



The 2020 Open Source Jobs Report

The Linux Foundation & edX | October 2020

Open source maintains its lead as the software development environment of choice among SMBs and enterprises despite economic and business challenges

2020 has proven to be a difficult year for businesses large and small, with COVID-19 introducing many challenges that threaten financial stability for organizations and individuals, many of whom have cut or lost jobs due to business failure and an overall slowdown in revenue.

However, despite an overall economic downturn, having demonstrated skills in open source technologies remains highly desirable for employers seeking IT professionals for potential hire even during these times of uncertainty. In a [recent survey](#) by Red Hat, 86% of IT leaders said that the most innovative companies are using open source software, citing higher quality solutions, lower cost of ownership, improved security, and cloud-native capabilities as the top reasons for usage.

Despite changes in the economy, 77% of respondents in that survey said that over the next 12 months, they

intend to increase their use of open source software. As indicated by our respondents, this increased usage will be for technologies such as containers, machine learning, and continued investment in DevOps, with cloud, Linux, security, and software-defined networking. The knowledge areas with the highest demand for expertise impact their hiring decisions.

The 2020 Open Source Jobs Report results, in partnership with [edX](#) and [The Linux Foundation](#), highlight a shift of priorities for hiring organizations towards cloud-native technologies and increasing use of open source solutions despite the severe challenges currently facing businesses and IT pros. This year's survey includes responses from more than 175 hiring managers at corporations, small and medium businesses (SMBs), government agencies, and staffing firms worldwide, plus more than 900 open source professionals.

Key Findings

- **Hiring is down, but not out, due to COVID-19:** Despite the pandemic and economic slowdown, 37% of hiring managers say they will be hiring more skilled IT professionals in the next six months.
- **Online training gains popularity during the COVID-19 era:** A full 80% of employers now report that they provide online training courses for employees to learn open-source software, up from 66% two years ago.
- **Certifications grow in importance:** 52% of hiring managers are more likely to hire someone with a certification, up from 47% two years ago.
- **Qualified open source talent is still in short supply:** 93% of hiring managers report difficulty finding sufficient talent with open source skills, up from 87% two years ago.
- **DevOps' rise:** DevOps pros have risen to the most sought after job role, with 65% of companies looking to hire more DevOps talent, up from 59% in 2018.
- **Cloud technology is hot:** In terms of knowledge domains, hiring managers report knowledge of open cloud technologies has the most significant impact, with 70% being more likely to hire a pro with these skills, up from 66% in 2018.

Despite the pandemic and economic downturn, skills in open source continue to be in high demand among employers



of hiring managers say **hiring open source talent is a priority** for 2020, and they are more likely than ever to look for open source professionals who hold certifications.



of hiring managers **plan to increase their hiring of open source professionals** in the next six months compared to the last six months.



of hiring managers stated that **hiring certified professionals is a priority**, up significantly from 47% in 2018.



of hiring managers report **difficulty finding sufficient talent with open source skills**, up from 87% in 2018.



of employers report that **training existing employees to gain the necessary skills** is now the top tactic utilized in 2020.

Despite the pandemic and economic slowdown, 37% of hiring managers say they will be hiring more skilled IT professionals in the next six months. The demand for open source talent is being driven primarily by organic growth within organizations, as reported by 70% of hiring managers (up from 65% in 2018). The second most common response was that the organization had increased its use of open source, leading to talent shortages, as reported by 56% of hiring managers. This increase in open source usage is a significant uptick from the 40% who stated this in 2018, implying that open source adoption may have accelerated due to the pandemic's economic conditions.

93% of hiring managers report difficulty finding sufficient talent with open source skills, up from 87% two years ago. The tactics for dealing with shortages of open source talent continue to evolve. In 2018, the most common response to this question was to continue looking until the right applicant came along, which was employed by 50% of employers. That has dropped to 43% in 2020 and been surpassed by hiring outside consultants (48% in 2020 versus 38% in 2018) and training existing employees to gain the necessary skills, which is now the top tactic in 2020 utilized by 57% of employers (up from 42% two years ago).

81% of hiring managers say hiring open source talent is a priority for 2020, and they are more likely than ever to look for open source professionals who hold certifications. 56% of hiring managers plan to increase their hiring of open source professionals in the next six months compared to the last six months; this is higher than the 52% who stated this in 2018. Only 4% expect to hire fewer, and 7% expect to hire no open

source pros at all. As the six months before this survey included the height of COVID-19 lockdowns, likely, companies coming out of lockdown procedures are now experiencing labor shortages, leading to a need to hire more in the days ahead.



Linux, DevOps, cloud, and security lead the pack in desired skill sets from potential employers



of hiring managers say that **Linux is the most in-demand skill** they seek in new hires.



of hiring managers are **seeking employees who can architect solutions based on open source** software

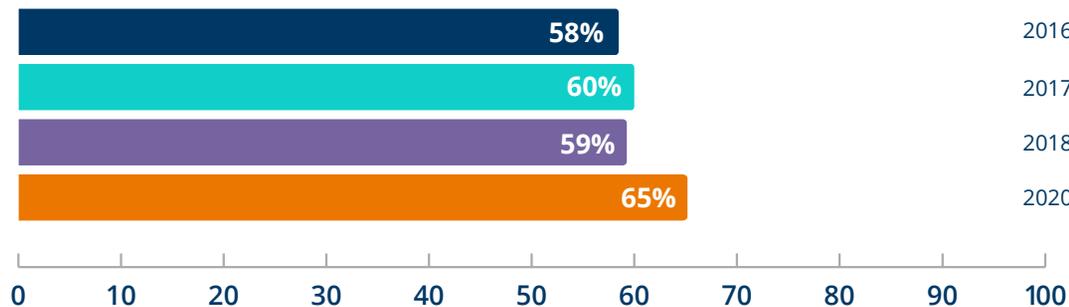


of companies are **looking to hire more DevOps talent**, up from 59% in 2018.

In 2020, Linux is the most in-demand skill amongst hiring managers, with 74% of those seeking talent with Linux experience (down from 80% in 2018). Cloud and containers are close behind at 69% (up from 64% in 2018). Security also continues to be important at 48% (virtually unchanged from 49% in 2018).

The most in-demand positions have changed; in 2018, 72% of hiring managers were looking for developers, while only 59% are looking for developers in 2020. DevOps pros have risen to the most sought after job role, with 65% of companies looking to hire more DevOps talent, up from 59% in 2018. Engineers remain the third most in-demand role, at 56%, followed by architects at 41%. SysAdmins saw a massive drop, from 49% in 2018 to 35% today, likely due to many SysAdmin roles evolving into DevOps ones.

Demand for DevOps Talent



Open source professionals also report an increasing necessity in understanding DevOps practices. 75% report using DevOps practices in their work today, compared to 58% two years ago.

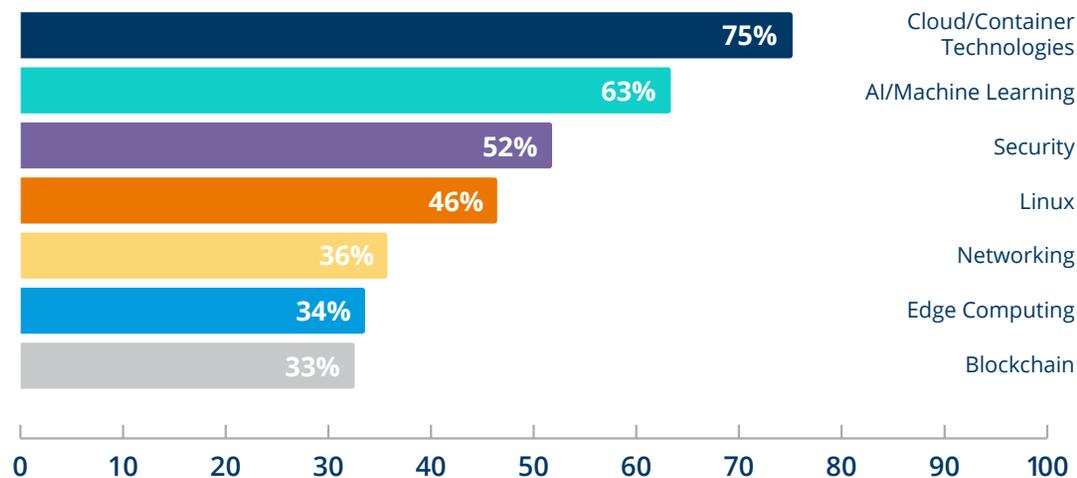
In terms of which skills influence hiring decisions, the most significant need is for individuals who can architect solutions based on open source software, which is sought by 63% of hiring managers (down slightly from 67% in 2018). 59% are looking for staff who can deploy open source software (note this was not an answer option in 2018). 48% are looking for staff with knowledge of new tools, 48% want experience using open source development tools like Git, 46% need teams with experience running projects already in production, and

44% want staff who have contributed previously to open source projects.

The open source professionals surveyed agree that a proven ability to architect solutions based on open source software is essential in this industry at 74%. 57% believe experience with open source development tools like Git is critical, and 50% cite the ability to deploy open source software.

In terms of knowledge domains, hiring managers report knowledge of open cloud technologies has the most significant impact on hiring decisions, with 70% being more likely to hire a pro with these skills, up from 66% in 2018. Linux is close behind at 69%. Security is the third-highest priority knowledge area, sought by 48% of hiring managers.

Technologies of the **highest importance** to open source professionals in 2020



These align with the knowledge areas open source pros believe are important. Cloud and containers are overwhelmingly the most important skills today at 72%, which is a massive increase from the 44% who said these skills were essential two years ago. Linux skills are next in importance according to professionals surveyed at 47%, and artificial intelligence follows at 44%.

Areas that professionals see increasing in importance in the coming year are unsurprisingly cloud and containers (75% up from 57% two years ago), AI at 63%, and security at 52%.

Open source professionals want training to learn new skills and to develop competency with certifications, with an increased emphasis on online courses



of hiring managers **report employees have requested more open source training this year**, compared to 64% in 2018.



of employers now report that they **provide online training courses for employees** to learn open source software, up from 66% two years ago.



of professionals surveyed **would like their employers to cover the cost of certifications**, up significantly from 47% in 2018.



54% of open source developers surveyed cite they **lack employer-sponsored training opportunities** (up from 49% in 2018).

Online training has skyrocketed in importance in the era of COVID-19. A full 80% of employers now report that they provide online training courses for employees to learn open source software, up from 66% two years ago. Training remains the top method for professional development.

Interestingly, sponsoring employees to attend technical conferences has moved from the third to second most popular options. It has increased to 65% from 56%—this could indicate many conferences being more accessible and affordable as they move to virtual formats due to

COVID-19 restrictions on large gatherings. Self-directed learning has fallen from second to third, with 61% of companies offering this option, up from 58% in 2018.

70% of hiring managers report employees have requested more open source training this year, compared to 64% in 2018. This could be due to increasing rates of digital transformation leading to skills gaps.

When selecting open source training providers, companies are looking for vendor neutrality. 76% state that it was important that a training provider for open source tech be vendor-neutral, identical to the result in 2018.

Open source professionals report they get most of their professional development via free resources, including free online webinars, tutorials, and written materials, with 77% taking advantage of these resources. 68% take online training courses, and half of the respondents report attending technical conferences to improve their skills.

Open source developers specifically were asked in the survey what their employers could do to make them more successful in their roles. The top request is to sponsor attendance at technical conferences at 71%, followed closely by providing training opportunities at 70%. 60% would like their employers to cover the cost of certifications, up significantly from 47% in 2018, reflecting increased respect for professional certifications. 57% would like more precise guidelines from employers on how and when they can use open source in their work, and 53% would appreciate the ability to set aside work time to contribute to open source projects.

Across the board, developers this year reported facing more challenges than they did in 2018. The biggest challenge, cited by 54% of open source developers surveyed, is a lack of training opportunities (up from 49% in 2018). Other significant challenges include a lack of documentation for open source projects (45%) and difficulty obtaining buy-in from management for the use of open source (43%, up significantly from 34% in 2018). There has also been a large increase in developers saying they face challenges from siloed departments at 36% compared to 27% two years ago.

Acquiring and retaining qualified professionals is now more critical than ever during COVID-19



of prospective job seekers **desired increased salary**, followed by the chance to work on interesting projects at 65%.



of hiring managers surveyed report a **willingness to pay for certifications**, up significantly from 55% two years ago.



of professionals surveyed report **planning to take a certification exam this year**, up significantly from 47% in 2018.



of job seekers **desire a better work-life balance**, and 51% want more flexible schedules or telecommuting options.

Possibly due to COVID-19 concerns, the steps companies are taking to retain talent have changed since our last survey in 2018. Offering flexible work schedules remains the most common incentive employers are using, but it has increased from 46% to 56% in two years. Offering additional training or certification remains second, but has increased from 42% to 48%.

The growth in the desire for certified talent is leading companies to sponsor their employees' certification efforts. 74% of hiring managers report a willingness to pay for certifications, up significantly from 55% two years ago. This increase may be partly driven by the employees who increasingly see the value in certifications. 68% percent of professionals surveyed reported that they planned to take a certification exam this year, up significantly from 47% in 2018. This may also be driven by the pandemic encouraging individuals to improve their resumes to make themselves more employable in difficult economic times, as demonstrated by 70%, stating that certifications enable them to demonstrate their technical skills to employers.

Salary increases were the third top incentive in 2018, with 39% of employers offering them, but that has dropped to only 20% this year, making it fifth. 2020's third top incentive by companies surveyed is to make efforts to support and contribute to open source projects that employees are passionate about, increasing from 38% to 44%. And the fourth in 2020 is providing bonuses, a tactic used by 28% of employers.

Only 15% of employers say they have had no difficulty retaining open source professionals this year, decreasing from 21% who had an easy time retaining staff in 2018.

Interestingly, open source professionals report being headhunted at around the same amount as two years ago. This year 46% reported receiving six or more calls from recruiters in the past six months, similar to 47% in 2018. However, COVID-19 and economic concerns weigh

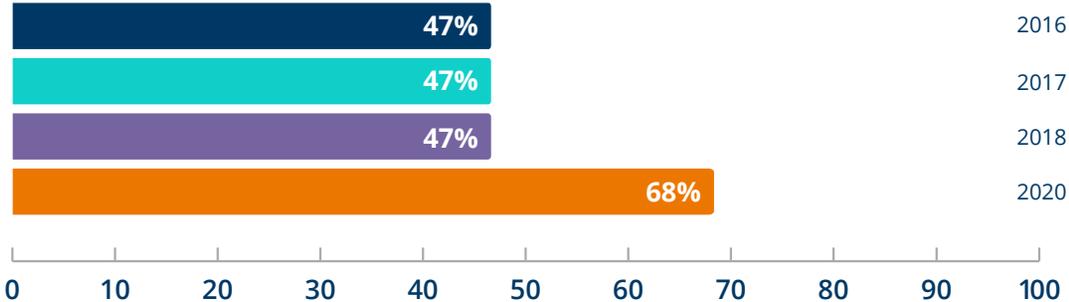
on these professionals, as 41% now believe it would be difficult for them to find a new position, compared to only 27% who said so in 2018.

Fewer open source professionals are considering moving to a new job this year, likely due to the global economic situation. 59% would consider changing jobs this year, compared to 64% two years ago, which may be putting some pressure on hiring managers as experienced professionals are not looking for new opportunities at the same rate.

Employees report that the only incentive to stay with their company to become more common in 2020 than 2018 is flexible work arrangements; 26% say their employers have added that incentive this year compared to 22% in 2018. The incentive that has seen the steepest decline is salary increases, which have been reported by 26% of open source pros this year, down from 34% in 2018.

The incentives that open source professionals want if they were to move to a new job have remained fairly steady year over year. The top desired incentive is increased salary (74% reported wanting this), followed by the opportunity to work on interesting projects at 65%. 58% desire a better work-life balance, and 51% want more flexible schedules or telecommuting options.

Open Source Pros **Planning to Get Certified** This Year



The COVID-19 pandemic has created staffing and resource issues in virtually all IT organizations, but open source professionals have been mostly immune from layoffs



of hiring managers surveyed said they **have laid off open source professionals due to the pandemic**, and a further 2% furloughed open source staff.



of hiring managers **have increased open source hires due to the pandemic**, while the remaining 39% stated it had no impact on their hiring decisions.



of hiring managers **have required staff to work from home** at least temporarily

When explicitly asked how COVID-19 has affected hiring plans this year, 41% of hiring managers stated they had hired fewer open source professionals than planned at the start of the year. Interestingly 20% have increased open source hires due to the pandemic, while the remaining 39% stated it had no impact on their hiring decisions.

Only 4% of those hiring managers surveyed said they have laid off open source professionals due to the pandemic, and a further 2% furloughed open source staff. 16% of open source pros surveyed reported having lost a job this year due to the pandemic, and only 25% of those reported having found a replacement job.

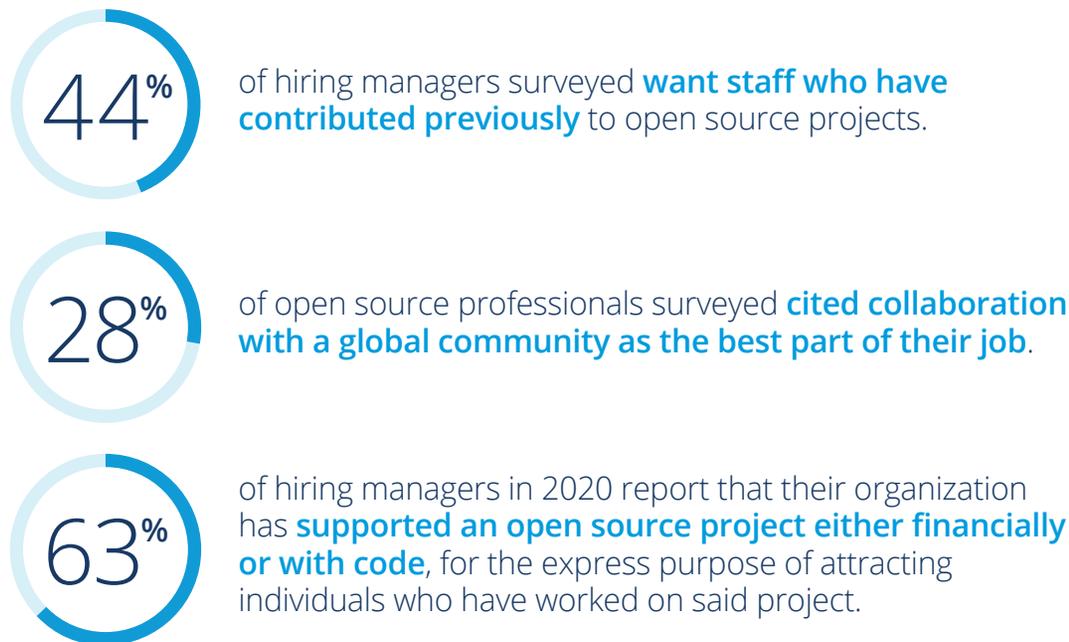
Tactics to deal with COVID-19 reported by hiring managers have included requiring staff to work from home at least temporarily (80%), allowing increased flexibility with working from home (17%), and staggering



hours in the office to limit the number of people onsite at any given time (15%).

Open source professionals also reported how the pandemic had impacted them at work. 25% report investments in new tools were delayed, 21% have had workloads increased due to coworkers being laid off or furloughed, another 21% report having had pay cuts imposed on them, 19% had a promotion delayed, and 14% reported reduced hours. Only 43% say they have experienced no impact at work.

Open source community and collaboration has value to both employers and IT professionals



Open source professionals have various reasons for pursuing a career in this field, but interestingly the least common reason reported is for the money and perks; only 13% of survey respondents selected this as a reason. The top reason is that open source runs modern technology, and having experience with it makes them more employable at 67%.

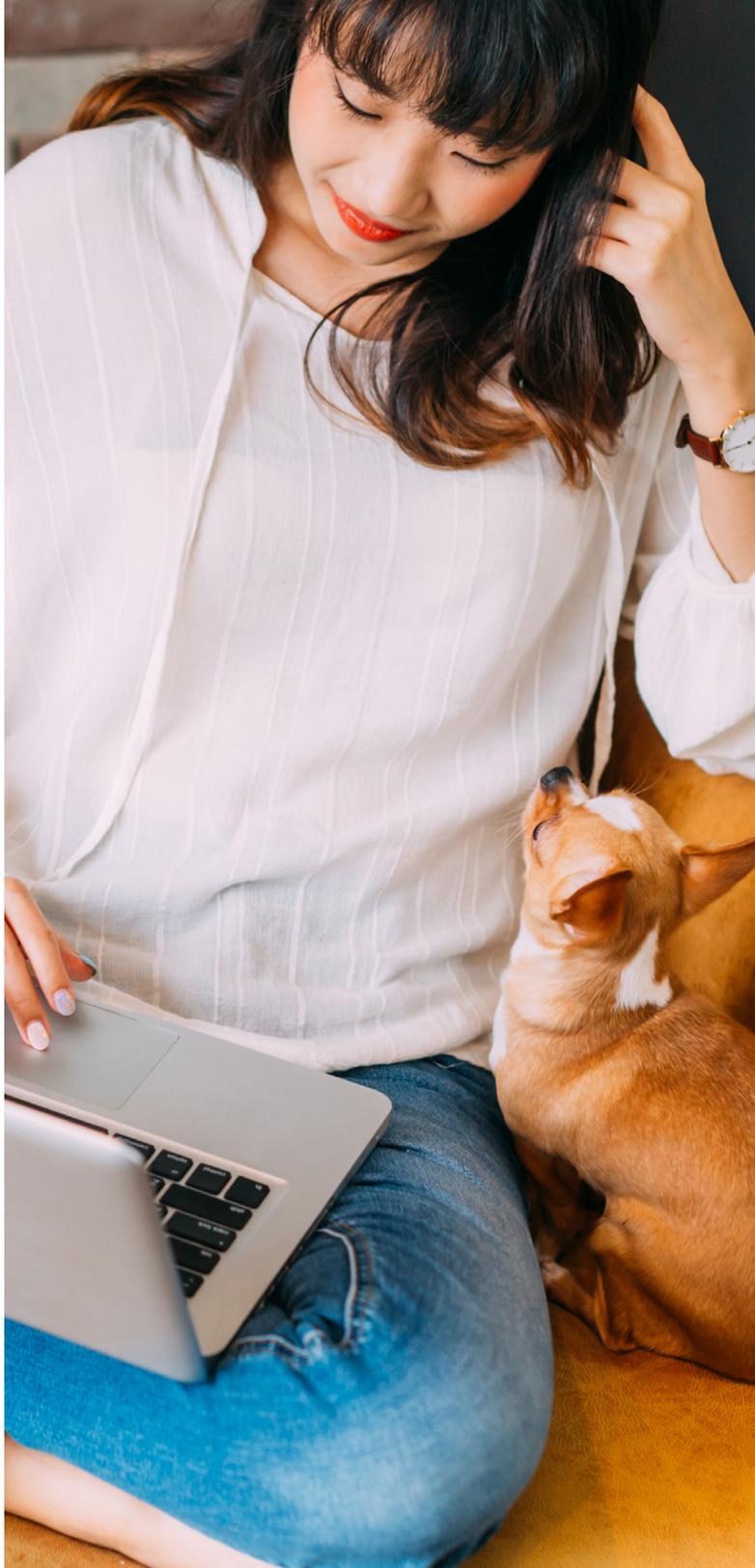
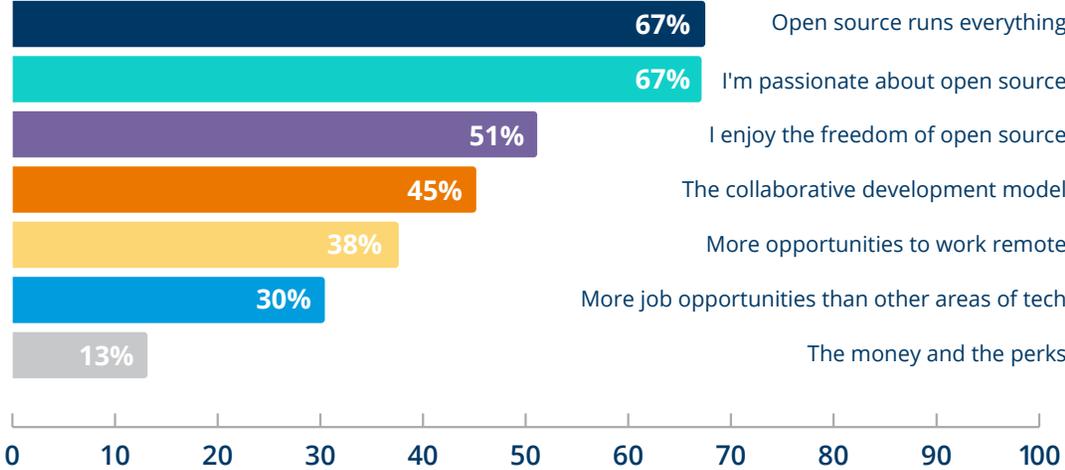
The issue of the preponderance of open source in overall deployments slightly edges out being passionate about open source, reported by 67% of respondents. Just over half of respondents also stated that open source freedom was a key driver for pursuing this kind of career.

When asked the best part of their job, only 3% stated the money and perks, the same as in 2018. The top thing stated is collaboration with a global community at 28%, followed by working with interesting projects at 21%.

Companies seem to be catching onto the importance of specific open source projects and recruiting individuals who have been involved with them. 63% of hiring managers in 2020 report that their organization has supported an open source project either financially or

with code, for the express purpose of attracting individuals who have worked on said project. This is a large increase from the 48% who reported this tactic in 2018. Additionally, 44% of hiring managers surveyed want staff who have contributed previously to open source projects.

Why professionals **choose careers** in open source



The diversity perception gap between employers and employees is closing but is still an issue of concern



of employers state that their company **proactively encourages hiring diversity**, up from 79% two years ago. This compares to 70% of employees who feel their companies are making this effort, up from 60% in 2018.



of companies surveyed **reported that they actively recruit underrepresented individuals**, increasing from 46% in 2018.



of hiring managers **rate their diversity efforts as Excellent or Good**, while only 58% of employees agree.

Employers are more bullish than ever on their diversity efforts, though a gap remains between their perception and that of their employees. 88% of employers state that their company proactively encourages hiring diversity, up from 79% two years ago. This compares to

70% of employees who feel their companies are making this effort, up from 60% in 2018.

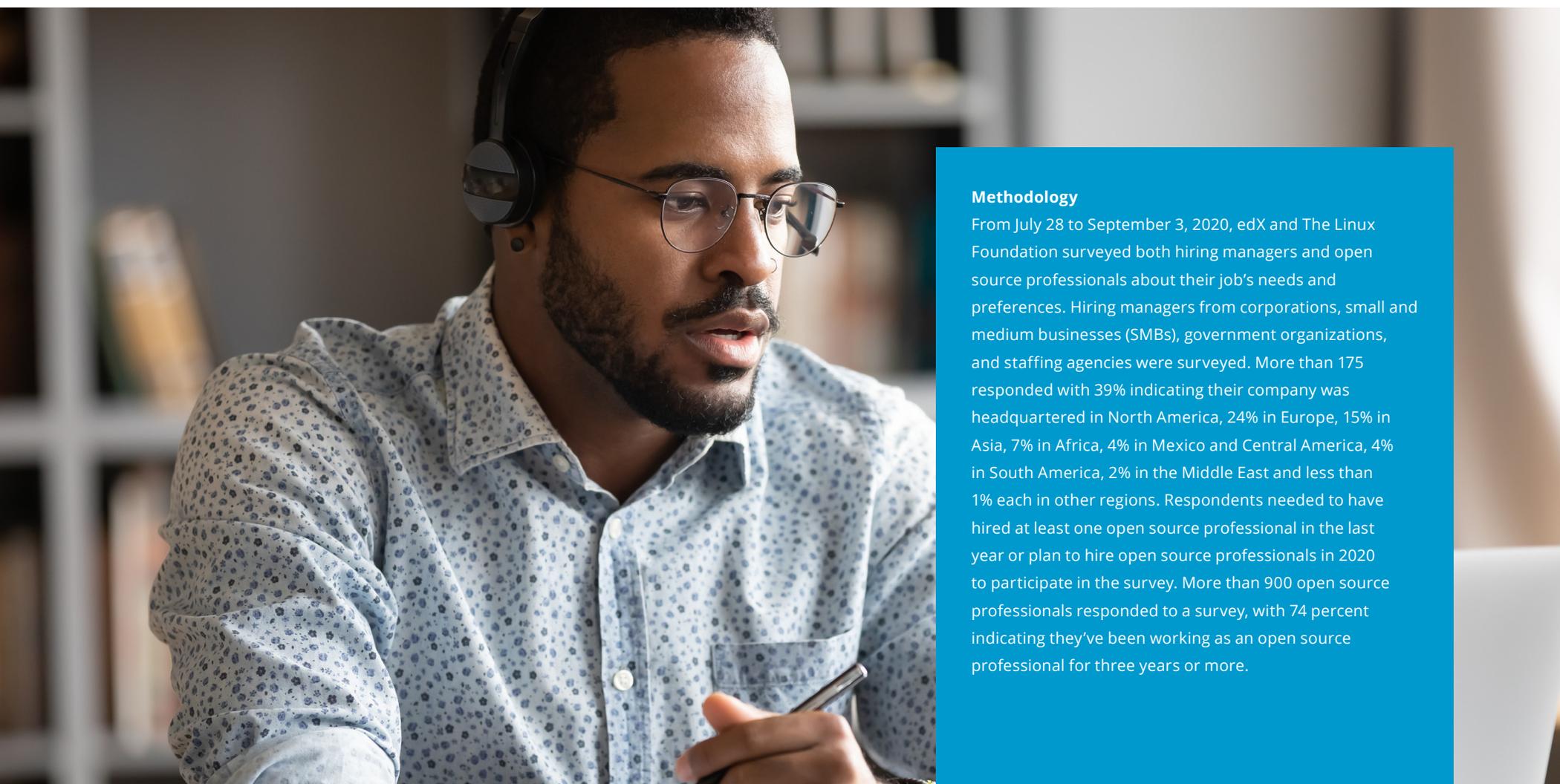
The perception gap continues when asked to rate the effectiveness of diversity efforts within one's organization. 68% of hiring managers rate their diversity efforts as Excellent or Good, while only 58% of employees agree. Interestingly, the employer rate is virtually unchanged from 2018 when it was 69%, but the employee figure has increased from 53%, implying some progress in the last two years.

11% of open source professionals report they have been discriminated against or felt unwelcome due to their personal characteristics, increasing from 8% who said so in 2018. This could reflect a more polarized political atmosphere or simply increased awareness amongst the public about these issues.

In terms of the actual efforts made by employers, there is little change from two years ago. Supporting industry-wide groups and initiatives such as Women Who Code or Blacks in Technology remains the most

common activity reported by 54% of companies. Those companies reporting that they actively recruit underrepresented individuals has increased from 46% to 52%. 33% of companies surveyed said they offered diversity training, and 33% also report sponsoring diversity groups within their organizations, virtually unchanged from 2018.

Again, there is a perception gap between companies and their employees. Only 43% of employees believe their company actively recruits underrepresented individuals, down, but not significantly, from 45% two years ago.



Methodology

From July 28 to September 3, 2020, edX and The Linux Foundation surveyed both hiring managers and open source professionals about their job's needs and preferences. Hiring managers from corporations, small and medium businesses (SMBs), government organizations, and staffing agencies were surveyed. More than 175 responded with 39% indicating their company was headquartered in North America, 24% in Europe, 15% in Asia, 7% in Africa, 4% in Mexico and Central America, 4% in South America, 2% in the Middle East and less than 1% each in other regions. Respondents needed to have hired at least one open source professional in the last year or plan to hire open source professionals in 2020 to participate in the survey. More than 900 open source professionals responded to a survey, with 74 percent indicating they've been working as an open source professional for three years or more.



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