

Travel, Logistics & Transport Infrastructure Practice

# A fresh approach to logistics forecasting in 2021

Ninety-one percent of surveyed executives acknowledge that forecasting in 2021 needs to look different. We outline one potential approach.

*by Tom Bartman, Kevin Dolan, Rohit Panikkar, and Mark Williams*



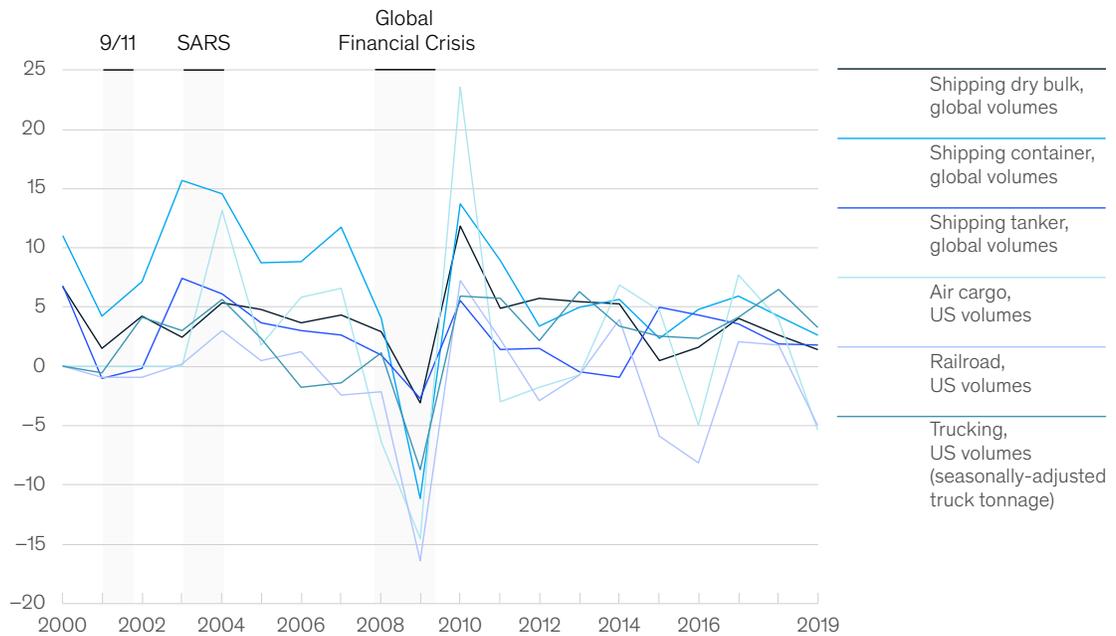
**The pandemic has disrupted** the global economy and supply chains. Global GDP is expected to shrink 5.2 percent in 2020.<sup>1</sup> Different logistics subsectors have recovered from previous crises within 12 months (Exhibit 1), but the shape and timing of this recovery, and which freight type and lane will recover and when, remain uncertain.<sup>2</sup> In our Global Manufacturing & Supply Chain Pulse Survey this year,<sup>3</sup> a third of companies reported facing material and other supply-chain shortages. Given the threat of disruption, 60 percent of our respondents in a recent budgeting and planning survey are building multiple (three or more) forecast scenarios for next year and 91 percent agree that their company's monthly reviews need to look different (Exhibit 2).<sup>4</sup>

Given this uncertainty, forecasting errors are bound to occur, particularly with conventional models that are built only upon top-level macroeconomic indicators or based on prior-year performance. This year has shown us that logistics companies no longer have a reliable baseline for building their models. Indeed, model errors in forecasting are rising, and key business metrics (such as operating profit and credit ratings) are affected by unforeseen changes in underlying drivers such as foreign exchange rates, available cargo capacity, and commodity prices. A solution for 2021 could be creating real-time dashboards based on modeling of these underlying business drivers over multiple scenarios.

Exhibit 1

**Historically, crises have had varied impacts among logistics subsectors, but most reverted to full recovery within about 12 months.**

**Year-over-year change in trade volumes by transportation mode, %, January 2000–December 2019**



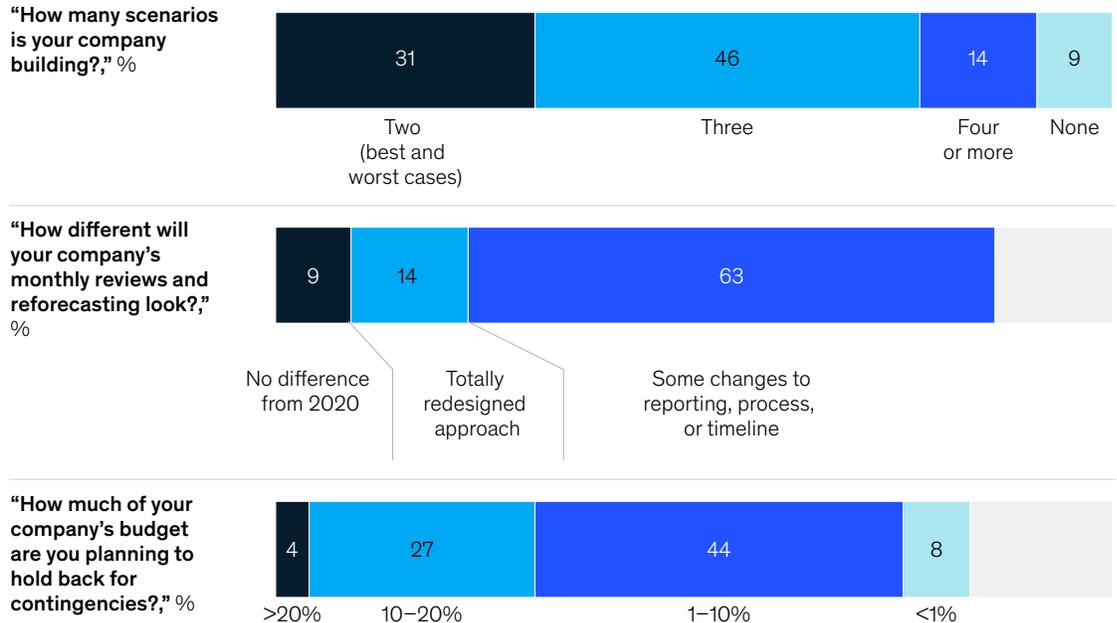
Source: US Census Bureau

<sup>1</sup> "Global outlook: Pandemic, recession: The global economy in crisis," *Global economic prospects*, World Bank, June 1, 2020, [worldbank.org](http://worldbank.org).  
<sup>2</sup> Jeff Condon, Sven Gailus, Florian Neuhaus, and Maite Peña-Alcaraz, "Global freight flows after COVID-19: What's next?," July 2, 2020, [McKinsey.com](http://McKinsey.com).  
<sup>3</sup> McKinsey COVID-19: Global Manufacturing & Supply Chain Pulse Survey, 2020.  
<sup>4</sup> McKinsey 2021 Budgeting and Strategic Planning Survey, September 2020.

Exhibit 2

## Uncertainty and the need to do things differently are top of mind.

Responses to survey questions, n = 473



Note: Some responses were left blank.  
Source: 2021 Budgeting and Strategic Planning Webinar survey, September 23, 2020

### Why good forecasts go bad

Many logistics companies have implemented relatively sophisticated forecasting processes and models. However, the pandemic has increased the margin of error of many of these models, and continuing to use them this year could lead to underutilization, lost revenue, or lost market share. We see three reasons why existing models are often unable to adjust to the next normal:

- **Dimensionality.** Many senior executives have developed a strong intuition that influences their planning. The multiple dimensions that will facilitate the COVID-19 recovery are interrelated, and therefore the scenario planning that is required now may be too complex to rely on intuition. Companies could consider

the high-low scenario approach to developing “uncertainty cubes”—tracking key financial market variables, quarter by quarter, across the nine macroeconomic recovery scenarios<sup>5</sup> (Exhibit 3).

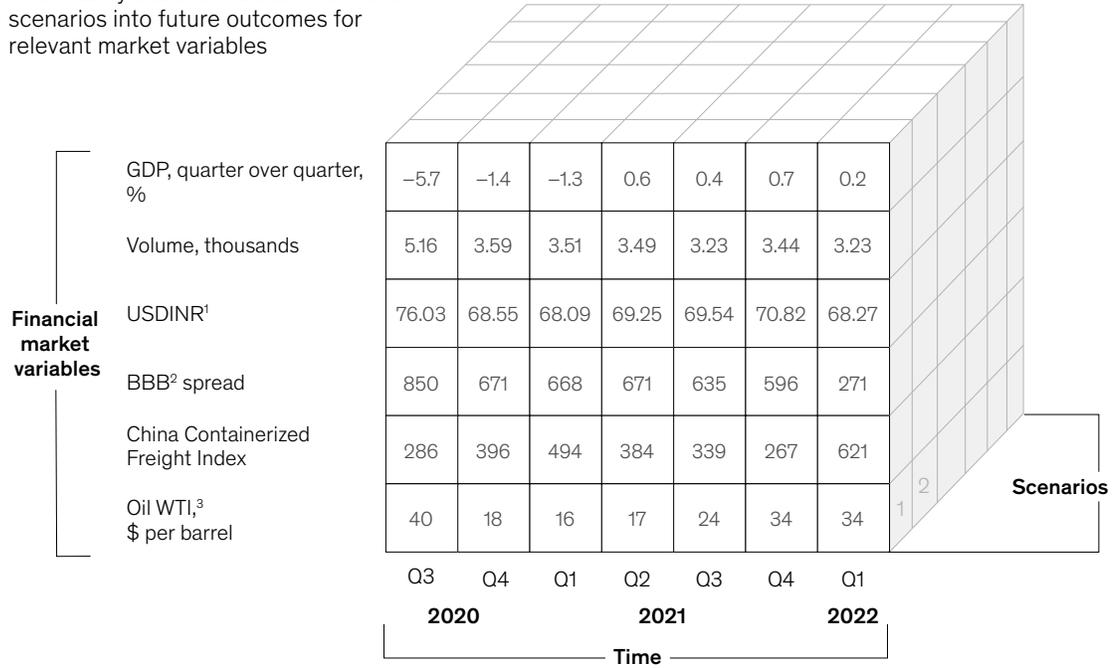
- **Externality.** Reliance solely on internal historical data no longer works to forecast or even to create a reliable baseline. The crisis has also shown the interdependence of different segments in travel and logistics, and the extent to which external shocks can have an impact on businesses. Accounting for relevant external variables related to demand (such as e-commerce penetration) and supply (such as available belly capacity in air cargo) makes for more robust models.

<sup>5</sup>“Nine scenarios for the COVID-19 economy,” October 29, 2020, McKinsey.com.

Exhibit 3

**‘Uncertainty cubes’ allow companies to realistically calculate future financials for each macroscenarios.**

Uncertainty cube to translate economic scenarios into future outcomes for relevant market variables



<sup>1</sup>Dollar-to-rupee trade pairing.  
<sup>2</sup>Before breaking bulk.  
<sup>3</sup>West Texas Intermediate.

— **Granularity.** Macroeconomic indicators may not accurately reflect how different micro markets—for instance, geographic subregions or customer segments—are behaving. This was true before the pandemic, but the current crisis has increased the number of variables that need to be accounted for. Models with higher granularity are likely to be more robust.

**Better forecasting for 2021**

Fortunately, today’s data availability and analytics capacity can create forecasting models that meet the external, dimensional, and granular requirements for next year. Analytics may not yield

perfect foresight, but they can help identify the underlying drivers—that is, the variables to track and build related insights around—that will most affect a business’s top line in 2021.

The two principal changes we see are an expanding number of scenarios and models built on business drivers. Likely scenarios and underlying business drivers inform forecasts modeled using these scenarios and drivers (Exhibits 4 and 5).<sup>6</sup> There are four advantages to this approach:

— **A broad range of possible outcomes.** Multiple scenarios allow forecasting across a broader range of possible outcomes, preparing

<sup>6</sup>“COVID-19 and the great reset: Briefing note #32,” COVID-19: Implications for business, updated November 18, 2020, McKinsey.com.

executives better for next year. This is especially important for liquidity planning and stress testing.

- **High-frequency data.** Drivers are often built on high-frequency data that are tracked faster than leads or sales. Driver-based dashboards can therefore forecast demand, highlighting changes in predicted models before they affect the top line.

- **External data.** Because the market has changed so much from the prepandemic status quo, using a company’s historical data to forecast a trendline won’t work. Developing an accurate forecast requires building a new baseline based on the external data that affects a company’s business. This approach allows companies to build models by combining proprietary historical and pipeline volumes with hundreds of external data points that can contribute to stronger forecasts in this time of uncertainty.

Exhibit 4

**First, the most likely scenarios are agreed upon, and underlying drivers are identified.**

**Primary scenarios**

Long-term impact	Drawn-out recovery	Effective interventions
Multiple rounds of virus recurrence followed by drawn-out economic impact	Drawn-out epidemiological and economic crisis leads to sustained drop of the economy	Effective economic response drives return to prepandemic conditions with slight uptick in e-commerce penetration
		
<b>B2</b>	<b>A1</b>	<b>A2</b>

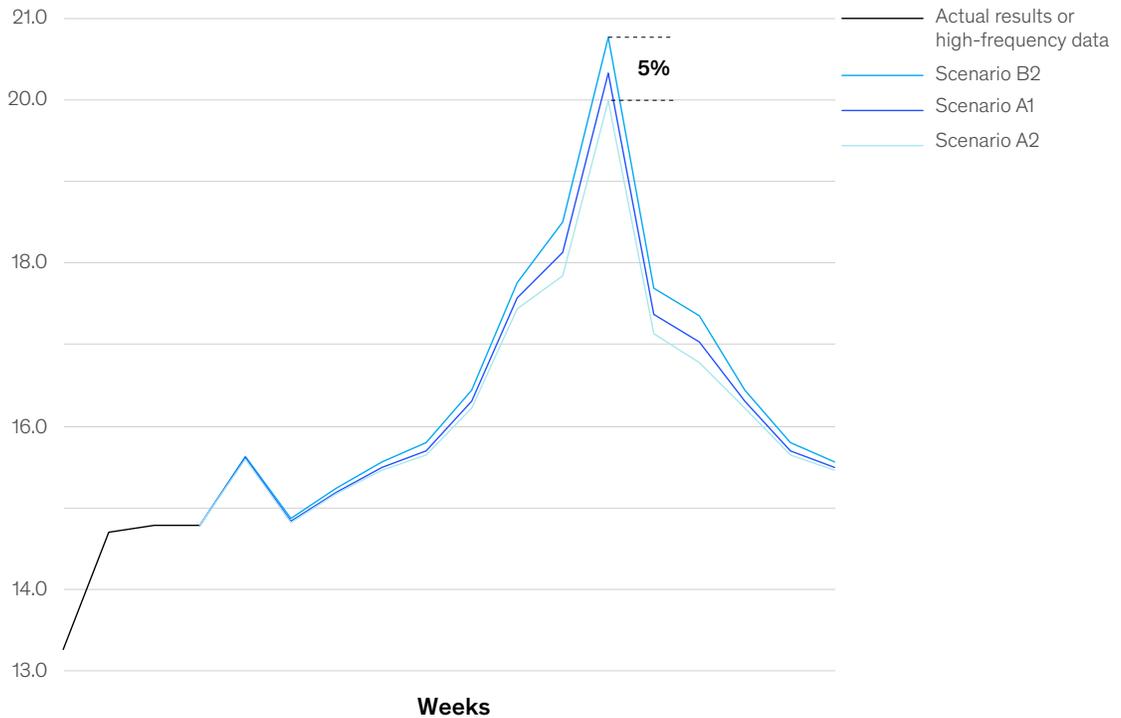
**Parameter**

Model	Current state	In peak	Past peak, in plateau	Past peak
B2C	Long-term e-commerce impact	+25%	+15%	+5%
Category B	Category B strategy	Secular decline, -20% volume	Temporary shock, -10% volume	Limited impact, flat volume
B2B	Drop in consumer spending	-25%	- 15%	-5%
	Unemployment rate, end of 2020	12%	8%	6%
	Time for industrial production return	3 years	2 years	1 year
All	Capacity constraint	5% below baseline	No change	5% above baseline
	Market share	15% below baseline	5% below baseline	No change

Exhibit 5

**Next, forecasts are prepared using high-frequency data associated with the relevant drivers.**

**Volume demand, millions**



— **Fact bases.** Driver-based planning gives structure and quantifies some of the leadership intuition that influences traditional forecasting (for instance, predicting that if e-commerce penetration grows, one business will grow but another business will have lower demand).

These forecast models and scenarios can have several applications, as the following examples demonstrate.

**An air cargo operator** used machine-learning techniques to help predict near-term, lane-level demand at one-, two-, and four-week horizons. Better near-term forecasts allowed teams to

adjust spot prices as demand recovered in certain trade lanes, switch capacity quickly among lanes, and adjust bid price settings a month in advance. Not only did yields rise 3 percent, but the operator also reduced error in demand prediction to 7 percent—a more than 50 percent improvement on previous models.

**A port terminal operator** modeled trade flow scenarios alongside drivers to forecast possible ranges of trade flow outputs through its terminals.<sup>7</sup> Within these ranges, the operator identified a set of trigger points—a sudden drop in one variable was found, for example, to be a good predictor of a near-term fall in volumes—that could guide leadership

<sup>7</sup>Condon, Gailus, Neuhaus, and Peña-Alcaraz, "Global freight flows after COVID-19: What's next?"

# An integrated, driver-based performance management cycle informs and enriches discussions, decisions, and execution.

decision making. This model enabled leadership to justify injecting capital into planned equipment.

*A postal operator's* financial planning and analysis team needed to understand how the pandemic and several underlying drivers might shape the organization's volume and volume mix. Segmenting volumes, identifying drivers for each volume type, and generating a multiscenario recovery outlook created a single forecasting model looking six, 12, and 24 months ahead. This model was then used to shape the operator's 2021 product mix and pricing strategy.

## From forecasts to tangible plans

Business plans typically assume a degree of certainty. Logistics companies calculate a baseline performance; modify it based on improvements, headwinds, and tailwinds; and create a new forecasting plan. Given that the variation this year makes using 2020 data unreliable, next year will be different. Forecasts will be built on drivers across many scenarios, and then need to be converted to a business plan. We find the following six steps to be important for driver-based planning and monitoring for the coming year:

1. **Build the recovery strategy.** For the leadership team, the initial focus should be on steering the

company through the strategic trade-offs that need to be made—such as growing margins or defending market share. These inform capital allocation, risk thresholds, and accountability, and help determine the most important business metrics for next year.

2. **Use the right drivers for models.** While a data science team works on identifying the drivers and expanding the datasets used for forecasting, business experts should help decide which drivers make sense and if modeled impact is in line with leadership's intuition.
3. **Set and communicate targets.** Given the uncertainty, next year might present an opportunity to change some of the incentives and targets used for a company's performance management. Companies could look, for example, for targets that are tied less directly to outcomes (which are not always in the team's control) but instead relate to the implementation of the recovery strategy, drivers being monitored, or actions required. In addition, not all variables need to be short-term focused. For instance, managing attrition—which may not affect financial performance in 2021 but will do so in the long term—could be useful for some teams.

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<sup>8</sup>Perspectives on transformation, 2019, McKinsey.com.

4. **Create the first version of the budget and plan.** Perform the full calculation of external and internal drivers, apply decisions and targets to influence them, and let the model produce the resulting financial budget and (re) forecast. Planning may need to begin with high-level market data for next year. By contrast, initiatives that start with data-specific business units or regions should largely be focused on exceptions due to real idiosyncrasies within their respective domains.

5. **Set up regular, better reviews.** In this environment, comparing month-to-month revenue does not generate as many insights as understanding what is affecting revenue, where, and how. Therefore, reviews should probably happen more frequently and with more granularity than in prior years. These reviews are not only to ensure accountability from teams but also to collect and learn from their feedback. Learnings from such reviews can help to both adjust model assumptions and identify the reactions and decisions that are working. Reviews that focus on actionable insights are always more valuable—now more than ever.

6. **Ensure key enablers are in place.** Acknowledging that many new processes and approaches are being implemented at the

same time, managing performance will not be solved by complex mathematical modeling alone. The right data can help measure and monitor business drivers, determine the right architecture and technology to embed these within a company's systems, and enable the application of the tenets of good change management.<sup>8</sup> In short, they can help companies to formalize these new ways of working and make plans for next year. For many companies, these changes will constitute a transformation of how they operate.

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Planning and forecasting without a reliable baseline represents the new way of working for almost all logistics companies. Although the sector has rebounded from previous crises, the extent of uncertainty today means that forecasts for next year that are built on conventional models are no longer reliable. Driver-based forecasting is a more robust approach to modeling, has been beneficial in response to the COVID-19 crisis, and could lay the foundation of a new way of working. Combining this with leadership intuition and change management could be a way to plan for next year—and indeed the years after.

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