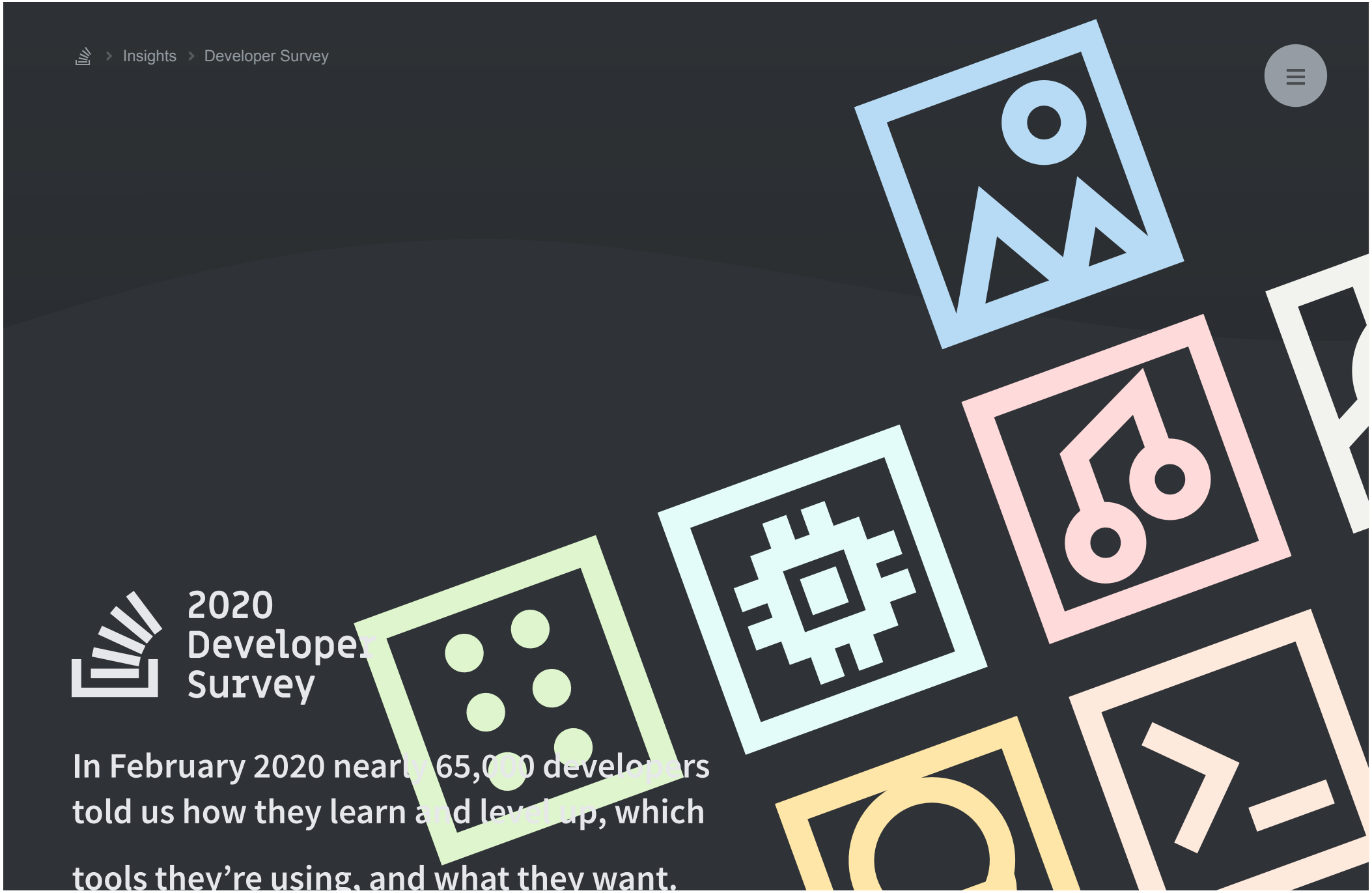


Read the overview →

Methodology →

65,000

This year, we focused on seeking diverse representation while asking for information ranging from technologies and behavior to questions that will help us improve the Stack Overflow community for everybody who codes.

For almost a decade, Stack Overflow's annual Developer Survey held the honor of being the largest survey of people who code around the world. This year, rather than aiming to be the biggest, we set out to make our survey more representative of the diversity of programmers worldwide. That said, the survey is still big. This year's survey was taken by nearly 65,000 people.

In our efforts to reach beyond the Stack Overflow network and seek representation from a greater diversity of coders, we advertised the survey less on our own channels than in previous years and sought ways to earn responses from those who may not frequent our sites. This approach included social promotion and outreach to underrepresented coders.

While we saw a lift in underrepresented groups, the difference in representation isn't as large as we had hoped. There was an uptick in some race and ethnicity groups, notably those of Hispanic or Latino/a/x and Black or of African descent, while other races and ethnicities remained similar or decreased. Similarly, we saw a slight increase in female-gendered respondents, while non-binary, genderqueer, or non-conforming remained the same. We acknowledge that we have a lot of work to do, and the data we obtain in our annual survey helps us make changes and set goals to improve the welcomeness and inclusiveness of our community.

★ Look for this icon, which highlights differences between developer demographics.

Working with the data at hand, we broke down our analysis by demographics where applicable. Look for the icon to see where demographics have an interesting impact. Also be sure to check out the topics that were new to this year's survey, like questions regarding DevOps and working overtime.

We also need to point out that this year's survey was taken in February, before COVID-19 was declared a pandemic by the World Health Organization and before the virus impacted every country in the world. Please keep the timing of the survey in mind when reviewing information such as job and salary data.

Finally, for those who want to dive into the results yourself, the anonymized results of the survey are available for download under the Open Database License (ODbL). We lo forward to seeing what you find—if you share on social media, be sure to tag us!

Key Results

Here are a few of the top takeaways from this year's results.

After a consistent rise over the last five years, Python fell from second last year to third this year on the list of most loved

technologies, being beat out by TypeScript. Rust held the top spot for most loved technology for the fifth year in a row.

Most loved languages →

Site reliability engineers and DevOps specialists remain among the highest paid individual contributor roles. 80% of respondents believe that DevOps is at least somewhat important, and 44% work at organizations with at least one dedicated DevOps employee.

Global salaries →

52% of respondents think “Hello, old friend” when they search for a coding solution online and find that the first result link is purple because they’ve already visited the link.

Already visited feeling →

When asked what steps to take when stuck on a coding problem, 90% of respondents indicated they visit Stack Overflow.

When you get stuck →

More than 75% of developers work overtime at least occasionally -- one to two days per quarter. 25% work overtime 1-2 days per week or more.

Overtime →

Australia respondents reported the highest average amount of coding experience at 16.9 years, followed by developers in United Kingdom and United States. In correlation, respondents from the United States and United Kingdom maintain the highest average age, at 33.7 and 33.1 years, respectively.

Experience by country →

0.3% of respondents had never visited Stack Overflow before taking the survey.

Visiting Stack Overflow →

More than 40% of respondents reported that they are members of other online developer communities beyond Stack Overflow.

Other developer communities →

More than 15% of people find Stack Overflow at least somewhat more welcome than last year. We still have work to do, but it's a start.

Engaging together →

We still see evidence that people of color are underrepresented among professional developers, but we do see some

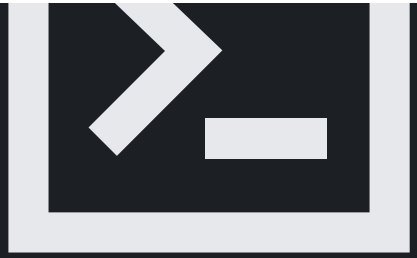
improvement when we include all developers, not just those who code professionally.

Race and ethnicity →

Developer Profile

What we know about the developers who are writing the script for the future

Geography →



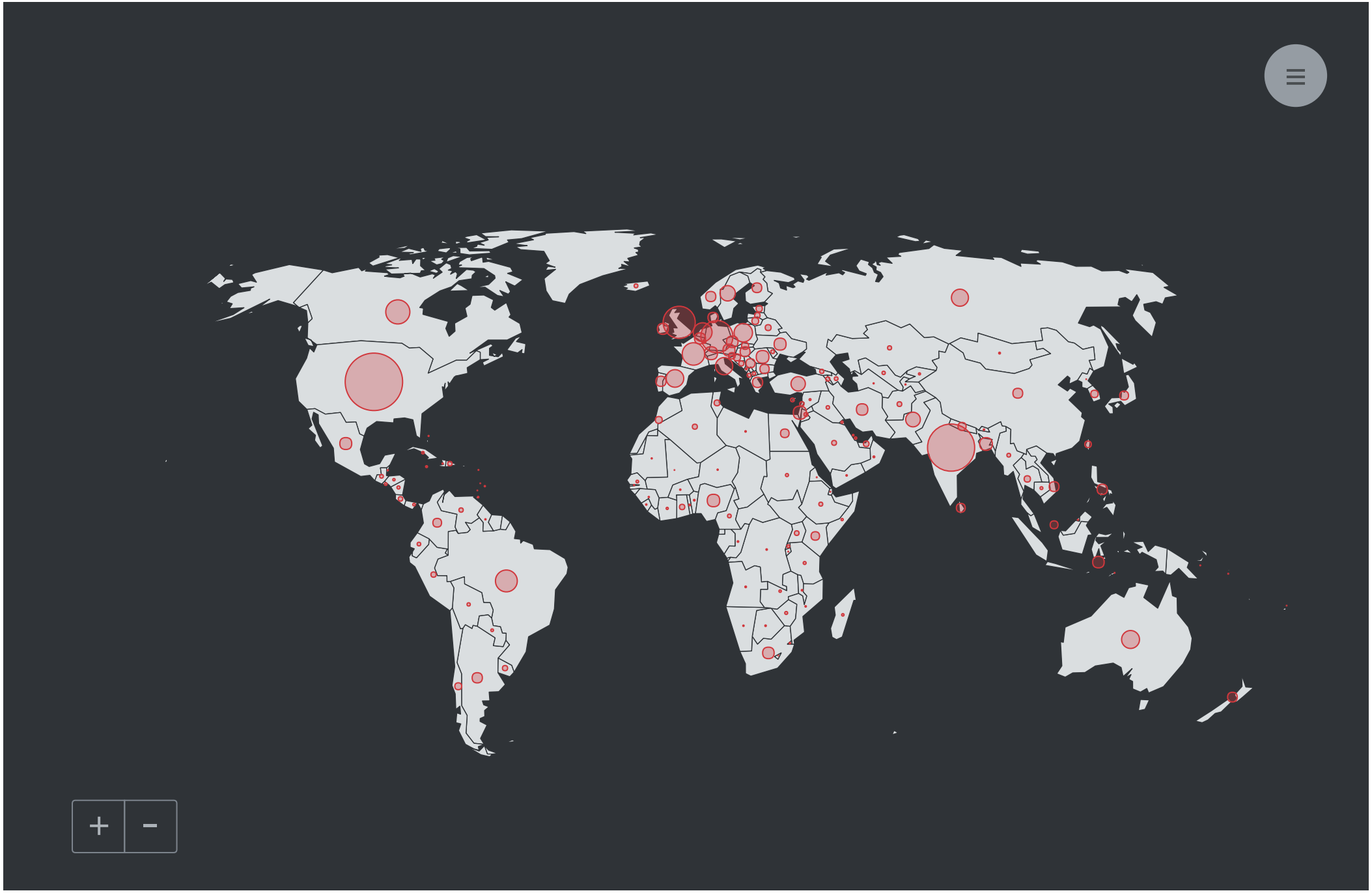
Developer Profile

Share

Geography

Each month, about 50 million people visit Stack Overflow to learn, share, and build their careers. Industry estimates suggest that 20-25 million of these people are professional developers and university-level students. The vast majority of our survey respondents this year said they are professional developers or who code sometimes as part of their work or students preparing for such a career.

See our Methodology section for details on how developers around the world accessed our survey.



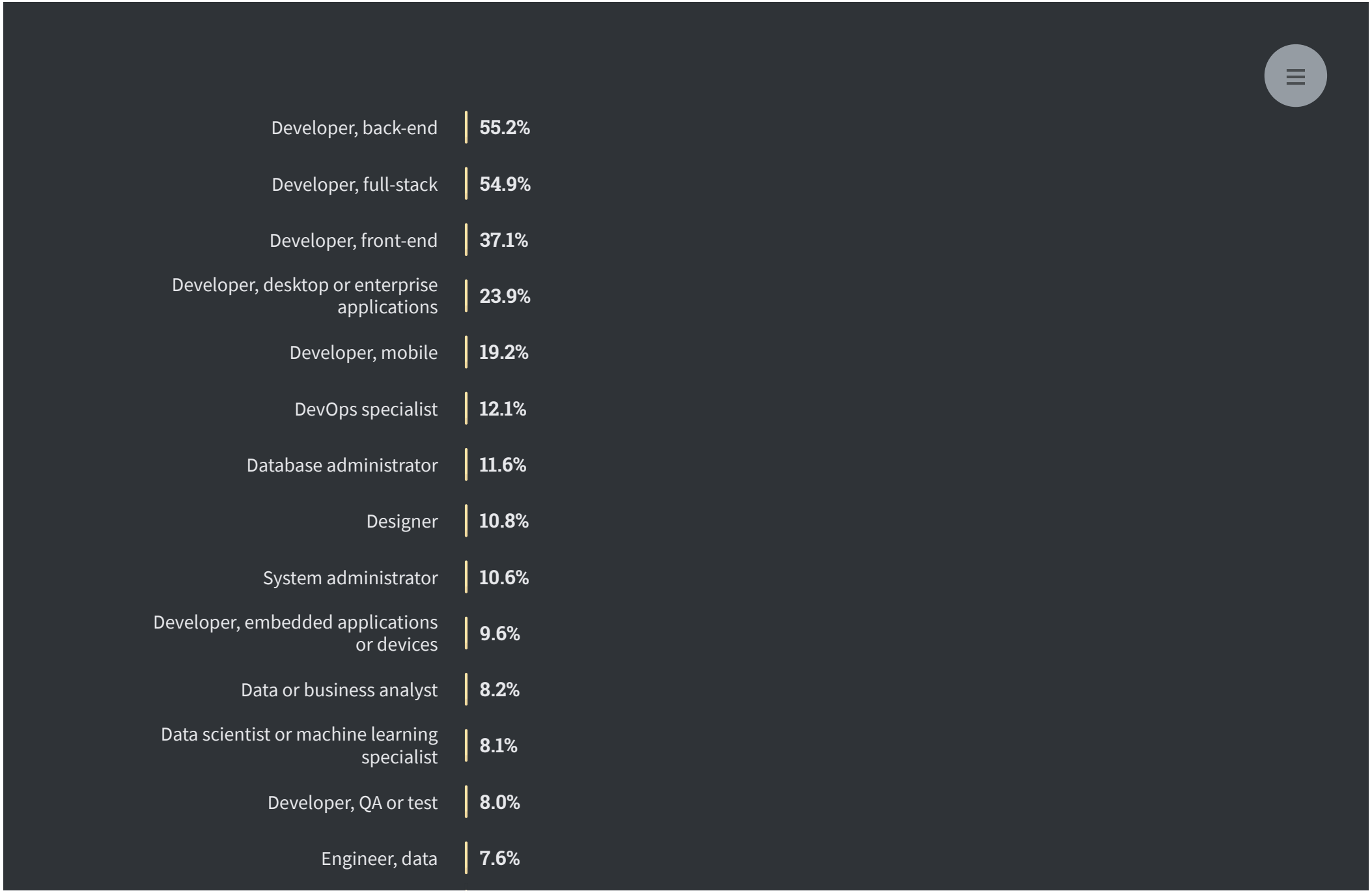
Developer Roles

Developer Type

About 55% of respondents identify as full-stack developers, and about 20% consider themselves mobile developers. The median number of developer type identifications per respondent this year is three, and the most common combinations include back-end, front-end, and full-stack developer. Pairs that are highly correlated include database administrator and system administrator, DevOps specialist and site reliability engineer, academic researcher and scientist, and designer and front-end developer.

Survey weighting is an approach used to analyze survey data when the survey sample doesn't match the underlying population well. For example, in our survey this year, 12% US respondents identify as women, but data from the US Bureau of Labor Statistics estimates that women's participation in the software developer workforce is about twice that, more like 20%. We can use survey weighting to adjust for the mismatch between our survey sample and the population of developers. We know that there is a difference in developer type representation by gender, so let's compare the overall proportions in our raw results for the United States with weighted proportions, assuming that we undersampled gender minorities at the rate indicated by the BLS report. When we use weighting, we see small increases in the representation of developer roles that have the most representation from women, like Data Scientists and Academic Researchers, and decreases in others with low representation from women, like DevOps.

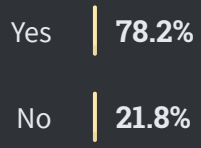
We know there are more ways in which our survey sample doesn't match the underlying population of developers than only gender (including frequency of use of Stack Overflow), and the United States is not the only country for which we expect such a mismatch. The reason we're using this specific example of weighting here is that it is one where we know we have systemic sampling issues and we have an estimate about the expected population proportion. We can demonstrate the effect of our survey sample on our results, both in direction and magnitude.



Academic researcher	**7.2%**
Educator	**5.9%**
Developer, game or graphics	**5.6%**
Engineering manager	**5.5%**
Product manager	**5.1%**
Scientist	**4.2%**
Engineer, site reliability	**3.9%**
Senior executive/VP	**2.7%**
Marketing or sales professional	**1.3%**

Coding as a Hobby

Many developers work on code outside of work. About 78% of our respondents say that they code as a hobby. Other responsibilities outside of software can reduce developers' engagement in coding as a hobby; developers who say they have children or other caretaking responsibilities are less likely to code as a hobby. Respondents who are women are also less likely to say they code as a hobby.



Developer Profile

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Experience

Years Since Learning to Code

There is a wide range of experience among developers who visit Stack Overflow, from seasoned developers who learned to code more than 30 years ago (approximately 15%), to a sizable percentage of developers (17%) who learned how to code less than five years ago. Of the professional developers on Stack Overflow, approximately 40% learned to code less than 10 years ago. See more on how these experience levels vary by gender.

20 to 24 years	**8.5%**
25 to 29 years	**4.4%**
30 to 34 years	**3.5%**
35 to 39 years	**2.7%**
40 to 44 years	**1.6%**
45 to 49 years	**0.4%**
50 years or more	**0.3%**

Years Coding Professionally

65% of respondents have been coding professionally for less than 10 years.

Less than 5 years	**39.6%**

5 to 9 years	**26.8%**
10 to 14 years	**14.7%**
15 to 19 years	**7.6%**
20 to 24 years	**6.0%**
25 to 29 years	**2.4%**
30 to 34 years	**1.6%**
35 to 39 years	**0.8%**
40 to 44 years	**0.4%**
45 to 49 years	**0.1%**
50 years or more	**0.1%**

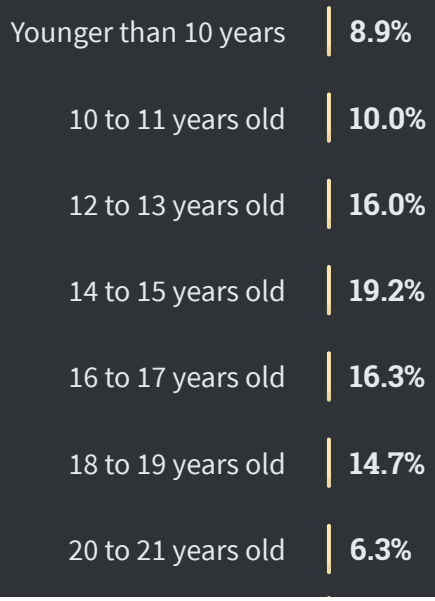
Years of Professional Coding Experience by Developer Type

Technical executives and engineering managers tend to have the most professional coding experience. Among the individual contributor roles, the most experienced developers tend to be system administrators, database administrators, and developers who create desktop and embedded applications. On the other end of the spectrum, web developers, academic researchers, and data scientists tend to have fewer years of experience. Part of this could be explained by the proliferation of coding bootcamps that teach web development and the amount of data scientists entering the field from academia.

	10.5
Educator	10.5
Data or business analyst	10.0
Scientist	9.9
Designer	9.8
Developer, game or graphics	9.2
Engineer, data	9.1
Developer, QA or test	8.9
Developer, back-end	8.9
Developer, full-stack	8.7
Developer, mobile	8.4
Data scientist or machine learning specialist	8.2
Developer, front-end	8.2
Academic researcher	8.1

Writing That First Line of Code

Of all of the respondents, over 54% wrote their first line of code, whether it was a web page or a hello world program, by the age of 16. People who wrote their first line of code in their 20s accounted for 13% of the respondents. When looking at the average age by country, respondents from countries such as Brazil and India tend to start writing code a full two years later compared to developers in countries such as Poland and Germany, who on average start coding by the age of 15.



22 to 23 years old	**3.0%**
24 to 25 years old	**2.1%**
26 to 27 years old	**1.0%**
28 to 29 years old	**0.7%**
30 years old or older	**1.7%**

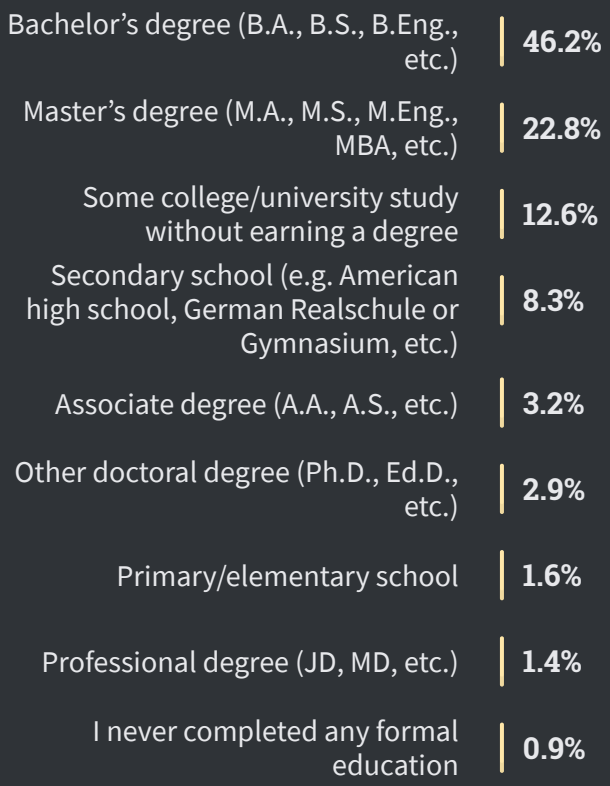
Developer Profile

Share

Education

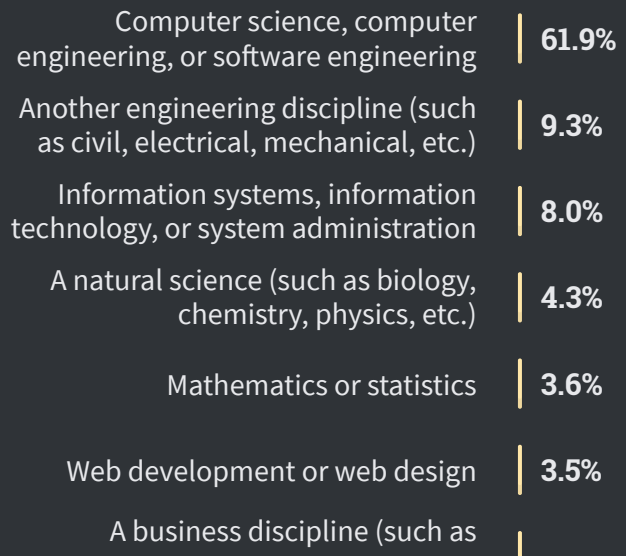
Educational Attainment

Approximately 75% of respondents worldwide completed at least the equivalent of a bachelor's degree or higher. This is consistent with what we've seen in previous years.



Undergraduate Major

There are a variety of academic paths to becoming a professional software developer. Of the respondents that write code professionally and studied at the university level, over 62% have a degree in computer science, computer engineering, or software engineering and just under 10% have a degree in another engineering field. Interestingly enough, almost 10% of the respondents have a business related degree or a degree in a humanities, social science, or fine arts field of study.



accounting, finance, marketing, etc.)	2.7%
A humanities discipline (such as literature, history, philosophy, etc.)	2.0%
A social science (such as anthropology, psychology, political science, etc.)	1.8%
Fine arts or performing arts (such as graphic design, music, studio art, etc.)	1.4%
I never declared a major	0.9%
A health science (such as nursing, pharmacy, radiology, etc.)	0.5%

Formal Education Importance

Almost 85% of the respondents that are professional developers feel that formal education is at least somewhat important, which is contrary to the popular idiom that you don't need formal education to become a developer. However, almost 16% believe that it is not at all important or necessary.

Critically important	**9.8%**
Very important	**24.5%**
Fairly important	**26.2%**
Somewhat important	**23.5%**
Not at all important/not necessary	**16.1%**

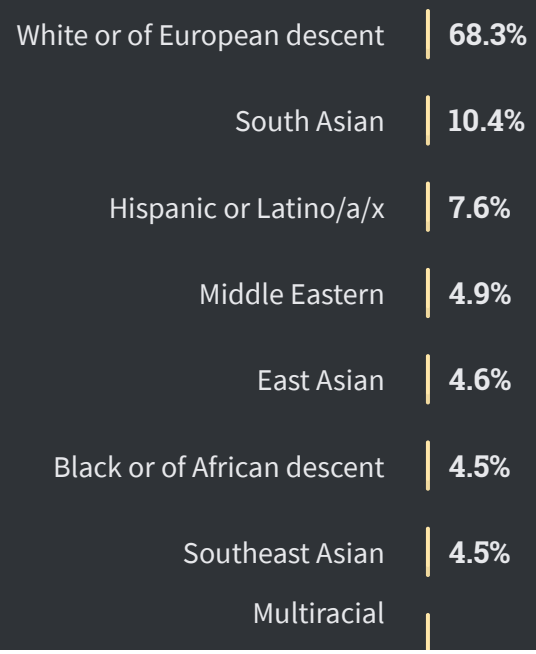
Developer Profile

Share

Demographics

Race and Ethnicity

Consistent with the data from last year, we still see evidence that people of color are underrepresented among professional developers. However, we see some improvement when we look at all respondents—not just the ones who code professionally. Despite a gradual change year over year, there is still much work to do to increase participation rates.

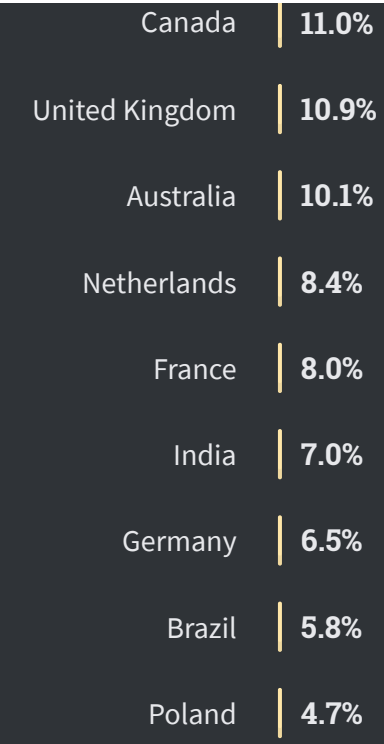


	1.7%
Biracial	1.2%
Indigenous (such as Native American, Pacific Islander, or Indigenous Australian)	0.8%

Gender

When looking at gender identity by country, we see various participation rates of professional developers who are women. Consistent with last year's survey, women developers account for almost 12% of developers in the US. In countries such as Germany, Brazil, and Poland, the participation rate is about half of that, which goes to show there is still much work to do to reach appropriate gender representation in the field. Among the respondents that code professionally, almost 92% are men.

United States	11.8%



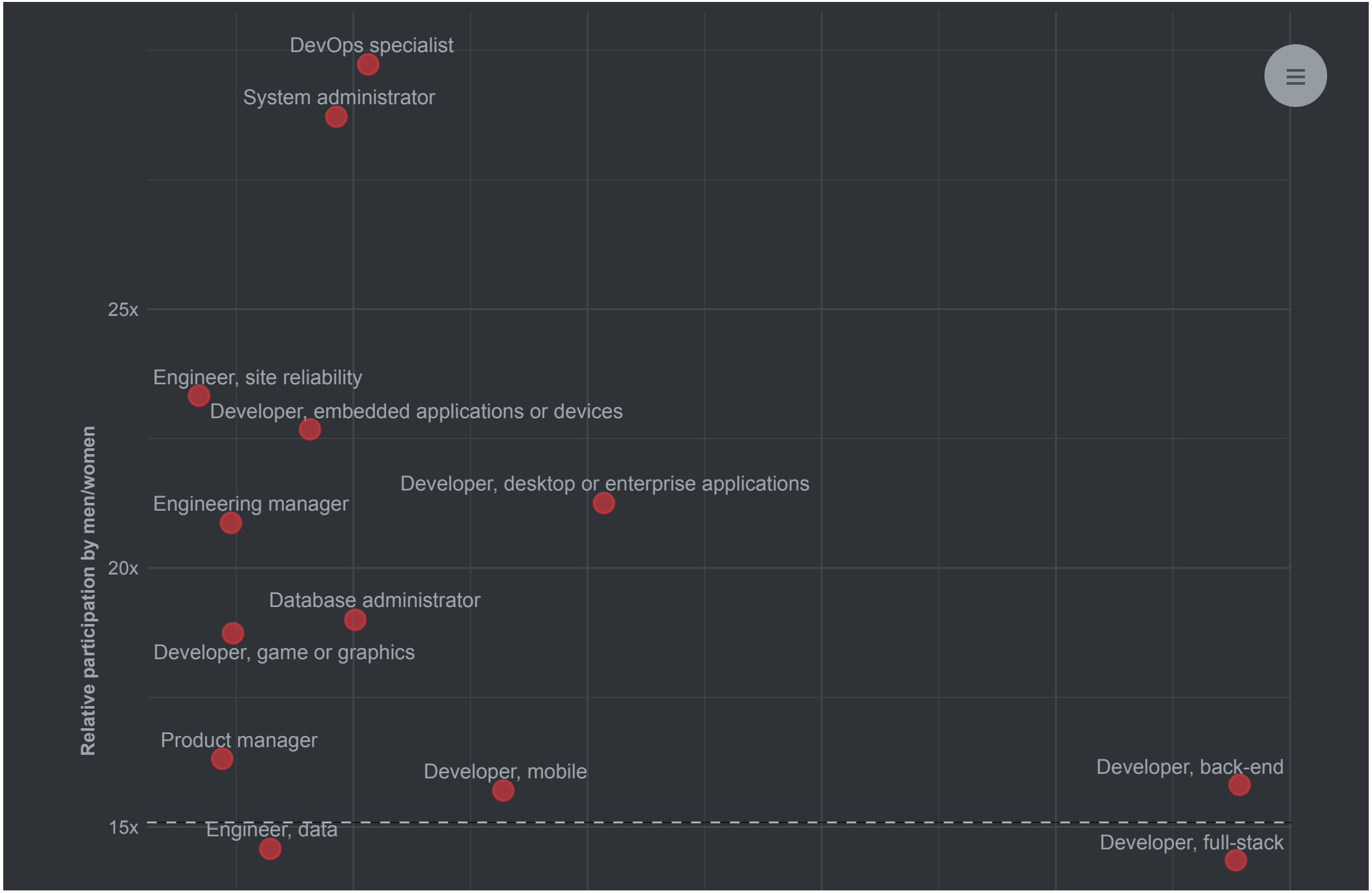
Transgender

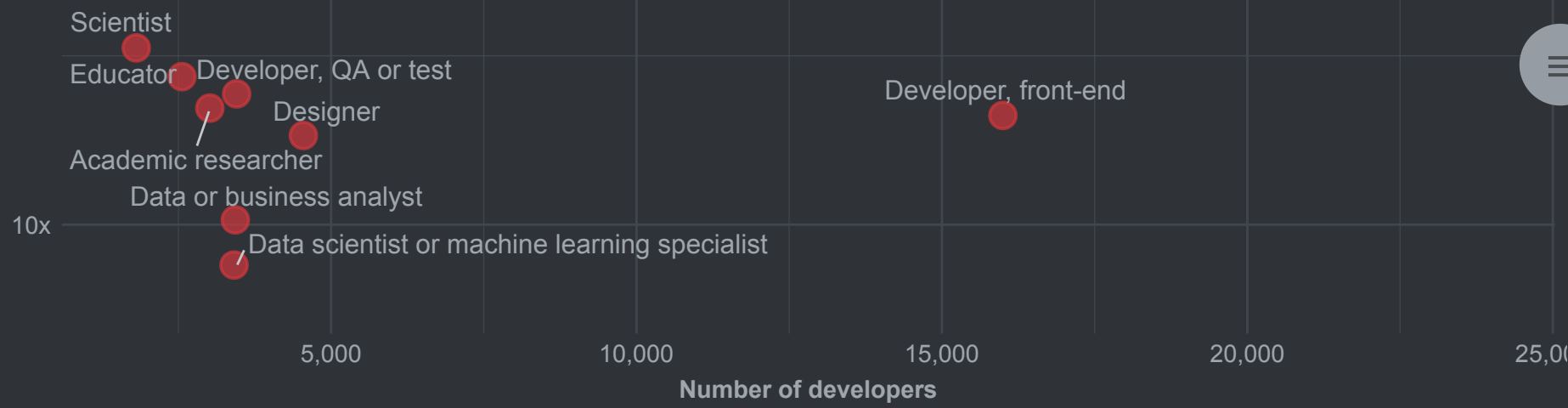
Approximately 1% of this year's respondents that write code professionally are transgender.

No	**99.0%**
Yes	**1.0%**

Developer Role and Gender

We see varying representation from men and women in different developer roles on our survey. All categories have dramatically more developers who identify as men than women, but the ratio of men to women varies. Developer types above the line have respondents that are more likely than average to be men, and those below the dotted line have respondents who are more likely than average to be women. Developers who are data scientists or academic researchers are about 10 times more likely to be men than women, while developers who are system admins or DevOps specialists are 25-30 times more likely to be men than women. Women have the highest representation as front-end developers, designers, data scientists, data analysts, QA or test developers, scientists, and educators.





The dashed line shows the average ratio of men's to women's participation

Experience and Gender

When we break down differences in years since learning to code by gender, we notice some retention problems. We see a big drop off at the 10-14 year mark when compared to men, though we've seen some improvement from last year's survey. This is consistent with other research that women leave tech jobs at higher rates than men. If we truly want to make a difference and see gender parity in the industry that is reflective of society, retention is key. It is important to not only hire people from diverse backgrounds, but to also create an environment where they feel included and can thrive.

40 to 44 years	**1.7%**
45 to 49 years	**0.4%**
50 years or more	**0.3%**

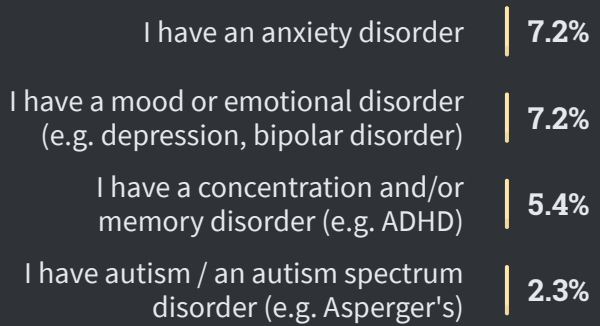
Sexual Orientation

Participants' responses regarding their sexual orientation are consistent with previous years.

Straight / Heterosexual	**92.1%**
Bisexual	**5.7%**
Gay or Lesbian	**2.7%**
Queer	**1.5%**

Disability Status

Among the respondents, almost 15% said they have some type of anxiety, mood, or emotional disorder. When looking at differences in physical ability, around 2% of respondents are differently-abled, such as being blind / having difficulty seeing or being deaf / having difficulty hearing. This underscores the importance of creating accessible software and creating companies that accomodate differently-abled people.



Age

Of the respondents that are professional developers, 70% are under 35 and about 5% are 50 years old or older.

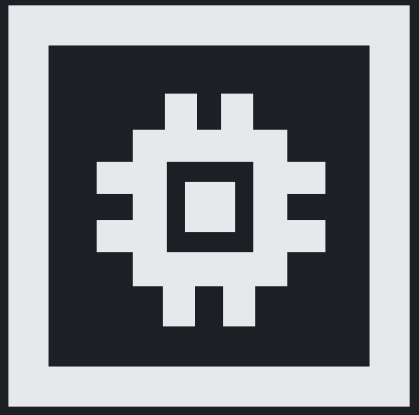
Age and Experience by Country

When we break down the age of the survey respondents by country, we see that developers in North America and Western Europe tend to skew older and have more coding experience compared to other regions.

Technology

The tools of the trade

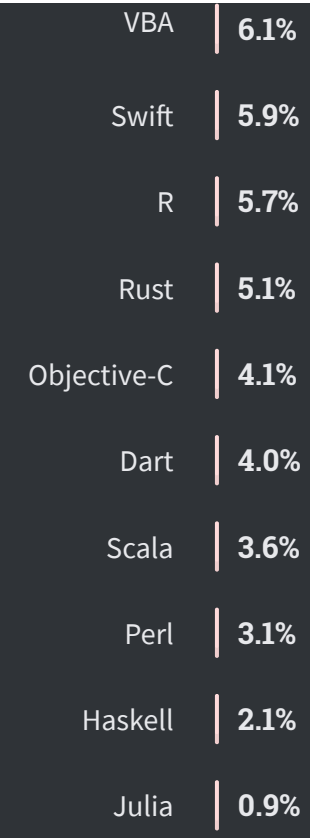
Most Popular Technologies →
Most Loved, Dreaded, and Wanted →
Development Environments and Tools →
Top Paying Technologies →
Correlated Technologies →
Learning & Problem Solving →



Most Popular Technologies

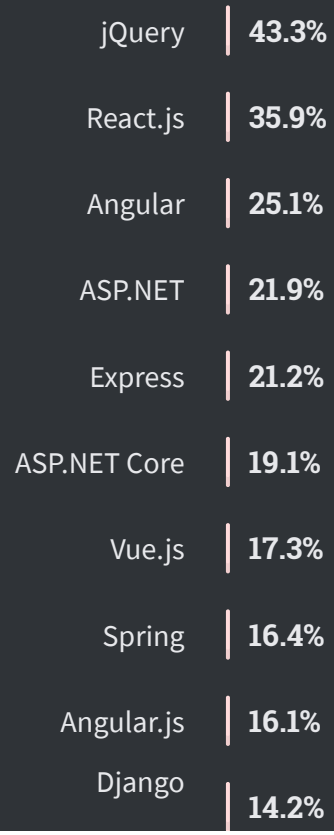
Programming, Scripting, and Markup Languages

Unsurprisingly, for the eighth year in a row, JavaScript has maintained it's stronghold as the most commonly used programming language. Going further down the list, we also see moderate gains for TypeScript, edging out C in terms of popularity. Additionally, Ruby, once in the top 10 of this list as recently as 2017, has declined, being surpassed by newer, trendier technologies such as Go and Kotlin.



Web Frameworks

When focusing purely on web frameworks, we see that jQuery is still king, but is slowly losing ground to React.js and Angular year over year. We do see some consolidation, as more than 35% of respondents use jQuery, React, a version of Angular (combining Angular, which represents Angular 2+, and Angular.js) or a flavor of ASP.NET (ASP.NET or ASP.NET Core).



Flask	**14.2%**
Laravel	**11.1%**
Ruby on Rails	**7.0%**
Symfony	**4.4%**
Gatsby	**4.0%**
Drupal	**3.2%**

Other Frameworks, Libraries, and Tools

Similar to last year, we asked about many of the other miscellaneous technologies that developers are using. For the second year in a row, Node.js takes the top spot, as it is used by half of the respondents. We also see growth across the board in the popularity of data analysis and machine learning technologies such as Pandas, TensorFlow, and Torch/PyTorch.

Hadoop	**4.5%**
Unreal Engine	**3.3%**
Puppet	**2.3%**
Chef	**1.8%**

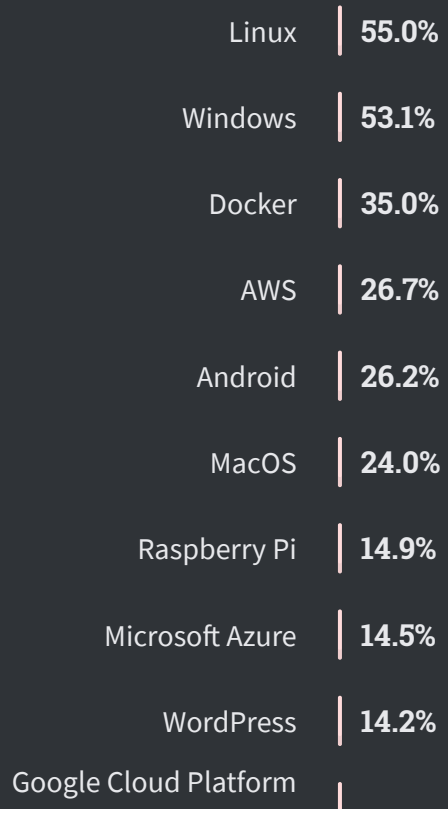
Databases

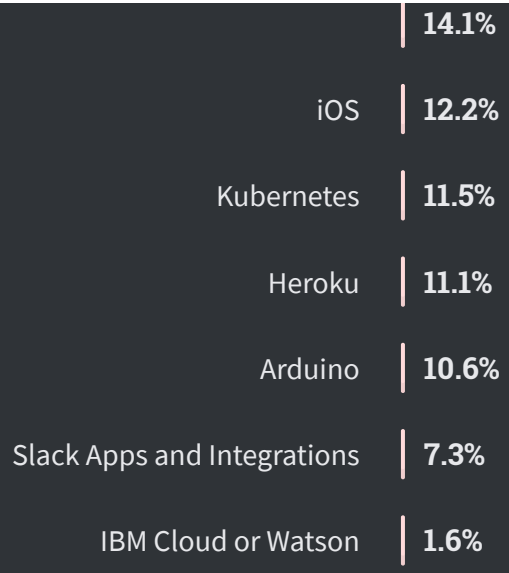
When looking at database technologies, the results are mostly consistent with what we observed last year. MySQL has maintained the top spot, followed by PostgreSQL and Microsoft SQL Server. However, we see some slight growth in the popularity of Firebase, which edged out Elasticsearch this year.

MySQL	**55.6%**
PostgreSQL	**36.1%**

Platforms

Linux and Windows maintain the top spots for most popular platforms, with over half of the respondents reporting that they have done development work with them this year. We also see some year over year growth in the popularity of container technologies such as Docker and Kubernetes.





Technology

Share

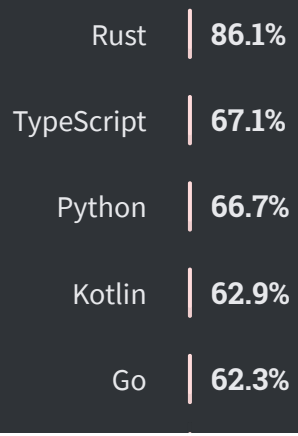
Most Loved, Dreaded, and Wanted

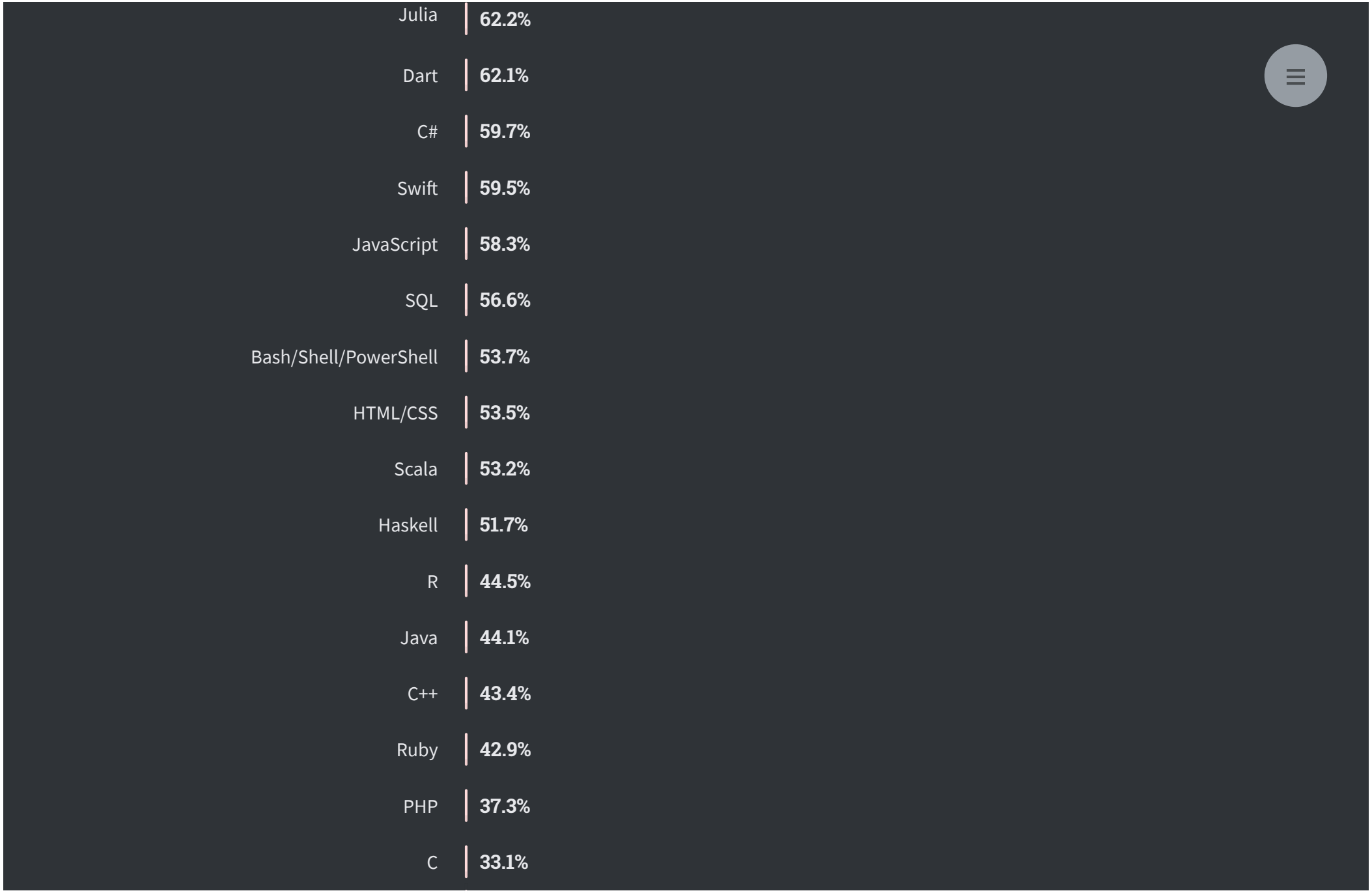
Most Loved, Dreaded, and Wanted Languages

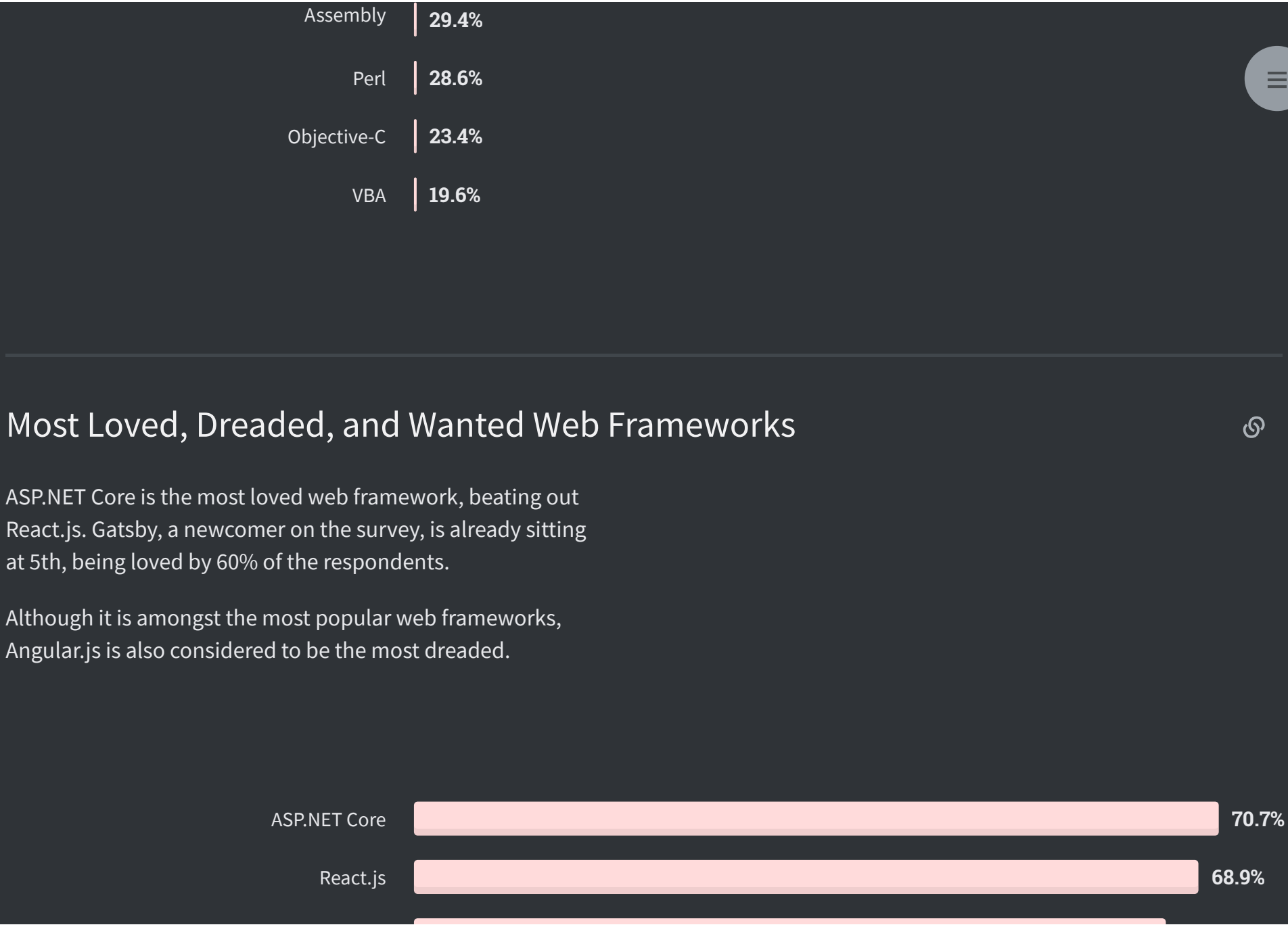
For five years running, Rust has taken the top spot as the most loved programming language. TypeScript is second surpassing Python compared to last year. We also see big gains in Go, moving up to 5th from 10th last year.

VBA, Objective C, and Perl hold the top spots for the most dreaded languages—languages that had a high percentage of developers who are currently using them, but have no interest in continuing to do so.

If we look at technologies that developers report that they do not use but want to learn, Python takes the top spot for the fourth year in a row. We also see some modest gains in the interest in learning Rust.



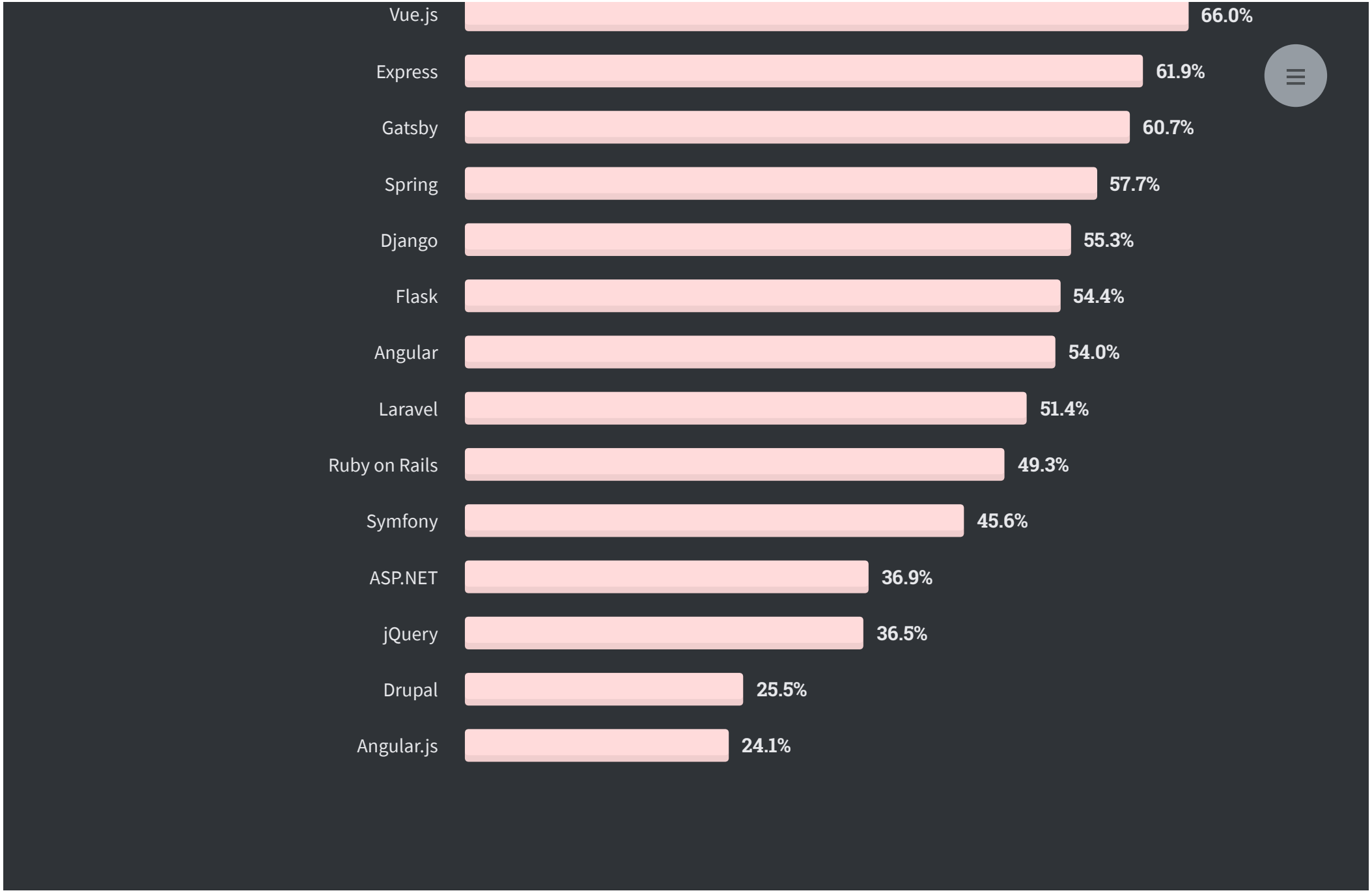




Most Loved, Dreaded, and Wanted Web Frameworks

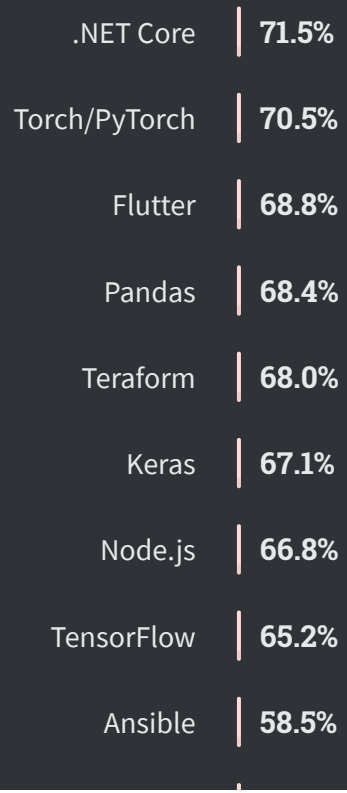
ASP.NET Core is the most loved web framework, beating out React.js. Gatsby, a newcomer on the survey, is already sitting at 5th, being loved by 60% of the respondents.

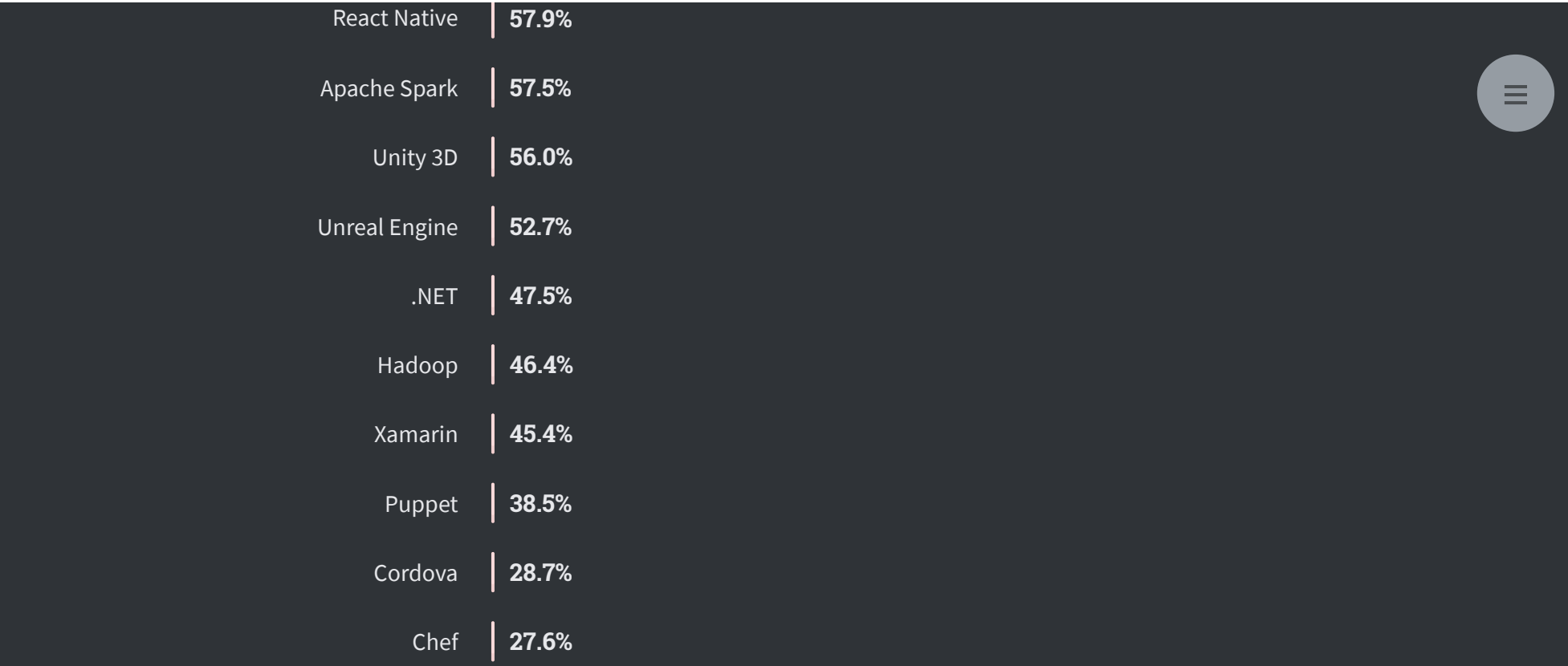
Although it is amongst the most popular web frameworks, Angular.js is also considered to be the most dreaded.



Most Loved, Dreaded, and Wanted Other Frameworks, Libraries, and Tools

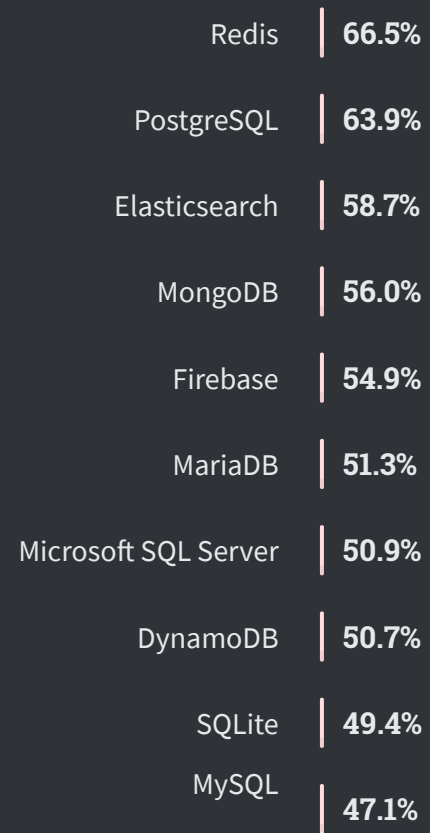
.NET Core and Torch/PyTorch remain the most loved of the other remaining frameworks, libraries and tools. DevOps tools Chef and Puppet are among the most dreaded technologies.





Most Loved, Dreaded, and Wanted Databases

Taking a look at database technologies, Redis remains the most loved, followed by PostgreSQL and Elasticsearch. Anecdotally, Stack Overflow has been using both Redis and Elasticsearch in our tech stack for years, since the early days of the company. IBM DB2 ranked as the most dreaded database and MongoDB remains the database technology that developers want to learn the most.

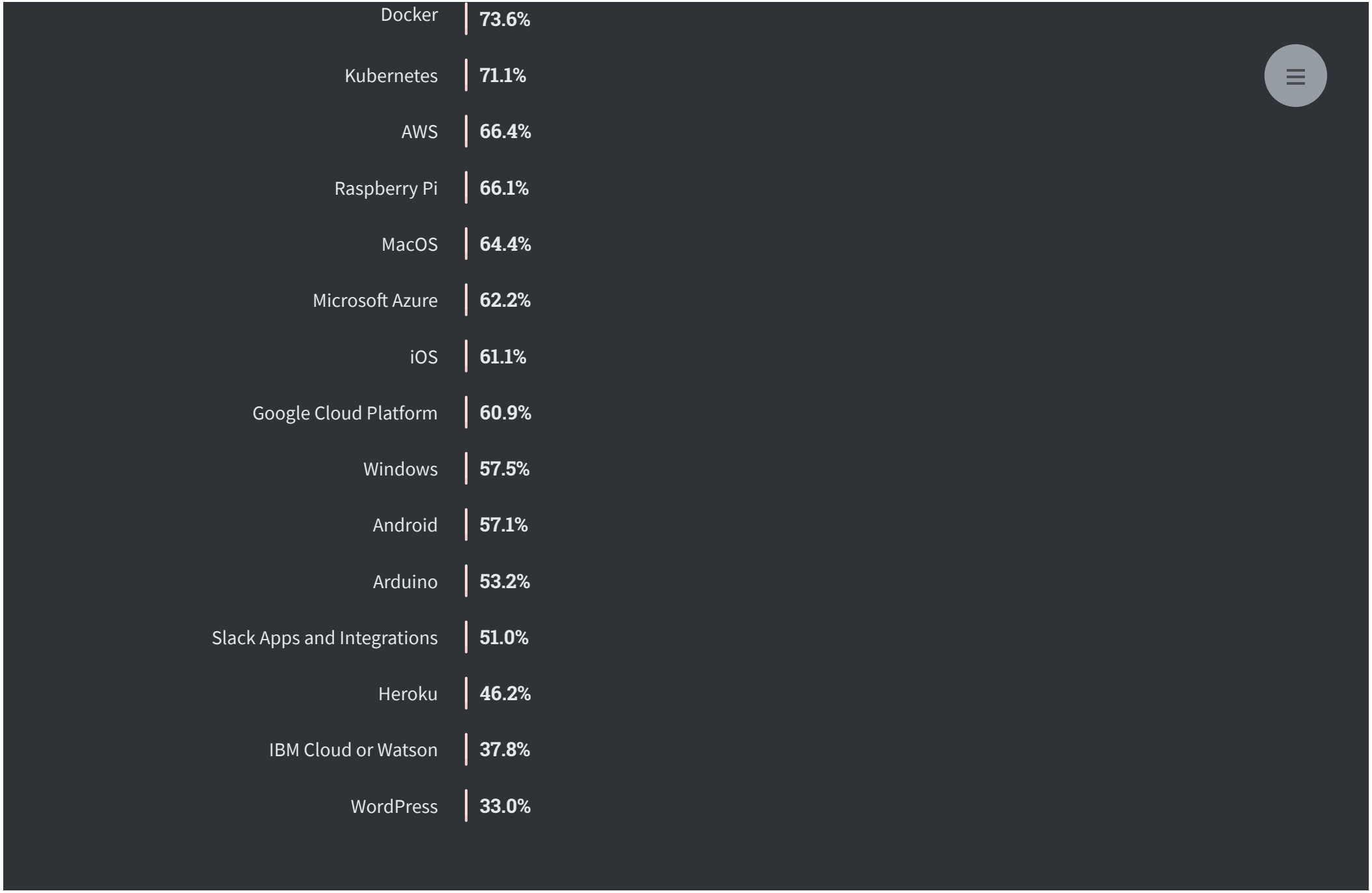


Cassandra	**43.6%**
Couchbase	**33.2%**
Oracle	**33.2%**
IBM DB2	**23.3%**

Most Loved, Dreaded, and Wanted Platforms

Linux remains the most loved platform. Container technologies Docker and Kubernetes rank as the second and third most loved. They are also among the platforms that developers most want to learn, which demonstrates how beloved they are. Wordpress is still the most dreaded, but Slack Apps and integrations, newly added to the list this year, rank high at the number four spot.

Linux	**76.9%**



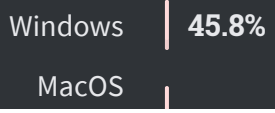
Technology

Share

Development Environments and Tools

Developers' Primary Operating Systems

Almost half of the respondents use Windows as their primary operating system. The rest were almost evenly split between MacOS and a flavor of Linux.



	27.5%
Linux-based	26.6%
BSD	0.1%

Collaboration tools

Of the professional developers who responded to the survey, almost 82% use GitHub as a collaborative tool and more than half use Slack.

GitHub	82.8%
Slack	53.0%
Jira	47.7%
Google Suite (Docs, Meet, etc)	41.5%
Gitlab	37.0%

Confluence	**32.4%**
Trello	**29.6%**
Microsoft Teams	**25.6%**
Microsoft Azure	**14.8%**
Stack Overflow for Teams	**5.8%**
Facebook Workplace	**3.0%**

Researching tools

When researching new tools, over three-fourths of respondents like to try the tool for themselves via a free trial. Social proof is also important, as over 60% of developers ask other developers they know about it or visit developer communities such as Stack Overflow.

Start a free trial	77.1%
Ask developers I know/work with	67.9%
Visit developer communities like Stack Overflow	64.0%
Read ratings or reviews on third party sites like G2Crowd	29.9%
Research companies that have advertised on sites I visit	12.3%
Research companies that have emailed me	5.5%

Purchase Influence

With regards to technology purchases within their organization, around 57% of respondents have some or a great deal of influence.

I have a great deal of influence	17.8%
I have some influence	39.1%

I have little or no influence | **43.2%**

Technology

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Top Paying Technologies

What Languages Are Associated with the Highest Salaries Worldwide?

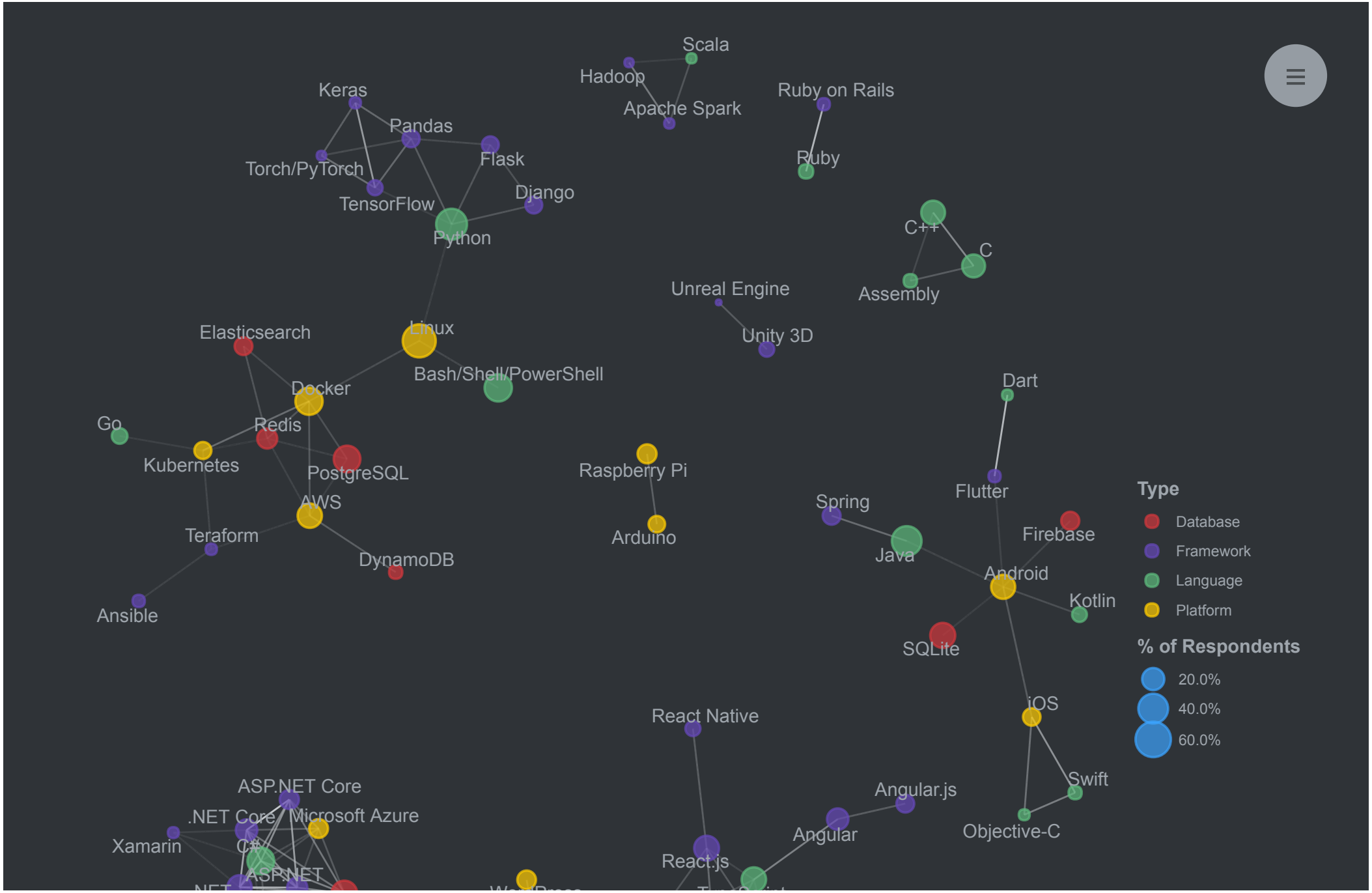
Globally, respondents who use Perl, Scala, and Go tend to have the highest salaries, with a median salary around $75k. Interestingly, Perl is amongst the top most dreaded languages, so it's possible that this high salary is to compensate for the dearth of developers who want to use that technology. When looking only at the US, Scala developers tend to have the highest salaries.

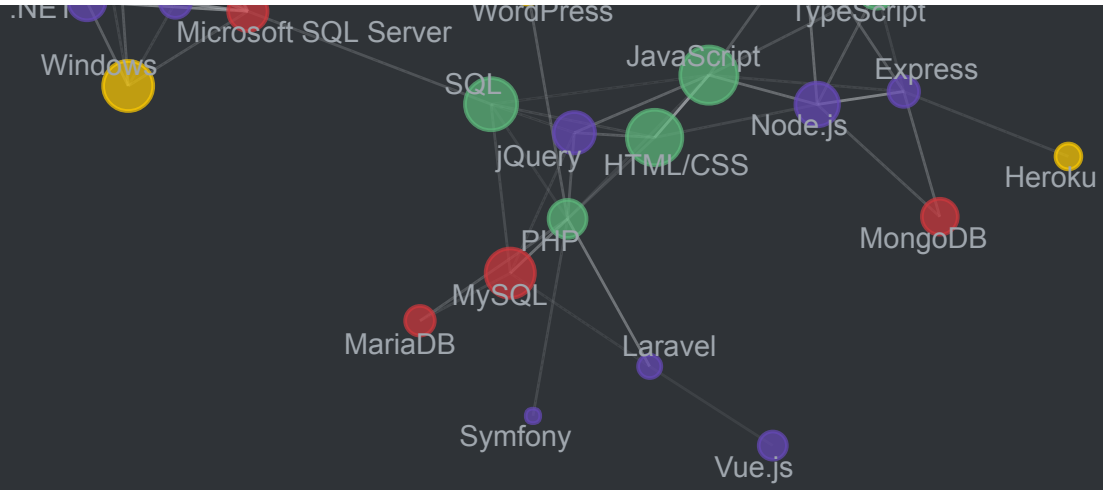
Swift	**$58k**
C#	**$57k**
R	**$57k**
TypeScript	**$57k**
Kotlin	**$54k**
SQL	**$54k**
Assembly	**$53k**
C++	**$53k**
JavaScript	**$53k**
HTML/CSS	**$52k**
VBA	**$51k**
C	**$50k**
Java	**$50k**
PHP	**$39k**
Dart	**$37k**

Correlated Technologies

How Technologies Are Connected

Technologies cluster together into related ecosystems that tend to be used by the same developers. This network graph demonstrates this by showing which technologies are most highly correlated with each other. Similar to last year, we see a large cluster of web development technologies connected via SQL to one for Microsoft technologies, as well as a cluster of operations technologies connected to the Python ecosystem network through Linux.





Technology

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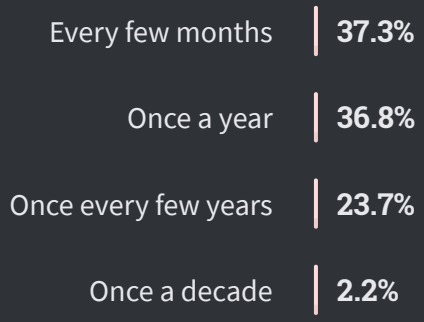
Learning & Problem Solving

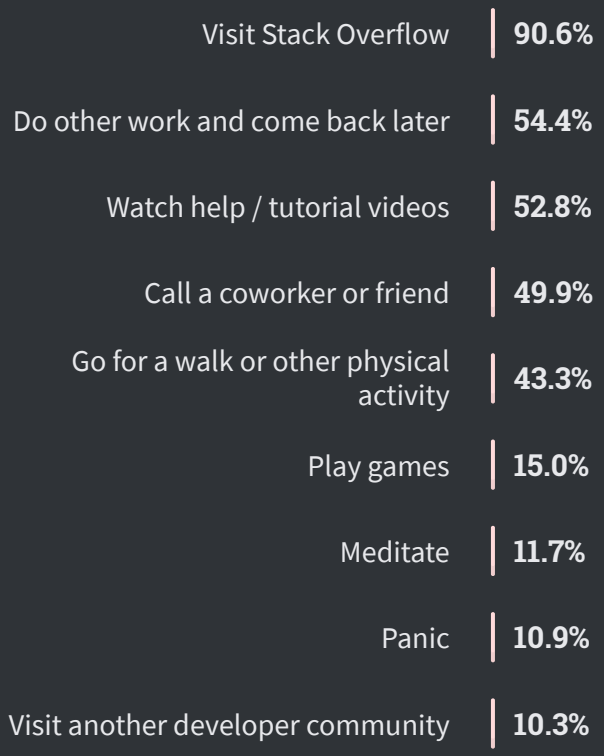
Learning new tech frequency

We asked developers how frequently they learn a new language or framework. Around 75% of respondents noted that they learn a new technology at least every few months or once a year. This demonstrates how quickly innovations happen and developers are constantly learning to keep their skills fresh.



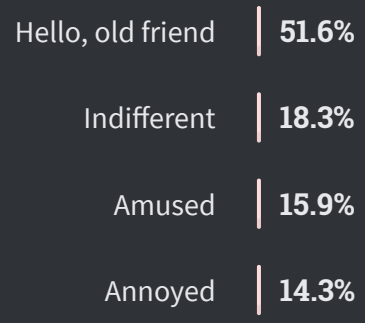
What do you do when you get stuck

We asked respondents what they do when they get stuck on a problem. Almost 90% reported that they visit Stack Overflow. This is an encouraging sign that we're succeeding in our mission to help people get access to the knowledge they need to get things done.



Already Visited Feeling

For the first time, we asked developers how they feel when they search for a coding solution online and the first result link is purple because they already visited the link. About half of respondents chose 'Hello, old friend', which suggests it may be a frequent occurrence for certain tasks. Perhaps this is why over 2.1 million people visited the 'How do I exit the Vim editor?' question on Stack Overflow.



Work

Reminder: this year's survey was taken in February, before COVID-19 was declared a pandemic by the World Health Organization and before the virus impacted every country in the world. Please keep the timing of the survey in mind when reviewing information such as job and salary data.

Employment →

Company Information →

Career Values →

Looking for a Job →

Job Priorities →

Salary →

Work

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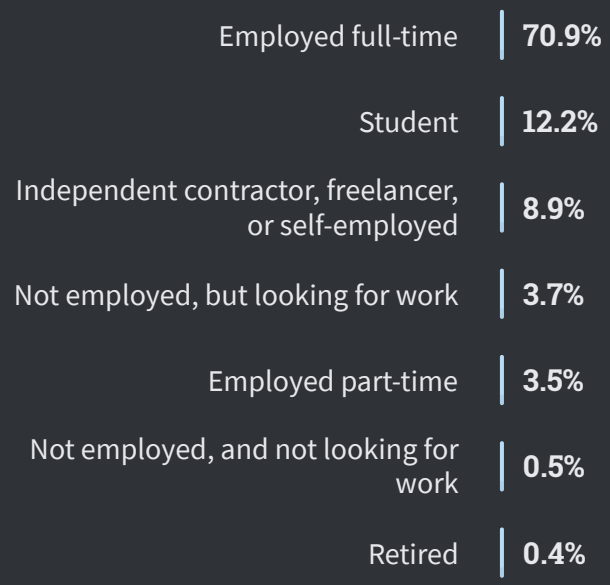
Employment

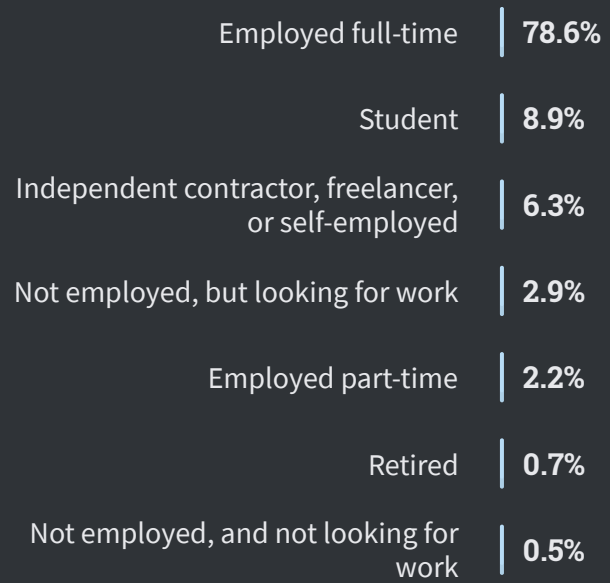
Employment Status

Over 92% of professional developers are employed at least part-time. Roughly 12% of all respondents say they are students.



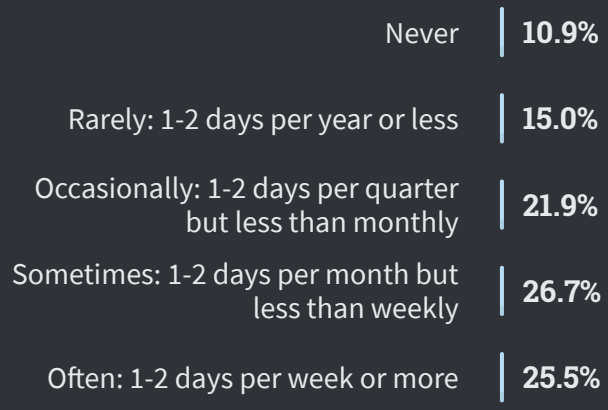
Employment Status by Geography

India has an noticeably higher proportion of students compared to other countries that are well-represented in the survey data. In all of these locations, more than 70% of developers are employed full-time.



Overtime

For the first time this year, we asked respondents how often they work overtime or beyond the formal time expectation of their job. Over 75% of developers work overtime at least occasionally, defined as one to two days per quarter.



Work

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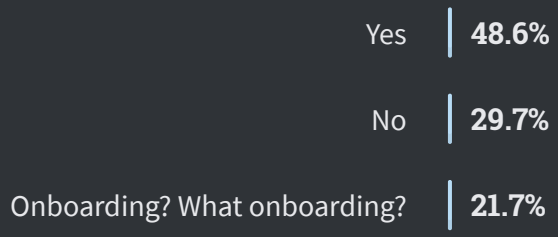
Company Information

Company Size

Just me - I am a freelancer, sole proprietor, etc.	**4.9%**
2 to 9 employees	**9.9%**
10 to 19 employees	**9.3%**
20 to 99 employees	**21.6%**
100 to 499 employees	**18.7%**
500 to 999 employees	**6.5%**
1,000 to 4,999 employees	**11.0%**
5,000 to 9,999 employees	**4.1%**
10,000 or more employees	**13.9%**

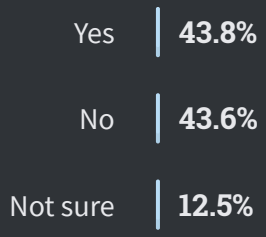
Onboarding

Almost half of the respondents reported that their company has a good onboarding process. About one fifth had no onboarding process at all.



Presence of DevOps Personnel

We asked survey takers if their organizations have dedicated DevOps personnel. An equal amount of respondents reported that their company had at least one dedicated employee to handle DevOps as those who reported they had none.



Importance of DevOps

We also asked survey takers about the importance of DevOps to scaling software development. Almost 80% of respondents believed that DevOps is at least somewhat important, with almost half of the respondents noting that it is extremely important.

Extremely important	**48.1%**
Somewhat important	**31.0%**
Neutral	**17.4%**
Not very important	**2.0%**
Not at all important	**1.4%**

Work

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Career Values

How Do Developers Feel About Their Jobs?

Overall, developers tend to be satisfied with their jobs, with almost 65% reporting that they are either slightly or very satisfied with their job. On the other end of the spectrum, around 25% are slightly to very dissatisfied.

Work

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Looking for a Job

Job Search Status

Almost 83% of respondents reported that they are either not actively looking or interested in new job opportunities. This is consistent with our findings about developer job satisfaction —most developers are happy with their jobs.

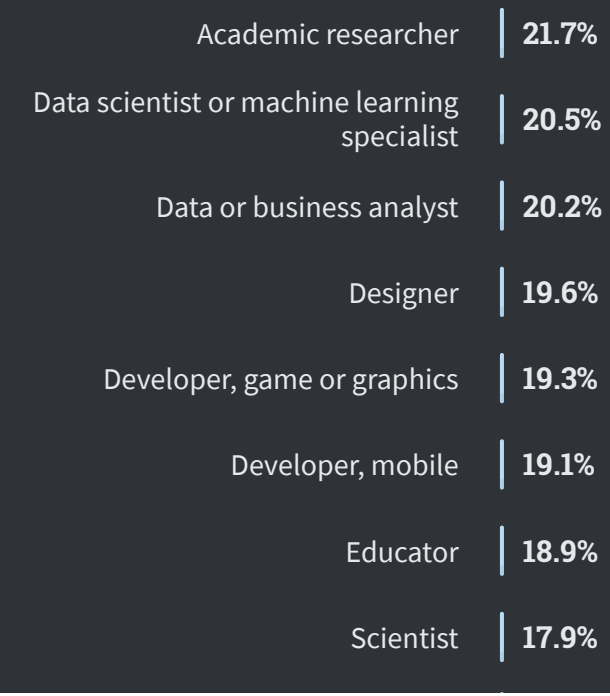
17.3%

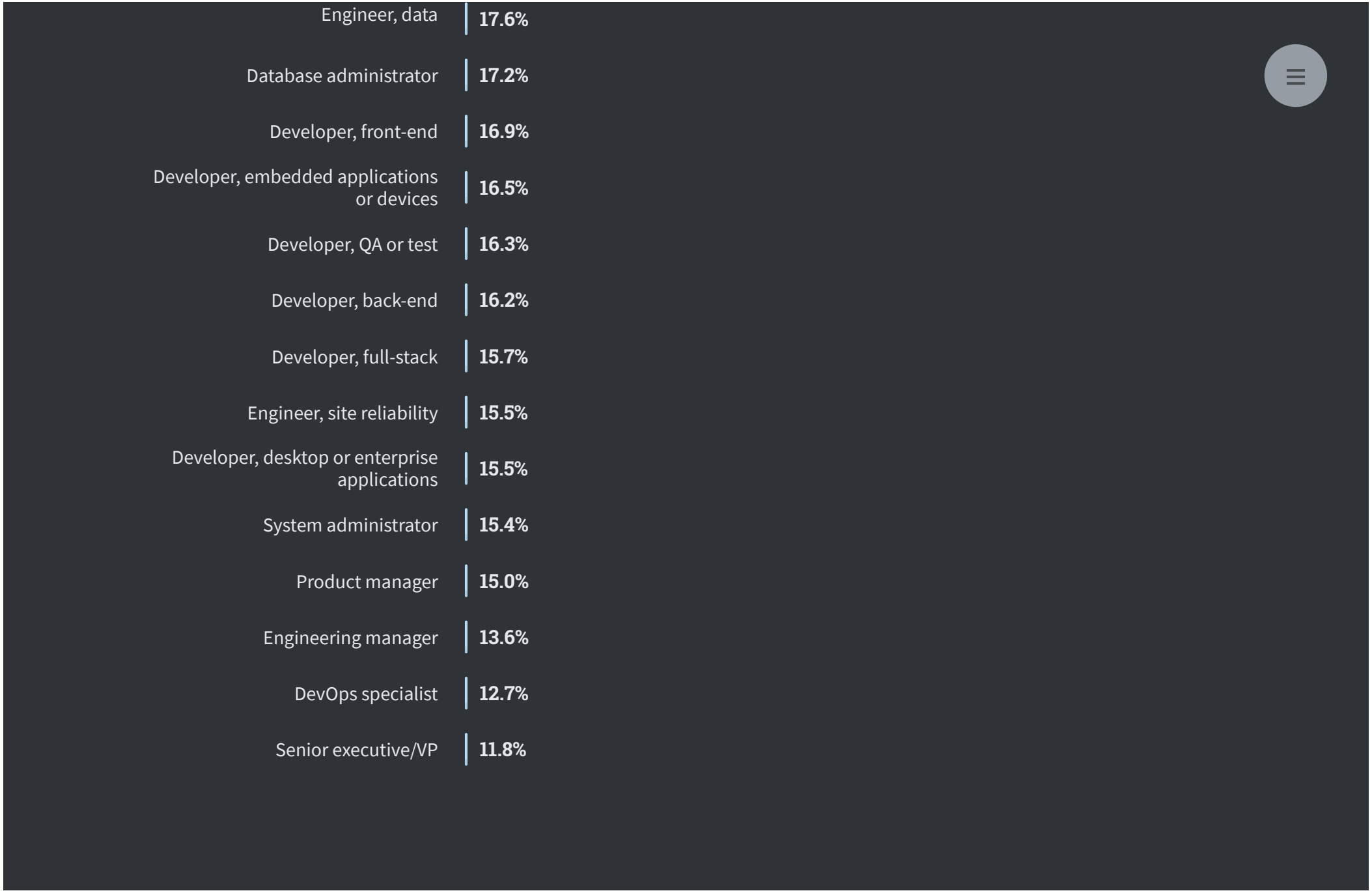
Job Search Status by Geography

When looking across several countries with large developer populations, job satisfaction is mostly consistent. In the US, India, UK, Germany, and Canada, over 80% of developers are not actively looking for a job, but at least half are open to new opportunities.

Who's Actively Looking for a Job?

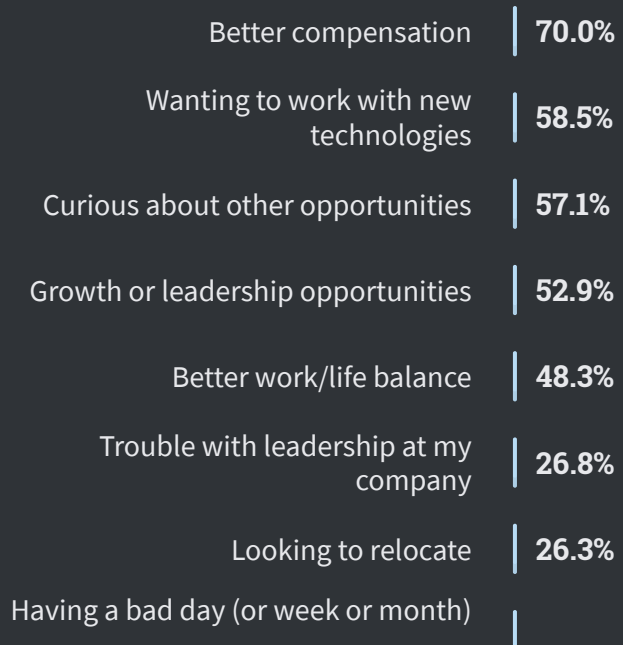
If we break out the data by job function, over 20% of academic researchers, data scientists, and data/business analysts are actively looking for a new job, followed closely by designers, game developers, and mobile developers at 19%. This is consistent with findings from past surveys, where we saw that academic researchers and designers were among the roles that had the lowest job satisfaction.





Job Hunt Factors

For the first time, we asked developers what drove them to look for a new job. Better compensation was by far the most common factor for respondents with 70% of them noting that more pay was important. Wanting to work with new technologies was the second most popular factor, which is consistent with what respondents reported as one of the most important priorities when choosing between two jobs.



at work	**20.3%**
Trouble with my direct manager	**17.0%**
Just because	**12.3%**
Trouble with my teammates	**11.7%**
Wanting to share accomplishments with a wider network	**10.3%**

How do you learn about a company during a job hunt

We asked respondents how they learn about a company during a job hunt and received mixed responses. Most respondents turn to reviews on third party sites, such as Glassdoor and Blind. However, a large amount also learn from viewing company sponsored media, such as blogs and company culture videos. Interestingly, relatively fewer respondents seek publicly available financial information, such as data from Crunchbase, which is consistent with respondents noting that company financial performance and fundraising is not a very important factor when deciding to take a job.

Company reviews from third party sites (e.g. Glassdoor, Blind)	69.6%
Read company media, such as employee blogs or company culture videos	65.3%
Personal network - friends or family	63.4%
Read other media like news articles, founder profiles, etc. about the company	49.2%
Directly asking current or past employees at the company	36.2%
Publicly available financial information (e.g. Crunchbase)	26.4%

Work

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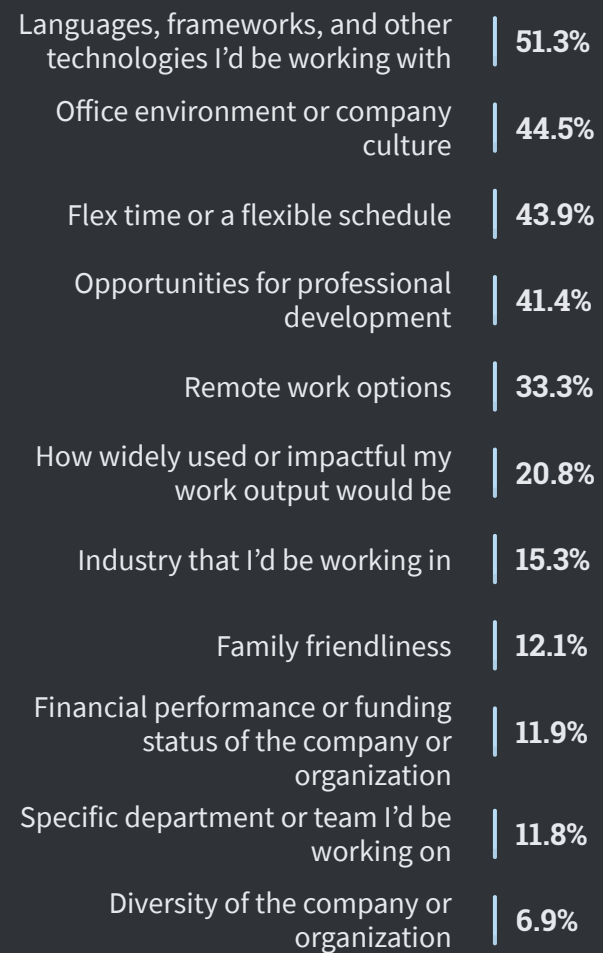
Job Priorities

Most Important Job Factors

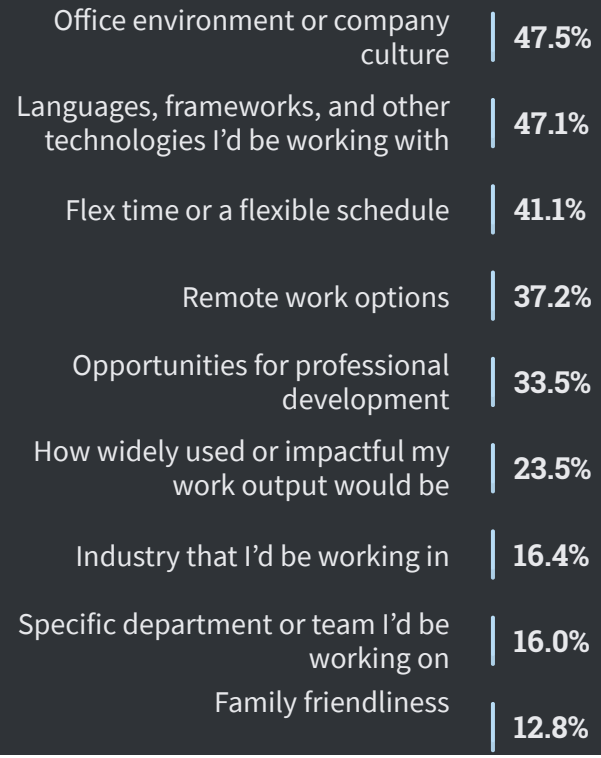
We asked the survey respondents if we control for compensation, benefits, and location, what three characteristics would most influence their decision to choose one job offer over another. Overall, the languages and technologies that the developer would be working with was most important, followed by the office environment or company culture and flexibility of schedule. Interestingly enough, the least important factors were the financial performance of the organization (11.4%), the specific team they would be working on (11.2%), and the diversity of the organization (6.6%).

However, if we control for gender, we see some differences in the rankings. For example, among the women respondents, 48% selected company culture to be one of the most important factors and 18% indicated that diversity was also of top importance. Among the non-binary respondents, 49.9% chose office environment and company culture in the top three most important factors and 33.4% strongly valued the diversity of the company.



Weighting Important Job Factors in the US

As mentioned previously, there are differences in job priorities by gender, so we also compared the overall opinion in the raw results with a weighted opinion. Weighting does not change the results significantly; however, we see gains in office environment or company culture and diversity of the organization.



Financial performance or funding status of the company or organization	12.5%
Diversity of the company or organization	9.1%

Work

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Salary

Salary by Developer Type

Across the board, engineering managers, SREs, DevOps specialists, and data engineers tend to receive the highest salaries. When focusing on the US, we see some differences at the bottom of the salary spectrum. In the US, mobile developers and educators tend to have a higher salary relative to other occupations when compared to the global developer population.

Engineering manager	**$92k**
Engineer, site reliability	**$80k**
DevOps specialist	**$68k**
Engineer, data	**$65k**
Data scientist or machine learning specialist	**$58k**
Developer, embedded applications or devices	**$57k**
Scientist	**$57k**
Developer, desktop or enterprise applications	**$56k**
Data or business analyst	**$55k**
Developer, full-stack	**$54k**

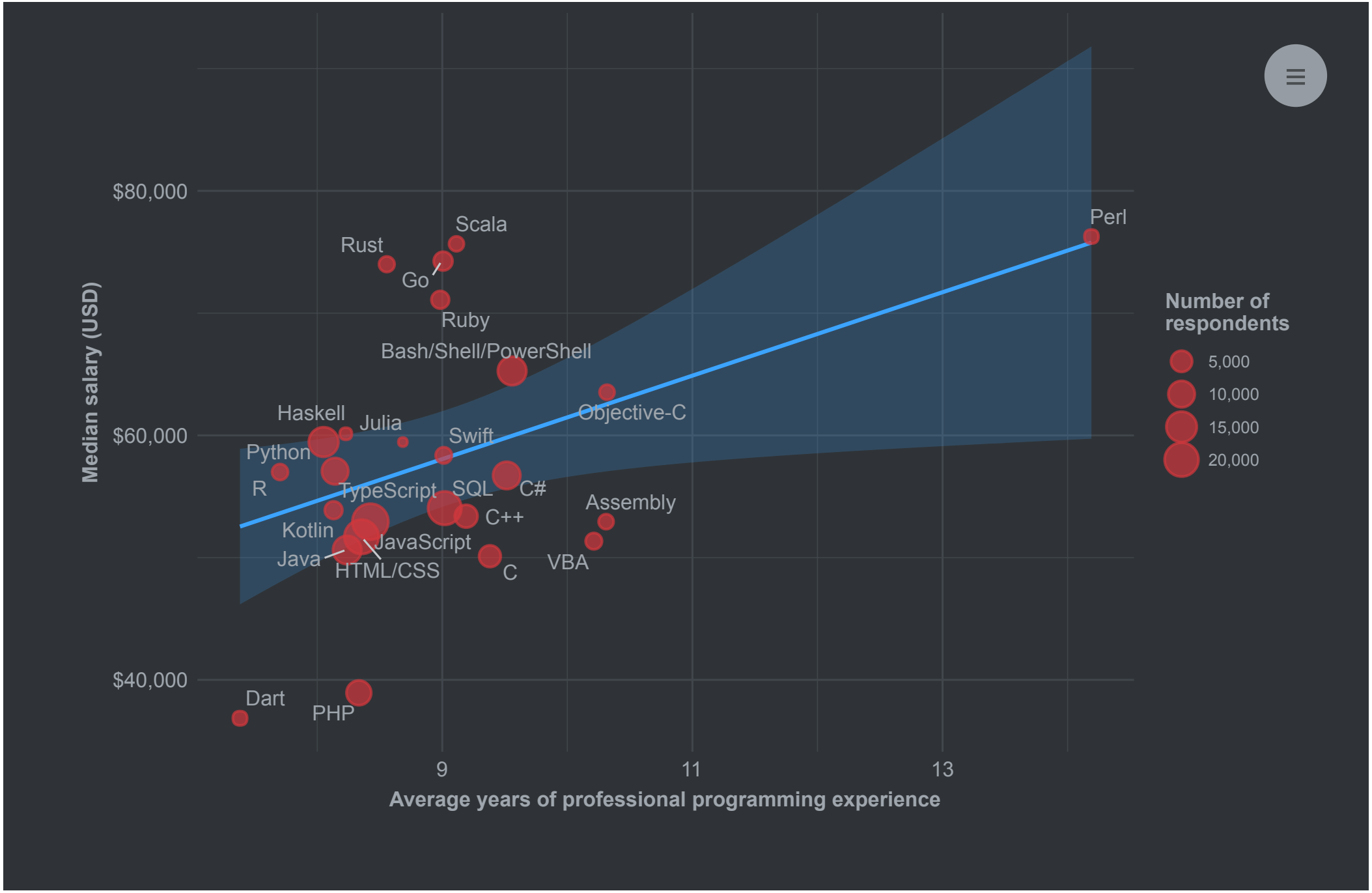
System administrator	**$54k**
Developer, back-end	**$53k**
Developer, QA or test	**$53k**
Database administrator	**$50k**
Developer, game or graphics	**$50k**
Developer, front-end	**$49k**
Educator	**$49k**
Designer	**$47k**
Developer, mobile	**$43k**
Academic researcher	**$41k**

Salary and Experience by Developer Type

When we look at how salary compares with years of experience, we see the expected - developers with more experience tend to command higher salaries. However, we see some differences when we look at specific developer roles. SREs, DevOps specialists, and data engineers command a disproportionately higher salary compared to developers within a similar level of experience in different roles. This is consistent with what we saw in the salary trends as a whole. Designers, mobile developers and educators tend to command a disproportionately lower salary.

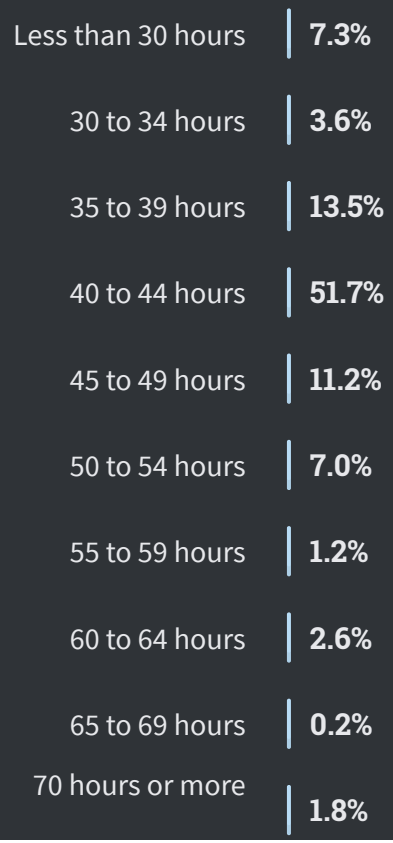
Salary and Experience by Language

Salaries also differ in terms of years of experience when looking at the programming language a developer uses as well. For most languages, the relationship between salary and years of coding experience is linear. However, we see some outliers with users of Python and R commanding higher salaries. This could be explained by the fact that these languages are often used by data scientists who are among the most highly compensated developers.



Hours Worked Per Week

Globally, over 75% of developers work less than 45 hours per week. Senior executives, engineering managers and product managers tend to work longer hours.



Community

Where developers come to learn, share knowledge, and build their careers

Site Use →

Stack Overflow Community Now →

Stack Overflow Community Moving Forward →

Community

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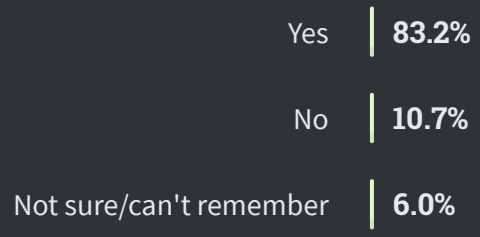
Site Use

Visiting Stack Overflow

Developers visit Stack Overflow. A lot. Our survey respondents likely visit even more than the average developer, since a majority of respondents found the survey from Stack Overflow emails, notifications, and banners. Over 82% of respondents visit Stack Overflow at least a few times per week, with over 59% visiting every day. In the United States, there are only slight shifts between the results weighted by gender and unweighted results on visit frequency.

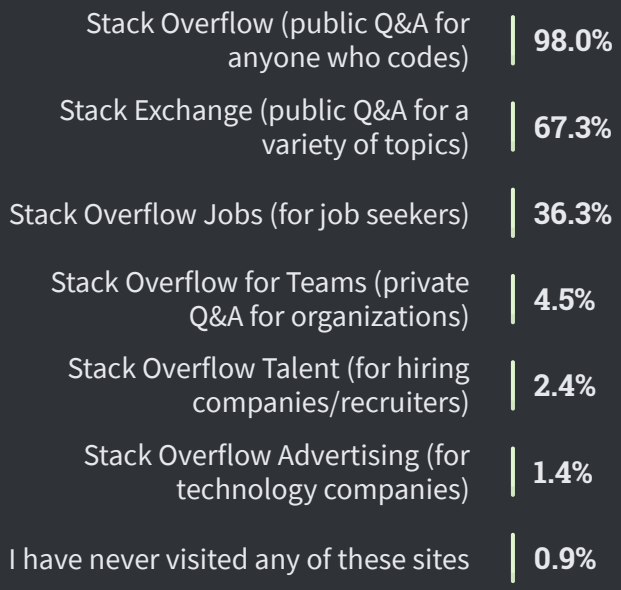
How Many Participants Have a Stack Overflow Account?

About 83% of the participants in our survey say they are registered users with accounts. This provides important context for interpreting our survey results, because most Stack Overflow traffic comes from anonymous, unregistered visitors.



Visited SE sites

Almost all of responents have visited Stack Overflow and about two-thirds have visited Stack Exchange.



Community

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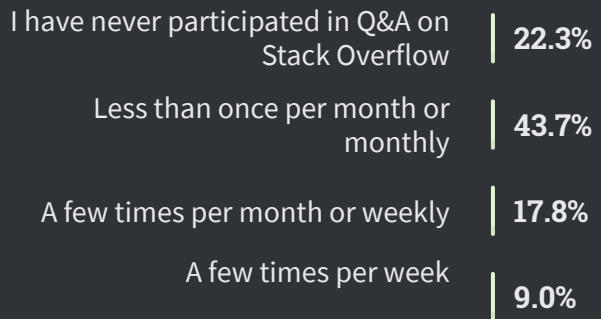
Stack Overflow Community Now

How Often Do Developers Participate on Stack Overflow?

Some developers come to Stack Overflow only to find answers to their questions, while others participate in the community by asking, answering, voting for, or commenting on questions. Over 34% of survey respondents participate on Stack Overflow a few times per month or more often. When comparing United States weighted data to unweighted results, we see more representation from those who have never participated on Stack Overflow.



Daily or almost daily	**4.7%**
Multiple times per day	**2.6%**

Do Developers Consider Themselves Part of the Stack Overflow Community?

About 43% of the respondents to our survey consider themselves part of our community, but this varies for different groups of people. For example, we find that respondents who identify as men see themselves as part of the community at much higher rates than those with other gender identities. The tech community as a whole, and we at Stack Overflow in particular, still have work to do in this area.

Yes, definitely	**15.8%**
Yes, somewhat	**27.0%**
Neutral	**20.7%**

No, not really	**26.0%**
No, not at all	**8.5%**
Not sure	**1.9%**

Compared to last year, how welcome do you feel on Stack Overflow?

Most respondents say they feel just as welcome on Stack Overflow as they felt last year. Answers this year were slightly more polarized than those from 2019. When asked why they responded the way they did, respondents who felt less welcome mentioned the relationship between the community and the company and question quality. Respondents who felt more welcome mentioned feeling more comfortable and confident, the site being nicer or friendlier, and features of the site like emails and the newsletter.

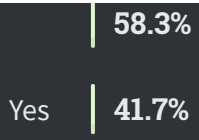
A lot more welcome now than last year	**6.1%**
Somewhat more welcome now than	

last year	9.5%
Just as welcome now as I felt last year	70.6%
Somewhat less welcome now than last year	5.9%
A lot less welcome now than last year	4.0%
Not applicable - I did not use Stack Overflow last year	3.9%

Member of other online developer community

For around 60% of respondents, Stack Overflow is the only online developer community they are a member of. Of the 41% who indicated they are members of other online developer communities. 15k respondents provided at least one additional community they participate in. Though this data is not present in results, it is available for analysis in the raw data.

No	



Community

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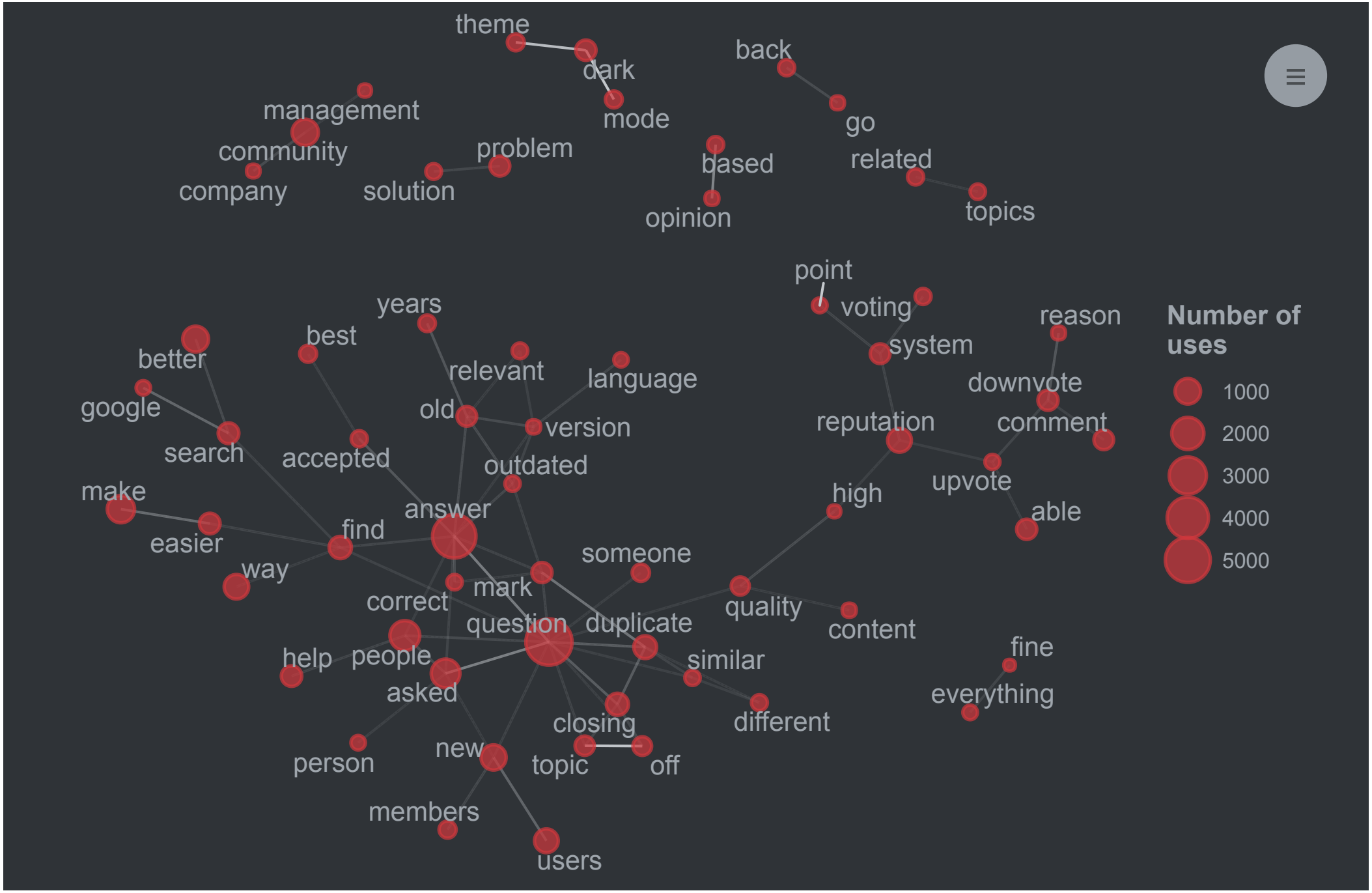
Stack Overflow Community Moving Forward

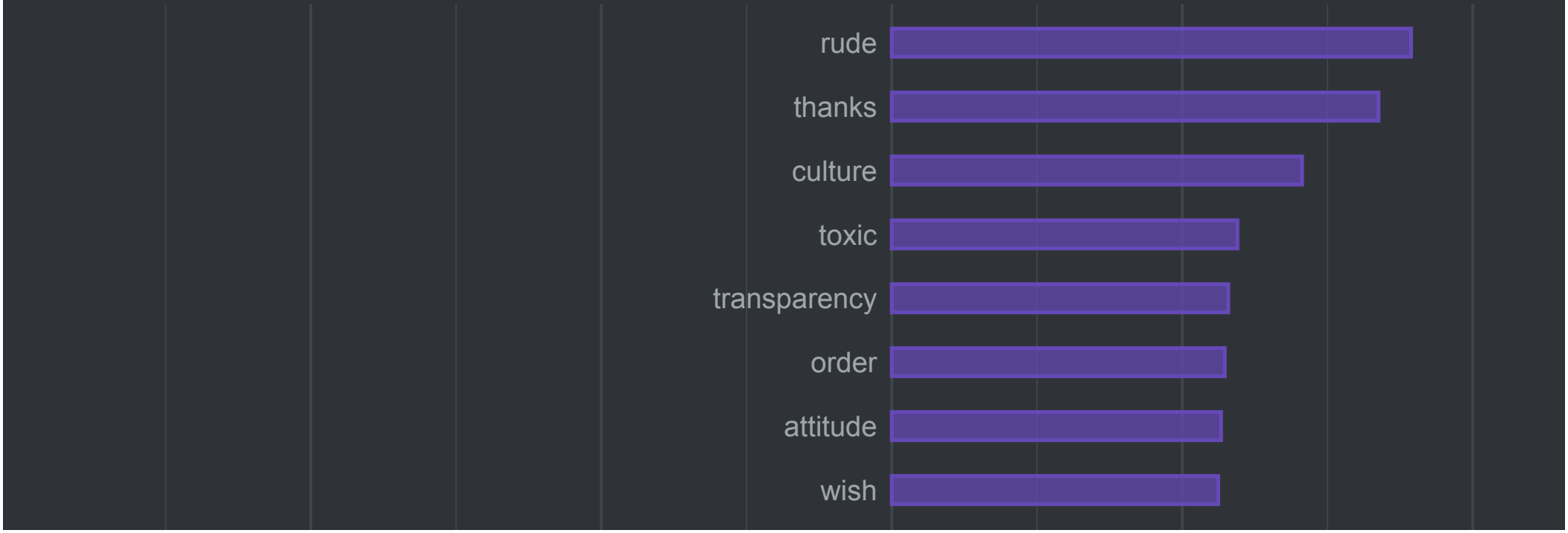
What Would Developers Change About Stack Overflow?

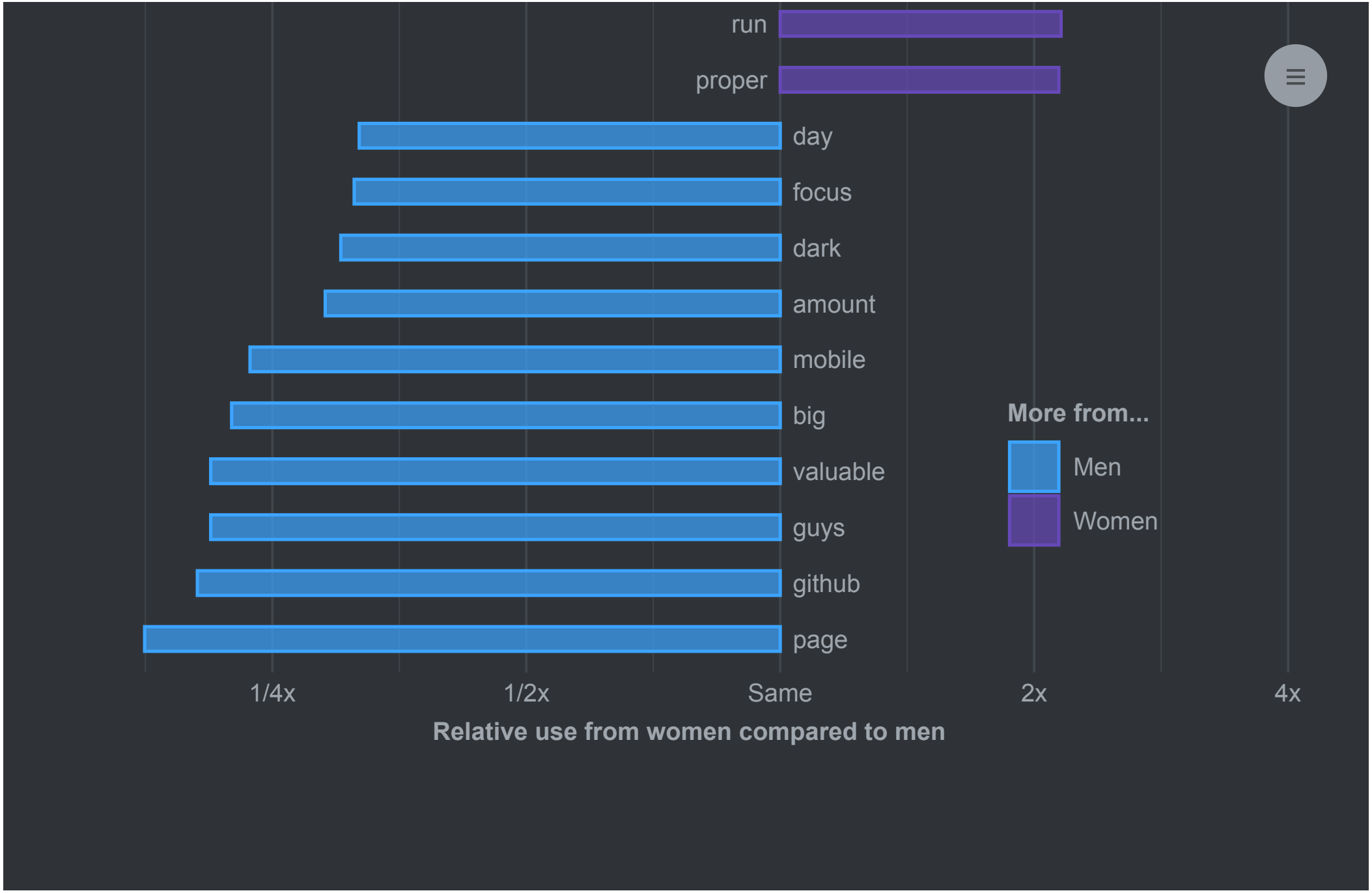
We asked respondents in a free text question one thing they would change about Stack Overflow if they had the chance. Respondents shared ideas focusing on question quality, improving search, identifying and removing outdated answers, frustrations with duplicate question handling, and issues with the way the company treats the community.



★ Developers' Perspectives By Gender

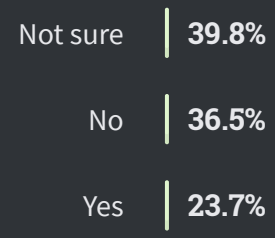
The aspects of Stack Overflow that respondents would like to change exhibit differences across demographic groups. For example, developers who are men are more likely to want specific new features, while developers who are women are more likely to want to change norms for communication on our site.





Relax restrictions on off-topic

We asked respondents whether they believe that Stack Overflow should relax restrictions on what is considered off-topic and received mixed results. Most respondents were not sure and almost 37% believe that restrictions should not be relaxed.



Methodology

How we planned and analyzed our survey

This report is based on a survey of 65,000 software developers from 186 countries around the world. This is the number of responses we consider “qualified” for analytical purposes based on time spent on the full, completed survey; another approximately 400 responses were submitted but not included in the analysis because respondents spent less than three minutes on the survey.

Qualified Responses Worldwide

Europe	**24,688**
North America	**15,570**
Asia	**16,400**
South America	**3,070**
Africa	**2,709**
Australia/Oceania	**1,570**
Other (country not listed)	**409**

The survey was fielded from February 5 to February 28.

The median time spent on the survey for qualified responses was 16.6 minutes, down from 23.3 minutes last year.

Respondents were recruited primarily through channels owned by Stack Overflow. The top sources of respondents were onsite messaging, blog posts, email lists, banner ads, and social media posts. Since respondents were recruited in this way, highly engaged users on Stack Overflow were more likely to notice the prompts to take the survey over the duration of collection promotion.

As an incentive, respondents who finished the survey could opt in to a “Census” badge if they completed the survey.

Due to United States transport/export sanctions, our survey was unfortunately unaccessible to prospective respondents in Crimea, Cuba, Iran, North Korea, and Syria, due to the traffic being blocked by our third party survey software. While some respondents used VPNs to get around the block, the limitation should be kept in mind when interpreting survey results.

In years past, our analysis of professional developers was based on site activity on Stack Overflow. This year, we utilized answers regarding employment to deduce whether or not a respondent qualifies as a professional developer and built our analyses based on this qualification.

We asked respondents about their salary. First, we asked what currency each respondent typically used. Then we asked that respondent what their salary was in that currency and whether that salary was weekly, monthly, or yearly.

We converted salaries from user currencies to USD using the exchange rate on 2020-02-19, and also converted to annual salaries assuming 12 working months and 50 working weeks.

This question, like most on the survey, was optional. There were 34,279 respondents who gave us salary data.

The top approximately 2% of salaries inside and outside of the US were trimmed and replaced with threshold values. The threshold values for inside and outside the US were different.

Many questions were only shown to respondents based on their previous answers. For example, questions about jobs and work were only shown to those who said they were working in a job.

The questions were organized into several blocks of questions, which were randomized in order. Also, the answers to most questions were randomized in order.

To identify which technologies to include on the survey this year, we looked at both the most popular and fastest growing tags on Stack Overflow (in terms of questions posted). We compared these to the technologies we included last year and looked at how many people chose each option. We synthesized all this together to curate a collection of technologies to include.