

Redis Digital Transformation Index

Our lives are digitally dependent. If anyone wasn't yet convinced, living through a pandemic for the past year has clearly demonstrated that digital transformation is real. Businesses around the globe and across industries—from healthcare to finance to education to retail to gaming—have all shifted gears to become more digitally-led than ever before.

We at Redis Labs find ourselves at the center of many digital transformation projects, strategies, and architecture discussions with our customers. We believe that besides a digital mindset, there's a set of technologies that are critical in enabling and fueling digital transformations. To better gauge the stage and maturity of customer efforts, we are introducing the first Digital Transformation Index report. We surveyed 550 AWS re:Invent respondents to assess their digital transformation journeys across the cloud, microservices, containers, and NoSQL databases. Not surprisingly we called it "the Redis Digital Transformation Index."

As the builders of a real-time data platform, we believe a flexible, robust, real-time data layer is critical for making the most of the cloud, microservices, and containers in any transformational architecture—therefore paying special attention to analyzing database technologies in this report.

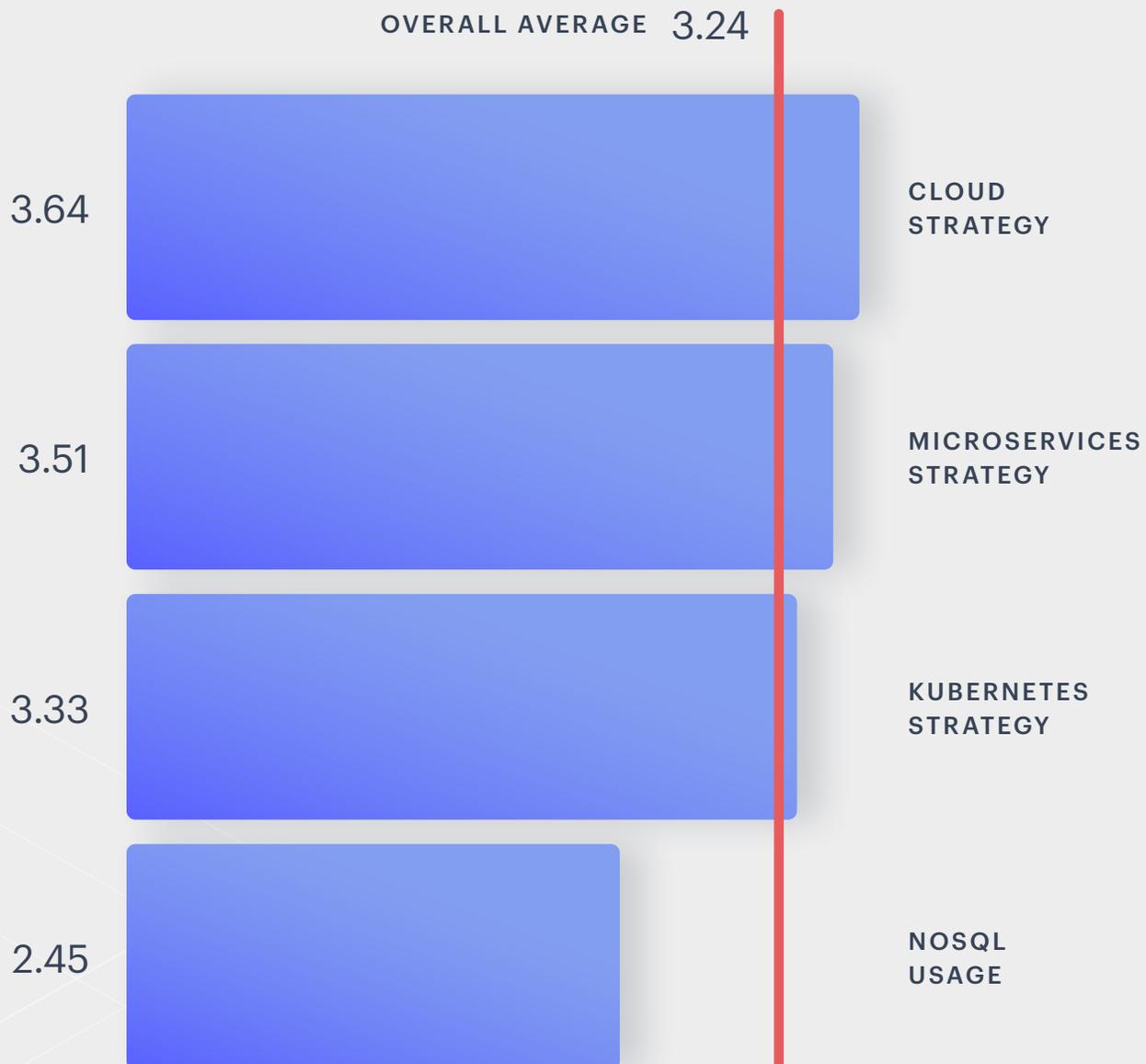
The result is a cross-industry picture of the state of digital transformations and their underlying data layers—and we learned whether users of tabs or spaces are more sophisticated.

Cloud is the leading driving force in digital transformation

Takeaway

Given that cloud computing is pervasive, we weren't surprised to see it have the highest score. We did expect NoSQL adoption to score higher, particularly because the survey participants were visitors to the Redis virtual booth.

As we looked at each component of the DTI, cloud strategies were the most mature, with an average score of 3.64. Bringing up the rear were NoSQL database strategies at 2.45. The composite DTI for all strategies came in at 3.24.

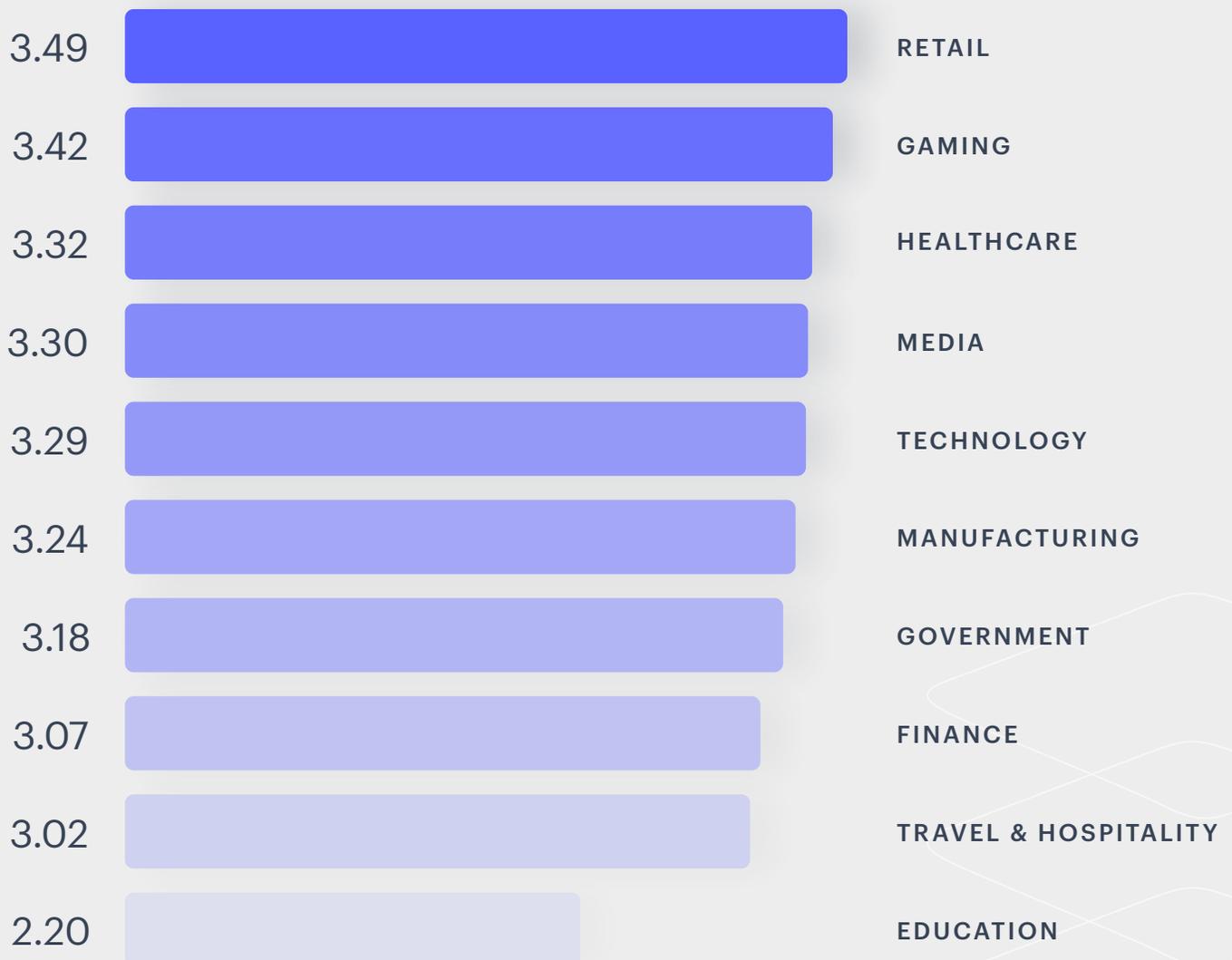


Consumer behavior dictated transformation pace across industries

Takeaway

COVID-19 has forced drastic changes in the way retailers interact with customers, delivered the gaming industry a captive audience, and played havoc with the healthcare industry. While COVID has presented those industries with opportunities for change, the pandemic has posed an existential threat to the travel and hospitality industry and the education sector.

Looking at DTI scores by industry, the top three industries are retail at 3.49, gaming at 3.42, and healthcare at 3.32. Finance, an industry likely to continue to rely on relational databases for the foreseeable future, was in effect penalized on the NoSQL strategy question. Without that penalty, finance would have the third highest DTI. Education was a significant laggard with a 2.20 DTI; no other industry fell below 3.



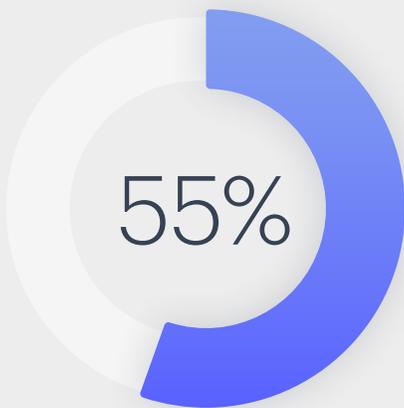
Key-value databases are almost as common as relational

Takeaway

NoSQL databases are no longer on the fringe of IT. For a majority of organizations, they're a crucial part of the technology stack.

We asked respondents what types of databases they use, allowing for multiple responses. On average, most organizations are using two types of databases. Relational databases came in first, followed by key-value, JSON, graph, and time-series databases.

Although visitors to the Redis booth may be more likely to use a NoSQL database of some kind, the results make it clear that NoSQL databases have become mainstream.



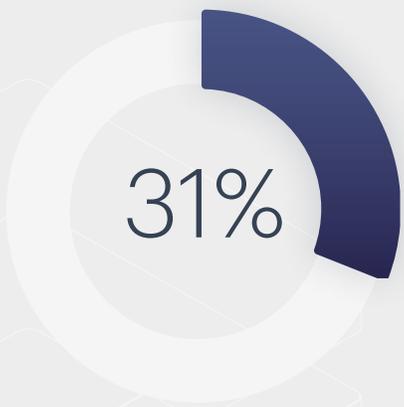
RELATIONAL



KEY-VALUE



DOCUMENT (JSON)



GRAPH



TIME SERIES

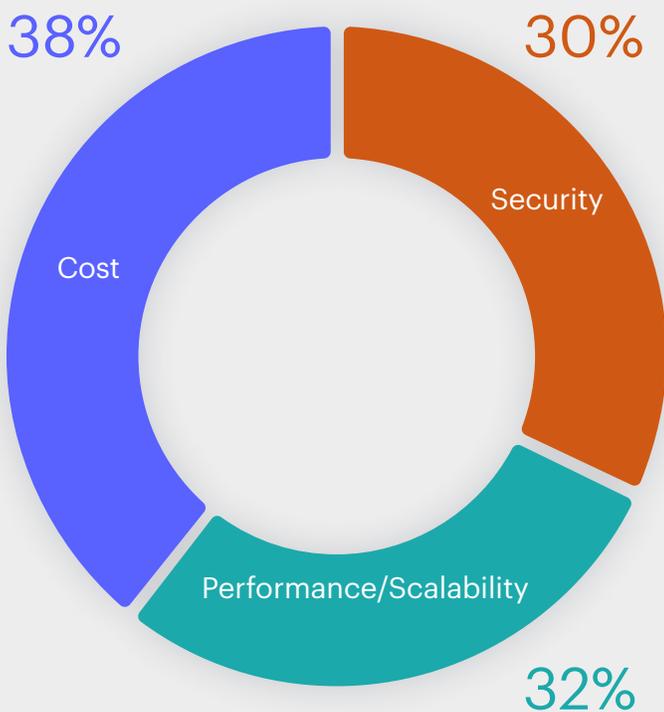
DevOps teams pick cost, performance, and security as top considerations for new databases

Takeaway

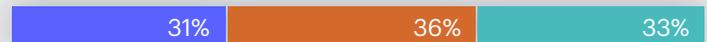
Although no one can ignore the importance of direct costs, TCO can be hard to define. Performance/scalability and security are non-negotiable requirements in today's environment.

We asked respondents what factors they consider when choosing a database. As expected, cost was the top factor in most industries (technology and education respondents cared more about performance/scalability). After cost, performance/scalability and security were the top concerns.

In finance and technology, there was very little difference among the importance of cost, performance/scalability, and security. And among respondents in the travel and hospitality industry, the industry most heavily impacted by COVID-19, cost was the most important factor by the widest margin.



EDUCATION



FINANCE



GAMING



GOVERNMENT



HEALTHCARE



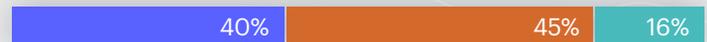
MANUFACTURING



MEDIA



RETAIL



TECHNOLOGY



TRAVEL & HOSPITALITY



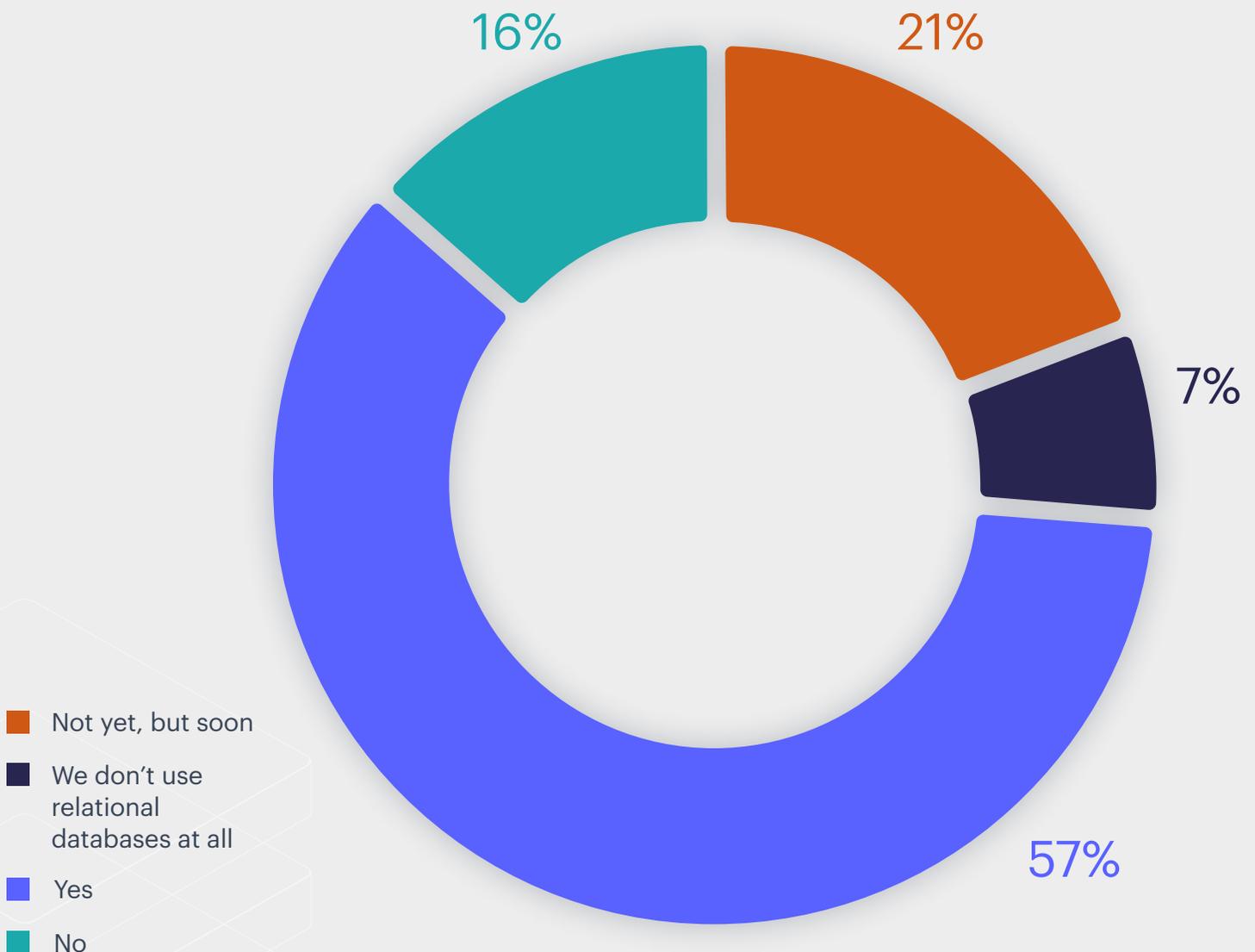
Caching is crucial for relational database users

Takeaway

To improve performance and reliability, the vast majority of relational database users use or plan to use caching in the near future. Caching has clearly become a critical use case for relational database users.

The majority of our respondents (57%) are currently using caching with their relational databases to improve their application performance and scalability, with another 21% planning to add a cache to their databases soon.

Using a key-value store as a cache for relational database queries is a very common use case, but we were surprised that more than three-quarters of respondents at least intend to use caching. Interestingly, 7% of respondents said they don't use relational databases at all.



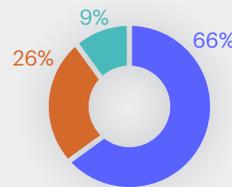
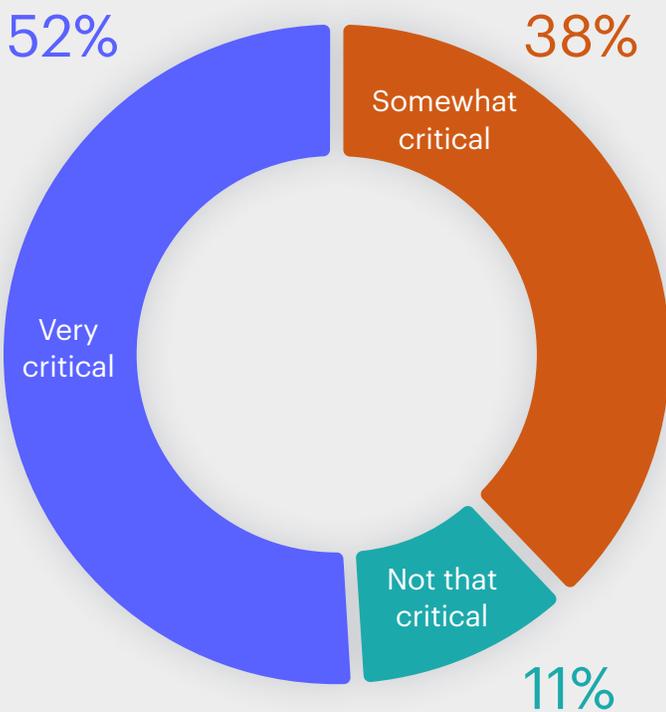
There's (usually) no tolerance for downtime

Takeaway

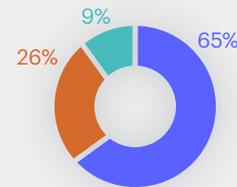
Failures are inevitable, but they don't have to be disastrous. If only the cache is down, the database can still respond. The application will be slower, of course, but it will still be running. We also found that continuous uptime is more critical for some industries than others.

The survey asked about application downtime from both the caching and database perspectives. Just over half (52%) of respondents said that downtime in either the database or cache was unacceptable, while another 38% said limited downtime in the cache was acceptable as long as the database was still running. Only 11% said that their applications weren't customer-facing and that they could accept limited downtime in both the cache and the database.

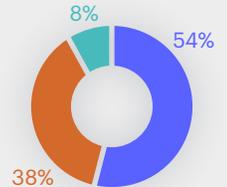
It's important to note that we asked about limited downtime; no one is saying they're indifferent to downtime in general. Looking at the importance of uptime by industry, retail, finance, and technology had the most stringent requirements, with education, government, and manufacturing bringing up the rear.



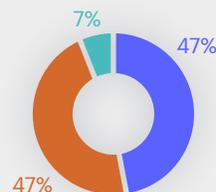
RETAIL



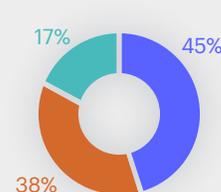
FINANCE



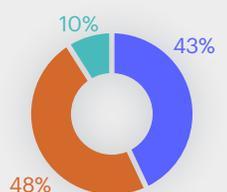
TECHNOLOGY



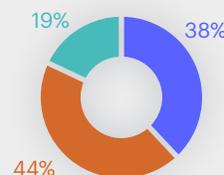
GAMING



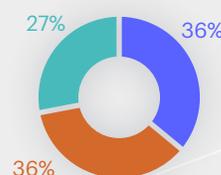
HEALTHCARE



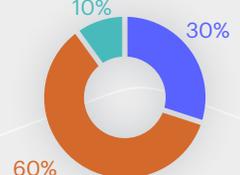
MEDIA



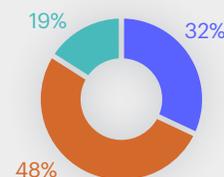
TRAVEL & HOSPITALITY



EDUCATION



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MANUFACTURING

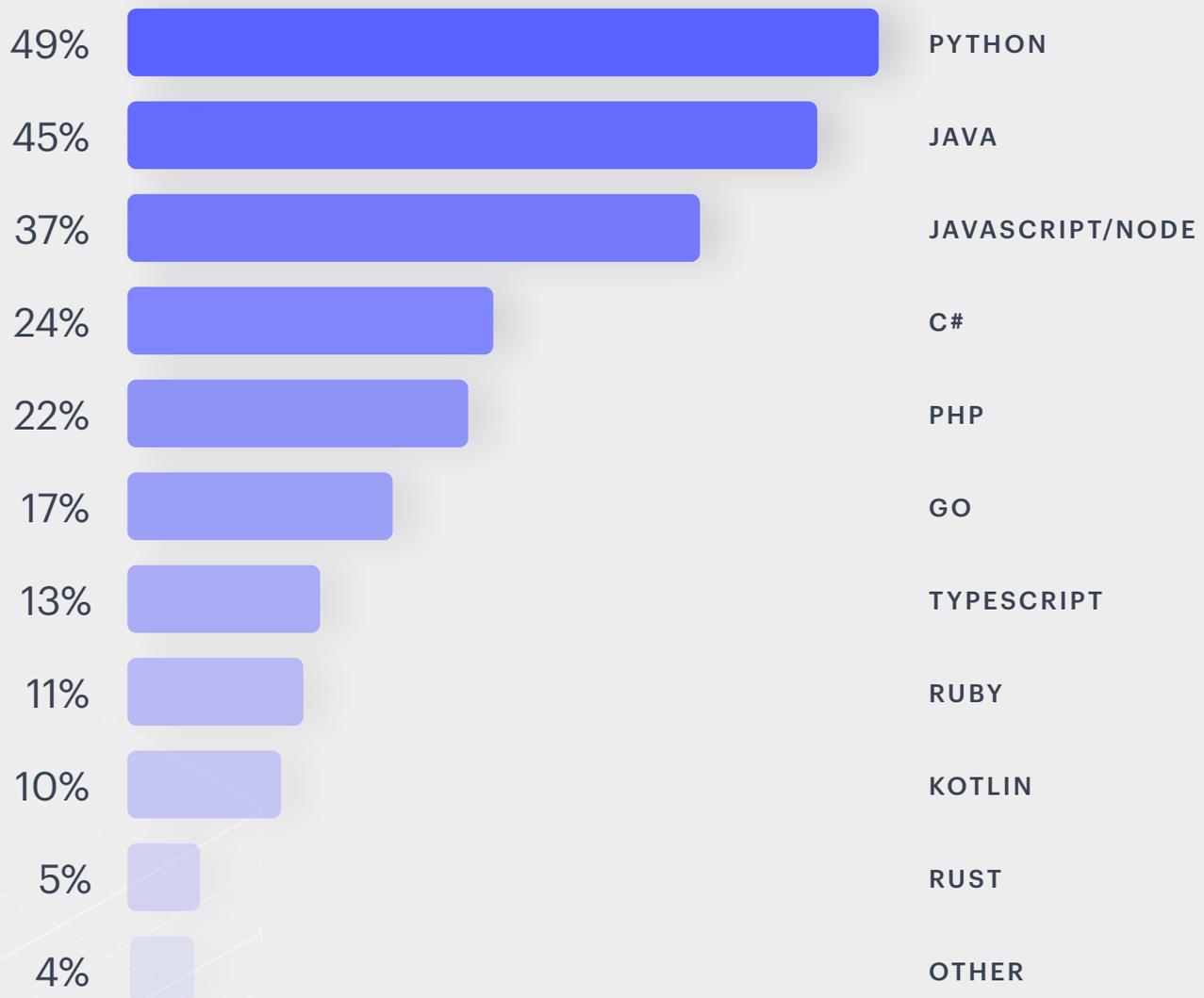
Python reigns supreme in database applications

Takeaway

Most organizations use at least two languages to develop database applications, with the top five languages consistent across industries and usage patterns.

We asked respondents to select all the programming languages they use when building database applications. Python (49%) is the most widely used, with Java (45%) a close second and JavaScript/Node.js (37%) in third place. Those rankings held true across each of the four components of the DTI. Restricting our focus to high-scoring organizations didn't change the rankings either.

The total responses add up to 233%, meaning that most organizations use at least two languages to develop database applications. Note that the top five languages in our survey are also the top five languages in the [June 2020 RedMonk Programming Language Rankings](#), although not in the same order.



Look for tab users if you're hiring

Takeaway

People who enjoy coding are far more likely to work with new technologies like NoSQL databases and Kubernetes on their own initiative. They have a higher DTI either because they introduced those new technologies into their workplaces or because they chose to work at a company that uses them.

For fun, we asked two personal questions at the end of the survey: Tabs or spaces? How often do you dream about coding (weekly/sometimes/never)?

Surprisingly, the answers were actually correlated with the DTI. People who used tabs and dream of coding weekly had a DTI nearly 0.7 points higher than those who use spaces and never dream of coding. That's the most statistically significant pair of variables in the entire survey! Aside from respondents' feelings about coding, DTI scores for tab users in all categories were slightly higher (roughly 0.1) than the scores for spaces users.

Uses tabs

DREAMS OF CODING WEEKLY

3.41

DREAMS OF CODING SOMETIMES

3.19

NEVER DREAMS OF CODING

2.82

Uses spaces

DREAMS OF CODING WEEKLY

3.32

DREAMS OF CODING SOMETIMES

3.13

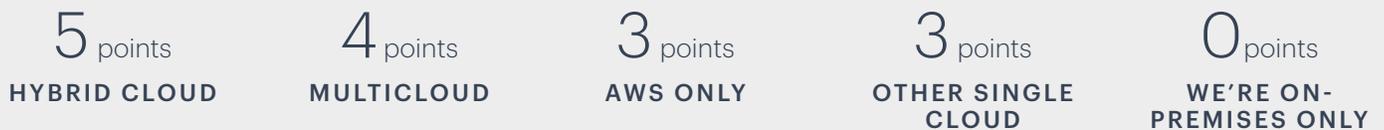
NEVER DREAMS OF CODING

2.74

Methodology

We used Survey Monkey to question 550 visitors to the Redis Labs virtual booth at AWS re:Invent. After storing their answers in a Redis database, we used the RediSearch module to do the data analysis presented here.

For each of the four technologies in the DTI, we asked a question with a range of clear, objective answers. For example, the possible answers and associated scores for the question “What is your cloud strategy?” were:



We used point values to convert the respondents’ textual answers into numeric scores. (Respondents did not know the point values associated with each answer.) A score of 4 or 5 qualified a respondent as an advanced user of a technology, giving us additional insights into the technology trends at organizations transforming their IT systems most aggressively.

Respondents per industry

We conducted this survey during AWS re:Invent 2020, so it’s not surprising that the majority of respondents belong to the technology (39%) sector. Finance (12%), retail (11%), healthcare (9%), and gaming (8%) together account for more than a third of the respondents. Other industries with significant representation include manufacturing, media, government, travel & hospitality, and education.



Respondents per country

The vast majority of respondents (91%) came from four countries: India (218), the United States (205), Canada (45), and the United Kingdom (32). The remaining 9% (50) came from at least 11 additional countries (some respondents listed their country as “Other”).



About Redis Labs

Data is the lifeline of every business, and [Redis Labs](#) helps organizations reimagine how quickly they can process, analyze, make predictions with, and take action on the data they generate. As the home of [Redis](#), the most popular open source database, we provide a competitive edge to global businesses with [Redis Enterprise](#), which delivers superior performance, unmatched reliability, and the best total cost of ownership. Redis Enterprise allows teams to build performance, scalability, security, and growth into their applications. Designed for the cloud-native world, Redis Enterprise uniquely unifies data across hybrid, multi-cloud, and global applications, to maximize your business potential.

Learn how Redis Labs can give you this edge at redislabs.com.