



The SolarWinds Query Report 2021: Database Priorities and Pitfalls

NORTH AMERICA

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Introduction

The industry has arrived at a critical inflection point in database management. The rise of hybrid IT and accelerated adoption of cloud-native apps have evolved traditional database design, management, and monitoring. At the same time, workloads are rapidly shifting to the cloud, and application performance is heavily dependent on the underlying database performance. As a result, organizations are increasingly acknowledging the importance of database performance management and strategy to ensure their most valuable asset—data.

The SolarWinds Query Report 2021: Database Priorities and Pitfalls reveals just how quickly the database architecture and operations tech pros are managing in today's organizations are changing—and the web of management complexity that follows. The latest SolarWinds survey of database administrators, application owners, engineers, developers, and IT generalists shows most technology professionals are experiencing the impact of shifting strategies and have an eye on three key transformative trends: a near-term migration to the cloud, the elevated role of security and compliance, and the benefits of a DataOps strategy.

With application availability and performance as critical business drivers, the database has long been the linchpin of today's IT environments. However, against the headwinds of increasingly diversified platforms and reduced resources, tech pros must be equipped to do more than reactive maintenance in environments that often exceed 300 databases. The opportunity ahead lies in maximizing the performance potential of cloud-hosted databases and the efficiencies of DataOps to ensure the successful optimization of an organization's data.

This report showcases the state of database management today, including the leading platforms and areas of investment, investment and technology priorities for the years ahead, and areas where more education and support is needed to confidently manage modern database environments.



The shift is underway

Tech pros are experiencing the impact of shifting strategies and have an eye on three key transformative trends: a near-term migration to the cloud, the elevated role of security and compliance, and the benefits of a DataOps strategy.

Key Findings

Database design and management is evolving alongside an increase in complexity, and tech pros are on the brink of a significant shift in strategy that embraces DataOps and Cloud DBaaS platforms as critical database performance success factors.

- Nearly one-third of tech pros surveyed are managing more than 300 databases in their organization's environment, and about 7 in 10 state that half or more of their organization's databases are considered to be critical to the success of their business.
 - Tech pros say Microsoft SQL Server, Cloud DBaaS (such as Azure SQL Database, Azure SQL Managed Instance, AWS RDS, or Google Cloud Platform), and Oracle Database are the most critical database platforms running in their organizations by weighted rank.
 - While nearly 80% of respondents say Microsoft SQL Server is the most critical platform in use today, there is relatively even split between the second, third, and fourth most-utilized platforms: Cloud DBaaS (54%), Oracle (47%), and MySQL (43%). This balancing act reinforces the hybrid reality of today's IT environments and demonstrates that enterprises are more likely to choose a "good enough" database platform fit to purpose, rather than committing to an individual vendor.
 - As tech pros keep pace with the advances in database platforms and indicate an intended shift towards Cloud DBaaS adoption (33% of respondents ranked Cloud DBaaS as the #1 priority database platform to adopt over the next three years), the new mix of traditional/cloud DBaaS platforms will also require new skills.
- 31% say complexity increased in response to COVID-19 and the transition to remote work over the past year, citing increased data demands from users, increased volume of data, and security/compliance issues such as GDPR as the top three drivers of added complexity.



On the brink

Tech pros are on the brink of a significant shift in strategy.

DataOps has emerged as an increasingly beneficial strategy, but its implementation is often hindered by lack of training, budget, and buy-in from senior leaders.

- The effects of a DataOps strategy are wide-ranging, with tech pros highlighting its ability to deliver functional benefits including increased efficiency/productivity among teams; reduced manual effort; automated management processes; and enabling faster access to actionable business intelligence/decision making (by weighted rank).
- However, despite these benefits, many tech pros simultaneously report challenges in implementing a successful DataOps strategy. Tech pros reported a lack of proper training/education/tooling (44%) and a lack of resources/budget (44%) as the leading challenges to DataOps implementation, followed closely by difficulty securing buy-in from business leadership (33%).
- Meanwhile, 4 in 10 tech pros stated data engineering is a skill they'd like to develop in 2021 to better manage added database complexity, which echoes the call for additional training to successfully implement DataOps strategies.
 - This will require a commitment to educating decision-makers and business leaders on the positive impact DataOps can have on the bottom line to secure investment in the necessary training for tech pros.

The cloud, security/compliance, and database performance management efficiencies are key considerations driving priorities and resource allocation in 2021 and beyond.

- Nearly 60% of tech pros surveyed state that of the data/systems currently managed within their organization, less than one-fourth are in the cloud. But this is expected to change over the next few years.
 - While 54% stated Cloud DBaaS is one of the database management systems their organization is currently running, 33% ranked Cloud DBaaS as the number one highest priority database platform(s) to adopt in the next three years.
 - 36% report integrating Cloud DBaaS as one of their organization's top priorities in 2021.
- Two-fifths of respondents anticipate bigger budget allocations in 2021 (compared to 2020) for cloud services and security/compliance (42% and 39%, respectively).



Implementation challenges

Many tech pros report challenges in implementing a successful DataOps strategy.

- That said, when it comes to the top priorities for organizations' database management strategies in 2021, efficiency is key: automation (46%), improving performance (45%), and reducing cost (45%) are the top three. Interestingly, this focus on efficiency requires an investment in tools (e.g., performance monitoring or data analytics)—which is much lower down the list of priorities (22%) and expected to receive a flat budget allocation in comparison to 2020 (as reported by 58% of respondents).

Database professionals spend over a third of their time per day on database maintenance. This limits both time and opportunity when it comes to activities like innovation and upskilling in response to added complexity and data-driven initiatives.

- Maintenance work accounts for a greater portion of database professionals' time as compared to other tasks. One-third of tech pros surveyed stated one of the top areas where they spend the most time as a database/data/tech pro is maintenance (33%) and database development (22%).
- This leads to less time available to invest in things like upskilling or innovating new ways of working. For example, nearly half of respondents surveyed stated performance/query tuning is among the top 3 skills/tools they feel they could develop/improve to better manage increasing database complexities, followed by security management and data engineering (45% and 41%, respectively).



Recommendations

1. GET BACK TO BASICS:

As more organizations seek the benefits of DataOps strategies, it will be imperative in the near term to deliver value through data. This is done with testing and validation as part of your continuous integration and delivery (CI/CD) pipelines. An example of data integration testing is checking you get the expected results on a sample data set passed through your pipeline. Data validation should be done as part of your production monitoring process, as you continuously search for anomalies. Incorporating both processes into your database best practices can yield great results; avoiding the usual reactive method and giving your business the opportunity to stay ahead of issues. Be mindful that this can take a great deal of time and energy to do manually, so leverage automation to your advantage.

2. MAP YOUR DATA ESTATE FOR MIGRATION AND COST EFFICIENCY:

Even during normal times, DBAs are under pressure to consolidate database vendor licenses and extract as much value and computing power as possible from the servers they currently have on-premises. So, there's always a strong need to thoroughly map all your data estate and the applications it supports. Now, however, the global pandemic has accelerated corporate planning for cloud computing and digital transformation. As organizations shift to the cloud, the need for database migration increases in parallel. But it's no walk in the park. Obstacles abound. Setbacks are common, and tech pros must take time to plan for these migrations accordingly. Database professionals should start with a basic data and code cleanse that ensures only what is truly needed is being migrated to both reduce complexity and overall cost (we know cloud storage doesn't come cheap). A comprehensive, successful migration strategy should also include a detailed assessment of the data estate—what dependencies or complex coding features exist? Remember, everything interconnected with a database has got to go with it to the cloud, so taking these preliminary steps will help organizations avoid any surprises down the road. From there, database professionals should be sure to have visibility into what the organization will need to pay for in the cloud, optimize performance and compute requirements for those costs, and test for data fidelity to validate data integrity post-migration. This is often overlooked but critically important—in many cases, the migration method may show everything has been successful, but it doesn't mean everything is perfect under the hood. Taken together, these steps will help ensure a smooth, trouble-free process.

3. EYES ON OPEN SOURCE:

While respondents listed Microsoft SQL Server, Oracle, and cloud DBaaS platforms as the most critical database platforms running in organizations today, the

results of the survey point to a growing number of organizations adopting and/or considering the adoption of NoSQL and open-source databases. The cost benefits and preference by developers are some of the reasons why organizations are increasingly looking to these platforms, but database professionals must invest the time to understand why and when these databases would make the most sense for their organization. Especially when tooling for open-source databases still has yet to mature, it will be critical for early-adopter database and technology professionals to build their knowledge and skills for managing and building on these platforms. In fact, major cloud vendors such as Microsoft Azure are embracing open-source databases and NoSQL data platforms to speed their customer's migrations to the cloud. You can now run not only SQL Server in the Azure cloud, but also MySQL and PostgreSQL, along with Azure CosmosDB. And to reduce tooling friction, Microsoft enables DBAs and Devs to manage all these platforms using Azure Data Studio toolkit.

4. DON'T FORGET THE LITTLE THINGS:

Managing database platforms is a big undertaking—a balancing act between proactive and reactive responses. But tech pros must make sure they're covering all their bases, especially when it comes to security and compliance (and on occasion cost and licensing). Time and time again we see these four big ticket items pushed to the bottom of the priority list. Taking the time to learn about different costing measures will allow you to do more with less but can also lead to more buy-in from the senior team. Likewise, licensing, security, and compliance isn't any DBA's favorite subject but falling down at one of these hurdles can do a great deal of damage. The new generation of legal compliance has real teeth for failure to comply with the law. A simple cost-benefit analysis can be the proof point you need to highlight the potential impact not upskilling in one of these areas can have and give you a reason to move it back up the top of the priority list.

5. LET TECHNOLOGY DO THE WORK:

It's no secret that to keep database management running smoothly requires daily maintenance. However, this limits the amount of time database professionals can spend on value-add tasks, such as optimizing processes that can result in cost savings or new opportunities for the business. One of the best ways to work harder, not smarter, drive down time spent on maintenance, and enable efficiency is to implement appropriate automation and monitoring tools. When implemented properly, automation and monitoring solutions can improve overall performance and eventually lead to reduced costs. More than that, it frees up tech pros' time, so they can focus on more proactive database performance management, rather than reactive. By doing this, monitoring tools can run in the background while DBAs have time to focus on tasks that add value to the business and allow for more time to upskill and innovate.



A Balancing Act

Tech pros must make sure they are covering all their bases especially when it comes to cost, licensing, security, and compliance.

Study Overview

RESPONDENT DEMOGRAPHICS

331 technology professionals responsible for database performance management (practitioner, manager and director roles) in the U.S. and Canada from public- and private-sector small, mid-size and enterprise organizations participated in a February 2021 online survey.

Figure 1. Organization Size
(number of employees)

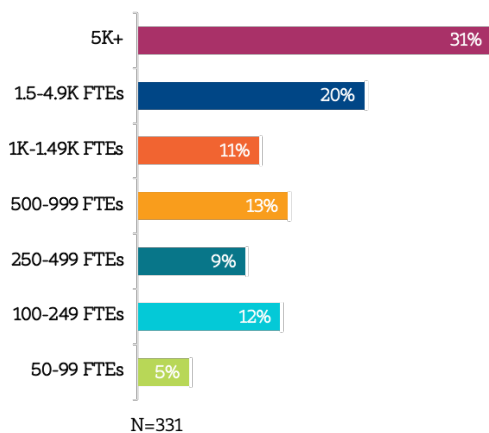


Figure 2. Tech Pro's Role

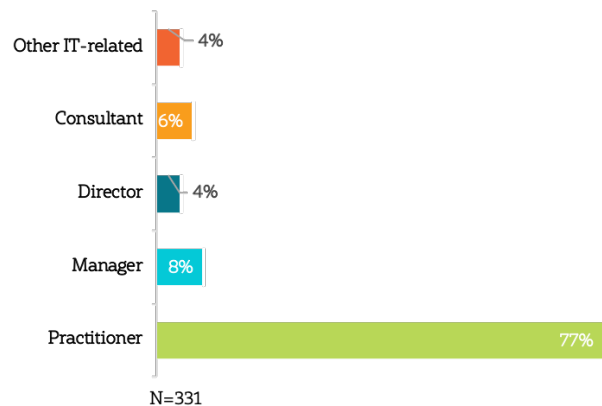
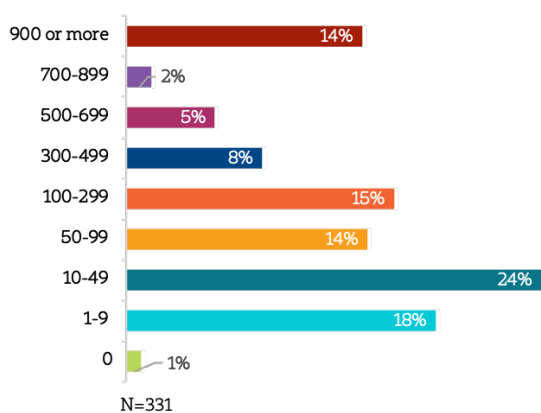


Figure 3. Total Databases in Environment

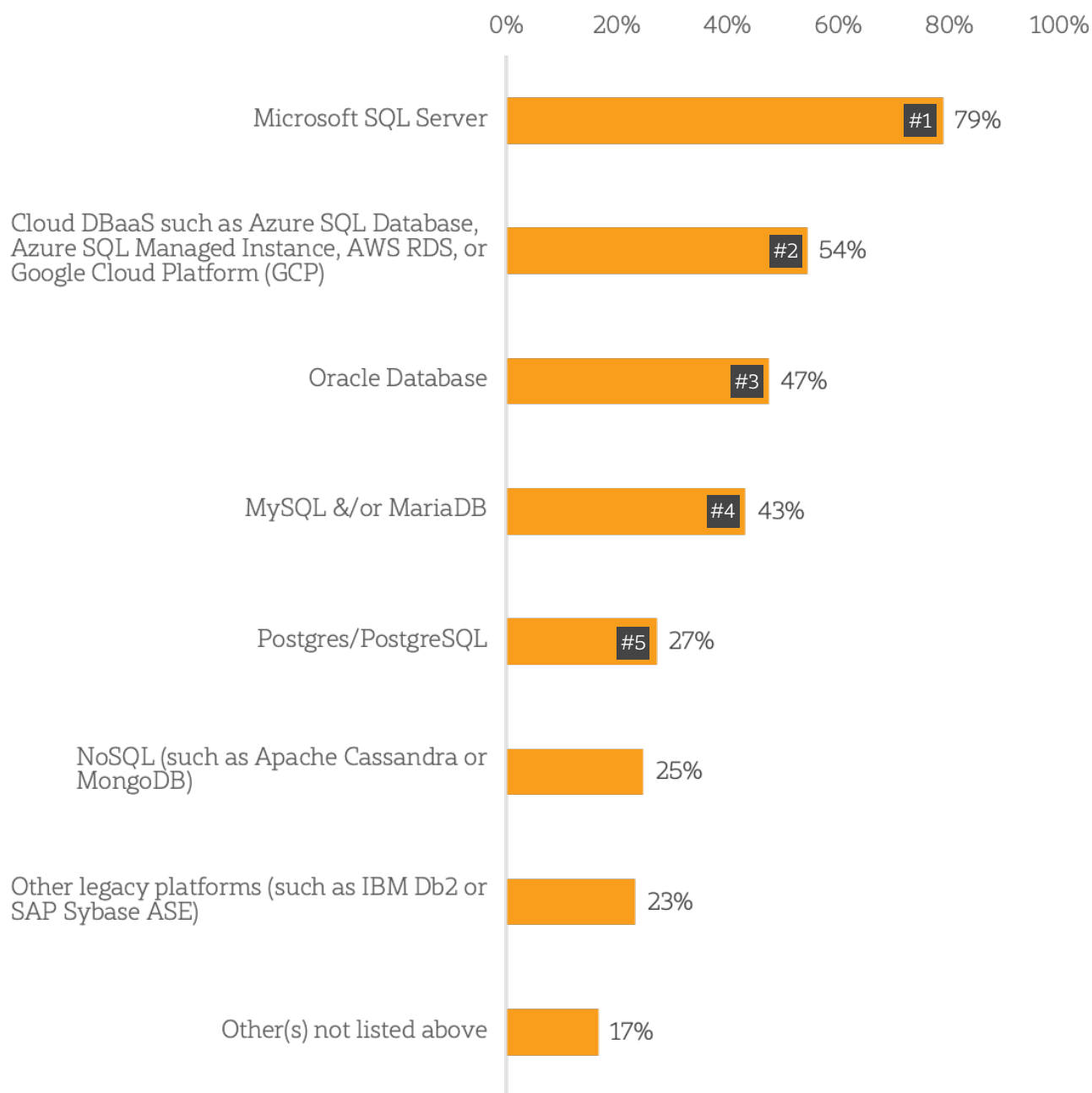


Study Findings

WE ASKED:

Which of the following database management system platform/brands is your organization running (include traditional, open-source, and cloud-native databases)?

Figure 4: Database Management System Platform/Brands Running Within Organizations (Ranked in Order of Critical Importance by Tech Pros)

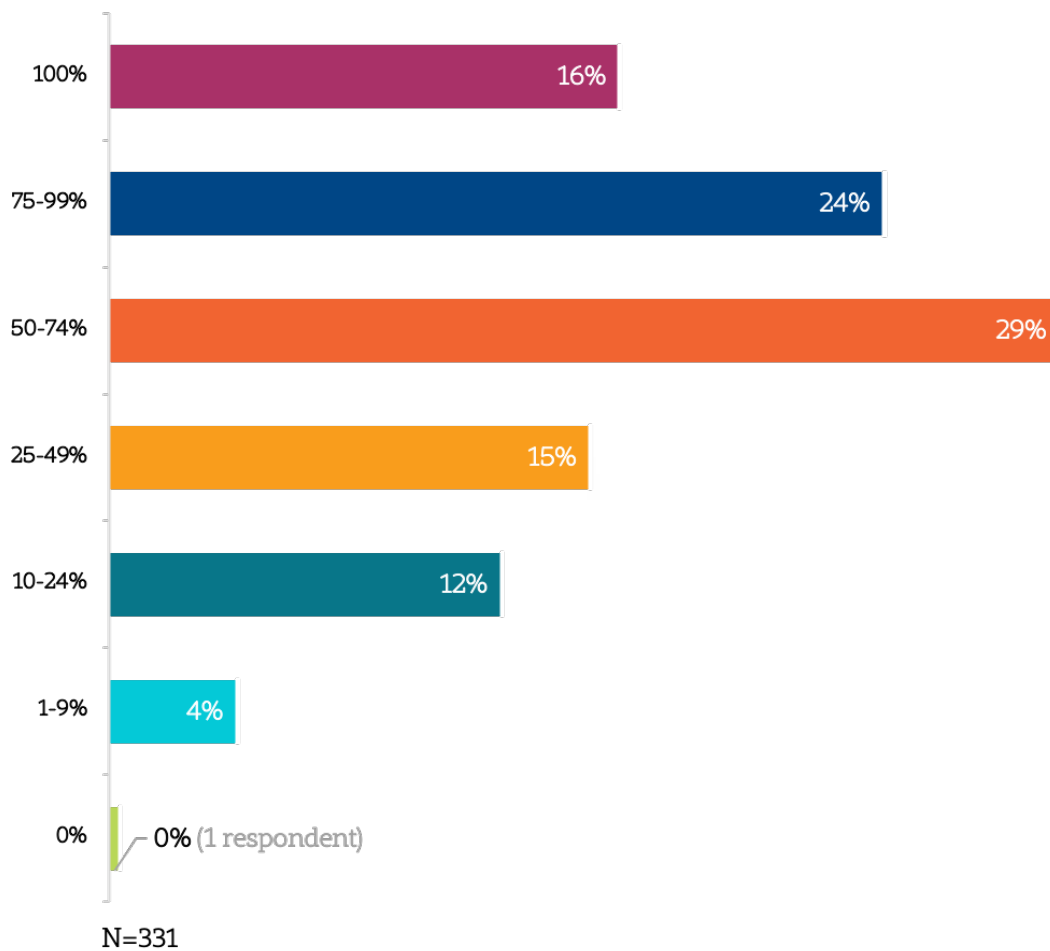


Study Findings

WE ASKED:

What percentage of your organization's databases are considered to be critical to the success of your business?

Figure 5: Percentage of Organization's Databases That Tech Pros Consider to be Critical to Success of Business

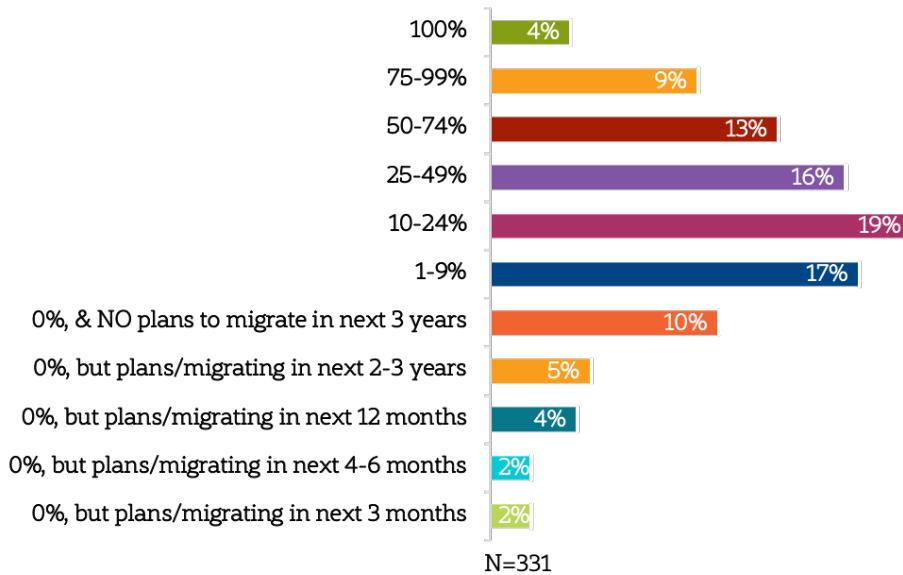


Study Findings

WE ASKED:

What percentage of the data/systems that your organization currently manages is in the cloud?

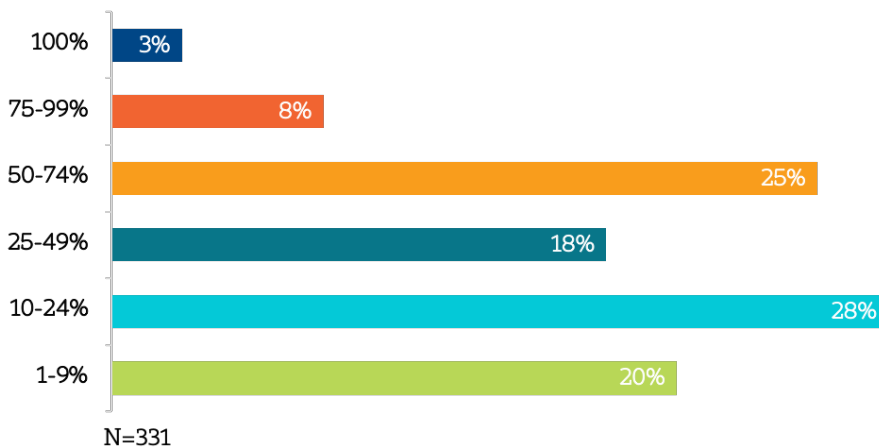
Figure 6a: Percentage of Organization's Data/Systems Currently Managed in the Cloud and Any Migration Plans for Those Not Yet in the Cloud



WE ASKED:

What percentage of the data/systems that your organization currently manages are you planning to migrate to the cloud within that time period?

Figure 6b: Percentage of Data/Systems in Planned Migration

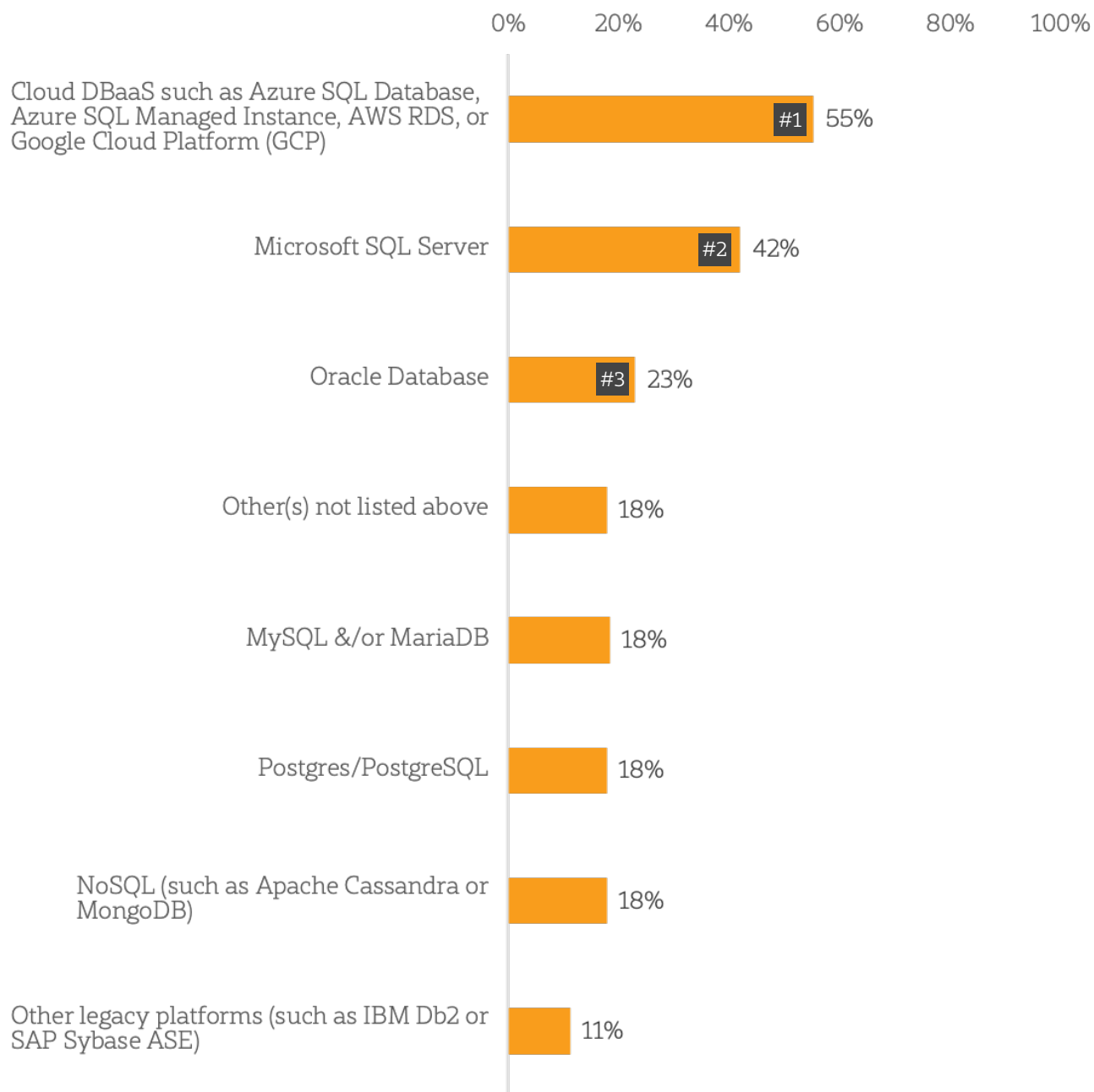


Study Findings

WE ASKED:

Which of the following database platforms do you plan to adopt within the next three years?

Figure 7: Database Platforms That Tech Pros Plan to Adopt Over Next 3 Years

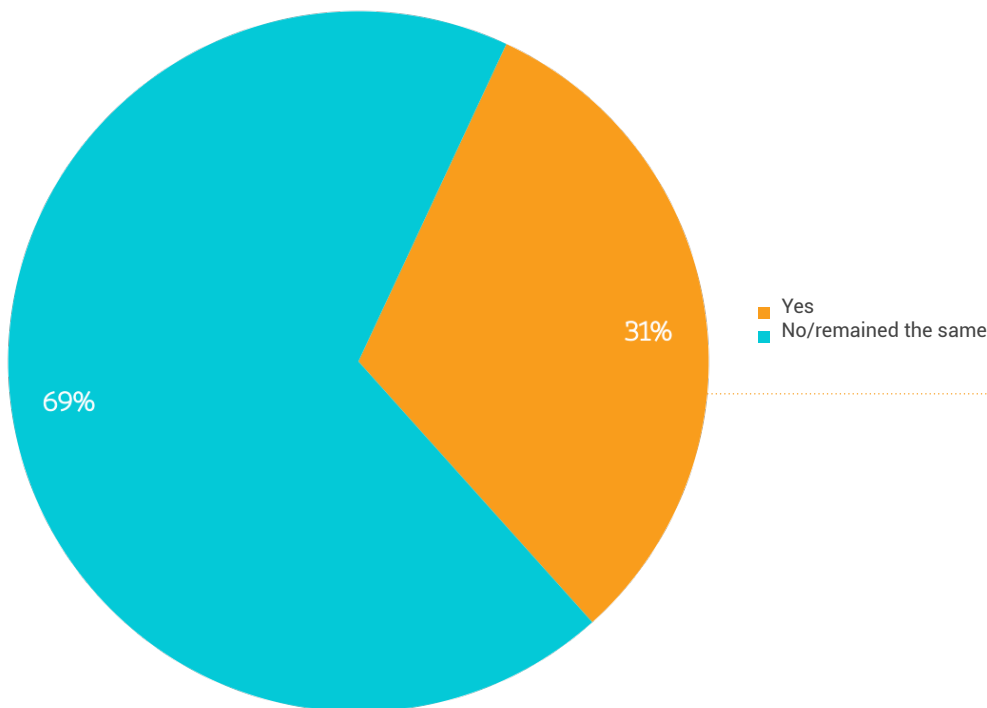


Study Findings

WE ASKED:

Did your organization see an increase in the complexity of database management as a result of the transition to remote work due to COVID-19?

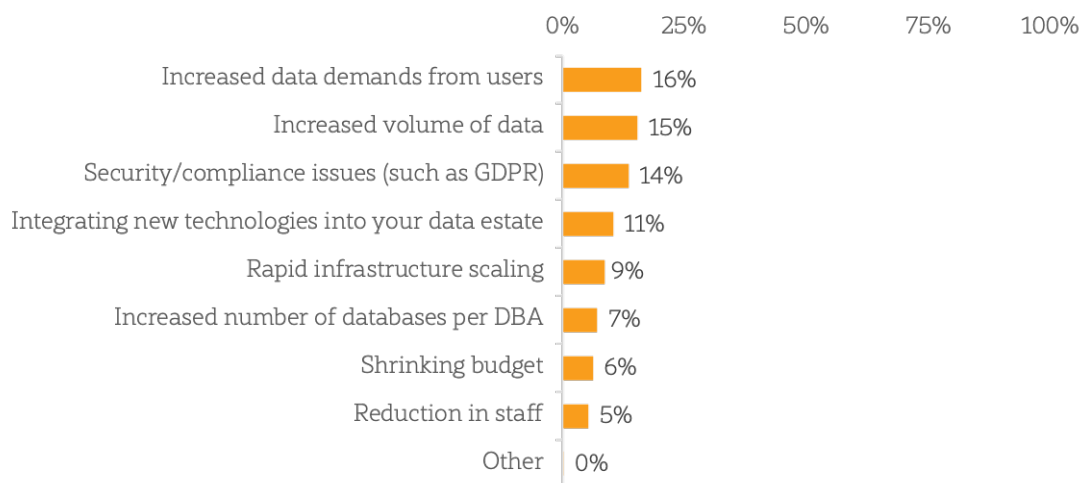
Figure 8a: Percentage of Tech Pros Seeing an Increase in Complexity of Database Management Due to COVID-19's WFH Transition and Factors Driving Increase



WE ASKED:

What were the top three factors driving this increase in your organization's administrative database complexity during the transition to remote work due to COVID-19?

Figure 8b: Factors Driving Increase in Organization's Administrative Database Complexity

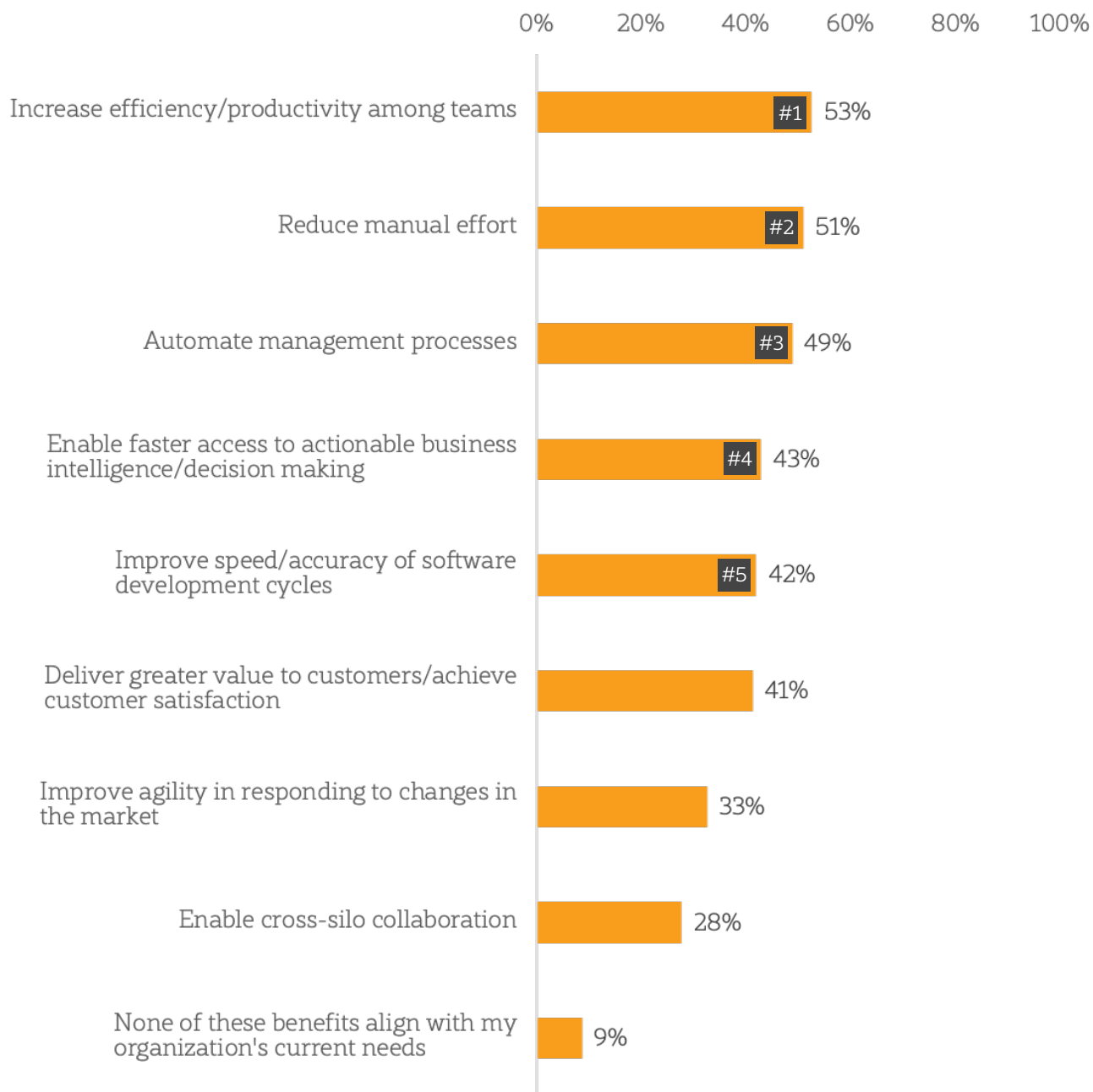


Study Findings

WE ASKED:

Which of the following DataOps benefits align with your organization's current needs?

Figure 9: DataOps Benefits That Align With Tech Pro Organization's Needs

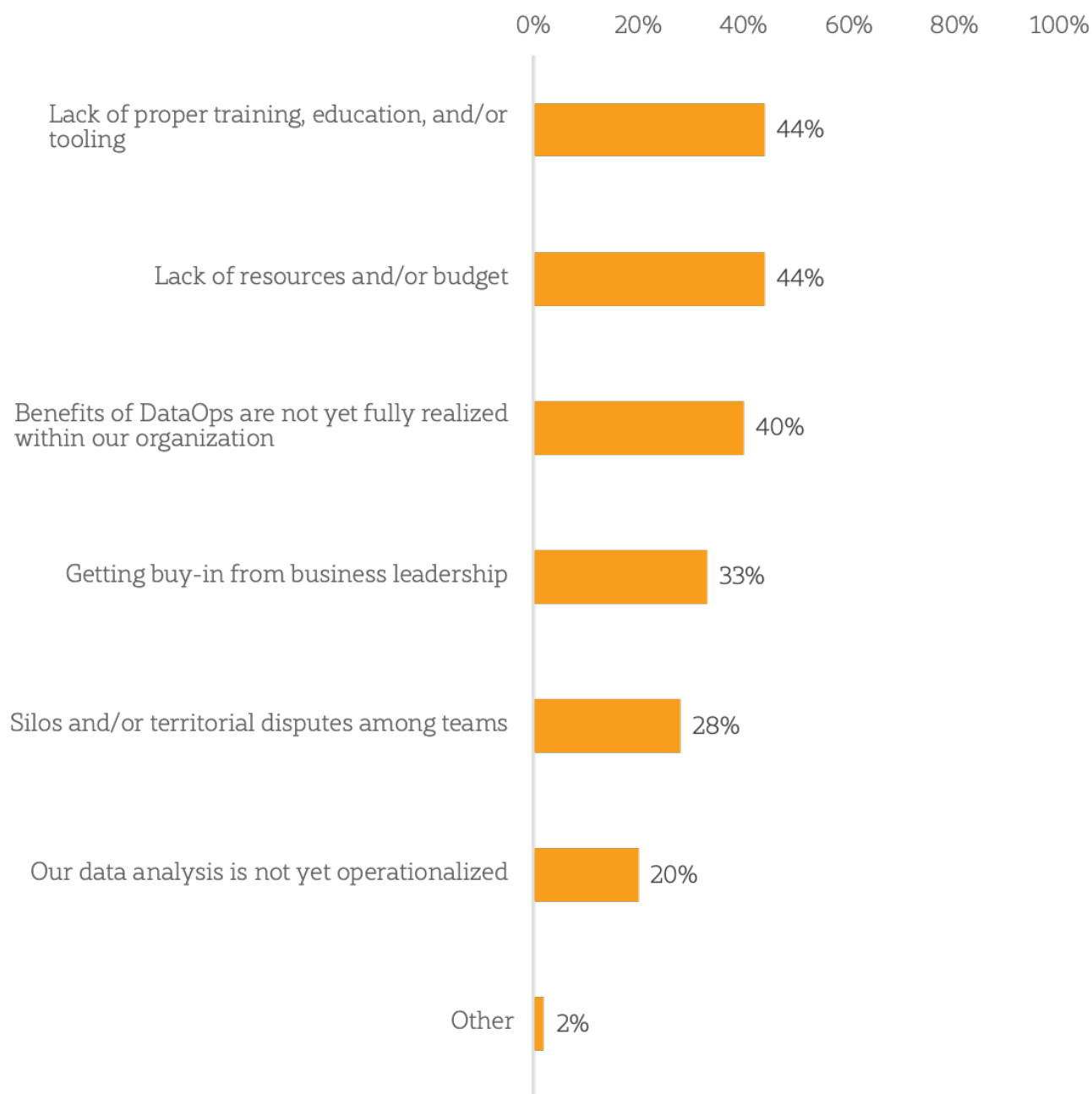


Study Findings

WE ASKED:

Using the same definition of DataOps, what do you consider to be the top challenges to implementing DataOps within your organization?

Figure 10: Tech Pros' Top Challenges to Implementing DataOps Within Organization



Study Findings

WE ASKED:

Compared to last year (2020), how do you anticipate your budget will be allocated in 2021 for each of the following areas?

Figure 11: Tech Pro's Anticipation of Budget Allocation in 2021 (Compared to 2020)

Figure 11a: Staffing

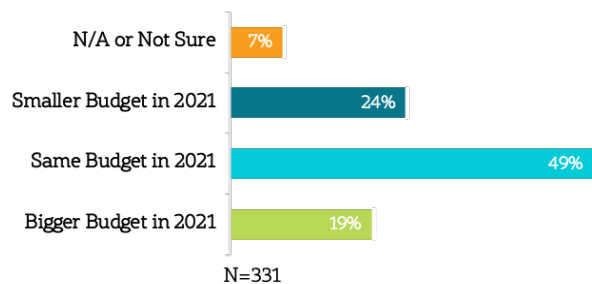


Figure 11d: Security/Compliance

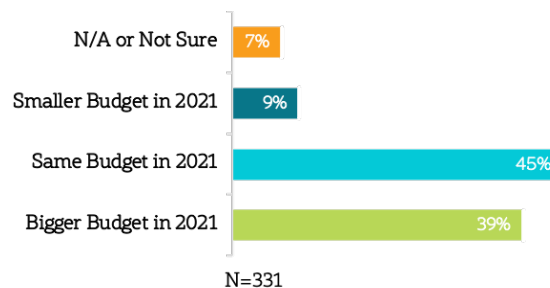


Figure 11b: Cloud Services

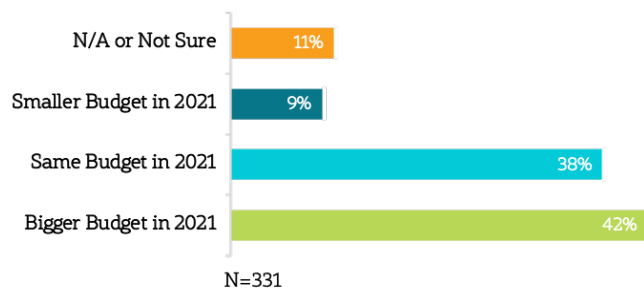


Figure 11e: Monitoring Tools

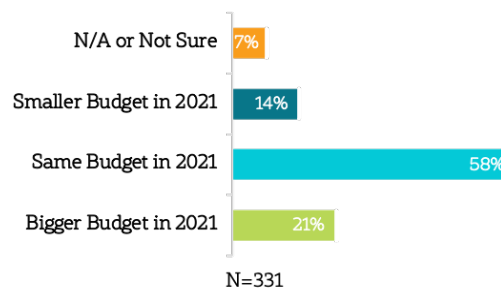
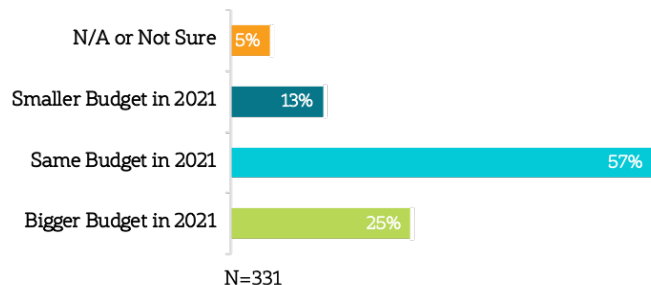


Figure 11c: Database Platforms/Licensing Fees



Study Findings

WE ASKED:

As a database/data/tech professional, where do you spend the most time?

Figure 12: Top 2 Areas Where Most Time is Spent as a Database/Data/Tech Pro



Study Findings

WE ASKED:

Given your current skillset/abilities, what are the top three skills/tools that you feel you could develop/improve in order to better manage increasing database complexities?

Figure 13: Top 3 Skills/Tools Tech Pros Feel They Could Develop/Improve in Order to Better Manage Increasing Database Complexities

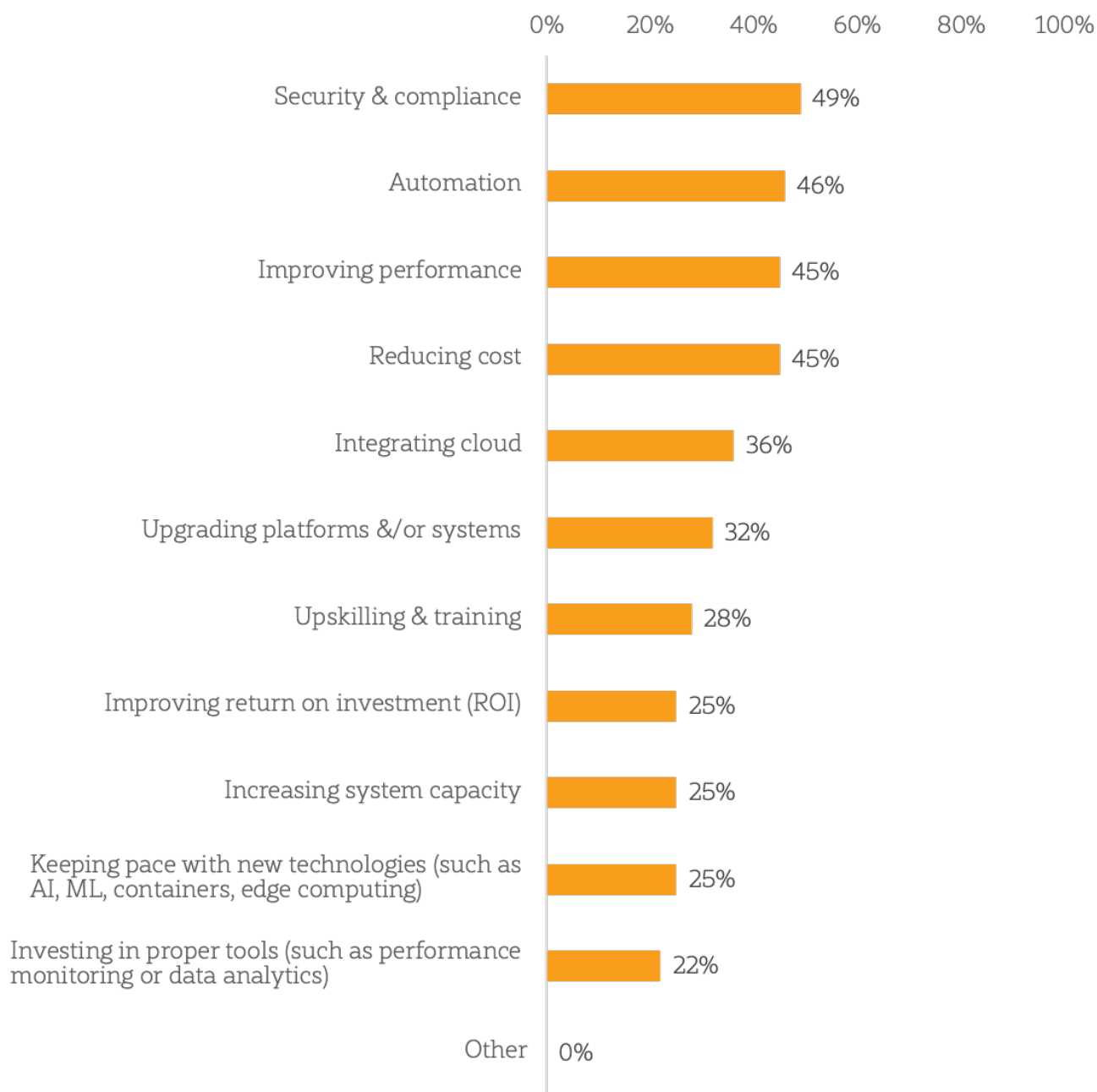


Study Findings

WE ASKED:

Which of the following are your organization's top priorities for database management in 2021?

Figure 14: Tech Pro Organization's Top Priorities for Database Management in 2021



ABOUT SOLARWINDS

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