

Exorcising ghost lanes from transportation procurement

Procuring freight transportation is a well-established supply chain process, yet the pervasiveness of ghost lanes as a consequence of “coverage” procurement strategies is little understood or appreciated.

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Ghost lanes are freight lanes contracted to motor carriers that are never used by the shippers that procure them. Research carried out at the MIT Center for Transportation & Logistics (MIT CTL) shows that contracting with carriers to move cargo that never materializes is far more prevalent than is widely assumed and exacts a surprisingly high price for both shippers and trucking companies.

We built a predictive model to identify which freight lanes are the most likely to yield very few or no loads, to estimate how much this outcome costs shippers, and to identify ways the industry can eliminate this profligate practice. Addressing the ghost lane issue may mean changing deep-seated behavior patterns.

Multiple pain points

We analyzed a large data set of shippers' procurement outcomes and found that about 70% of the lanes procured in a given year end up as ghost lanes in that year. In other words, some 70% of the procurement process for motor freight—a complex process that can take many months to complete—was not needed.

Every participant pays a price for such extravagance.

In addition to shouldering unnecessary administrative costs, shippers incur higher freight costs. We modeled carriers' behavior year-over-year and found that carriers burdened with relatively high numbers of ghost lanes tend to increase their prices for the shippers involved. Our research indicates that for every 10-percentage point increase in the number of ghost lanes a carrier takes on in a given year, contract prices for that shipper increase by 1% the following year. This means that on average, shippers see 7% higher contract prices the next year than they would have without such high ghost lane rates.

Motor carriers waste time and effort bidding for

business that does not exist and fail to earn the revenue associated with these lanes. Also, allocating trucks to carry phantom cargo can create network imbalances that make it more difficult for a carrier to compete in potentially profitable lanes. Such imbalances can also lead to an increase in empty miles, making the network less efficient and less sustainable.

Consumers can also suffer the adverse consequences of ghost lanes when escalating freight transportation costs result in higher product prices.

Picking zero-load lanes

Why do shippers engage in such a seemingly needless and wasteful exercise?

In general, shippers make a strategic choice to include these lanes in their procurement events to hedge against demand uncertainty. We call this a coverage approach to procurement. Carrier capacity is procured a year in advance, and shippers do not know for sure what volume of orders they will need to move. There are many possible ways in which a shipper might underestimate future volumes. For example, perhaps a new warehouse did not receive the volumes projected by the company, or a customer failed to place the orders anticipated.

Faced with such ambiguities, shippers include lanes with a low probability of yielding cargo in the bid process. They want to make sure that contract rates from known carriers are on file in

case demand picks up in these lanes. Also, shippers want to minimize the likelihood of having to resort to the spot market to find capacity.

Can lanes likely to fall under the ghost category be identified ahead of a procurement event? To answer this question, we created a predictive model that analyzed lane characteristics and the profiles of ghost lanes. The model confirmed that these lanes can be identified.

First, a lane's newness is the strongest indicator of its potential to become a ghost lane. Lanes not included in the previous year's bidding exercise are prime candidates. We found that 85% of ghost lanes were not included in last year's procurement event.

In addition, lanes procured the previous year that failed to yield loads exhibited the same tendency the year before that. It appears that ghost lanes typically recur year after year, so they can be detected by checking past performance.

The model indicated that the ghost lanes that were not new—that is, those that had been procured the previous year—were often low volume in the past. Also, lanes characterized by high geographic aggregation levels—for example, region-to-region or three-digit zip code-to-three-digit zip code—are more likely to become ghost lanes. Such broad aggregations often lead to lane duplication that results in very low or zero load volumes on some lanes.

Addressing the problem

If the ghost lane problem is so prevalent, what can be done to address it?

The most direct solution is to identify lanes that are prime candidates for meeting the definition of “ghost” and remove them from procurement events. Maybe these lanes can be procured in separate mini bids if the shipper is adamant that it wants contract rates for this business. Or the loads could be put out to bid if the business materializes. Alternatively, if the volumes are very low then perhaps using the spot market to acquire capacity in these load-deficient lanes is not such a bad idea.

An obvious argument against these solutions is that they expose shippers to the uncertainty-related risks that ghost lanes intend to mitigate. However, after considering this argument in detail, we concluded that the ghost lane risk management strategy may not be as effective at shielding shippers from capacity and price uncertainty as is assumed.

Based on our research, some 95% of new lanes in a given year become ghost lanes. It follows that only about 5% yield loads for the carrier. We looked at carrier acceptance rates on this small group of lanes and found that about 73% of the loads tendered are actually accepted. This is an unacceptably low number given that shippers generally expect acceptance rates for motor freight of 95% to 99%.

These figures suggest that including new lanes in bids is not an effective hedge against demand uncertainty, because

even when loads materialize, a relatively low number are accepted by carriers.

We also explored the contract prices offered by trucking companies that accept loads on these new lanes that do see loads. Our research showed that contract prices were 13% to 40% higher than spot prices at the times the loads became available. So, shippers appear to be overpaying for freight transportation on these potential ghost lanes.

In combination, these findings provide convincing arguments for eliminating ghost lanes from procurement events. To address the problem, shippers need to look more diligently at past performance and identify the ghost lanes as well as their underlying causes. For example, how were these lanes defined, why were they included in bids, and what price was paid for their inclusion?

Of course, every distribution network is different and there may be competitive reasons for retaining ghost lanes. However, at the very least, shippers would benefit from gaining a more thorough understanding of how this strategy affects their networks.

Attitudinal habits at work

On a more philosophical level, the existence of the ghost lane issue reflects broader human behavioral patterns.

People prefer to know what their current costs are than guess what their future, unknown costs might be; the devil you know is preferable to the unknown devil. In a freight transportation context, this means swallowing the administrative and extra freight costs generated by including ghost lanes in bids. At the same time, shippers overemphasize the risks that come with future market uncertainty including the challenge of finding truck capacity especially in the spot market.

Another behavioral factor is the high value people put on flexibility. Individuals like to have as many options as possible to offset the risks that come with future uncertainty. Researchers have explored this tendency in controlled experiments. The upshot of this work is that people will knowingly overinvest today to secure more options later on. From a freight perspective, shippers are willing to incur avoidable transportation costs and the effort required to sift through carriers in lanes they may never use to acquire the flexibility needed to ride out future volatility.

We believe there is a need to research these tendencies further. For example, what value do shippers place on flexibility in the freight transportation procurement process, and to what extent do they recoup the costs involved?

The research described above suggests that shippers might be investing in a risk management strategy that does not deliver the returns they envisage. ☹

Research on ghost lanes and related transportation procurement practices is ongoing at the MIT FreightLab.