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The State of DataOps

Improving the Quality, Delivery, and Management of Data and Analytics at Scale

Mike Leone, Senior Analyst

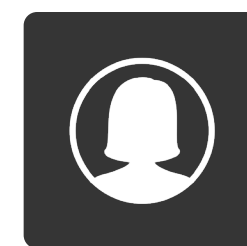
APRIL 2022

Research Objectives

The need for rapid insight is forcing organizations to prioritize agility, transparency, and speed across their data ecosystems with a goal of improving operational efficiency, improving collaboration, and accelerating time to value from investments in support of data-driven initiatives. But organizations need help ensuring seamless orchestration, appropriate management, and timely delivery of data in support of the people, tools, processes, and environments that fuel their business. Between data quality issues, distributed data, tool proliferation, overburdened and under-skilled teams, rising costs, and increased risk, the complexity of today's data ecosystem hinders democratization of data and analytics. This is a big reason organizations are turning to DataOps: DataOps is an agile, automated, and process-oriented methodology used by data stakeholders to improve the quality, delivery, and management of data and analytics. And the wide belief is that establishing DataOps will set organizations up for success as they look to achieve a data-driven future through an agile, process-oriented approach to securely accessing and analyzing data at scale.

In order to gain more insight into these trends, ESG surveyed 403 technical and business data professionals at organizations in North America (US and Canada) involved in data and analytics strategy with knowledge of modern tooling, technology, and processes. This research aimed to assess the state of DataOps, including market maturity, experienced challenges, factors influencing buying and planning decisions, and business benefits.

THIS STUDY SOUGHT TO:



Determine the extent to which organizations have shifted power to new personas who influence and make decisions when it comes to utilizing an analytics platform that enables rapid and reliable insight.



Gain insights into what matters most to businesses and end-users based on where they are in their data-centric journey, from data engineering and tooling to automation and collaboration.



Understand the tipping point for all data stakeholders, including data engineers, IT, developers, and end-users who enable the democratization of data and analytics platforms to the business.



Gauge buyer preferences for different capabilities, features, and guidance to help enable data-driven success.

KEY FINDINGS

CLICK TO FOLLOW



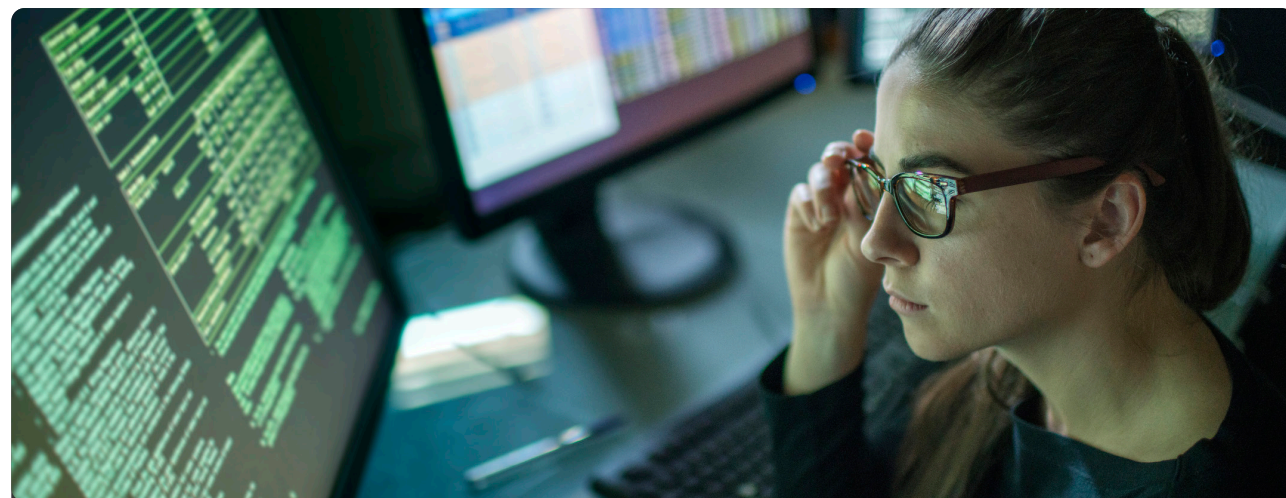
Overarching data strategies continue to emphasize the importance of trust in data platforms, processes, people, and data itself.



Organizations are looking to increase DataOps spending with a goal of overcoming both business and technical challenges.



The criticality of automation and data observability cannot be overstated when it comes to DataOps effectiveness and success.



Data integration continues to serve as a lynchpin to DataOps.



Data engineers continue to be critical to DataOps, but it's increasingly about the other personas.



DataOps done right delivers undeniable benefits that include increased employee data access and improved effectiveness for data producers and consumers alike.

Overarching data strategies continue to emphasize the importance of trust in data platforms, processes, people, and data itself.



Top Business Objectives Are Tied to Quality, Cost Savings, and Prediction

As organizations look to more pervasively leverage data to fuel insight and innovation, business objectives tied to data strategies highlight wider exposure to more of the business. Historically, operational efficiency has been the top business objective (by a fair margin) driving an organization’s data strategy, and it has been tightly connected to IT and other technical stakeholders. As more areas of the business are empowered to better use data as part of their job functions, objectives like improving the quality of products/services delivered and improving business decisions are rising in the business objective rankings, highlighting a maturation to some extent of the overall data market.

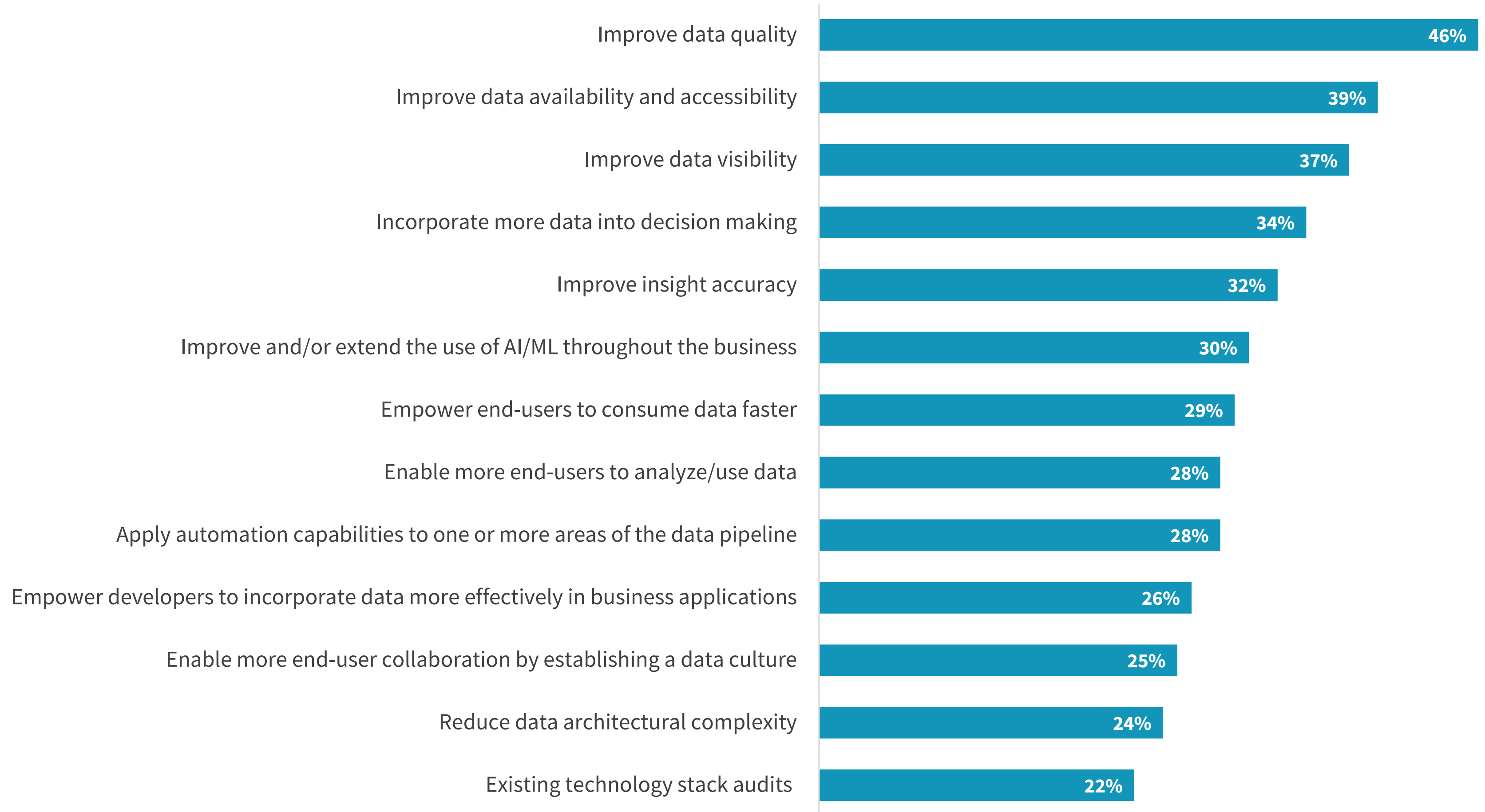
| Business objectives driving data strategies.




Prioritizing Trust

For organizations to best enable the business to effectively utilize data, trust continues to underpin most organizational priorities, and it starts with data quality. Without high quality data, trust in the platforms, insights, and outcomes are impacted. So how can high quality data be ensured without data availability, accessibility, visibility, and accuracy? Simply put, it can't. As organizations look to best empower more stakeholders within the business to bring data to every decision, ensuring trust continues to be a pillar of and overarching priority for all data-centric organizations.

Priorities to enable broader and more effective data use.



A man with grey hair and a beard, wearing a dark hoodie, is looking down at a smartphone he is holding in his hands. He is sitting at a desk in an office environment. In the background, there are several computer monitors displaying data and charts. A laptop is open on the desk in front of him. The lighting is soft, and the overall tone is professional and focused.

Organizations are looking to increase DataOps spending with a goal of overcoming both business and technical challenges.

DataOps Spending Is on the Rise

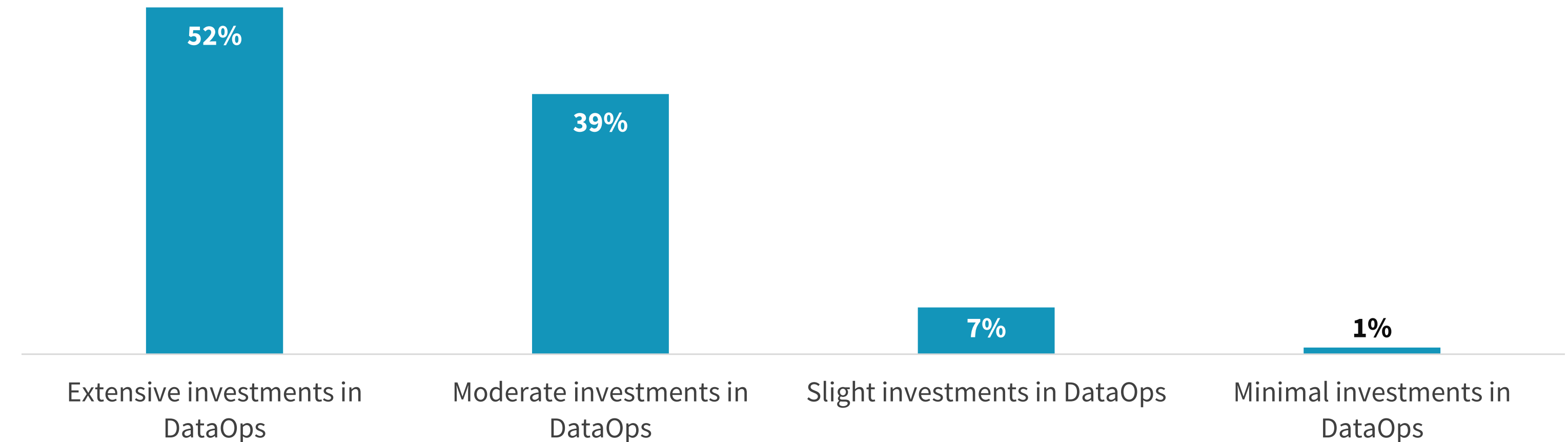
Regardless of the state of current DataOps implementations, spending trends highlight mass acceleration and increase across the board. When it comes to solutions and technology in support of DataOps, an eye-opening 91% of respondents plan to make moderate to extensive investments over the next year. This speaks to the collective desire to improve the quality, delivery, and management of data and analytics at scale to all relevant stakeholders using agile, automated, and process-oriented methodologies.



90%

of respondents **plan to make moderate to extensive investments** over the next year.

| Investment plans in support of DataOps over the next year.

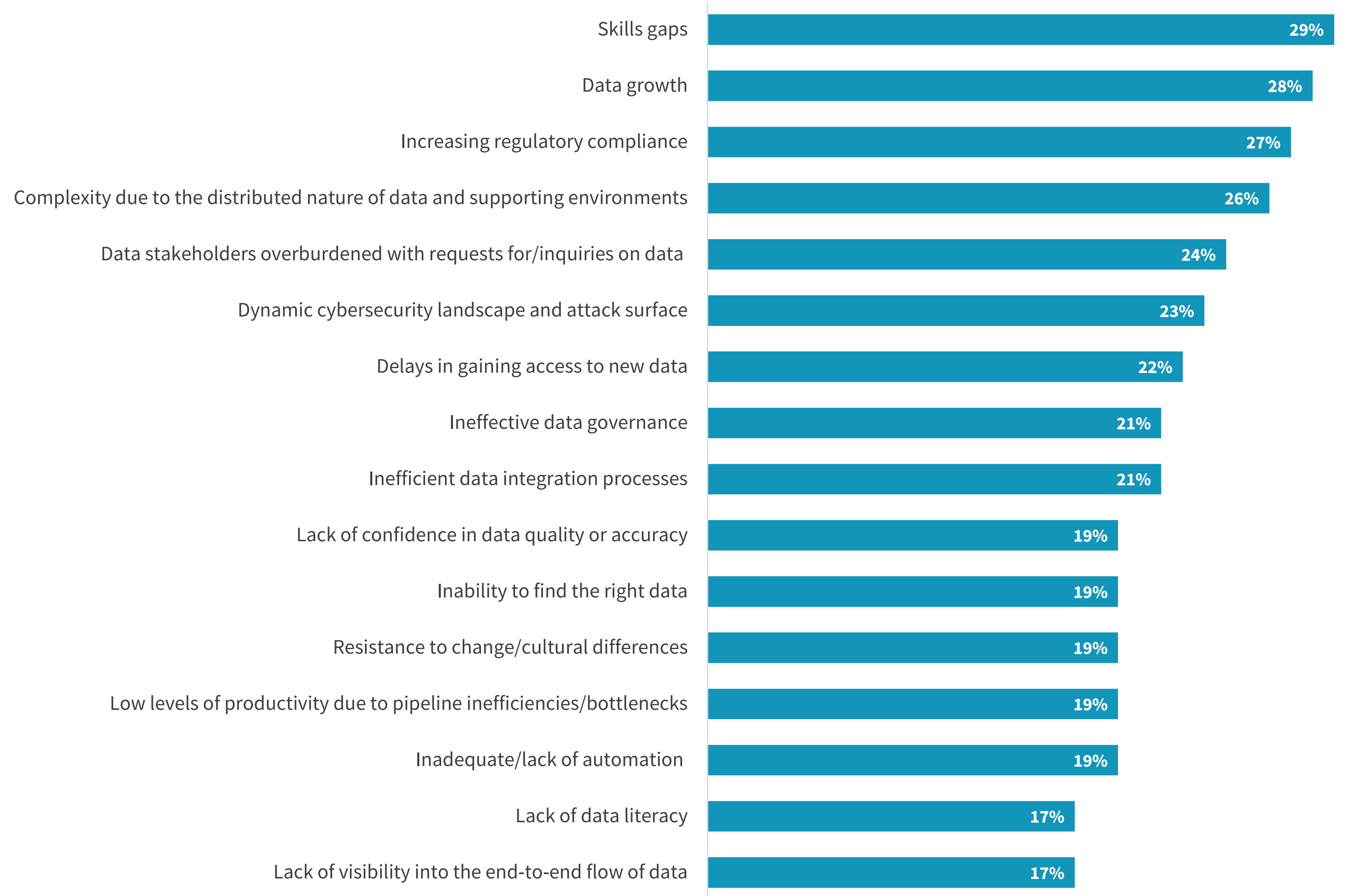


Data Challenges Appear across the Board

As organizations ramp up spending on supporting technologies and initiatives tied to DataOps, the driver is often to overcome existing bottlenecks or challenges. The research highlights the fact that all organizations experience challenges that are driving DataOps strategy.

Ecosystem complexity continues to hinder the democratization of data and analytics. Overburdened and under-skilled teams, the increasing distribution and growth of data, data quality issues, tool proliferation, and rising costs are just some of the challenges organizations hope to overcome soon through more effective DataOps strategies.

| Data challenges driving DataOps strategies.



Capabilities and Attributes Highlight the Desire to Democratize Data and Analytics

As organizations look to embrace modern technology in support of data initiatives, the list of requirements continues to grow and often forces organizations to make tradeoffs between “must haves” and “nice to haves.”

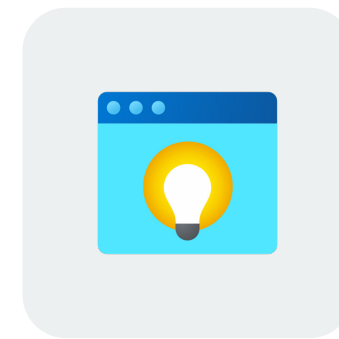
Based on the most important technology capabilities, reliability is proving to be the most valuable capability in the supporting technology stack. And it’s not just in terms of uptime, but in the overall experience. Attributes like consistency and predictability matter. When a stakeholder sits down to complete a data-centric task, regardless of where they are located, they are looking for simplicity, flexibility, and security collectively without impacting performance.

| Ten most important technology capabilities to support ongoing data initiatives.



40%

Reliability



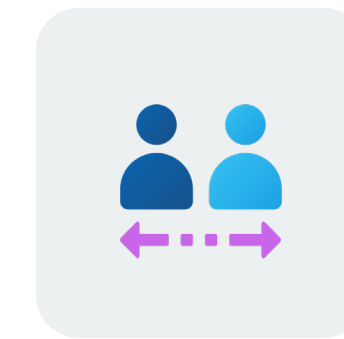
38%

Ease of use



36%

Performance



33%

Flexibility



28%

Security/governance



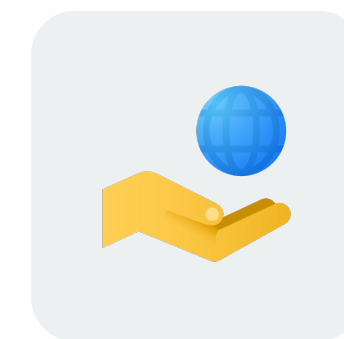
26%

Ease of integration with other applications, APIs



25%

Cost, return on investment, and/or total cost of ownership



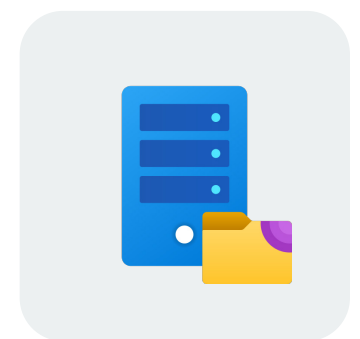
21%

Availability and accessibility




21%

Scalability



18%

Flexible hosting options/consumption models

The background is a dark blue field filled with intricate, glowing circuit board patterns. In the center, there is a large, semi-transparent circular graphic containing three interlocking gears. A cloud icon is visible in the upper left quadrant, connected to the circuit lines. The overall aesthetic is high-tech and digital.

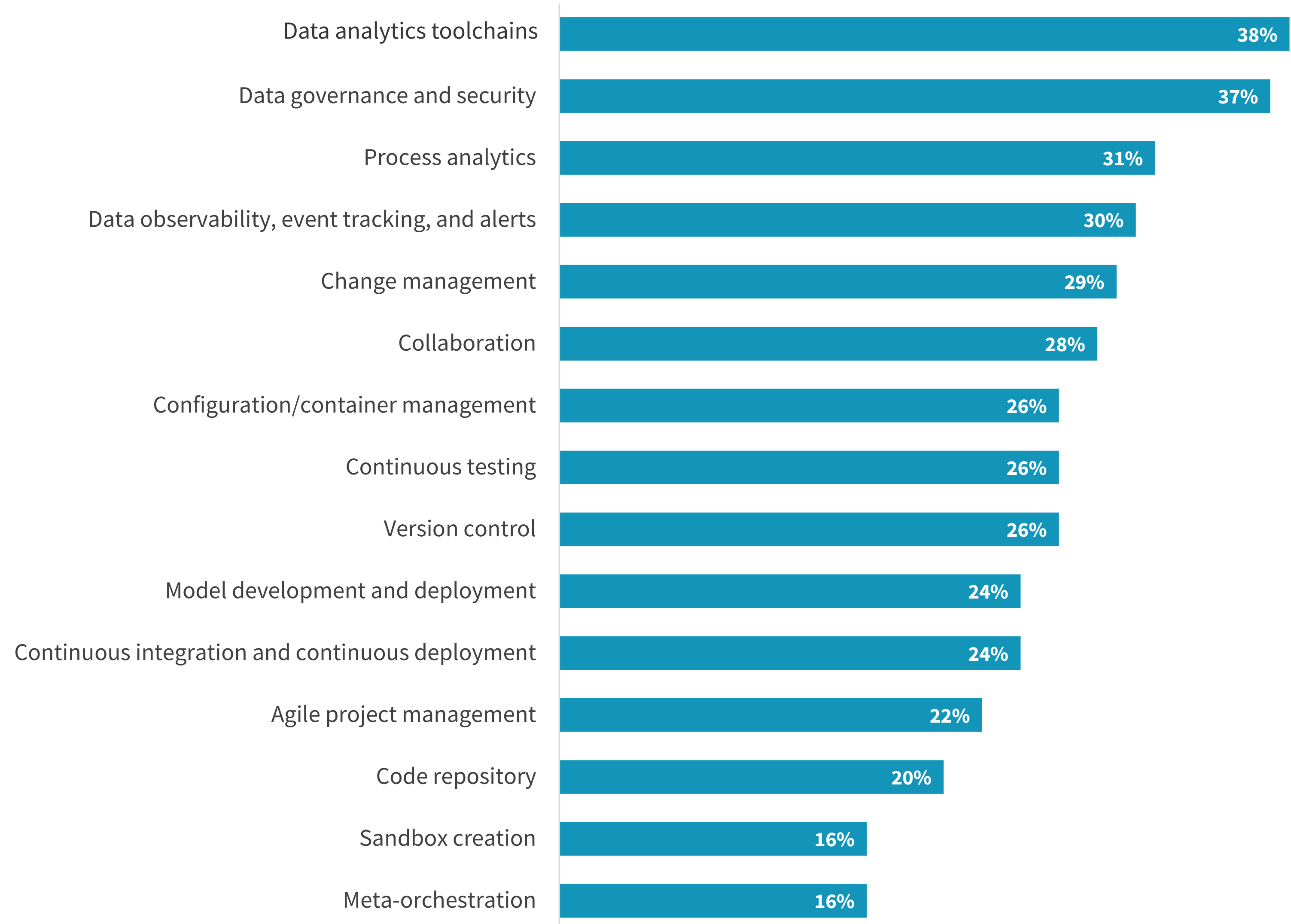
The criticality of automation and data observability cannot be overstated when it comes to DataOps effectiveness and success.

What Components Are Part of the DataOps Ecosystem?

While the DataOps vendor ecosystem is diverse in nature, so too are the components considered a part of it.

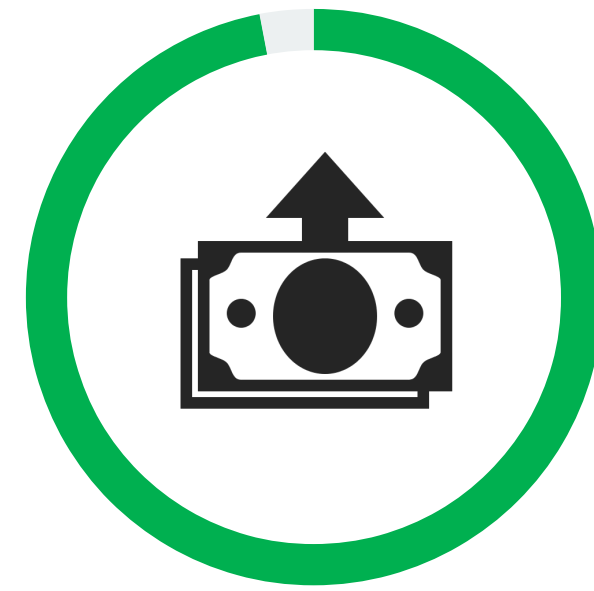
It's not surprising that data analytic toolchains come out on top, as without the tools, there would be nothing to orchestrate. But DataOps is proving to be much more than the toolchain vendors that support everything from integration, access, and governance, to transformation, modeling, and visualization. For a DataOps program to be truly successful, components like data observability, change management, collaboration tools, and CI/CD are proving to be critical. And by layering in automation, these interconnected components serve as a robust foundation to an effective implementation of DataOps.

| Necessary components of a DataOps ecosystem.



The Criticality of Automation in the DataOps Process Is Clear

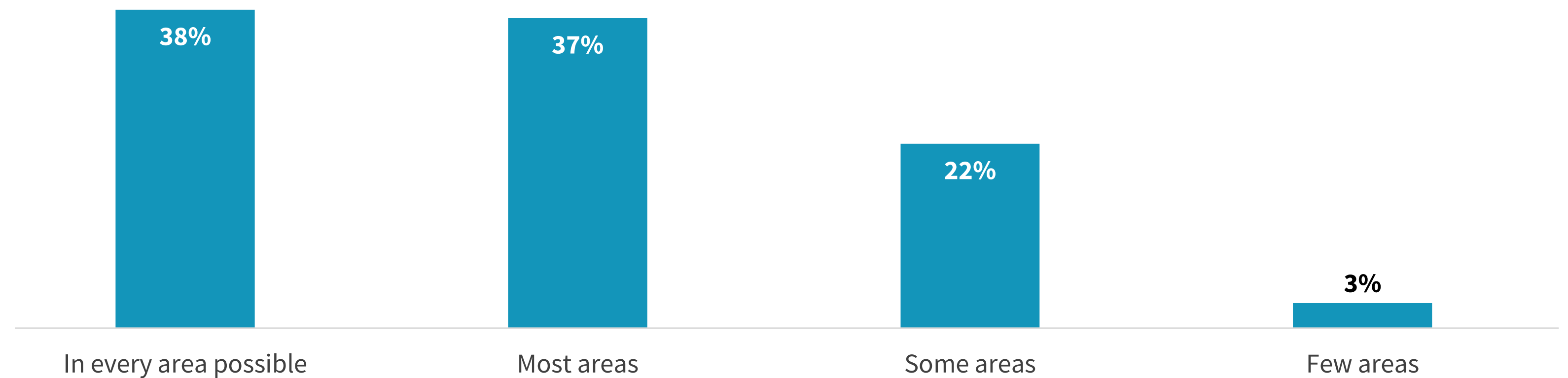
When it comes to automation, 97% of organizations agree that at least some areas of DataOps processes will be automated, and more than one-third (38%) believe automation will be applied in every area possible. Automation clearly has mindshare when it comes to closing the staffing and skills gap, especially when applied with intelligence like problem solving or continuous learning capabilities. A best practice for ensuring proper automation implementation is to first prioritize low-risk, high-volume tasks, with success measured simply by time saved. It's important to note that a key factor to consider is rework: In other words, does someone have to go in after the automation has taken place to clean up?



97%

of organizations agree that at least some areas of DataOps processes will be automated.

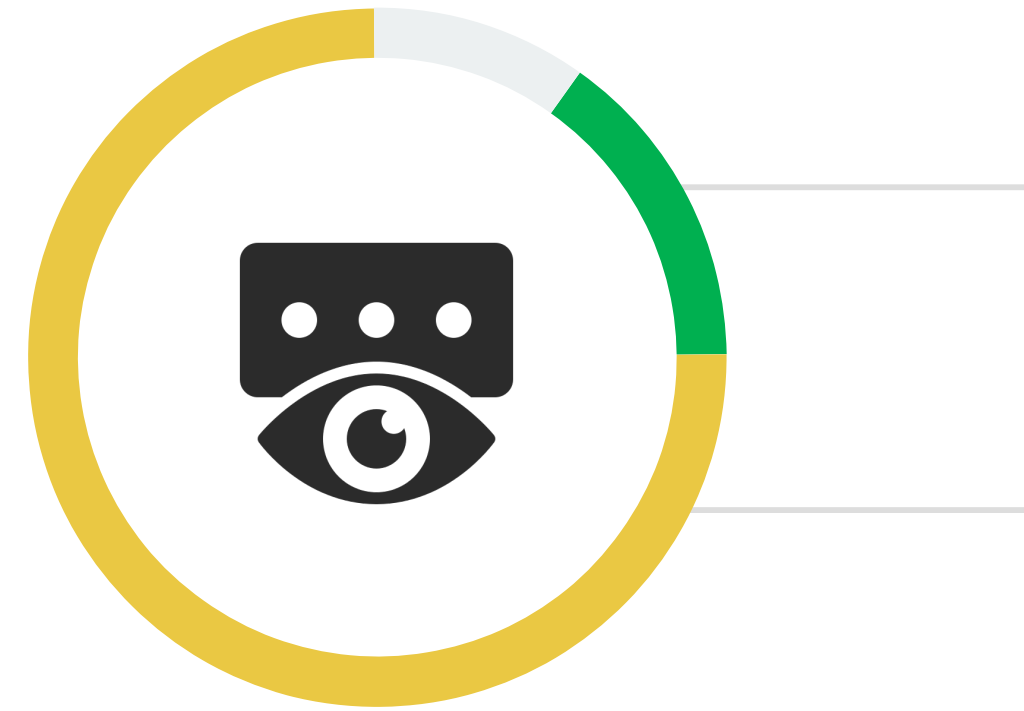
| Extent to which automation is or will be used throughout the DataOps process.



The Criticality of Data Observability

The rise of data observability cannot be overstated as it really serves as the next evolution of data quality. Data observability makes DataOps possible by encompassing technology that enables the business to understand the state and health of its data estate. This is done by providing an ability to monitor, identify, troubleshoot, and resolve data issues throughout the data lifecycle, from integration to production.

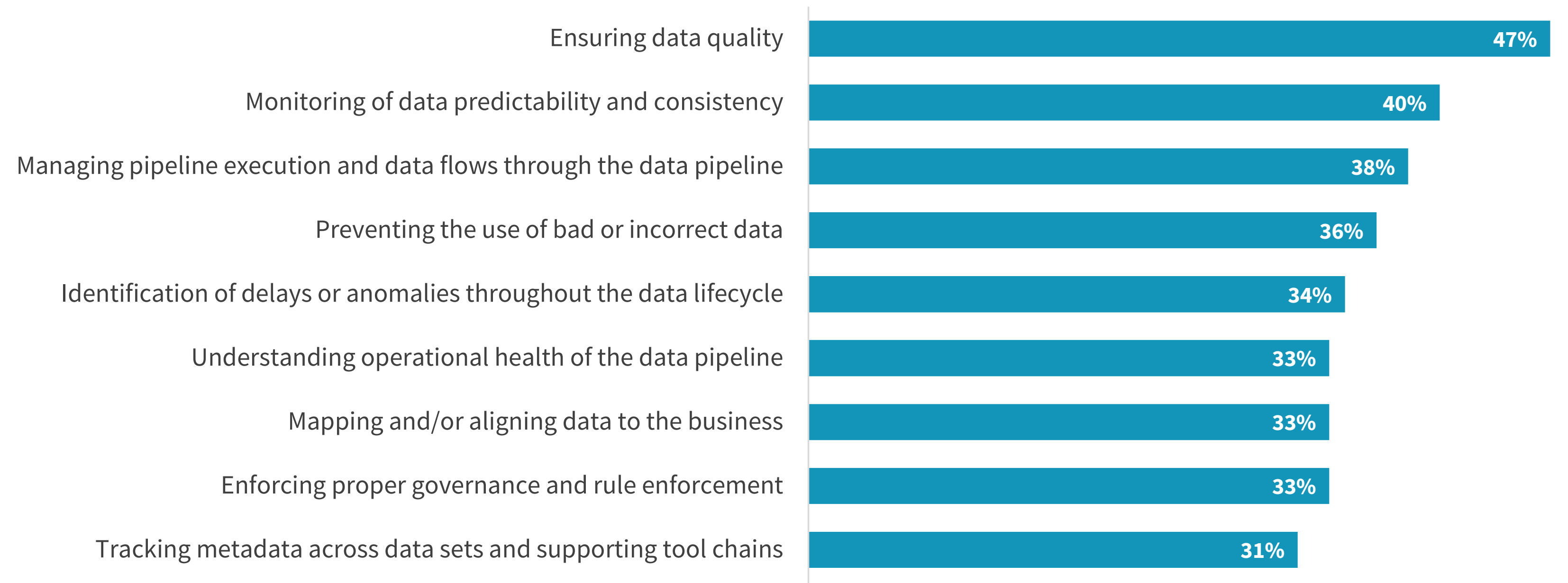
While the vast majority (90%) recognize the importance of data observability as a foundational component of DataOps, 99% of respondents have aspects of data observability implemented and/or deployed in their organizations today, helping ensure comprehensive data quality and consistency.

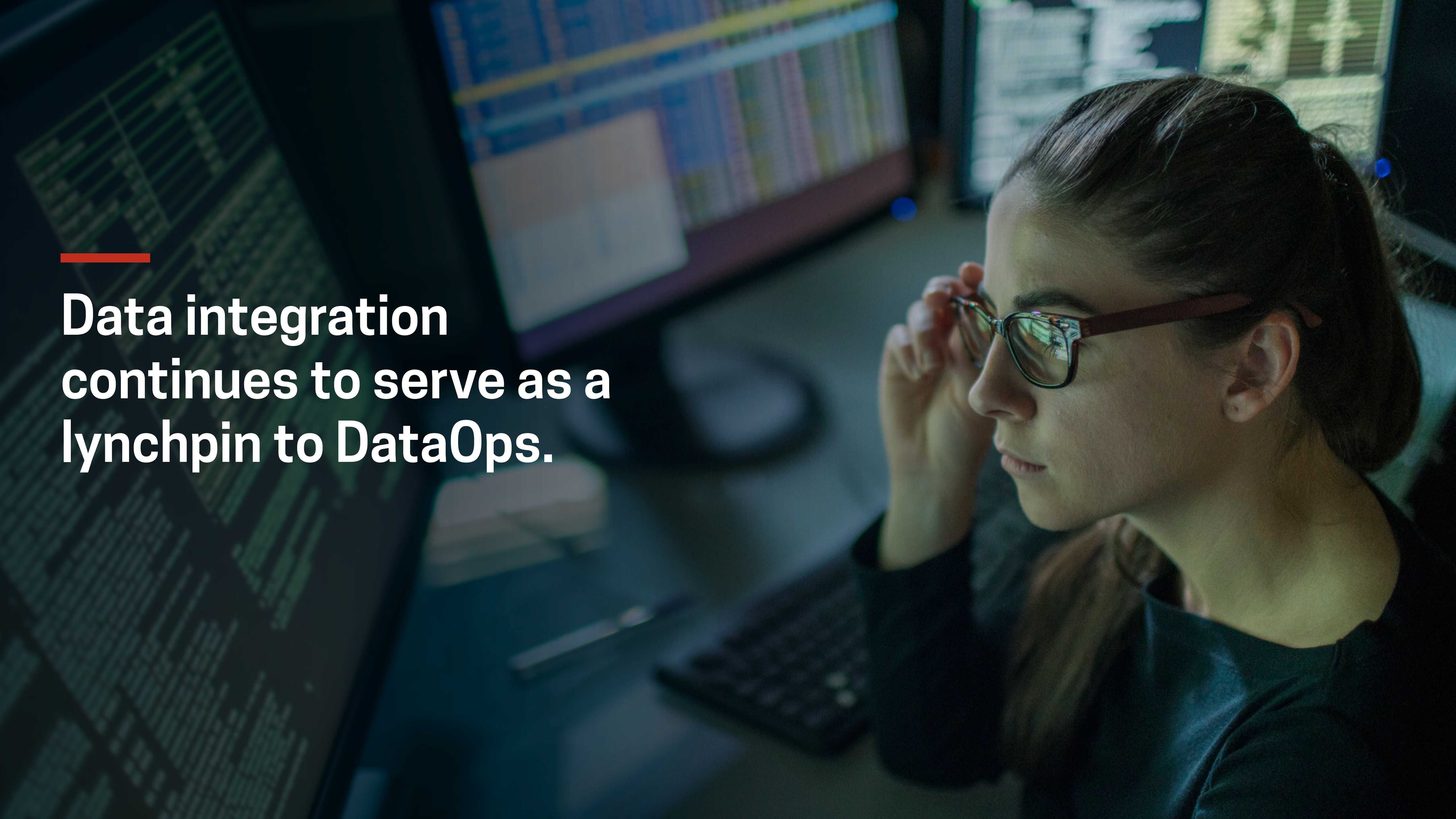


15%
of respondents view data observability as critical

75%
of respondents view data observability as very important

| Tasks considered part of data observability practices.



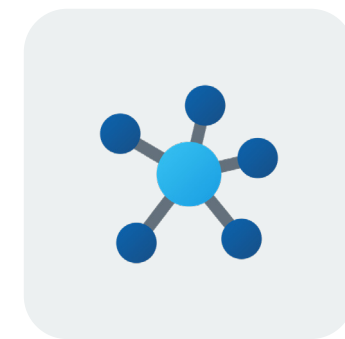
A woman with dark hair tied back, wearing glasses and a dark top, is shown in profile, looking intently at several computer monitors. The monitors display various data visualizations, including bar charts and line graphs. The scene is dimly lit, with the primary light source being the screens, creating a focused and professional atmosphere. A small red horizontal line is positioned above the text on the left side of the image.

**Data integration
continues to serve as a
lynchpin to DataOps.**

The Challenges of Data Integration

Data integration is notorious for being one of the greatest challenges when it comes to data initiatives. In fact, 97% of organizations have at least one aspect of data integration that is viewed as consuming the most time and/or challenging. There's the distributed nature of data and data silo problem, the desire to analyze different types of data together, and the rate at which data changes. There's a massive ecosystem of tools and technologies that must be properly stitched together (such as databases, data warehouses, and data lakes), and automating all of it is proving difficult. It's no surprise that organizations are making some of their largest investments in DataOps with a goal of improving data integration specifically.

| Ten most common data integration challenges.



29%

Combining data of different structures with a goal of analyzing together



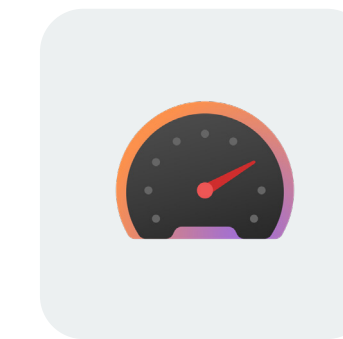
28%

Inability to apply automation to processes and/or workflows



27%

Combining data from disparate data silos/environments



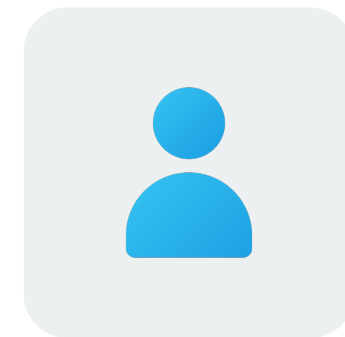
25%

Handling the rate/speed at which data is changing



25%

Lack of data standards



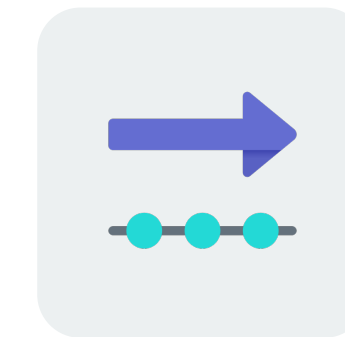
25%

Inability of preferred enterprise analytics application to meet all end-user requirements



24%

Understanding the data due to lack of metadata



23%

Delay in data access due to data movement



23%

Limited data retention policies



23%

Inability to map data back to ownership for business context

Addressing Ongoing Data Integration Challenges

It appears organizations are approaching data integration more as a technical problem than a people problem. While skills gaps remain in the data integration space, responses highlight the need to modernize data-centric environments and implementations with automation, orchestration, and managed service offerings, with hiring staff further down on the list.

| Steps taken to address data integration challenges.



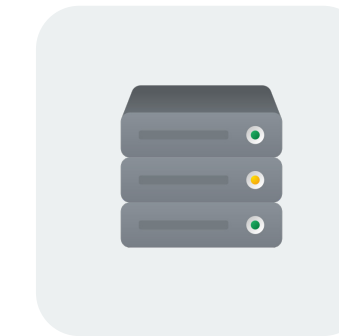
44%

Embrace automation tools and technology



38%

Deploy management/orchestration software



38%

Consolidate technology vendors



37%

Audit existing data infrastructure



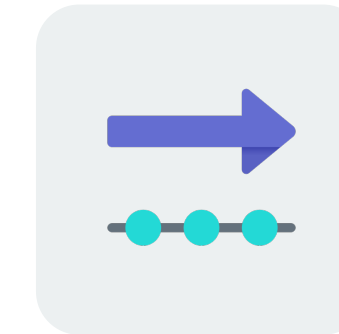
34%

Hire more people



32%

Embrace managed service offerings



29%

Leveraging third-party management solutions



28%

Reduce the number of cloud providers we leverage today

A close-up photograph of a person's hand pointing at a tablet. The tablet screen displays several data visualization elements, including a donut chart with a blue segment and a bar chart below it. The background is dark and out of focus, showing another person's hand near the tablet. The text is overlaid on the left side of the image.

Data engineers continue to be critical to DataOps, but it's increasingly about the other personas.

Data Engineers Are Not the Most Influential in Driving DataOps Initiatives

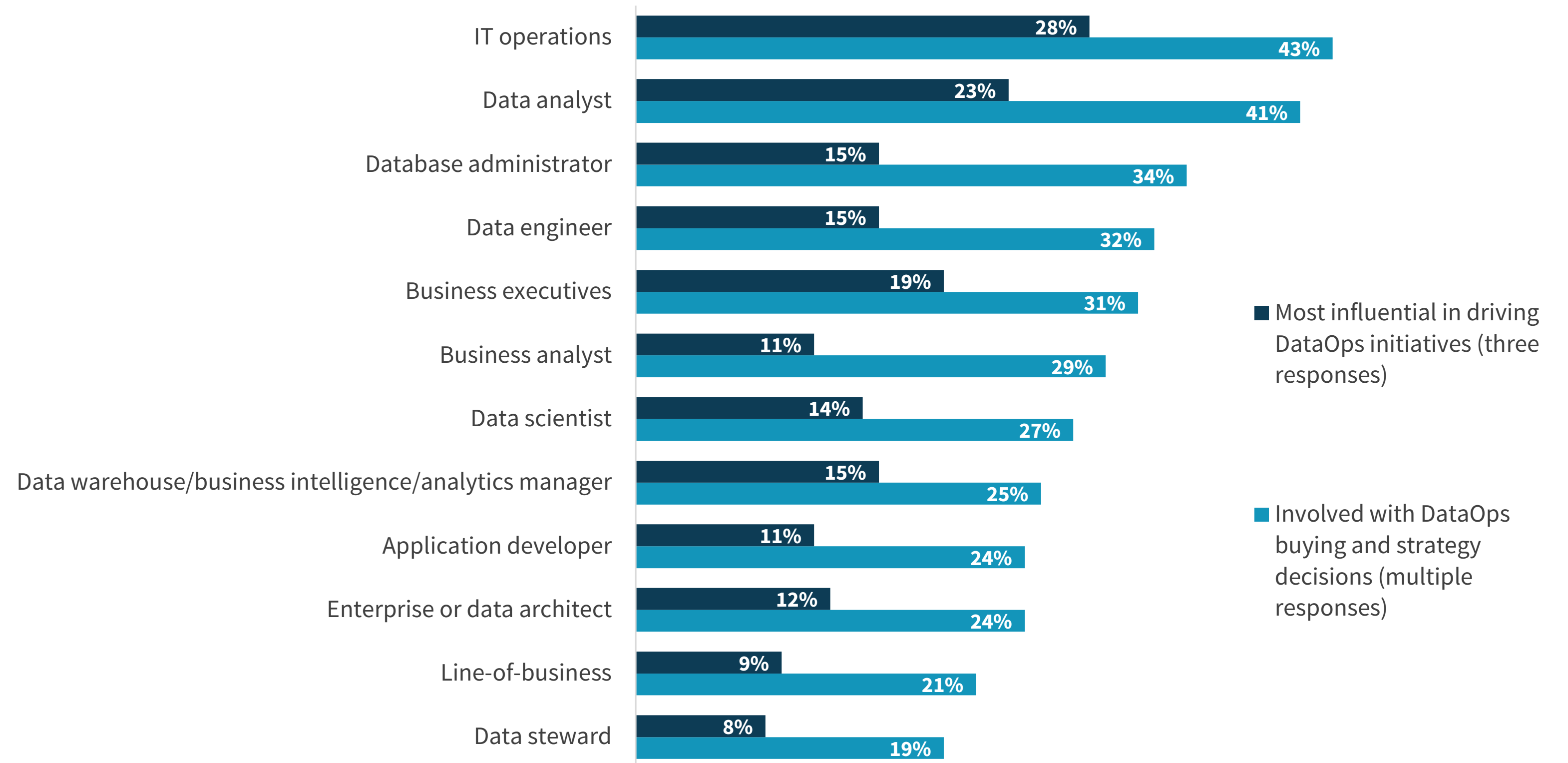
When it comes to DataOps, the key persona has long been thought of as the data engineer. While that is still likely the case for implementations and everyday work and involvement, when it comes to strategy and buying decisions, influence in DataOps initiatives is increasingly driven by virtually all aspects of the business. In fact, stakeholders in IT, end-users, developers, and line-of-business leaders all have heavy involvement in the direction of DataOps. It shines a spotlight on the desire to improve cooperation and collaboration across these teams as everyone must work together to achieve DataOps success. Indeed, more than three-quarters (76%) of organizations are currently cooperating across involved teams when it comes to DataOps strategies.



76%

of organizations **are cooperating across teams** when it comes **DataOps strategies.**

| Stakeholders involved with DataOps strategy and purchasing.



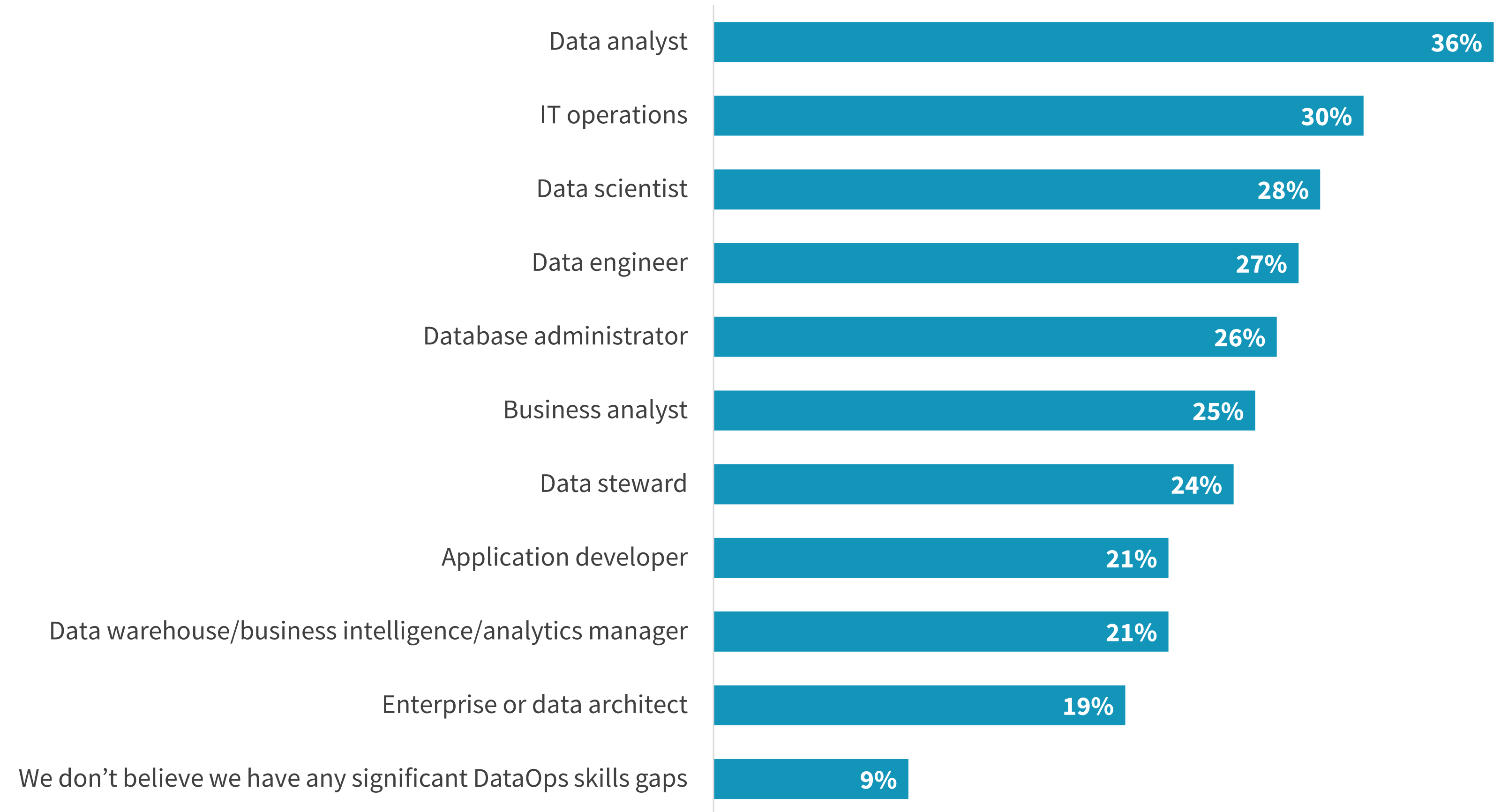
Significant Skills Gaps Found Virtually Everywhere

When it comes to all of the stakeholders involved in DataOps initiatives from both producers and consumers of data, 91% of organizations have significant skills gaps in at least one area. At least 1 in 4 organizations have skills gaps in the following roles: data analyst, IT operations, data scientist, data engineer, database administrator, and business analyst. This serves as a big driver for leaning on technology like automation and self-service to offset the skills gaps.



91%
of organizations **have significant skills gaps in at least one area.**

Areas of significant DataOps skills gaps.

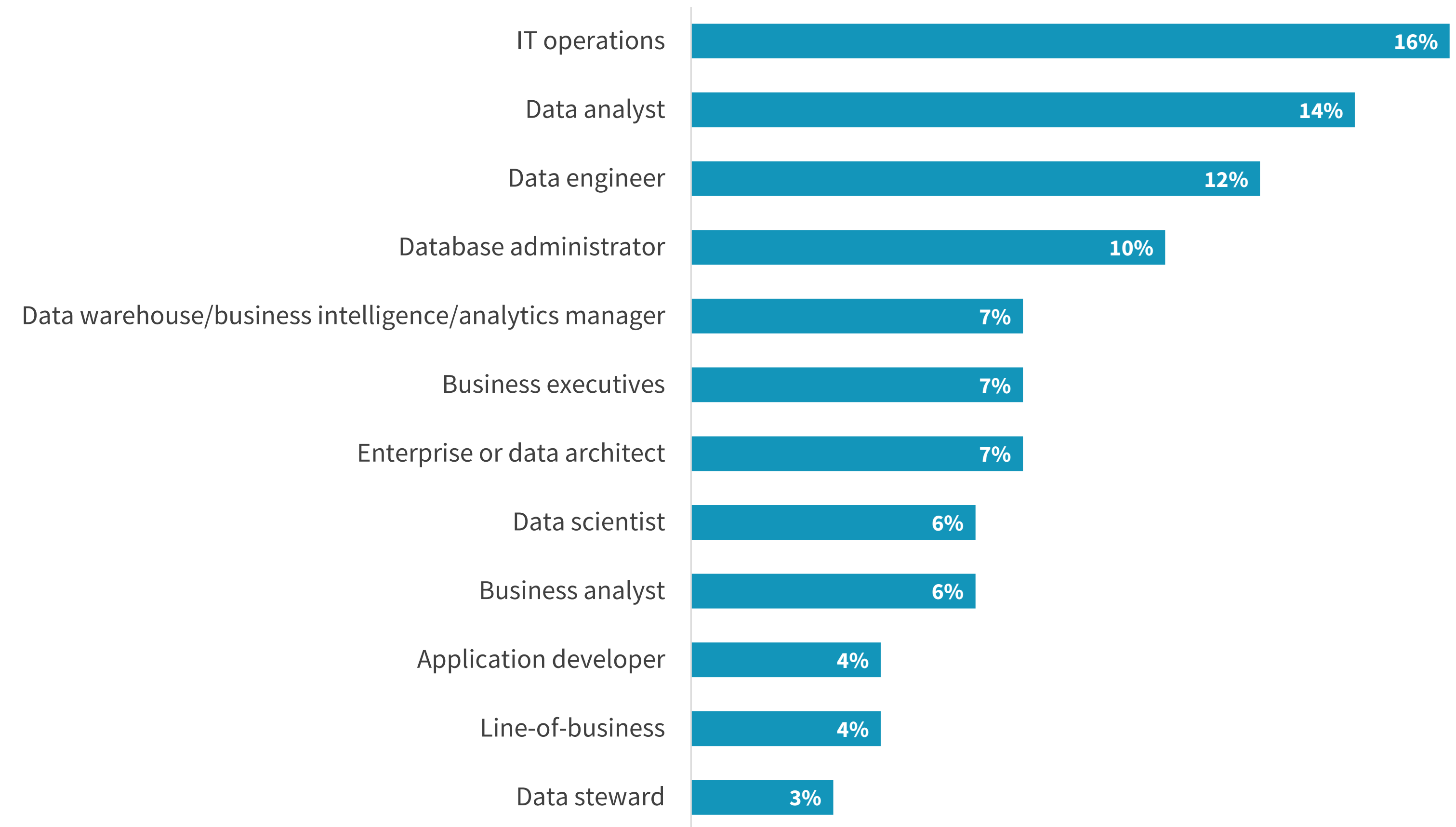


Several Personas Involved with DataOps Strategy Are Overburdened

An unfortunate effect of skills gaps is the idea that the work must go somewhere and be done by someone. The result is an overburdened workforce with unique and, in many cases, complex tasks landing on people without the proper experience or required time. This creates a ripple effect that delays value and increases risk. As such, organizations are looking to technology to alleviate the burden by embracing automation and self-service that can help experts and generalists alike, whether helping an overburdened data engineer who needs time back or empowering a generalist who is just ramping up and needs self-service enablement.

“ Organizations are looking to technology to alleviate the burden by embracing automation and self-service that can help experts and generalists alike.”

| Most overburdened DataOps stakeholders.



DataOps done right delivers undeniable benefits that include increased employee data access and improved effectiveness for data producers and consumers alike.



DataOps Is Delivering on Its Promises

Organizations looking for ways to empower data teams to reliably deliver data and analytics to all consumers have already realized significant benefits from their DataOps initiatives. Whether it be a developer looking to infuse data into a modern application, a line of business strategizing about a new market opportunity, or a business analyst integrating a new data set for a more complete view of the business, the business benefits achieved by simplifying the orchestration and consumption of data and analytics are far-reaching. More than 1 in 3 organizations have seen improved data quality as a result of DataOps, and many have realized other benefits including improved dashboard/reporting (32%), improved mapping/inventory/cataloging (31%), and automated resource management and allocation of data technologies (30%).

More than 1 in 3 organizations have seen **improved data quality as a result of DataOps.**

| Ten most commonly realized benefits from DataOps.



36%

Improved data integrity/quality



32%

Improved analytics dashboards/reports



31%

Improved data mapping/inventory/cataloging



30%

Automated resource management and allocation for data technologies



28%

Improved regulatory compliance



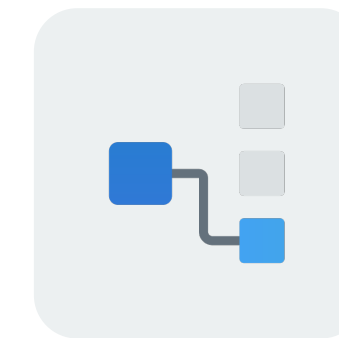
27%

Improved cross-functional collaboration and/or communication



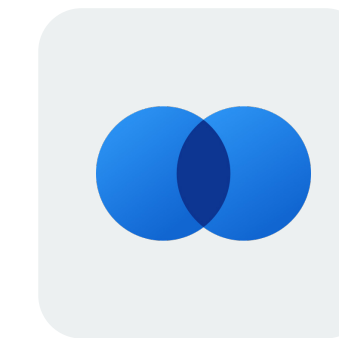
27%

Improved data cleansing/preparation time



27%

Improved processing of real-time/streaming data



26%

Improved the performance of query execution



26%

Optimized the data lifecycle

Assessing DataOps Maturity

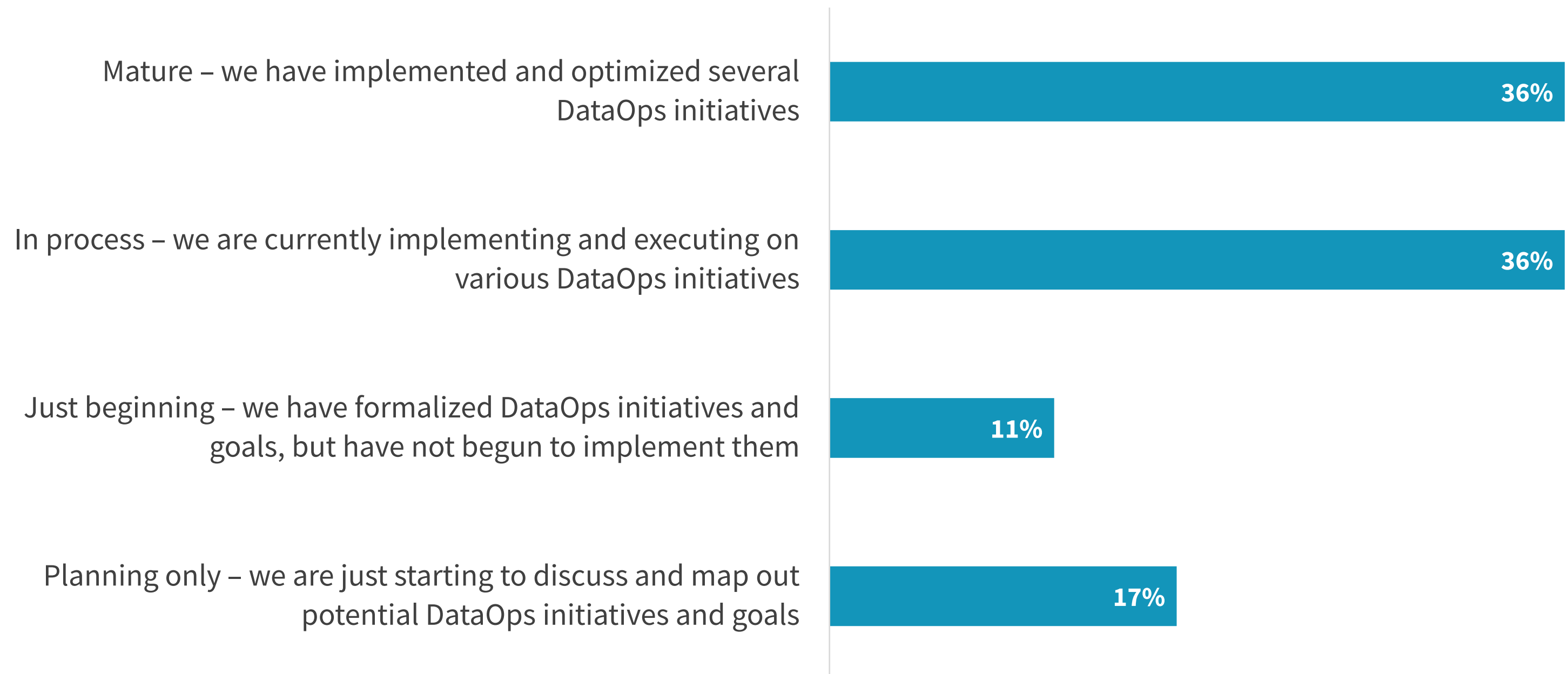
So where are organizations in their DataOps journey? Just slightly more than one-third (36%) of organizations view themselves as mature, having implemented and optimized several DataOps initiatives. That leaves 64% of organizations with significant room for growth when it comes to formalizing, implementing, and executing on DataOps initiatives. It should be noted that this is a moving target: Even mature organizations, while set up for success, must continue to be agile in how they respond to the real-time data needs of the business.



64%
of organizations have significant room for growth when it comes to formalizing, implementing, and executing on DataOps initiatives.

“ Even mature organizations, while set up for success, must continue to be agile in how they respond to the real-time data needs of the business.”

| Maturity level of DataOps initiatives.



Mature DataOps Organizations Seeing Greater Value

While the research shows investments continue to be made in DataOps with a goal of driving greater value for producers and consumers of data, effectiveness in maximizing investments is a key metric that separates DataOps leaders from everyone else. Mature DataOps organizations, meaning those organizations that deemed themselves mature in their DataOps initiatives and overall strategy, are much likelier to report they:

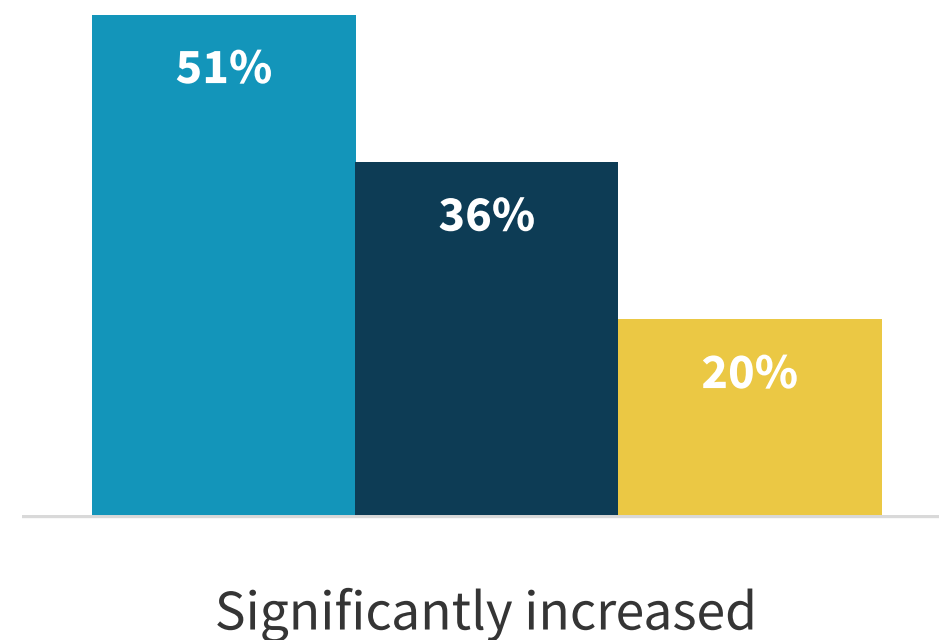
- Have *significantly increased* the number of end-users who have access to data and analytics over the last year by **2.6x** that of organizations just getting started with DataOps (51% versus 20%).
- Are *very effective* at maximizing the ability to democratize data and analytics to all consumers of data by **2.2x** that of organizations just getting started with DataOps (65% versus 30%).
- *Exceed their peers or competition* when it comes to their ability to leverage insights from data analytics by **2.1x** that of organizations just getting started with DataOps (68% versus 33%).

Maturity level of DataOps initiatives.

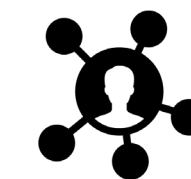
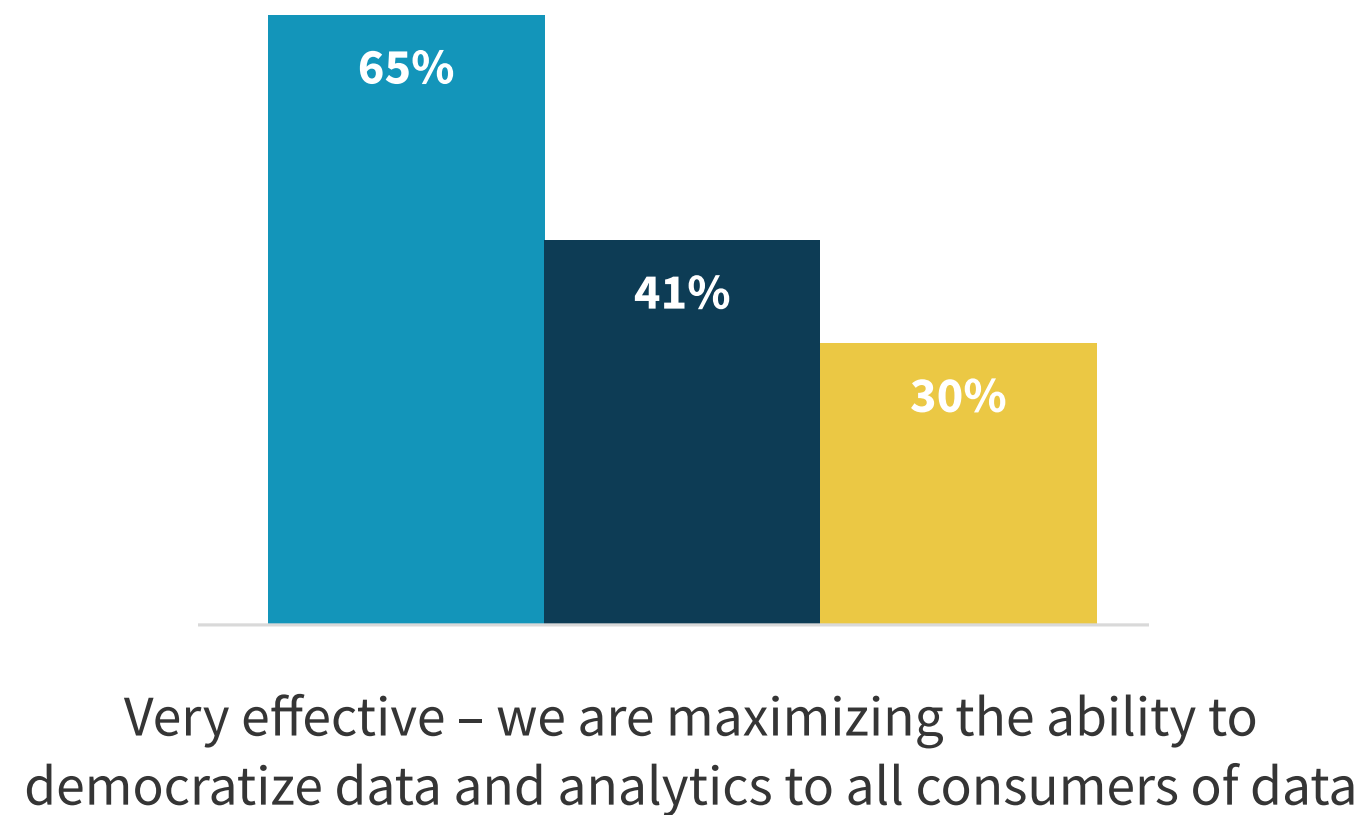
■ Mature ■ In process ■ Just beginning



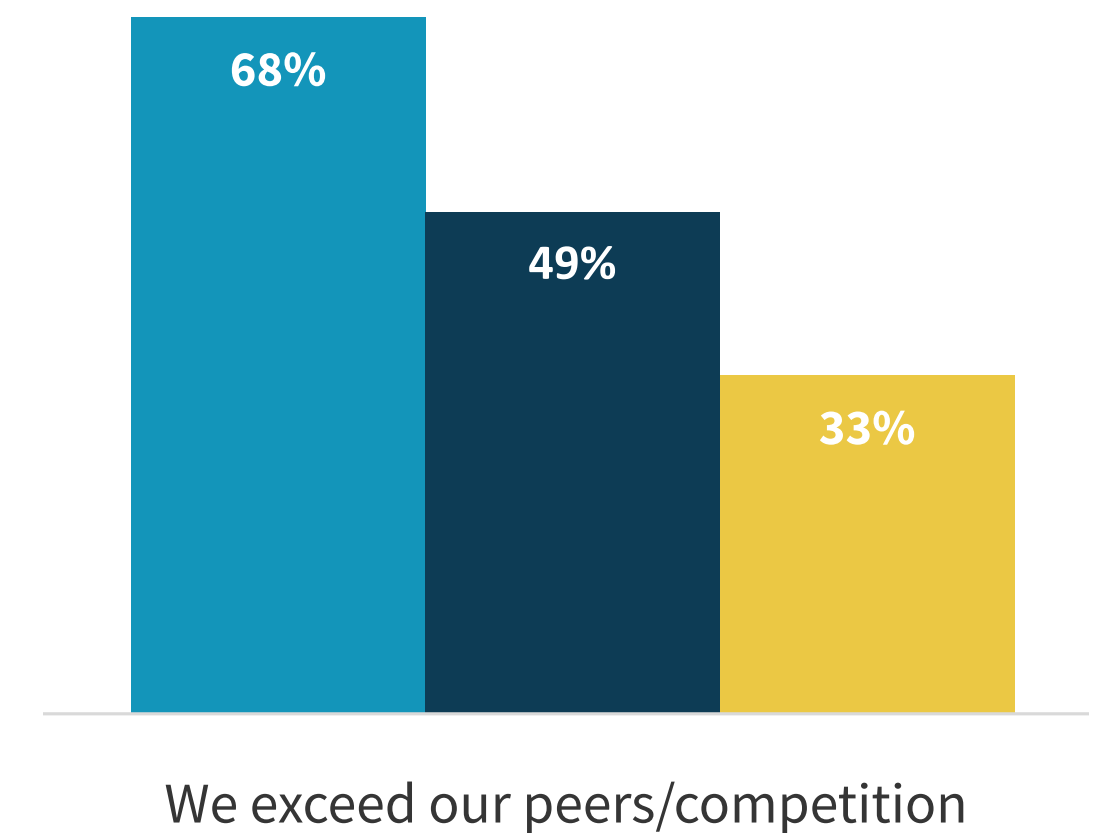
Change in number of end-users who have access to data and analytics tools.



Effectiveness of DataOps strategy.



Leveraging insights from analytics compared to competitors.





At StreamSets, a Software AG company, our mission is to ensure data engineering teams thrive in today's world of constant change. We do this by embedding the DataOps philosophy of "continuous data for the connected enterprise" into the StreamSets DataOps Platform. StreamSets empowers data engineers to build, run, monitor, and manage smart data pipelines for modern analytics. StreamSets is the only data integration platform that provides a single design experience for all design patterns for 10x greater developer productivity; smart data pipelines that are resilient to change for 80% less breakages; and a single pane of glass for observing and monitoring all pipelines to eliminate blind spots and control gaps. With StreamSets, you can deliver continuous data for modern analytics and hybrid integration in a world of constant change.

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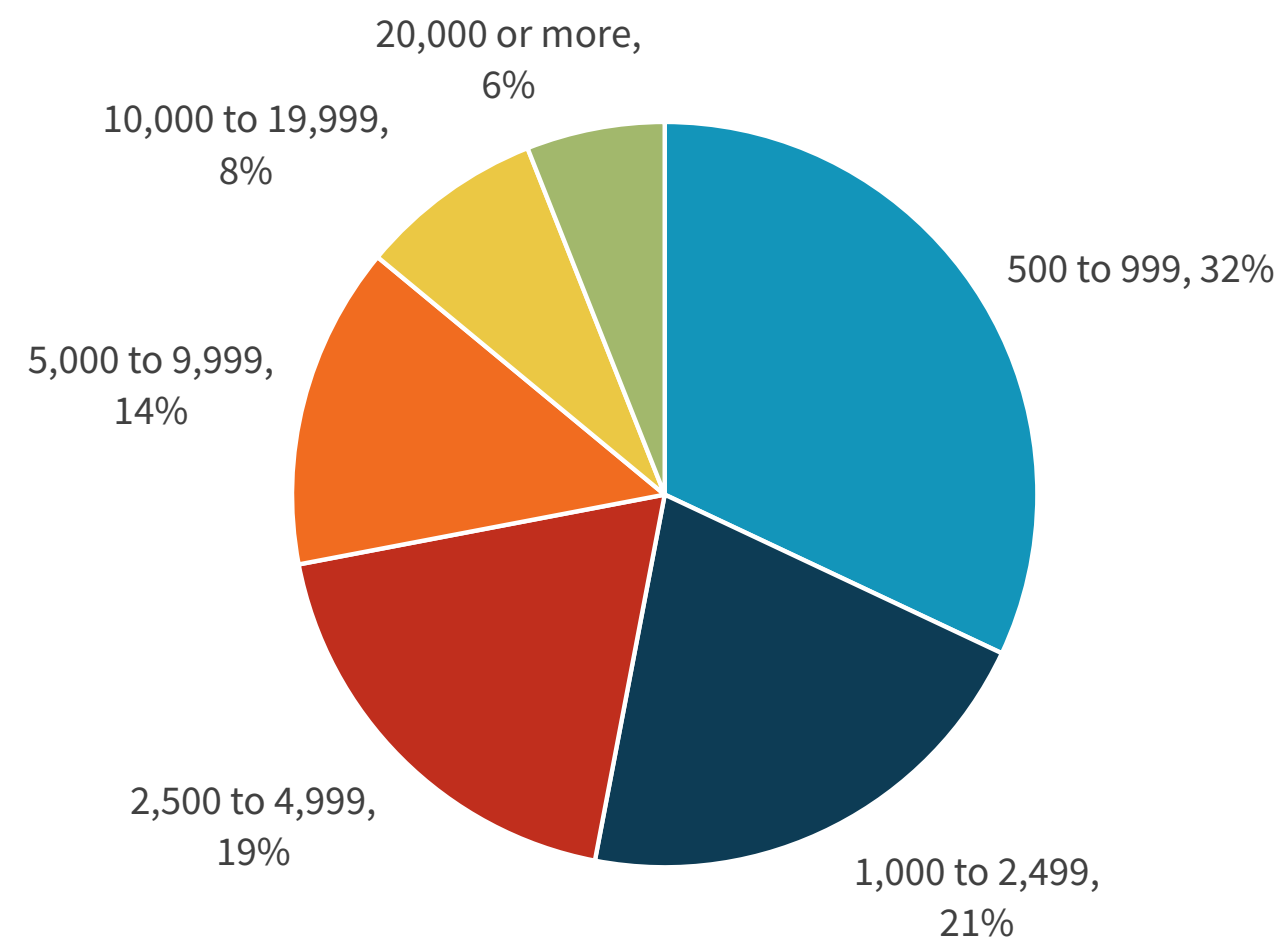
Research Methodology

To gather data for this report, ESG conducted a comprehensive online survey of data professionals from private- and public-sector organizations in North America (United States and Canada) between March 1, 2022 and March 21, 2022. To qualify for this survey, respondents were required to be personally involved in data and analytics strategy, with knowledge of modern tooling, technology, and processes, and responsible for evaluating, purchasing, managing, and building DataOps solutions. All respondents were provided an incentive to complete the survey in the form of cash awards and/or cash equivalents.

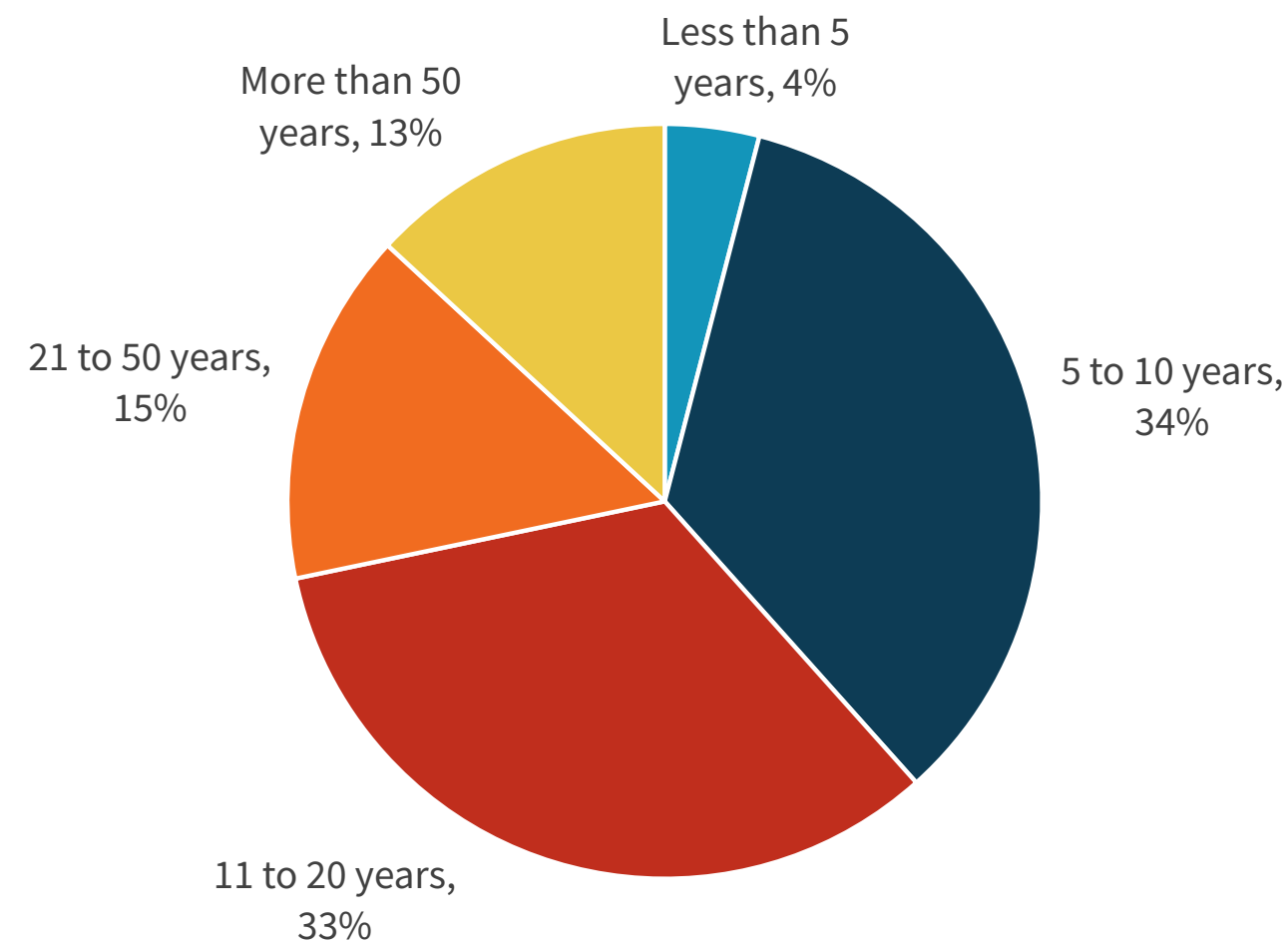
After filtering out unqualified respondents, removing duplicate responses, and screening the remaining completed responses (on a number of criteria) for data integrity, we were left with a final total sample of 403 technical and business data professionals.

Note: Totals in figures and tables throughout this eBook may not add up to 100% due to rounding.

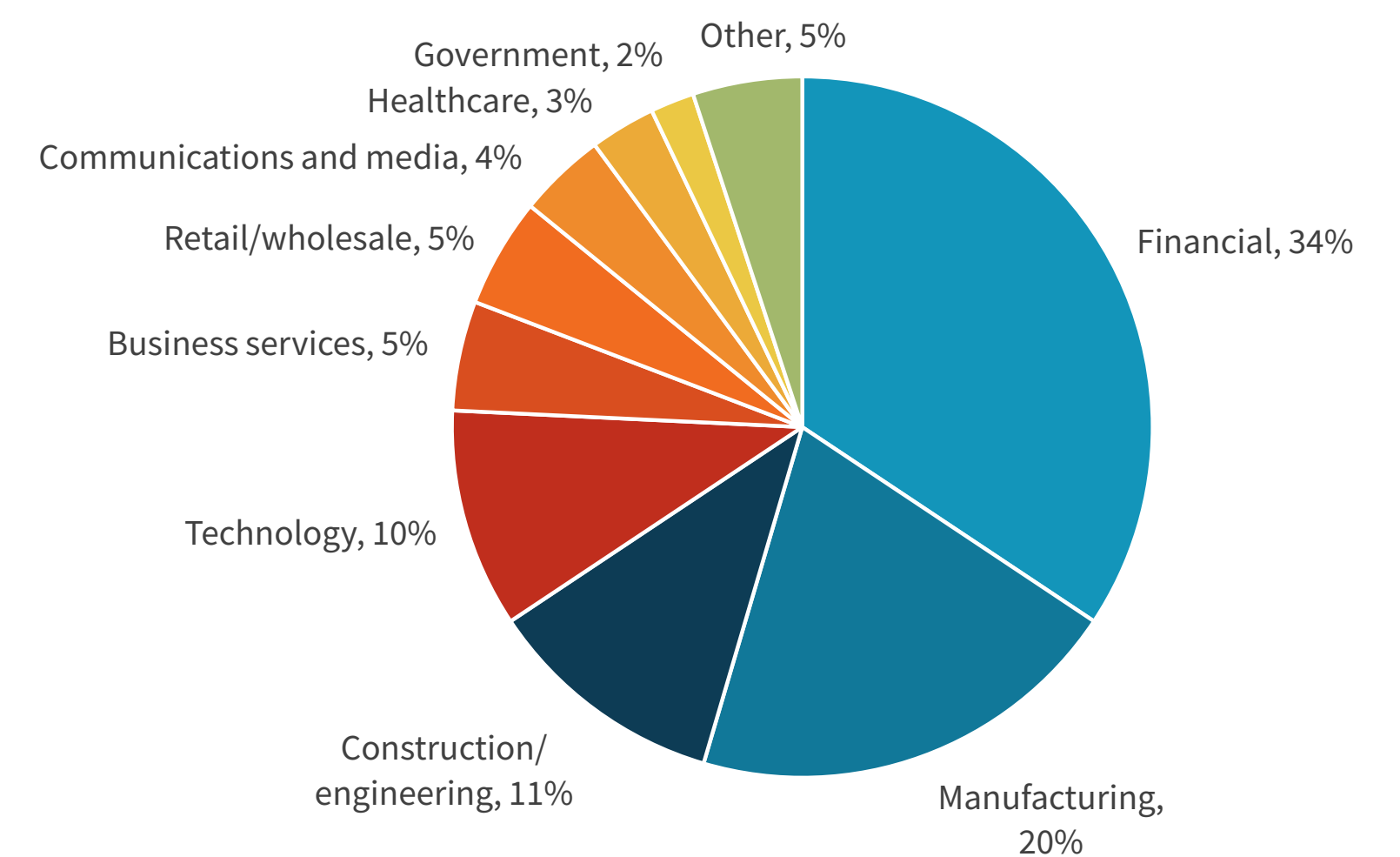
RESPONDENTS BY NUMBER OF EMPLOYEES



RESPONDENTS BY AGE OF COMPANY



RESPONDENTS BY INDUSTRY



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