



# Trends in the Transportation Industry

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February 2014

# Introduction

With 2014 in full swing, some of the larger trends that have been and will become hot button issues are beginning to take shape. This report explores five transportation-related issues from 2013 that will continue to be hot in the coming months, as well as five key new issues that will likely grab shippers' attention in 2014.

## 2013 Continuing Trend: Right-shoring

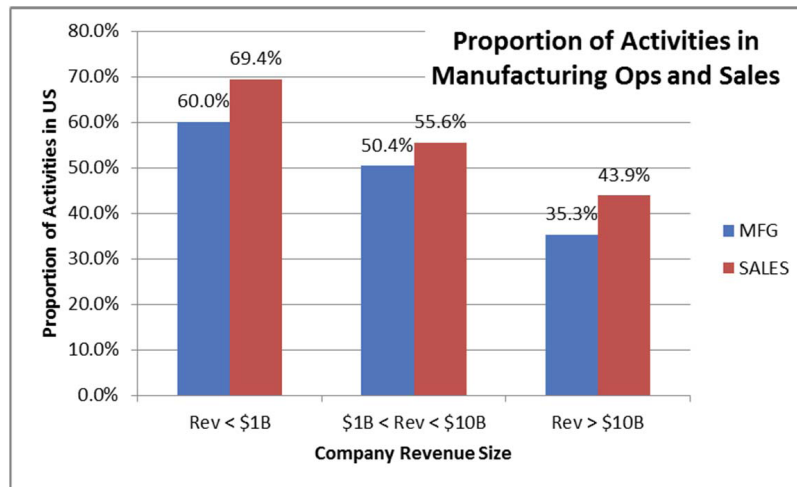
The subject of reshoring—that is, bringing manufacturing back to the U.S.—has been a sensitive topic the past few years. Politicians and press have heralded some high-profile companies' decisions to bring certain specific final assembly back to the U.S., and chose to ignore that at no point in time have the jobs created by these moves been greater than the jobs that continue to be outsourced overseas. Results from the 2013 Tompkins Supply Chain Consortium survey on the subject suggest companies will selectively bring back manufacturing jobs to the U.S., especially in the case of high value items with unique intellectual properties. However these moves will have little macroeconomic impact. The rhetoric surrounding reshoring has overshadowed a trend that has taken hold and should continue to expand in 2014: right-shoring.

**Right-shoring is relocating all or part of the manufacturing process to achieve the lowest landed cost.** It has begun to gain a true foothold and will continue to be an opportunity in 2014. A generation after U.S. manufacturing migrated to Asia, top companies have created procurement and logistics experts who are prepared to take advantage of opportunities not just in China, but also in Chile and the Czech Republic. They are not just looking in Mexico, but also in Myanmar and Moldova.

**“What does all this mean for shippers? Agility and flexibility will be at a premium.”**

Far beyond the location of low cost manufacturing, the Internet-enabled global economy (combined with years of domestic recession and tepid growth) has inspired American companies to sell their goods and take market share in places that would have never even been considered 10 years ago.

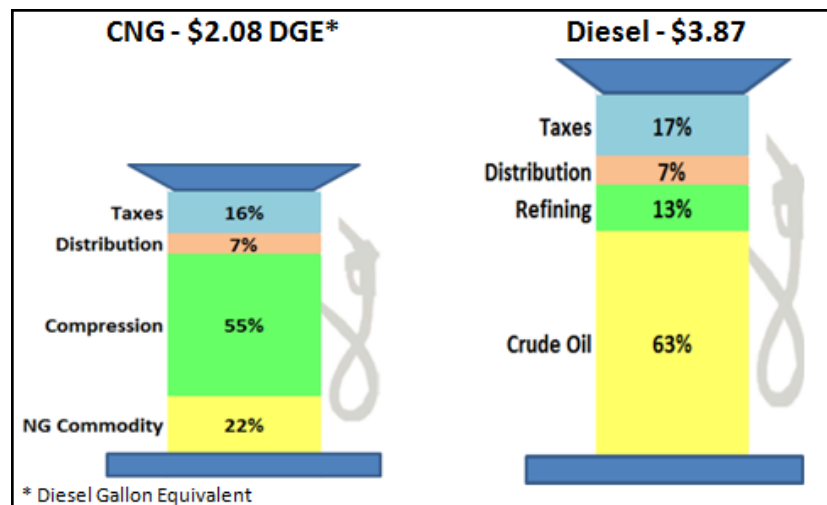
What does this all mean for shippers? Agility and flexibility will be at a premium. When “international transportation” once simply consisted of shipping containers from Shanghai to Los Angeles/Long Beach, and doing some cross-border transactions with Canada and Mexico, freight capacity and specific customs knowledge could be easily outsourced or relatively easily sourced in-house. In an increasingly fluid global environment, **the emphasis must shift to a repeatable process that can quickly integrate a new origin or destination without disruption.** For most companies, this will mean a combination of carriers and non-vessel operating common carriers (NVOCCs), full-service and highly-specialized third-party providers, and knowledgeable in-house talent closely aligned with both procurement and sales.



Source: MIT Forum for Supply Chain Innovation, 2012 Annual Report on Reshoring

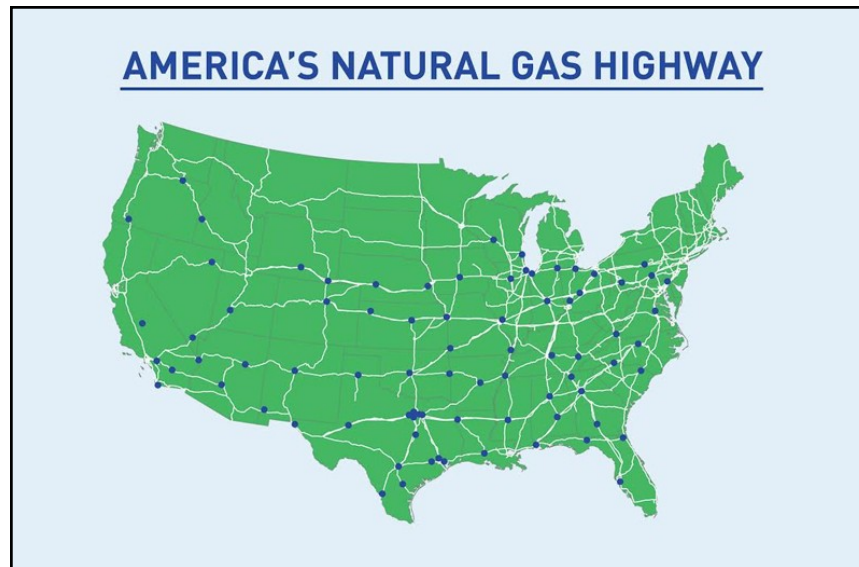
## New 2014 Trend: The Shift from Diesel to Natural Gas

Unlike the rhetoric of reshoring, the case for carriers converting portions of their fleet to run off natural gas seems to be taking hold. In 2013, Cummins made available a 12L natural gas engine capable of up to 400hp and 1450 lb-ft of torque. While this is not as powerful as similar-sized diesel engines, it is more than enough power for over-the-road hauls in all but the most mountainous parts of the U.S. Although the upfront costs are higher (i.e., natural gas engines are at least \$35,000 more expensive than their diesel alternative), the case for conversion is quite compelling: the cost per gallon equivalent of natural gas is typically between \$1.50 and \$2.00 less than a gallon of diesel. As of January 2014, the difference was \$1.79.



Source: U.S. Energy Information Administration

In October 2013, General Electric created a “strategic alliance to accelerate adoption of natural gas in the Trucking industry.” This followed the announcement by UPS earlier in the year to only buy natural gas powered trucks for the next several years. The first UPS order for 2014 is for 700 tractors, which is about 12% of the logistic behemoth’s over-the-road fleet. All this is happening during a time when less than 25% of a planned natural gas refueling network is operational.



Source: Clean Energy Fuels ([www.cleanenergyfuels.com/buildingamerica.html](http://www.cleanenergyfuels.com/buildingamerica.html))

Beyond the cost per gallon savings, using natural gas has some secondary benefits that will be more important to some companies than others, but are noteworthy nonetheless. Natural gas creates about 30% less carbon emissions than diesel. In addition, natural gas is both abundant in supply and locally sourced. Around 98% of the natural gas consumed in North America is domestically produced, and the continent is estimated to have a known reserve that could last for 120 years.

As the infrastructure continues to build out, the price difference between engine alternatives decreases, and the cost of diesel goes up, it is easy to see an increasing number of companies adopting the technology going forward.

## 2013 Continuing Trend: Dedicated Fleet Expansion

One group of vehicles that is particularly well-suited to natural gas conversion is dedicated fleets. In 2013, dedicated fleets were the fastest growing sector of the truckload market. But it still only accounts for about \$40 billion of a \$280 billion industry. It is a sector that is growing for all the right reasons. For shippers, it secures capacity, locks in a competitive cost, increases service, and reduces volatility, without having to invest in assets or deal with the headaches of managing drivers. For carriers, it smoothes out cyclicity, fosters a long-term relationship with a client, and allows them to provide more drivers with the highly desirable regular route that tends to be both more predictable and closer to home. If early returns on capacity tightening continue (see page 6), dedicated fleets will continue to gain momentum throughout 2014.

## 2013 Continuing Trend: Intermodal Growth

Companies are utilizing intermodal as a truckload alternative in record numbers. According to the Association of American Railroads, the numbers for 2013 were up by 4.6% over the previous year, and the total containers shipped surpassed the previous (pre-recession) high of 2006 by over half a million units. This is happening for three key reasons.

First, **intermodal is the growth engine for the railroads**. During 2013, total carload shipments actually slightly declined. The growth of intermodal in recent years has caused the railroads to place increased emphasis on service, in-transit visibility, and timeliness of both arrival times and container availability. This provides shippers with the predictability and confidence to incorporate the longer lead-time in order to take advantage of the 15-25% savings that the mode typically offers when compared to truckload.

The second issue is **increased interest from the demand side**. Sophisticated shippers have always been interested in taking advantage of intermodal savings but, similar to dedicated fleets, the long predicted truckload capacity crunch has everyone exploring new alternatives. The same can be said for times when the cost of diesel spikes as intermodal fuel surcharges tend to be considerably lower and much less price dependent than its trucking counterparts. Enabled by world-class transportation management system (TMS) alternatives available as software as a service (SaaS)—and inspired by more consistent shipping, visibility, and rates—new customers are seeking the benefits of intermodal as a cost-effective alternative, while existing clients are shifting even more freight from road to rail.

The last issue is the biggest reason why intermodal conversion is likely to expand in 2014: **more availability to more places**. One should not be surprised that the eastern and western railroads are offering more capacity and opening up new (or reopening old) terminals to expand service offerings. But this is only part of the railroads' motivation. In anticipation of the now-stalled Panama Canal expansion, both the western and eastern railroads were highly motivated to expand and improve current service offerings.

The Union Pacific and the BNSF Railway (the western railroads) have been making large sums of money for an entire generation by shipping containers that arrived on the West Coast from the Far East into the Midwest and East Coast of the United States. An expanded Panama Canal offers shippers a potential alternative to this long-standing model, and western railroads have vowed to not lose a single container of business to the competition. Similarly, CSX and Norfolk Southern (the eastern railroads) have been building out their networks from eastern ports in anticipation of more freight arriving via the canal *and* in an effort to partner with the western railroads to provide a more robust rail alternative to the Canal. With the Canal's expansion now in limbo, the railroads are poised to fill the void with expanded alternatives, increased service, and better visibility. Combined with equally motivated shippers and carriers, intermodal's continued growth in 2014 seems assured.

## 2013 Continuing Trend: Big Data

A key enabler for expanding utilization of both dedicated fleets and intermodal is a world-class set of transportation systems that were once considered a luxury only the largest providers could afford. However, over the past 5 years, the migration of software to the cloud and adoption of SaaS models have made world-class technology



available to even the smallest of shippers. And while there is almost always a nice, initial improvement in routing quality, shipment consolidation, and modal utilization when first implemented, there is also a second window of major opportunity 12 to 24 months later. This is when the output from the TMS can be analyzed on a broader basis—when trends like seasonality, pooling opportunities, and lane balancing reveal themselves. Larger companies previously began using big data to improve their networks up and down the supply chain, but thanks to the adoption of the SaaS model for transportation services, the big data trend has taken root in smaller companies as well.

### **New 2014 Trend: Tightening Capacity (Yes, Really.)**

One of the reasons dedicated fleets and intermodal usage are likely to increase is because it serves as a hedge against tightening truckload capacity. Supply and demand of truckload capacity has been in balance since the end of the Great Recession despite dire (and repeated) predictions from carrier executives and industry experts. Two things suggest that 2014 might, in fact, be the year for the shortfall. The first is that the initial results of the Federal Motor Carrier Safety Administration's (FMCSA) Hours of Service (HOS) rules have come out. The HOS rules went into effect in July 2013. They are starting to put actual numbers against some of the lost productivity that was predicted. The study, conducted by the American Transportation Research Institute (ATRI), suggests that 80% of surveyed carriers experienced lost productivity since the rule changes. Preliminary results suggest the hit is in the 1-3% range—a daunting number for an industry with notoriously low margins.

A larger concern to shippers may be the impact the 34-hour restart and mandatory break after 8 hours may have on individual drivers. Of the 2,300 drivers surveyed, 82.5% indicated that the new HOS rules have had a negative impact on their quality of life. Also, 67% report a decrease in wages earned since the rules took effect.

The second issue is the economy is starting to get some consistency in its growth numbers. In the third quarter of 2013, gross domestic product (GDP) grew 3.6%. It has historically taken consistent growth in the 3% range to start driving transportation rates higher. The fact that this was only the fourth time in the past 18 quarters is a big reason why transportation supply and demand has remained in equilibrium. But if the economy starts posting consistent growth at a time when carriers' expenses are increasing and drivers' pay is decreasing, capacity will disappear quickly and shippers could be caught off guard. If the next prediction comes true, the capacity issue will be exacerbated further.

### **New 2014 Trend: Trucking Industry Consolidation**

What are bigger threats to small carriers vs. larger carriers? The lower cost and ease of entry into cutting edge technology, the expansion of private fleet and intermodal, the lost revenue stemming from the recently implemented HOS laws—these are all bigger threats to smaller carriers. Additionally, larger carriers are typically less reliant on profit siphoning freight brokers, have access to newer, more fuel efficient fleets, and enjoy greater economies of scale. And now with the Affordable Care Act (Obamacare) set to go into full effect, the cost of driver benefits is about to go up.

All of these issues point to the likelihood of smaller carriers hanging a “for sale” sign on the door or simply shutting the windows altogether. The longer the economy draws out its choppy comeback, the more at-risk small carriers will be. While the old saying suggests that ‘trucks never go out of business, they just change color,’ that does not mean the industry is impervious to short-term disruptions caused by consolidation.

## 2013 Continuing Trend: Migration from Distribution Networks to Fulfillment

The Internet—specifically Amazon’s—effect on consumers has been to create an ever-growing expectation by customers to get exactly what he or she wants whenever he or she wants it. The retailer’s efficiencies that are enabled by e-commerce (e.g., endless aisle, inventory reductions, reduced square footage) can be offset by a supply chain that has been designed to aggregate and push large(r) quantities of a smaller number of products out to a sales floor. While retailers are slowly (potentially too slowly) adopting the best practices necessary to expand the capabilities of a network of high-volume distribution centers to include the unique responsibilities that come with individual customer fulfillment, there has been less time and effort spent on how to optimize that parcel freight spend. For the first generation of e-commerce and direct-to-consumer efforts, this was not as important because the expense of shipping and handling was almost always borne by the consumer.

How does this affect transportation? In a world where most consumers’ expectations include “free shipping” in exchange for a minimum purchase and everyone’s prices can be compared with just a couple of mouse clicks, the ability for transportation professionals to minimize costs without sacrificing service will be paramount. This involves getting into the details of the parcel companies’ assessors and making certain that packaging weights and dimensions are correct. But the biggest opportunity may be the most difficult because it requires buy-in from the fulfillment side: right-sizing the boxes in which the merchandise is being shipped. Just as the combining of products into single-case orders is a money-saver, shipping dead air in overwrap that is much too large presents an enormous opportunity for companies for whom parcel shipping was considered an afterthought.

## New 2014 Trend: Final Mile

Early estimates from the 2013 holiday season suggest that 33-40% of seasonal shopping was done online. The online numbers throughout the year are not nearly that high, but the decade-long trend of double digit growth, year-over-year shows no sign of stopping. A number of issues suggest that the transportation industry’s innovation is about to be tested in final mile delivery. For starters, more and more manufacturers are selling their products direct-to-consumer, which means more companies are looking for the service. Secondly, **Amazon appears to be ready to tackle one of the last great anchors of brick and mortar retailing: groceries**. After years and years of running their Seattle-based test market, AmazonFresh has begun expanding into new markets, making fresh food available at the click of a mouse.

How these two issues affect transportation boils down to the third issue: **the traditional parcel delivery model limits them from growing**. For many young, tech-savvy consumers who live in big cities and work during the day, having packages delivered to their homes during the day is not desirable. Neither is trying to get to a terminal to sign for a package during normal business hours. And even in suburbia, where drop shipments are considered both safe and common, not many people are excited about the idea of milk and eggs sitting outside potentially for hours. In order to penetrate untapped markets and keep online retail sales growing, companies like Amazon need networks that can

deliver packages to lockers at convenience stores, or to the grocery store when the customer has placed a fresh order that they intend to pick up, or even to the house if it is a weekend. Both FedEx and UPS have identified this as an issue and begun heavy marketing campaigns around the ability to reroute packages to new locales or change delivery times if needed. Yet these are workaround solutions for a distribution model that is based on efficiently picking up from and distributing to a set of known points.

So where will this highly flexible, local, ultra-small parcel delivery service come from? If UPS and FedEx fail to evolve quickly enough, **the answer may be couriers**. In May 2013, the Messenger Courier Association of America (MCAA) changed their name to the Customized Logistics and Delivery Association (CLDA)—a move that signals a future far beyond the traditional contracts and legal documents. Developing a robust, flexible, highly-responsive final mile network will be critical for shippers in the coming months because **the biggest game-changer of all is just over the horizon**.

## New 2014 Trend: Same-Day Delivery

Jeff Bezos, founder and CEO of Amazon, oversaw the following three events in the fourth quarter of 2013:

- October 2013: [Washington Post Closes Sale to Amazon Founder Jeff Bezos](#) (Washington Post)
- November 2013: [Amazon Partners with U.S.P.S to Deliver Packages on Sundays](#) (Forbes)
- December 2013: [Amazon Receives Patent for "Anticipatory Shipping"](#) (Wall Street Journal)

The main reason transportation networks need to focus on becoming great at consumer level transportation and understand the complexities of a dynamic final mile is because Amazon is about to raise consumers' expectations for everyone with **delivery of ordered merchandise within 24 hours, seven days a week**. Companies that are caught flat-footed will be out of business before they even get a chance to adapt. Let's take a look at each of those headlines and explore in a bit more detail.

First, in October, Bezos closed on his personal purchase of the *Washington Post*. The few interviews with the Amazon CEO since his purchase have focused on breathing new life into the sagging industry. But despite the flaws of a printed word business model in an Internet age, there are a couple of things that newspapers do very well that hint at other motives. On a daily basis, papers like the *Washington Post* take stories, articles, and columns that did not exist in their final form until around midnight, create a finished product, and then physically deliver them to an entire city's worth of doorsteps less than six hours later, seven days per week.

Whatever anyone thinks about the future of the newspaper industry in general, this is a supreme display of supply chain prowess that nobody thinks about because it all takes place while we are asleep. Could a *Washington Post* subscription one day be included with an Amazon Prime membership? Maybe. Will an Amazon order placed by a consumer in the evening one day be delivered the next morning by the same truck delivering newspapers? Possibly. Will Bezos use his learnings about the newspaper's supply chain to see what he can apply to Amazon? Almost certainly.

In November, Amazon announced a new partnership with the United States Postal Service (USPS) to deliver packages on Sundays. Similar to the newspaper industry, the USPS is a service losing massive amounts of money (\$16 billion in 2012) and is struggling with an identity crisis in the digital age. What is one of the few lucrative aspects of the USPS? It is package delivery.



Enter Amazon, who is only too happy to pay a fair price for the USPS's latent capacity instead of the exorbitant premiums that private parcel carriers like UPS and FedEx would demand.

Initially, Sunday delivery service is only going to be available in New York and Los Angeles, but plans to roll out to other cities have already been announced. It is not too difficult to see this ultimately being offered in the 40 largest metropolitan areas that account for about 50% of the U.S. population. And similar to newspaper delivery, Amazon now has a partnership with a provider who is already delivering to almost every single address six days per week who has now agreed to deliver on Sundays as well. In the current setup, that would mean an item needed for work or school could be ordered on Friday and be sitting at a customer's doorstep before it is needed on Monday morning. But next-day delivery is not where Amazon is headed.

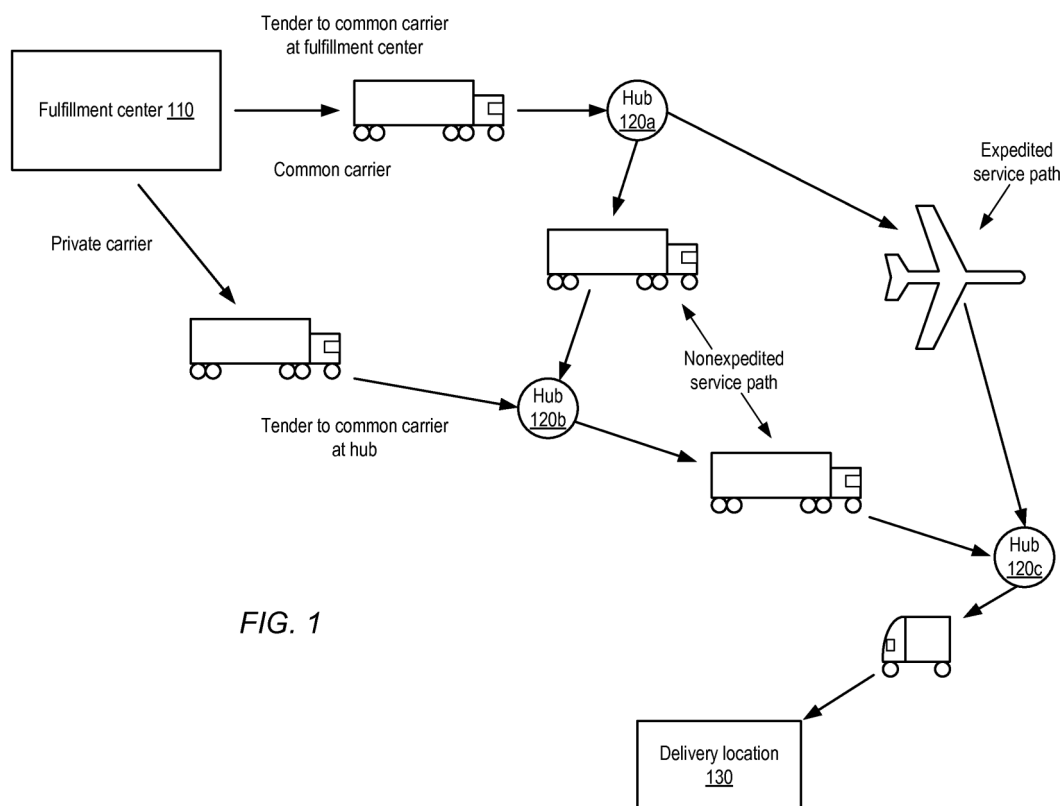


FIG. 1

Source: U.S Patent Number 8,615,473 B2

In December of 2013, Amazon was granted a patent for “**anticipatory shipping.**” Essentially, Amazon will look at prior purchases, wish lists, items that are left sitting in a digital shopping cart, the number of similar items a consumer has clicked on and, supposedly, even the length of time a mouse hovers over an item and compare that to the number of times other customers have ordered that same item. It will potentially also roll in other items based on how frequently *Item A* and *Item B* were bought together, and the number of times *Item B* was eventually

purchased at a later date once *Item A* was acquired. It will overlay this information with what other customers in the same area are doing and create a series of shipments without knowing who the final customer will be or where it should be delivered.

So far this is just a patent. Amazon has announced no plans for how it intends to use this technology. As one can imagine, press coverage has fixated on how Amazon intends to know what you want before you want it. **But to supply chain professionals, this is a lot less mystifying. This is big data being used for micro-forecasting and forward deployment at its finest.**

It is less likely to be about “Big Brother” and more likely to be around a series of seasonal events such as back to school, Halloween, hunting season, or the release of a new video game. In each of these events, lots of people from a given area who have similar interests in fact order the same exact item or items.

From a supply chain perspective, this is not about sending something to a customer before it is ordered; it is about reducing the amount of time between the order and the delivery. When Amazon first began making noise about same-day delivery, many industry experts focused on the strain this would put on carriers. *It already takes half a day to get the order picked and ready for shipping at the distribution center, and even then it would only work if the origin distribution center were within a few dozen miles of the destination.* It appears that Amazon is preparing itself to do that work ahead of time. And if incorporating same-day shipments into the network appears to be too challenging for the traditional parcel carriers? Perhaps Amazon will simply contract with a group of people who are already driving by, if not delivering to, everyone already, such as the newspaper delivery van or the USPS.

Individually these stories are all interesting. When combined together they give the appearance of a full frontal assault on same-day delivery, seven days a week at minimal or no extra cost. When Amazon successfully creates this as a customer expectation and combines it with already competitive prices, traditional retailers will have to wonder why anyone would ever want to step foot in a store again.

## Conclusion

With substantial budgets and few assets committed to long-term leases, transportation tends to be an excellent precursor of larger supply chain trends. But because it is so malleable, many trends get identified, adopted, and adapted so quickly and frequently that it does not seem like much is changing at all.

Stop and think about relocating entire supply chains to get product closer to both new and old consumers, and then forward-deploying merchandise based on shopping history to get even closer. Then non-traditional transportation networks are utilized to insure that items as diverse as food and video games can be delivered to the location of each customer’s choosing less than one day later. **This is nothing short of amazing.** Shippers and carriers alike need to understand the larger consequences of transportation trends and act decisively if they hope to thrive, rather than simply survive.

# **Appendix: Transportation Metrics**

## Mode Utilization

Mode	2013	2011
Truckload	37.8%	33.9%
Less-than-Truckload (LTL)	13.1%	15.4%
Air	6.4%	7.8%
Parcel	12.8%	12.3%
Intermodal	5.7%	4.9%
Boxcar	2.9%	1.9%
Ocean	19.2%	21.5%
Other (e.g., Barge, Courier)	2.1%	2.3%
	100.0%	100.0%

## Truckload Metrics

	Year	Average	Q1
On-Time Pickup	2013	94.7%	98.6%
	2011	93.2%	98.0%
On-Time Delivery	2013	93.4%	98.0%
	2011	94.2%	97.6%
OSCOT	2013	92.9%	98.0%
	2011	84.8%	93.3%
ODCOT	2013	93.9%	97.0%
Tender Load Accept %	2013	90.0%	98.9%
	2011	90.3%	99.0%

## LTL Metrics

	Year	Average	Q1
On-Time Pickup	2013	95.6%	99.0%
	2011	94.9%	99.0%
On-Time Delivery	2013	94.9%	97.4%
	2011	94.6%	97.9%

## Intermodal Metrics

	Year	Average	Q1
On-Time Delivery	2013	91.3%	97.3%
	2011	92.5%	98.1%

## Ocean

	Year	Average	Q1
On-Time Sailings	2013	95.2%	95.0%
	2011	92.7%	96.5%
On-Time Arrival	2013	90.2%	95.0%
	2011	91.4%	95.0%



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