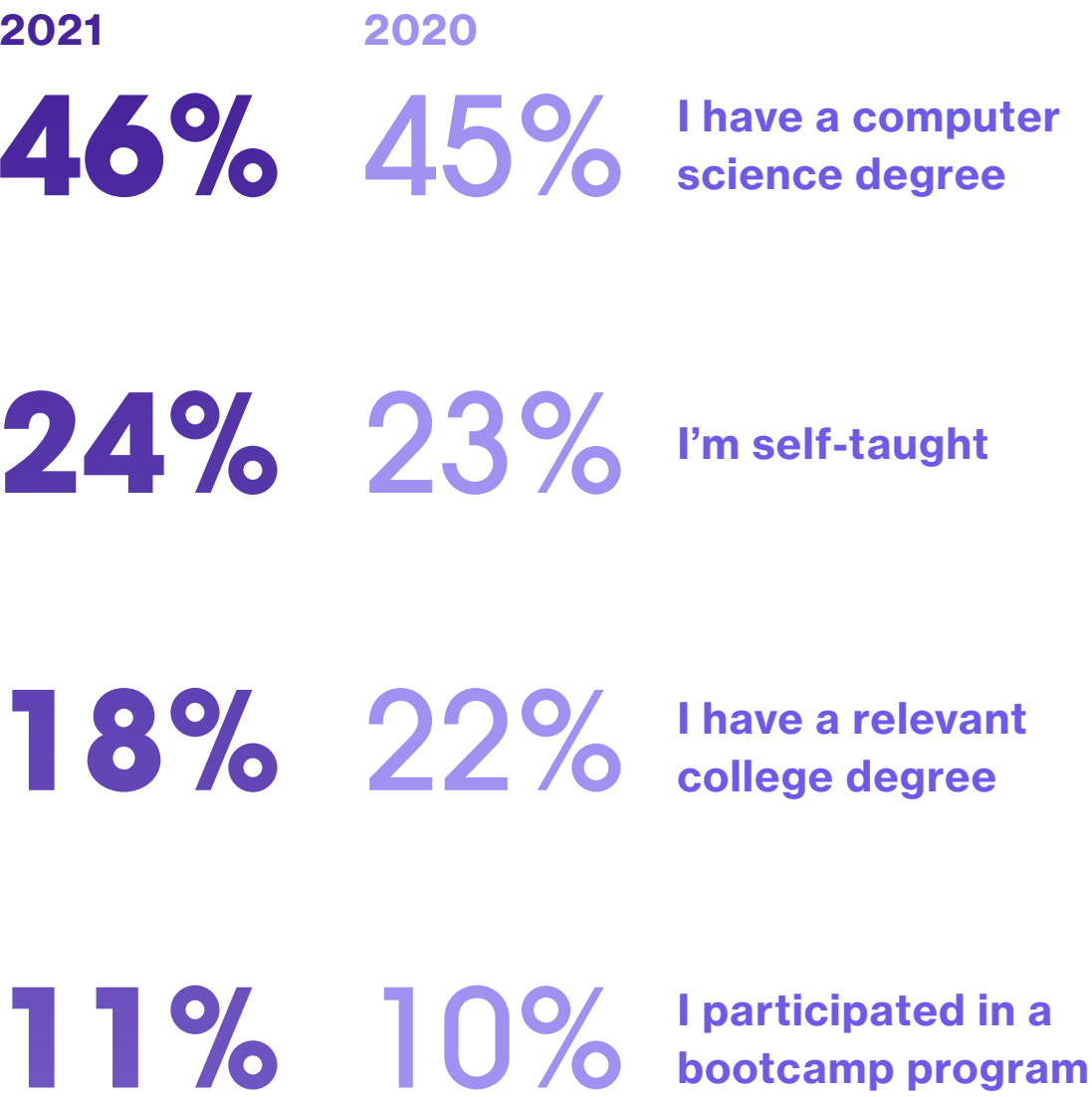
To identify the right candidate – no matter what their background is – ask yourself:
Who submitted stronger test assignments?
Which candidate had standout soft skills during the interview process? What skills do candidates need to excel on the job?
Proficiency in Python? JavaScript? SQL?
Get specific.

Avoid getting stuck on a candidate’s current role or title. If they’ve been an IC for a while and aspire to move into a team lead or manager role soon, an open (indefinitely) IC role may not be the right fit.

Conversely, a manager may be interested in stepping away from management for various personal and professional reasons. It’s not about checking boxes on a job description, it’s more about what’s best for both parties, today and down the road.

If you’re concerned about unconscious bias in the hiring process, AI tools can help. According to a [survey by Gartner](#), 17% of organizations use AI-based solutions for HR and another 30% will do so in 2022.

How did you learn to program?





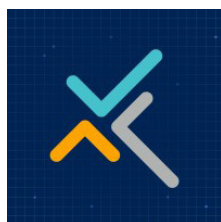
Employers – here are some ways to attract and retain software engineers

2022 State of Software Engineers

- Introduction
- Key Findings
- Top Software Engineering Skills
- Top Software Engineering Roles
- Salary & Demand Trends by Market
- Demand by Company Size
- What Motivates Software Engineers
- What's Next?
- Methodology & Glossary

Here are some tools to help eliminate (pedigree or other) bias and focus on skills in the hiring process:

Bias reduction tools



Criteria Corp provides unbiased pre-employment tests designed to prompt better hiring decisions.



Textio helps you craft more inclusive job descriptions and other hiring content to attract qualified candidates – regardless of their background or demographics.



Hired's Diversity Goals matches you with the best candidate based on their skills and years of experience rather than pedigree. Other features on the Hired platform help reduce salary bias as well.

Get a customized hiring solution for your business.
Request a free demo

Need a hiring solution right now?
Try Hired for Free



**2022 State
of Software
Engineers**

Introduction

Key Findings

Top Software
Engineering Skills

Top Software
Engineering Roles

Salary & Demand
Trends by Market

Demand by
Company Size

What Motivates
Software Engineers

What's Next?

Methodology &
Glossary

Methodology

This report is based on proprietary data gathered and analyzed by Hired’s data science teams. For the purpose of this report, Hired examined software engineering candidate interview requests and salary data from January 2020 through December 2021 inclusive. The data included reflects over 366,000 interactions between companies and software engineers on Hired during this time period.

A minimum of 50 interview requests for salary-related data was required for the data to be valid and included in the report and a minimum of 500 interview requests were required in a given market for it to be included.

Of note, for the sections on the demand for certain software engineering roles and skills, candidates can have multiple subroles as well as several skills associated with their candidate profile (e.g., a candidate with a primary role of software engineer can have both NLP engineer and machine learning engineer subroles on their profile). All salaries indicated reflect the salaries offered by an employer at the time of the interview request.

In addition to our proprietary data, we collected survey responses from more than 2,000 software engineers on the Hired marketplace to inform our understanding of software engineers’ working preferences.

Glossary

Tier 1 markets:

San Francisco Bay Area
New York
London

Tier 2 markets:

Boston
Los Angeles
Seattle
Toronto

Tier 3 markets:

Atlanta
Austin
Chicago
Dallas/Ft Worth
Denver
Minneapolis/St Paul
Other
Philadelphia
San Diego
Washington D.C.