The background features a dark blue financial chart with white and light blue lines and bars. A prominent white bar is on the left side. The chart shows a peak around 10500.00 and a date of 2020-03-05. Other values like 10000.00 and 10000.00 are visible. The overall theme is data and analytics.

Disruption: Data and Analytics Modernization in the COVID-19 Era

COVID-19 has changed the world – and many companies are gaining benefits by rethinking their analytics models and data management processes to keep pace with the new realities of business, our latest research reveals.

The breathtaking speed and scale of the COVID-19 crisis have put tremendous levels of stress on analytics/models. They have also created challenges for ensuring that the data analytics/models employed are timely, complete and secure.

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Introduction

The impact of the COVID-19 pandemic has been sudden, broad and dramatic. It has disrupted supply chains, shifted vast numbers of employees to remote work, changed consumer behavior dramatically and driven abrupt shifts in demand.

With companies now increasingly relying on analytics/models to chart their course through a changing world, these whiplash-inducing shifts have underscored a key reality: Analytics/models and the data they depend on are “perishable.” Flexibility needs to replace rigidity.¹

This means that companies need to continuously refresh models, bring in new and modern data, and adapt more rapidly to changing events – or risk making decisions based on invalid projections. This was true before, but the breathtaking speed and scale of the COVID-19 crisis have put tremendous levels of stress on analytics/models. They have also created

challenges for ensuring that the data analytics/models employed are timely, complete and secure. This has become more difficult as companies need to analyze a growing range of data to keep track of changing business conditions, and also protect data that is being generated and shared by large numbers of employees who are working remotely.

Our recent Cognizant survey of 600 executives in the U.S. and Canada, which examined how the COVID crisis has impacted the way organizations handle data management and analytics/models, underscored the extent of these disruptions.



Fifty-four percent of our respondents said their companies' revenues had decreased by 5% or more in the six months following March 2020, compared to the same period in 2019, while 32% said revenues had increased by this amount. But many companies have experienced even greater volatility – 16% reported their revenues had decreased by 25% or more in that period and 14% reported revenue increases of this magnitude.

This volatility is not confined to specific industries. In every industry surveyed (see Methodology, page 23), at least one quarter of companies said that they had seen these large swings in revenues, with retail companies (38%) and manufacturing companies (32%) being the most likely to cite them.

Some companies recognize the need to keep analytics capabilities aligned with today's

changed – and changing – environment. In our research, 45% of companies said they had made major or significant changes to data management since the COVID-19 pandemic, while 46% said the same about their analytics/models.

These proactive companies appear to be satisfied with the progress they've made. They are more likely than less active companies to report that they are more confident than before in the projections generated by their analytics/models and that they have significantly increased their planned investments to further enhance their capabilities.

As companies work to improve their data and analytics, they should look beyond the immediate demands of dealing with COVID-19 and its resulting economic impact. Future disruptions

caused by unforeseen Black Swan events like COVID are highly likely, while the pace of even foreseen disruptions (e.g., climate change and social change) continues to accelerate. This means that the ability to work with current, accurate and relevant data and models that seamlessly adjust to change will be a vital business capability – and critical to informing advanced artificial intelligence (AI) capabilities needed to drive performance. Ultimately, those companies that successfully make the transition to new, more [agile approaches to analytics](#) – what we call intelligent decisioning² – will be in a better position to navigate a volatile world to stay one step ahead of change – and the competition.

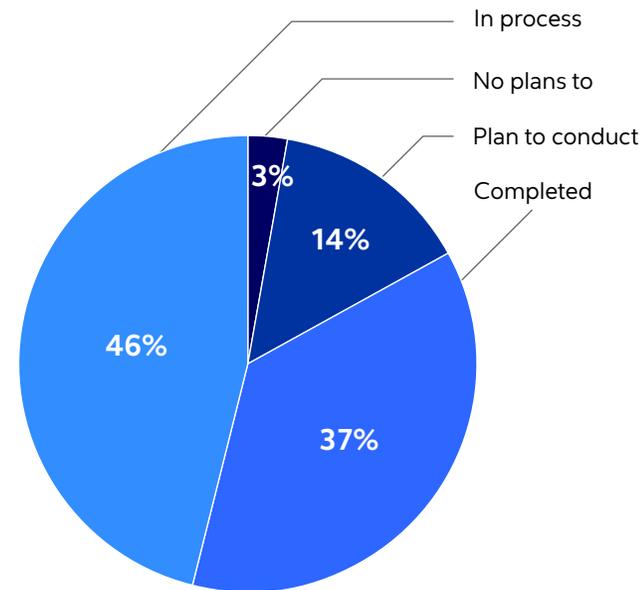
How COVID altered behaviors, data analytics needs

The actions taken during the pandemic – broad lockdowns, restrictions on travel and dining, the widespread use of remote work – coupled with the changing behavior of customers have upended the assumptions underpinning business analytics/models. In response, many companies have been assessing the impact that COVID-driven changes in business conditions have had on their analytics/models and on their data management processes. These efforts have provided a valuable starting point for understanding how analytics/models and data need to be updated.

Our research found that 83% of companies have either completed such assessments on their analytics/models (37%) or have them in process (46%) (see Figure 1). The most common issues identified were analytics/models being overly weighted toward pre-COVID data (51%) and not being flexible (46%).

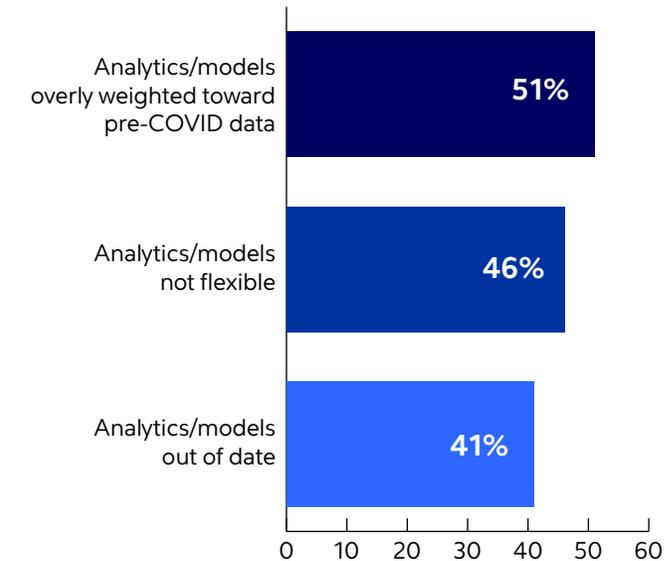
Analytics/models assessments

Has company conducted assessment of impact of changed business conditions on analytics/models?



Analytics/models issues identified

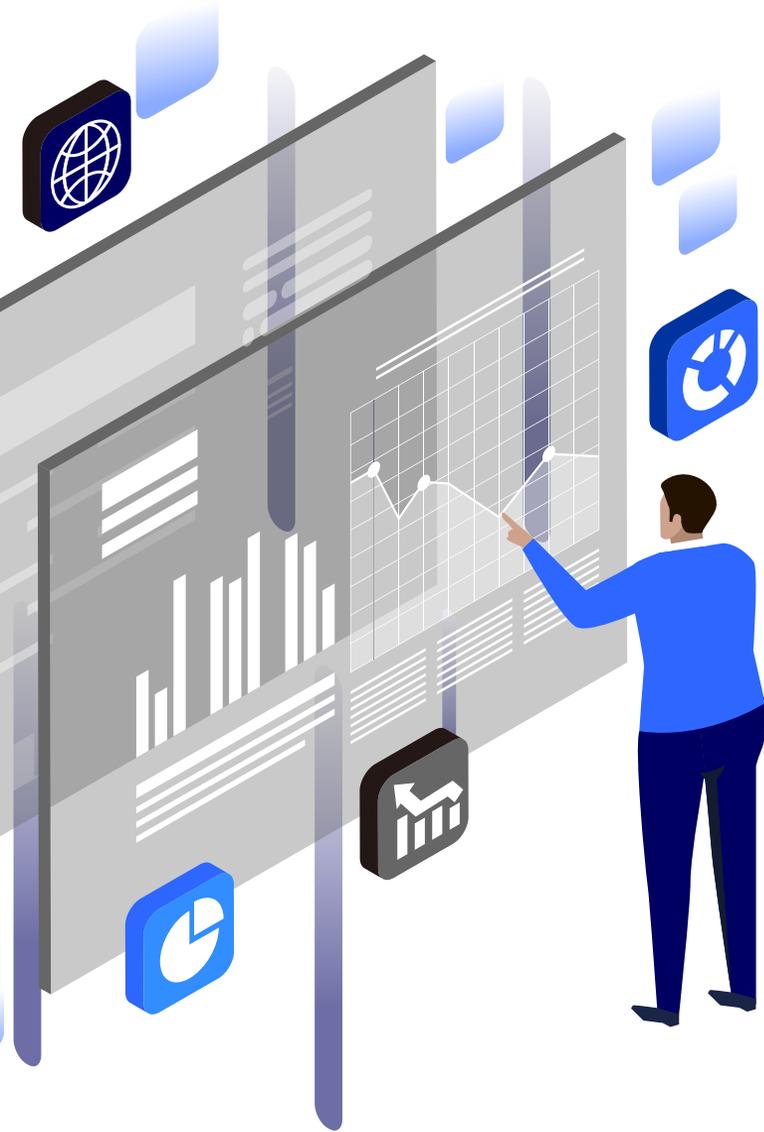
Percentages total more than 100% since respondents could make multiple selections.



Response base: For chart above left, 600 North American business and IT leaders. For chart above right, 214 respondents who said their companies had completed an assessment.

Source: Cognizant

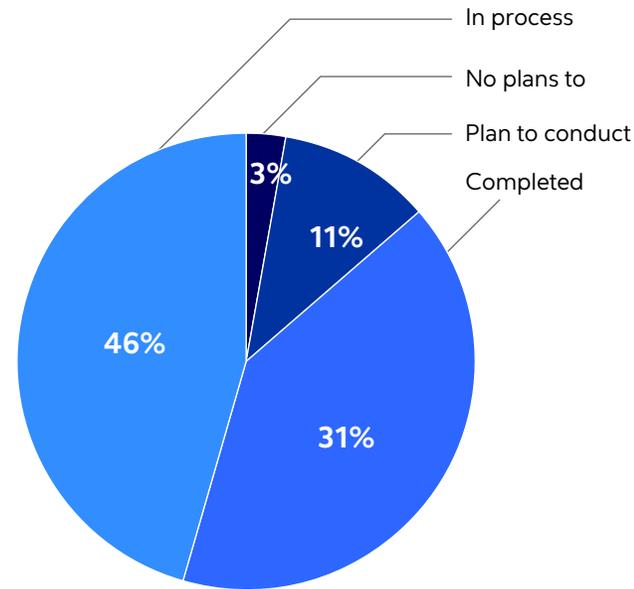
Figure 1



When it comes to data management, 87% of companies have completed such assessments (41%) or are in the process of doing so (46%) (see Figure 2). The most common issues identified were incomplete data (48%) and untimely data (47%).

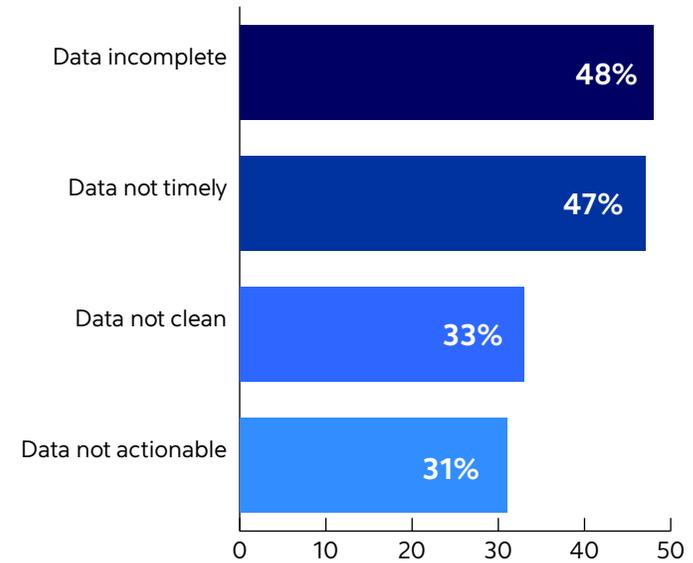
Data management assessments

Has company conducted assessment of impact of changed business conditions on data management?



Data management issues identified

Percentages total more than 100% since respondents could make multiple selections.



Response base: For chart above left, 600 North American business and IT leaders. For chart above right, 231 respondents who said their companies had completed an assessment.
Source: Cognizant
 Figure 2

Updating models & data for a post-COVID-19 world

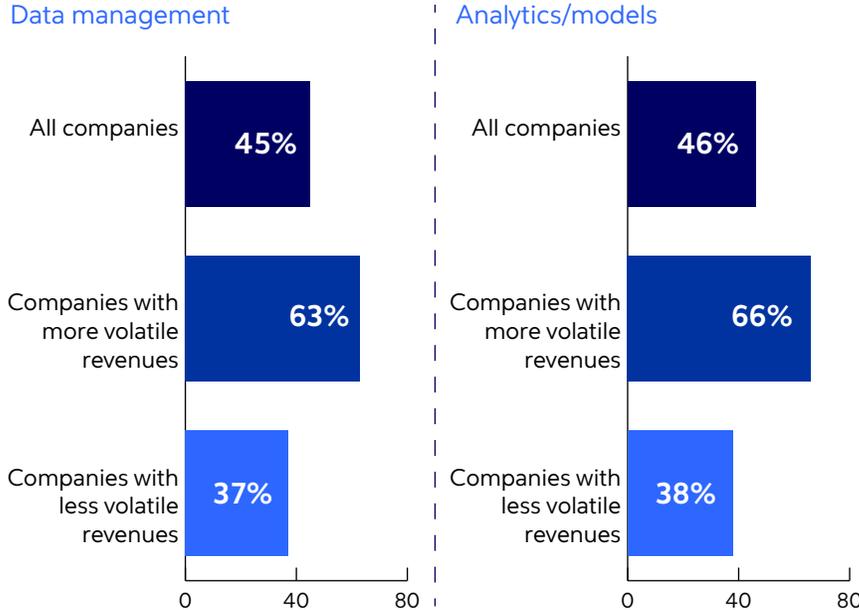
A significant number of companies have been taking steps to reshape their approach to analytics. Roughly 45% of the surveyed companies said they had made major or significant changes to their data management and to their analytics/models. Looking ahead, roughly half the respondents expected their companies to make additional major or significant changes in each area over the next 12 months.

Respondents at companies that have experienced especially volatile revenues in the post-COVID-19 period (i.e., revenue increases or decreases of 25% or greater) more often reported that they had made major or significant changes. For example, companies with more volatile revenues were more likely than those with more stable revenues to report that they had made major/significant changes to data management (63% vs. 37%) and analytics/models (66% vs. 38%) (see Figure 3).

In a changing world, these types of efforts can pay off – and often do so quickly. For example, we helped a large convenience store chain adjust its analytics and data to accurately identify which products were selling the fastest in its stores during the pandemic. This allowed the retailer to proactively take steps to ensure that it had those in-demand goods in stock, and to place them near checkout counters so customers could easily find them. Ultimately, the client said this drove an increase in per-customer purchases of those products of about 25%.

Changes in post-COVID period

Percentage of companies making major or significant changes.



Response base: 600 North American business and IT leaders

Source: Cognizant

Figure 3

“The way our customers interact now has changed completely, so we are having a hard time projecting the new behavior because it’s nothing like we have seen before.”

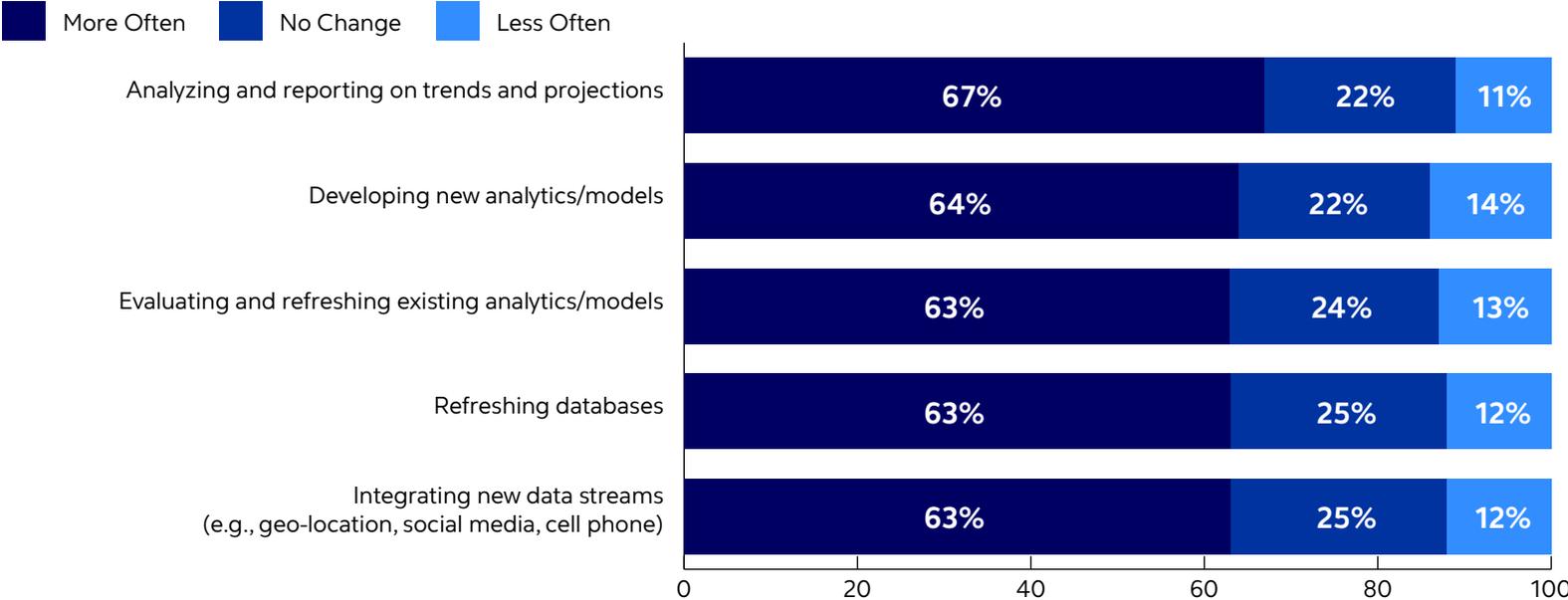
**Chief Financial Officer
Financial Services company**



Post-COVID enhancements

Roughly two-thirds of companies said that since the emergence of COVID, they have been developing new analytics/models, evaluating and refreshing their existing analytics/models, refreshing databases and integrating new data streams such as geo-location, social media and cell phone data. Here again, companies that had made major/significant changes to their models were more likely to be pursuing these activities. For example, these proactive companies were more likely than other organizations to report that they are developing new analytics/models (77% vs. 48%) and integrating new data streams (75% vs. 48%).

Change in frequency of activities in post-COVID period compared to before



Response base: 600 North American business and IT leaders
Source: Cognizant
Figure 4

“Data is having to be aggregated from far more locations than before, since everyone is working from home. And we are having to find a way to utilize that data across different platforms that we weren’t using previously.”

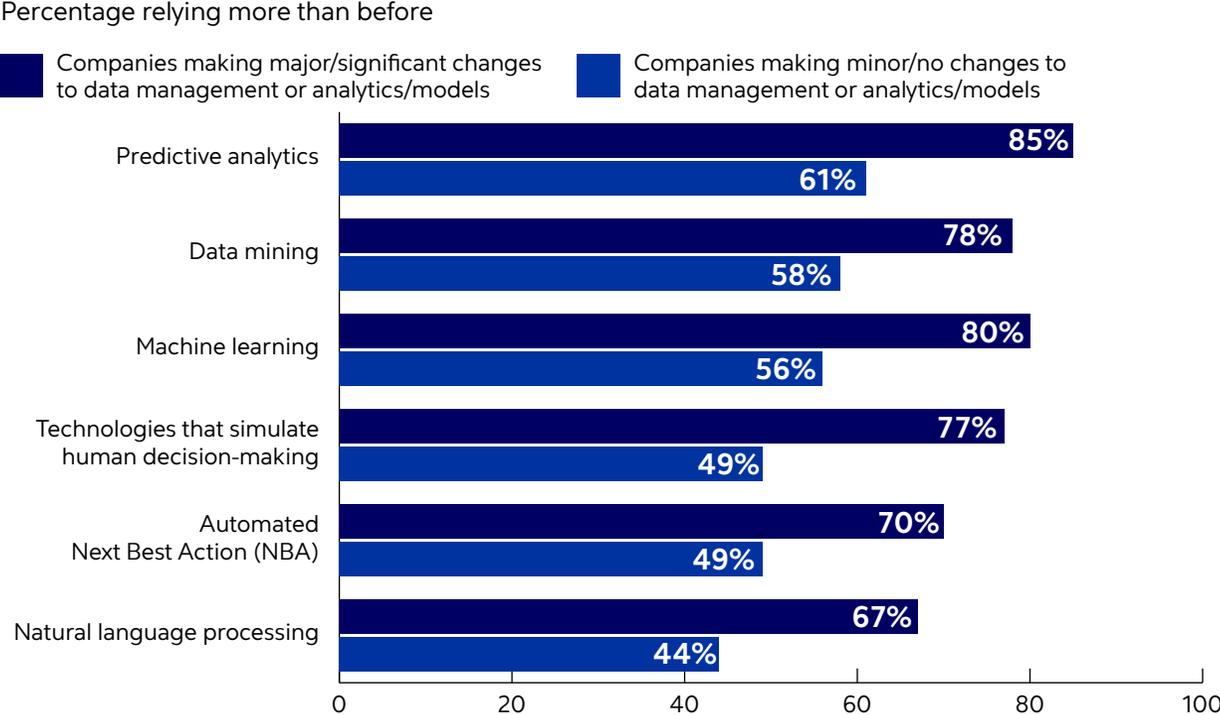
**Vice President, Sales & Marketing
Insurance company**

More sophisticated practices & technology tools

In addition to improving their models and data management, many companies have increased their use of practices designed to help them gain a better understanding of a more volatile and unpredictable world. Three-quarters of companies said that since the crisis they had started relying more heavily on scenario planning to assess the potential impact of extreme events, while 71% said they were making greater use of real-time data and 67% had increased their use of descriptive analytics of current trends.

Many companies have also increased their use of advanced technologies during the pandemic in order to take better advantage of their data, analyze complex trends and deepen their understanding of future business conditions to chart a course of action. In this area, companies that had proactively made substantial upgrades to their data management or analytics/models are leading the way. For example, these proactive companies more often said they were relying more than before on natural language processing (67% vs. 44% among less proactive companies) (see Figure 5).

Change in reliance on technology tools in post-COVID period



Response base: 600 North American business and IT leaders

Note: Multiple responses permitted.

Source: Cognizant

Figure 5

“We have a heavier emphasis on interpreting data using artificial intelligence metrics to guide decision-making at the corporate level.”

**Chief Information Officer
Retail company**

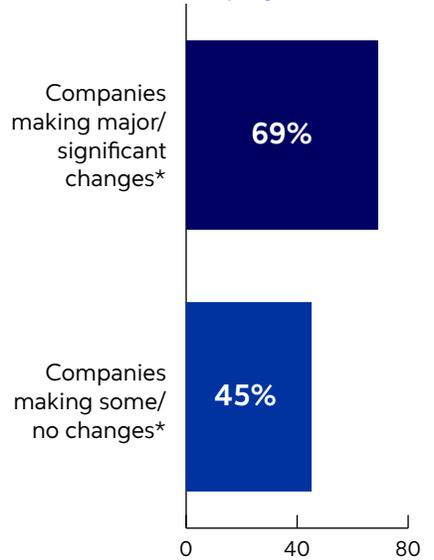


Post-COVID: Increasing reliance on analytics

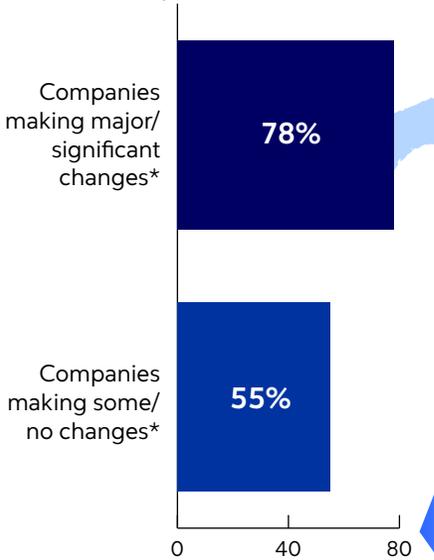
Despite the challenges of adapting analytics to the realities of the pandemic, proactive companies are more confident that they have made progress. Almost 70% of companies that have made major or significant changes to their data management or analytics/models are now more confident in their projections, compared with 45% among less active companies. They are also more likely than other companies to say they are now relying more on their analytics/models (78% vs. 55%) than they did before the pandemic (see Figure 6).

Benefits from enhancing data management and analytics/models

Percentage of companies more confident in projections



Percentage of companies relying more on analytics/models



* Changes to data management or analytics/models
Response base: 600 North American business and IT leaders
Source: Cognizant
Figure 6



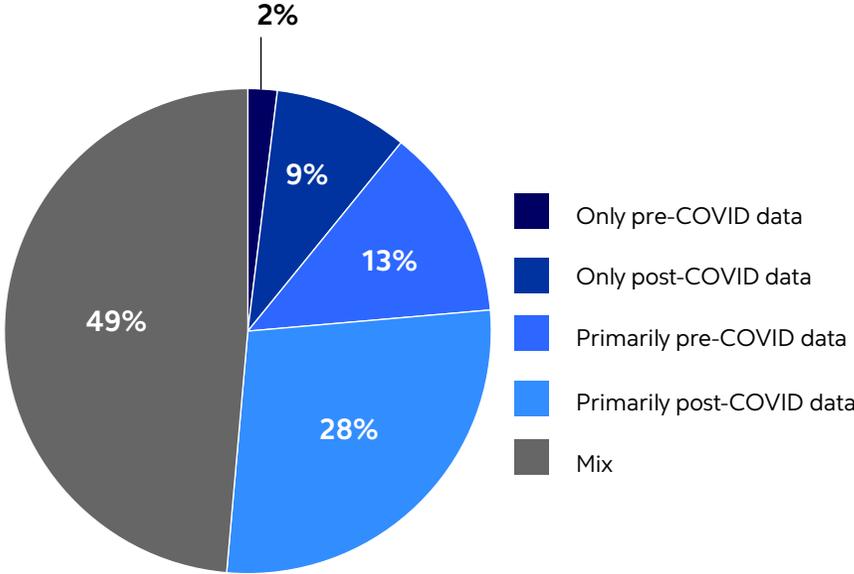
Managing data in a time of disruptive change

Companies working to improve their analytics/models are taking an important step forward. But analytics processes are only as good as the data they are based on, and the turmoil driven by COVID-19 has meant that pre-pandemic data may well be out of date. Many companies have been taking action on this front, with 37% of respondents saying the analytics/models at their companies now rely exclusively or primarily on post-COVID data (from March 2020 and later), while 49% said they rely on an equal mix of pre- and post-COVID data (see Figure 7).

Here, retail companies stood out as an exception to the reliance on post-COVID data. Only 25% of the retail companies surveyed said they relied primarily on post-COVID data, compared to between 35% and 40% of companies in other industries. Retail companies were more likely than others to report that they rely on an equal mix of pre-COVID and post-COVID data. It appears that retail companies are less likely to believe that the widespread change in consumer buying habits is the new normal and expect business indicators to move closer to their historical trends over time.

Companies that decide to mix pre-COVID and post-COVID data must decide what approach to take. Roughly 70% of respondents said their companies use smoothing techniques (such as moving averages) either extensively (23%) or significantly (49%) to combine such data.

Reliance on pre-COVID vs. post-COVID data



Response base: 600 North American business and IT leaders
Source: Cognizant
Figure 7

“Our data is outdated. It’s mostly based on pre-pandemic so it may not be applicable to decisions we need to make today.”

Chief Information Officer
Manufacturing company



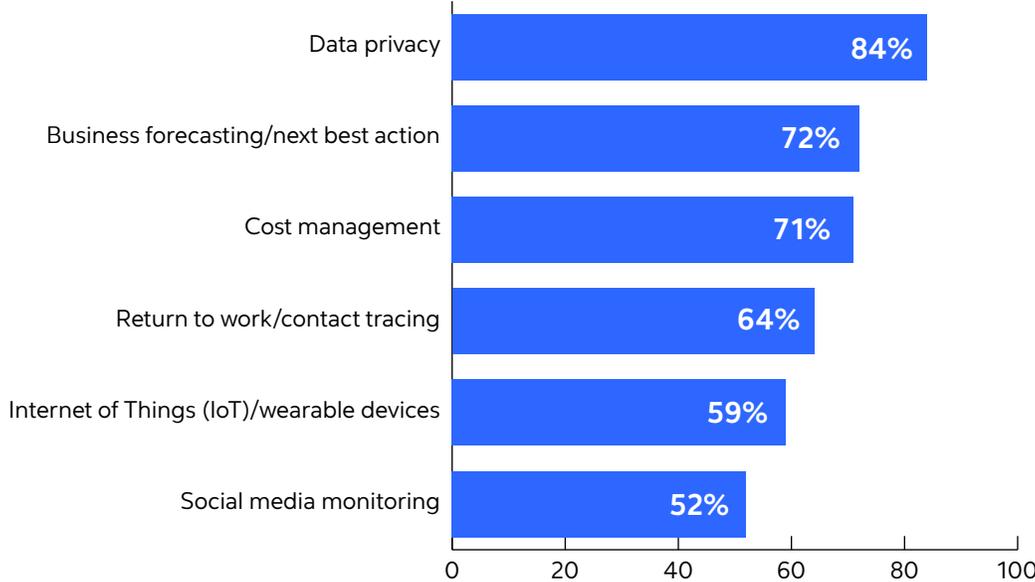
Data privacy: A continuing and growing challenge

Data-related issues also came to the fore when respondents were asked about their analytics and data management priorities going forward. Data privacy was cited as a top priority by 84% of respondents, while about 70% each cited business forecasting/next best action technologies and cost management. And with companies considering how best to restore normal operations after an extended period of reduced activity and work-at-home policies, 64% said return to work/contact tracing (see Figure 8).

The high ranking of data privacy issues is not surprising. Such concerns predate COVID, as companies have contended with data privacy rules such as California’s Consumer Privacy Act and the EU’s General Data Protection Regulation (GDPR). But COVID-19 has added an additional layer of complexity to those existing challenges. With many employees working off site and often using personal devices that are outside the company’s firewall and security procedures, the protection of data has become an even greater concern. In our survey, 43% of respondents reported that all or almost all of their companies’ data resides in the cloud, and another 35% said that most of their data does. That points to increased risk, because companies often fail to fully address security issues when moving to the cloud.

Priorities over the next 12 months for data management and analytics/models

Percentage very high or high priority



Response base: 600 North American business and IT leaders

Note: Multiple responses permitted.

Source: Cognizant

Figure 8

“One of the greatest challenges we have faced as a result of the ongoing pandemic is moving from a centralized to a remote work space, which in return has forced employees to work from home, thereby exposing our business to cyber fraud and privacy risk.”

**Chief Information Officer
Technology company**

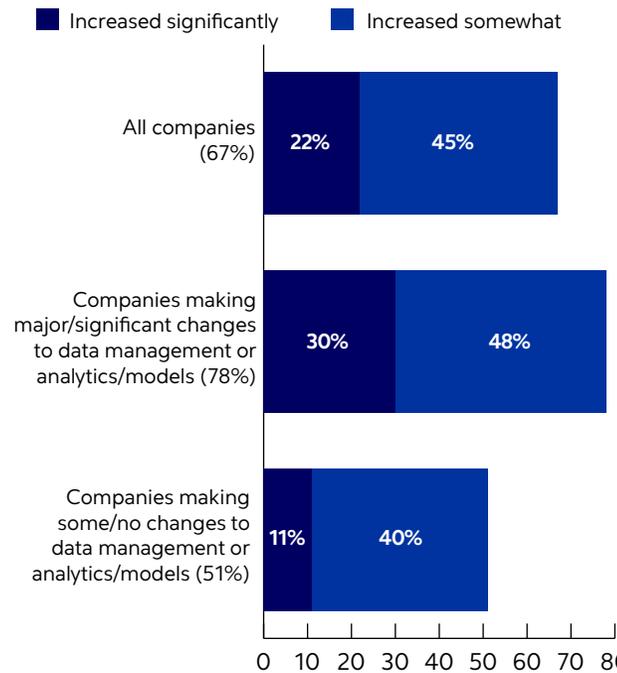
Upping the ante in analytics and data management

As the recent focus on updating models and data management might suggest, many survey respondents – about two-thirds – said their companies had increased their planned level of investments in these areas since the beginning of 2020. These increases were especially marked among companies that have made major or significant changes to data management and/or analytics/models. Seventy-eight percent of these companies said they had increased their planned investments in these areas since the start of the year, compared with 51% of other companies. In addition, 30% of these proactive companies said they increased their planned investment significantly, compared with just 11% among other companies (see Figure 9).

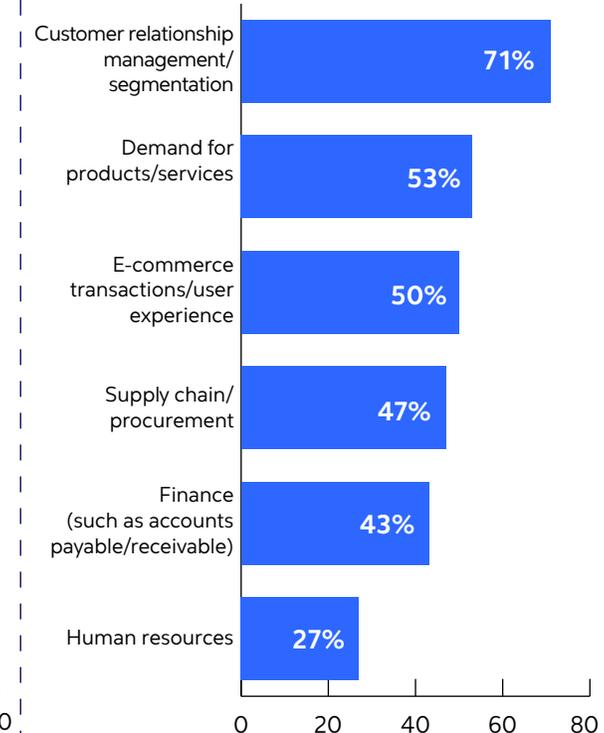
When asked about their investment priorities in the coming year, respondents most often cited customer relationship management/segmentation (71%), followed by demand for products/services (53%) and e-commerce transactions/user experience (50%). These priorities are indicative of the heightened need to understand and keep up with the changing behaviors of customers – especially their dramatically increased use of online channels.

Investment in data management and analytics/models

Change since January 2020 in planned level of investment



Investment priorities ranked in top three



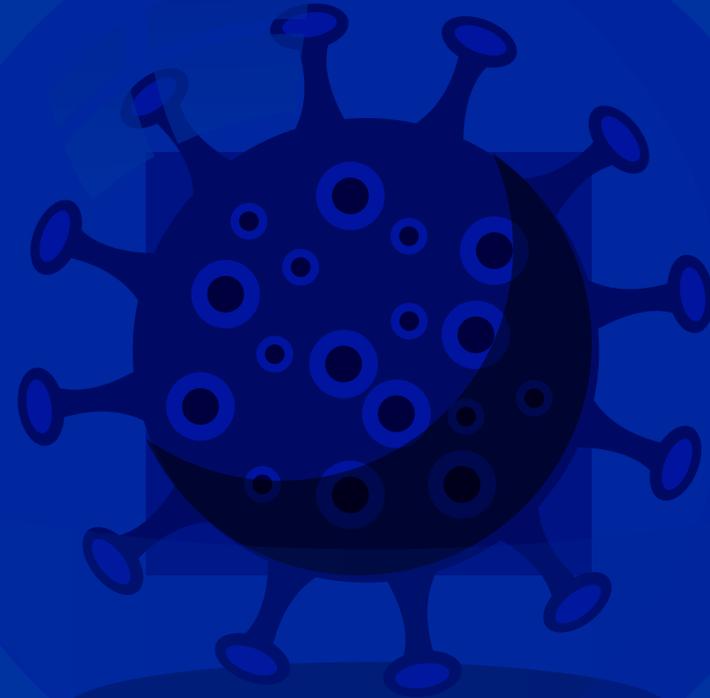
Response base: 600 North American business and IT leaders

Source: Cognizant

Figure 9

“I think the biggest challenge is layering in variability for the unpredictable nature of the recovery period and a possible second surge.”

**Senior Director, Finance
Healthcare/Life Sciences company**



Strengthening data and analytics for an uncertain future

Many companies recognize the imperative of updating analytics/models and data management to cope with the changes driven by the COVID-19 crisis. Looking ahead, they need to build on this understanding and incorporate the concept of model and data perishability into their analytics processes.

Regarding data management, companies can cast a wider net when gathering data in order to create a more complete picture of conditions and tap into early-warning signals of change. That can mean using not only transactional and operational data, but also data from social media and the Internet of Things (IoT) to help the organization sense and respond to changes before the competition. Using data from multiple sources also improves the ability to accurately sense underlying trends that are sometimes obscured by poor data quality.

In assessing perishability, companies need to look at more than simply the age of their data. They should instead consider data in three dimensions, taking steps to help ensure that their data is:

- I Current:** It should reflect recent changes that could have a significant impact on the company and business conditions, and have been acquired with enough lead time to allow the companies to respond effectively.
- I Accurate:** It should be cleansed and validated to ensure it comes from a reliable source, has not been compromised and is in a usable format.
- I Relevant:** It should enable meaningful predictions of future conditions and support insights that the company can use to take action.

Assessing data across these dimensions should not be a one-time event, but rather an ongoing process, because shifting conditions can quickly affect how current, accurate and relevant data is. This constant reassessment is especially important when dealing with data from sources such as social media and IoT, which tend to vary significantly over compressed timeframes.



Artificial intelligence and the move to agile analytics

AI can play a vital role in these efforts. It can be used to continually and automatically assess data currency, relevance and accuracy; identify which data is most useful; and discard the rest. This helps avoid spending the time and money – and potentially working with invalid predictions – that can result from using the wrong data to train analytics/models.

AI can do much the same with analytics/models, creating the foundation for a new approach called “agile analytics.” Traditionally, analytics have built on historical events and interpretations to reduce uncertainty and provide a focused view of the future that is as accurate as possible. This view is typically used to create annual or quarterly forecasts to help decision-makers.

Running models with more varied data makes them more robust. Although it may seem like a good idea to train models for use in a particular

geography or time period, it is often better to expose them to more varied situations (e.g., by including data from other geographies and time periods). That’s to help ensure the model is not merely repeating specific past experiences, but also developing a better understanding of the underlying causes and effects, which allows it to perform with greater precision.

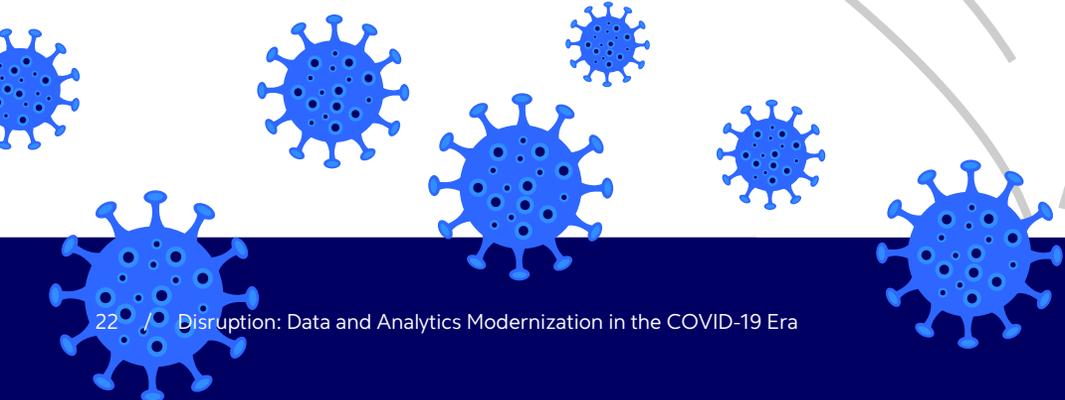
The traditional type of analytics is still highly valuable. But in a more volatile and unpredictable environment, companies can benefit from employing agile analytics, which is designed to help decision-makers in situations where much of the information they need is fast-changing, unknown or even unknowable, and there are no simple answers.



Agile analytics provides insights into trends and a directional understanding of evolving conditions, rather than a precise forecast of an outcome. It uses advanced AI to test millions of new models against real-world data to continuously develop new scenarios and ranges of forecasts. It can also produce multiple “generations” of analytic models and assess their accuracy against digital twins of real-world conditions to support continual improvement of those models. With this approach, decision-makers can consider a range of scenarios, identify possible shifts early on and proactively develop a set of possible responses that can be put into effect, based on how actual events unfold.

COVID-19 has provided a sharp reminder of the deep impact that sudden disruptions can have – but it is not likely to be the last such event. With factors ranging from future infectious diseases, hurricanes and climate change to geopolitics, evolving technology and relentless competition at play, volatile change has become a regular feature of the business landscape.

From an analytics and data management point of view, the pandemic has shed new light on the risks companies face from perishable data and outdated models. Companies that work now to improve their data and analytics capabilities will be better prepared to manage through tomorrow’s disruptions, and compete more effectively on a rapidly shifting playing field.

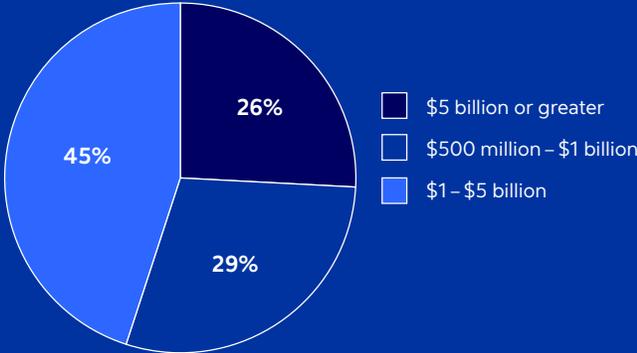


Methodology

Cognizant surveyed 600 executives – 500 in the U.S. and 100 in Canada – on the experiences of their companies with data management and analytics/models during the COVID-19 pandemic. The survey was conducted online in September 2020. Respondents were familiar with how their companies employ data management and analytics/models.

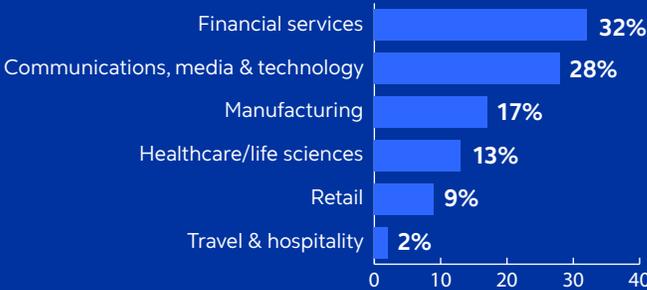
Respondents represented a range of company sizes and industries. C-level executives comprised 59% of the respondents, with 13% being Executive Vice President/ Senior Vice President/ Vice President and 28% having the title of Senior Director/Director.

Company revenues



Response base: 600 North American business and IT leaders
Source: Cognizant

Respondents by industry



Note: Percentages do not total to 100% due to rounding.

Respondents by function



Endnotes

¹ Leaders need data-driven decisioning to deal with today's increasingly unpredictable world. Organizational and technical challenges prevent businesses from unlocking the value of the data they already have. Today, businesses are focused on making data accessible, reliable and compliant in order to empower critical real-time decisions.

² As business problems become more complex, so do the decision-making processes necessary to solve them. The core of better, faster decisioning is data. But data alone is no longer enough.

Today, companies are activating data at scale, turning vast amounts of information into tangible decisions that drive the enterprise forward. With intelligent decisioning, businesses can finally realize the potential of data and AI.

Learn More

For more information and to find out more about Cognizant data & AI services, visit www.cognizant.com

About Cognizant's Artificial Intelligence Practice

As part of Cognizant Digital Business, Cognizant's Artificial Intelligence Practice provides advanced data collection and management expertise, as well as artificial intelligence and analytics capabilities that help clients create highly personalized digital experiences, products and services at every touchpoint of the customer journey. Our AI solutions glean insights from data to inform decision-making, improve operations efficiencies and reduce costs. We apply Evolutionary AI, Conversational AI and decision support solutions built on machine learning, deep learning and advanced analytics techniques to help our clients optimize their business/IT strategy, identify new growth areas and outperform the competition. To learn more, visit us at cognizant.com/ai.

About Cognizant

Cognizant (Nasdaq-100: CTSI) is one of the world's leading professional services companies, transforming clients' business, operating and technology models for the digital era. Our unique industry-based, consultative approach helps clients envision, build and run more innovative and efficient businesses. Headquartered in the U.S., Cognizant is ranked 194 on the Fortune 500 and is consistently listed among the most admired companies in the world. Learn how Cognizant helps clients lead with digital at www.cognizant.com or follow us [@Cognizant](https://twitter.com/Cognizant).



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