

# Kubernetes and unexpected cloud spend: taming, not riding, the tiger

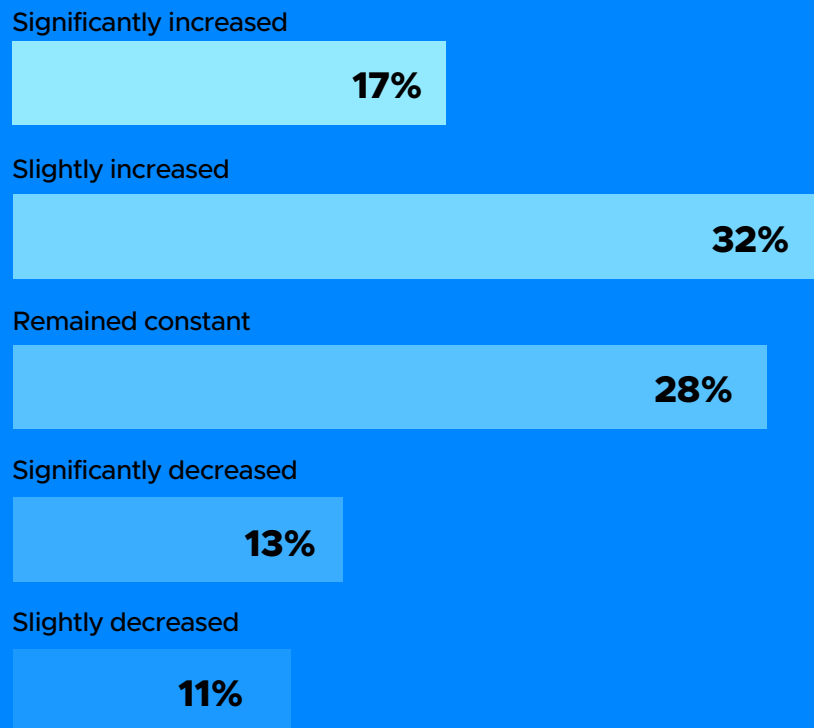


## Cloud spending has jumped dramatically as Kubernetes has driven the usage of cloud environments to record highs, and while most organizations lack a clear insight, they are taking firm steps towards establishing cost control.

Kubernetes has driven cloud spend up for nearly half (**49%**) of those surveyed in CNCF’s latest microsurvey report on Cloud Native and Kubernetes FinOps, whether that is from demanding more resources or enabling larger-scale deployments.

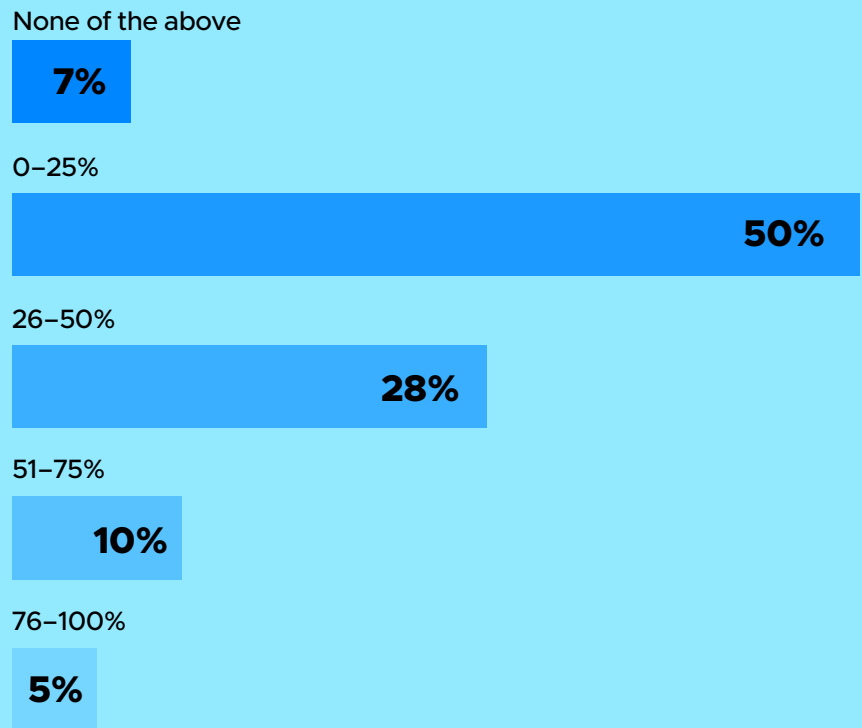
Respondents told us their costs had increased slightly or significantly after implementing the popular orchestration platform. Just under a third (**28%**) said their costs were unchanged.

### Have costs increased, decreased, or stayed the same since adopting Kubernetes?



Kubernetes is taking different-sized bites out of cloud budgets across the board. Half, the largest group of respondents, said they are spending up to a quarter of their budget on Kubernetes, but for a decent number, this figure was higher. Some **28%** of respondents said Kubernetes is taking up to half their budget, while for **10%**, that figure was up to **75%** and for a slim **5%**, Kubernetes took up between **76% and everything**.

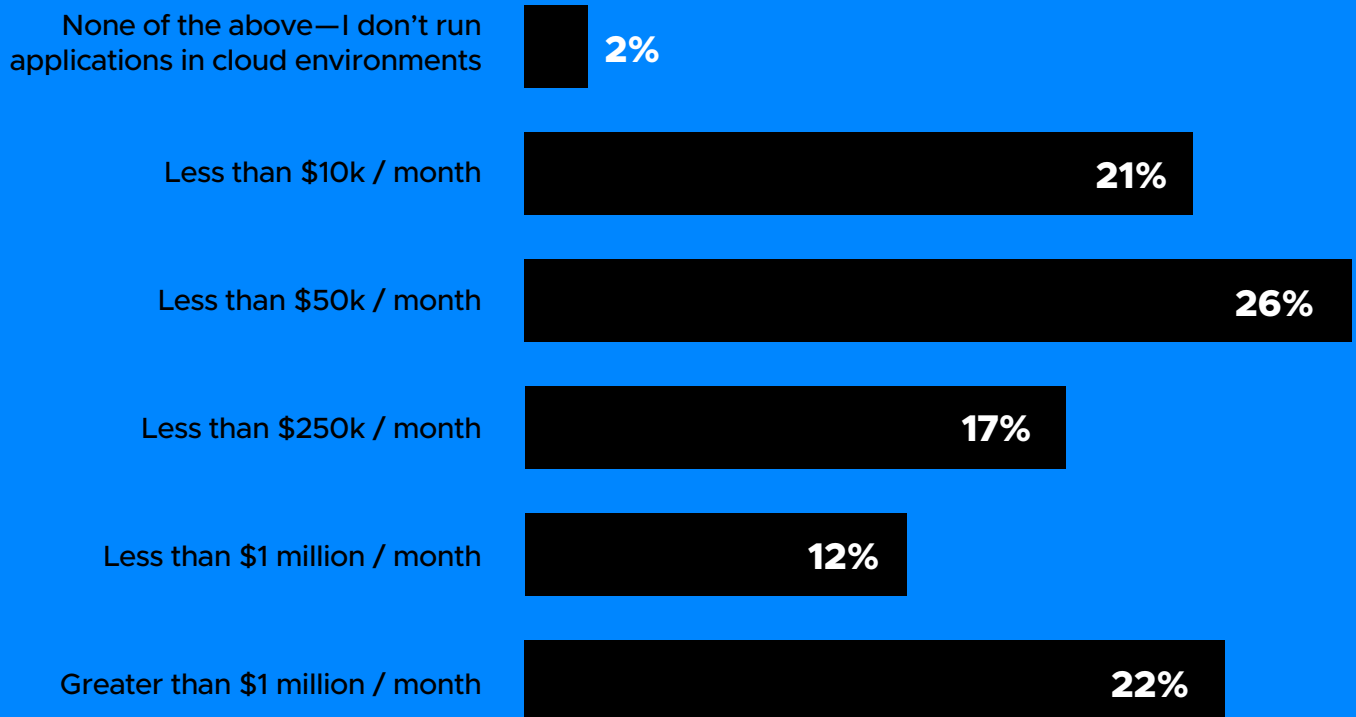
## How much of your cloud spend goes to Kubernetes?



What do those figures look like in reality? Our survey provided some hints.

The largest group, **26%**, is spending up to \$50,000 per month on cloud, but the second biggest (**22%**) is paying 20 times that figure and, therefore, more than anybody else at upwards of \$1m per month. That figure dropped significantly for the third biggest group, with **21%** spending less than \$10,000 per month on cloud.

## How much is your cloud-related spend?

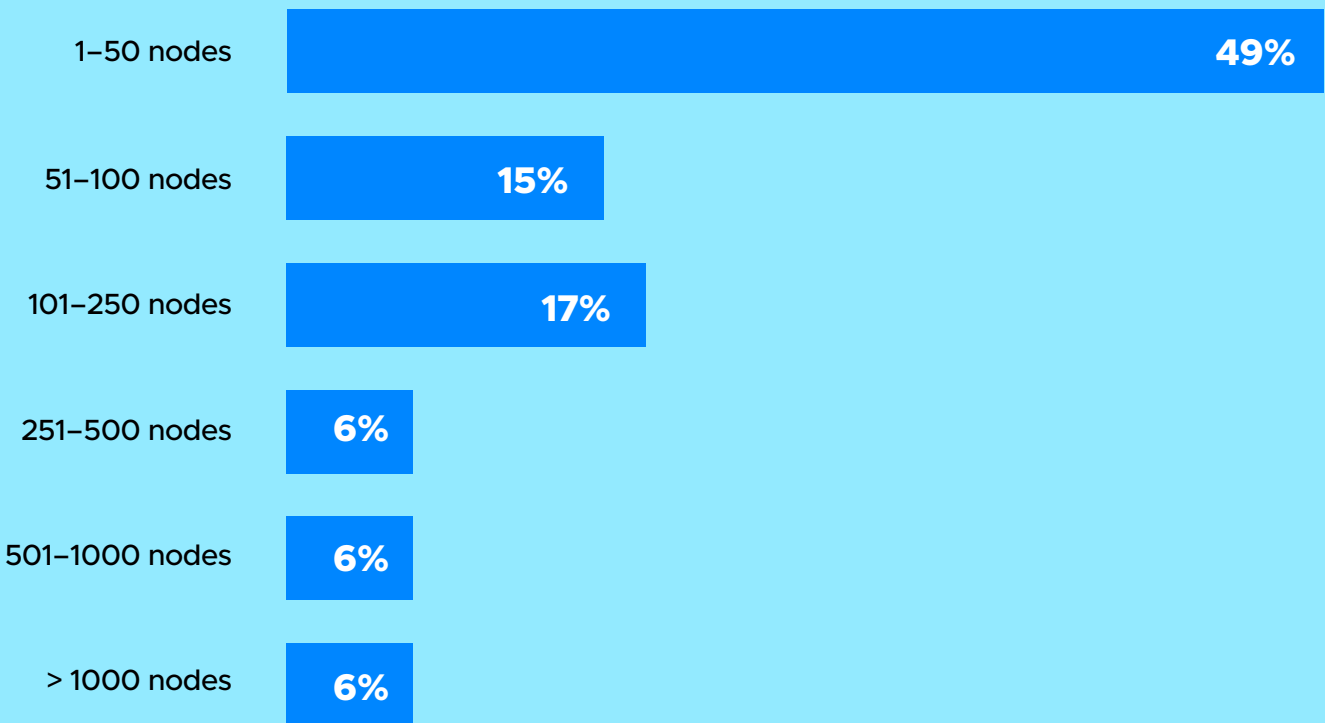


## What are Kubernetes users spending on?

The size of Kubernetes infrastructure varies, with the sweet spot at the low end and a long tail at the larger end of the scale. Nearly half, **49%**, have up to 50

nodes, while **17%** are running 101-250, and the third largest group, **15%**, has 51-100 nodes. On the long tail, estates range from 251 to 1,000-plus that, added together, account for **19%** of respondents.

## What is your Kubernetes scale across all of your clusters?

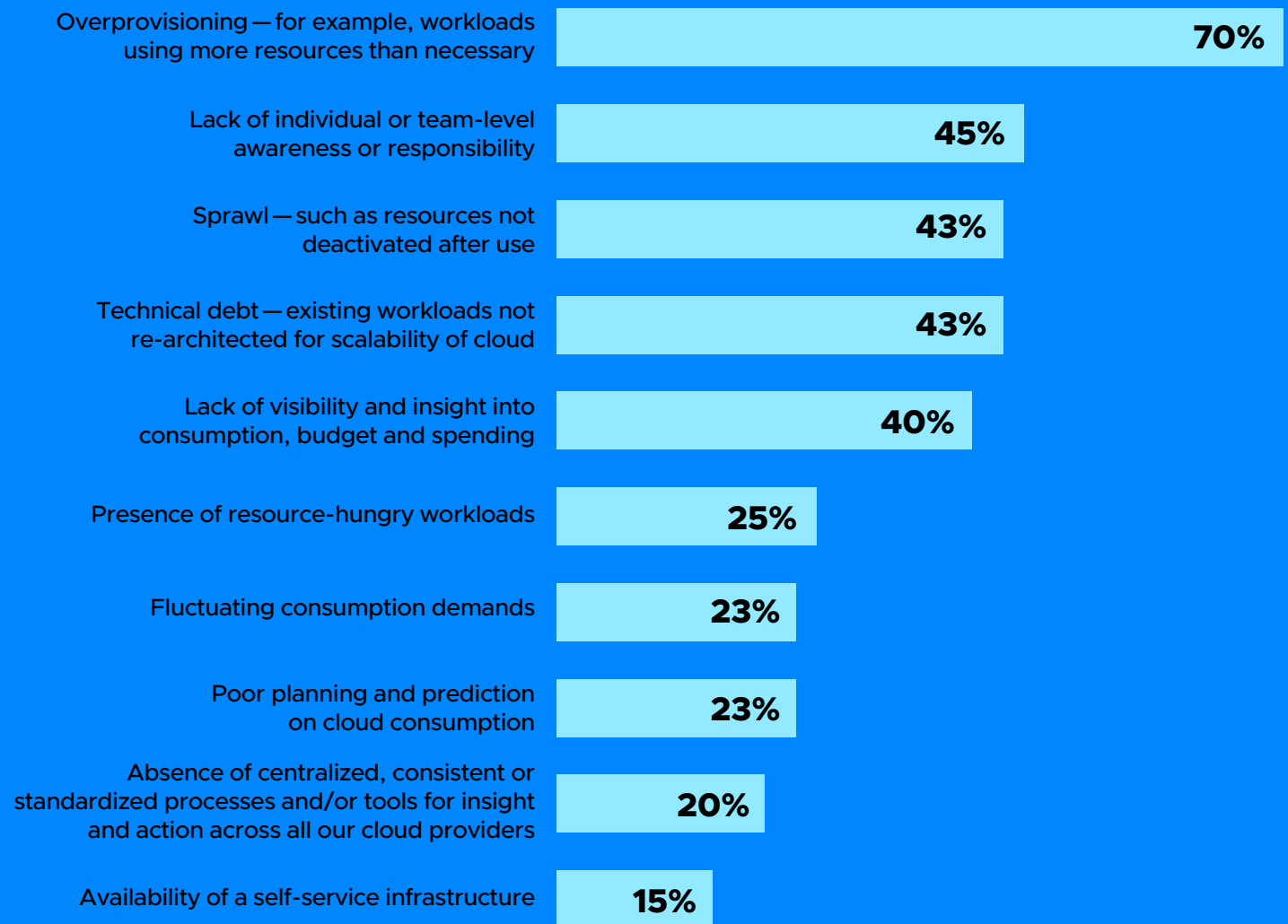


A number of human and technology factors were blamed for the increase in both spend and unwanted and unexpected costs in cloud environments. Over-provisioning came first by a long way at **70%**, with a lack of awareness

of responsibility at an individual or team level coming second at **45%**. Failure to deactivate resources after they'd been used and the presence of technical debt — defined as workloads that had not been re-architected to take advantage of the scalability of cloud native environments — tied for third place at **43%** each.

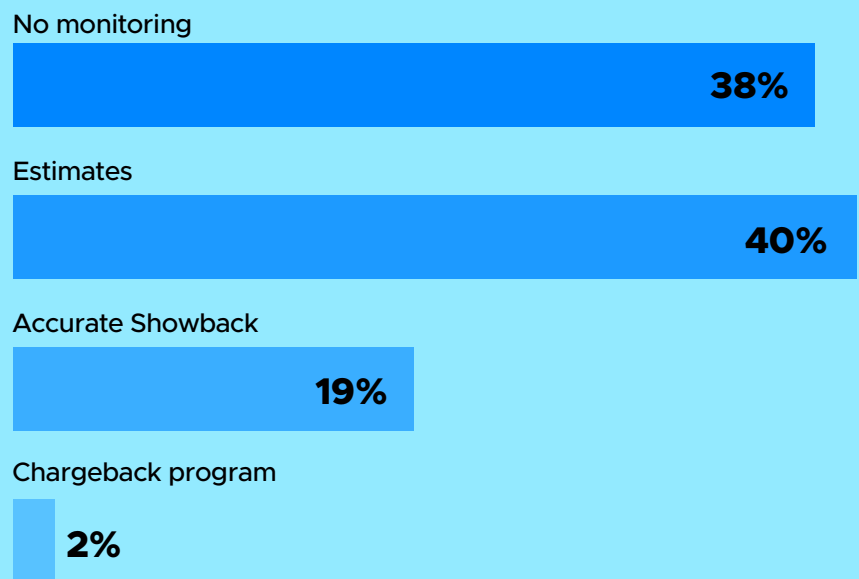
## What factors are leading you to overspend?

Select all that apply.



We saw a range of tools and approaches employed overall to understand and manage cloud spend. These included billing analysis and monitoring and dashboards with alerts. Kubernetes saw less evolved approaches: just under a fifth (**19%**) had access to accurate information, while **40%** said they estimated their Kubernetes costs. There was no monitoring in place for **38%**.

## What level of Kubernetes cost monitoring do you have in place?



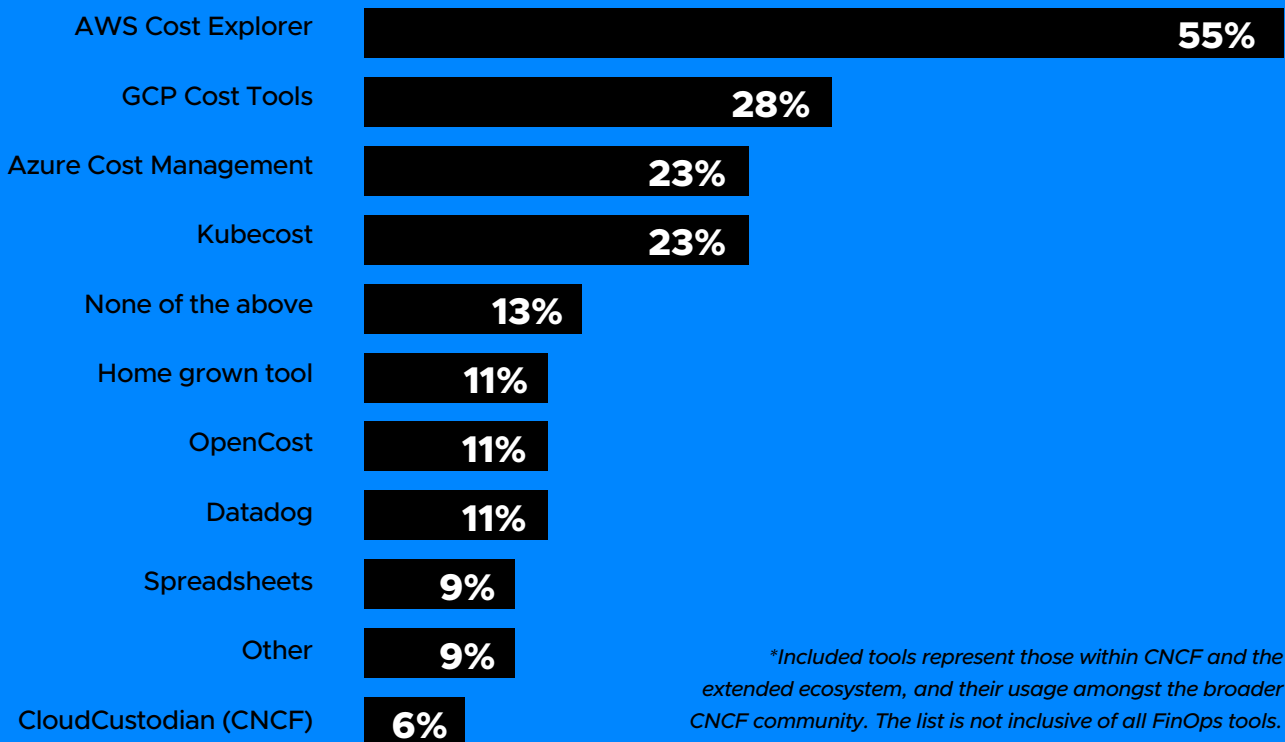
Where participants *are* using cost and budgeting tools, the data appeared to reflect overall cloud service providers' market share. AWS Cost Explorer was the most widely used tool (**55%**) by our respondents, followed by GCP Cost Tools (**28%**), with Azure Cost Management (**23%**) in third place. Microsoft tied for third place with independent cost monitoring provider [Kubecost](#).

Another **11%** report using homegrown tools, and **11%** use the open source [OpenCost](#) tool, a vendor-neutral CNCF Sandbox project for measuring and

allocating cloud infrastructure and container costs in real time. Kubecost, RedHat, AWS, Adobe, SUSE, Armory, Google Cloud, Pixie, Mindcurv, D2IQ, and New Relic are all founding contributors to the OpenCost project, and it offers integrations with AWS, Azure, and GCP billing APIs. OpenCost recently appeared in the [top 30 CNCF project velocity list](#) for the first time, demonstrating continued growth alongside the rise of the FinOps movement worldwide.

OpenCost also implements the [FinOps Open Cost and Usage Specification](#) (FOCUS) from the FinOps Foundation, which provides a technical specification and toolkit to build and maintain an open standard for cloud cost, usage, and billing data across all major cloud service providers.

## What criteria did you apply for picking tools?

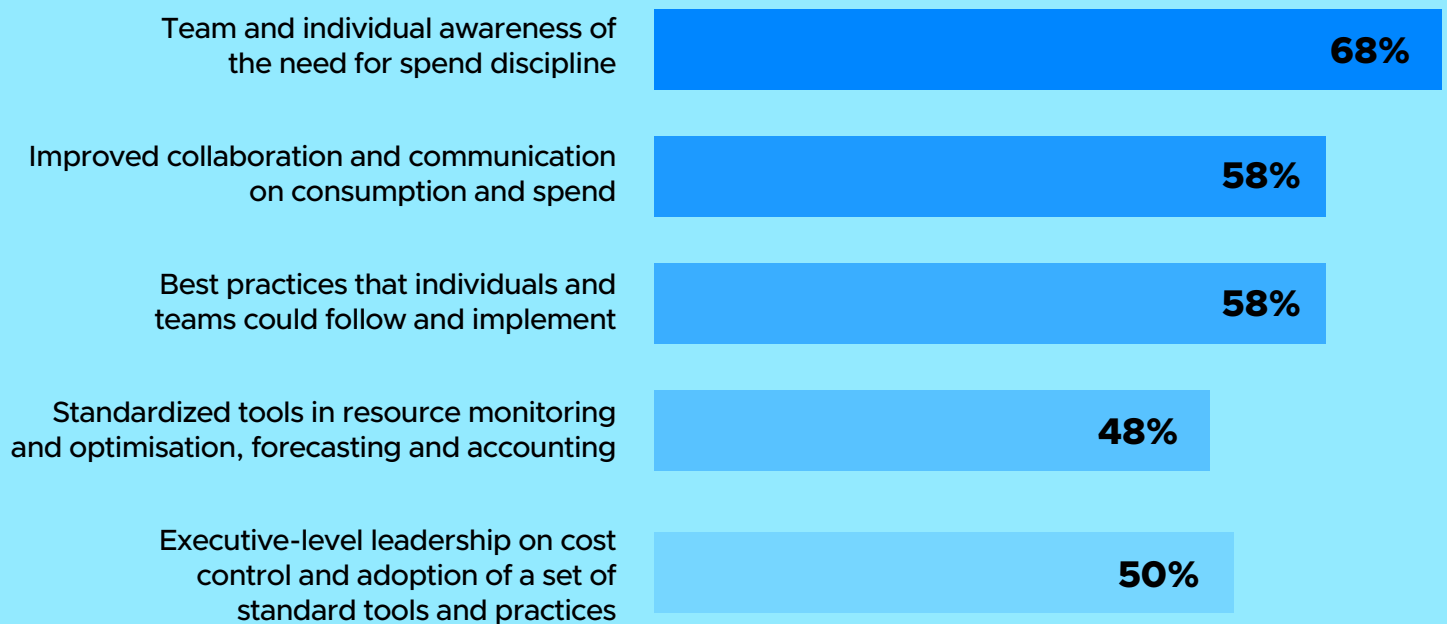




Given our findings on the factors driving up spending and costs, a connection emerged on the best way to reign these in and gain control. The majority, **68%**, believed it would help to make individuals and teams aware of their spending responsibility and increase their understanding of costs. Improved collaboration and communication on spend and consumption came second at **58%**. Tying for second place, also at **58%**, were best practices that could be followed and implemented at an individual and team level. Half said leadership at an executive level with the adoption of standardized tools and practices would help. Rounding out the results, **48%** identified standardized tools for monitoring and optimizing resources, forecasting and accounting.

## What do you think would help to get overspend under control?

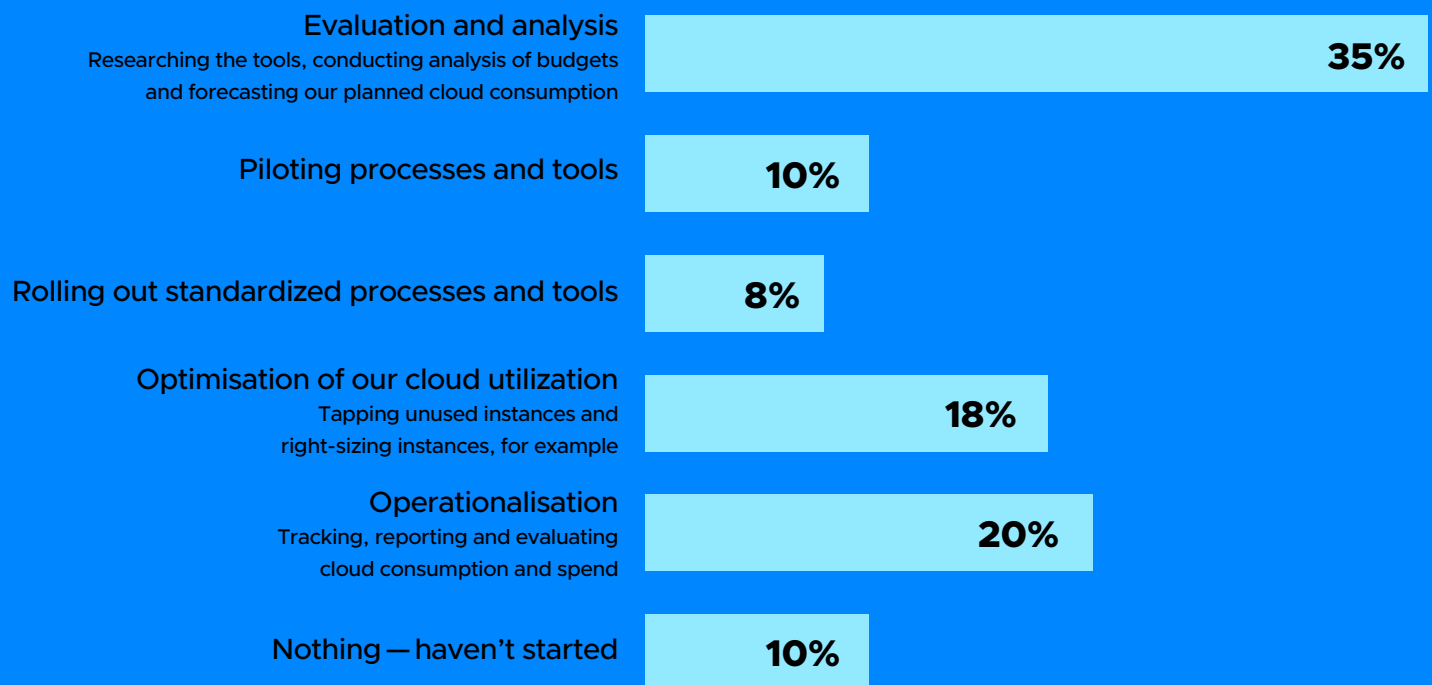
Select all that apply.



Overall, there was a belief that individuals and teams should and would be willing to play a part in the bigger financial picture. A resounding **98%** said it was important that engineers, development, and product teams pay attention to spend and participate in cost controls, while **75%** expected they could get these teams to play a part.

It is no surprise, therefore, that we found survey participants at different stages in the adoption of FinOps tools and practices. **35%** are researching and evaluating the tools for budget analysis and forecasting, **20%** have moved to tracking, reporting, and evaluating consumption and spend, while **18%** have started to optimize their infrastructure — taking steps such as tapping unused instances and rightsizing.

## Where are you on your FinOps journey?





# CLOUD NATIVE AND KUBERNETES FINOPS MICROSURVEY

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[www.cncf.io](http://www.cncf.io)

The microsurvey was designed by CNCF with help from members of the OpenCost team. It was conducted between June and November 2023 and received a total of just over 100 responses.

The full survey data can be found on GitHub.

