

The LeadDev

AI Impact Report 2025

We asked 880+ engineering leaders how the adoption of generative AI and large language models (LLMs) is impacting their teams.
Here's what you told us.

Editor's note

Generative AI is here to stay, but two years into this massive disruption, we are still struggling to quantify the impact that coding assistants and large language models (LLMs) are having on engineering teams.

Back in June, we surveyed nearly 900 software engineers to try and fix that. We didn't just want to know how AI coding assistants are impacting individual developers – software engineering is a team sport, after all – but to assess the influence generative AI is having on how engineering leaders think about their teams, budgets, processes, and talent pipelines.

We also wanted to understand just how productive this new class of tools is making engineers feel, and if those gains are worth the cost and disruption of adoption. Finally, has any progress been made with measuring the effectiveness of AI coding tools, and if not, how are leaders expected to make sensible decisions about the future of their organization?

We hope this report helps answer some of those questions, and we will be back next year to check in on how things have changed.

Scott Carey
Editor in Chief, LeadDev



A note from DX

AI promised to change everything about software development, and somehow it did – and didn't. We're living in a world where everything is both brand new and exactly the same.

With AI, we're evolving not just what we build, but how we can build it. In this completely new world of software engineering, AI enables capabilities that were previously impossible or impractical. Whether it's generating entire functions in seconds or automating complex refactoring tasks across massive codebases, we're experiencing a new world of software engineering.

But at the same time, everything is exactly the same. The speed of code generation is faster, but that doesn't automatically translate to higher quality software or better business outcomes. The fundamental challenges of good software – and code review, architecture, security, and maintainability – remain the same.

This tension is what makes this moment so fascinating and why we are excited to partner with LeadDev to share this research with you. The findings capture a pivotal moment where engineering leaders are grappling with rapid AI adoption while trying to maintain the engineering excellence and rigor their organizations depend on.

An industry transformation of this magnitude is uncomfortable; you might feel strain as your organization

adapts to new ways of working while maintaining the stability your customers depend on. Leaders are also under more pressure than ever to innovate, reduce time to market, and deliver value to customers at a rapid pace.

At DX, we work with hundreds of organizations navigating this transition. Those positioning themselves well for long-term success are approaching AI as they would any other significant technology decision. They're identifying specific problems AI can solve, building the necessary organizational capabilities to support adoption, measuring the impact of AI systematically (like with frameworks such as the AI Measurement Framework), and maintaining unwavering focus on fundamental software engineering principles.

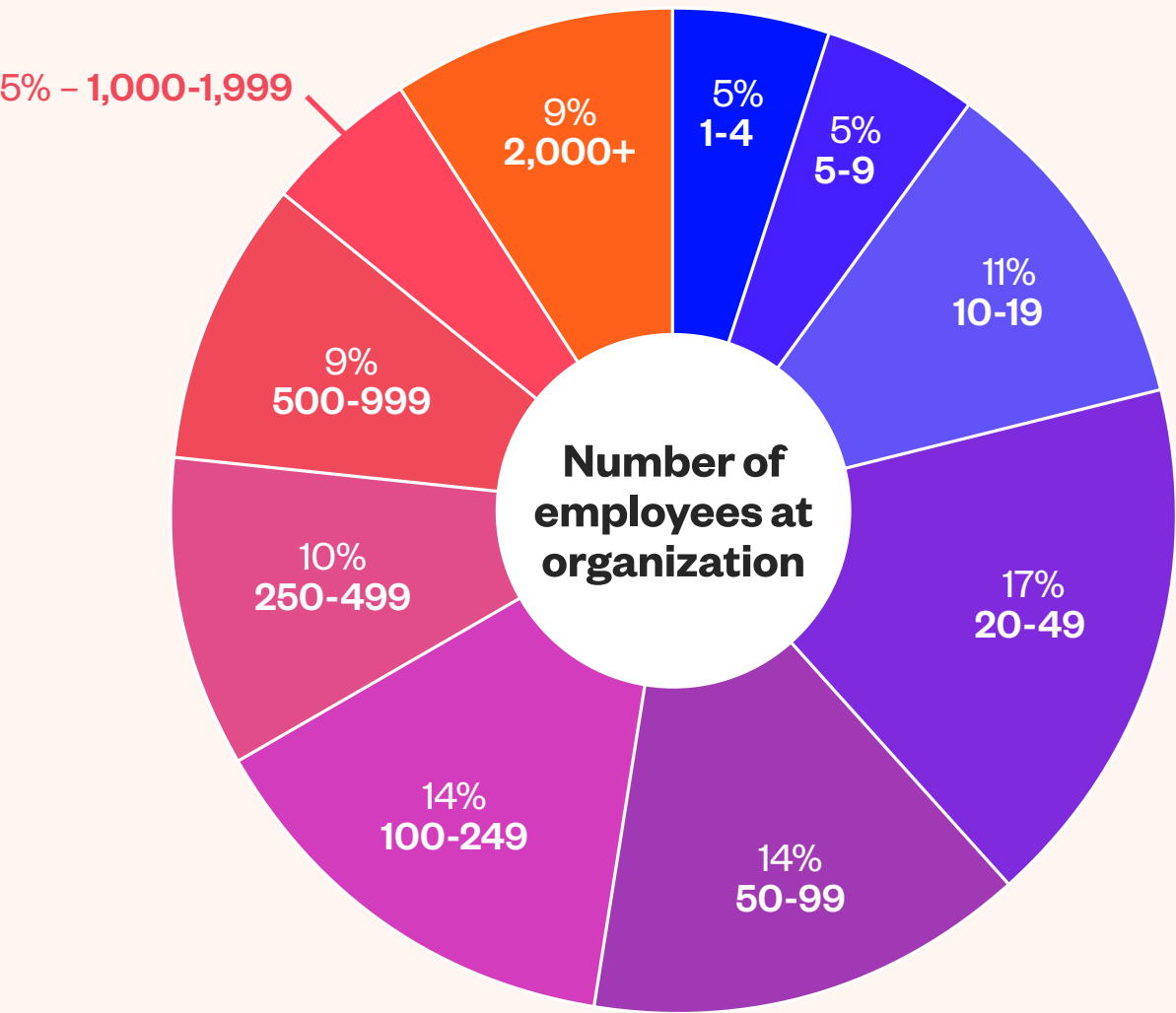
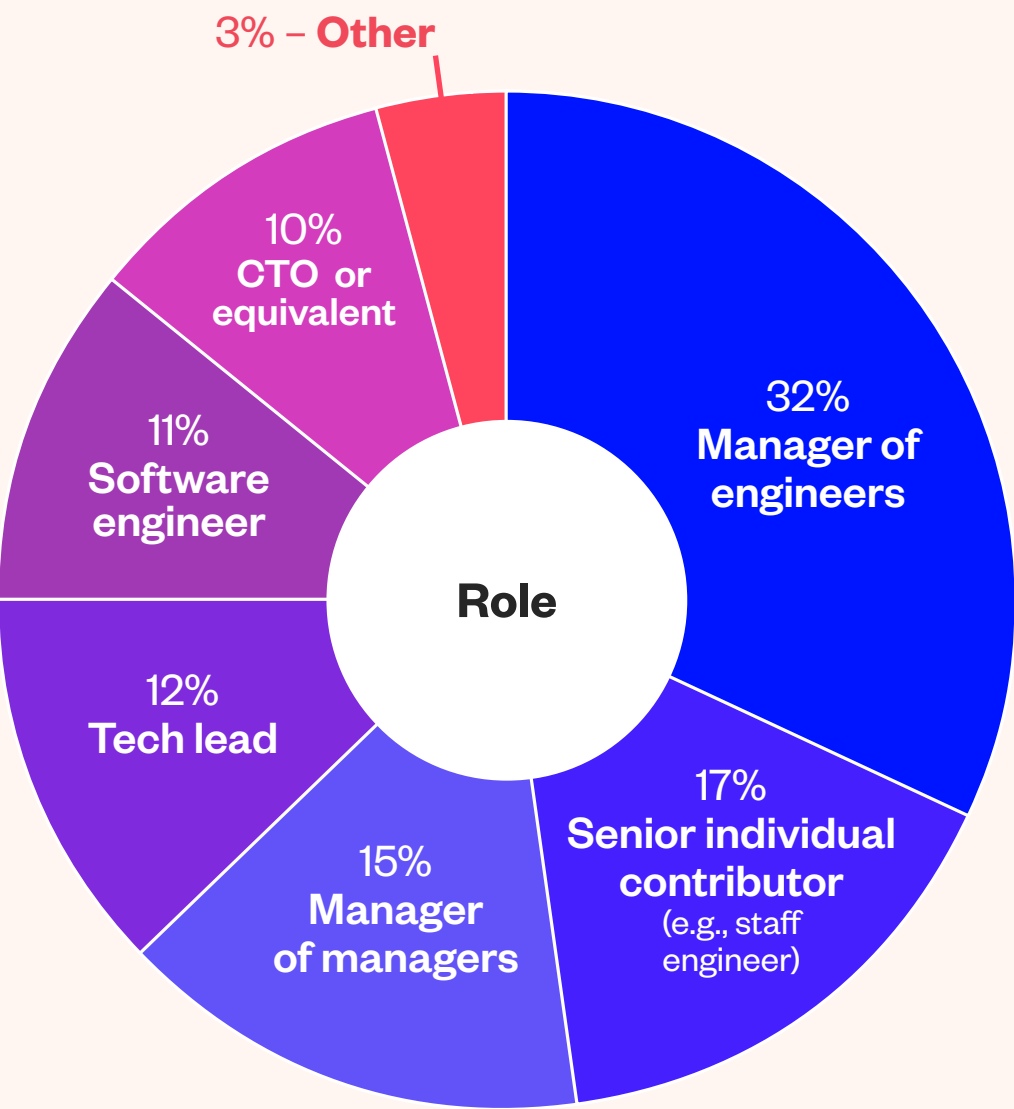
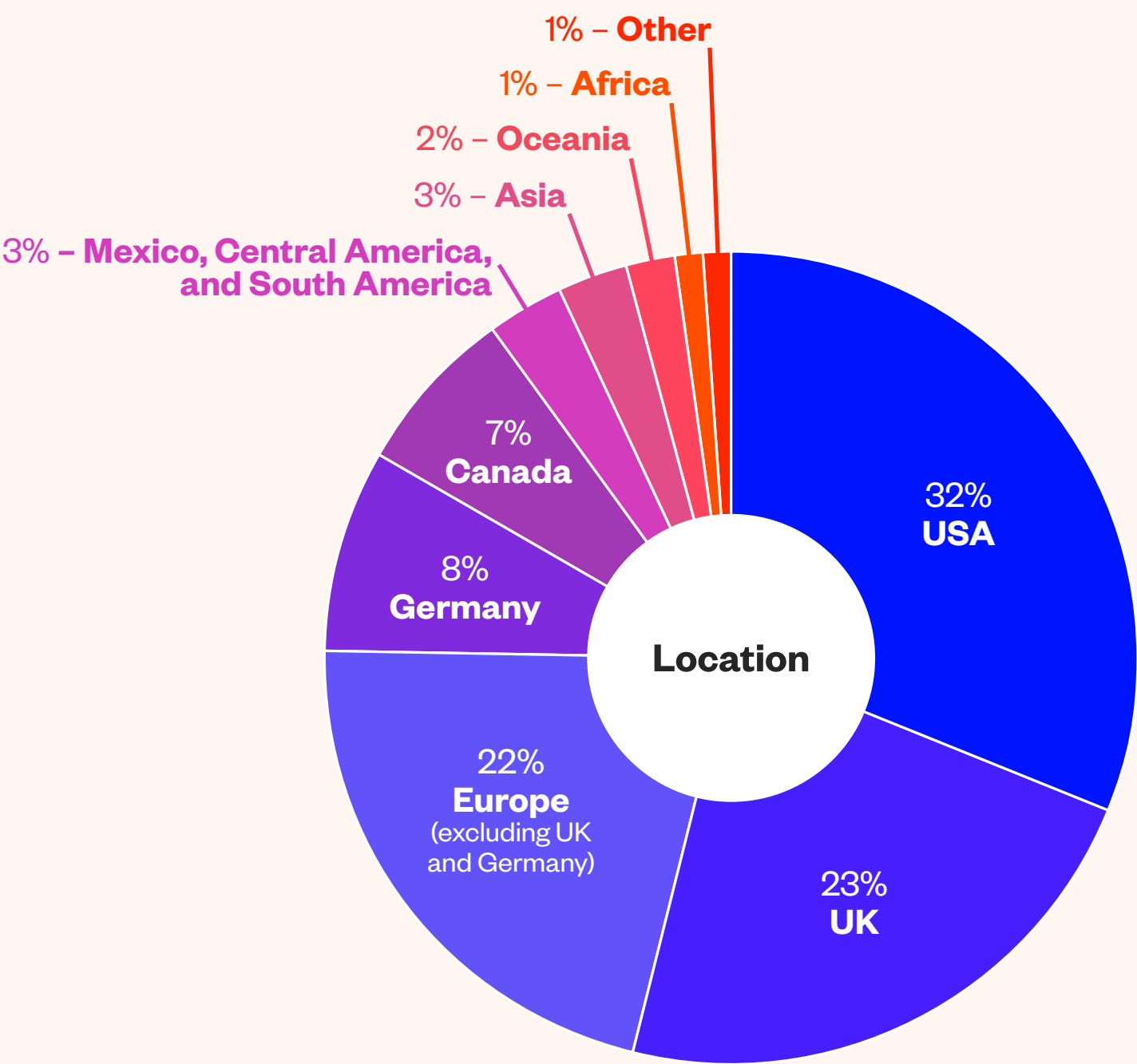
As you navigate your AI journey, stretching between worlds that are simultaneously completely different yet exactly the same, remember: data beats hype every time. We hope this report helps you keep conversations grounded in reality, data, and pragmatism, and is a useful navigational tool as you chart your organization's course into the future.

Laura Tacho
CTO at DX



Methodology

The survey of the LeadDev community was conducted between **30 May–21 June 2025** and is based on **883 respondents**.



Some charts in this report may not add up to 100% due to rounding.

5 top takeaways

60%

of organizations cite the lack of metrics on AI impact as a **key challenge**.

59%

of respondents feel **more productive using AI coding tools**.

85%

are prioritizing internal engineering processes in their **AI investment strategies**.

Critical thinking and architectural design **ARE THE MOST IN-DEMAND COMPETENCIES.**

54%

of respondents expect hiring of **junior engineers to decrease**.

The impact on AI tooling and investment



SUMMARY

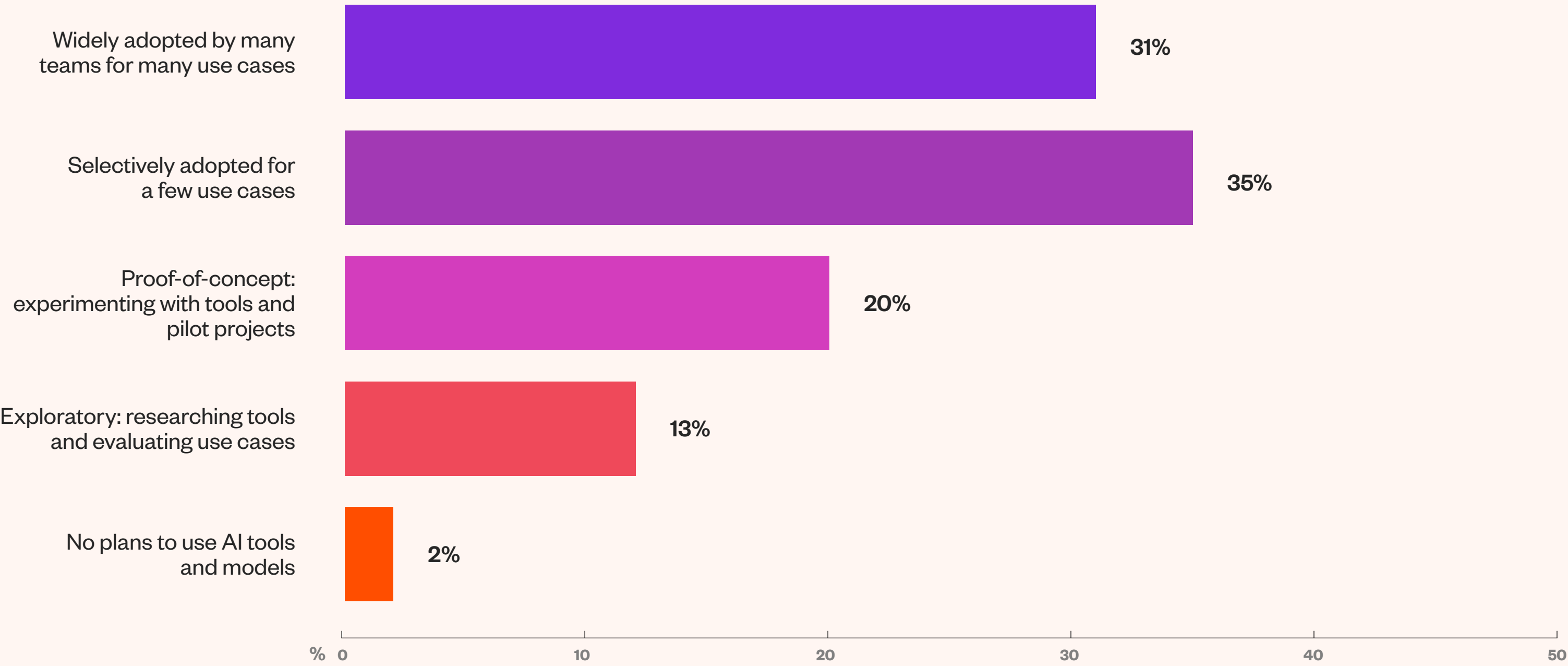
- **66%** of respondents have adopted AI tools in production.
- **85%** are focused on internal engineering use cases.
- **59%** of respondents feel AI has increased productivity.

The tooling landscape

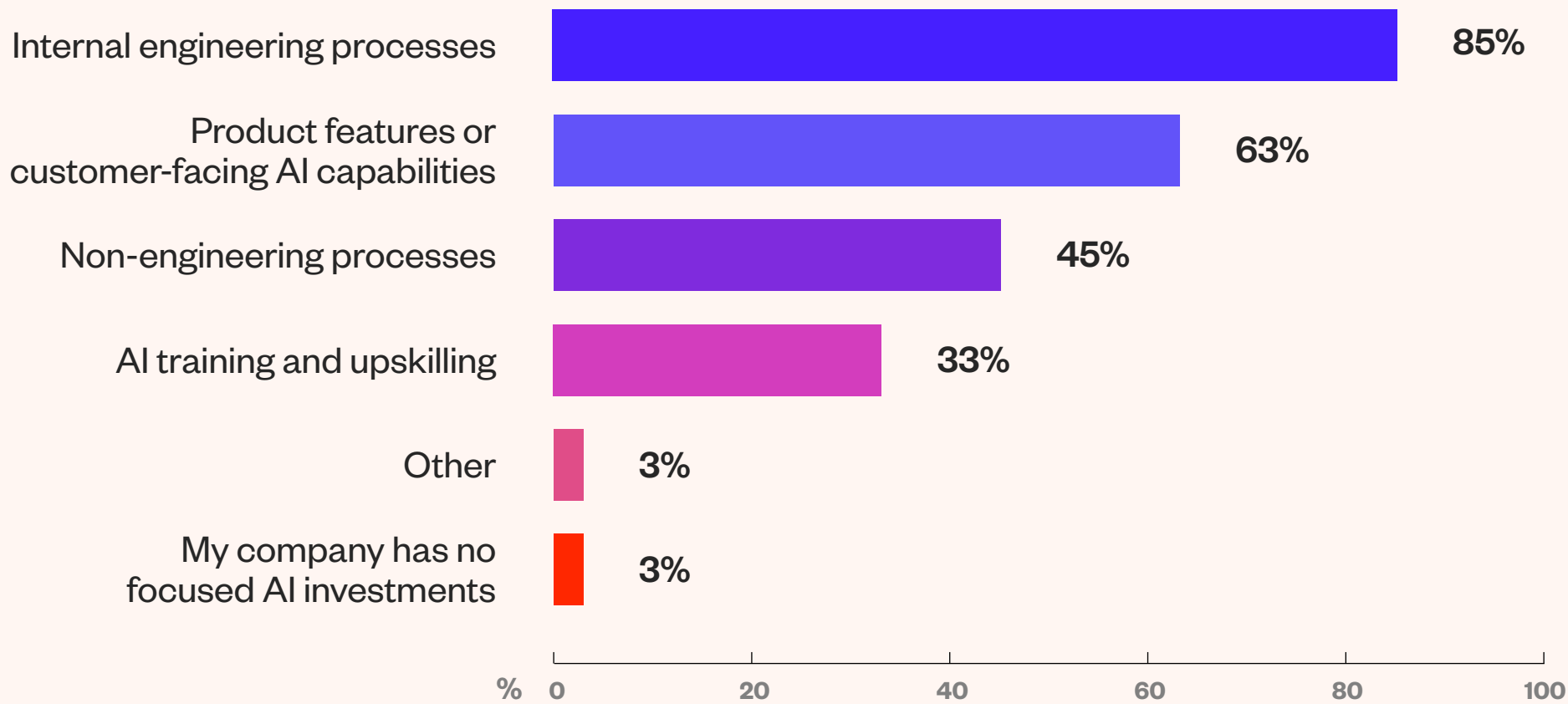
Whether overzealous leaders have mandated adoption or allowed engineers to discover these tools themselves, it's safe to say that AI coding assistants and large language models (LLMs) are firmly part of the software developer's tool belt today.

Two-thirds (66%) of respondents have adopted AI tools or models for at least some use cases, with 20% at a pilot stage, and 13% still exploring. This leaves just 2% who have no plans to use AI tools or models.

Which of the following best describes the stage of your engineering organization's adoption of AI tools and models?



Where has your company focused its AI investments to date?



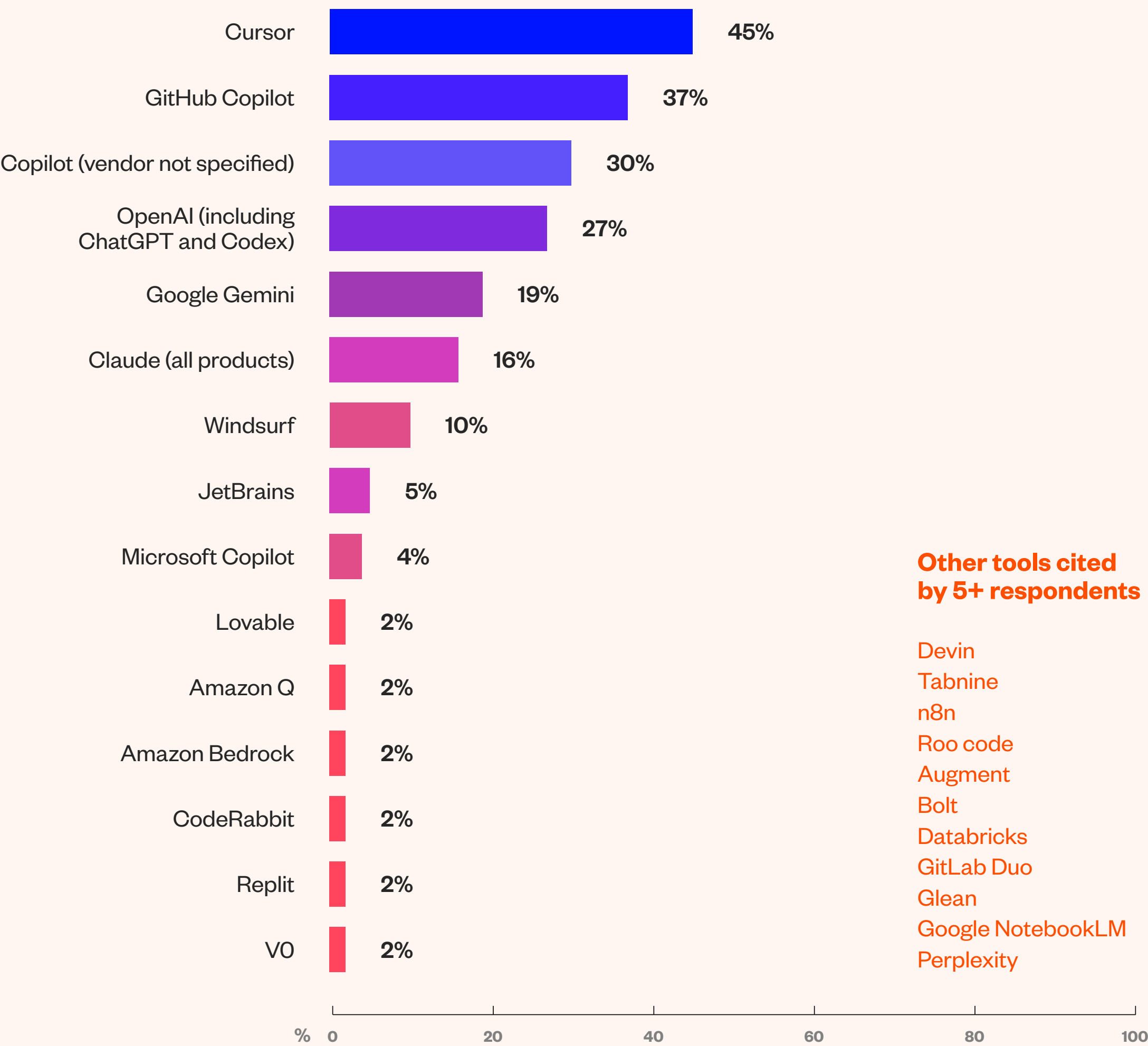
But where exactly are companies concentrating their AI efforts? When asked about investments, 85% of respondents report focusing on using AI for internal engineering processes, such as internal dashboards, testing, or assisting with code writing. Next up, 63% of respondents are investing in product features or customer-facing AI capabilities.

Nearly half (45%) of respondents’ employers are also using AI to streamline non-engineering processes. This can span legal, marketing,

or HR tasks like contract analysis, audience segmentation, or interviewing. A third are focusing on investments in training staff to work with these new tools.

When it comes to specific tools used, the code editor Cursor proved the most popular (45%), followed closely by GitHub Copilot (37%). These were followed by more general-purpose AI products, such as OpenAI’s ChatGPT, Google’s Gemini, and Anthropic’s Claude.

Please name up to five AI-focused developer tools that have been funded at your organization.



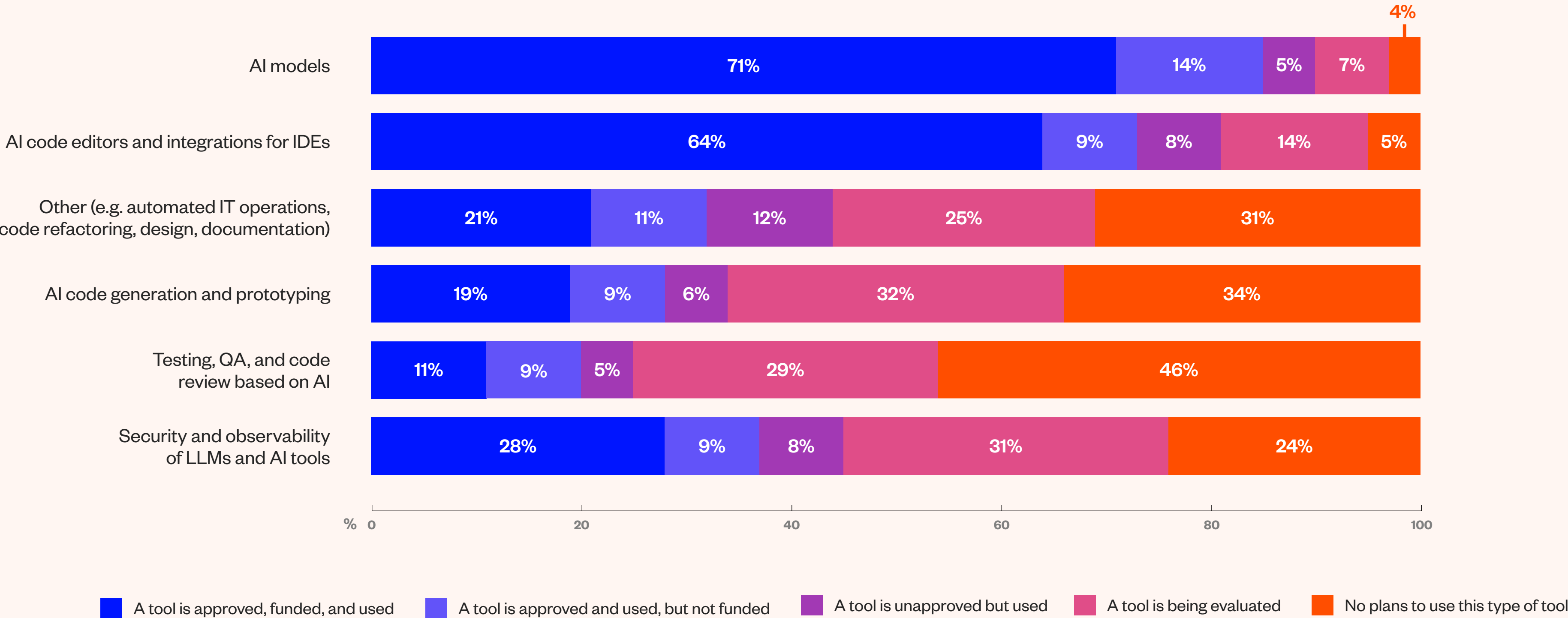
Other tools cited by 5+ respondents

- Devin
- Tabnine
- n8n
- Roo code
- Augment
- Bolt
- Databricks
- GitLab Duo
- Glean
- Google NotebookLM
- Perplexity

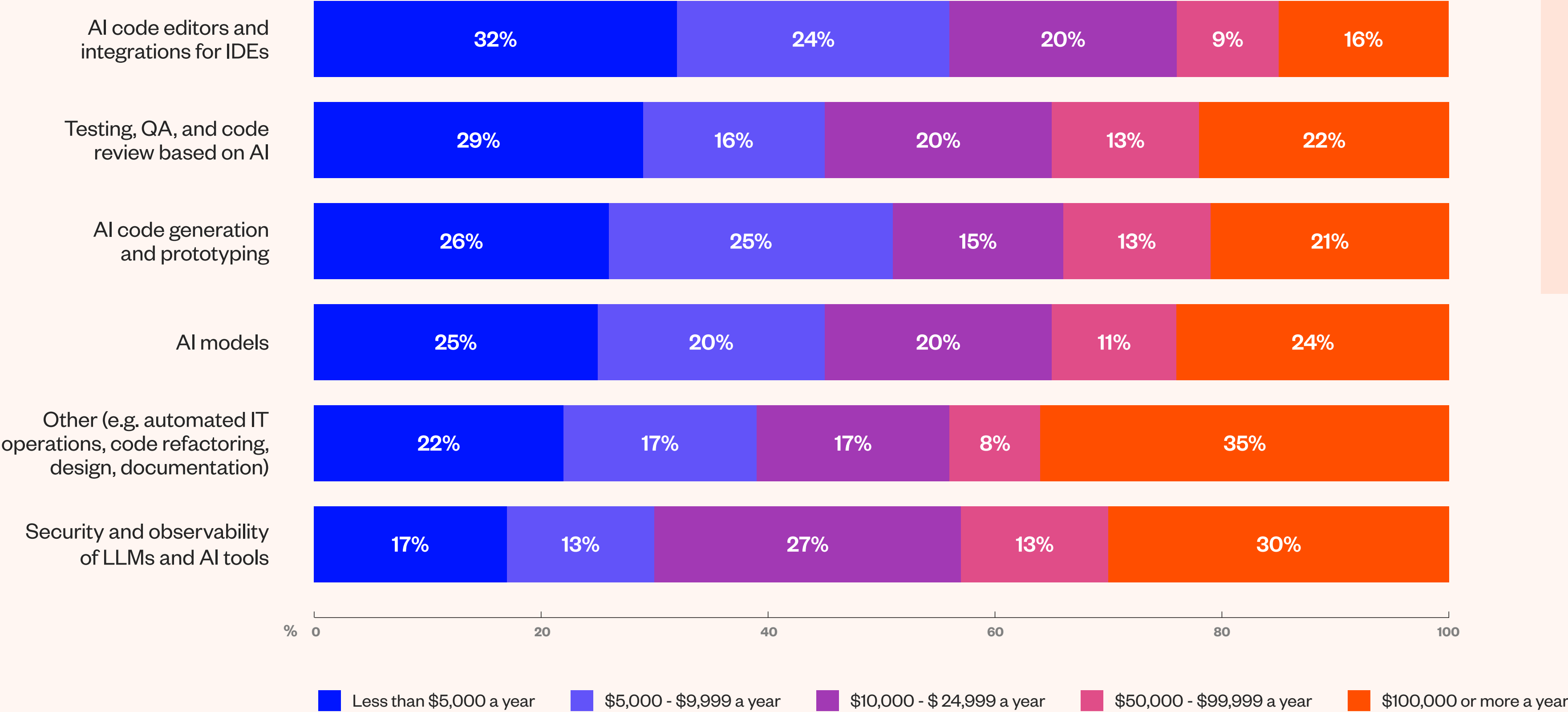
Budgets and investments

It's one thing to talk about company interest in the tooling landscape; it's another thing to follow the money.

To what extent has your organization adopted AI-focused developer tools or LLMs in the following categories? Note that some tools may span multiple categories.



How much is your organization planning to spend on funded AI models and tools in the upcoming year?



Among organizations that have funded AI models, we found that 71% of those with 500+ engineers are likely to spend \$100,000 or more US dollars in the upcoming year. In medium-sized orgs, ranging anywhere from 20-499 engineers, spending was likely to fall in the \$5,000-\$24,999 band.

A similar picture is painted when examining how organizations plan to spend on AI code editors and IDE integrations in the upcoming year, where larger orgs are more likely to invest more money, and smaller orgs less.

This question was only asked if the organization is funding the technology. The chart excludes all respondents who answered “not sure or don’t know.” The number of respondents (n) for each category was: AI models, n=241; AI code editors and integrations for IDEs, n=238; Other, n=63; AI code generation and prototyping, n=61; Testing, QA, and code review based on AI, n=55; Security and observability of LLMs and AI tools, n=30.

AI's impact on engineering tasks

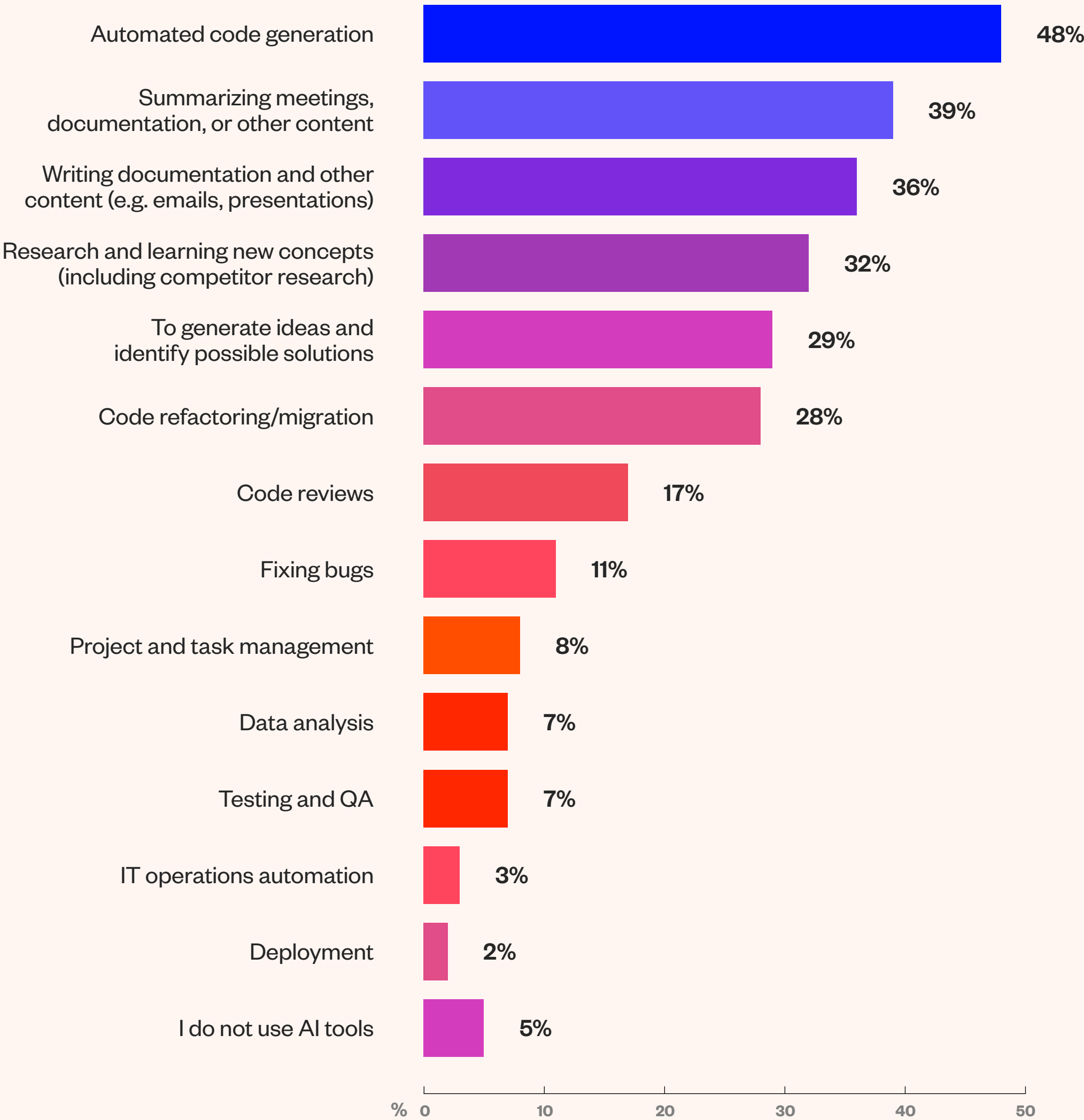
A company's investment in AI tools or LLMs doesn't necessarily tell the whole story of how engineers are personally using them in their day-to-day tasks. So, what was the most popular AI function for engineers?

Automated code generation, which can range from rendering boilerplate code to refactoring, was the most popular task offloaded to an AI tool, at 48%. Other popular tasks for AI tools included summarizing meetings, documentation, or other content (39%), writing documentation (36%), and researching new concepts (32%).

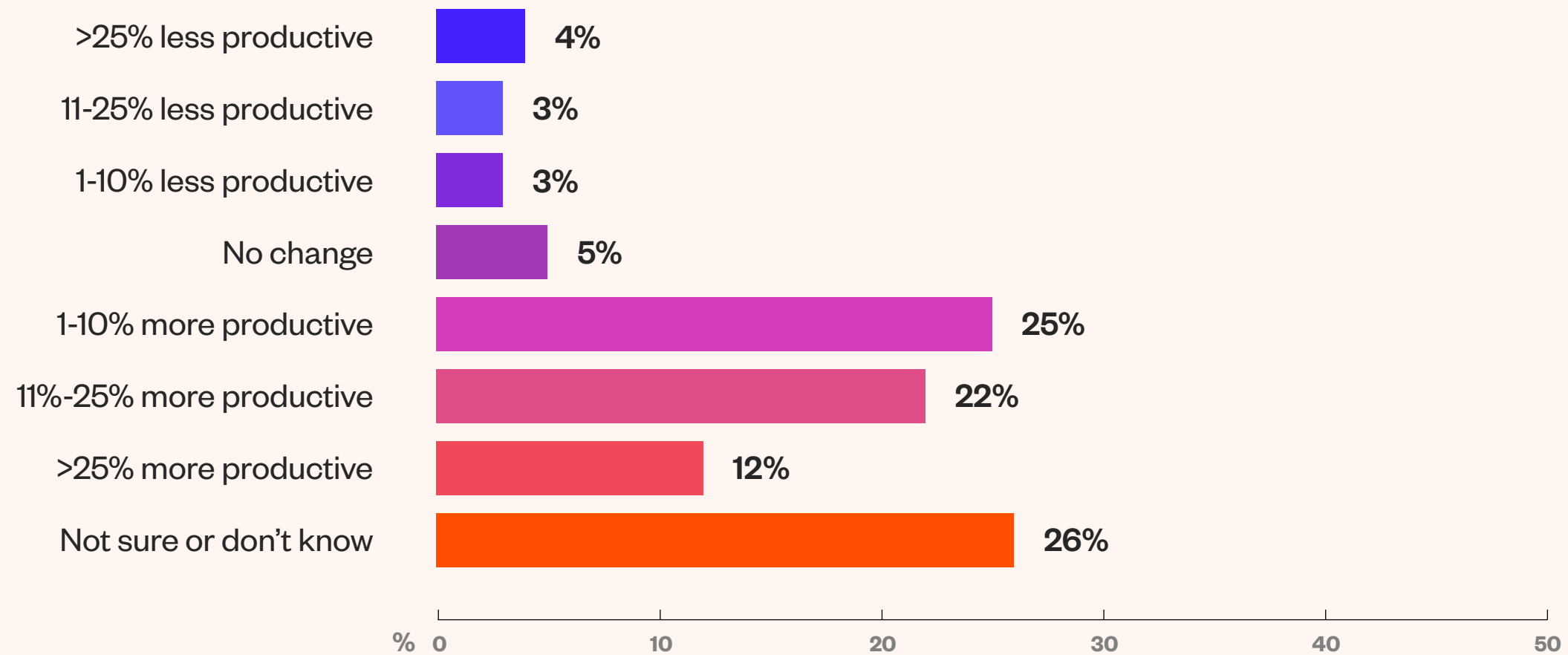
Assistance with code reviews remained middle of the pack, at 17%. However, it is worth noting that 57% of organizations that experienced an impact on their code review processes used them to identify potential issues for human review.

At the lower end of the spectrum were testing and QA (7%), IT operations automation (3%), and deployment (2%), despite these parts of the software development lifecycle being ripe for automation.

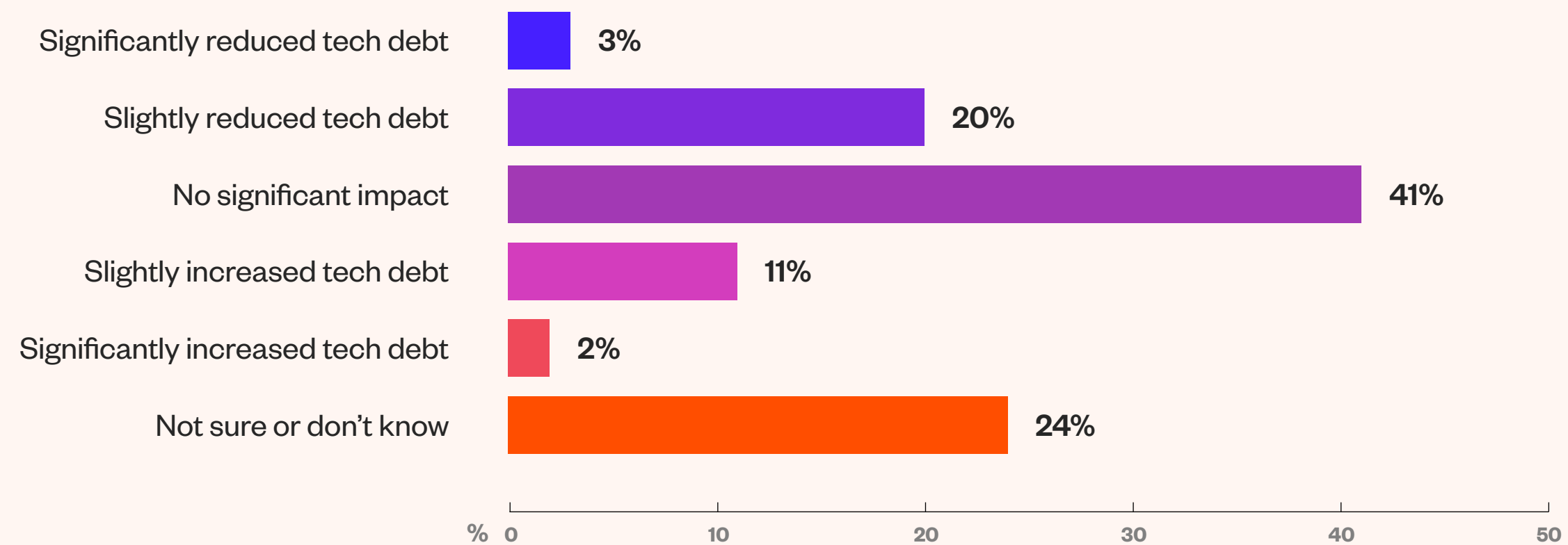
What tasks and processes do you most use AI tools for?



If your company has adopted AI tools, to what degree have they improved engineering productivity?



How has the adoption of AI coding tools impacted your organization's tech debt?



Engineer productivity

Individual adoption may paint a certain picture, but is it paying off in enhancing developer productivity?

Overall, 59% of respondents noted a perceived increase in productivity, compared to 10% who felt there was a decline. Yet, 26% couldn't quantify any impact at all.

Just looking at the respondents that could answer this question, 46% felt there was a productivity boost of more than 10%. And productivity gains were biggest among companies with fewer than five engineers, with 59% citing a greater than 10% increase in productivity.

There didn't seem to be much cause for concern regarding an increase in technical debt, with 41% citing no significant impact. Another 23% felt that tech debt has been reduced, with this figure going up to 54% at companies that measure the impact of AI coding tools (more on measurement challenges later).

A cumulative 13% of orgs felt there had been an increase in tech debt.

An illustration on a purple background showing a person in a light blue canoe with orange interior compartments, paddling with two blue oars. A scuba diver in a blue suit is positioned near the stern of the canoe. Three large, dark blue shark silhouettes are swimming around the canoe. The scene is set against concentric, semi-transparent purple circles.

The impact on engineering roles

SUMMARY

- **61%** of engineers have seen an increase in supervising or taking part in AI initiatives.
- **54%** felt there will be less junior developer hiring long term.
- **Managing agents and prompt engineering** are the most popular AI-related skills to learn.

The impact on junior engineers

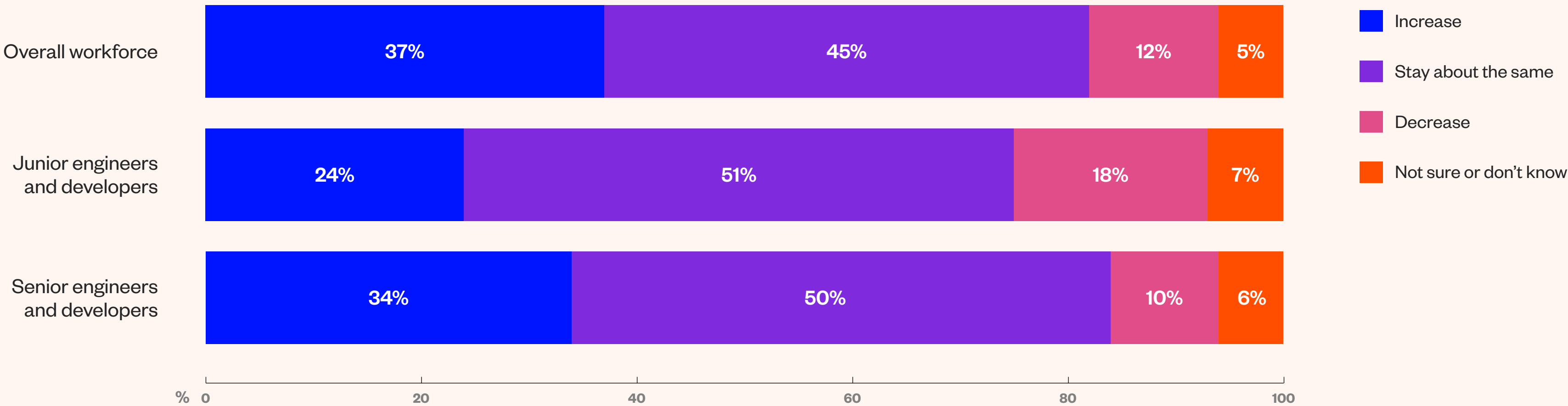
With widespread industry layoffs, the great flattening, and recent moves from large technology firms to consolidate headcount, it might be difficult to see how AI adoption could have anything but a negative impact on hiring. But survey respondents were refreshingly positive about the topic.

When looking at top-line hiring estimates, just 12% expected an overall workforce reduction,

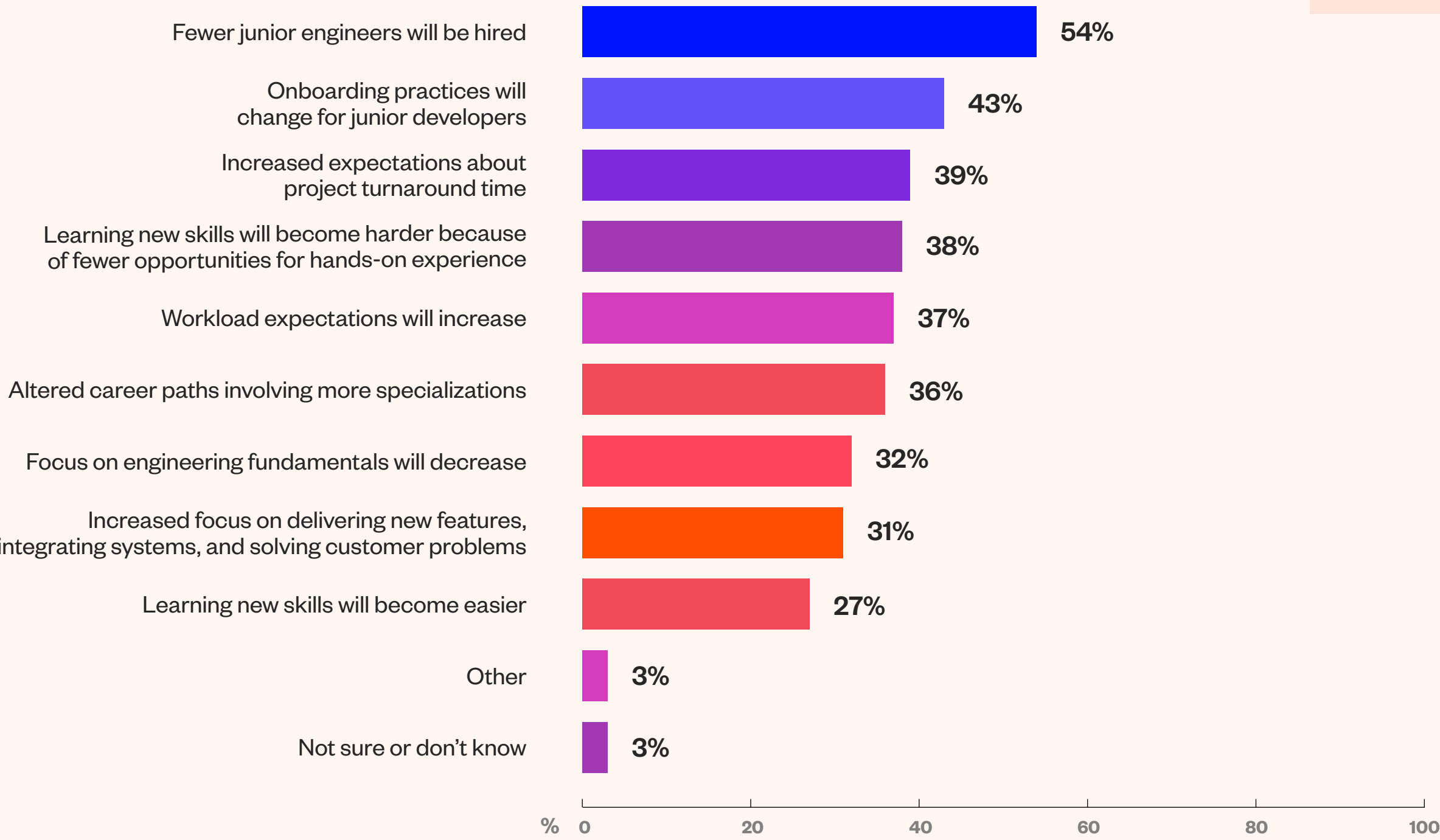
18% expect fewer junior hires, and 10% fewer senior engineers in the next 12 months.

While many respondents believed that hiring levels would remain largely unchanged, 34% anticipated an increase in senior engineer hires, compared with 24% who expected junior engineering positions to increase in the next year.

How do you expect the number of employees to change in your organization or company over the next 12 months?



How do you think increased adoption of AI coding tools will affect junior engineers?



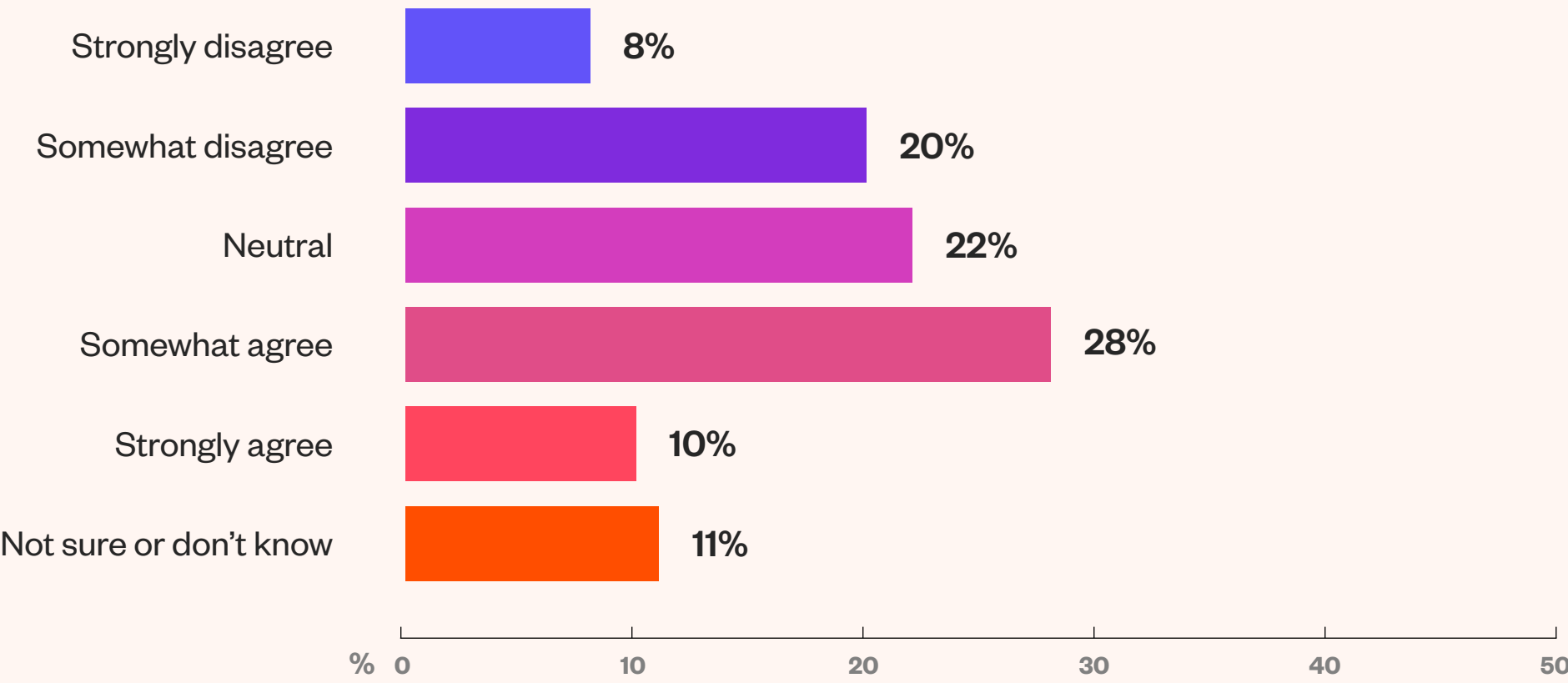
Interestingly, the tune changed a little when respondents were asked specifically how the increased adoption of AI coding tools would impact junior engineers in the long term. Over half (54%) felt that there would be less junior developer hiring over a non-specified timeframe.

While 27% thought that AI’s ability to expedite learning would have a positive impact on junior engineers, 38% thought learning new skills would be harder due to a lack of real-world experience.

Other, less positive expectations about junior engineer roles were: increased expectations about project turnaround time (39%), less opportunity for hands-on experience (38%), and increased workload expectations (37%).

Further, 38% of engineering leaders agreed with the statement that “AI tools have reduced the amount of direct mentoring junior engineers receive from senior engineers.” Those who disagreed with the statement were only a little bit behind, at 28%.

To what extent do you agree or disagree that the increased use of AI tools has reduced the amount of direct mentoring junior engineers receive from senior engineers?



The impact on AI skills investments

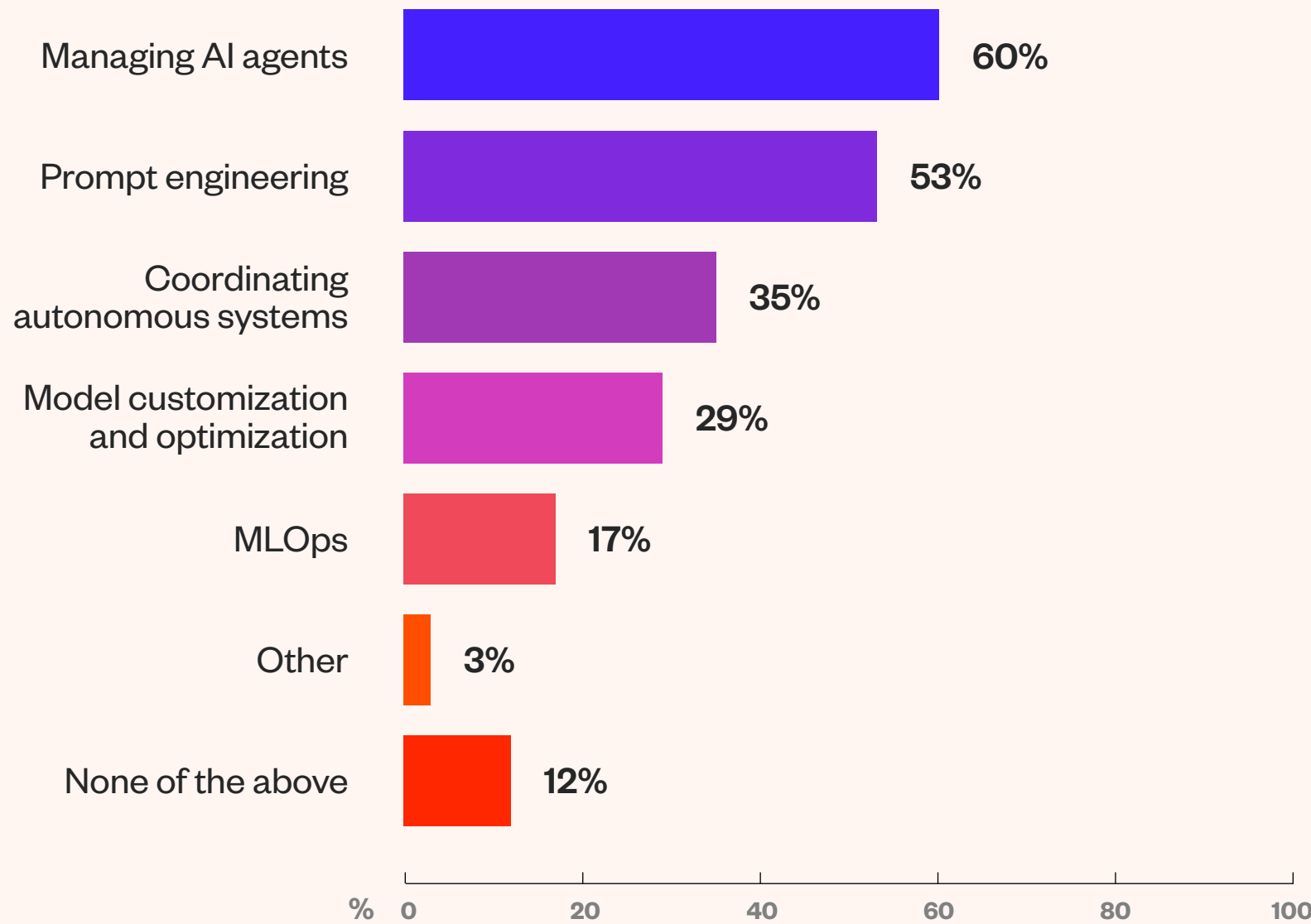
Every new technological boom calls for an upgrade in skill set. In terms of building up AI-specific expertise over the next year, 60% said they will be focusing on learning how to manage AI agents, followed by 53% who said that prompt engineering is a priority for their professional growth.

As a result of AI usage, respondents feel the most in-demand competencies will be critical thinking (43%) and architectural design (34%) over the next three years. Other points of interest were domain expertise at 28% and communication skills at 27%.

Skills that didn't quite make it to the top of the priority list were writing code (8%), mentoring (8%), project management (7%), and code translation (5%).

“Skills in natural language prompt engineering and retrieval-augmented generation (RAG) have also become essential capabilities, helping them interact effectively with AI systems and utilize AI tools to optimize the development process.”

Which of the following emerging AI-related skills will you likely personally focus on developing in the next year?



Over the next three years, which areas of engineering competence do you think will be most in demand due to increased use of AI?



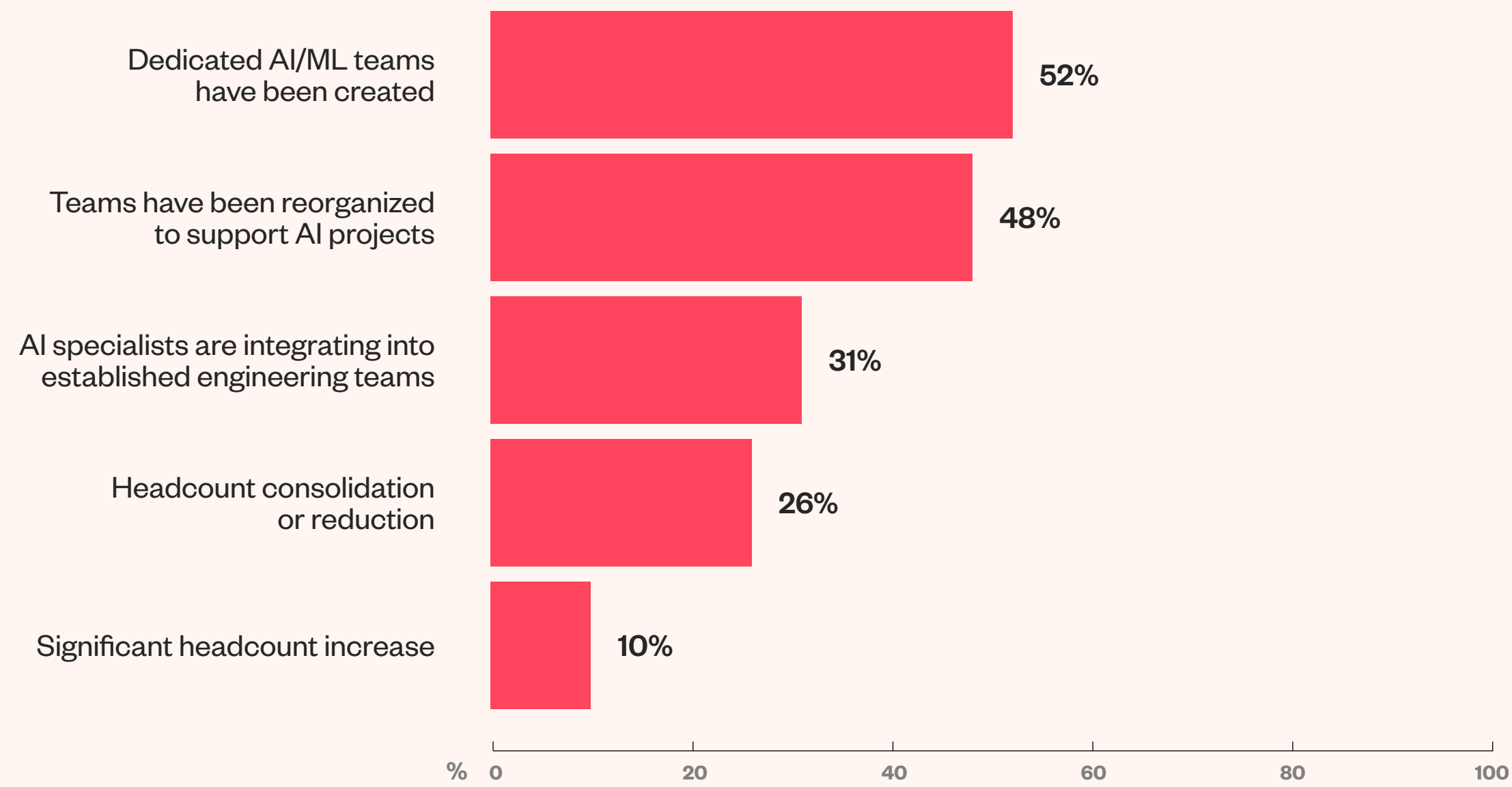
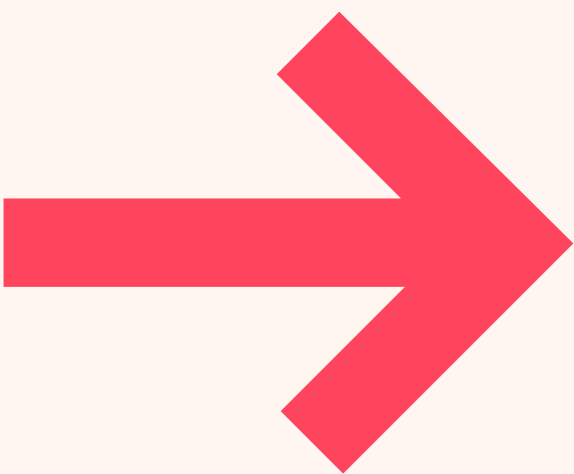
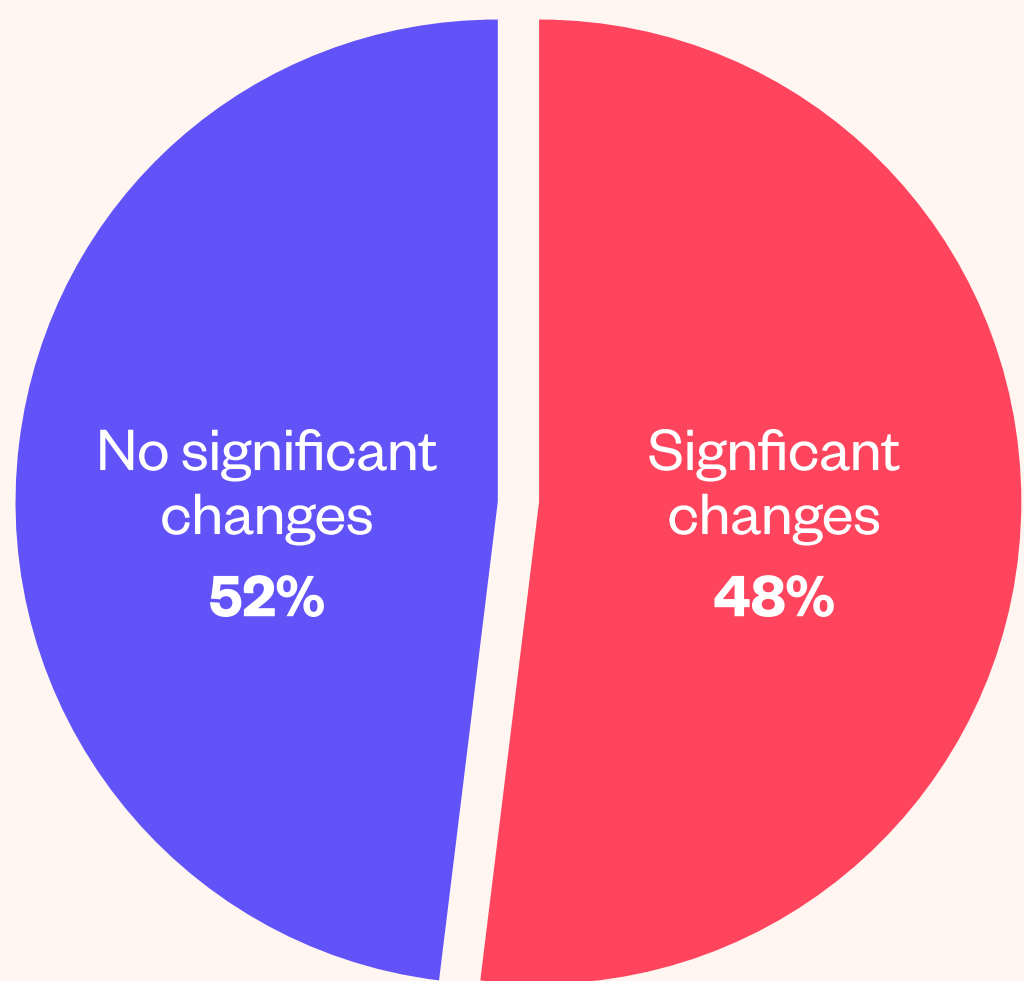
The impact on team structures and remits

The adoption of AI has not catalyzed mass structural reorgs – yet. About half (52%) of engineering leaders shared that there haven’t been any significant changes to team structures.

Of those that did see a shift, 52% cited the creation of dedicated AI/ML teams as part of that change, followed by 48% that reorganized teams to support AI initiatives. AI specialists had been integrated into 31% of teams, and 26% reported a consolidation of headcount.

The companies that noted a significant increase in headcount tended to be organizations hiring AI specialists as they moved from exploratory phases to adoption.

How has AI adoption impacted your organization’s team structures over the last 12 months?

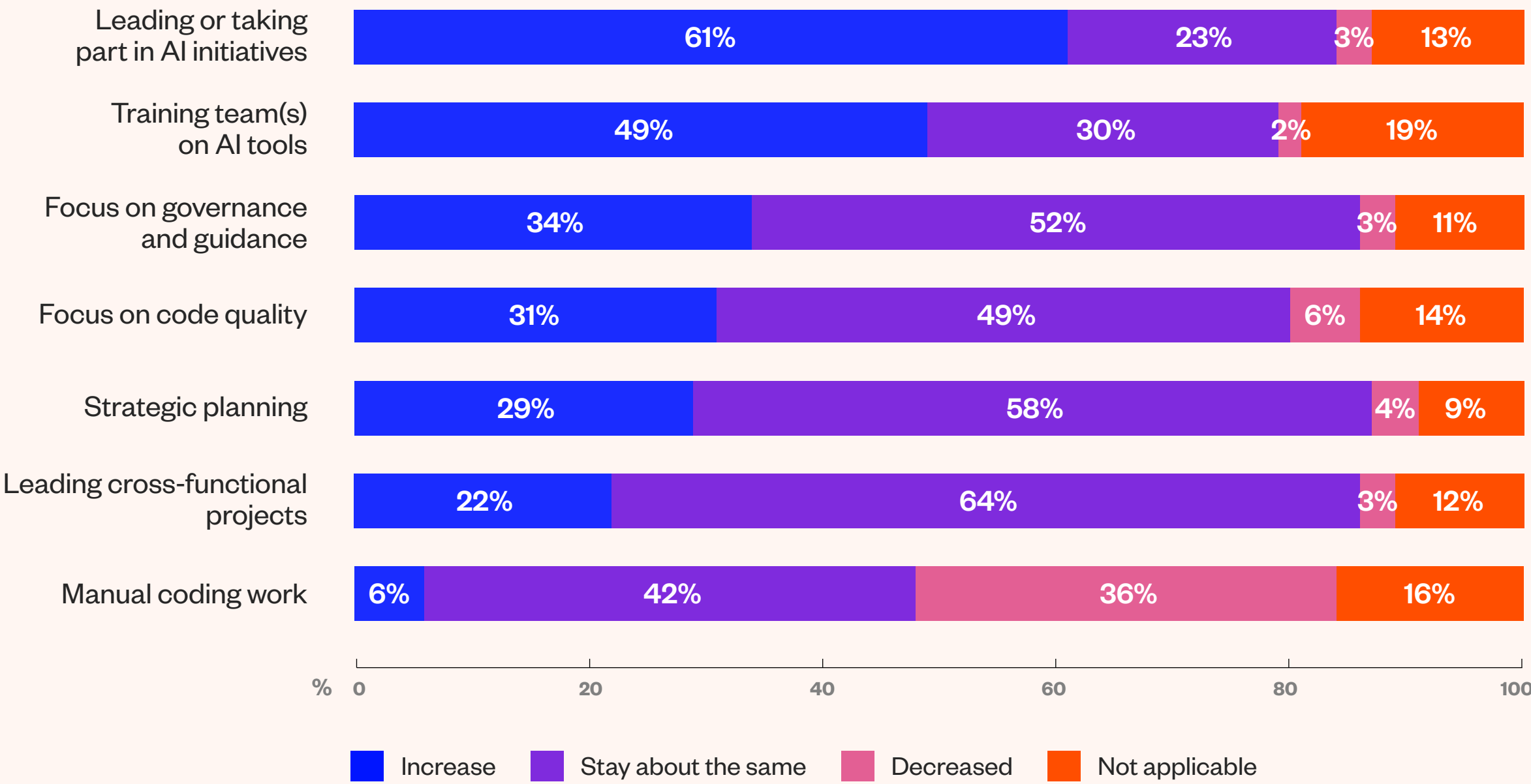


While there may not be any significant structural changes for most orgs, in an age where there are demands to deliver “more with less,” how has AI evolved the leadership remit?

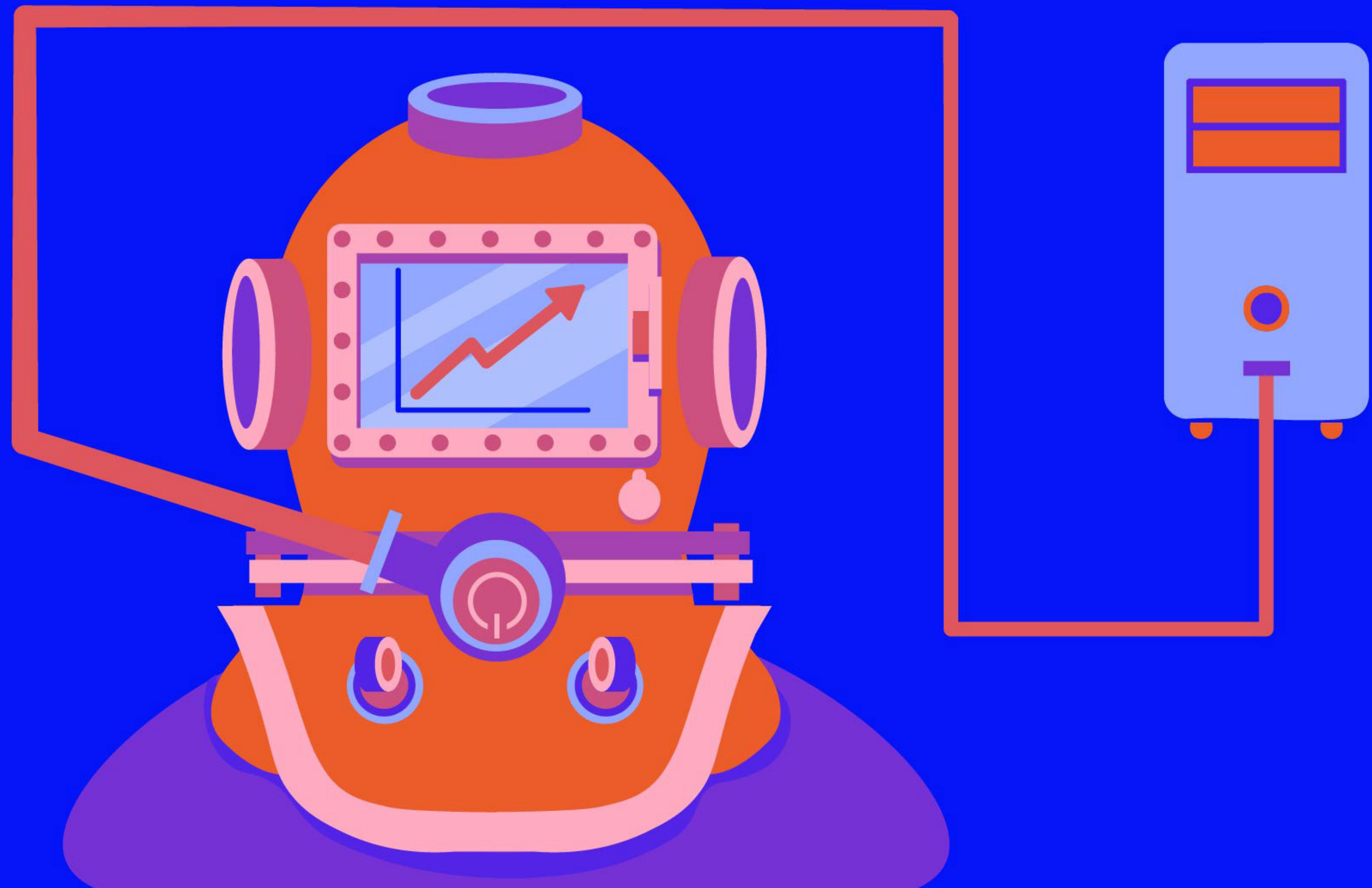
With such a steep incline of AI adoption happening across respondent orgs, it comes as no surprise that 61% have seen an increase in overseeing or taking part in AI initiatives. Following this was training team(s) on AI tools at 49%.

Unsurprisingly, 36% report their manual coding responsibilities decreased in the last year, compared to 6% that saw an increase in coding work. Engineers at organizations that use paid versions of Cursor, OpenAI’s products, and GitHub Copilot were even more likely to note a decline, at 46%.

How have your responsibilities increased or decreased over the past 12 months as a result of using AI coding tools?



AI challenges and best practices



SUMMARY

- **60%** of organizations cite a lack of clear metrics as their biggest AI-related challenge.
- **Development time per feature** was the most popular metric for measuring AI tool effectiveness.
- **Less than half** of respondents have ethical AI use policies in place.

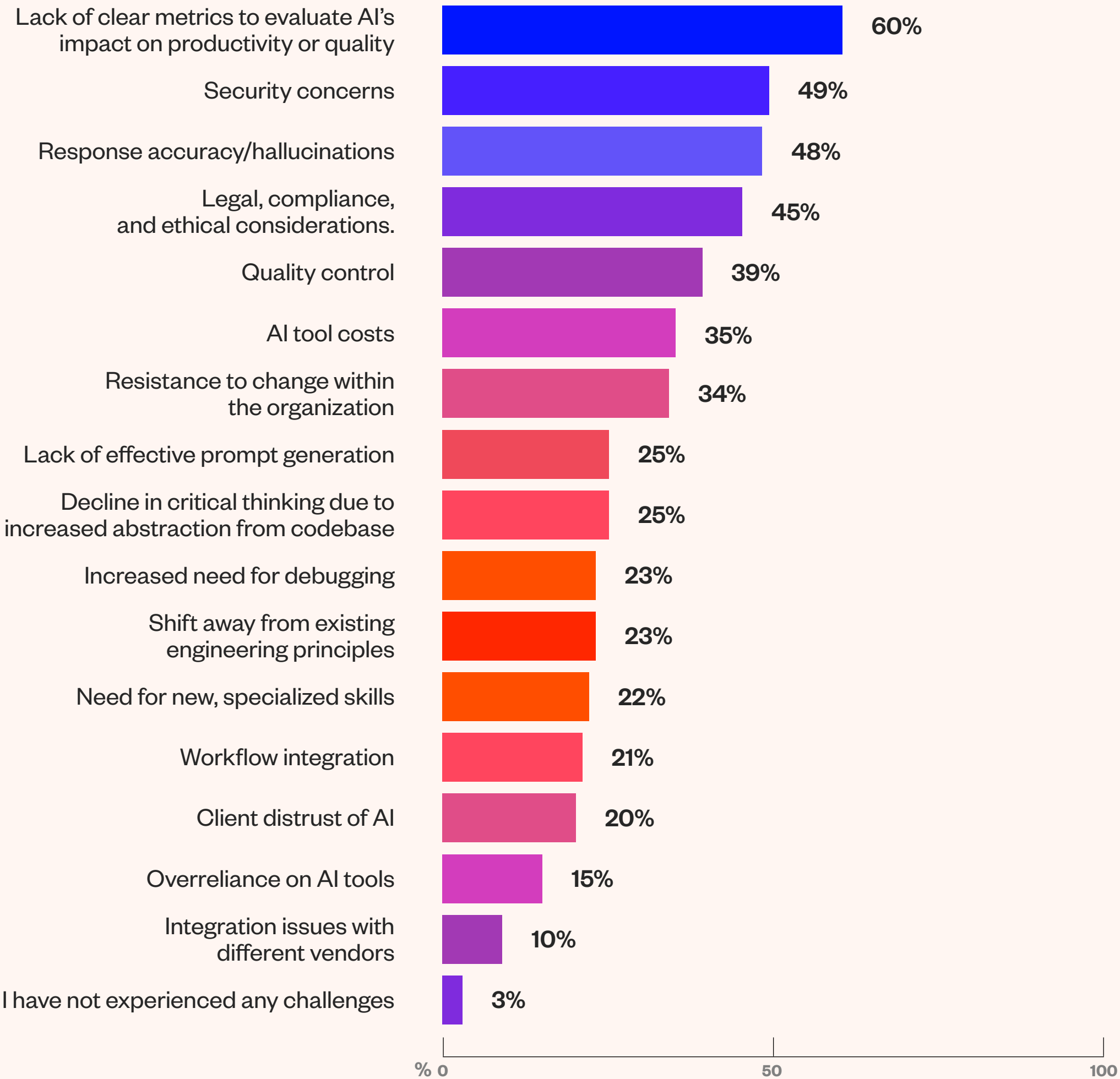
The impact of AI and metrics

Hallucinations, poor code, and security concerns are among the top challenges organizations have faced with AI adoption over the last year. While company execs are showing appetite to buy into AI solutions, it's not always clear sailing.

For our respondents, there was another obvious pain point: metrics.

The majority of respondents (60%) named a lack of clear metrics for AI's impact on productivity or quality as a key challenge. When explicitly asked if their companies were currently measuring the impact of AI tools, only 18% attested that they were, with 40% still assessing the best route – suggesting that the issue may lie in nailing down the right metrics to track.

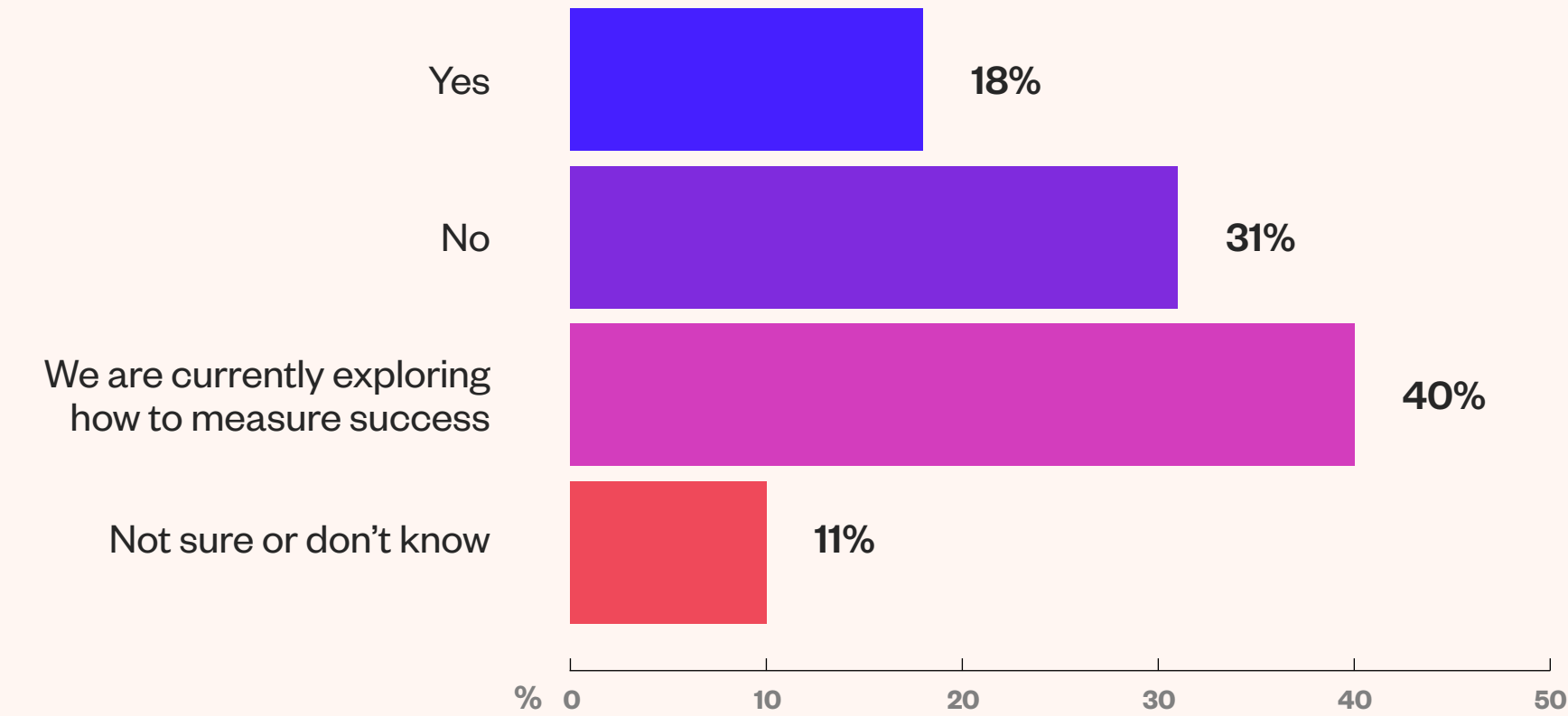
Which of the following challenges have your organization experienced with AI in the past 6-12 months?



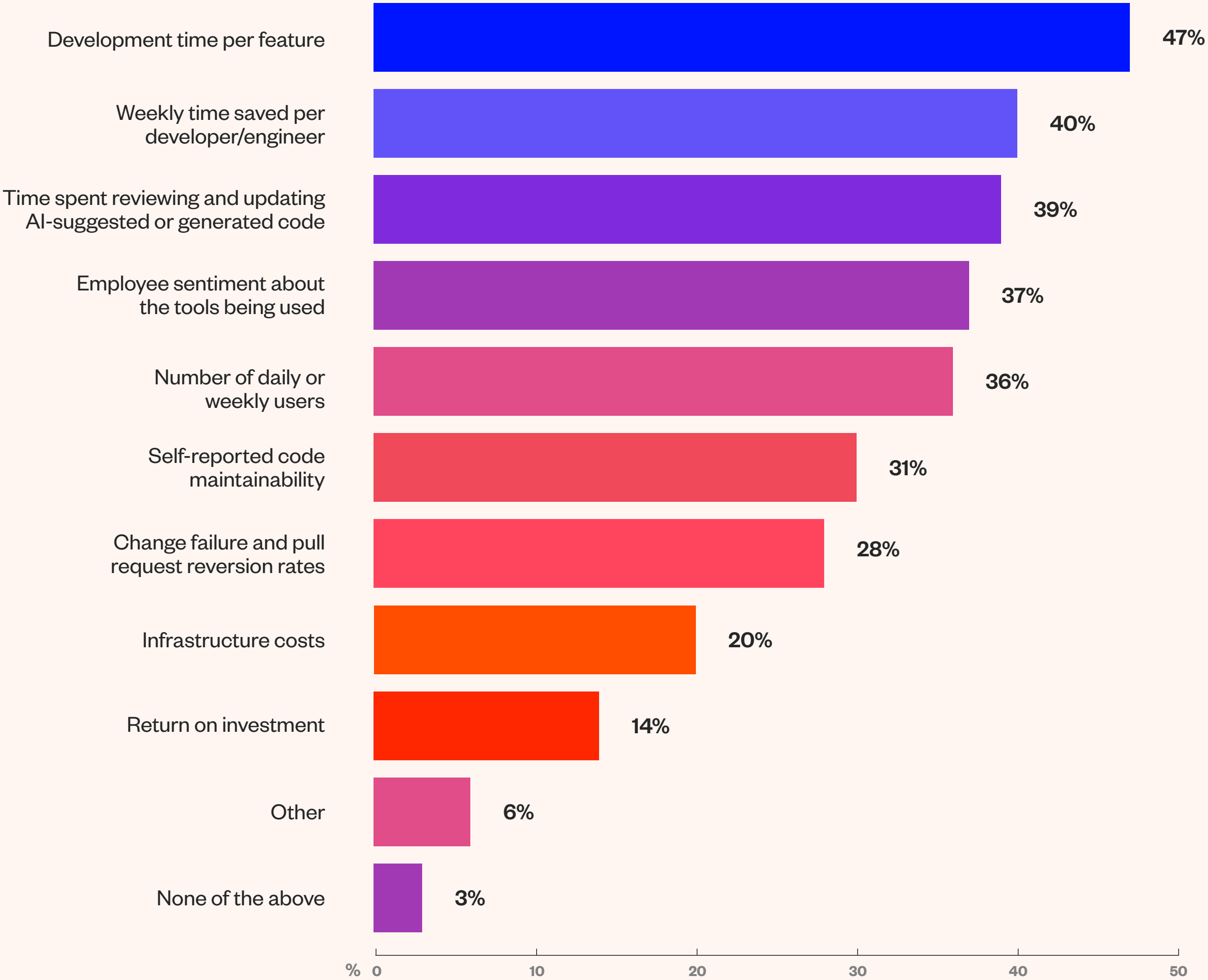
Taking a closer look at the size of a company’s engineering org shows that almost twice as many (33%) organizations with 1,000+ engineers are measuring the impact of AI tools.

Among organizations that gauge the impact of AI tools, development time per feature was the commonly chosen metric for 47% of respondents. The next most tracked metrics were weekly time saved per engineer (40%) and time spent reviewing AI-suggested or generated code (39%).

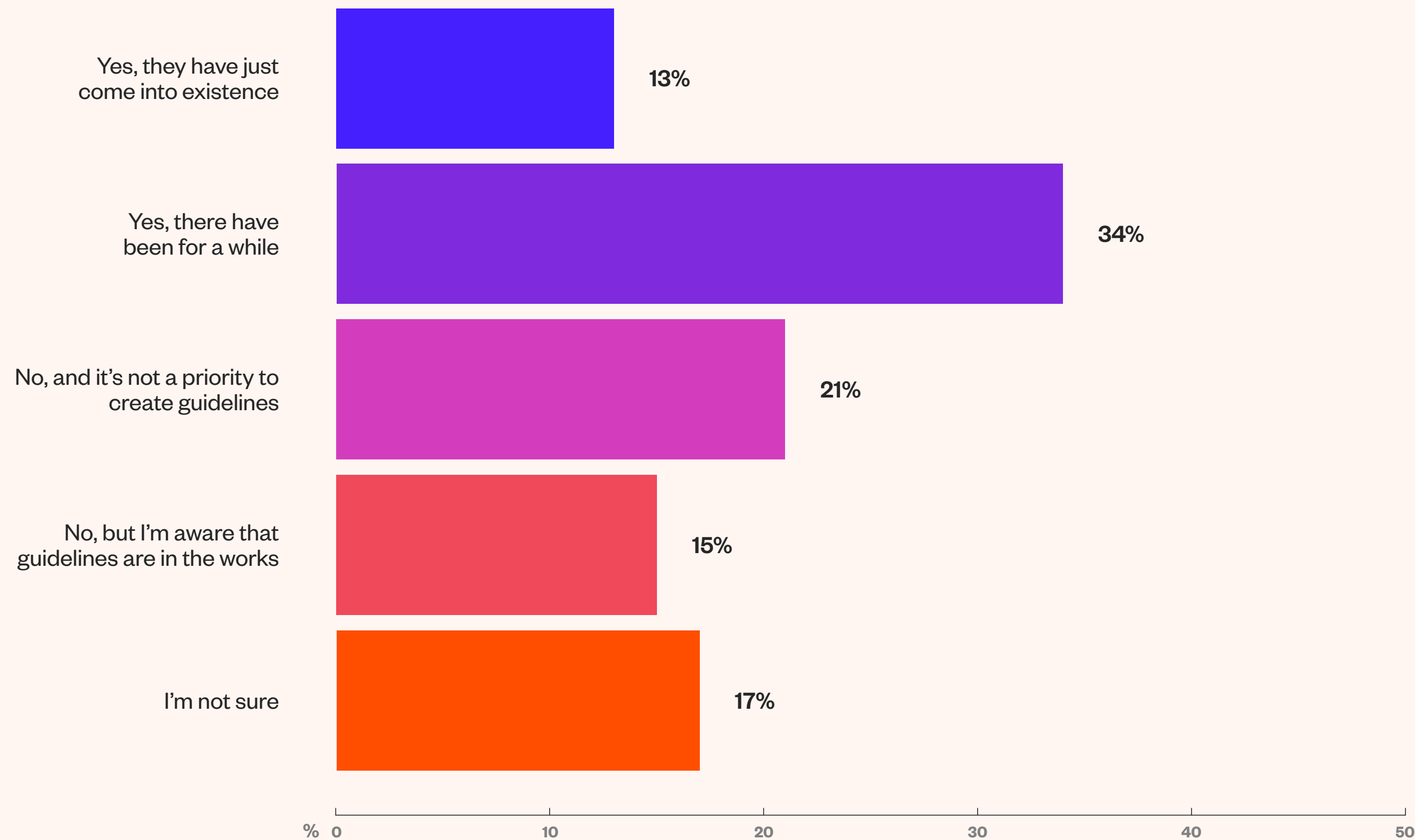
Does your organization currently measure the impact of AI tools used within engineering teams?



What key metrics does your organization track that can gauge the impact of AI tools?



Are there any internal guidelines within your organization regarding the ethical use of AI?



The impact on security and ethics

The perils of metrics weren't the only problems for engineering teams. Security concerns (49%) and hallucinations (48%) were all significant challenges.

Ethical issues (45%) followed closely behind, but when respondents were asked whether they had internal guidelines regarding AI ethics, 47% reported having them, and 36% said they did not. A further 17% said they weren't sure if they had policies in place. Given that ethical considerations are among the top four challenges companies face, there doesn't seem to be enough priority placed on establishing guidelines to curb them.

While a majority of respondents (55%) mentioned that they have a defined leader for AI initiatives and policies, 38% said there was no one designated person, perhaps contributing to the vacuum in guidelines.