

15th State of Agile Report

Agile adoption accelerates across the enterprise



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Executive Summary

Welcome to the 15th State of Agile Report, the longest continuous annual series of reviews of agile techniques and practices.

This year's report highlights several important milestones in Agile's journey from its initial principles aimed at software development teams to its current widescale adoption to drive business value and deliver speed and quality in software delivery.

As we reach 20 years since the creation of the "Manifesto for Agile Software Development," we feel it is a good time to look back and reflect at the remarkable journey Agile has experienced over these past two decades.

Since the global pandemic emerged in early 2020, organizations are now aware of the opportunities and challenges ahead and realize being successful in the digital age requires agility in software development and delivery, as well as business strategy and operational execution. With today's enterprises under increased pressure to respond quickly to the needs of their customers and

stakeholders, they must bring new products to market faster and accelerate improvements to existing solutions and services.

This report offers a chance to look at the role Agile has played during this tumultuous period and to reflect on how the benefits of agile practices can help organizations adapt and excel in the path ahead.

As you explore the 15th State of Agile Report for current trends in agile software delivery with key highlights from past surveys, clearly Agile has the potential to be a steadying force in uncertain times.

To recognize the significance of the 15th edition of the State of Agile survey, we spoke with many notable agile software delivery experts and influencers to get their take on the past, current and future states of agile software delivery. You'll see their views intermixed throughout the report, providing more depth and context to the findings. We'd also like to thank both Scrum.org and Scaled Agile for their help in distributing this year's survey.



What's Trending

Remote/hybrid workforces require a new way of thinking

For years, respondents to the State of Agile surveys indicated a workforce becoming increasingly distributed and the frequent outsourcing of work to external vendors located across the globe. Unsurprisingly, this year's survey saw a dramatic increase in this move toward remote work and a clear indication that this direction isn't temporary.

- **Only 3%** indicate they plan to return to the office full time
- **25%** of respondents say they will remain fully remote in a post-COVID world
- **56%** favor a hybrid approach, returning to the office regularly but not daily

This mix of both remote and co-located work will present a challenge for organizations looking to continue to build on their success in 2021 and beyond. The State of Agile survey respondents aren't alone in this realization.

In reflecting on how COVID-19 has changed the global workforce, Gartner research found that,

“In response to the pandemic, organizations are accelerating the adoption of new processes, practices, and technologies to support changes to product and service delivery”.

Gartner also found that organizations will need to adapt to succeed, stating “The radically distributed software engineering resulting from the COVID-19 pandemic exposed process and skills gaps that impact the ability of organizations to successfully deliver applications. The ‘new normal’ will be led by organizations that are able to quickly identify and address the critical skills needed to drive their business.¹”

Agile goes mainstream

Perhaps fueled in part by an increasingly distributed global workforce, this year's report sees an explosive increase in Agile adoption across the functions of the enterprise. Since the first report 15 years ago, we've seen a steady increase in the number of organizations adopting agile practices and processes, both inside Development and within non-IT groups including Finance, Human Resources, and Marketing.

This year's findings indicate significant growth in Agile adoption within software development teams, increasing from **37%** in 2020 to **86%** in 2021.

Growth in non-IT lines of business also rose significantly, doubling in adoption since last year's report. What's stopping even broader adoption? The survey shows no fewer than ten barriers to adoption, including:

- Inconsistencies in processes and practices **46%**
- Cultural clashes **43%**
- General organizational resistance to change **46%**

Despite these challenges, it's clear that respondents continue to see the value of broadening Agile adoption as a way to achieve critical business outcomes. In fact, **2/3** of respondents identified managing priorities, visibility, or alignment between business and IT as seeing the strongest positive impact from Agile adoption. Conversely, organizational culture — once regularly cited as a barrier to adoption — is no longer a top challenge, with only slightly more than four in 10 respondents identifying it as a barrier.

Driving DevOps and value stream management initiatives

More than ever, organizations are under increasing pressure to deliver features that provide greater value and new solutions that improve efficiency and reliability. Year after year, more respondents tell us their organizations view both DevOps and value stream management (VSM) initiatives as essential to achieving these goals.

3/4 of respondents say DevOps transformation is important or very important to their organization

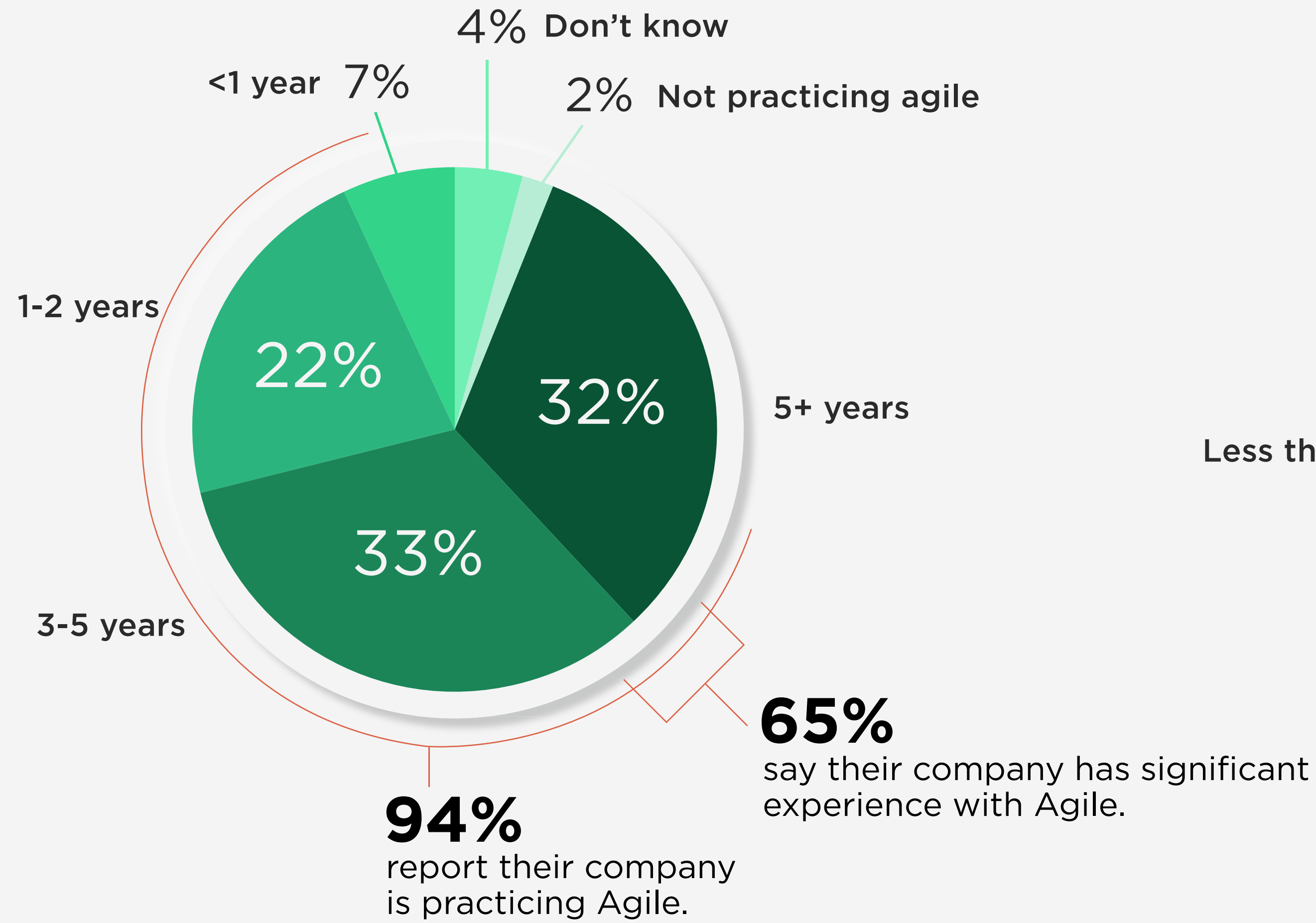
2/3 are involved with implementing or planning a VSM initiative

“We placed a focus on the business and transforming how we work first and foremost. We used that as a catalyst to begin to drive agility through the organization — speed of decision making, clarity of focus on purpose, showing that we can deliver incremental value — without forgoing the larger picture.”

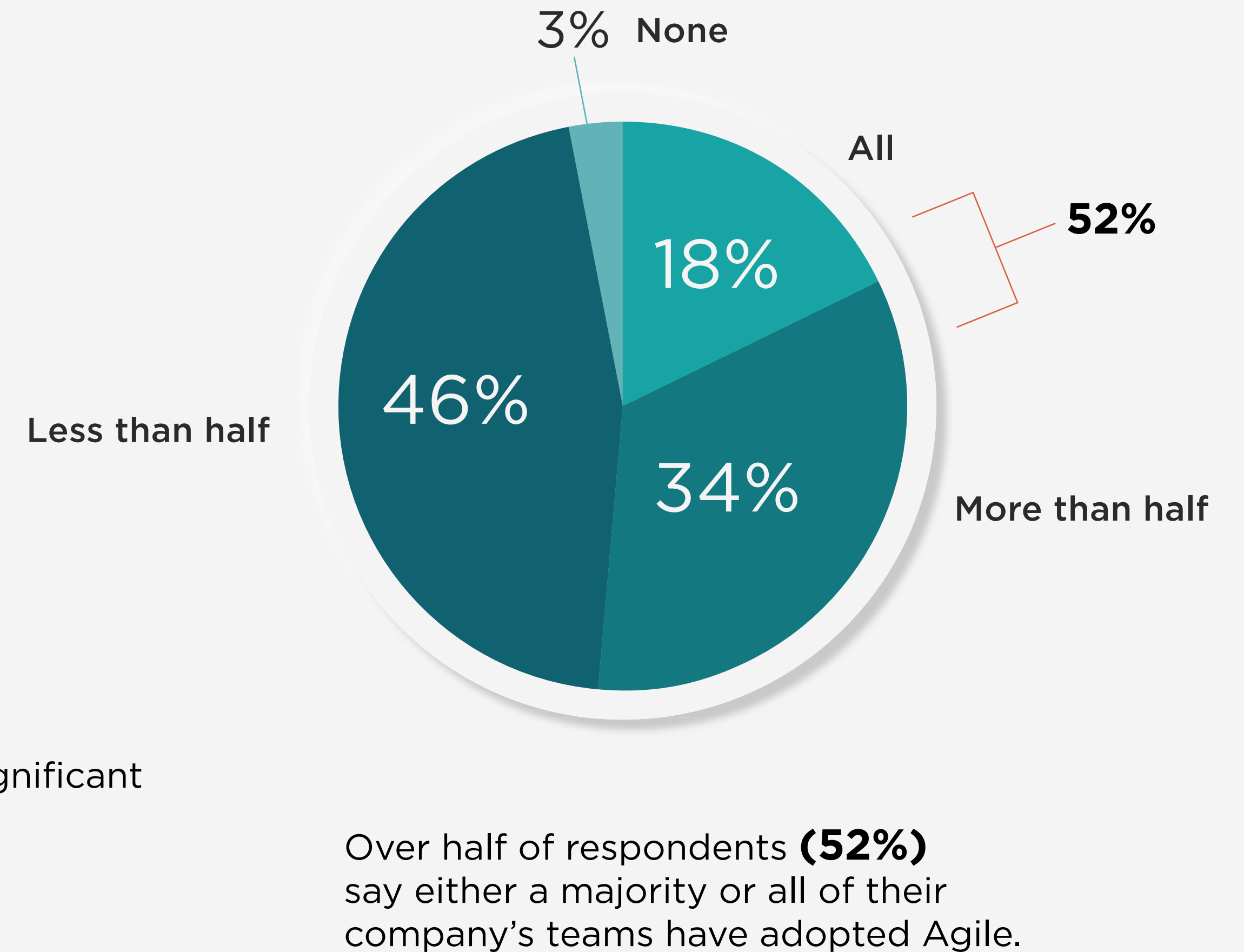
David Paine, *Domain Information Office Toyota Financial Services*

Company Experience with Agile

How long has your company been practicing agile?



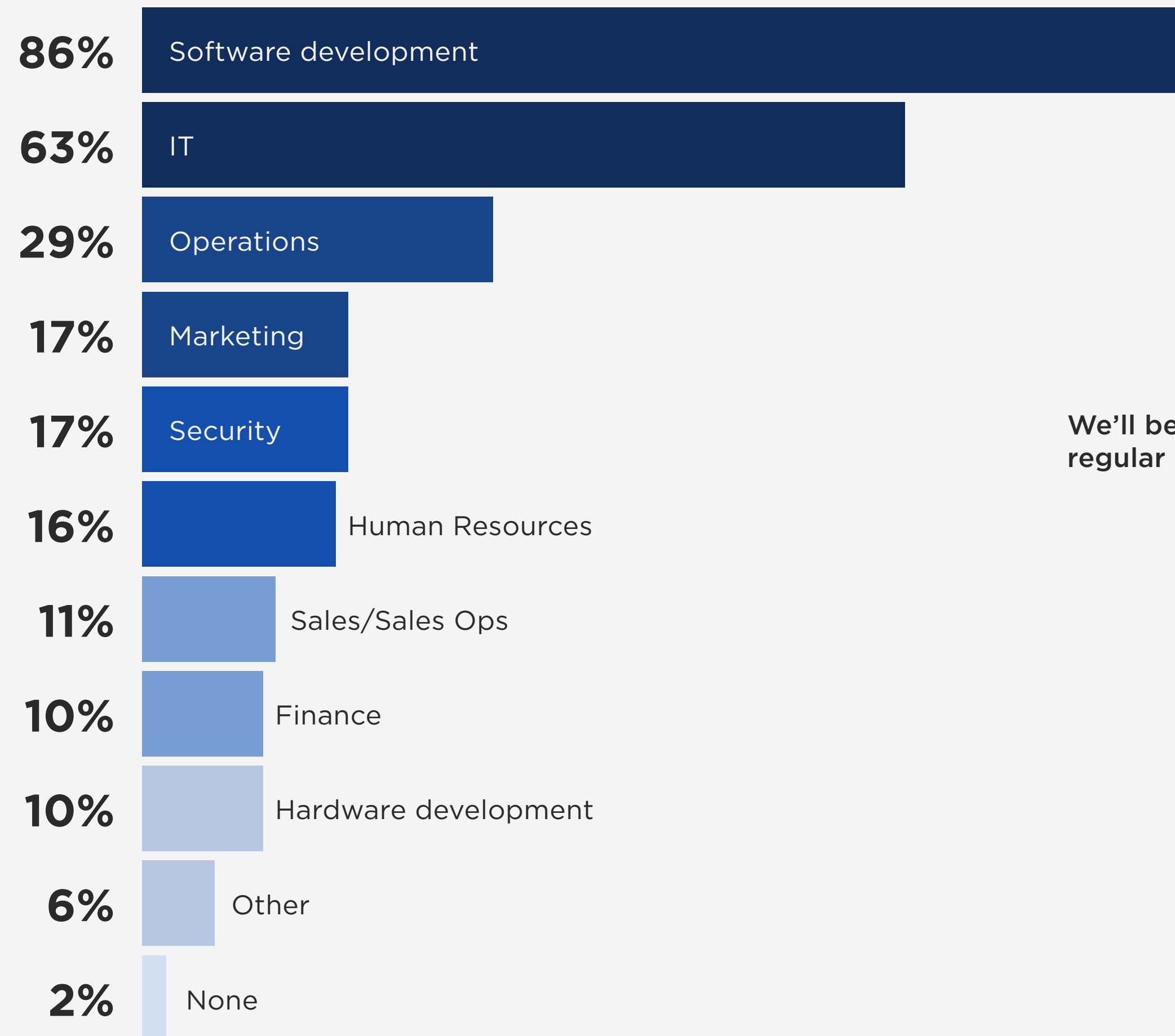
How many of your company's teams have adopted agile practices?



Company Experience with Agile

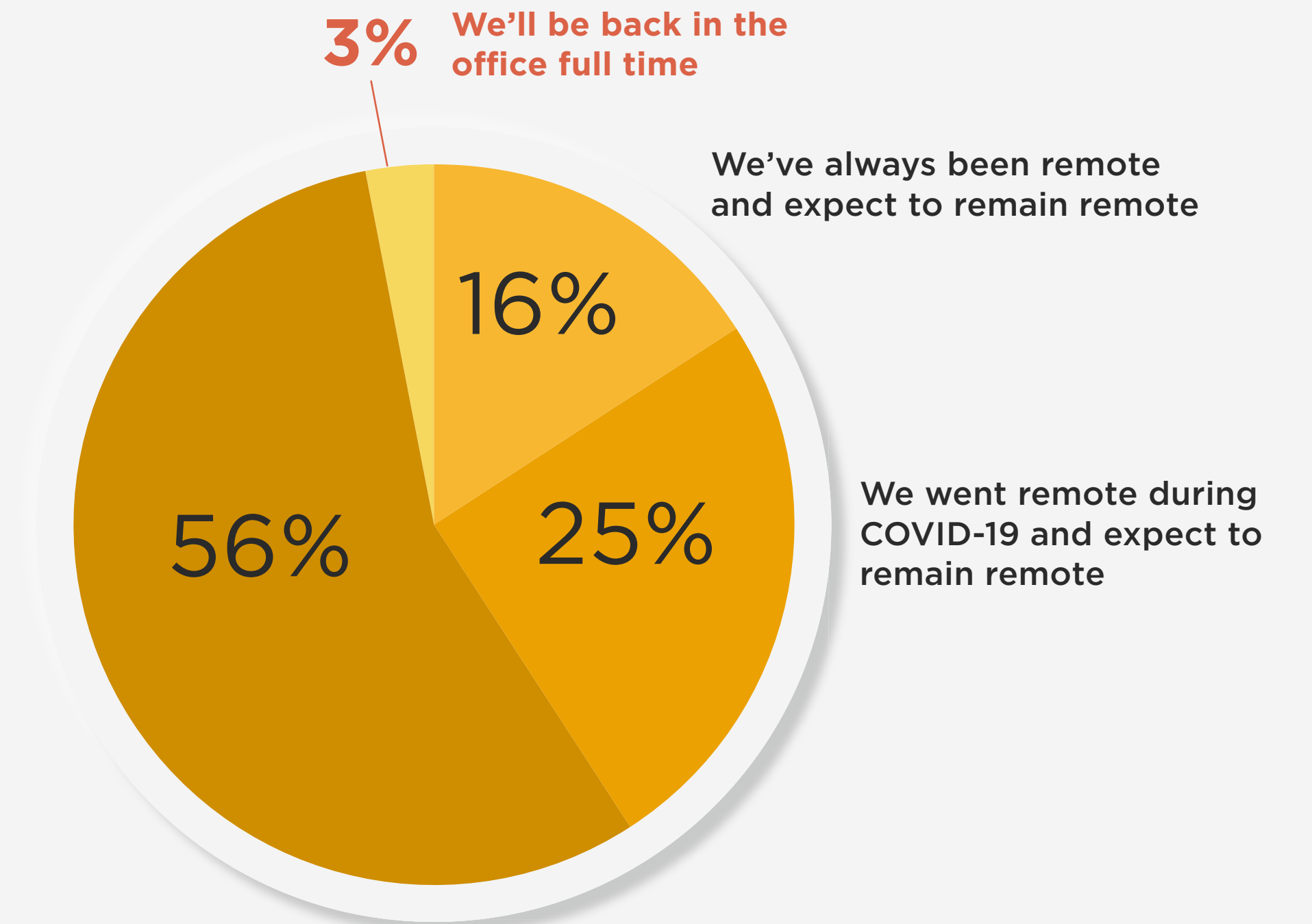
Which areas of your organization have adopted Agile principles and practices?

**Respondents were able to select multiple responses to this question.*



How do you see the distribution of your Agile team changing post-COVID-19?

We'll be back in the office on a regular basis but not full time



Multiple industry studies have shown a growth in distributed teams. This survey indicates that 89% of teams are geographically distributed.

Remote work isn't just a temporary trend during COVID-19 — a mere 3% say they will be back in the office all of the time after COVID-19.

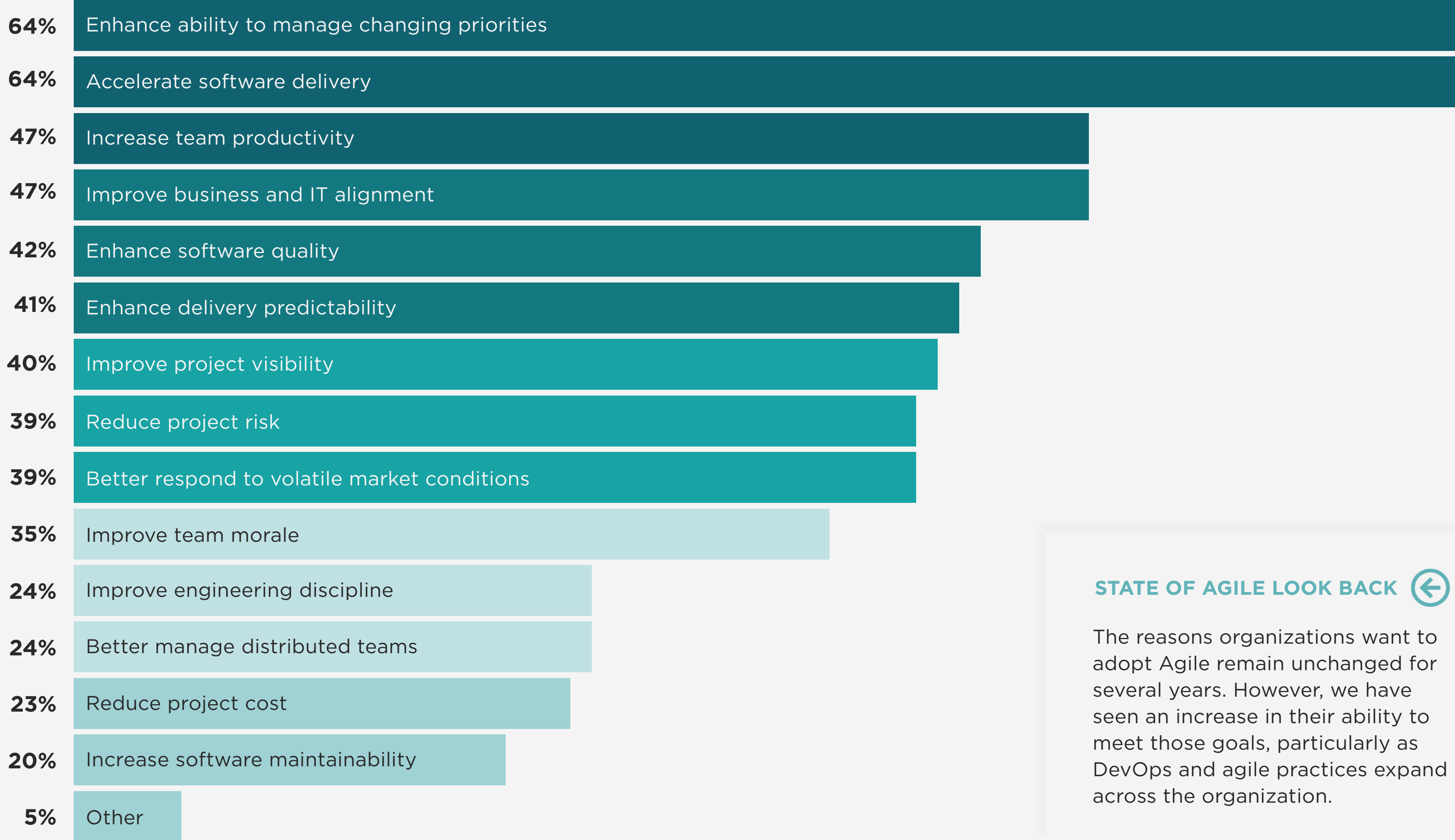
Agile Adoption

Supported by shifts toward value stream management and business agility, survey respondents indicate their organizations are now better able to meet their agile transformation goals based on their continued adoption of agile practices.

The two most urgent reasons for adopting Agile are the speed and flexibility required by working environments that continue to be both unpredictable and volatile. These are closely followed by a continued need to focus on alignment across teams to streamline the software delivery process.

What were the most important reasons for adopting Agile within your team or organization?

**Respondents were able to select multiple responses to this question.*



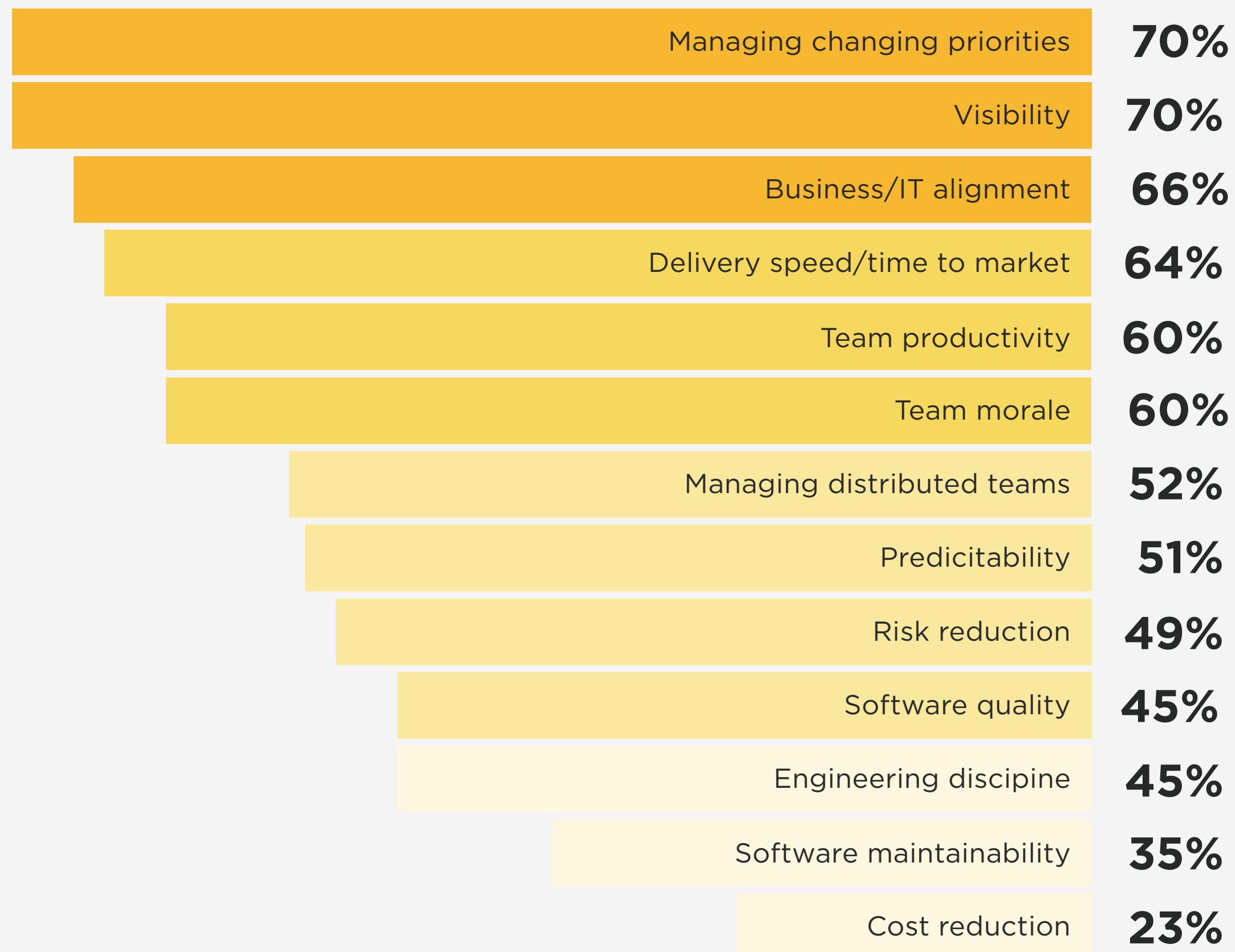
STATE OF AGILE LOOK BACK

The reasons organizations want to adopt Agile remain unchanged for several years. However, we have seen an increase in their ability to meet those goals, particularly as DevOps and agile practices expand across the organization.

Agile Adoption

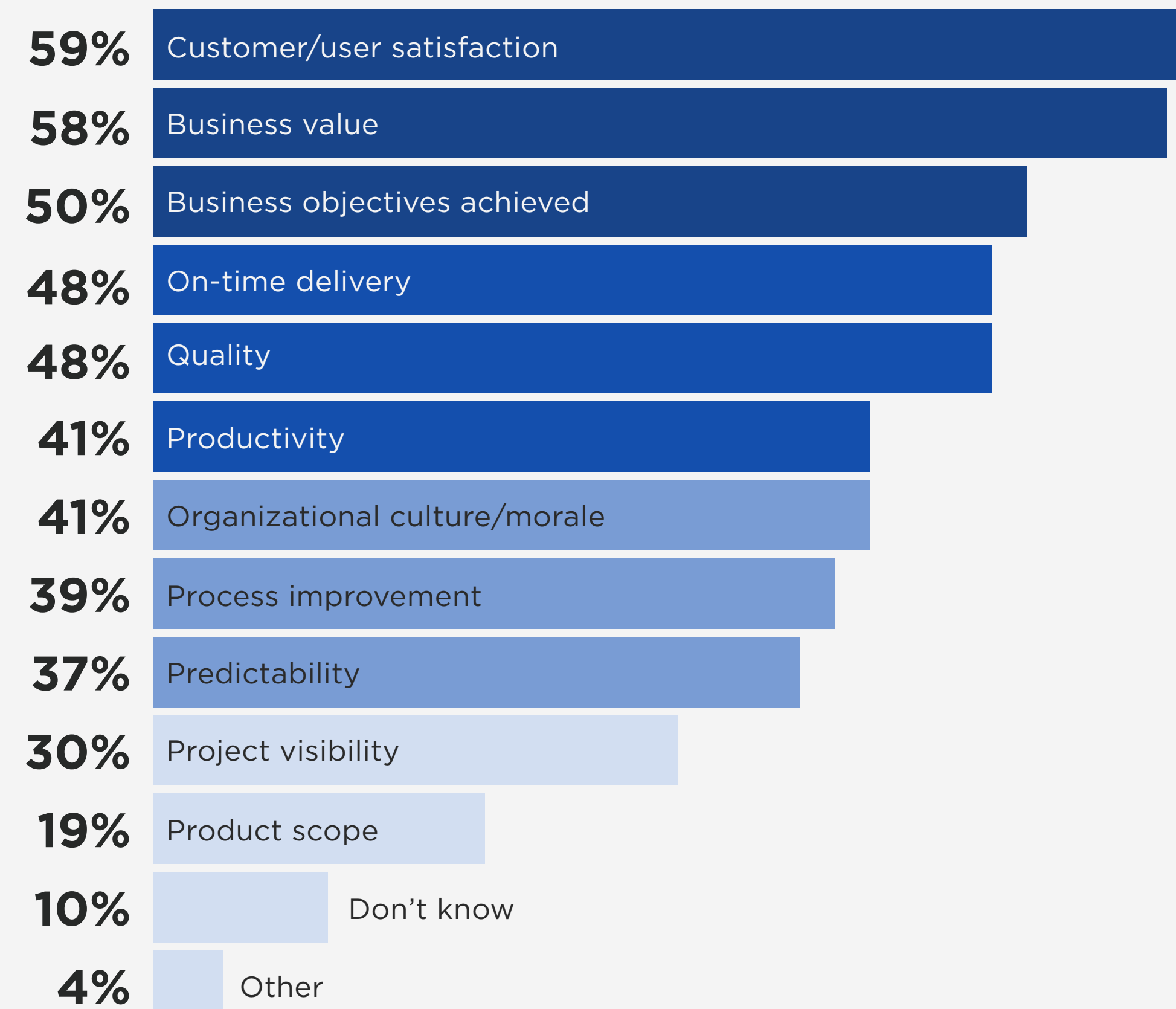
Business and IT alignment and visibility across agile teams were highlighted as key to leading agile adoption. $\frac{2}{3}$ of respondents identified management, visibility, and alignment as receiving the strongest positive impact from adopting agile approaches.

Has the implementation of agile positively impacted each of the following areas within your company?



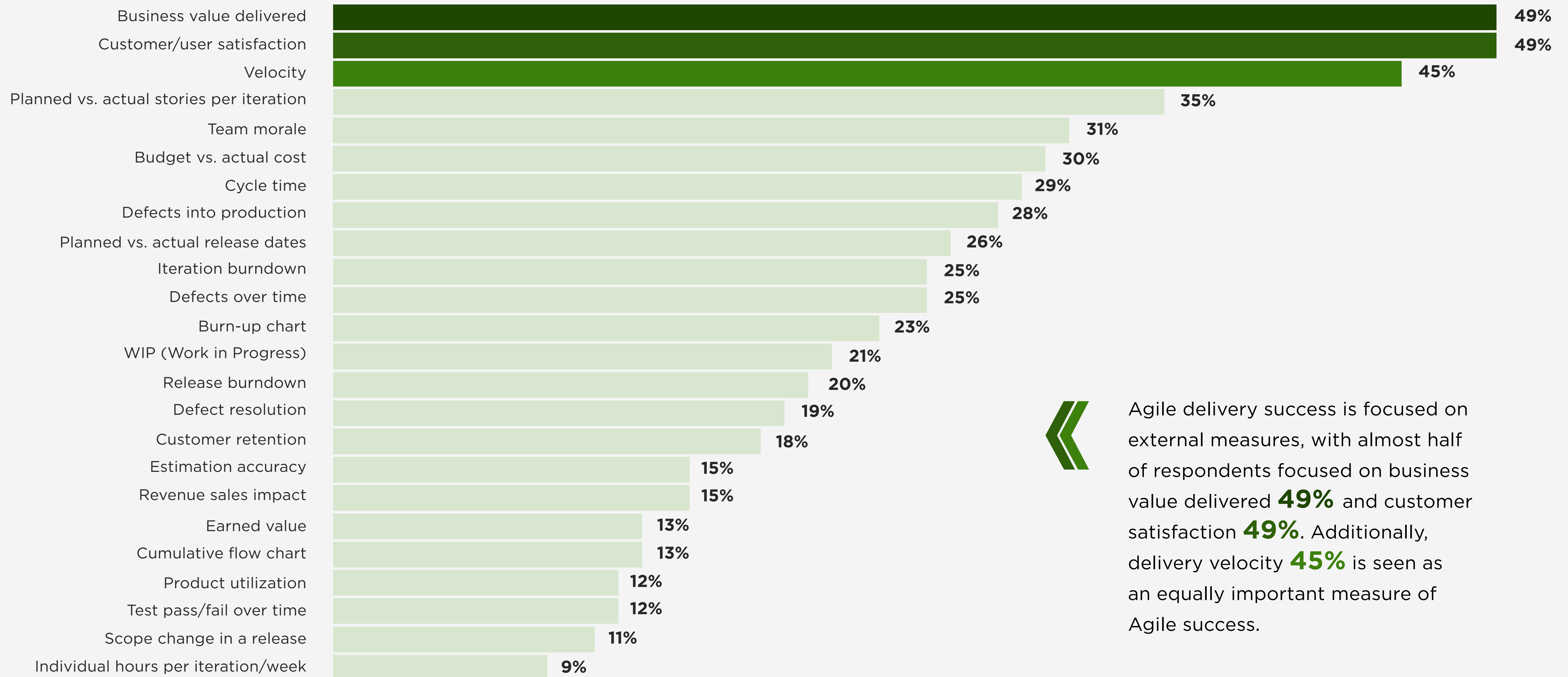
When assessing the metrics organizations use to determine agile transformation success, the survey shows three in five respondents look to externally focused measures of success.

How does your organization measure success of Agile transformations?



Agile Adoption

How does your organization measure the success of Agile delivery?



Agile delivery success is focused on external measures, with almost half of respondents focused on business value delivered **49%** and customer satisfaction **49%**. Additionally, delivery velocity **45%** is seen as an equally important measure of Agile success.

Agile Challenges

“The future requires agile at scale, being able to achieve DevOps, being able to achieve flow, have everybody operating with an agile mindset, having the leaders understand that this is a new way of working — they need to get it.”

Dean Leffingwell, *Co-founder and Chief Methodologist of Scaled Agile*

Organizations face a variety of challenges as they introduce agile techniques, practices, and tools.

*In fact, **30% of respondents** identified no fewer than ten different challenges faced while adopting Agile.*

The most significant Agile adoption barriers include:

- Inconsistencies in processes and practices **46%**
- Cultural clashes **43%**
- General organizational resistance to change **42%**
- Lack of skills and experience **42%**
- Absence of leadership participation **41%**
- Inadequate management support and sponsorship **40%**

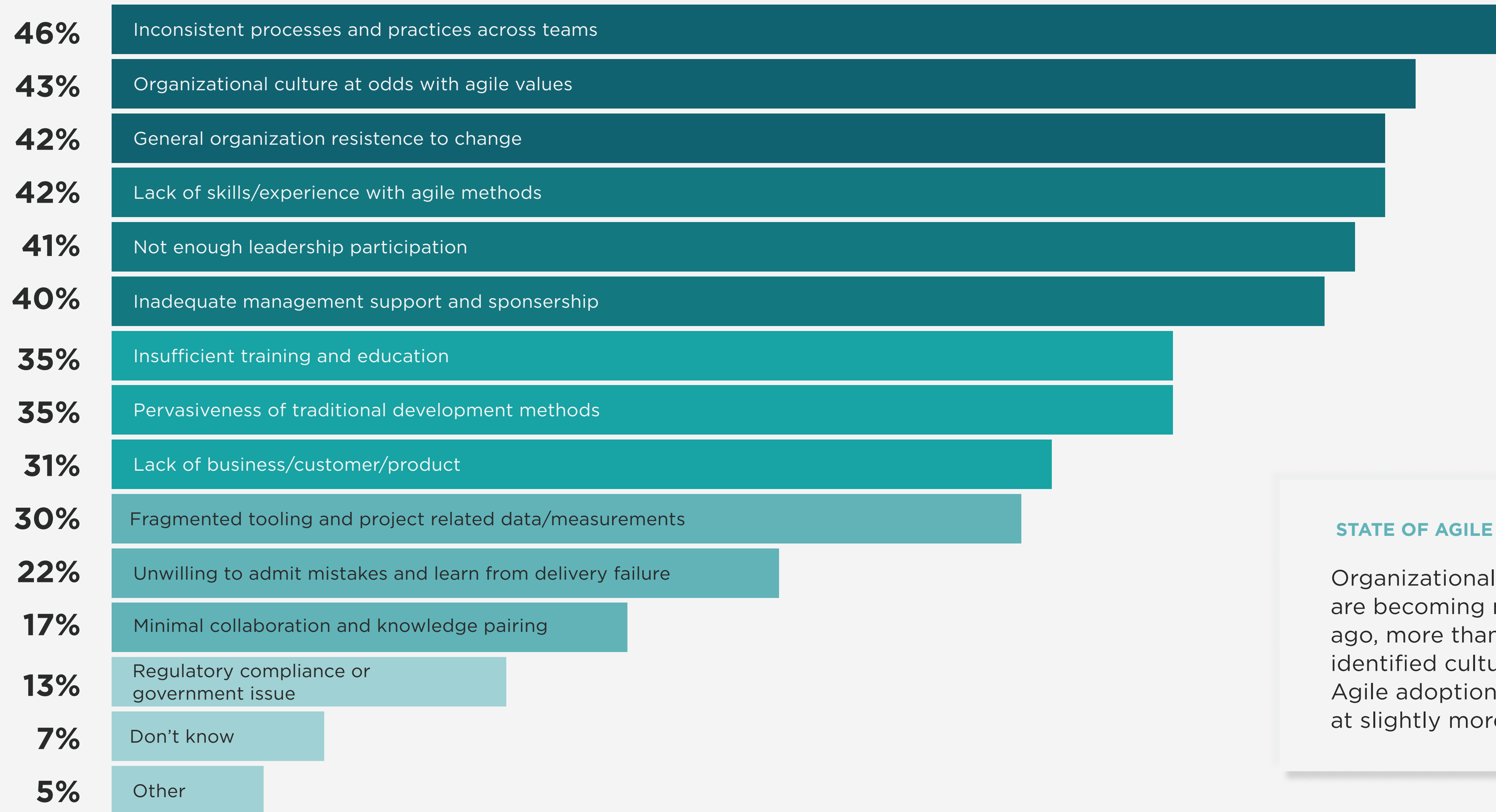
The key challenges organizations face when adopting Agile have remained largely unchanged for the past several years.

Challenges with organizational culture, resistance to change, and lack of support and skills continue to be problems.



Agile Challenges

What are the most significant barriers to adopting and scaling Agile practices in your current organization?



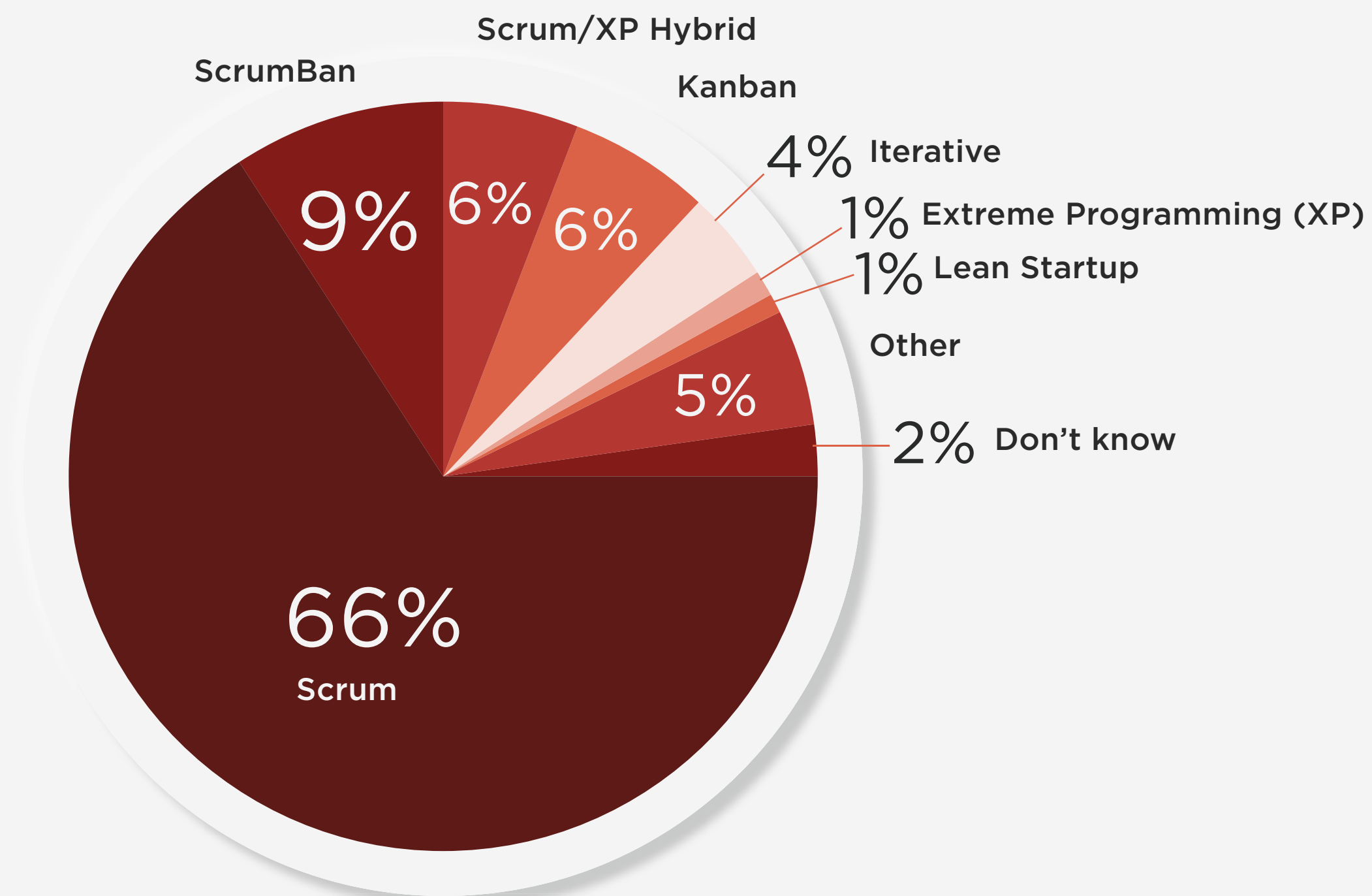
STATE OF AGILE LOOK BACK

Organizational culture and Agile values are becoming more aligned. A few years ago, more than 8 out of 10 respondents identified culture as a significant barrier to Agile adoption. That number now stands at slightly more than 4 in 10.

Agile Techniques and Maturity

The survey once again highlighted Scrum as the most popular Agile approach with **66%** identifying it as the methodology they follow most closely, with an additional **15%** who follow derivations of Scrum (ScrumBan **9%** and Scrum/XP **6%**).

Which Agile methodology do you follow most closely at the team level?



In terms of agile techniques and practices, at least four out of five respondents cited:

- Daily standups **87%**,
- Retrospectives **83%**, and
- Sprint/iteration planning **83%** were used.

In addition:

- Kanban boards **77%**,
- Task boards **67%**, and
- Spreadsheets **66%** are all widely used for agile planning.



Agile Techniques and Maturity

STATE OF AGILE LOOK BACK

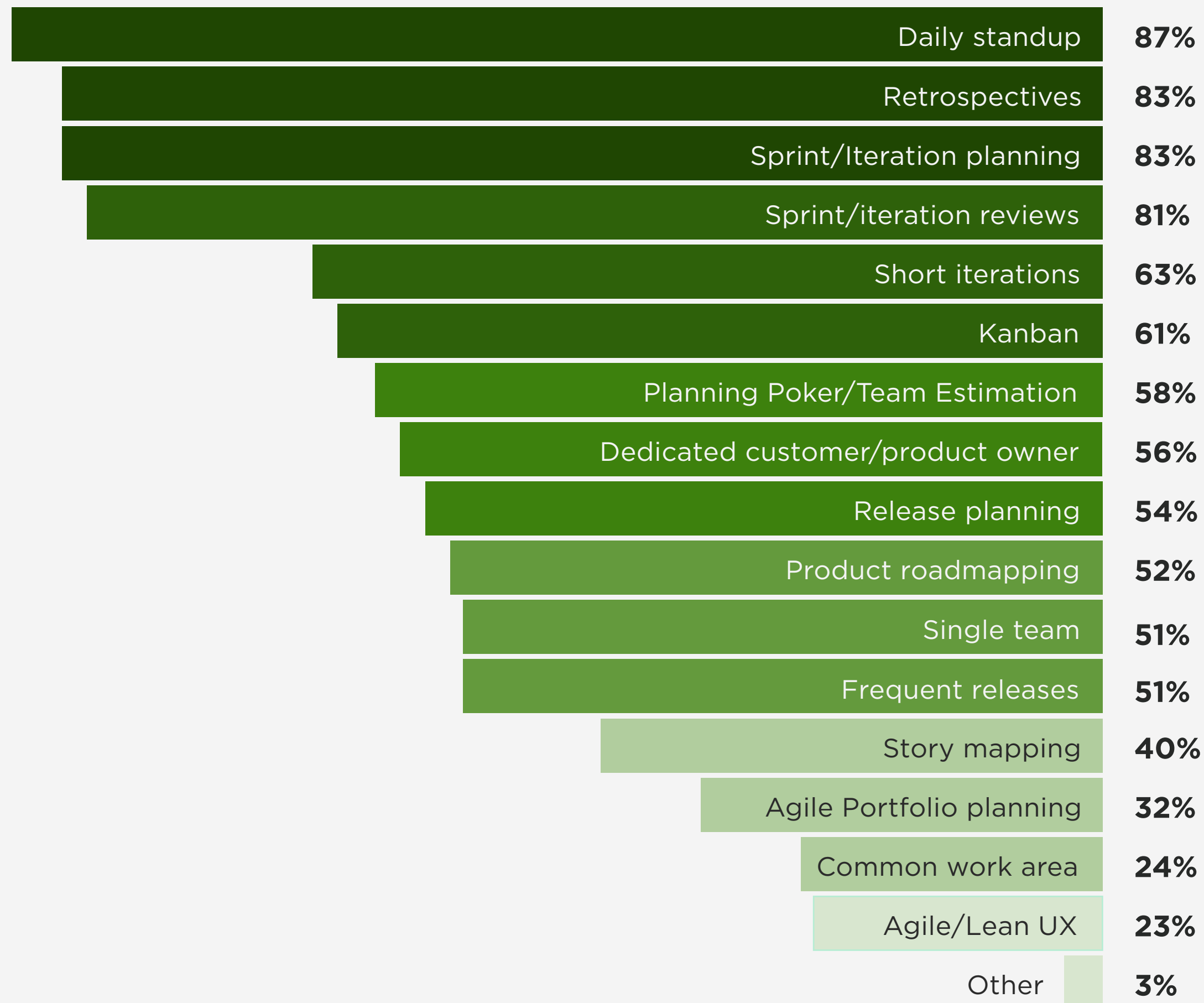
Over the years, the State of Agile survey determined “practices used” as an indication of the maturity of Agile adoption. Most notably, we have seen the use of Scrum increase from **40%** of respondents in the first survey to **66%** in the most recent. Other approaches such as extreme programming (XP) dropped from use by almost a quarter of respondents to less than **1%** today.

In contrast, the use of specific individual Agile techniques and practices remained relatively constant across the surveys. Key activities including daily standups and retrospectives have been at the heart of agile approaches, supported by sprint planning and reviews. Perhaps the most significant growth trend has been the use of kanban boards for workflow management and visualization. This approach is now used by **61%** of respondents, steadily increasing from **6%** in the first survey.

Agile Techniques and Maturity

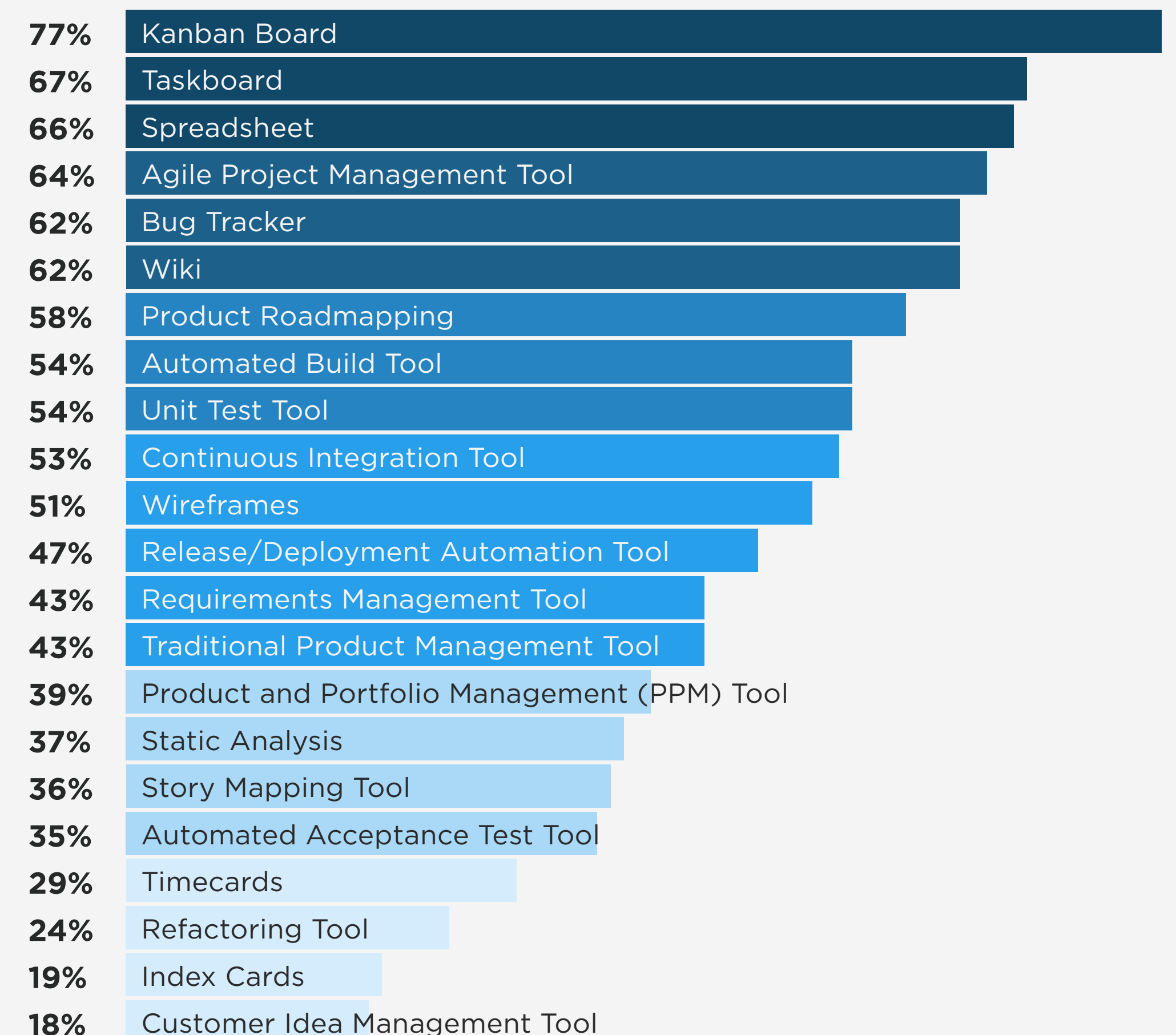
Almost nine in 10 respondents use daily standups while over four in five use retrospectives and sprint/iteration planning.

Which of the following Agile techniques and practices does your organization use?



$\frac{3}{4}$ of respondents say they use kanban boards while $\frac{2}{3}$ use taskboards and spreadsheets.

Which Agile planning and delivery tools do you currently use?



Scaling Agile

While a wide range of scaling frameworks are in use, the Scaled Agile Framework (SAFe®) continues to be the most popular with **37%** of respondents identifying it as the framework they most closely follow. SAFe® significantly outdistances the next nearest scaling method, Scrum@Scale/Scrum of Scrums (**9%**).

Over the last several years, there has been increasing awareness of both the opportunities and challenges offered by scaling Agile practices across the organization. Initially, scaling agile was addressed through a “Scrum of Scrums” approach. Over the past five surveys, we have seen the use of SAFe® grow significantly to become the dominant approach, in use by more than a third of respondents.

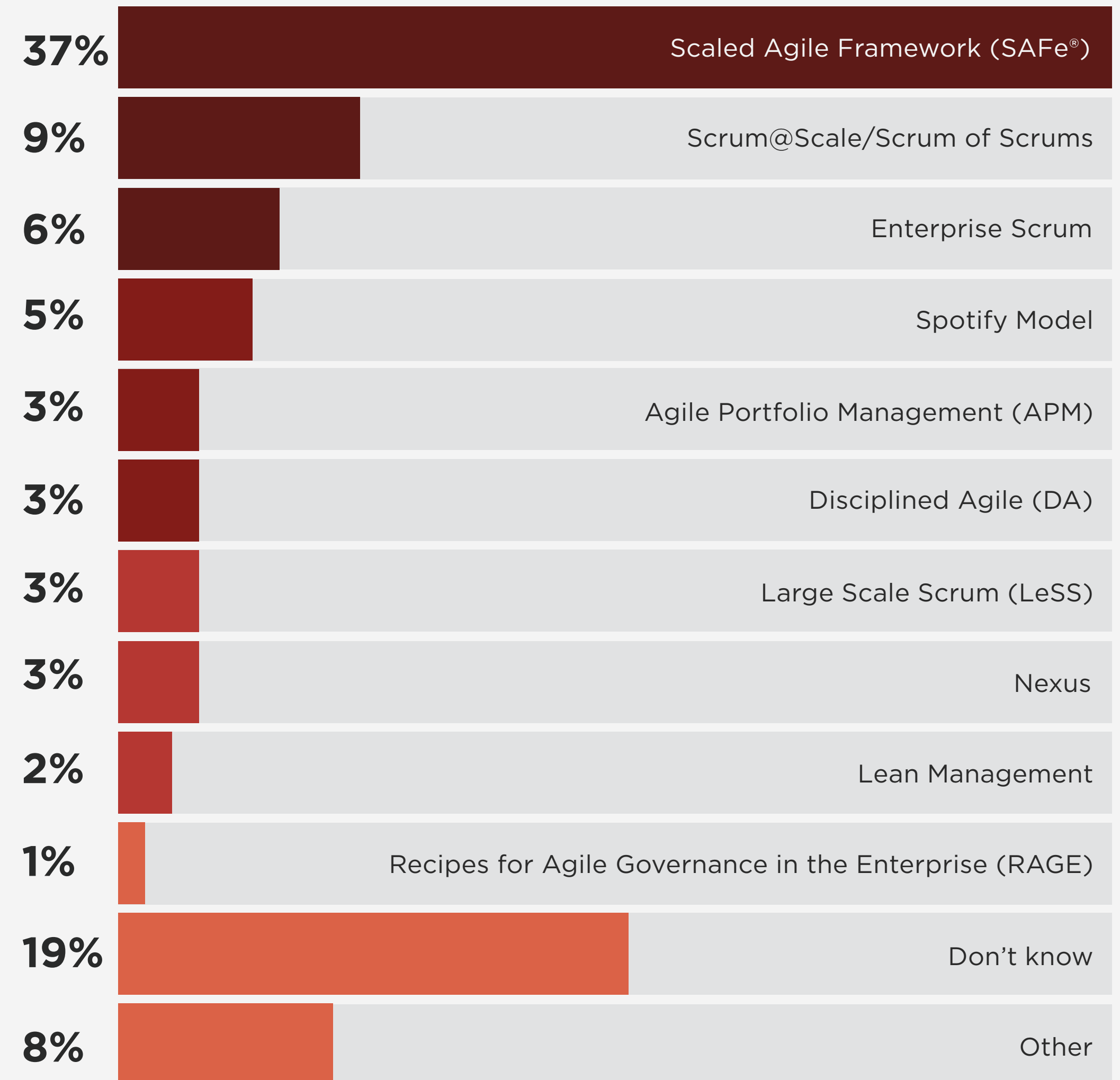
“I would say that the number one challenge facing capital ‘A’ Agile today is a lack of awareness of systems thinking. And the fact that we have all these teams and organizations who have adopted agile and agile frameworks, be it Scrum or SAFe or XP, are doing so in one part of the system.”

Evan Leybourn, *CEO and Founder Business Agility Institute*

“With respect to software development, I think at the team level agile is widely practiced. It’s the dominant form of how teams organize. In many IT teams, the alignment to business outcomes is missing.”

Dave West, *CEO at Scrum.org*

Which framework does your organization follow to help scale Agile?

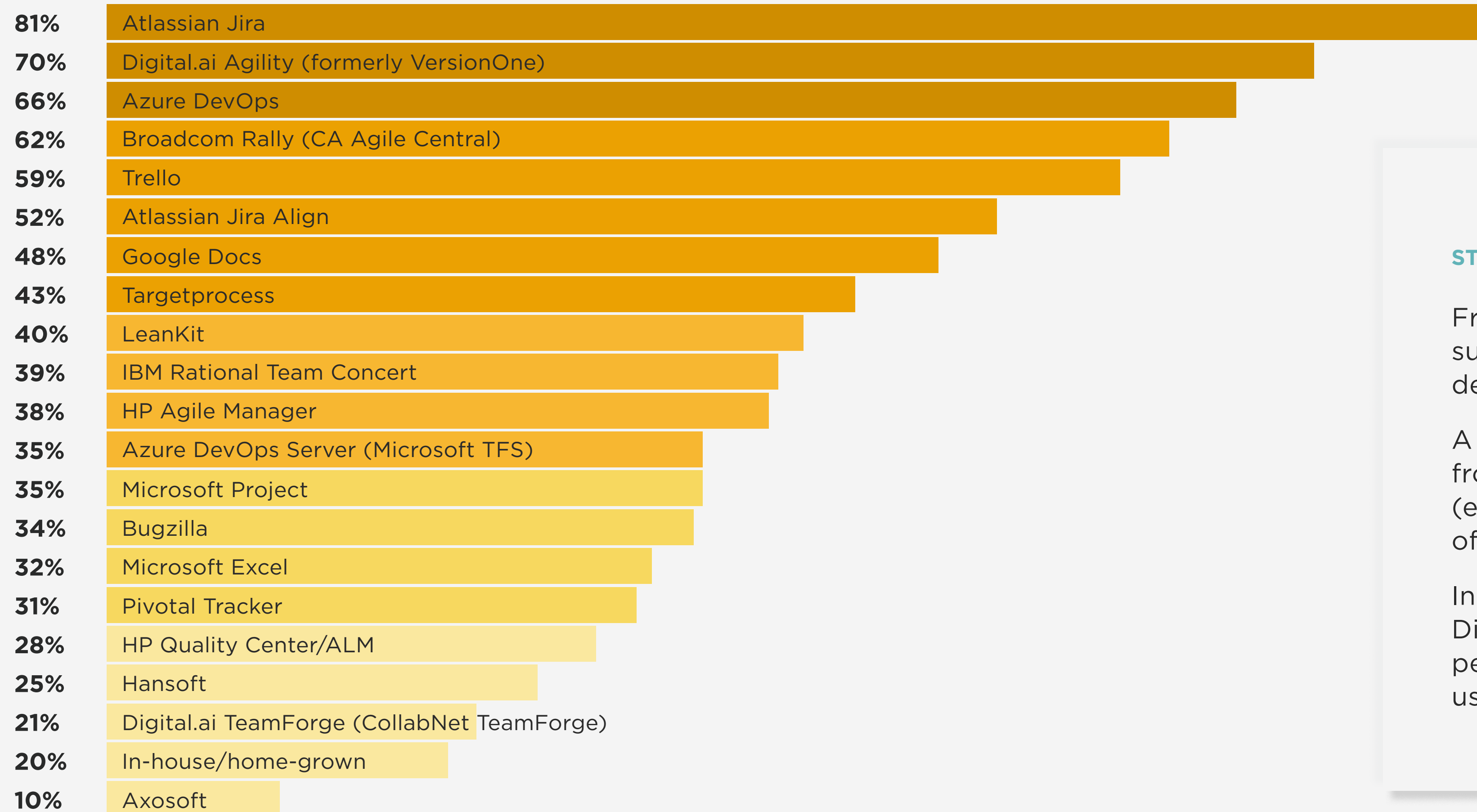


Agile Tooling

Agile practitioners rely on a wide variety of tools to support Agile techniques and practices. However, the survey indicated that two tools, Atlassian Jira (**81%**) and Digital.ai Agility (**70%**), were the most highly recommended to colleagues by their users.

Based on your experience using agile planning tools, which ones would you recommend to someone else?

**Respondents were able to select multiple responses to this question.*



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From the earliest days of the State of Agile survey, tool support has been a key component determining the success of Agile.

A varied collection of tools is employed, ranging from generic planning and management tools (e.g., Microsoft Office) to specialized commercial offerings.

In the past few years, Atlassian Jira and Digital.ai Agility have seen the highest percentage of recommendations from their users.

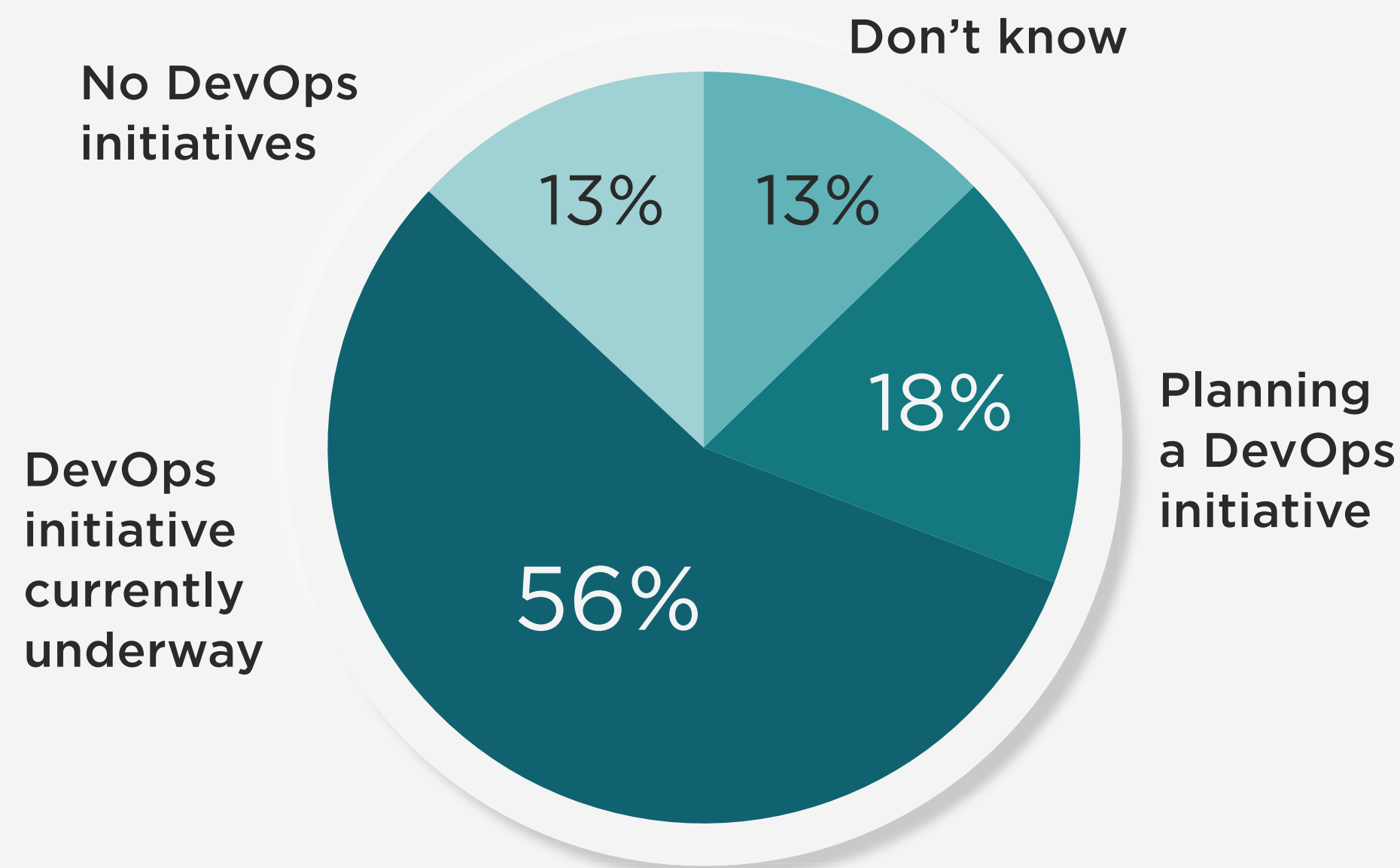
DevOps Initiatives

“I think you would struggle to become a digital enterprise without using Agile and DevOps.”

Helen Beal, *Chief Ambassador DevOps Institute and Chair of the Value Stream Management Consortium*

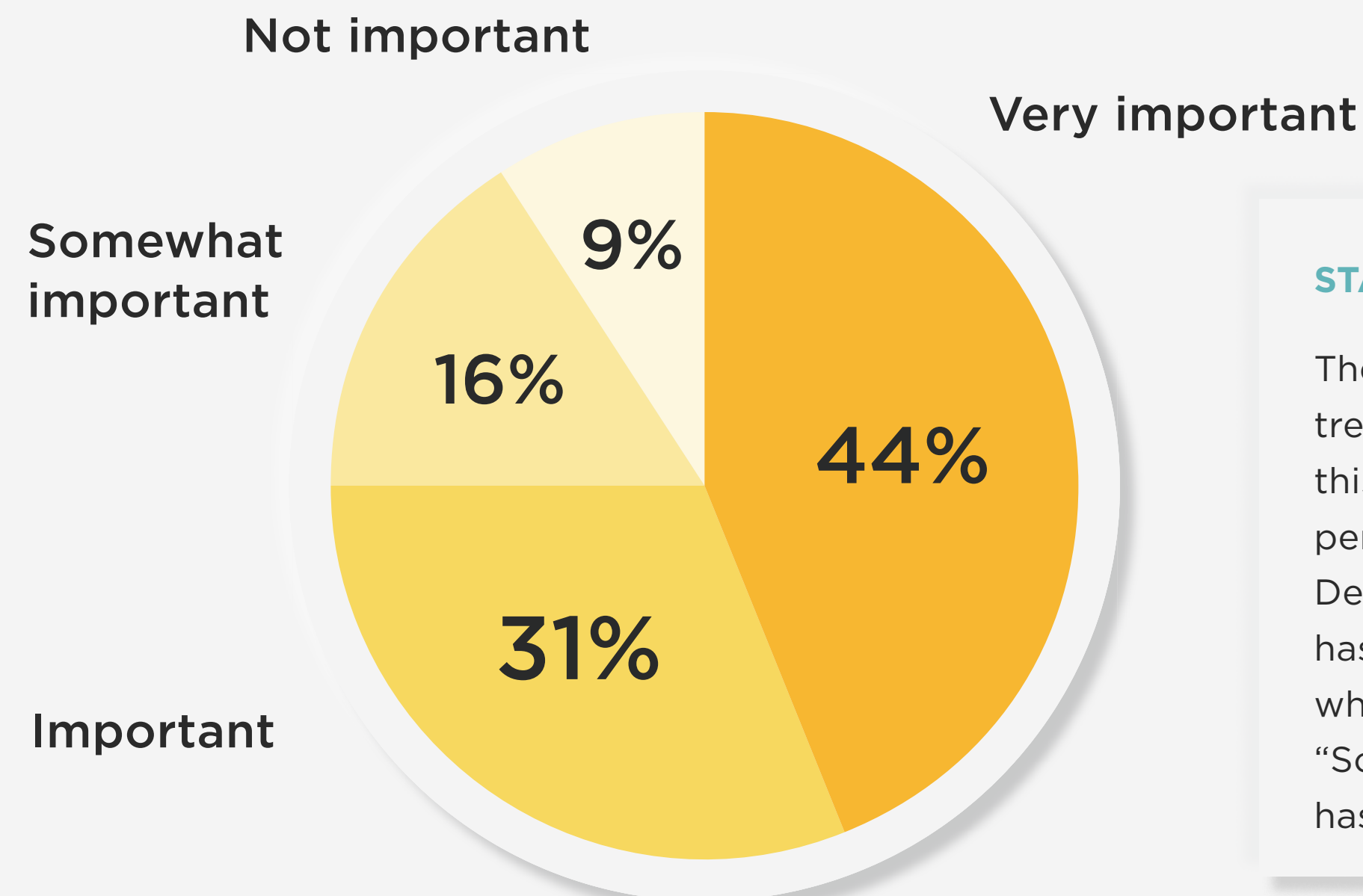
With **74%** of respondents stating they either have a current DevOps initiative or are planning one, DevOps maintains a steady strong level of investment.

Do you have a DevOps initiative currently in process?



Broad organizational recognition and acceptance of DevOps continues to grow. In the current survey, **75%** of respondents indicate DevOps is important or very important to their organization with only **9%** stating it has no importance.

How important is DevOps within your organization?



STATE OF AGILE LOOK BACK

The interest in DevOps has been a notable trend throughout the past few editions of this survey. Over the past four years, the percentage of companies who consider DevOps transformation “Very Important” has continued to increase (**33% to 42%**) while those who believe DevOps to be “Somewhat Important” or “Not Important” has decreased (**35% to 25%**).

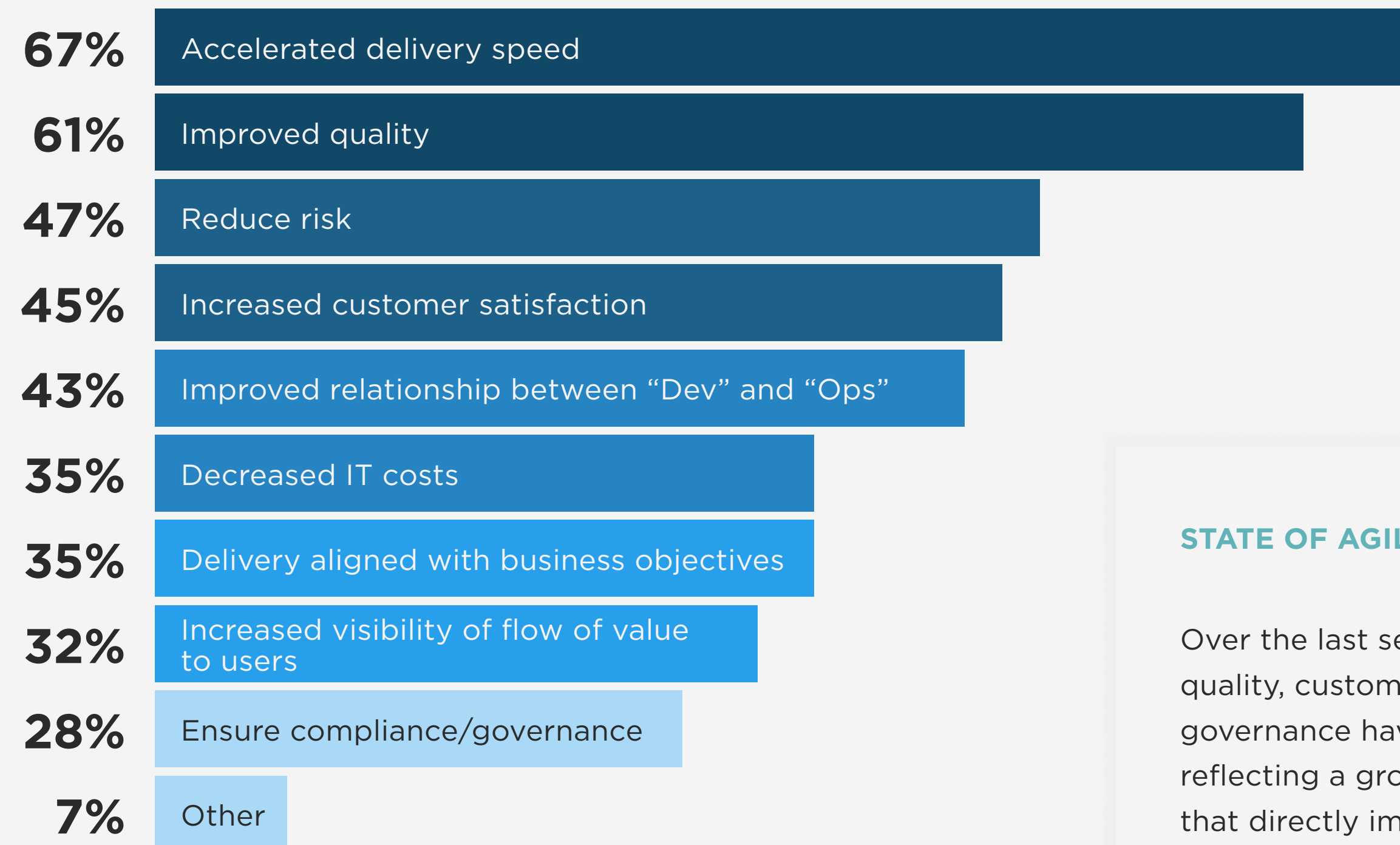


Improving DevOps Success

DevOps helps increase software delivery frequency and reliability while reducing bugs in production. Accelerating software delivery and improving quality are shown to be the top measures of success for DevOps transformation initiatives.

$\frac{2}{3}$ of respondents say accelerated delivery speed is the most critical measure of success for their DevOps transformation initiatives while three in five say it is improved quality.

What are the most critical measures of success for your DevOps transformation initiatives?



STATE OF AGILE LOOK BACK

Over the last several years, delivery speed, improved quality, customer satisfaction, and compliance/governance have steadily increased in importance, reflecting a growing focus on outward-facing metrics that directly impact customer experience.

Value Stream Management

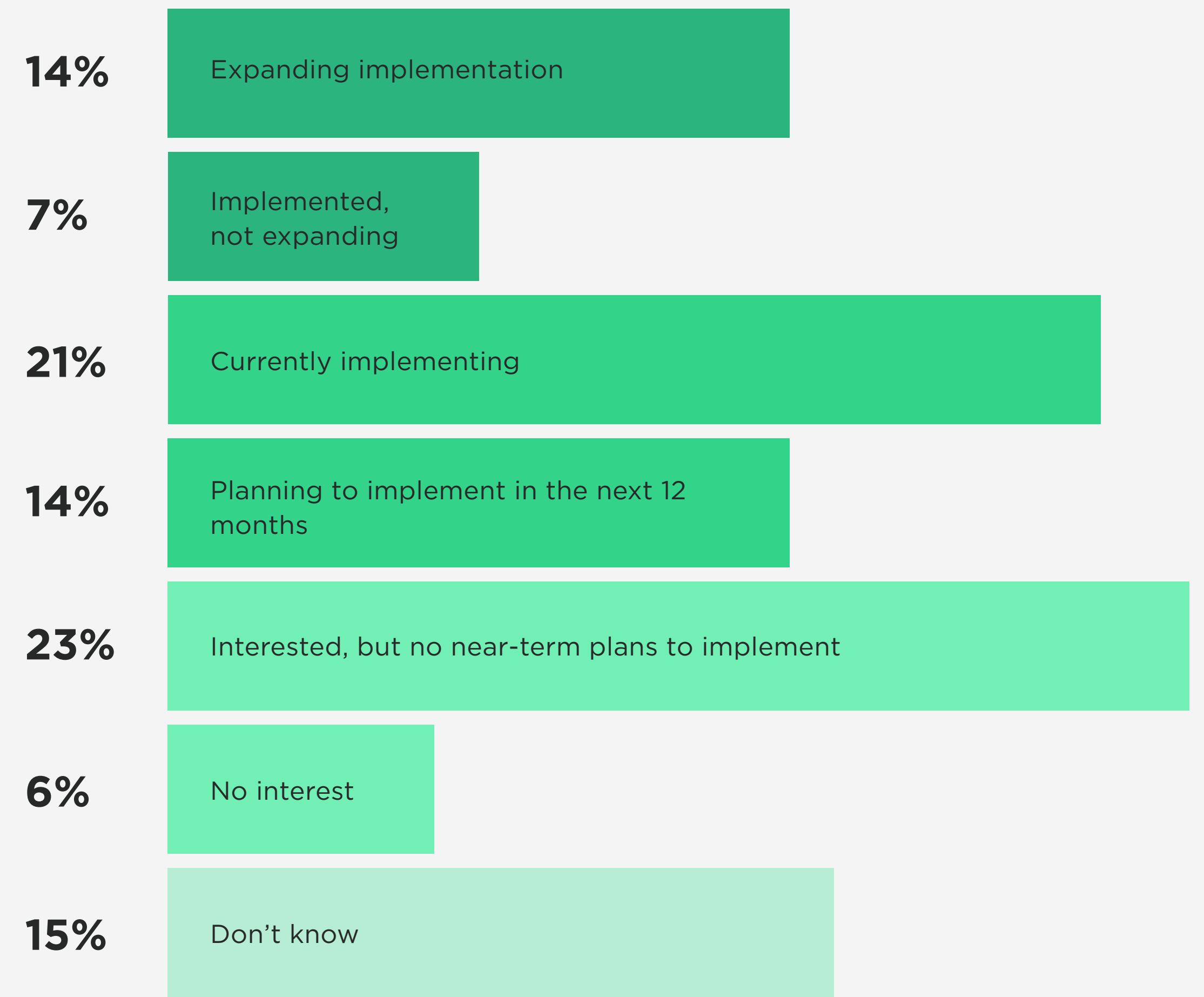
“While value streams are a critical aspect of lean methods, it’s a common misconception that improved efficiency is their primary objective. Every value stream’s goal is to deliver the maximum amount of value to the customer, with the highest possible quality and delight in the shortest sustainable lead time.”

Richard Knaster, *Chief Scientist, Value Stream Management, Digital.ai*

Introduced in last year’s State of Agile survey, value stream management continues to be an important focus for respondents. As defined in the current study, VSM is a combination of the people, processes, and technology that maps, optimizes, visualizes, measures, and governs the flow of business value (delivered by epic, stories, work items) using end-to-end enterprise software delivery pipelines spanning from idea through development and into production.

Consistent with last year, more than half (**56%**) of respondents have implemented or are planning to implement VSM and an additional **23%** report their organization is interested in VSM. This data is consistent with Gartner research that predicts “By 2023, 70% of organizations will use value stream management to improve flow in the DevOps pipeline, leading to faster delivery of customer value.²”

Which of the following best describes your organization’s adoption of VSM?



² Gartner, Inc.: “2021 Planning Guide for Agile Software Development and DevOps,” 9 October 2020, by analysts Bill Holz, Danny Brian, Peter Hyde, Sean Kenefick, Brad Dayley, Kevin Matheny

About the Survey

The 15th State of Agile survey was conducted between February and April 2021.

Sponsored by Digital.ai, individuals across a broad range of industries in the global software development communities were invited to participate.

A total of **4,182** responses were received with **1,382** complete survey responses collected, analyzed, and prepared into a summary report by Regina Corso Consulting, an independent survey consultancy.

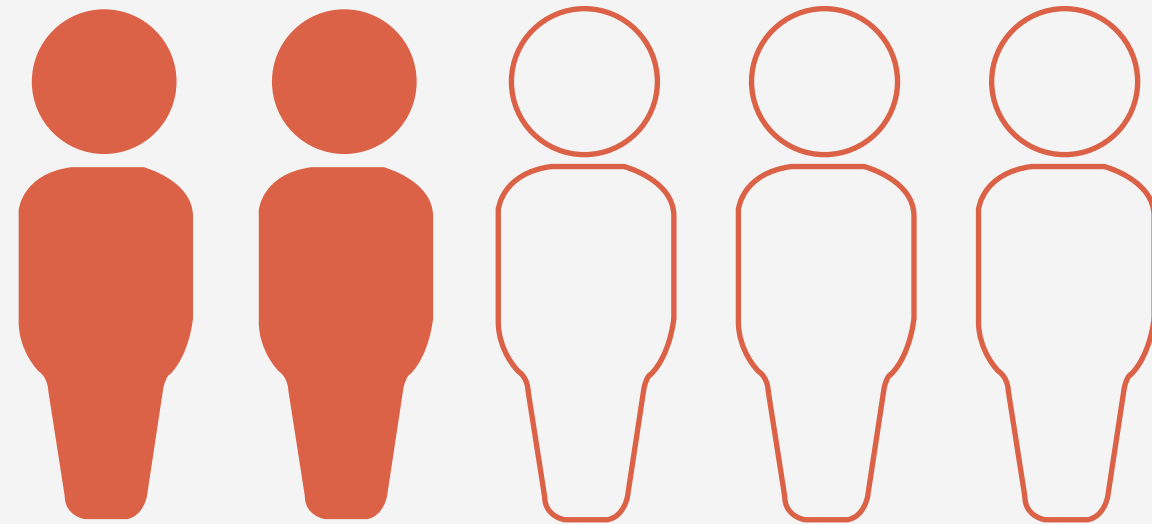
Unlike previous years, this survey was conducted entirely online due to the global pandemic. To encourage the widest possible participation, the survey was promoted by Digital.ai through a variety of online channels.



Demographics

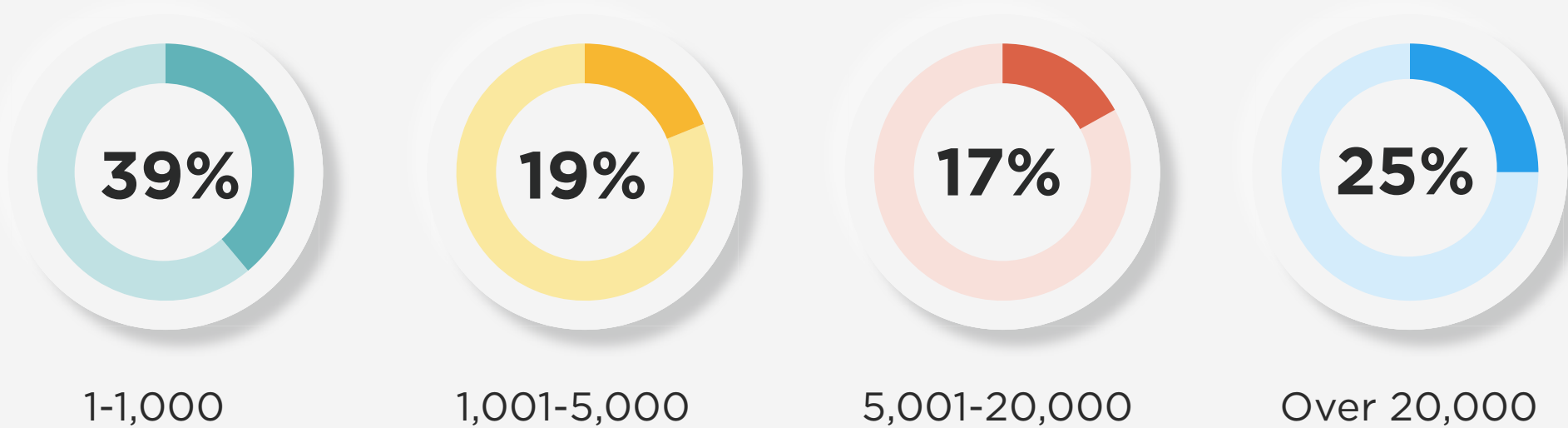
The 15th Annual State of Agile survey reflects the input of Agile practitioners of all levels, from more than 100 countries, in companies large and small and across a wide range of domains. To ensure broad access, all responses were collected online, and the survey was broadly advertised through social media channels, website requests, blog postings, and email to relevant curated mailing lists.

This year, two in five respondents come from companies with 1,000 employees or less and $\frac{1}{4}$ work in companies with over 20,000 employees.

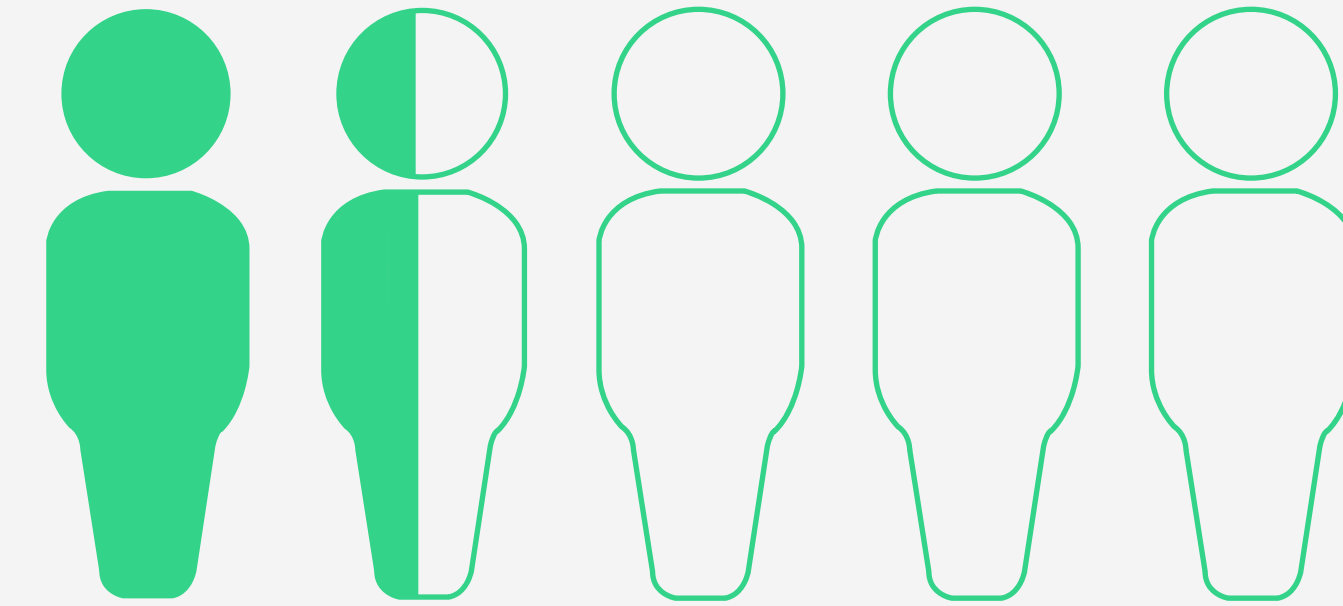


Despite the changing approach to gathering data and publicizing the survey, company size has held relatively steady over the past five years, providing a consistent foundation for the survey.

How many employees are in your entire company?

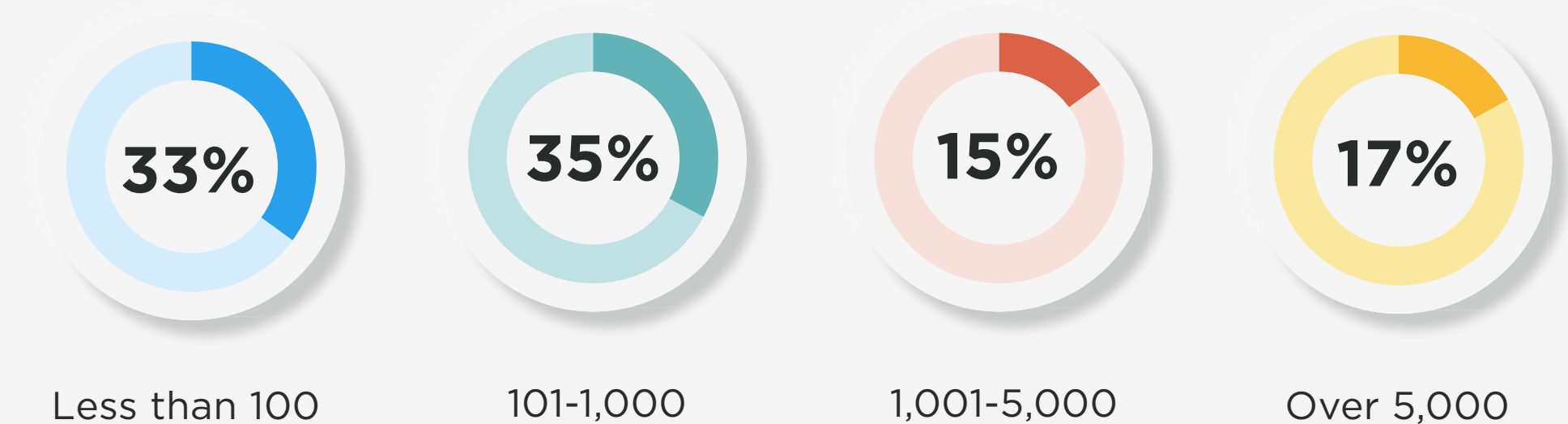


Over $\frac{1}{3}$ of respondents say the software organization in their company is between 101 and 1,000 people and $\frac{1}{3}$ say it's less than 100 people.



It is notable that over the past several years, respondents to this survey have consistently been drawn from small, medium, and large software teams.

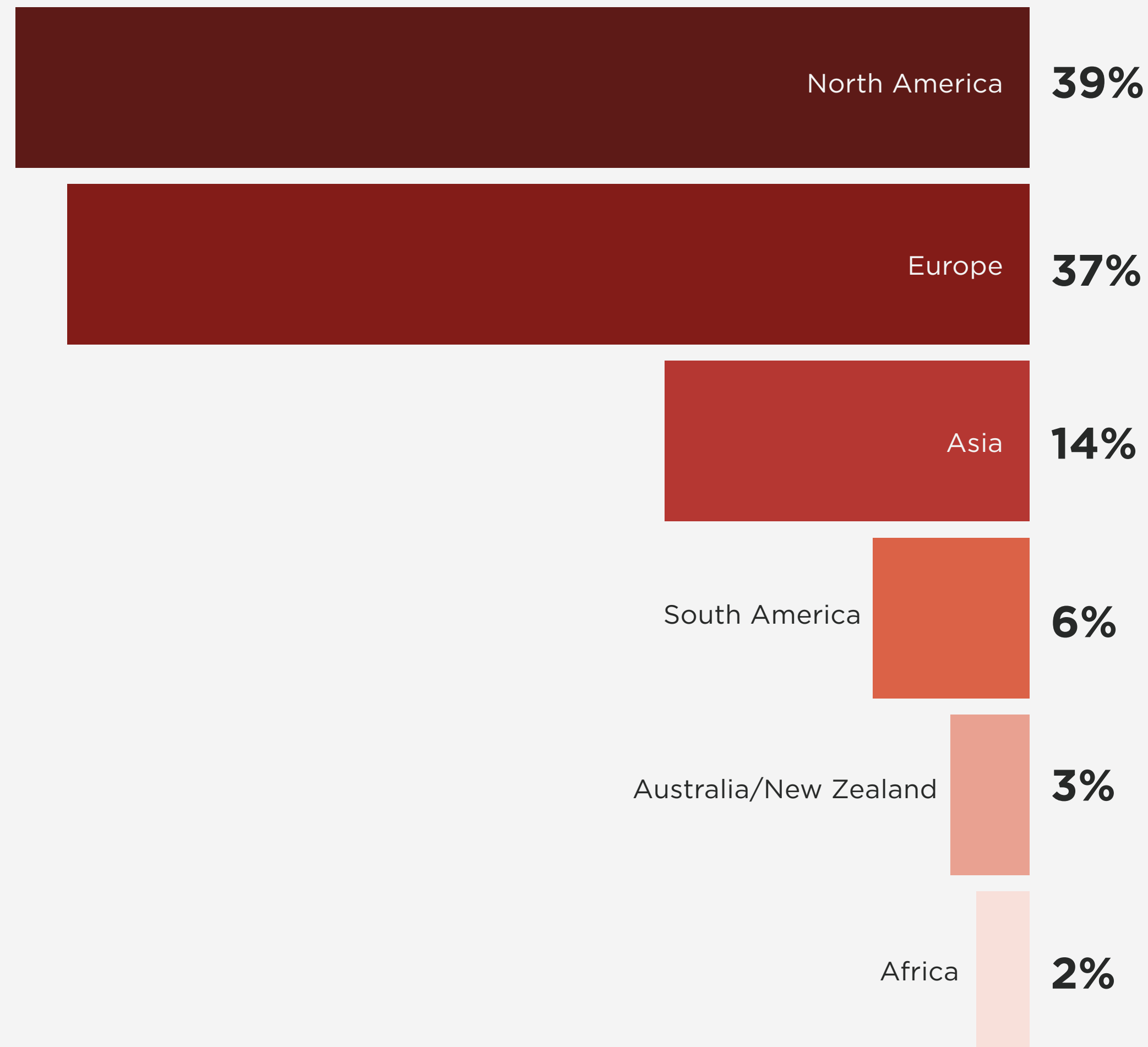
How many people in your organization (including contractors) are responsible for planning, developing, testing, and delivering software?



Demographics

Respondents are evenly dispersed across North America, Europe, and the rest of the world.

Where are you located?



A majority of respondents (**38%**) describe themselves as Scrum Masters or Internal Coaches. This trend has been consistent over the past several years of the State of Agile survey.

Which role best describes your current position?

