DBmaestro
DevOps for Database

# 2019 Database DevOps Survey

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# Executive Summary

DBmaestro's annual Database DevOps Report reviews the challenges and best practices of companies using or looking to implement DevOps for databases. The results are based on responses from 253 companies from around the world, collected through an online survey conducted in April 2019.

Key findings from this year's survey include:

- The majority of survey respondents (85%) are already using DevOps in their projects, with **42% using DevOps in more than half of their projects.** Only 10% of the companies have yet to adopt DevOps for their projects. Close to **40% of the companies who were not practicing DevOps started doing so in 2019.** DevOps adoption rates are going up as expected.

- While DevOps has been widely adopted to quickly deploy development changes, when it comes to databases **only 12% of respondents are able to deploy database changes daily.**

- **Continuous Delivery is highly adopted for Application Development (55% of non-partial implementations), but lags behinds when it comes to Databases (25%).**

- Looking at 2018, **14% of respondents have an impressive lead time of a day or better.** This number is expected to double in 2019, with 28% aiming to have a lead time of a day or less. Yet DBAs are the bottleneck of making changes with 49% of companies allowing only DBAs to make database related changes.

- The top risks when deploying database changes account for 69% of the biggest risks, and include: Downtime (25%), Performance impact (23%) and Data loss (21%).

- **Configuration drift is the #1 reason for errors when introducing database changes** rated so by 70% of the companies. In fact, 7 out of 8 reasons for errors when making database changes, are issues that have long been solved in the world of code development.

- **Database crashes are quite frequent. A quarter (25%) had a significant problem in the past month,** and almost half (46%) in the past 3 months. Amount of failures increases with the frequency of database deployments.

## What Percentage of IT Projects in Your Company Use a DevOps Approach?

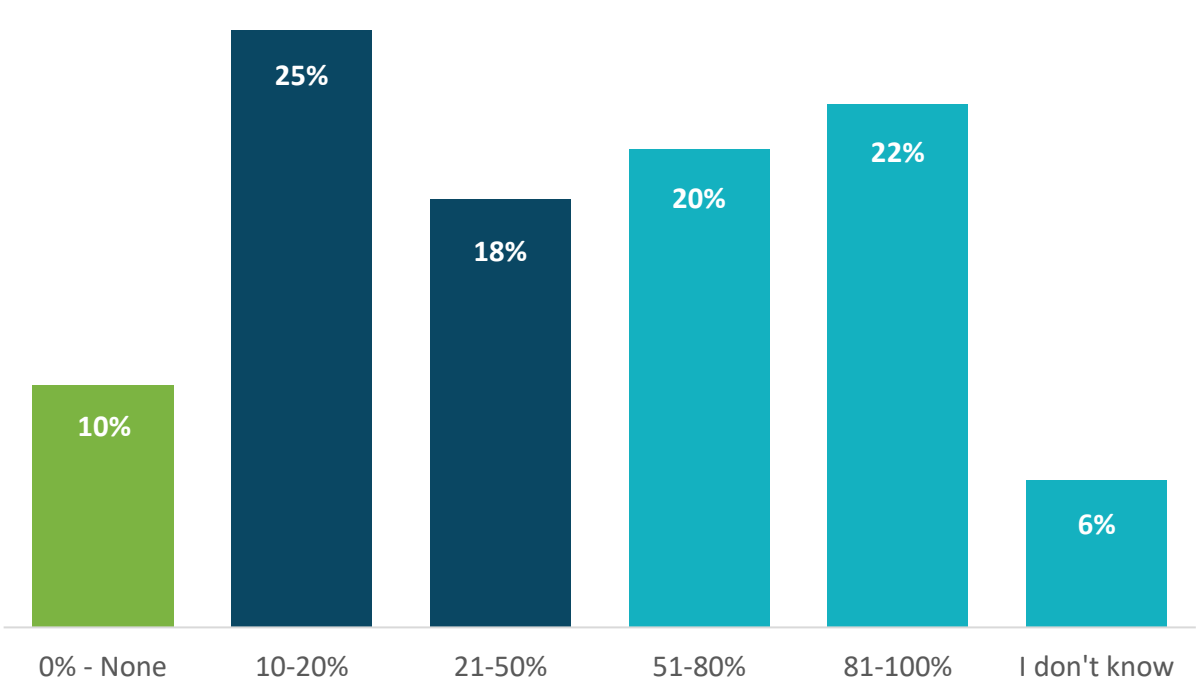
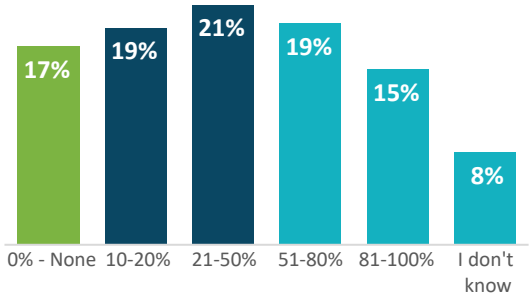



Figure 1 : Percent of IT projects using DevOps approach




2018 results

**The majority of survey respondents (85%, up from 74% in 2018) are already using DevOps in their projects, with 42% using DevOps in more than half of their projects (up from 34% in 2018).**

Only 10% of the companies have yet to adopt DevOps for their projects. This is down from 17% in 2018.

Overall DevOps adoption rates are going up in 2019 in comparison to 2018 as expected.

**Close to 40% of the companies who were not practicing DevOps in 2018, started doing so in 2019.** Companies already practicing DevOps, are expanding their implementation rates.

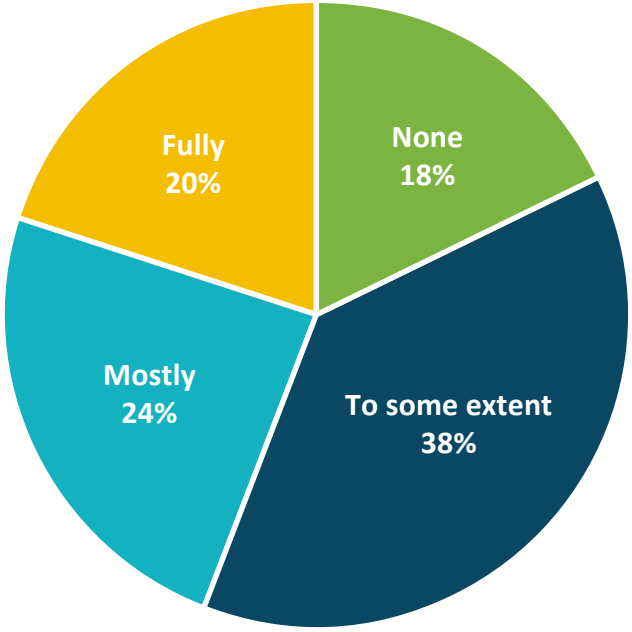
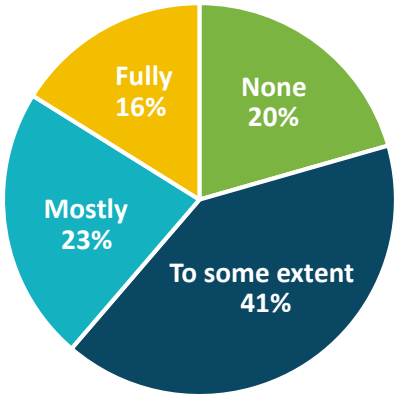



Figure 2: Integration of DBAs with DevOps Teams




2018 results

Most survey respondents (82%) have some level of integration between the DBA and DevOps teams, with 20% fully integrated (up from 16% in 2018) and 62% showing “some” or “mostly” integrated teams.

Only 18% of companies have no integration between the DBAs and DevOps.

Overall participation rates of DBAs in DevOps teams is going up, but only marginally so, and the majority are still not integral part of DevOps adoption.

We asked respondents to what extent their company has adopted continuous delivery in Application Development, Databases, Infrastructure, Security and Testing.

It comes as no surprise that Application Development leads the way with Continuous Delivery, with 88% of respondents showing adoption (same as reported in 2018).

When comparing advanced and full adoption (i.e. in 50% or more of IT Projects), there's a gap between **Application Development (55% adoption),** Testing (39%) and **Databases, which lags behind with 25%.**

Interestingly, **more companies are planning to implement CD for the databases (28% in 2019 vs 17% in 2018),** BUT also less are stating they have achieved their goal in doing so (25% in 2019 vs 37% in 2018)

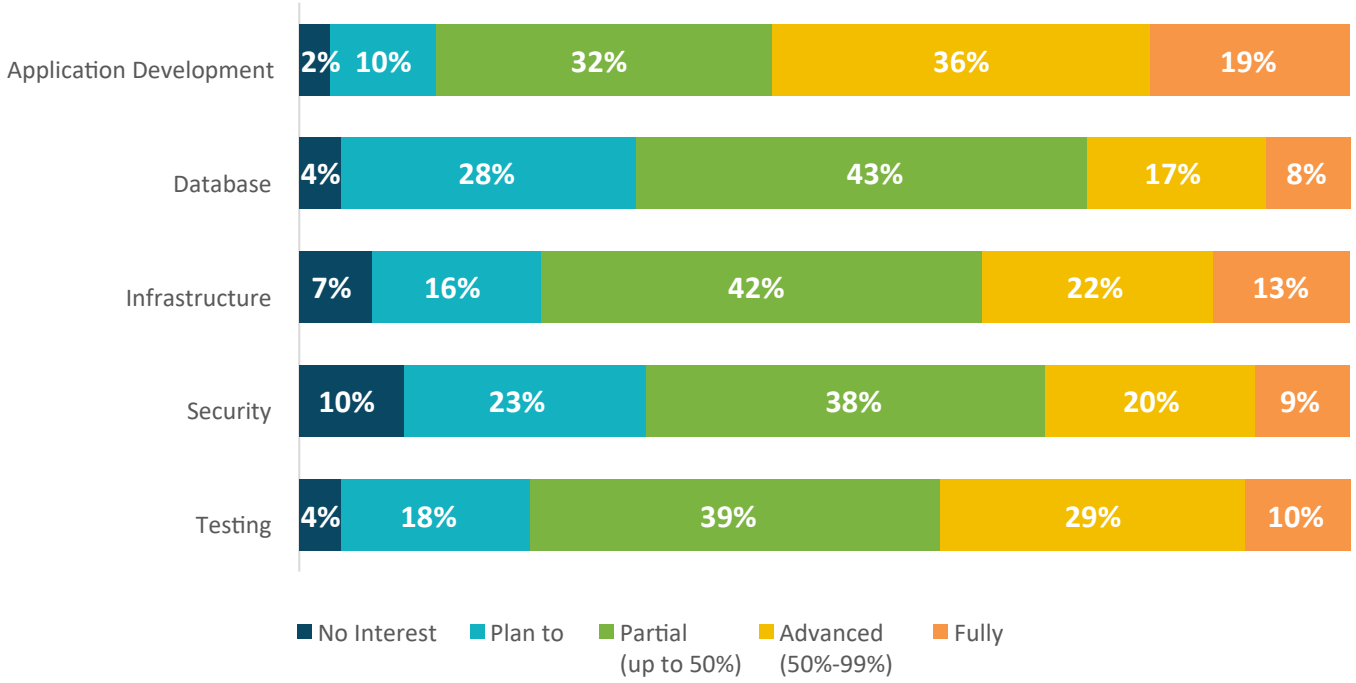
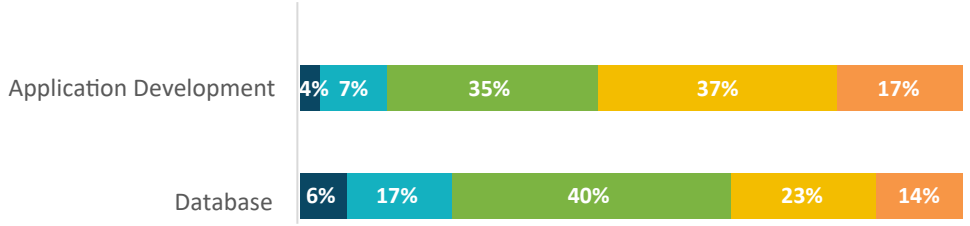



Figure 3: Continuous Delivery Adoption Rates




2018 results

## Most Popular Release Management Tools

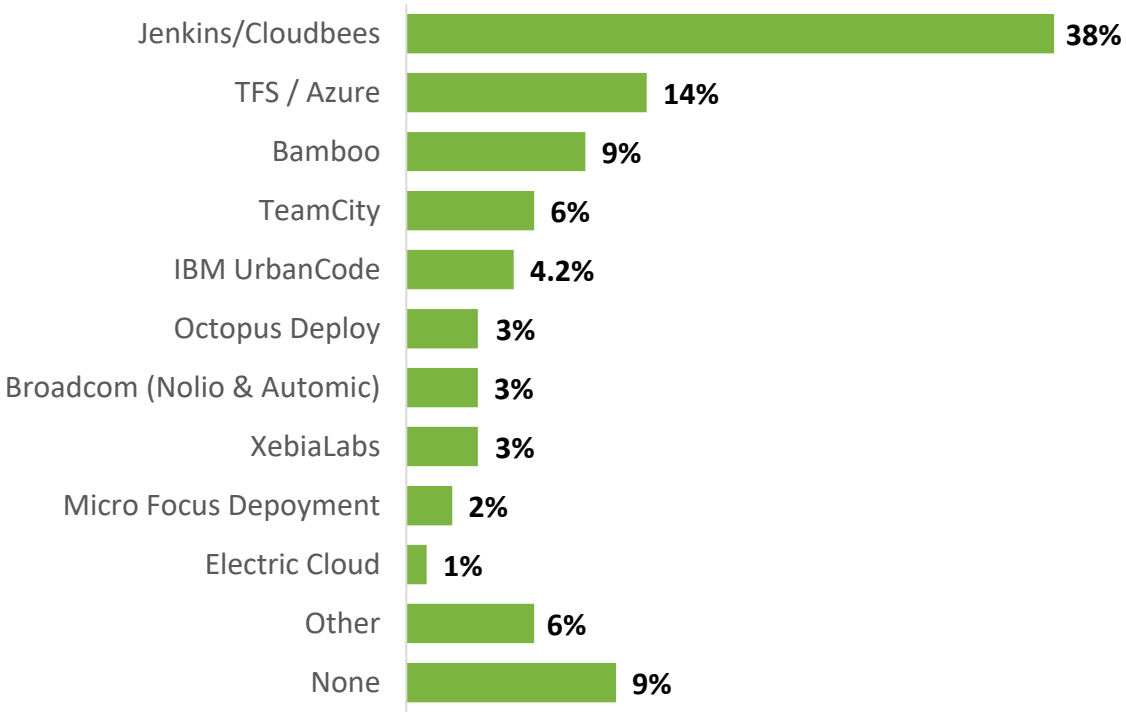
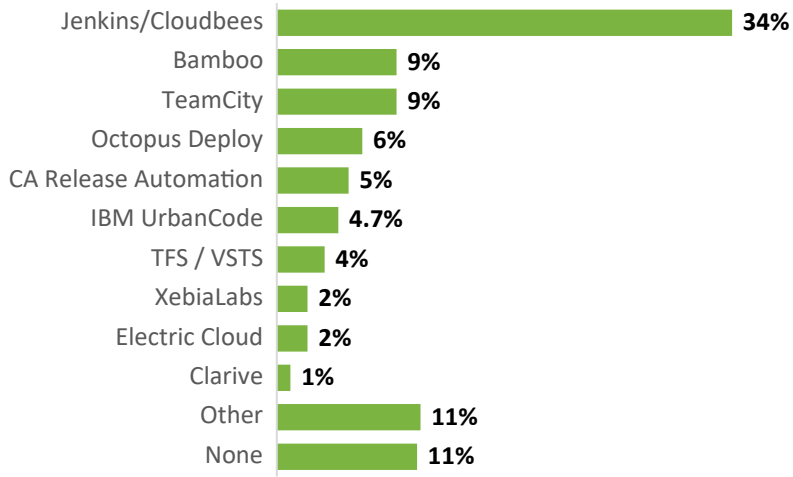



Figure 4: Most Popular Release Management Tools




2018 results

Jenkins is by far the most popular release automation tool amongst survey respondents, **getting stronger** in 2019 (38%, up from 34%).

**Microsoft made a significant jump with Azure Pipelines from 4% reported last year, to 14% this year.**

Together with Microsoft's Azure, Bamboo, TeamCity and IBM UrbanCode – these five release tools account for more than 72% in terms of popularity.

We asked respondents what their development-to-production lead time was in 2018, as well as their goal for 2019.

Looking at 2018, 14% of respondents have an impressive lead time of a day or better. This number is expected to double in 2019, with 28% aiming to have a lead time of a day or less. **Expectations to move faster are trending up** from last year (23% rising to 28% in 2019), but actual getting there is not always easy (actual progress from 12% in 2017 to 14% in 2018).

**Half** of 42% of long-cycle teams with quarterly lead times, are planning to shrink lead time (hoping for 21% in 2019).

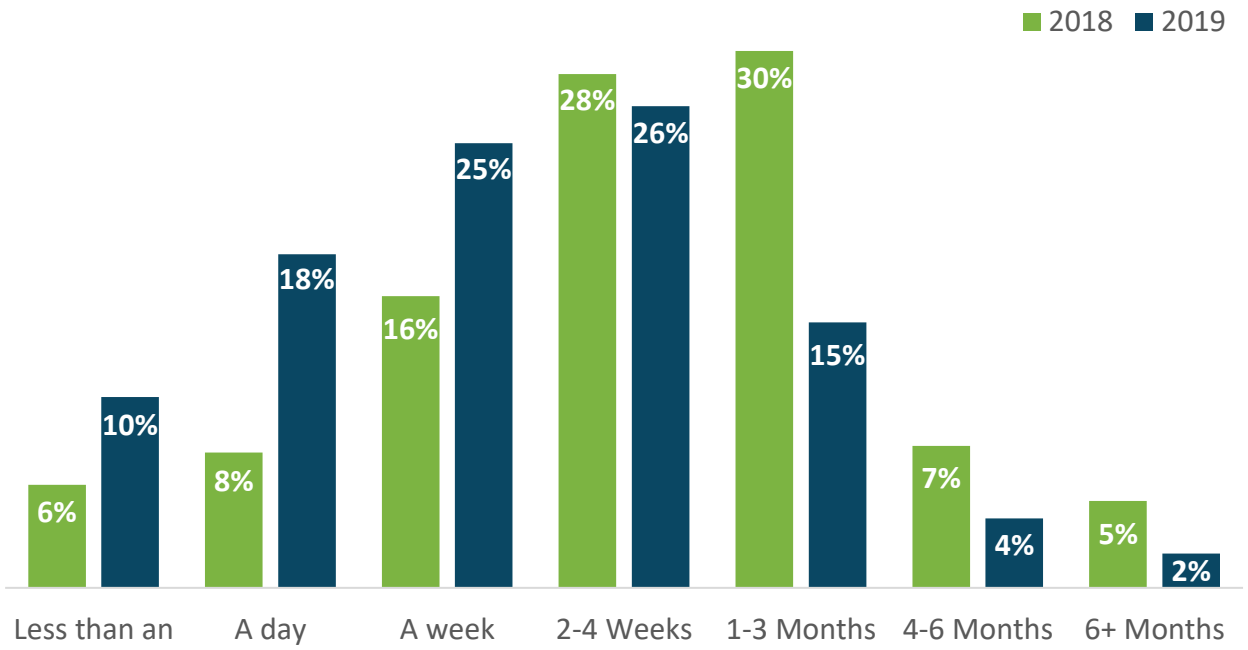
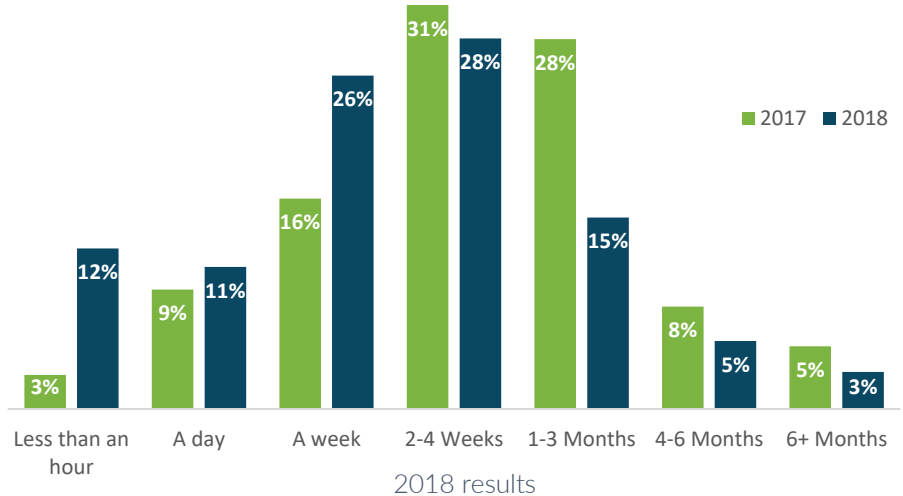



Figure 5: Development-to-Production Lead Time




2018 results

# Frequency of Application Deployments by DevOps

We asked respondents what the frequency of their application deployments by DevOps was in 2018, as well as their goal for 2019.

Looking at 2018, 46% of respondents deploy more than once a week (up from 43% last year). This number is expected to rise in 40% in 2019 to 64% (almost the same goal as set a year ago, 62%, a goal that has not be met yet).

In 2018, 87% are already deploying once a month, a couple of times a month or better, and this number is expected to grow slightly to 90% in 2018 (same as reported last year).

**Comparing 2017, 2018 and 2019 shows that same goals are being targeted but achieving them takes longer than expected.**

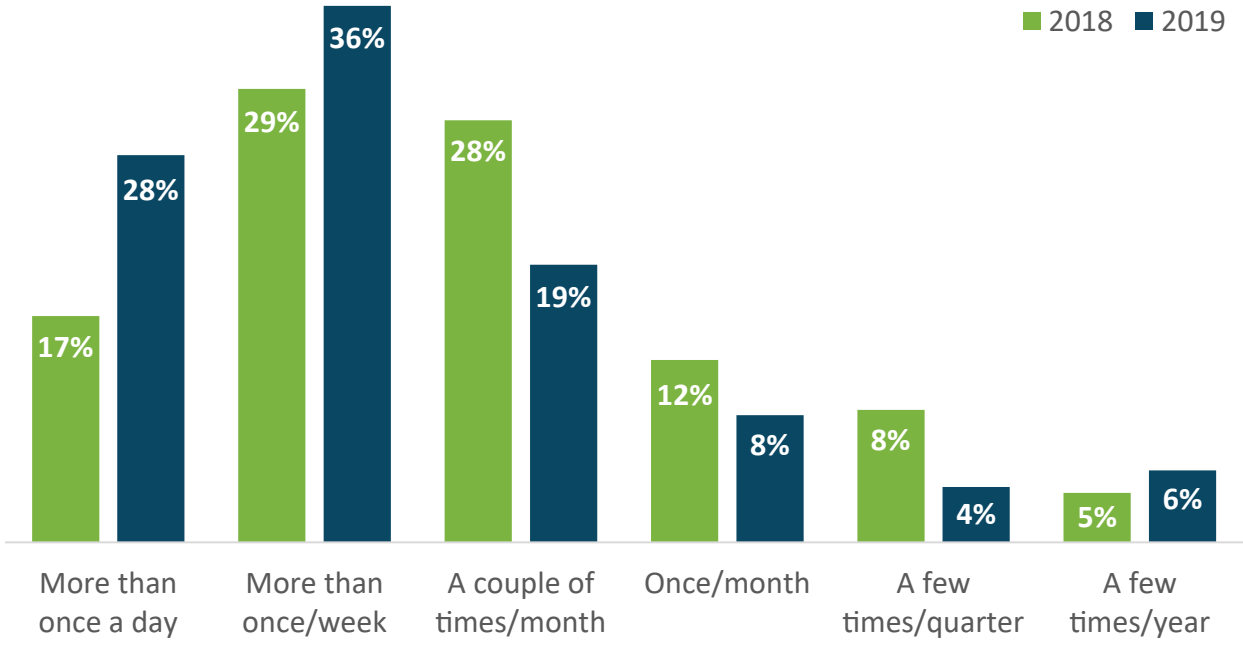
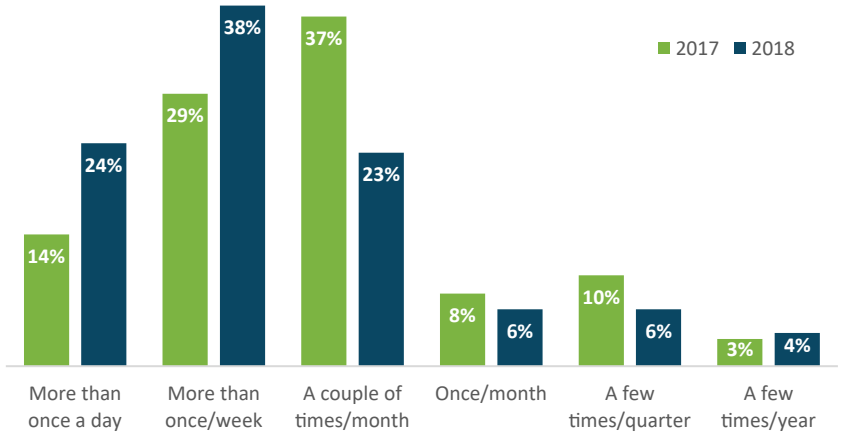



Figure 6: Frequency of Application Deployments by DevOps




2018 results

# Most Popular Databases

Trending up from last year – open source and cloud databases:

- MySQL (13% to 17%)
- PostgreSQL (9% to 12%)
- Amazon RDS (4% to 7%)
- Azure DB (4.5% to 6.1%)

Trending Down – on premise commercial databases:

- Ms SQL server (21% to 18%)
- Oracle (20% to 12%!)
- DB2 (6% to 3%)

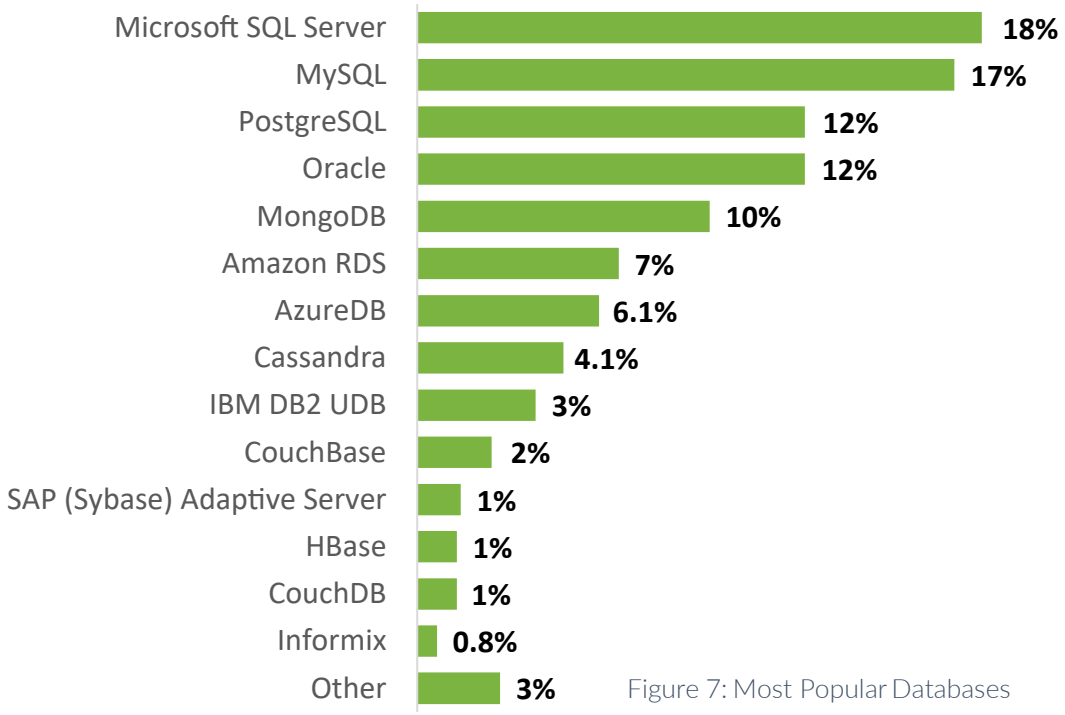
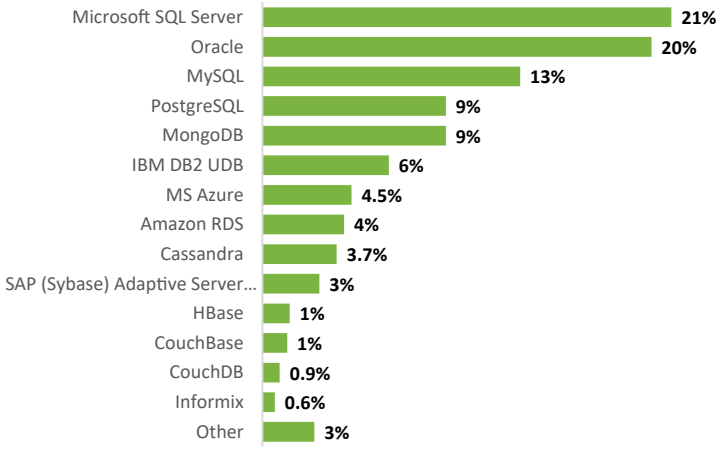



Figure 7: Most Popular Databases




2018 results

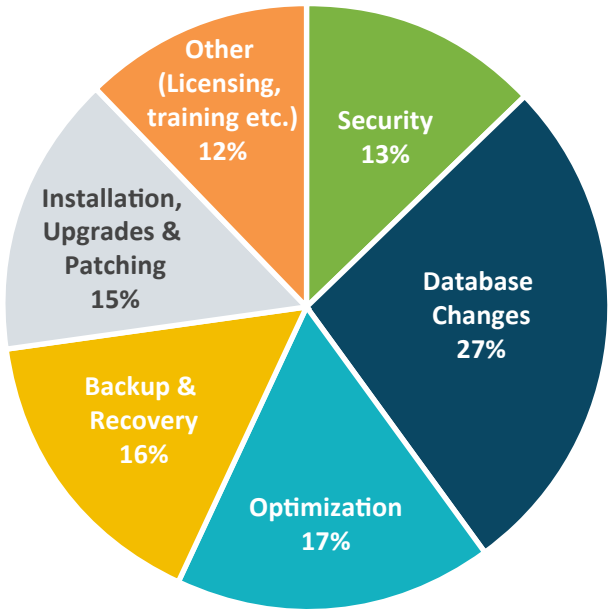
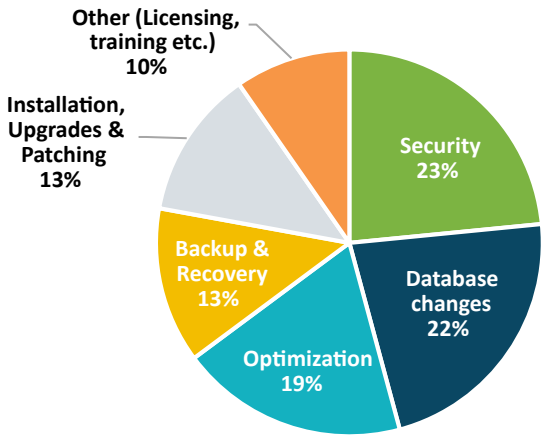



Figure 8: How DBAs SpendTheir Time on Top Database Activities




2018 results

What stands out when looking at how DBAs spend their time is that the pie chart that **was** almost "equally" split between these top six activities in 2018, is being **shifted into change delivery, at the expense of security.**

This makes a lot of sense with DBAs being pulled into higher cadence processes, as CI/CD is being implemented faster than automated processes for the database. The first to suffer from this shift is the focus on security, followed by database optimization.

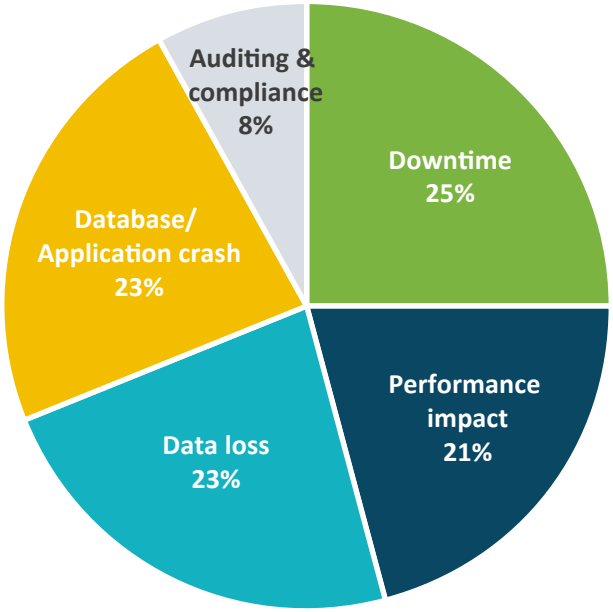
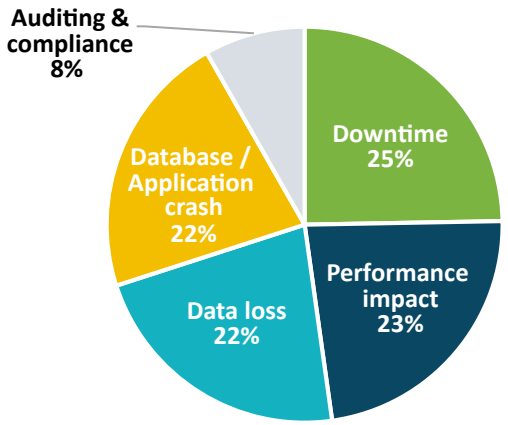



Figure 9: Biggest Risks When Deploying Database Changes




2018 results

The top three risks when deploying database changes account for 70% of the biggest risks, and include: Downtime (25%), Performance impact (23%) and Data loss (22%).

No significant change in risk perception from 2018.

# Top Reasons for Errors When Making Changes to the Database

There are plenty of reasons that can cause errors when making changes to a database. We asked to pick the top three, and one stood out – **failures due to configuration drifts** (something that works in one environment fails on the next due to configuration inconsistencies).

All of these issues have long been solved in the world of code development and release. Companies will need to find ways to introduce similar solutions for their database to help reduce if not eliminate these causes for errors.

*The question was changed from previous survey, so no comparison to 2018 is attached.*

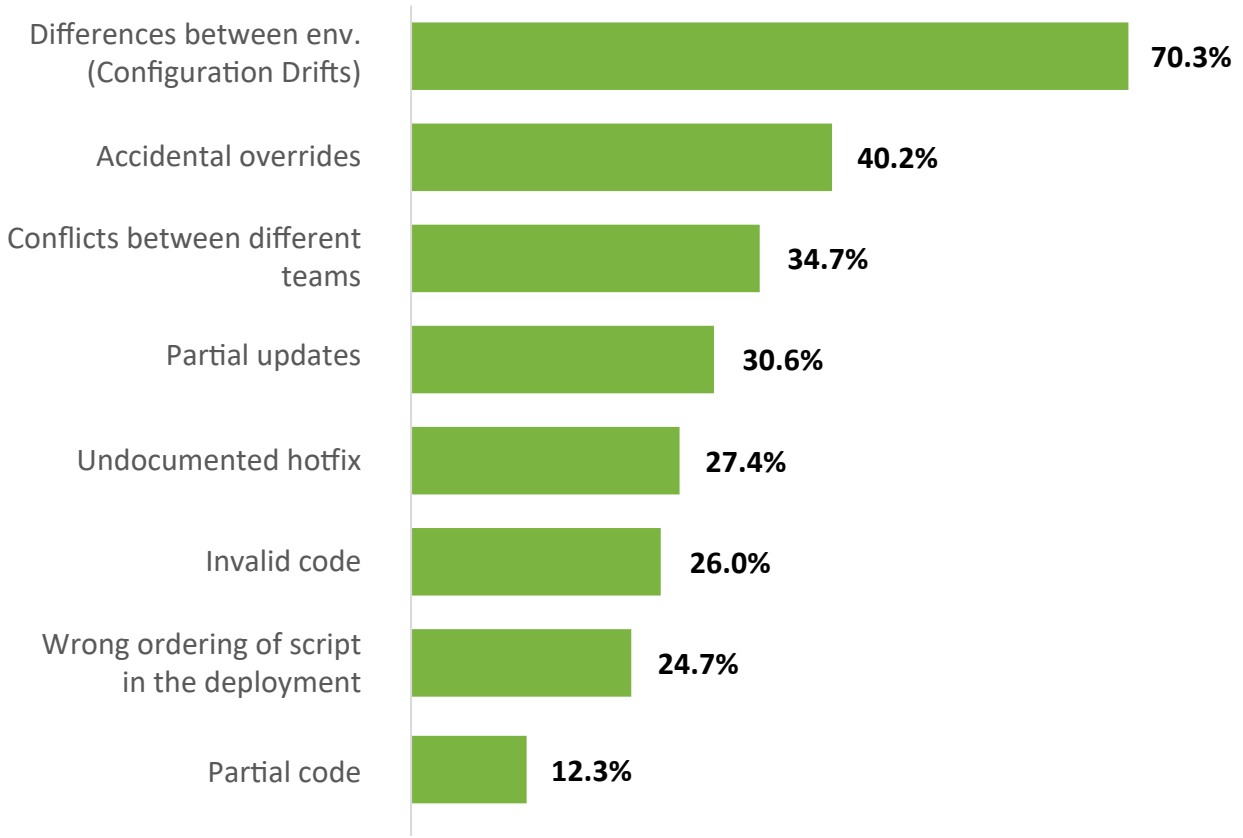
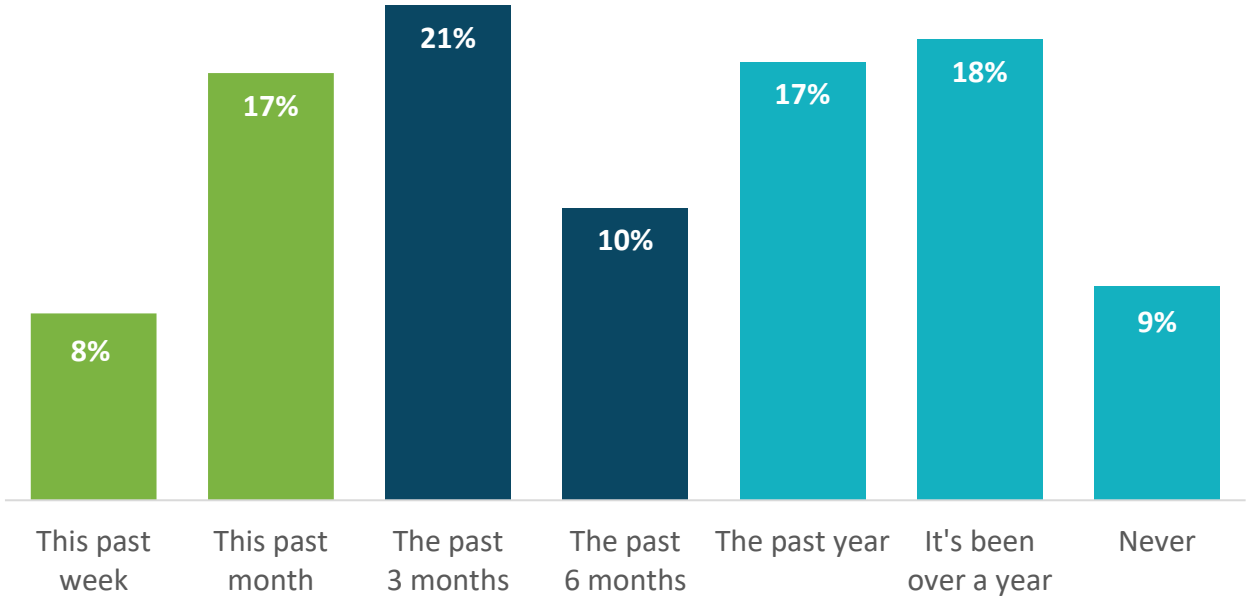
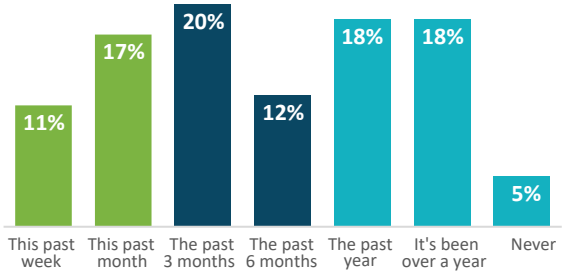



Figure 10: Top Reasons For Errors When Making Changes to the Database

## Last Significant Problem in Database (e.g. Downtime, Crash)




2018 results

Figure 11: Last Significant Problem In Database (e.g. Downtime, Crash)

Database crash on a regular basis and only 27% of respondents said they didn't have a problem in at least over a year (up from 23% in 2018, good news!)

A quarter (25%) had a problem in the past month, and almost half (46%) in the past 3 months. Overall, no significant change from 2018.

# Longest Time to Recover from Database Problems (Last 12 Months)

Looking at the longest time it takes to recover from database problems in the past 12 months, over half (52%) recovered within 5 hours or less, and 33% took more than 6 hours.

What we see here is that the bulk of issues can be solved in less than 6 hours (still, a chunk of time if you are down). There are still a significant (>30%) number of issues that take days to solve, in fact, that number has increased since 2018.

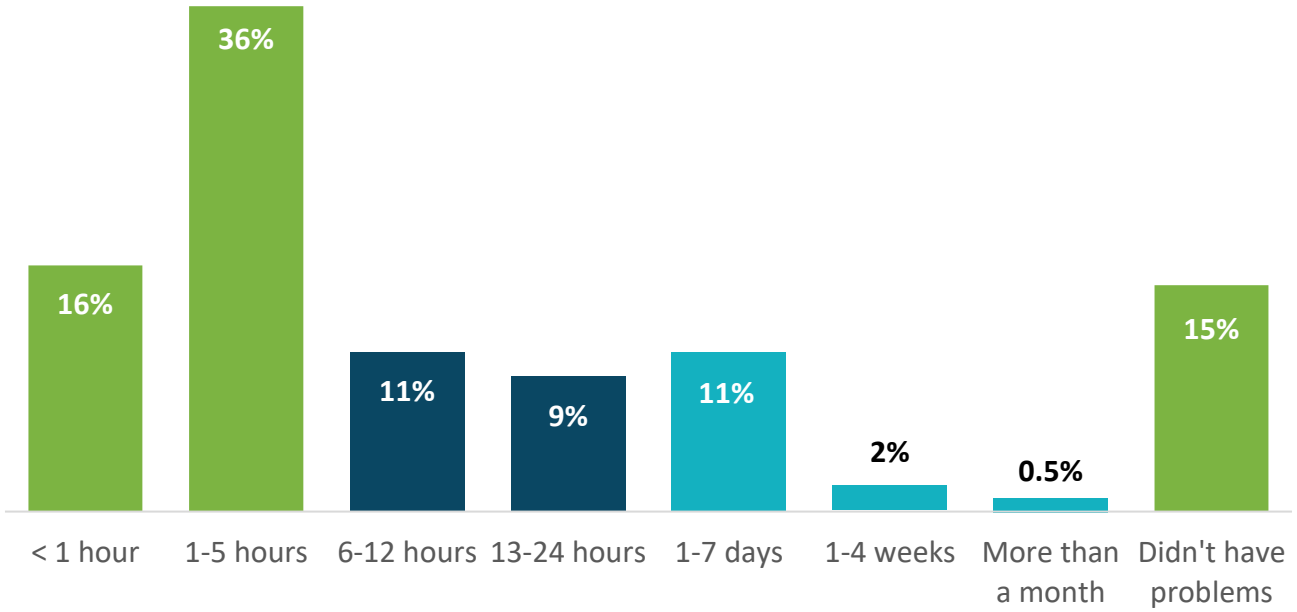
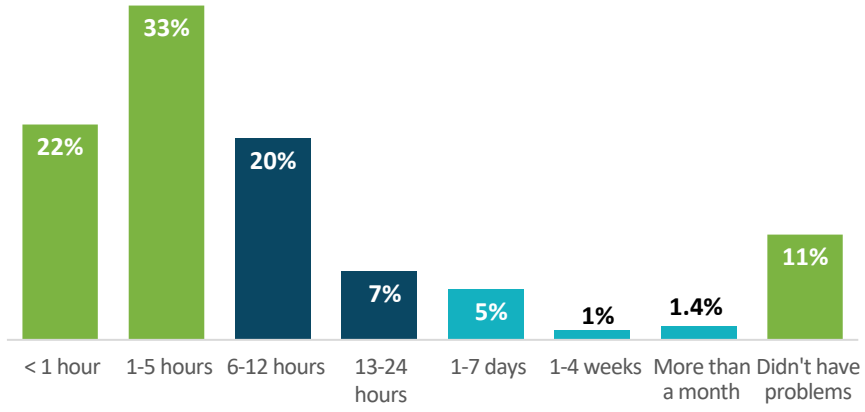



Figure 12: Longest Time to Recover From Database Problems (Last 12 Months)




2018 results

# Average Time to Recover from Database Problems

After looking at the longest time it takes to recover from database problems (see page 15), we asked respondents how much time on average it takes to recover from these problems.

77% of problems were resolved within 5 hours, and 23% took longer.

Overall trend shows that on average it takes longer to recover from problems in comparison to last year, with more issues taking close to 24 hours to conclude which correlates well with longest time to recover from problems.

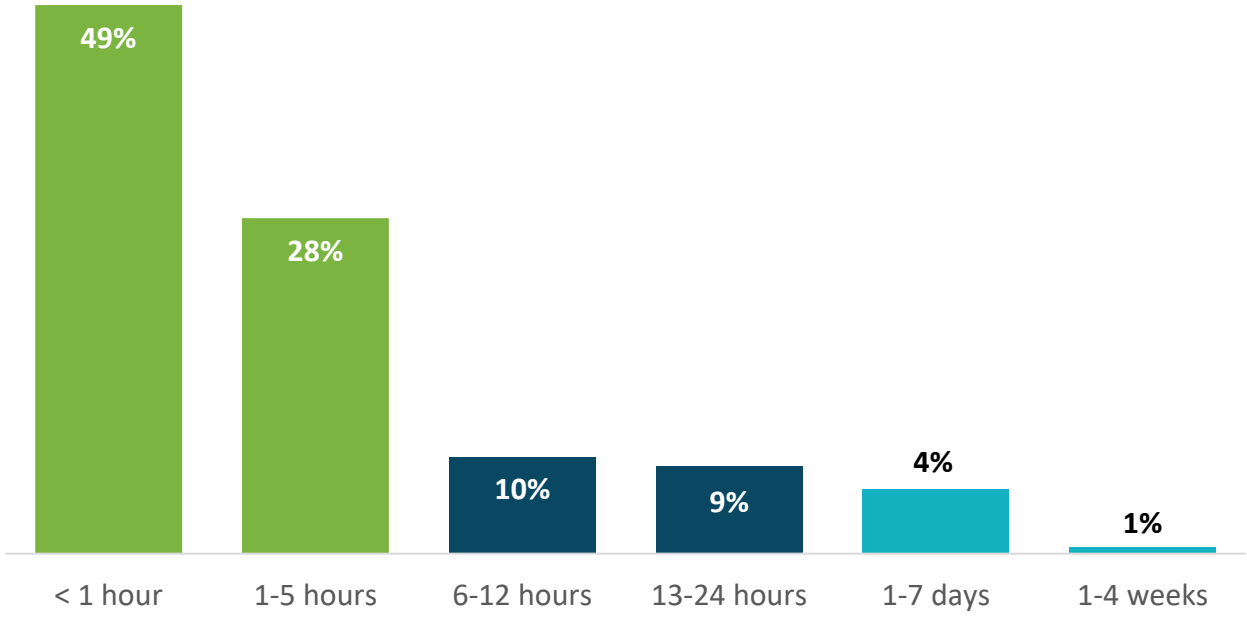
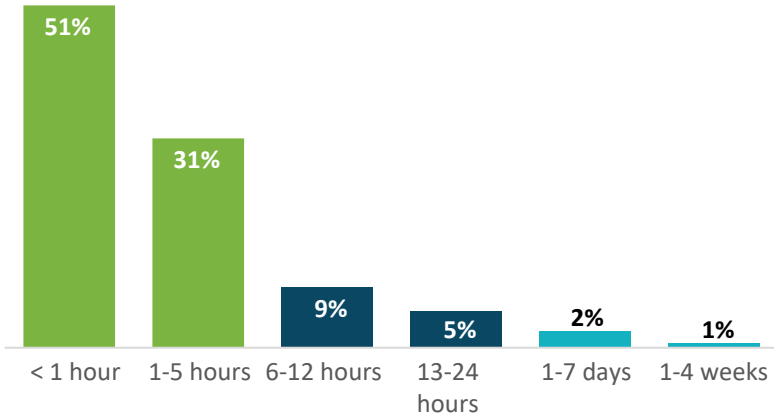



Figure 13: Average Time to Recover From Database Problems




2018 results

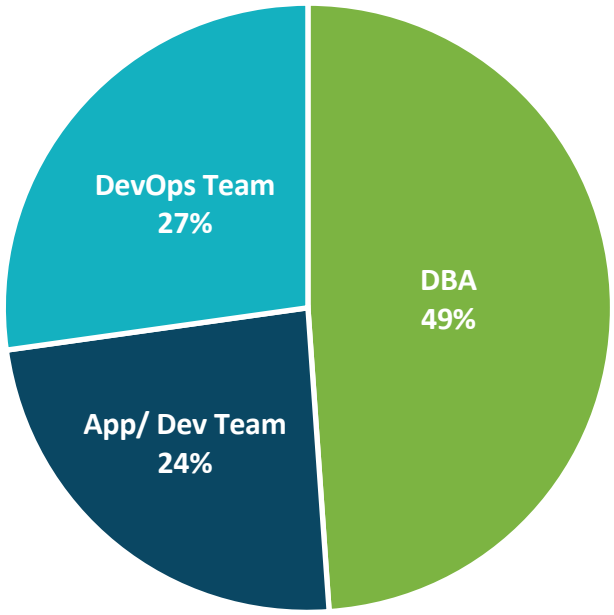
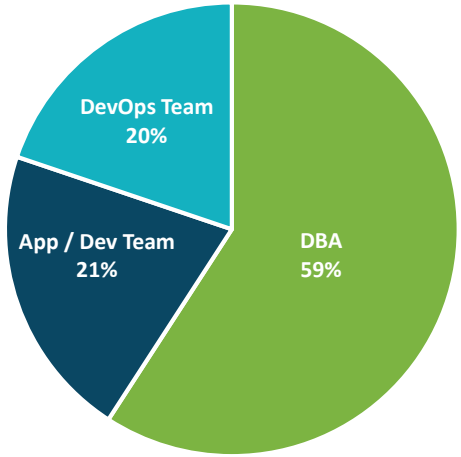



Figure 14: Access to Make Database Changes




2018 results

DBAs are still king of their database, with 49% of respondents saying only DBAs are allowed to make changes to the database.

This number is declining from 59% last year, with DevOps teams taking most of that gap under their responsibility! Great news for DevOps and a welcome progress.

As DBAs spend close to 30% of their time delivering changes (see page 11), organizations still need to find ways to solve the tension between development needs to drive faster releases (see page 8) and the DBAs being the bottleneck of this process.

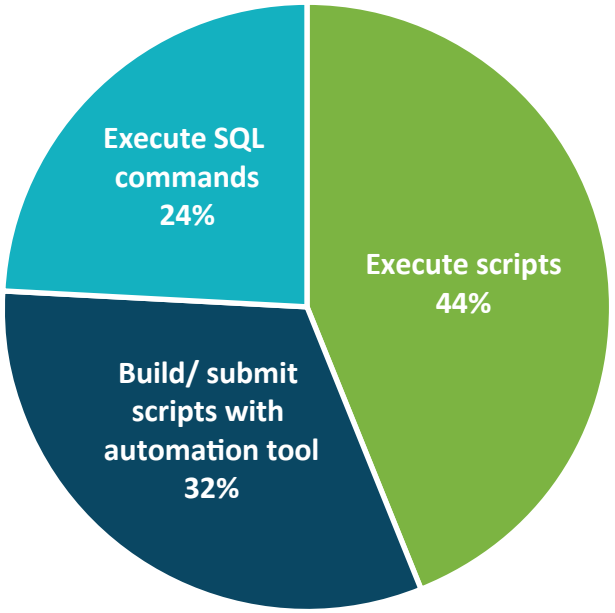
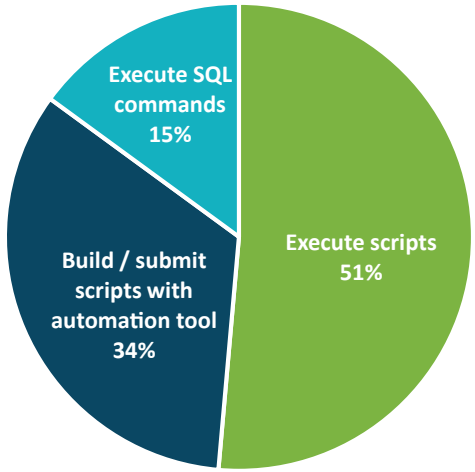



Figure 15: How Database Changes Are Performed




2018 results

Execution of scripts is still the main method of performing changes to the database (44%, dropping from 51% last year). Automation tools are in charge of 32% of change updates, with no significant change from 2018.

**The shift from scripted updates to manual execution of SQL command is counter-intuitive given the emphasis of automation in the marketplace.** A possible explanation could be attributed to cycle of implementation automation, then pulling back after realizing its more complicated than that. E.g. Overriding changes by other teams, or hot-fixed environment (see page 13)

# Deployment Frequency of Database Changes

While DevOps has been widely adopted to quickly deploy development changes, when it comes to databases only 12% of respondents are able to deploy database changes daily.

A quarter (28%) of respondents are not able to deploy more frequently than a month.

The majority (59% compared to 64% last year) are able to deploy database changes a few times a month or better.

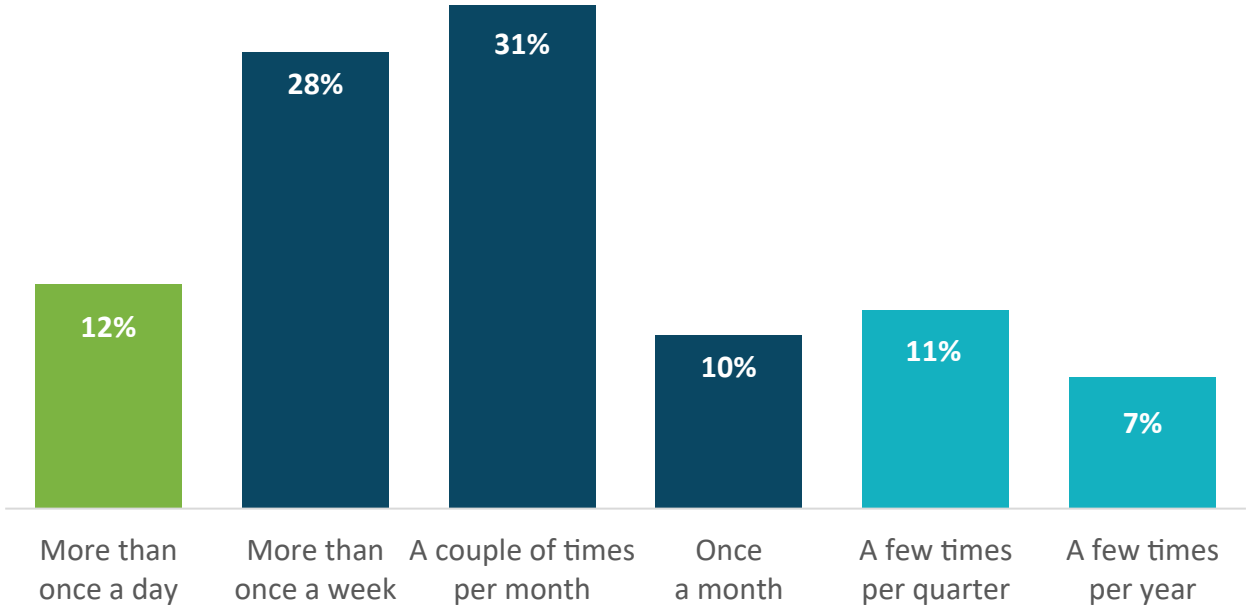
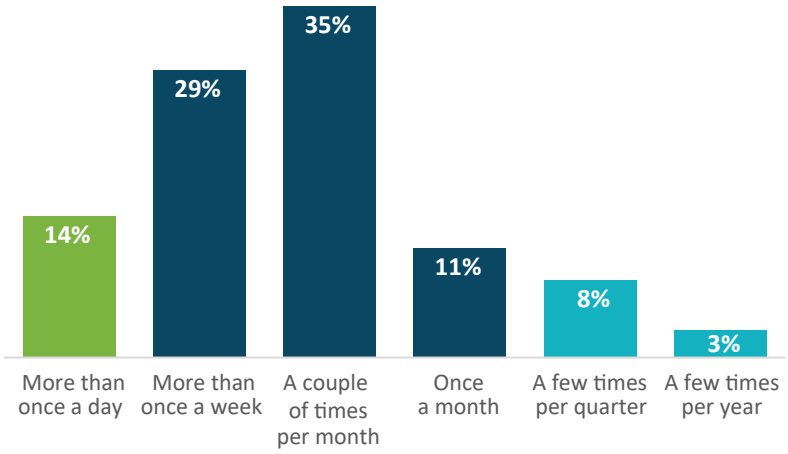



Figure 16: Deployment Frequency of Database Changes




2018 results

## Frequency of Database Changes vs. Last Database Crash

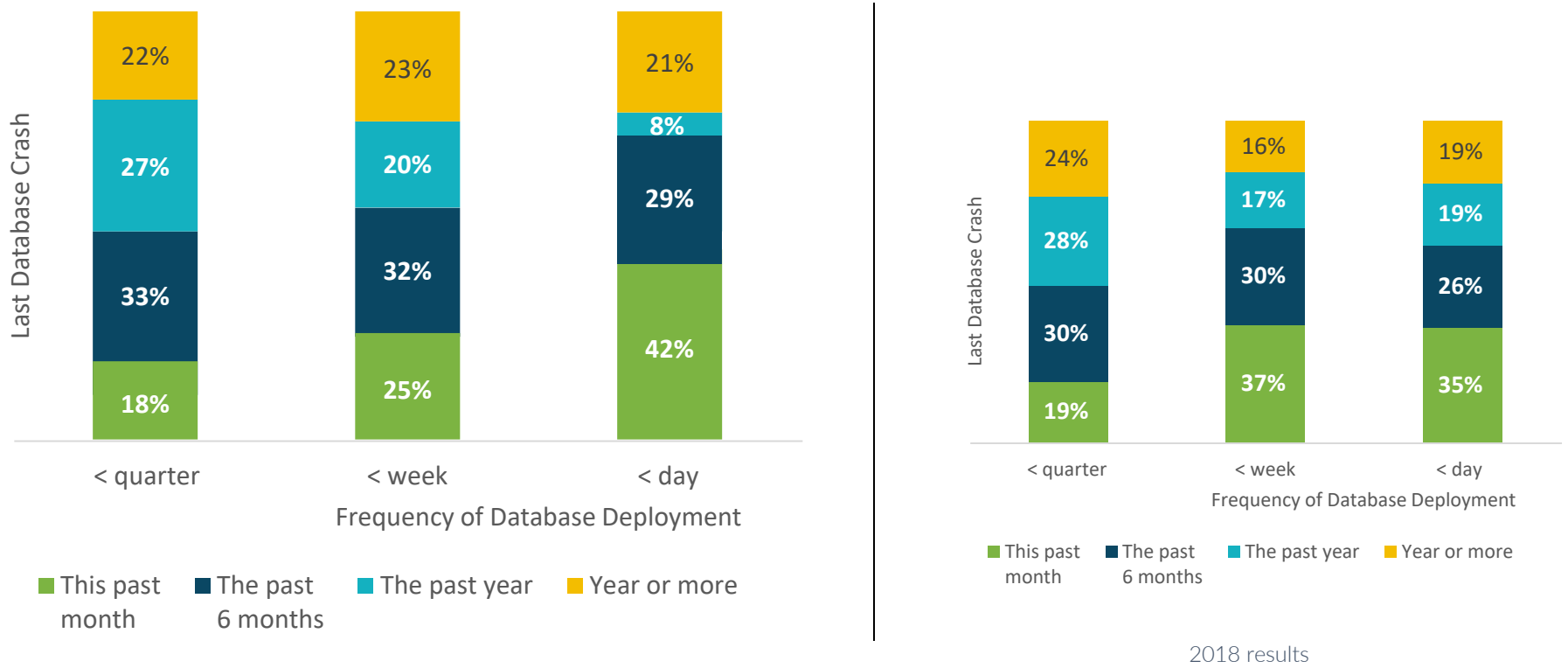



Figure 17: Frequency of Database Changes vs. LastDatabase Crash

Looking at the amount of database failures, we can clearly see that the amount of failures increases as the frequency of database deployment.

With 24% of database changes being done manually, and 44% semi-automatic (manual execution of script) (see page 18), this comes as no surprise.

As companies are looking to increase the deployments frequency in 2019 (see page 9), they will need to find ways to automate their database release with additional safety nets, in order to reduce the number of database related errors.

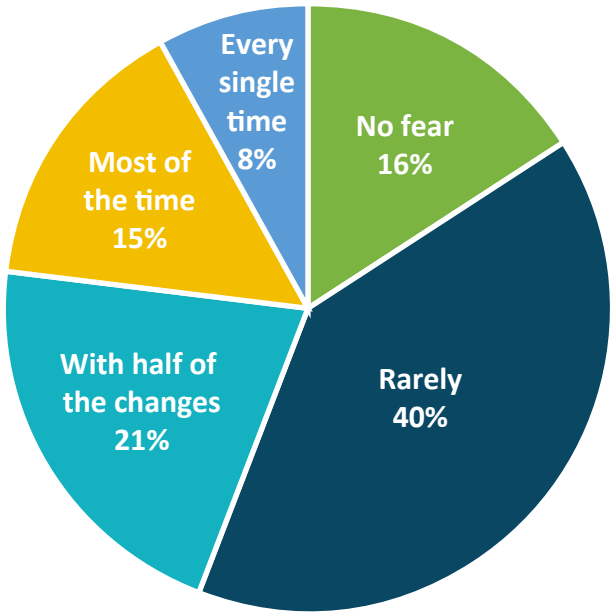
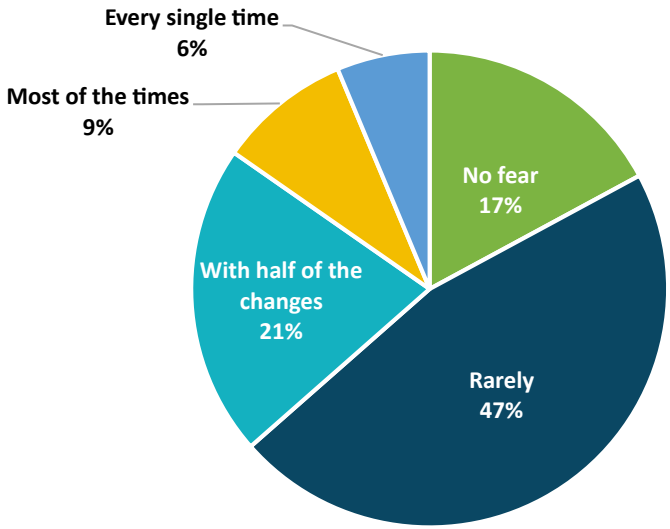



Figure 18: Fear of Making Database Changes




2018 results

Database changes can lead to errors, and only 16% feel fully confident while making changes and show "No fear." (almost the same as in 2018).

**Unfortunately**, almost half (44%, up from 36% last year) fear making changes with at least half the changes they deploy. This is attributed to the more challenging issues reported in the passing 12 months (see pages 15 and 16)

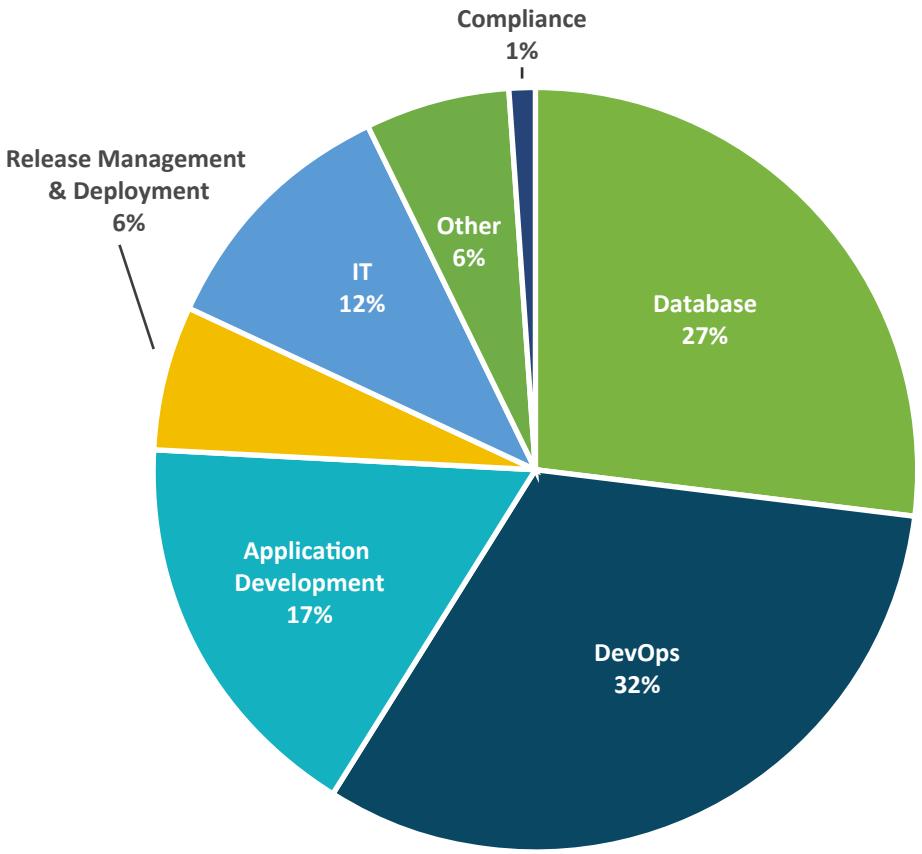



Figure 19: Job Responsibility

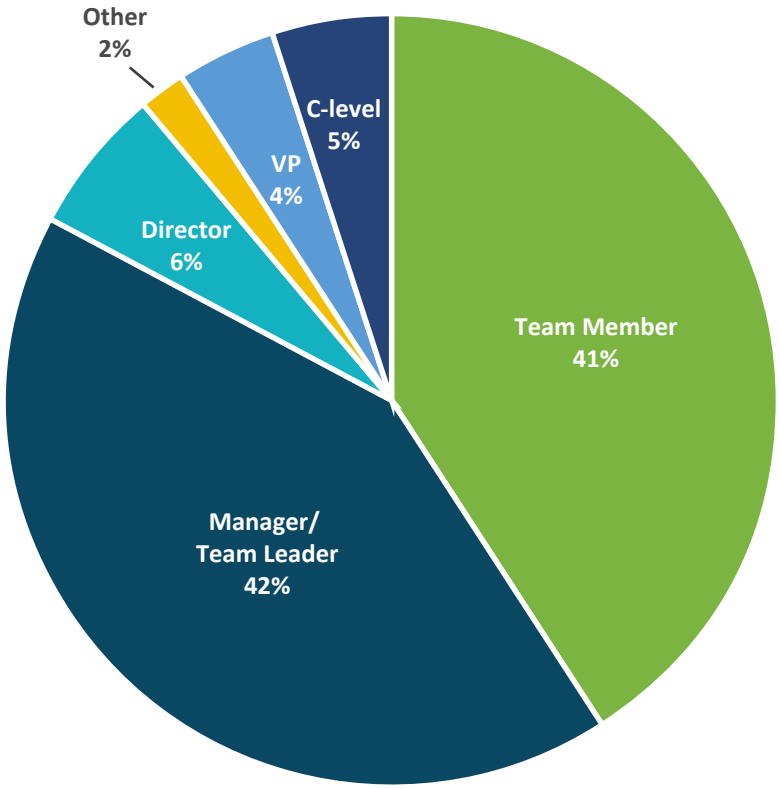



Figure 20: Position Within Organization

This 2019 survey is based on replies from a balanced and diverse representation of roles in the organization – from DevOps people being a third, DBAs representing a quarter and developers a sixth, as well as release managers, IT teams and compliance officers.

More than half (59%) of the respondents are managers, directors, VPs and C-level executives.

Over half of the respondents (55%) are from companies of 1,000 or more employees.

Financial Services, IT and Banking account for over half (57%) of the respondents.

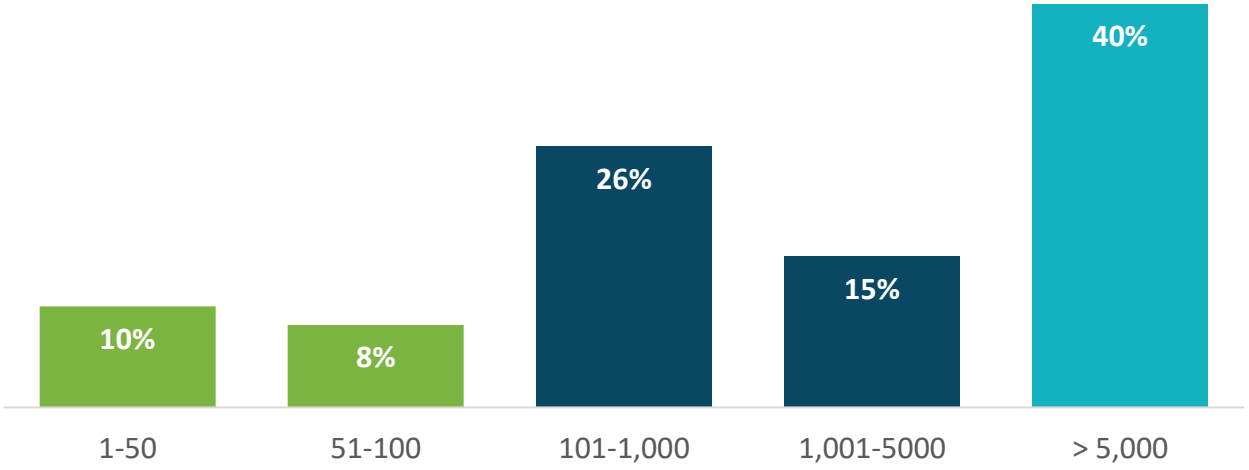



Figure 21: Number of Employees

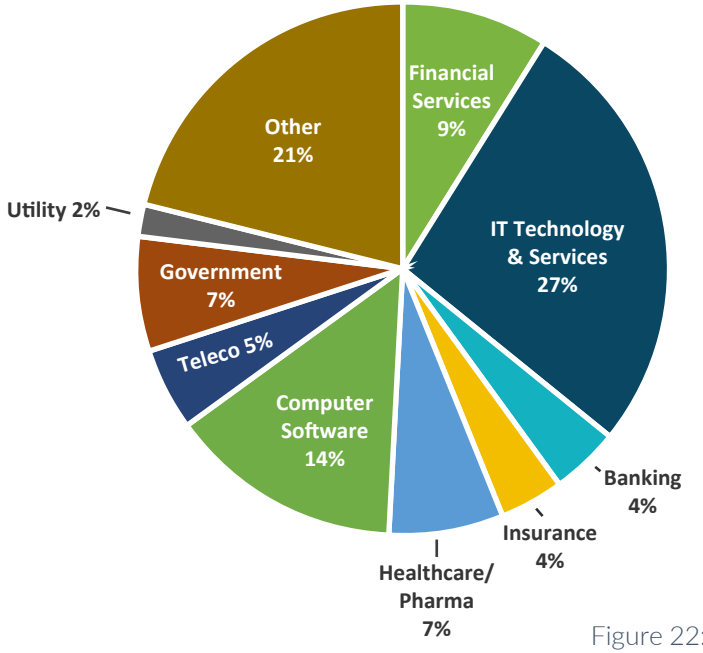



Figure 22: Industry

## About DBmaestro

DBmaestro is a leading DevOps for database solution provider. Our flagship product, DBmaestro DevOps Platform, introduces DevOps and automation best practices to databases, dramatically simplifying, lowering risk, accelerating, and improving release processes, while modernizing database development via release pipelines, long enjoyed elsewhere in the industry.

We are providing both database release automation and database source control capabilities across the board for DevOps professionals, developers, DBAs, security, and operations in multi-database enterprise environments.

For more information, please visit **www.DBmaestro.com**

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