



**CONVOY**

# 5 FUNDAMENTALS OF SUPPLY CHAIN RESILIENCE

How shippers can secure reliable and flexible capacity  
in any market condition with a digital freight network

## **EVEN IN NORMAL MARKETS, LOGISTICS IS A HIGH-PRESSURE FIELD OF WORK. 2020 HAS BEEN ANYTHING BUT NORMAL.**

Q2 of 2020 was the most volatile quarter in modern freight history. The demand shocks driven by COVID-19 created a ripple effect throughout the freight market. In mid-March, contract rates destabilized and the spot market surged. By early April, the market softened and contracted below pre-crisis levels. In only a few weeks, the freight industry saw market highs and lows that might normally play out over the course of a full year.

Market uncertainty shows no signs of stopping. Between the ongoing pandemic, civil unrest, and an upcoming election with consequences for the US-China trade war, a return to normal feels like wishful thinking.

In the absence of stability, it's imperative for shippers to build resilient supply chains that can perform in any market condition.

Read on to learn 5 of the key ingredients to improving the resilience of your freight logistics, and how a digital freight network like Convoy is uniquely positioned to provide reliable and flexible truckload capacity in any environment.

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# THE NEW ERA OF RESILIENT SUPPLY CHAINS

COVID-19 shined a spotlight on the North American supply chain. In a few short weeks, shelves in department and grocery stores were left empty, truck prices whipsawed, vulnerable carriers reduced their workforce, and shippers struggled to respond to demand shocks, the likes of which hadn't been seen in a decade. The crisis forced shippers to reexamine the flexibility of their freight logistics, and accelerated the need for supply chain resilience, an operational requirement for responding to disruption and recovering from it quickly<sup>[1]</sup>.

Of course, uncertainty isn't a new concept to supply chain professionals.



## Day-to-day uncertainty

Every day, logistics teams respond to unpredictable shifts in demand for their companies' goods. As consumer expectations rise, so do the requirements on supply chain performance. As supply chains become more connected and complex, so do the points of vulnerability to disruption.



## Seasonal uncertainty

Supply chains also face seasonal uncertainty. In addition to preparing for demand surges during holidays, shippers can plan for disruptions during an Atlantic hurricane season, California wildfires during times of drought, and tornado season in the Plains and Midwest.



## "Black swan" uncertainty

However, the biggest threat to supply chains are high-impact, low-probability events that are impossible to predict. Also known as "black swan" events, these can wreak havoc on a supply chain. Examples of such events include the terrorist attacks of 9/11, the global financial crisis of 2007-2008, and, most recently, the COVID-19 pandemic and economic fallout.

While these three challenges vary in their duration, intensity, and predictability, their antidote is the same. Supply chain resilience enables teams to reduce the risk of uncertainty while also improving the efficiency and reliability of day-to-day operations.

The challenge is that many traditional methods of achieving supply chain resilience run counter to business goals of reducing costs and improving efficiency. For example, a company could build resilience by producing and holding extra inventory, sourcing excess capacity, and onboarding redundant suppliers. However, these measures also increase costs and add complexity to the supply chain, reducing the company's competitiveness in the market.

**To effectively weather unpredictability and disruption, supply chain teams need a new solution that improves the resilience of their freight operations without sacrificing performance.**

# 5 FUNDAMENTALS OF SUPPLY CHAIN RESILIENCE

**Principles that enable a freight network to perform in any environment.**

Building resilience into a transportation network starts with five operating principles that improve forecasting, speed response time, and reduce waste.



**RELIABILITY**



**FLEXIBILITY**



**VISIBILITY**



**EFFICIENCY**



**SUSTAINABILITY**

# FIVE FUNDAMENTALS FOR SUPPLY CHAIN RESILIENCE



## Reliability

Consistently delivering product on time, in good condition, at agreed upon prices is a foundation to any successful freight partnership. It's particularly critical in times of uncertainty and shifting demand.

What to look for:

- Historical tender acceptance rates in tight and loose markets
- OTP and OTD performance and transparency in reporting
- The carrier's track record of safety incidents and cargo claims



## Flexibility

In volatile markets, supply chain teams need carriers that can scale capacity at a moment's notice and exceed their commitments without sacrificing performance.

What to look for:

- The volume of trucks in the carrier's network
- Overlap between their lanes and carrier's coverage map
- The carrier's hours of operation and quality of customer service



## Visibility

Responding to disruption isn't possible without an accurate view of supply chain and facility operations. Through tracking shipments in real-time and monitoring facility performance, companies can identify problems and take action.

What to look for:

- 24/7 GPS tracking on every shipment
- Facility analysis, tracking wait times and incidentals
- Integrations with leading supply chain visibility software



## Efficiency

In times of crisis, operations that rely on phone calls, emails, spreadsheets, and fax may be too slow to respond. Automated systems that use technologies such as machine learning are better equipped to adapt instantly.

What to look for:

- Use automation for tender responses and pricing
- Match a truck to a load in minutes rather than hours
- Use technology to automatically fix shipment problems



## Sustainability

Sustainable shipping reduces empty miles by batching headhauls and backhauls, resulting in better truck utilization. Fleets that maximize utilization improve resilience by enabling you to cover more loads faster, which is critical during demand spikes.

What to look for:

- Batch headhauls, backhauls, and multi-point shipments
- Reduce the volume of miles driven empty
- Measure progress toward sustainability targets

# THE TRADEOFFS BETWEEN ASSET-BASED CARRIERS AND BROKERS

To better evaluate your carriers against these criteria, it's important to first understand the inherent strengths and weaknesses of the two types of freight companies you're likely working with.

Asset-based carriers and freight brokers account for the majority of truckloads shipped in the United States each year. Each model of freight company has strengths and weaknesses when it comes to delivering on the promise of supply chain resilience.



## ASSET-BASED CARRIERS: A RELIABLE REPUTATION, BUT LESS FLEXIBLE CAPACITY

Asset-based carriers work directly with shippers and own their equipment. Because they own their trucks and employ the drivers who operate them, large asset-based carriers have established a reputation for reliability. Based on their tender acceptance, on-time performance, and safety records, shippers often prefer assets over brokers for contract freight, and large shippers typically allocate the majority of their loads to assets.

However, an asset carrier's reliability depends on how well the location of its fleet aligns with the shipper's network of lanes. Even the largest asset carriers own a finite number of trucks and employ a finite number of drivers. This limits their ability to flex to meet their customers' needs.

In addition, when supply is tight, assets frequently broker their loads to other carriers in order to avoid tender rejection. In fact, a 2016 study by LaneAxis showed that asset-based carriers broker out 42% of their shipments<sup>[2]</sup>, a finding that calls into question the conventional wisdom of assets having greater control over their service levels and risk.



## FREIGHT BROKERS: MORE FLEXIBLE CAPACITY AT THE COST OF RELIABILITY

Freight brokerages match shipments with trucks, referencing their personal network to find drivers who will cover loads. Transportation teams often look to brokers for their flexibility. When a contract carrier rejects a tender, brokers can fill in the gap to haul the freight, albeit at a higher cost to the shipper. A shipper may also turn to brokers during soft markets to secure loads at a lower price than their contracted rate.

While brokers' strength is their flexibility, this sometimes comes at the cost of reliability - a problem inherent to the brokerage business model. Specifically, brokers tend to source the cheapest carrier available, even if doing so sacrifices quality.

The reason is that freight brokers take a percentage markup on each shipment they match. The bigger the margin between shipper's price and the payout to the driver, the more the broker gets paid. This motivates brokers to select cheaper carriers even if it increases risk to shippers in the form of lower on-time performance, higher falloffs, or lower safety ratings.

## TRADITIONAL OPTIONS WEREN'T BUILT FOR EFFICIENCY, VISIBILITY, OR SUSTAINABILITY

Brokerages and assets were built for a single purpose: to transport freight. Both models were established decades before the Internet, GPS, smartphones, and machine learning. As a result, their operations are rooted in manual processes with limited technology, and without a focus on addressing modern business challenges such as reducing carbon emissions.

### Manual operations reduce efficiency

The efficiency of asset carriers varies depending on how well their fleets align with your needs. Assets may route your freight to maximize truck utilization even if it isn't the most efficient way to haul your loads. When demand exceeds their fleet capacity, assets may broker loads, introducing another set of inefficiencies.

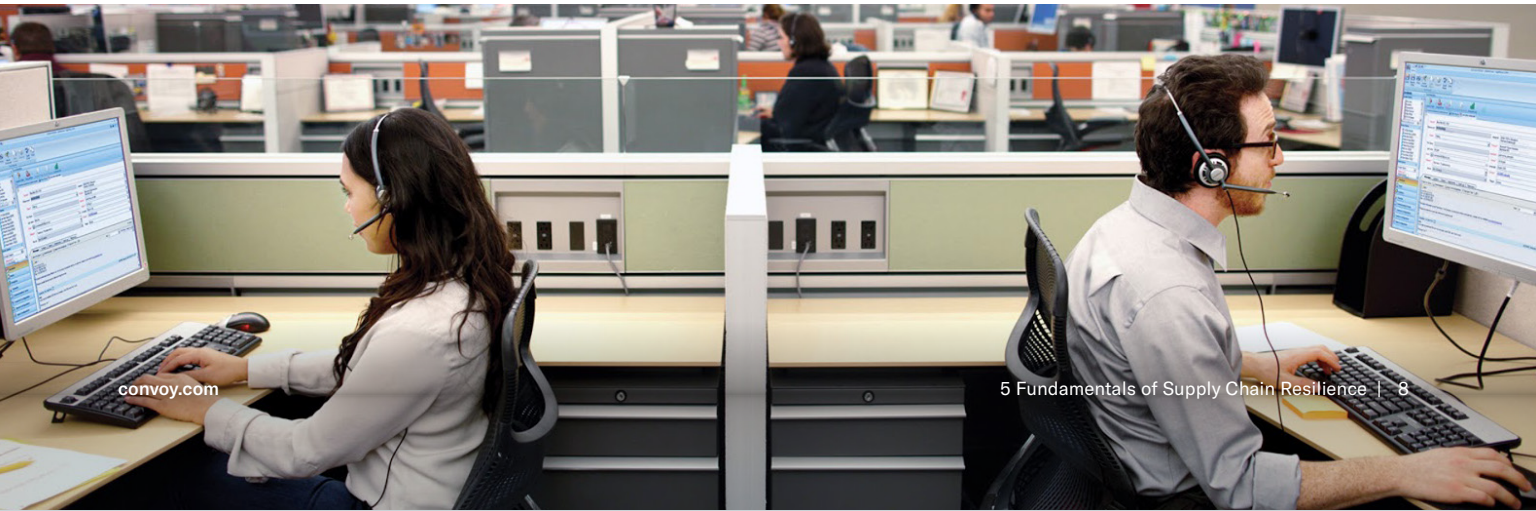
Similarly, brokers have inefficient operations. They rely on people to handle the entire lifecycle of a shipment, including menial, repetitive tasks that computers could handle in less time with

fewer errors. Individual brokers make hundreds of phone calls a day, and match a truck to a load once per hour on a good day. This time spent coordinating translates to time you spend waiting to hear if your load is covered.

Once the shipment is in transit, assets and brokers can be slow to address problems. If a mechanical issue causes a missed pickup at 10:30PM, a replacement truck may not be found until business hours the next day. This can result in a late delivery, chargeback fees, and damage to the customer relationship.

### Lack of data reduces visibility

When you order a rideshare service or food delivery, you can see the precise location of the vehicle along with its ETA. Consumers expect real-time visibility. Yet commercial shippers often lose visibility of their freight as soon as a load leaves the docks. This is another shortcoming of brokers and assets, whose businesses were built without a foundation of GPS and smartphone technology. The result is a lack of real-time visibility into individual shipments, facilities, and lane performance over time.





Finding the precise location of a truck often requires brokers and assets to make phone calls. This puts shippers at a disadvantage, relying on a middleman and phone tag to answer a simple question, “where’s my truck?”

This middleman dynamic can lead to inaccurate arrival time estimates, as shippers don’t have visibility into delays caused by traffic, weather, and breakdowns. Similarly, on-time performance records are imprecise, as carriers manually self-report their pick and drop times (reliably in their own favor).

In addition, brokers and asset-based carriers don’t gather shipment data and share insights with shippers. Without this, shippers remain blind to facility inefficiencies that can add up to hundreds of thousands of dollars in incidental spend each year.

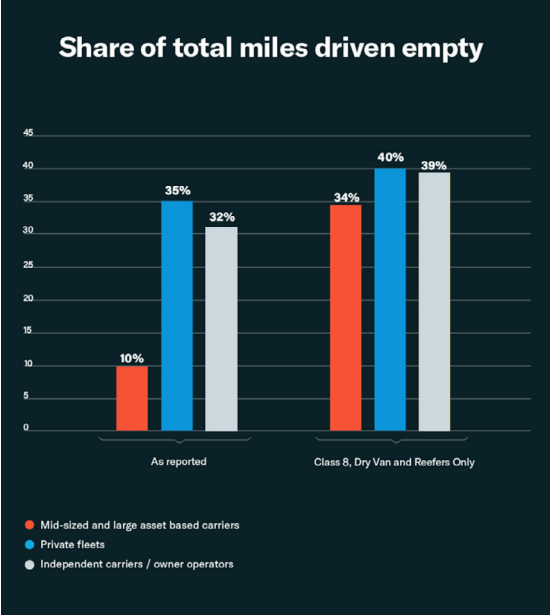
**Inefficiency increases emissions**

When it comes to sustainability, brokers are major contributors of transportation waste in North America according to Frost & Sullivan.<sup>[3]</sup>

“Empty miles account for a staggering 25-40 percent of total road-freight miles every year in North America. Such empty miles primarily result from the inherent opacity and slowness of traditional road-freight brokerage processes,” reports Silpa Paul, Supply Chain Analyst with Frost & Sullivan.

Asset-based carriers don’t fare much better. According to Convoy’s analysis of US Census Bureau data<sup>[4]</sup>, the share of miles run empty

for mid-sized/large asset-based carriers is 34% for Class 8 dry vans and refrigerated vans (reefers). Asset-based carriers are also prone to understating empty miles they drive.



**A better path toward resilience**

Asset-based carriers and brokers introduce compromises and vulnerabilities to supply chains. With market volatility expected to continue throughout 2020, supply chain leaders need alternative options to build resilient transportation infrastructure.

Digital freight networks provide a solution. Over the last five years, they’ve emerged as a third category of freight service provider, built to improve the efficiency of trucking, address the needs of modern shippers, and strengthen supply chain resilience.

# DIGITAL FREIGHT NETWORK: A NEW CATEGORY OF FREIGHT COMPANY

“ A digital freight network is an open, fully connected freight marketplace that uses machine learning, automation, and other software services to efficiently connect shippers and carriers.”

**Gartner**

# DIGITAL FREIGHT NETWORK: A NEW CATEGORY OF FREIGHT COMPANY

CONVOY

**Convoy launched the first digital freight network in 2015**, a time of unique opportunity based on the convergence of three technologies: smartphones, mobile networks, and machine learning. Nearly three-quarters of American adults owned a GPS-enabled smartphone in 2015. High-speed mobile networks blanketed nearly the entire US. And machine learning technology, which improves efficiency and accuracy over time, was being deployed at scale.

Using these technologies, we built a new kind of freight company from the ground up that improves supply chain resilience without the shortcomings inherent in traditional freight brokerages and asset-based carriers.

Through the use of machine learning, we automate critical parts of the shipment workflow, including the matching of trucks to shipments, tender acceptance, and pricing.

Machine learning also enables us to identify the safest carriers, verify their safety record before every load, and continually improve the quality of service we provide to shippers.

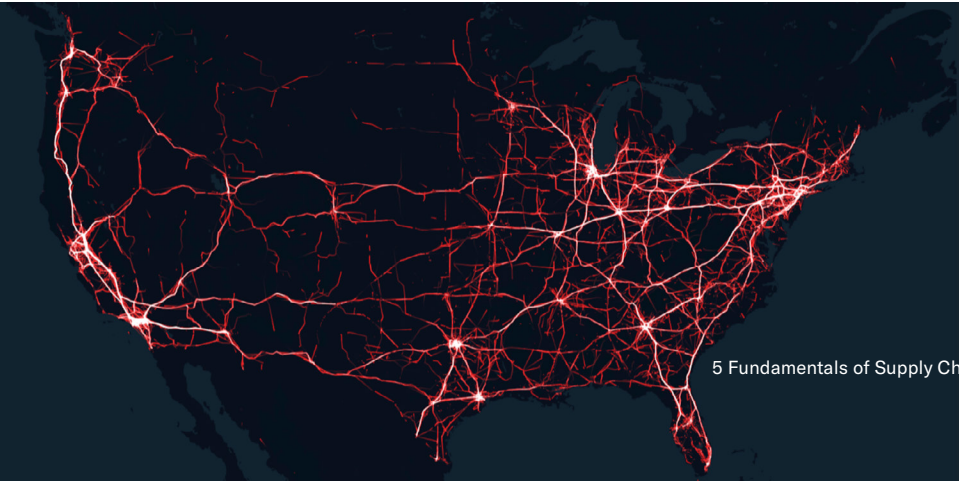
With smartphones in each of the hundreds of thousands of trucks in our network, we provide real-time visibility into every shipment and gather data on the efficiency of every facility.

And to address the long-standing problem of trucks driving empty, we use machine learning to create “batches,” matching headhauls with backhauls and dramatically reducing carbon emissions.

The result is a freight partner that delivers on the five fundamentals of supply chain resilience: reliable performance, flexible capacity, efficient operations, supply chain visibility, and sustainable shipping.

“ Digital freight networks can help companies that are looking for real-time available capacity or looking to reduce transportation costs during the current crisis, as well as during future challenging times.”

**Gartner** Supply Chain Report <sup>[5]</sup>





# RELIABLE PERFORMANCE

**Convoy is one of the largest truckload networks in the nation.** The volume of carriers in our network and the rigorous quality standards for every driver result in higher tender acceptance, fewer safety incidents, and better on-time performance.

### Higher tender acceptance rates

Convoy’s digital freight network includes tens of thousands of carriers and hundreds of thousands of trucks. By contrast, even the largest asset carriers have between 10 and 25 thousand trucks each. For any individual shipment, the chance that Convoy will be able to find a truck is higher than carriers with smaller fleets and brokers with smaller networks.

When it comes to contract freight, Convoy uses machine learning to accurately price RFP responses. Every bid that we submit is based on

millions of historical shipment data points and machine learning models that estimate truck prices and contract rates sustainable to Convoy over the course of the contract. This helps us cover contracted loads with a higher than 95% acceptance rate, even in tight markets.

### Safer drivers for peace of mind

100% of the carriers who haul with Convoy meet our safety and compliance requirements, which are among the most stringent in the freight industry. Before a driver can accept a load, our system checks crash history, vehicle maintenance, speeding tickets, and traffic violations.

Convoy’s quality and compliance process has helped us achieve a crash rate that’s 16% lower than the industry and a cargo claims rate is 1/20th of the industry average.

## PREDICTIVE CARRIER CRASH CAPABILITY



### COLLECT CARRIER DATA

Convoy combines rich carrier data from government, insurance, and safety organizations with our own digital freight network statistics.



### IDENTIFY SAFEST DRIVERS

Machine learning processes thousands of inputs across millions of records spanning the past 10 years to identify carriers who are least likely to crash.



### VERIFY SAFETY STATUS

Through automation, we vet the tens of thousands of carriers in our network against our rigorous standards, daily, with every load.



### A SAFER CARRIER NETWORK

As a result, Convoy carriers have a **16%** lower crash rate with **1/20th** of the cargo claims vs. the industry average.





“ Convoy disproportionately services our hardest freight, yet they consistently deliver some of the best results out of our carrier partners.”

**On-time performance  
(without fudging the numbers)**

Convoy provides industry-leading pickup and delivery performance, and we can prove it. While many carriers manually self-report their pick and drop times, Convoy uses GPS and geofencing to provide true OTP and OTD with accuracy down to the minute.

Convoy uses machine learning to continuously improve performance. This first happens in the freight matching process. We analyze our

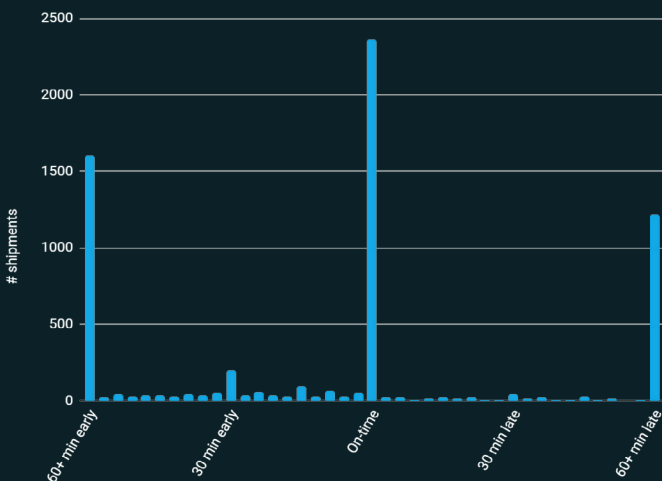
network to find the carrier best suited for each shipment, improving the probability of on-time pickup and delivery. We then motivate better carrier performance by rewarding top drivers with better access to loads.

In rare instances when an issue occurs, machine learning models help us quickly secure a replacement carrier and maintain OTP. The more loads we haul, the more data fed to our machine learning models, and the more efficient and accurate they become.

**INDUSTRY-LEADING, ACCURATE OTP AND OTD**

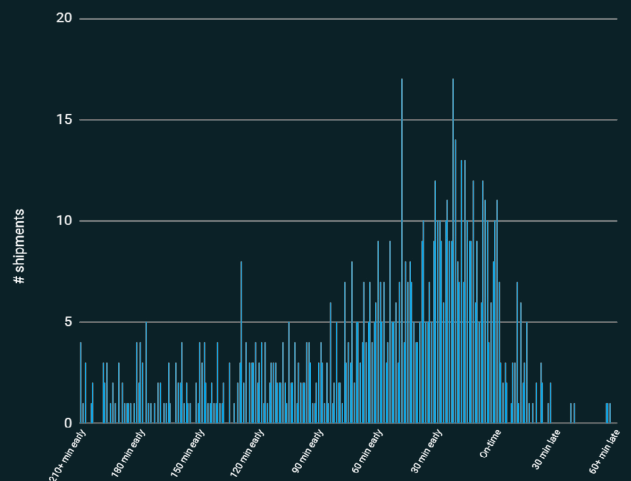
**Assets and Brokers**

Unreliable self-reporting: 78% on-time pickup



**Convoy's True OTP**

Accurate reporting to the minute: 98% on-time pickup





# FLEXIBLE CAPACITY

“ Convoy has given us another level of flexibility and efficiency by streamlining and reducing wait times at shipping and receiving locations.”



### The flexibility of Convoy’s digital freight network was put to the test in March 2020.

For our largest food and CPG customers—the categories most impacted by COVID-19 driven panic buying—Convoy flexed capacity up 150% to fulfill the increase in same-day tenders for pickups.

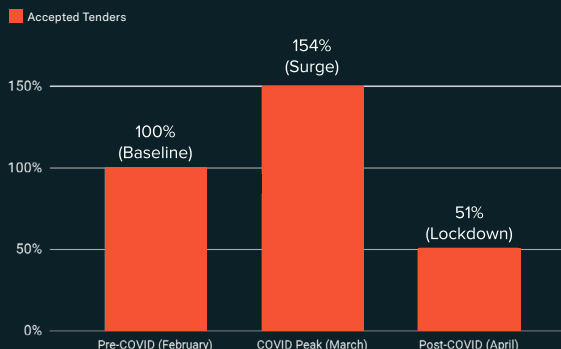
Because our technology automates the brokering process, we were able to quickly adapt to market conditions. Throughout the following months, we maintained industry-leading OTD.

According to Gartner’s April 2020 supply chain report, “Digital freight networks are helping shippers overcome COVID-19 challenges by delivering the reliability of an asset-based carrier and the flexibility of a broker.”

When Frost & Sullivan recognized Convoy at their 2020 Company of the Year Awards, they reported that, “Convoy offers real flexibility within its freight network. They help shippers respond more quickly to changing market conditions, improving their supply chains’ resilience to demand shocks.”<sup>[6]</sup>

## CAPACITY FLEX DURING COVID-19

- The graph on the right shows tender acceptance for Convoy food shippers, who saw demand surge in March 2020
- Convoy’s digital freight network flexed capacity more than 50% to meet demand surge
- Our carrier network maintained industry-leading on time delivery (OTD) during surge and falloff





### On-demand drop and hook

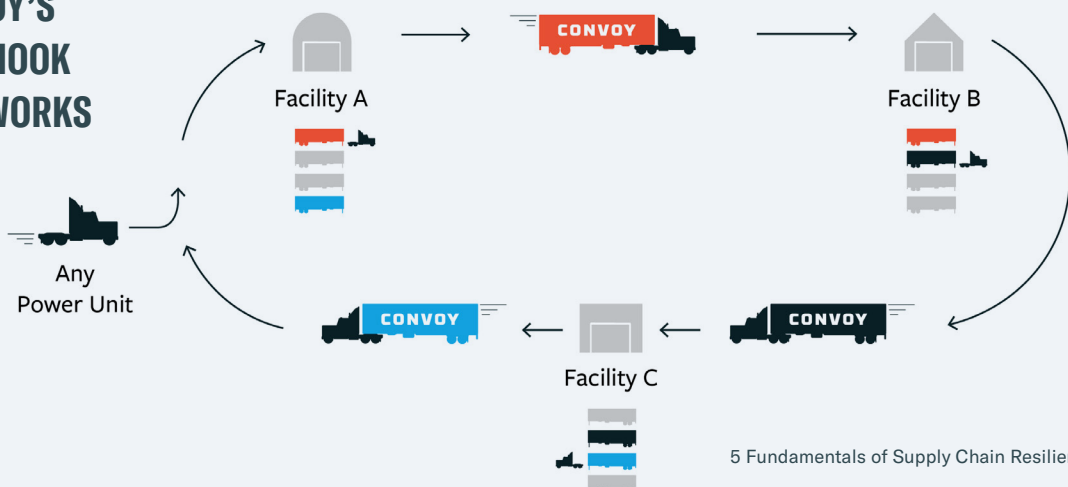
Shippers also gain flexibility from Convoy's nationwide drop-and-hook network. With power-only loads, driver wait time in facilities is reduced from an average of three hours down to less than an hour per shipment. <sup>[7]</sup>

Drop shipments represent the majority of Fortune 500 company shipments, and we make them available to more shippers and accessible to all carriers with no rental fee.

“ Convoy's nationwide drop and hook program has given us an even greater level of flexibility for our shipments coupled with the great levels of service we've come to expect.



### HOW CONVOY'S DROP AND HOOK PROGRAM WORKS





# SUPPLY CHAIN VISIBILITY



“ We looked to Convoy due to their ability to provide real-time data-driven insights combined with innovative programs that drive better performance.”

**Our digital freight network provides shippers with a level of supply chain visibility never before possible.** We collect more than 1,000 data points per shipment, and as of June 2020, we’ve gathered approximately 1 million facility ratings across 25,000 locations.

Convoy’s insights help supply chain teams optimize freight operations, streamline facility performance, and uncover opportunities to save time and money. Every month, we provide business reports covering shipment volume, on-time performance, dwell times, incidentals, facility reviews, carrier safety, carbon savings,

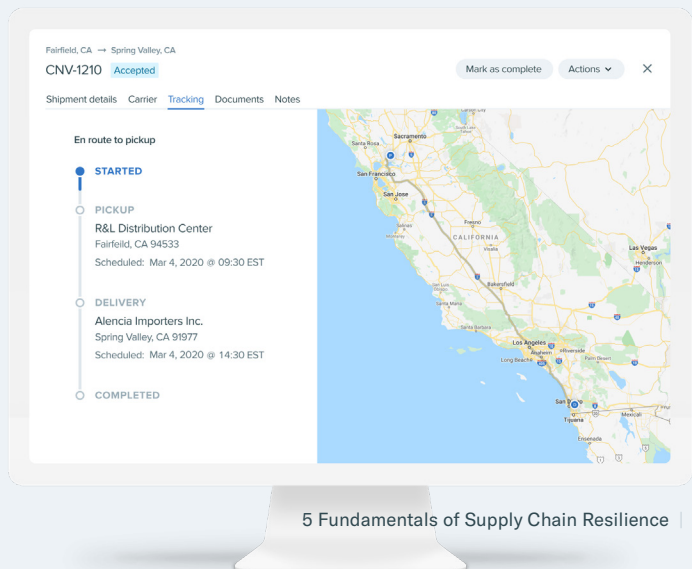
and the details of their driver network. Companies can access their entire shipment history on Convoy’s web-based dashboard. With this interactive tool, shippers can slice and dice their data as needed.

## Real-time tracking on every truckload

Convoy provides 24/7, real-time visibility into every shipment in our digital freight network. This can improve downstream supply chain operations, informing your entire team and customers of shipment status that’s accurate to the minute.

## REAL-TIME GPS TRACKING

- Real-time GPS tracking on each shipment
- More than 1,000 data points collected per load
- Accessible in shipper platform, Convoy Connect
- Integration with FourKites, Project44, 10-4





### View trends and spot anomalies

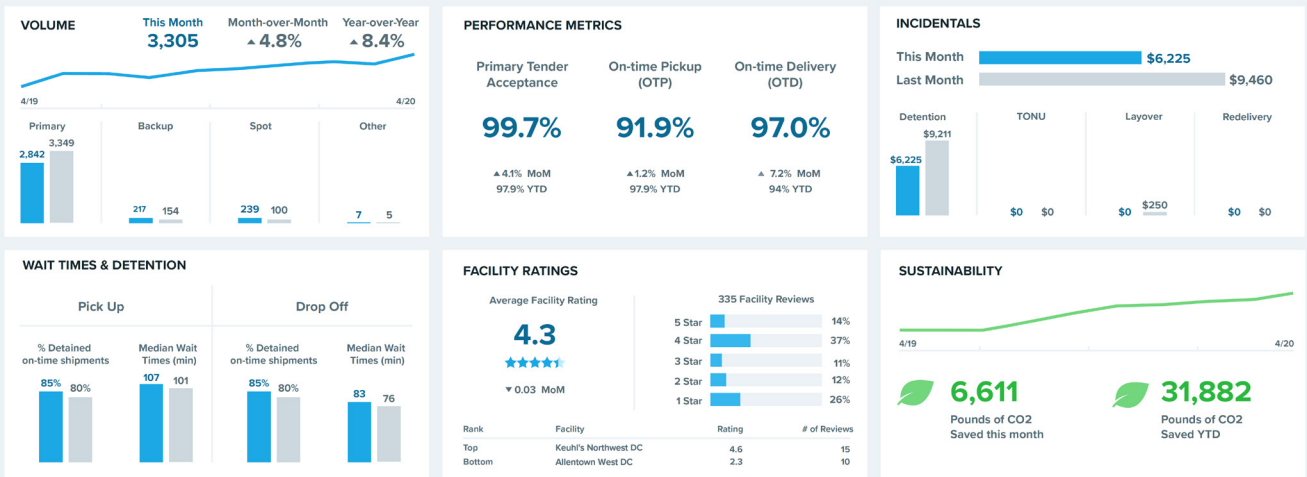
According to McKinsey, up to half the cost of many supply chains lurks ignored and unmanaged in outbound logistics and behind the closed doors of distribution centers.<sup>[8]</sup> Data and insights can shine a light on this waste to provide savings opportunities.

By providing automated reports, dynamic tools, and custom insights, we've helped customers:

- Reduce detention costs at problematic facilities
- Uncover the root causes of spiking incidentals
- Improve carrier preference for shipper facilities

## SHIPPER INSIGHTS

Sample monthly business report overview



For an in-depth look at the visibility benefits of a DFN, download our white paper: [Supply Chain Visibility and the Digital Freight Network](#)



“Convoy gives me the types of insights I can't get from any other partner.”



# EFFICIENT OPERATIONS

“ By working with Convoy and leveraging their digital freight network, we have been able to reduce our overall transportation costs.”



**Our machine learning models automate key points in the shipment lifecycle, including tendering, matching, and hauling.** A traditional broker or asset-based carrier may take hours to coordinate a truck with a load. Our platform can achieve this in minutes without a single phone call or email.

What does this look like in action? When brokers and assets work with shippers on contract freight, their median tender response time is between 33 and 58 minutes. With Convoy, the median response time is only 6 minutes.

## MACHINE LEARNING IMPROVES SERVICE



### Tendering

- Determine supply availability
- Ensure accurate pricing



### Matching

- Find quality carriers
- Identify batching opportunities



### Hauling

- Predict shipment delays
- Automatically fix problems

“ Convoy is currently the only company that has achieved 100% automation of loads to trucks.”



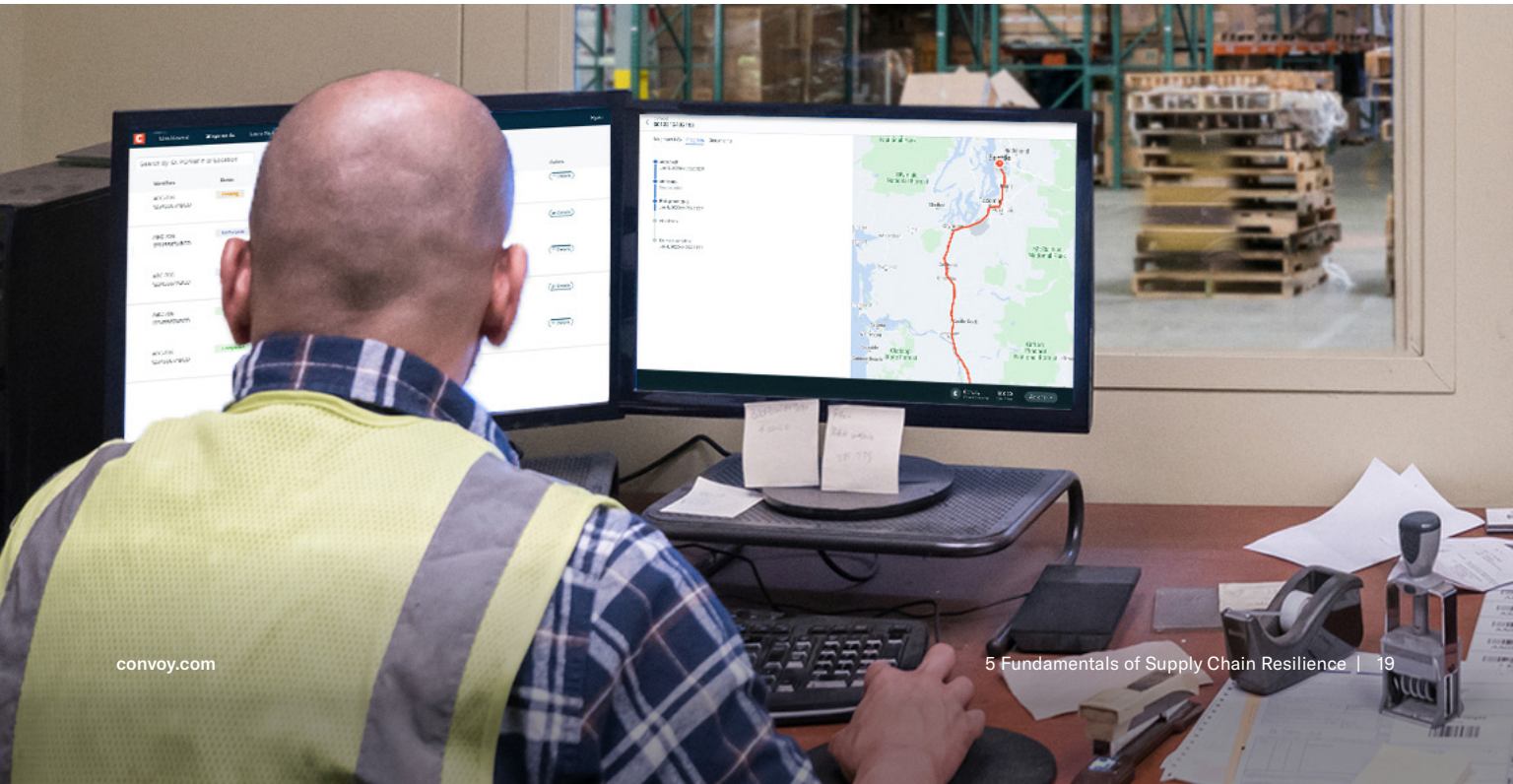
**Automation 24/7**

A digital freight network never stops working for you. Even when you're asleep, Convoy's machine learning technology automatically manages many steps of the shipment lifecycle - accepting tenders, ensuring accurate pricing, finding the highest quality drivers, setting appointments, and tracking every load.

Our operations team works around-the-clock to ensure that loads move as expected. We deliver to wholesale clubs, supermarkets, and retailers, making pickups and deliveries at all hours.

**More automation = More personal service**

Since Convoy automates the operational tasks suited for technology, we spend more time on higher-value strategic services better suited for people. Time that was once spent emailing, calling, collecting bids, and negotiating rates is now focused on analyzing your lane network, evaluating facility performance, and planning capacity for your shifting needs. This helps lower transportation costs for shippers, reducing incidentals and wait times, while providing reliable and flexible carrier capacity.





# SUSTAINABLE SHIPPING

“ Convoy’s digital freight network batches our loads with the most relevant carriers to reduce the empty miles within our routes. By reducing these miles, we improve the sustainability of our fleet.”



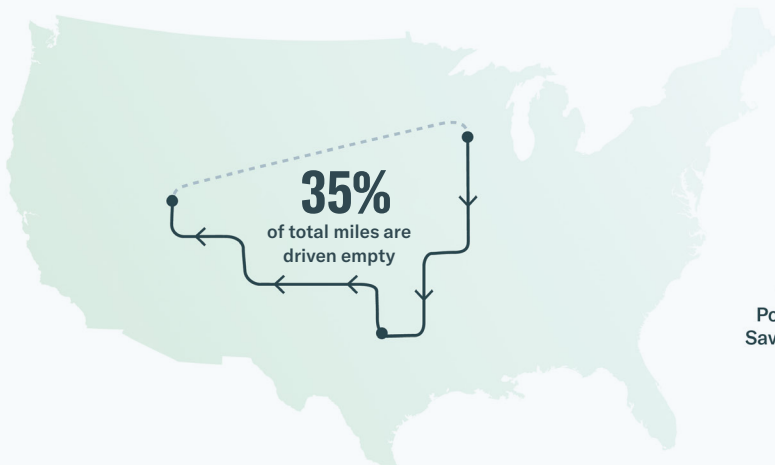
**Convoy helps companies reduce their carbon emissions, using machine learning to improve the efficiency of freight.** We achieve this by helping drivers combine multiple shipments together into “batches.”

Sometimes a batch is simply a headhaul and a backhaul that ensures the driver has a full load on the drive home. Sometimes a batch is a more complicated, multi-point trip - for example, from Dallas to Houston, Houston to San Antonio, San Antonio to Austin, and Austin back to Dallas.

## 45% lower CO2 emissions

The result is the same - fewer empty miles and lower carbon emissions. In our top markets, more than half of all loads are batched. And across our network, batching currently yields a 45% reduction in CO2 emissions. To date, batching has prevented more than 2 million lbs of carbon emissions from entering the atmosphere <sup>[9]</sup>.

## IT'S A PROBLEM OF EMPTY MILES



Our technology reduces the number of miles that trucks drive empty, lowering CO2 emissions by up to 45%.



# WRAP UP: THE RESILIENCE IMPERATIVE

## COVID-19 was a black swan event for the American supply chain.

It revealed the vulnerability of organizations whose logistics are built upon outdated, inefficient processes. And it demonstrated the resilience of digital freight networks built on automation and machine learning.

With market volatility expected to continue in the months ahead, and as shippers continue to navigate even the more manageable daily and seasonal shifts in demand, resilience has

become imperative to the modern supply chain. Companies whose freight logistics are rooted in the five principles of resilience are better positioned to respond to disruption and recover from it more quickly.

Now is the time to start building more resilience into your supply chain. Convoy can help. Contact us today to learn about a new kind of freight partnership.

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Get started today at [convoy.com/shipper](https://convoy.com/shipper)





# CONVOY

## ABOUT CONVOY

Convoy is the nation's most efficient digital freight network. We move thousands of truckloads around the country each day through our optimized, connected network of carriers, saving money for shippers, increasing earnings for drivers, and eliminating carbon waste for our planet. We use technology and data to solve problems of waste and inefficiency in the \$800B trucking industry, which generates over 72 million metric tons of wasted CO2 emissions from empty trucks. Fortune 500 shippers like Anheuser-Busch, P&G, Niagara, and Unilever trust Convoy to lower costs, increase logistics efficiency, and achieve environmental sustainability targets.



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