Inhibitors to Rail Carload and Intermodal Market Share Growth

Industry Study

January, 2009

Norbridge

AGENDA

- **Background**
- Norbridge Study Approach
- Summary of Findings
- Intermodal Growth Inhibitors
- Carload Growth Inhibitors

Introduction

- Norbridge, Inc. is a management consulting company that assists clients in making better decisions to improve performance
- We have considerable experience in all aspects of transportation and logistics including rail and trucking
- We conducted this study because we were interested in understanding why rail did not gain share when fuel prices spiked in the first half of 2008

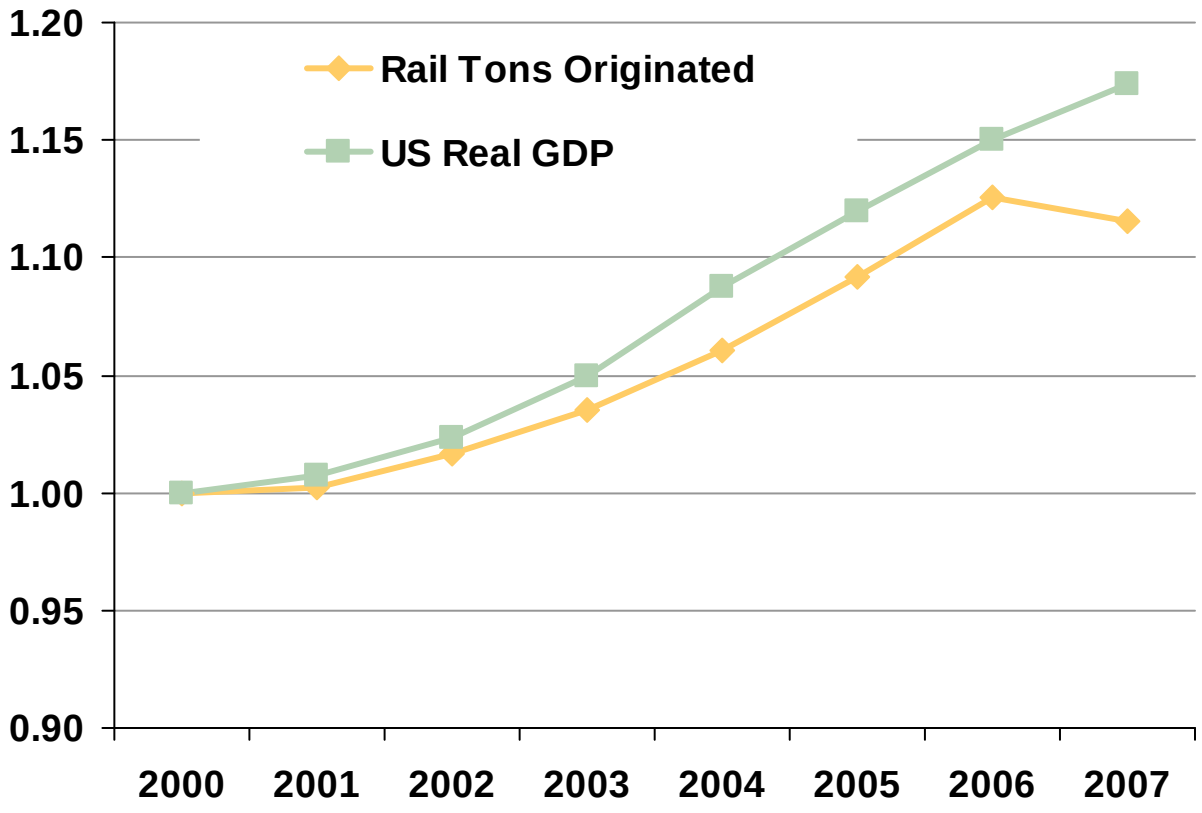
Study Participants

- We interviewed 40 transportation buyers to get their opinions on how their modal decisions changed when fuel costs spiked in the first half of 2008
- Interviewees were major companies across various industry segments and included both shipper and receiver transport buyers
- Interviews were conducted between October and early December, 2008
- Interviewees were typically transportation managers

For the last several years, rail tonnage has trailed real GDP growth

Rail Tonnage Change vs. Real GDP Change

2000 = 1



Source: AAR, U.S. BEA, Norbridge Analysis

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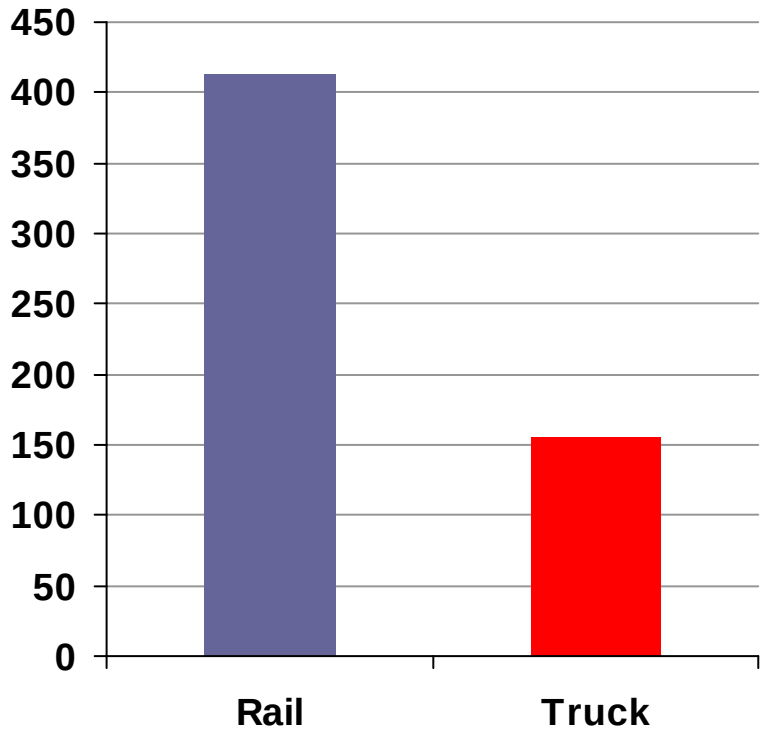
But by the first half of 2008, many macroeconomic factors favored a shift to rail

Issue	Detail
Fuel Prices	▪ Trucks are more fuel intensive than rail
Productivity	▪ Rail productivity had improved or stabilized as truck productivity had declined
Environmental	▪ Rail has a low carbon footprint relative to truck, and "green" was emerging as a issue
Capacity	▪ While constrained in some lanes, rail has available infrastructure capacity in many lanes, while highways have become increasingly congested

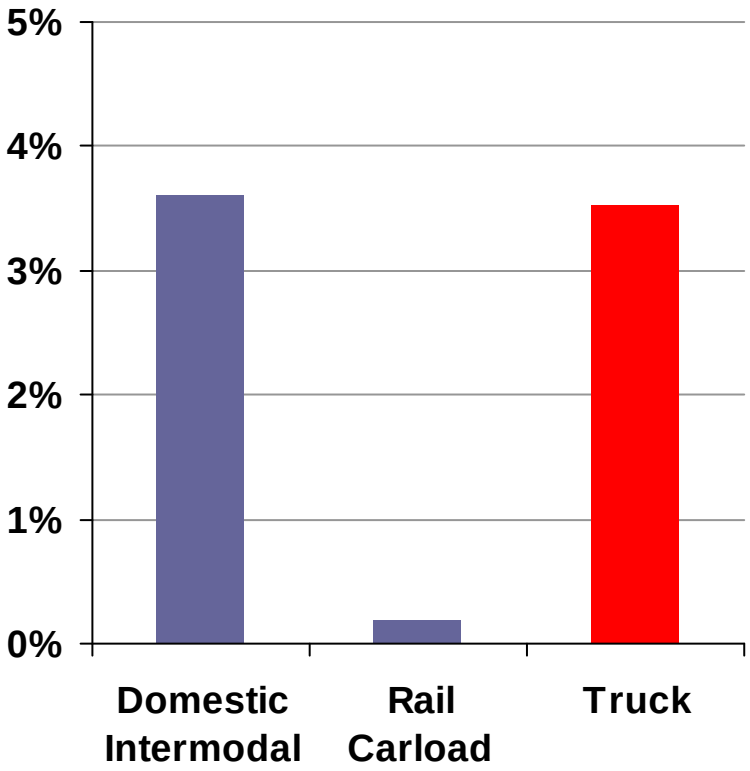
Rail is nearly three times as fuel efficient as truck, yet did not gain share as fuel prices rose in the first half of 2008

Ton-Miles per Gallon of Fuel



Volume Increases by Mode*

First Half 2008 vs. First Half 2007



Source: Texas Transportation Center; EIA, IANA, AAR, ATA through June, 2008
***Domestic Intermodal carloads; Rail carloads originated, Truck tonnage**

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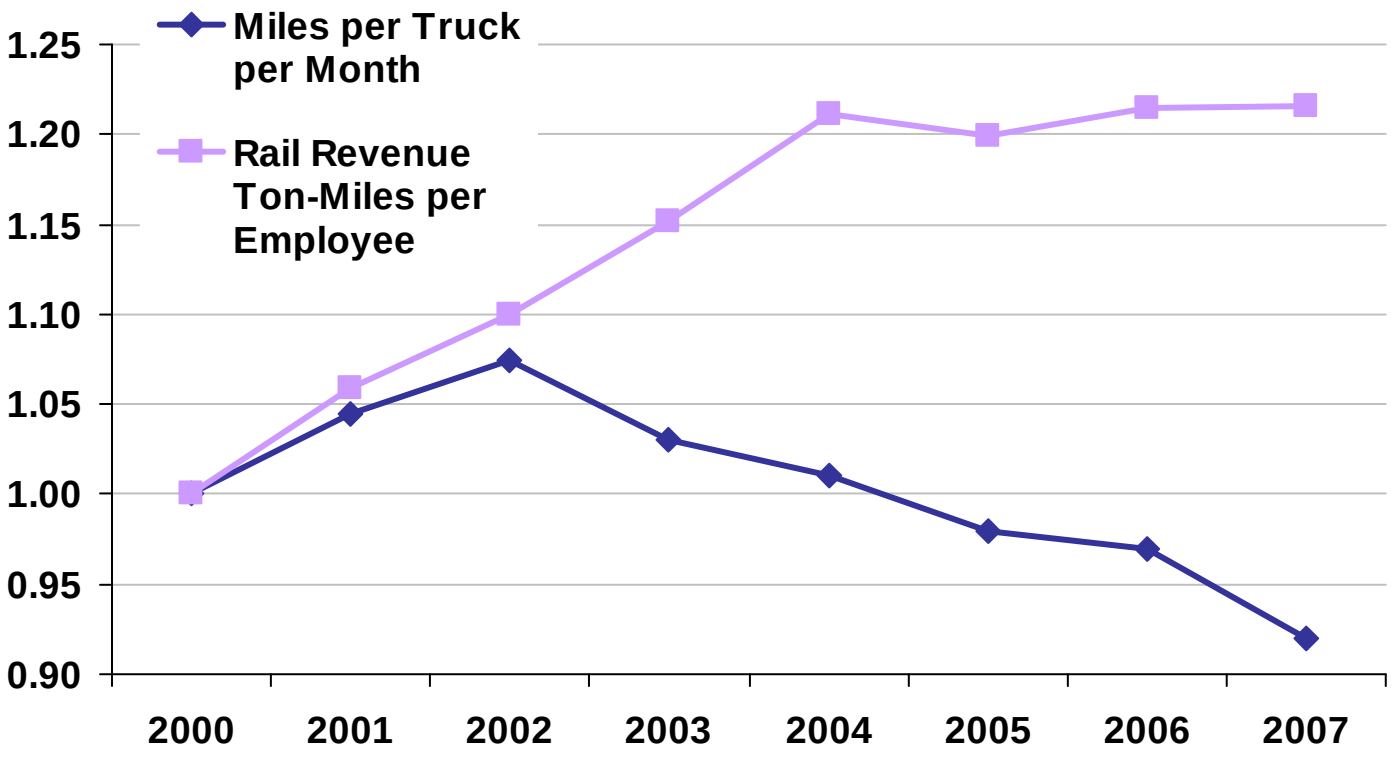
Truck productivity has declined during the past five years as rail productivity has remained high

U.S. Miles per Truck per Month vs. U.S. Rail Revenue Ton-Miles per Employee

2000=1



Source: ATA, AAR, Norbridge Analysis
Note: Comparison shows key productivity indicators for each mode

For a shipper interested in sustainability and green sourcing, rail has lower emissions per ton-mile than other modes

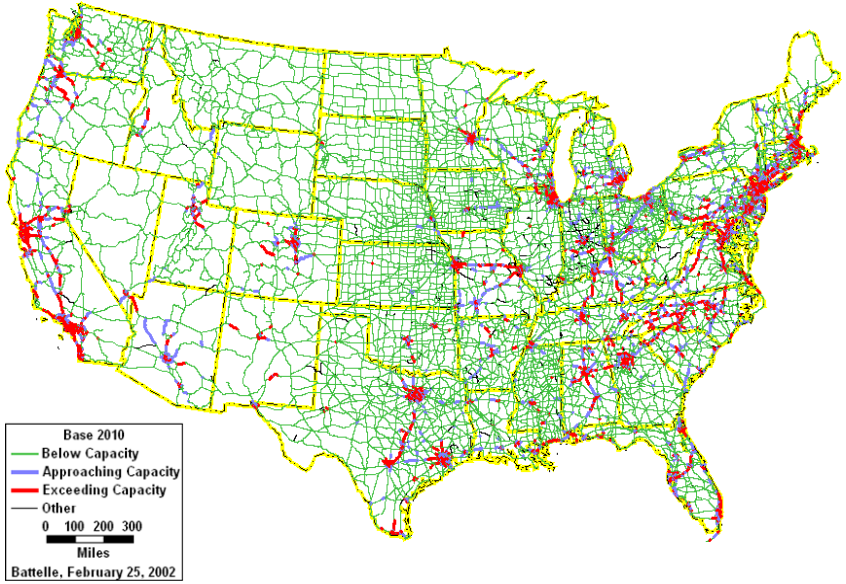
Emissions per Ton-Mile

Rank (1= Most Desirable	Oxides of Nitrogen	Volatile Organic Compounds	Particulate Matter	Carbon Monoxide	Carbon Dioxide
1	Rail	Rail	Air	Rail	Rail
2	Water	Water	Rail	Water	Water
3	Truck	Air	Water	Air	Truck
4	Air	Truck	Truck	Truck	Air

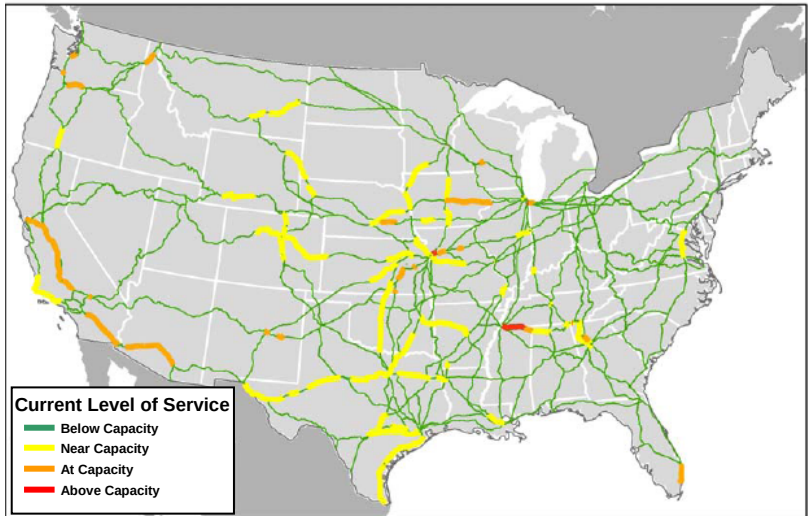
Source: Envirotrans, AAR

The railroad system has more available capacity in several major metro areas than the interstate highway system

Interstate Capacity Issues (estimated 2010)



Rail Capacity Issues (2007)



Source: Texas Transportation Institute; FHA, National Rail Freight Infrastructure Capacity and Investment Study

Given these favorable trends, why didn’t rail gain share?

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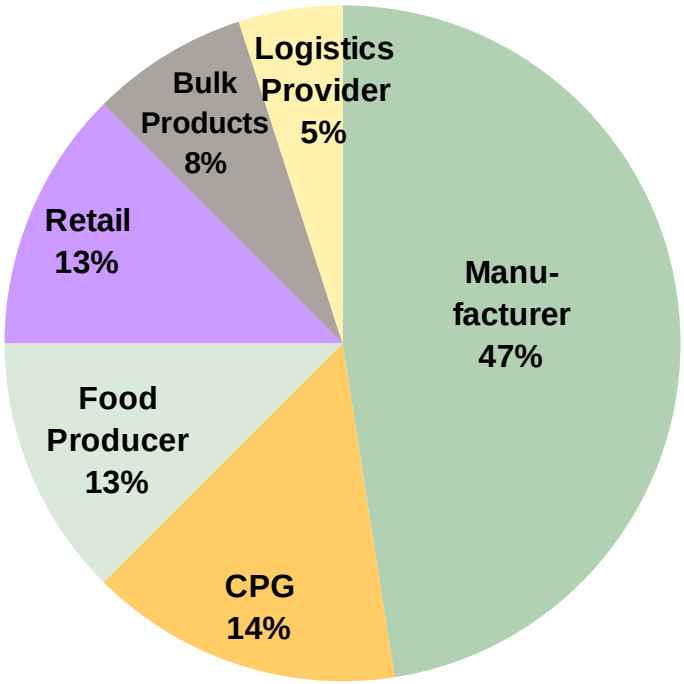
- Summary of Findings
- Intermodal Growth Inhibitors
- Carload Growth Inhibitors

To answer this question, we interviewed 40 major transportation buyers

Industry Representation



Total: 40 Interviews

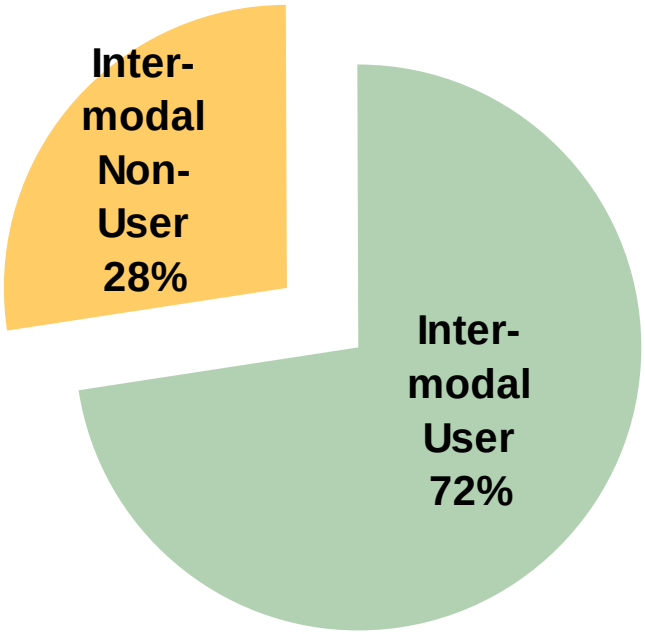
Interview Scope

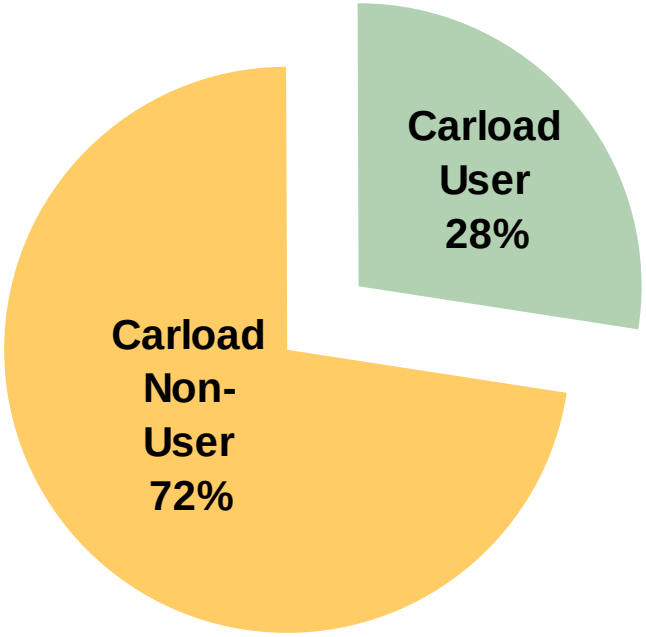
- Domestic intra-North America shipments
- Shipments >250 miles
- Shipments that could be potentially shipped in dry van or flatbed truck
- Customers with the scale and volume required to ship in truckload quantities
- Interviews were conducted from October through December 2008

Interviewees were comprised of a mix of rail users and non-users

Interviewee Modal Usage

"Have you used rail (intermodal or carload) service recently?"





Total: 40 Interviews

We interviewed shippers regarding three sets of issues

Issue	Detail
Supply Chain Modal Decisions	▪ Recent changes to modal mix and distribution network ▪ The reasons for those changes
Rail Growth Inhibitors	▪ Inhibitors to significant intermodal growth ▪ Inhibitors to significant rail carload growth
Opportunity to Increase Carload or Intermodal	▪ Potential opportunity for modal shift towards rail intermodal or carload if issues were resolved

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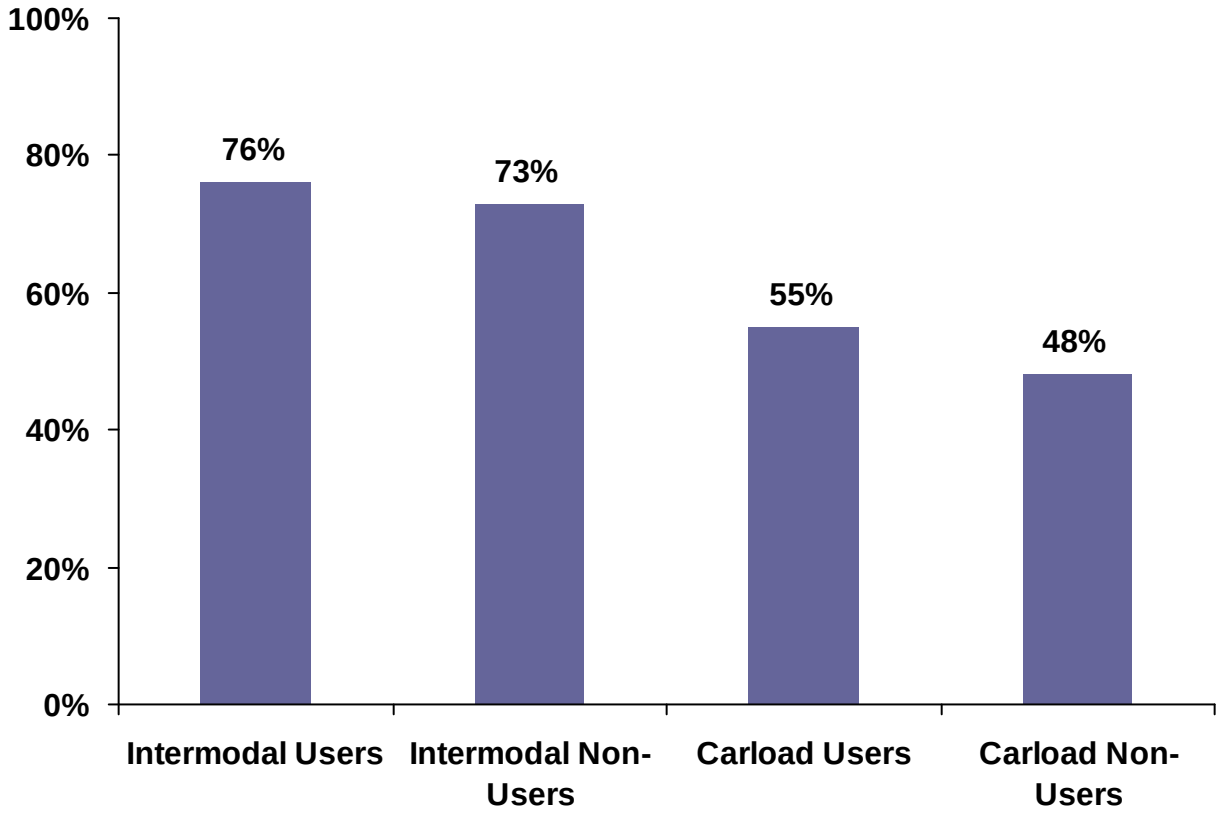
- Norbridge Study Approach
- **Summary of Findings**
- Intermodal Growth Inhibitors
- Carload Growth Inhibitors

Rail service was considered a major inhibitor to growth, if not the primary inhibitor, across all survey segments

Interviewee Responses

Interviewee Mentions of Rail Service as an Inhibitor to Increased Rail Usage

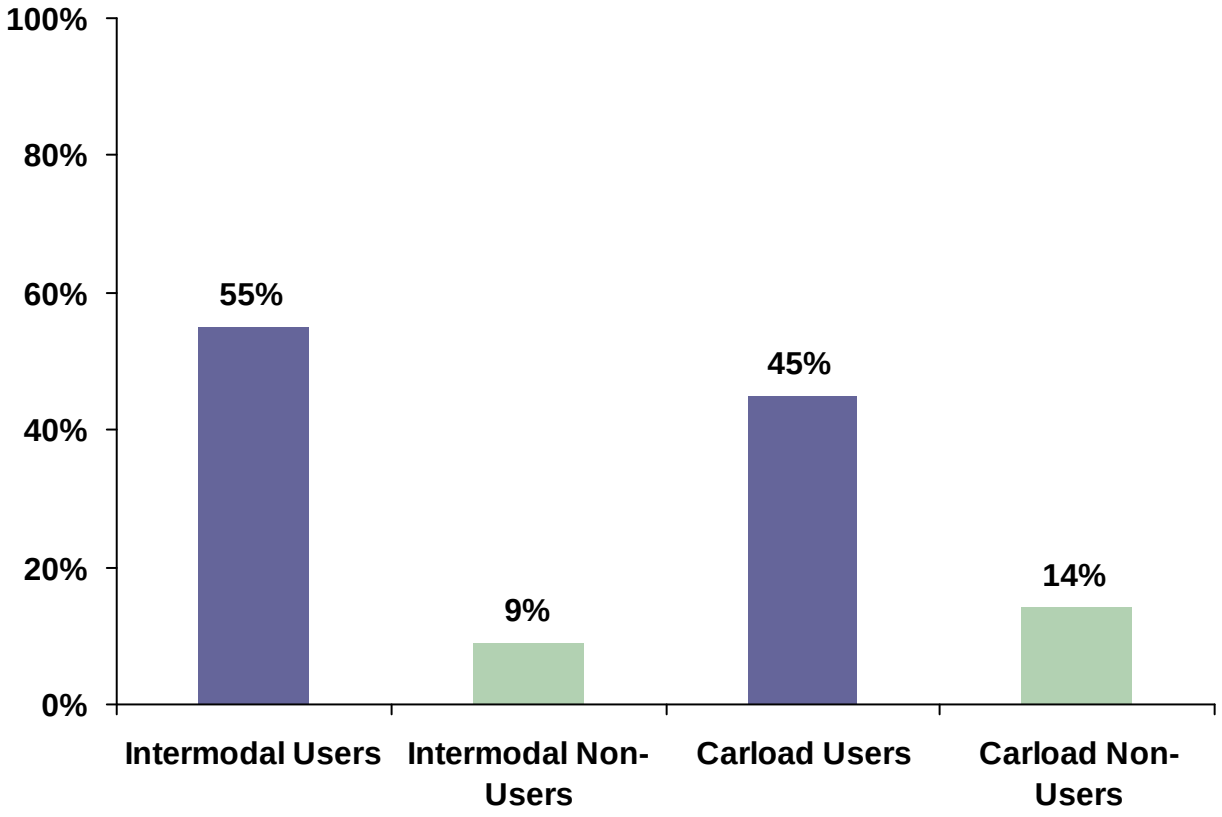


Source: Interviews
Note: Service issues include transit time and reliability

Price was also a factor in limiting additional use of rail for existing carload and intermodal users, but was not a major barrier for non-users to convert to either service

Interviewee Responses

Interviewee Mentions of Price as an Inhibitor to Increased Rail Usage

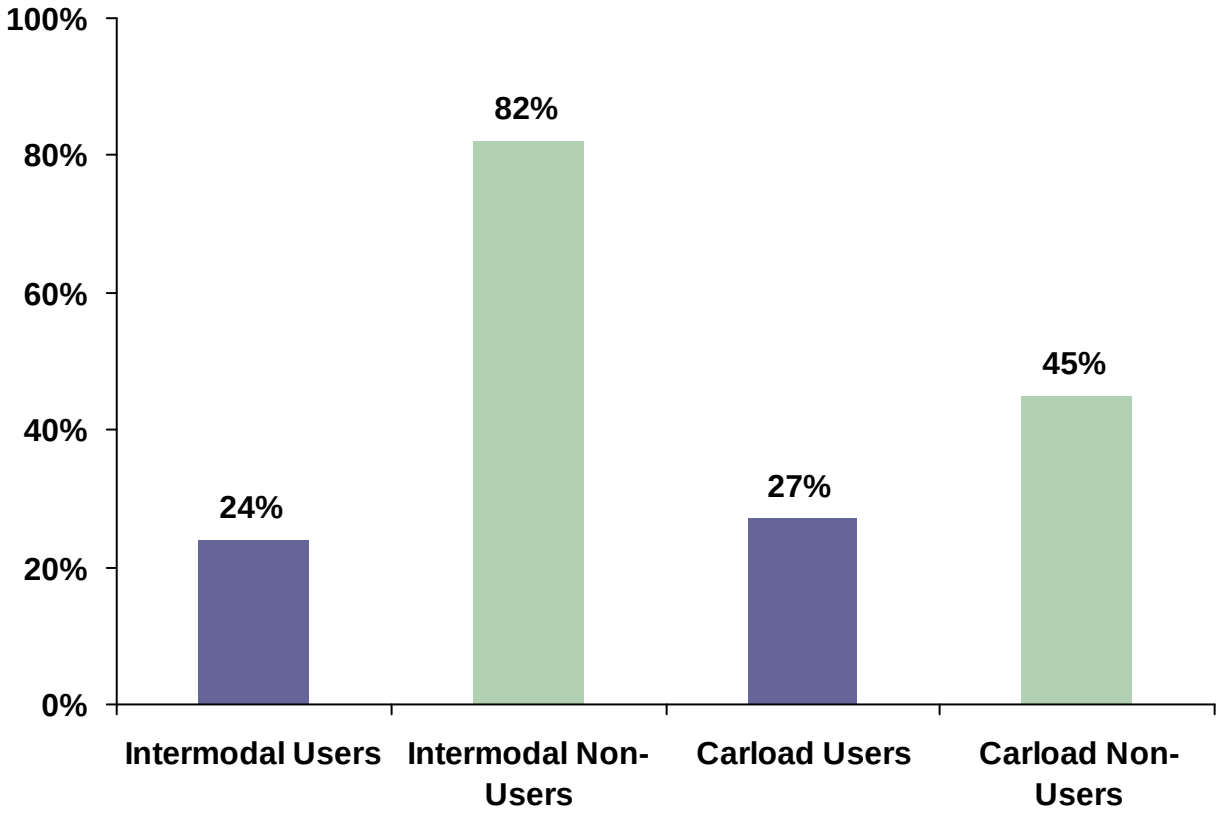


Source: Interviews

Rail product misalignment with buyer supply chain processes and systems was the leading inhibitor for non-users to begin using carload or intermodal

Interviewee Responses

Interviewee Mentions of Supply Chain Processes/Systems as an Inhibitor to Increased Rail Usage

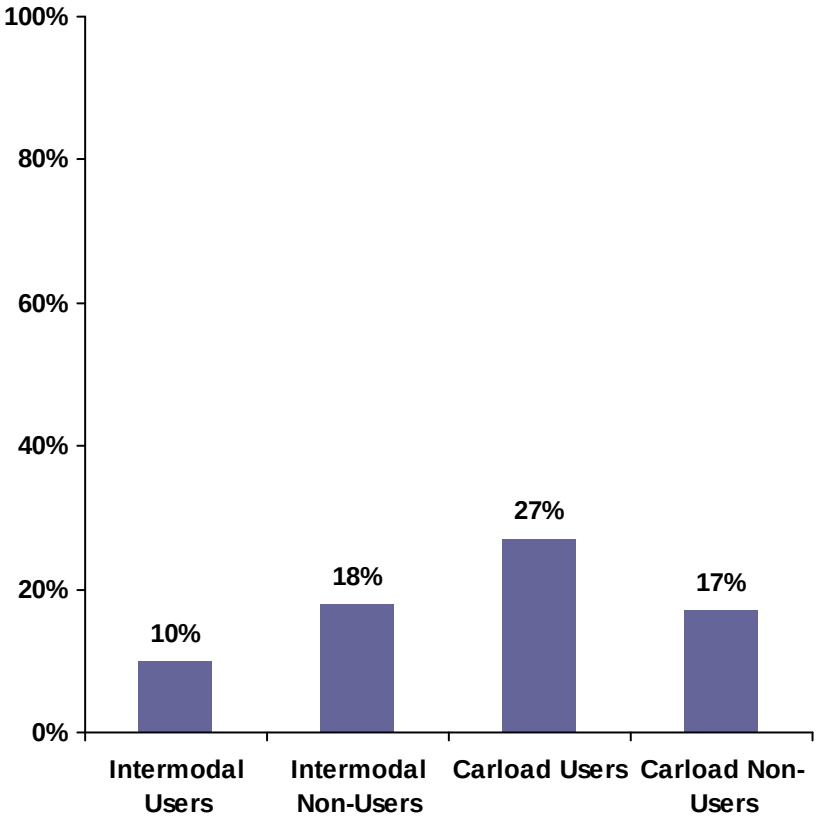


Source: Interviews

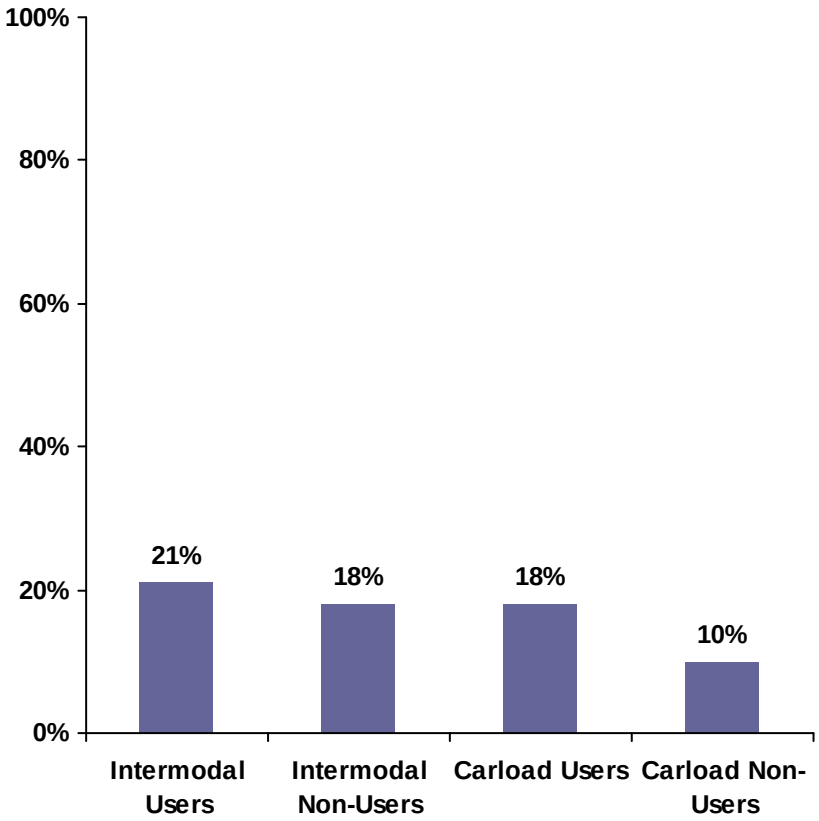
Risk of product damage and ease of doing business were relatively low inhibitors of increased rail use

Interviewee Responses

Interviewee Mentions of Damage as an Inhibitor to Increased Rail Usage



Interviewee Mentions of Ease of Doing Business as an Inhibitor to Increased Rail Usage



Source: Interviews

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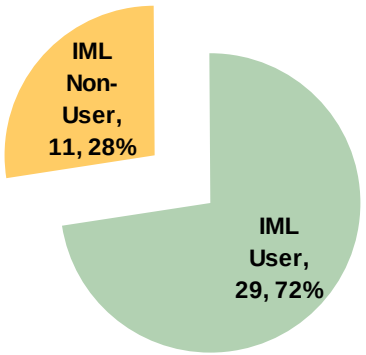
- **Intermodal Growth Inhibitors**
- Carload Growth Inhibitors

Interviewees that traditionally shipped intermodal increased their usage as fuel prices rose

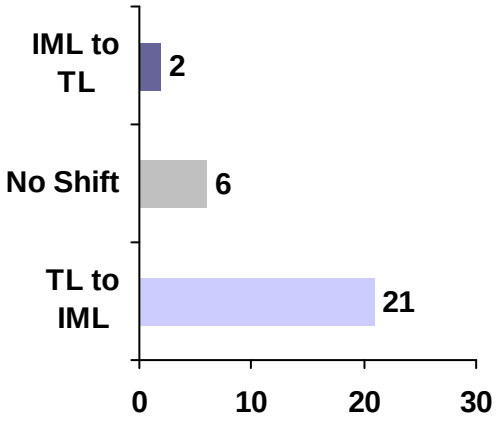
Modal Usage

"Have you used intermodal (IML) service recently?"



Modal Usage

"Have you made any changes in your modal mix?"



- **Of the 21 interviewees to shift from truckload to intermodal**
  - **20 said that the impact of fuel on total delivered cost played a role**
  - **7 stated that limited truck capacity also played a role**

Interviewee Opinions

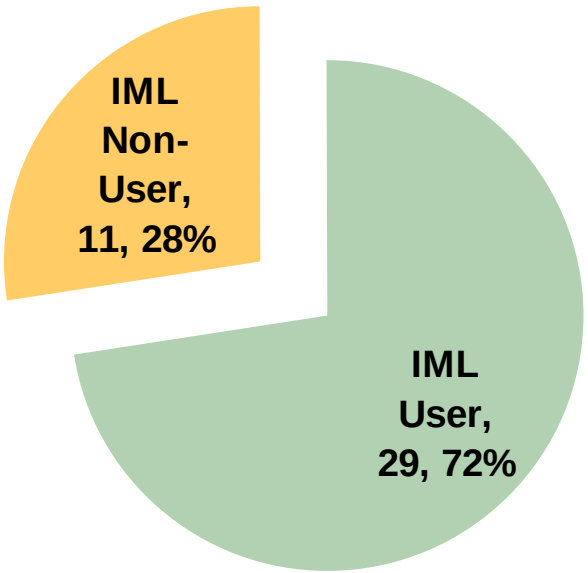
- **"Fuel prices increased total delivered cost of truck relative to rail"**
- **"Not only have fuel prices increased the cost of truckload, but some carriers now refuse loads that they never refused before in order to avoid empty miles"**
- **"The coming (truckload) capacity storm is leading us to diversify our modal options"**

Source: Interviews
Note: Truckload (TL) and Intermodal (IML)

However, intermodal attracted few new shippers as fuel prices increased

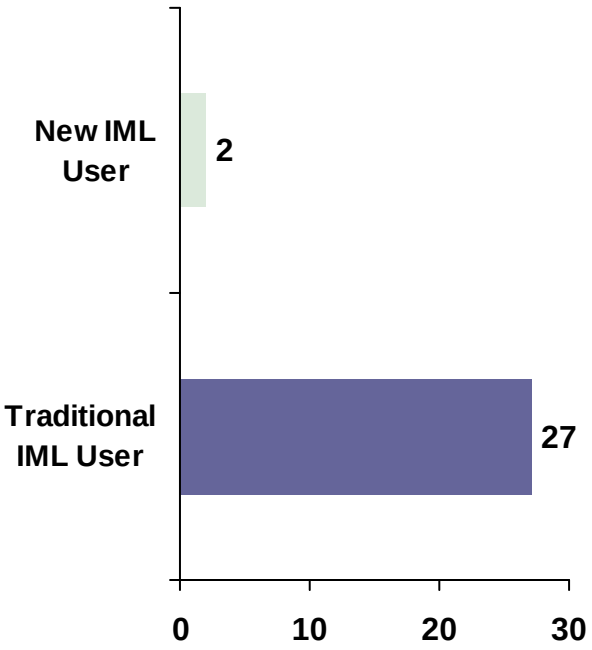
Modal Usage

"Have you used intermodal (IML) service recently?"



Modal Usage

Number of intermodal users that mentioned first using intermodal in the last two years

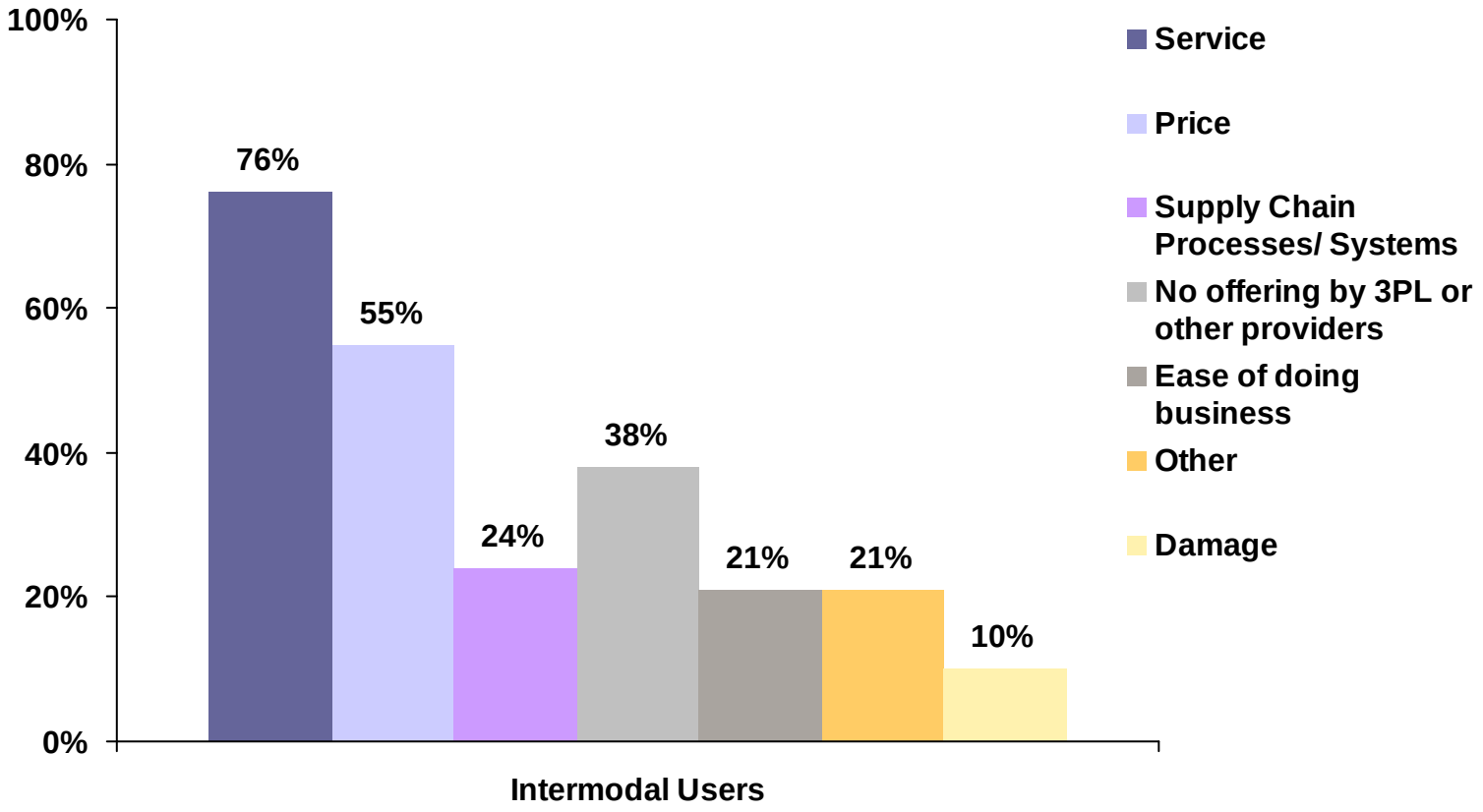


Source: Interviews
Note: Intermodal (IML)

For existing intermodal users, service quality and price were the biggest inhibitors to further increasing intermodal share

Interviewee Responses

"What are the main inhibitors to shifting significant volume to intermodal?" – Number of Mentions*
29 Intermodal Users

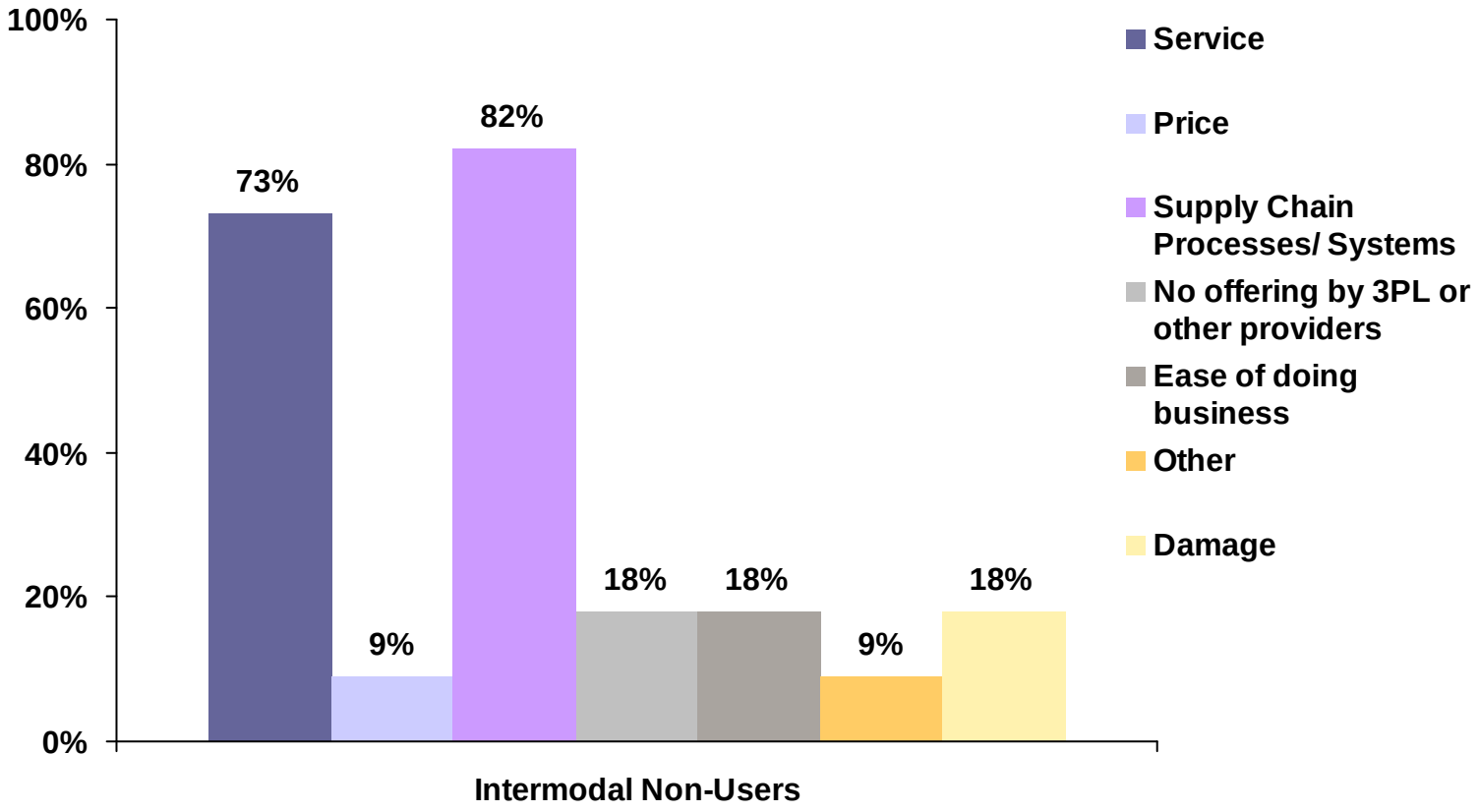


Source: Interviews
***Ordered by total mentions by users and non-users**

For intermodal non-users, fit with supply chain processes/ systems, and service were the biggest intermodal inhibitors

Interviewee Responses

"What are the main inhibitors to shifting significant volume to intermodal?" – Number of Mentions*
11 Intermodal Non-Users

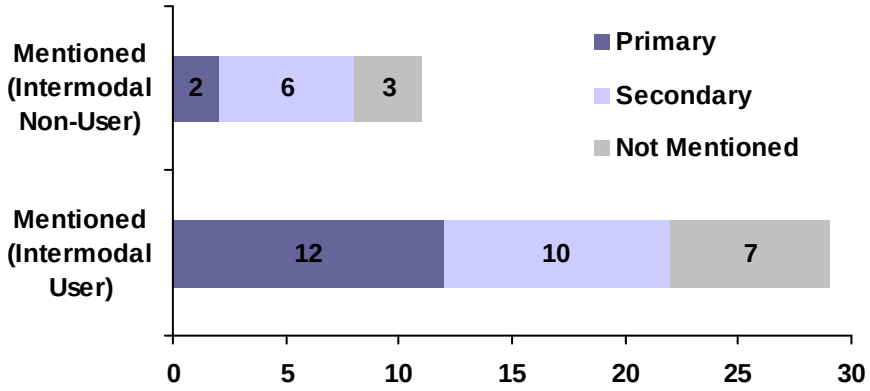


Source: Interviews
***Ordered by total mentions by users and non-users**

75% of interviewees mentioned service quality as an inhibitor of increasing intermodal share

Interviewee Responses

"What are the main inhibitors to shifting significant volume to intermodal?" – Mentions of Service Quality



- 30 interviewees mentioned service as an inhibitor
  - Some felt that this was more perception than reality
  - Others were genuinely dissatisfied with service
- Many interviewees that cited service as an inhibitor qualified their response by stating that price was the most significant barrier at shorter lengths of haul, service at longer lengths of haul

Source: Interviews

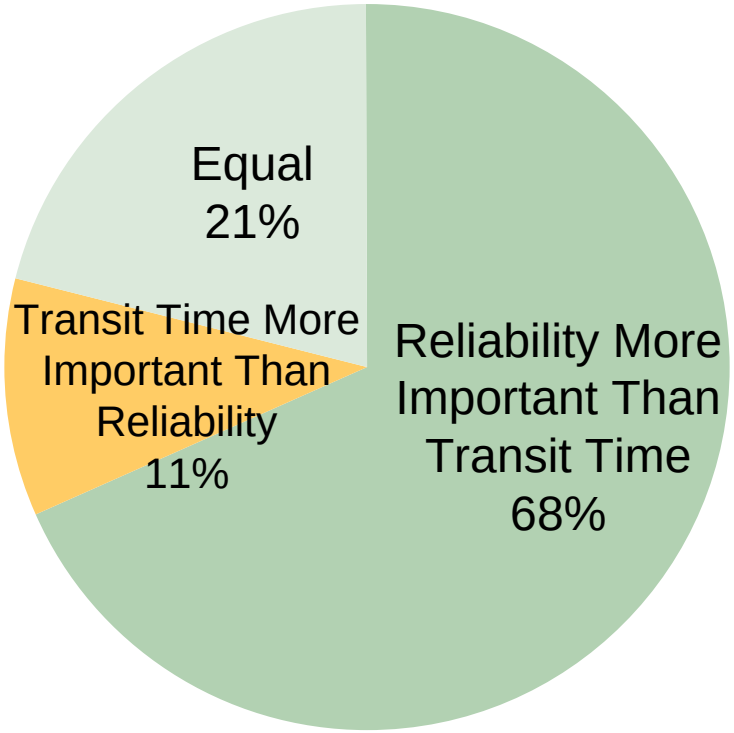
Interviewee Opinions

- "Inconsistent intermodal service affects our total cost analysis when making modal decisions. It impacts the cost of holding inventory, putting intermodal on the losing side of many battles"
- "The Just-In-Time model is too ingrained. Both transit time and reliability would need to be essentially equivalent to truck."
- "Door-to-door product needs to be on time…not late, but also not early"
- "Intermodal boxes frequently arrive 36-42 hours after their scheduled arrival time. This is unacceptable to most shippers"
- "My on-time percentage for intermodal ranges from 70% to 92% vs. truckload at 95-99%"

Reliability is considered a more significant inhibitor than transit time

Interviewee Responses

"Is Reliability or Transit Time More Important?" – Number of Mentions



Comments

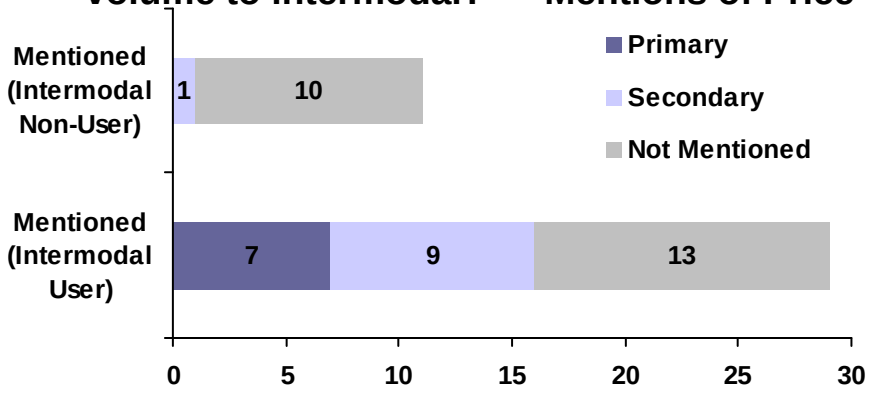
- **87% of respondents with a stated preference for transit time or reliability (13 of 15) felt that reliability was a more significant inhibitor to intermodal than transit time**
- **93% of interviewees queried (14 of 15) felt that if there were a guaranteed service option, intermodal would be more attractive – even if transit times were a day or two slower**

Source: Interviews

Intermodal users often view price as an inhibitor for increasing share, but price is not a major barrier for intermodal non-users

Interviewee Responses

"What are the main inhibitors to shifting significant volume to intermodal?" – Mentions of Price



- **Price was only mentioned by one non-intermodal user, and as a secondary inhibitor to use. Supply chain issues may make price a moot point**
- **Price was frequently mentioned among intermodal users as an inhibitor of shifting volume to moves of 250-750 miles**
- **Price was not a major inhibitor on existing intermodal longer-haul lanes**

Source: Interviews

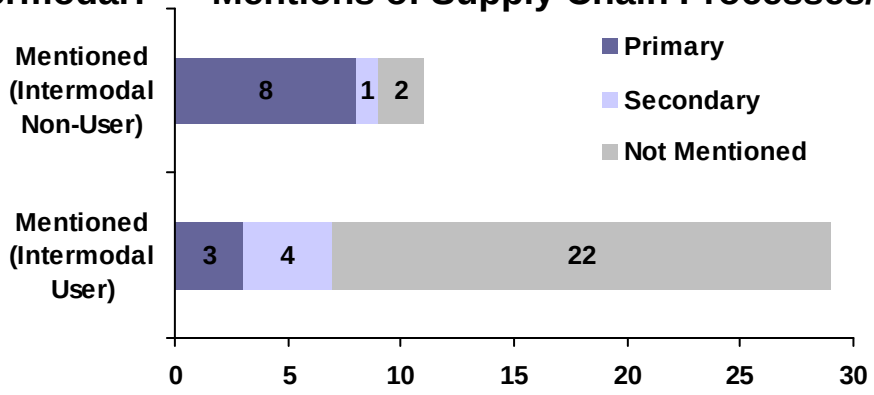
Interviewee Opinions

- **"We don't really even consider intermodal at distances less than 650 miles"**
- **"Even in some longer haul lanes, the total delivered cost of priority intermodal trains exceeds that of truckload"**
- **"If there were more rail ramps where we need them, the length of haul required for price parity with truckload could decrease from 750 to around 500 miles"**

Supply chain processes or systems are a major barrier for shippers that do not currently use intermodal

Interviewee Responses

"What are the main inhibitors to shifting significant volume to intermodal?" – Mentions of Supply Chain Processes/Systems



- **Supply Chain Processes: There is a perception among some shippers that big truckload volumes are required to justify intermodal**
- **Network Design: Some supply chain networks were designed in a way that makes the rail network an afterthought**
- **Supply Chain Systems: Network design models do not take rail into account**

Source: Interviews

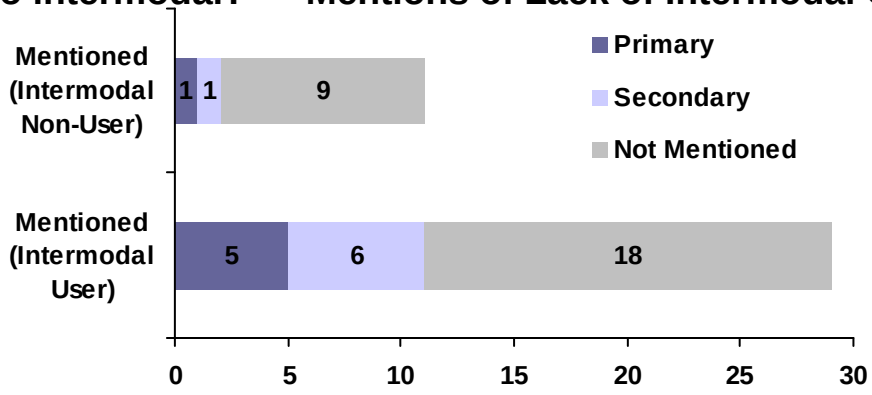
Interviewee Opinions

- **"I need the flexibility to re-route in transit"**
- **"We built our D.C. network around the highway system. Intermodal terminal locations were not even incorporated in our network design technology tool"**
- **"Because of small order quantities, intermodal isn't even considered for most lanes"**
- **"Customers are regionalizing freight, limiting intermodal opportunities"**

A lack of intermodal offerings in some lanes does not prevent shippers from using intermodal, but it does limit growth

Interviewee Responses

"What are the main inhibitors to shifting significant volume to intermodal?" – Mentions of Lack of Intermodal Offering



- Intermodal users mentioned this issue more frequently than non-users
- Some intermodal users state that there are lanes for which intermodal is not offered, generally due to a lack of realistic terminals
- Some non-users of intermodal have not been offered an intermodal product

Source: Interviews

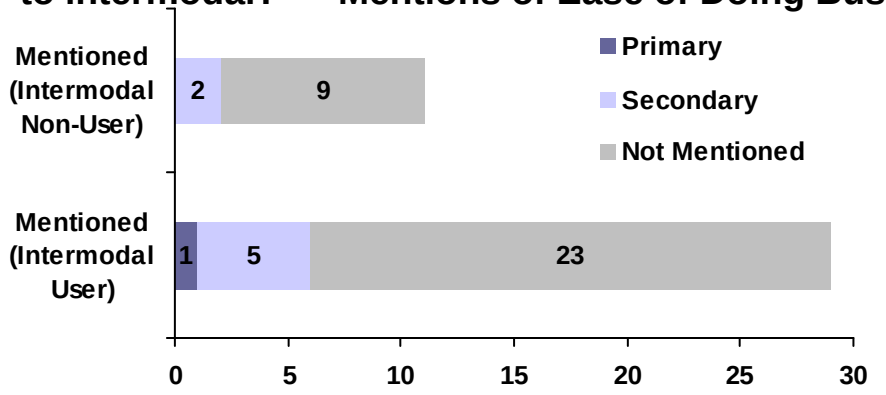
Interviewee Opinions

- "Intermodal ramps are way too far away for the service to be viable"
- "Even if there might be intermodal service in a given lane, our 3PL does not even present us with rail alternatives. I can't make a decision to switch away from the status quo if I am not aware of all of my options"
- "No one has ever tried to sell me an intermodal product"
- "In many of our shorter haul lanes, intermodal service isn't offered"
- "I can only access RoadRailer for select lanes. I wish it were offered in more"

Ease of doing business with the intermodal providers was not cited as a major barrier by most shippers

Interviewee Responses

"What are the main inhibitors to shifting significant volume to intermodal?" – Mentions of Ease of Doing Business



- **Only 8 of 40 interviewees mentioned negative experiences or perceptions of the intermodal providers as an inhibitor of using more intermodal**
- **However, those that find the intermodal service providers difficult to work with held strong opinions**

Source: Interviews

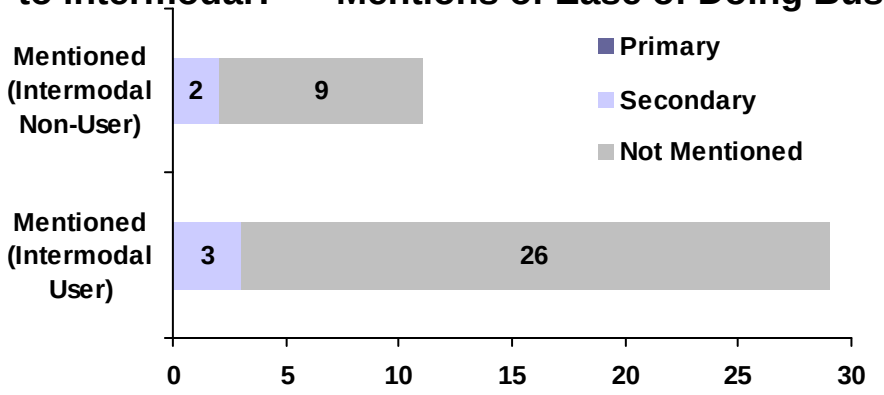
Interviewee Opinions

- **Some opinions were positive**
  - **"Intermodal Marketing Companies have good customer service"**
- **Others were distinctly not**
  - **"How about a *partnership*, where they *actually consider* the needs of the shipper?"**
  - **"The relationship needs to be a two-way street"**
  - **"The IMCs seem to think 'Customers aren't saying we're unacceptable, so we must be doing OK'"**
  - **"Trucking companies are more collaborative and much more willing to invest in a relationship"**

Damage issues were not a major inhibitor to intermodal use

Interviewee Responses

"What are the main inhibitors to shifting significant volume to intermodal?" – Mentions of Ease of Doing Business



- **Damage was mentioned only 5 times by our interviewees as an inhibitor of a shift towards intermodal**
- **For each mention, it was not cited as a primary inhibitor**

Source: Interviews

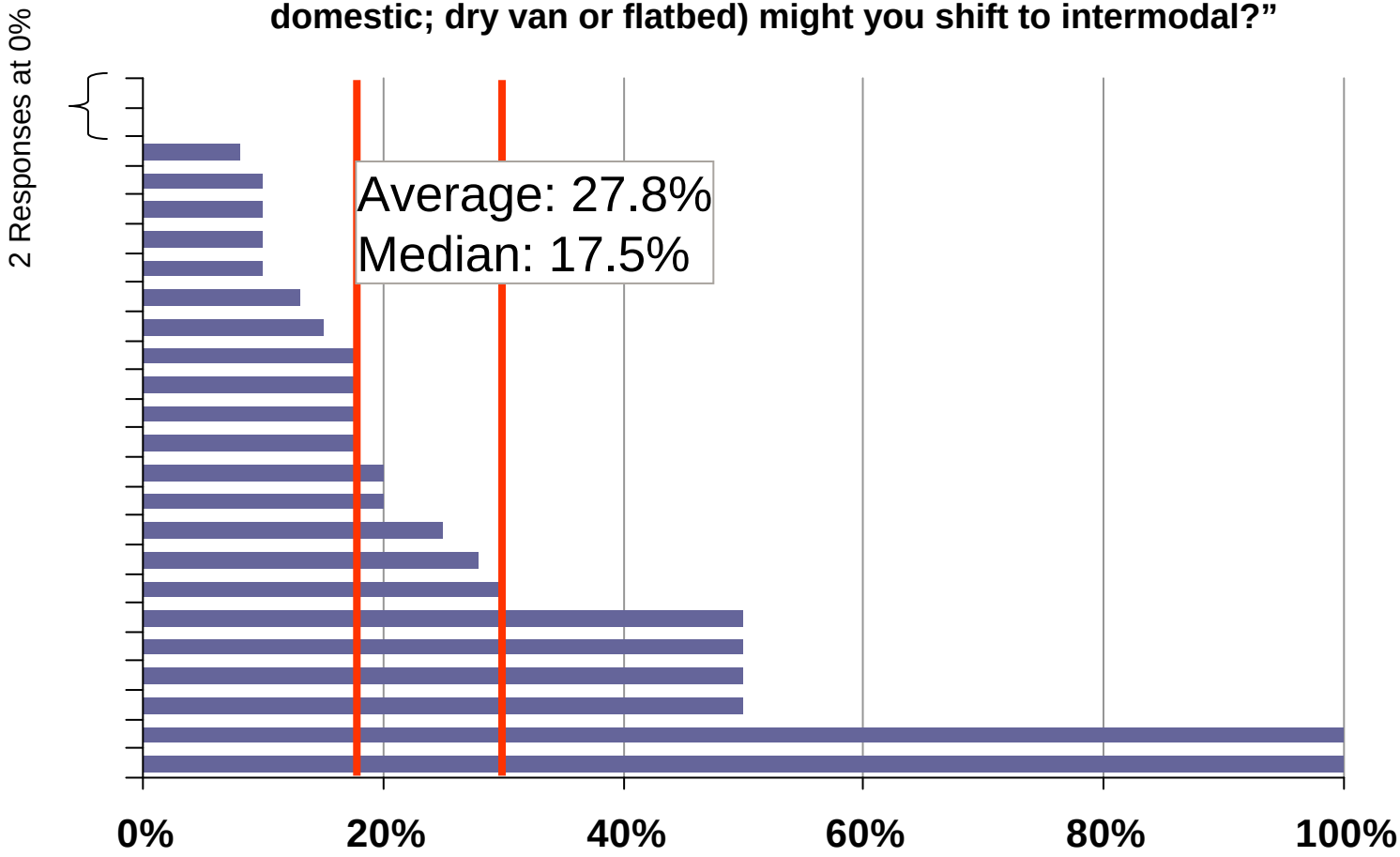
Interviewee Opinions

- **"Regardless of actual performance, the reputation is bad for product damage"**
- **"Our product is of high value, so it is not worth the risk of damage"**

If non-price related issues were resolved, intermodal users suggest they could shift an average of 28% of their truckload volume to intermodal

Interviewee Responses

"If these problems were overcome, how much of your truckload volume (>250 miles; domestic; dry van or flatbed) might you shift to intermodal?"



Source: Interviews
Note: If range was given (e.g. 15-20%), the midpoint of the range was used (17.5%)
Note 2: Five intermodal users did not respond to this question

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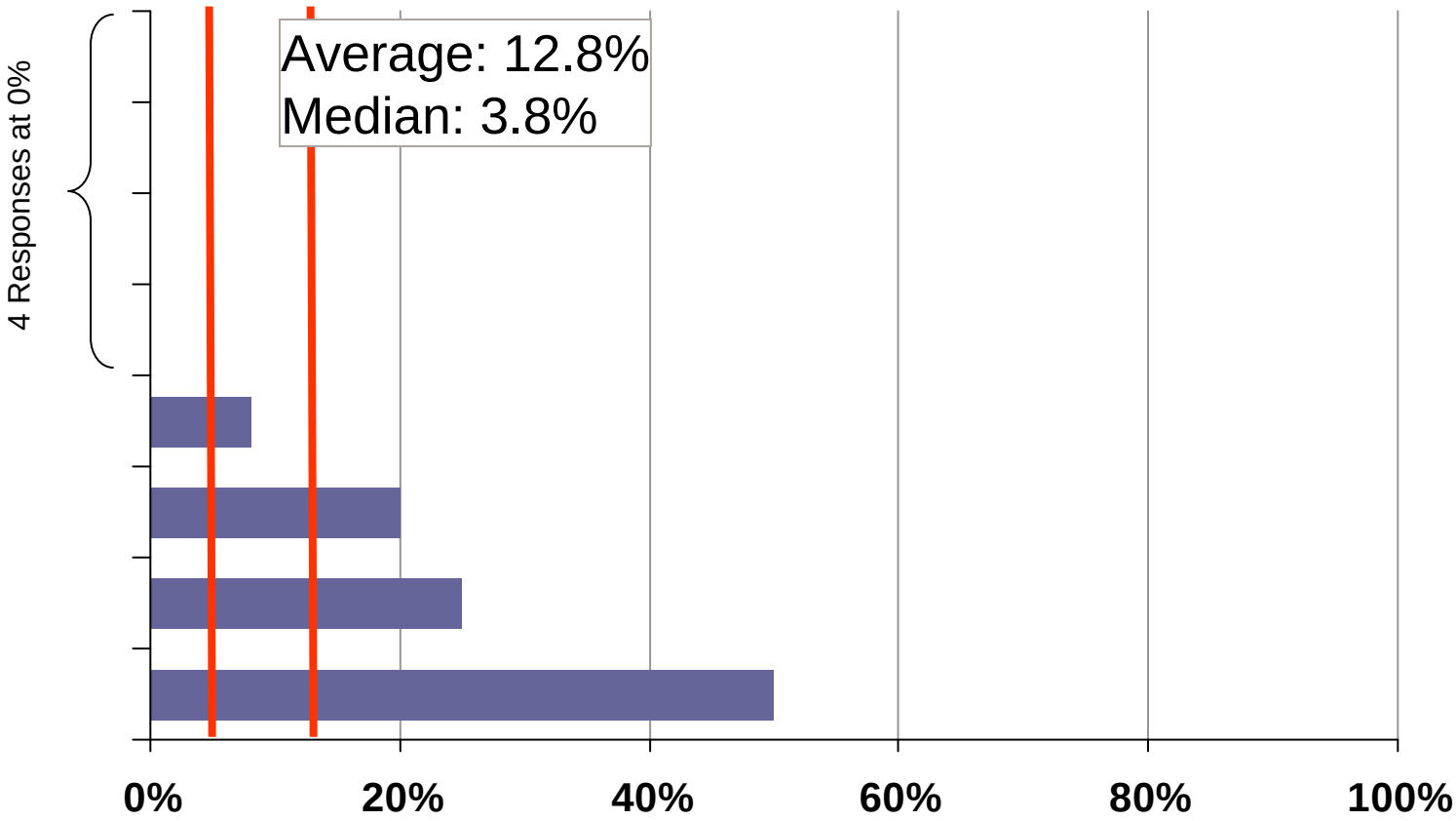
If non-price related issues were resolved, intermodal non-users suggest they could shift an average of 13% of their truckload volume to intermodal

Interviewee Responses

"If these problems were overcome, how much of your truckload volume (>250 miles; domestic; dry van or flatbed) might you shift to intermodal?"



Source: Interviews
Note: If range was given (e.g. 15-20%), the midpoint of the range was used (17.5%)
Note 2: Three intermodal non-users did not respond to this question

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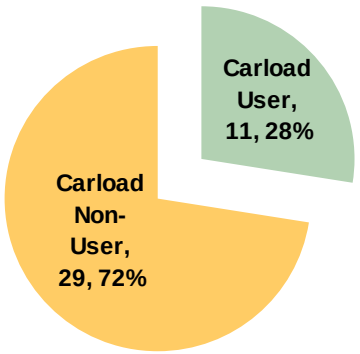
- **Carload Growth Inhibitors**

Rail carload did not gain share as the shift towards carload roughly equaled the shift away from carload

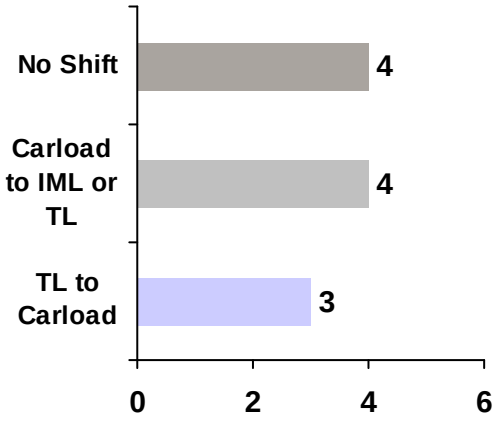
Modal Usage

"Have you used carload service recently?"



Modal Usage

"Have you made any changes in your modal mix?"



- **3 of 4 interviewees that shifted away from carload did so due to an increase in rail base freight rates**

Comments

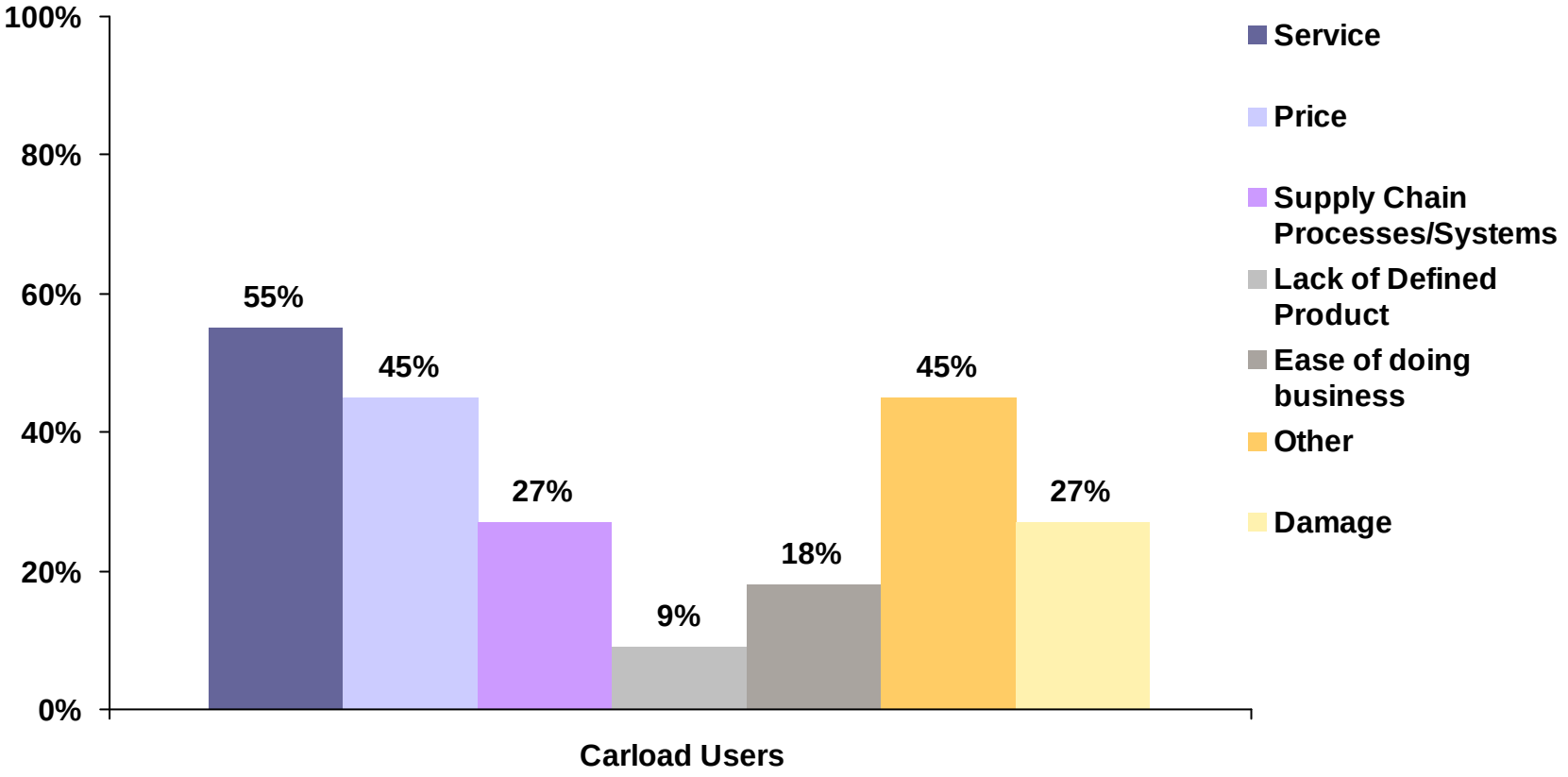
- **Two of three interviewees that shifted towards rail carload made the shift as part of a broader shift towards rail, particularly intermodal**
- **Those same interviewees stated that fuel drove the shift towards intermodal and carload**
- **Not one shipper moved to carload for the first time**

Source: Interviews
Note: Truckload (TL) and Intermodal (IML)

For carload users, service and price were the leading inhibitors for increasing carload share

Interviewee Responses

"What are the main inhibitors to shifting significant volume to carload?" – Number of Mentions*
11 Carload Users



Source: Interviews
***Ordered by total mentions by users and non-users**
Note: "Other" includes lack of purchasing control and absence of rail service

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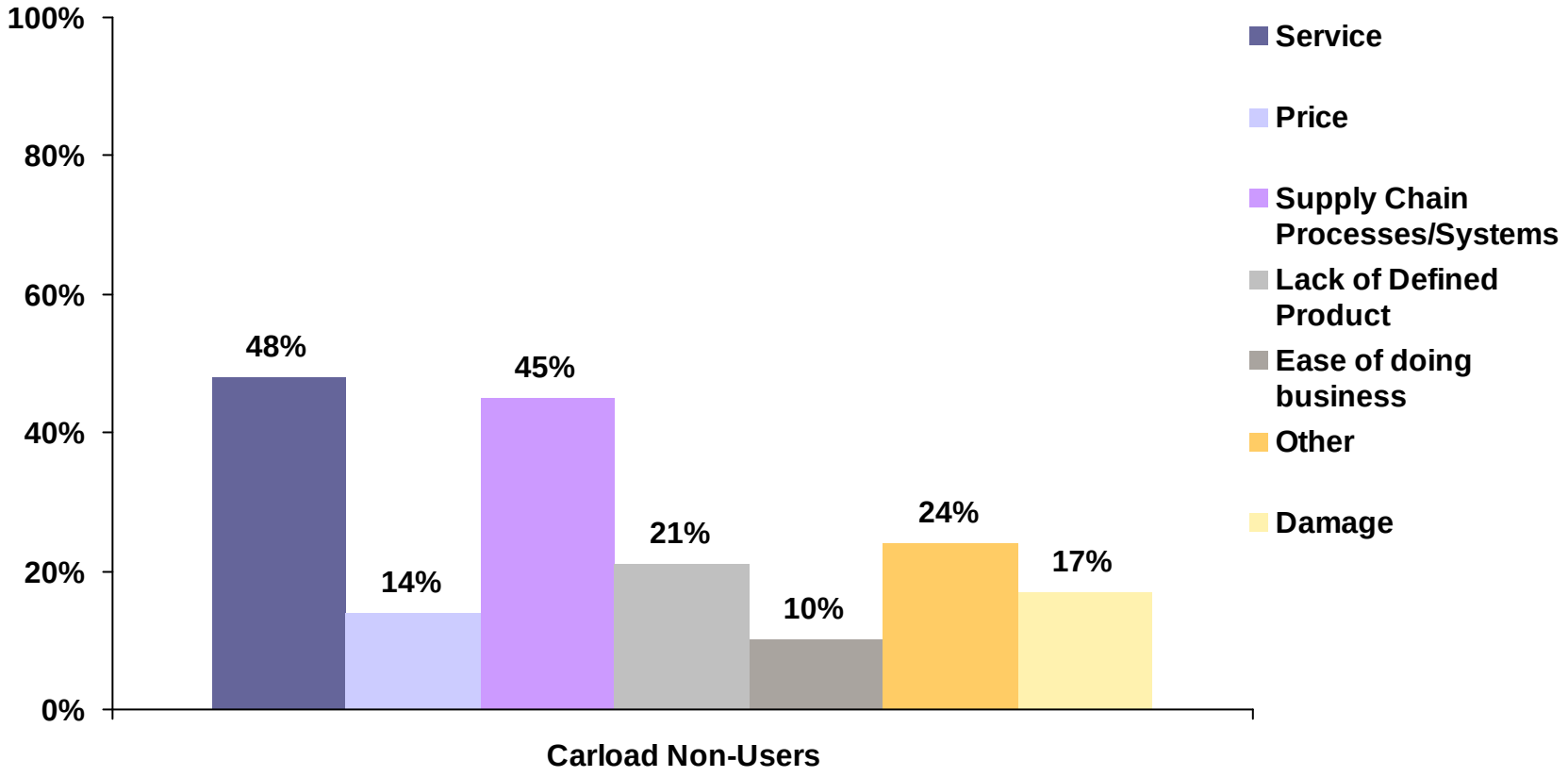
For carload non-users, service and fit with supply chain processes/systems were viewed as the biggest inhibitors

Interviewee Responses

"What are the main inhibitors to shifting significant volume to carload?" – Number of Mentions*
29 Carload Non-Users



Source: Interviews
*Ordered by total mentions by users and non-users
Note: "Other" includes lack of purchasing control and absence of rail service

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Most carload non-users stated that they have never considered rail carload as a potential transport option

Interviewee Opinions

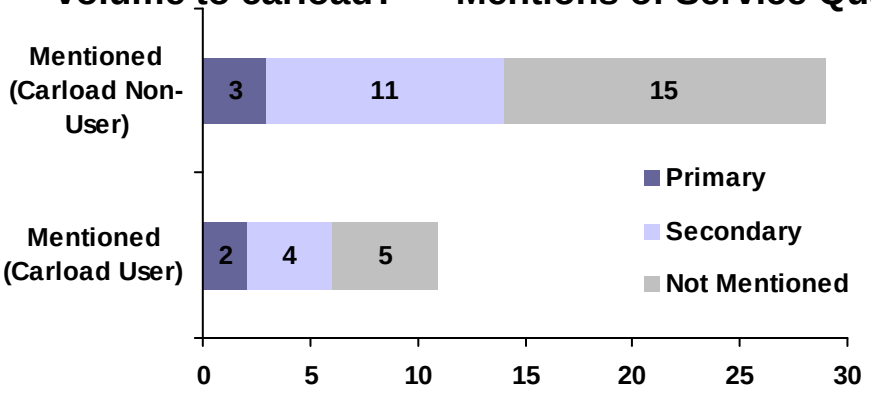
- **"Rail carload really isn't on my radar screen"**
- **"I have never thought of rail carload as relevant to (our product) so I don't really have much insight into the costs and benefits of using rail carload"**
- **"No one has ever educated me on a carload product"**
- **"I don't know what carload options are even available for us. Not once has my 3PL, an IMC, or a railroad come to me with a carload alternative"**
- **"Intermodal does not work for us, so carload definitely does not"**
- **"I neither know nor care about opportunities to shift towards carload"**
- **"Even intermodal is pushing the limit on transit times"**

Source: Interviews

Both users and non-users perceive that the slow and unreliable service of rail carload makes it suitable only for low-value bulk commodities

Interviewee Responses

"What are the main inhibitors to shifting significant volume to carload?" – Mentions of Service Quality



- **Many carload non-users were unsure of the exact transit time they should expect from rail carload, but were certain that it would not be fast or reliable enough to merit serious consideration**
- **Service was a major inhibitor for both non-users and carload users**

Interviewee Opinions

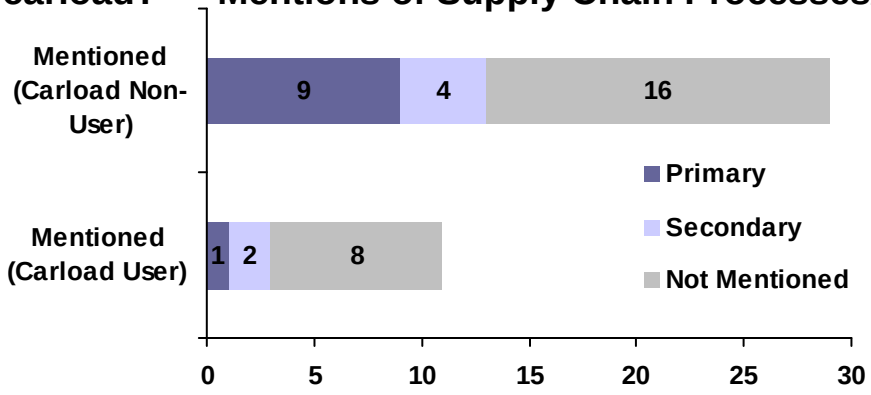
- **"I don't know anyone not in the commodity business that can justify a 20-30 day transit time, which is what you have to expect in carload"**
- **"Rail carload service may not be quite as bad anymore as people remember from a few years back, but the railroads sure haven't done much to convince me or others that they can be counted on"**
- **"Poor reliability has a two-fold impact on cost: inventory cost rises and we need expedited truck service to cover service failings"**

Source: Interviews

Carload incompatibility with supply chain processes and systems was the greatest inhibitor for non-users

Interviewee Responses

"What are the main inhibitors to shifting significant volume to carload?" – Mentions of Supply Chain Processes/Systems



- **13 of 29 non-users indicated that rail carload does not fit their supply chain processes and or systems**

Source: Interviews

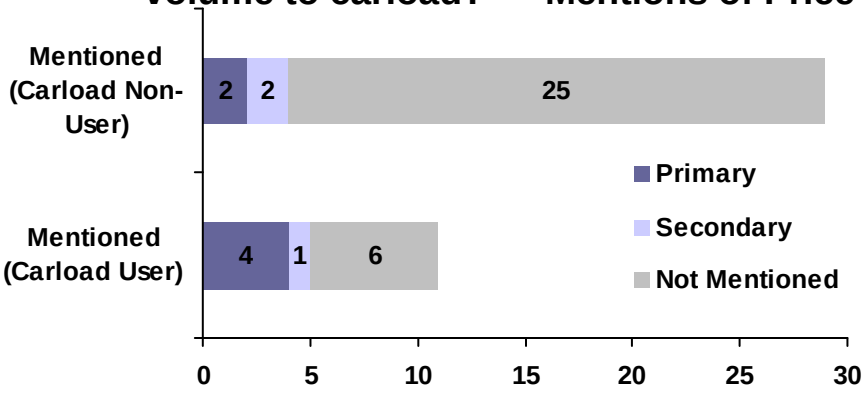
Interviewee Opinions

- **"Our order sizes are not big enough for carload"**
- **"We just redesigned our DC network, after trying out 12 different technology solutions. Not a single one of them considered the rail network or rail terminals when 'optimizing' our network"**
- **"20 years ago, DCs were primarily built near ports and rail. This is no longer the case"**
- **"Carload is not an option for our palletized freight"**
- **"There is no way to put carload into our TMS system"**

Rates are considered a growth barrier for current carload users, but not for non-users

Interviewee Responses

"What are the main inhibitors to shifting significant volume to carload?" – Mentions of Price



- **Several of the interviewees that shifted from carload to intermodal or truckload cited price as their primary reason for switching modes**
- **Non-users generally do not perceive an issue, often because there are other barriers that prevent them from obtaining price quotes**

Interviewee Opinions

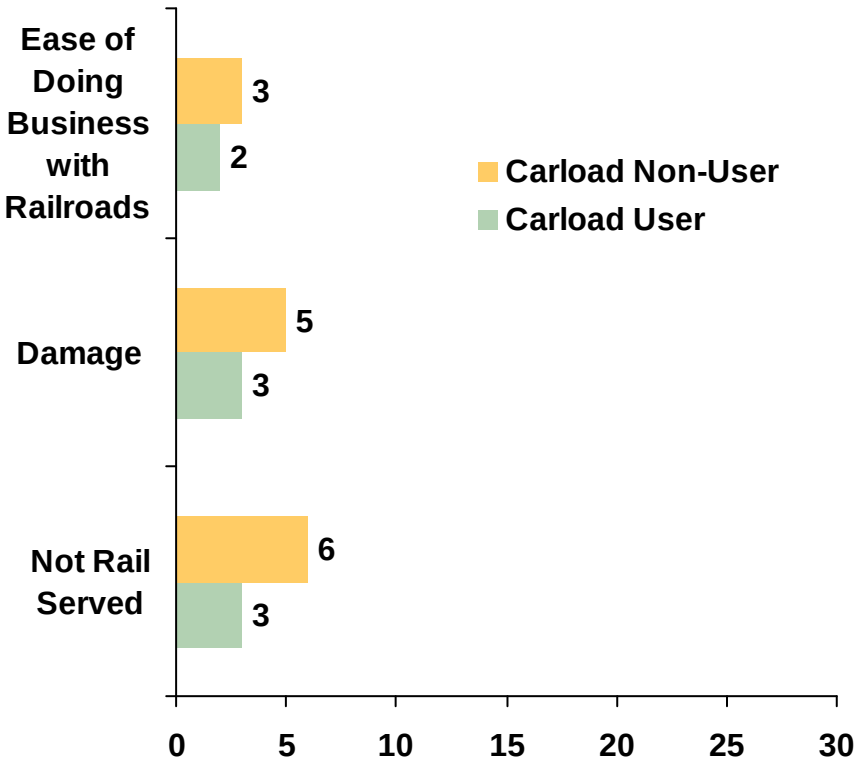
- **"Railroads have been increasing prices 5-12% annually to the point that boxcar is now more expensive than either intermodal or truckload on a weight basis"**
- **"Their pricing suggests they don't even want our large carload volumes…then they act surprised when we pull the volume"**
- **"The railroads are using their pricing power – that is the main reason we have not shifted more to rail carload"**
- **"Railroads are doing everything possible to maximize margins"**

Source: Interviews

Damage and ease of doing business with railroads were not considered major inhibitors to the use of carload

Interviewee Responses

Mentions of Other Factors as Inhibitor of Shift Towards Carload



Source: Interviews

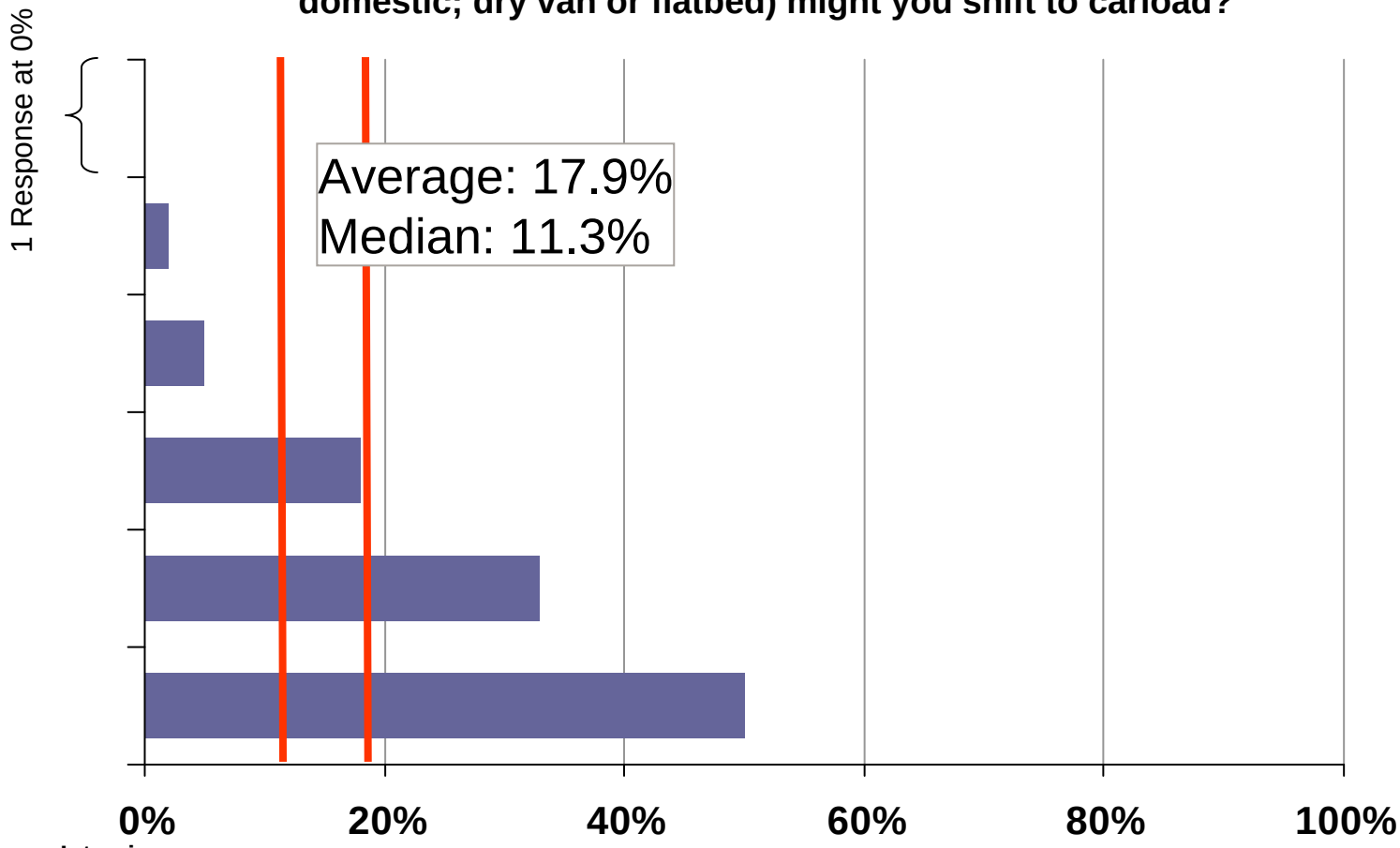
Interviewee Opinions

- "Customer DCs don't have rail sidings, so outbound carload is a non-option"
- "Consumer products require a careful risk analysis – carload usually doesn't meet our standard"
- "Damage is significantly worse for carload"
- "The customer controls transportation, and their JIT model prohibits carload. Customers don't accept inventory until they have to, and employee metrics are based on meeting JIT goals. I don't see this system changing"
- "Extensive packaging analysis is necessary to secure the product in the railcar. We have to invest money and time for slower service and minimal savings…not much of a value proposition"

If non-price related issues were resolved, carload users suggest they could shift an average of 18% of their truckload volume to carload

Interviewee Responses

"If these problems were overcome, how much of your truckload volume (>250 miles; domestic; dry van or flatbed) might you shift to carload?"



Source: Interviews
Note: If range was given (e.g. 15-20%), the midpoint of the range was used (17.5%)
Note 2: Five carload users did not respond to this question

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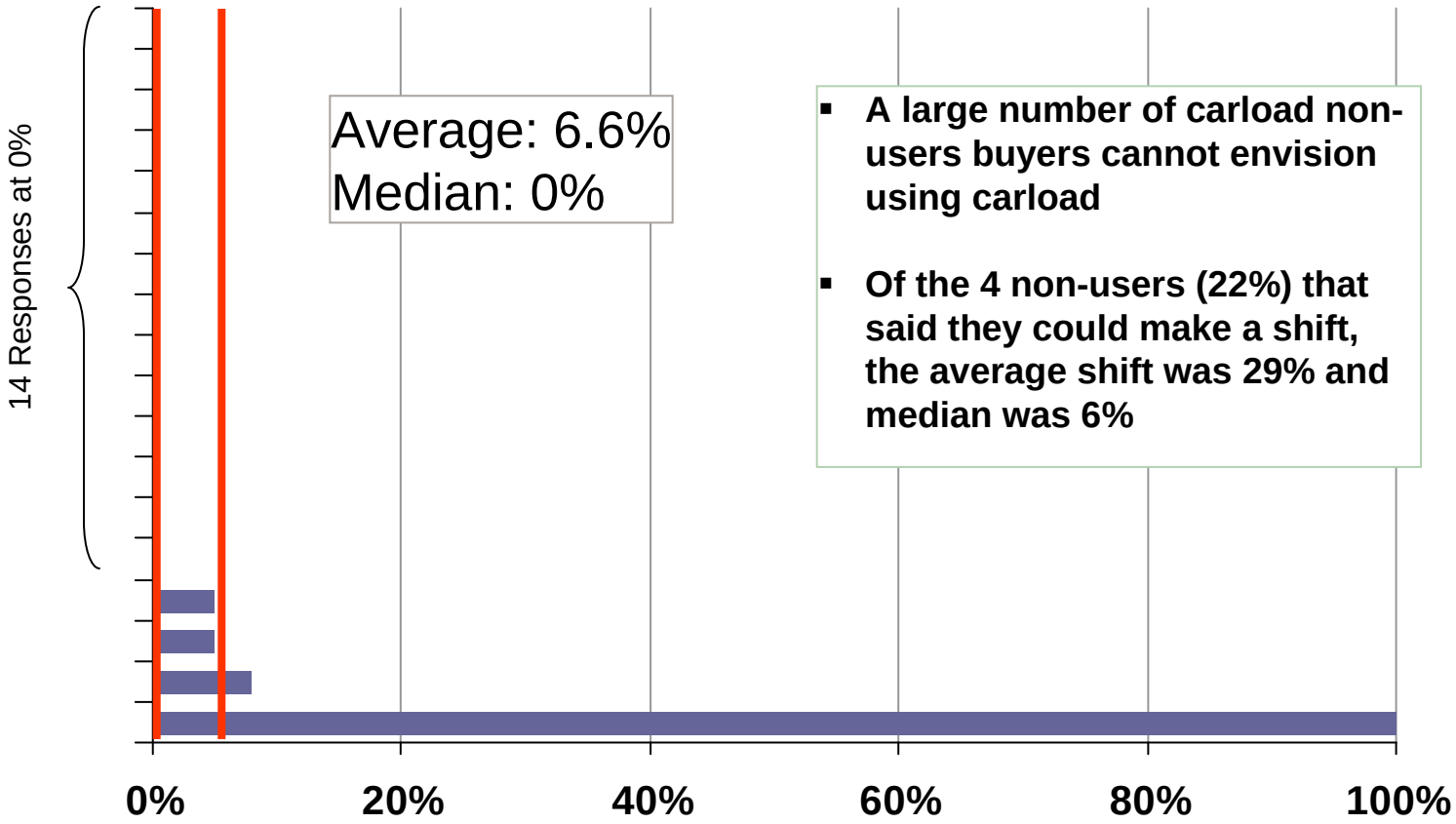
If non-price related issues were resolved, carload non-users suggest they could shift an average of 6.6% of their truckload volume to carload

Interviewee Responses

"If these problems were overcome, how much of your truckload volume (>250 miles; domestic; dry van or flatbed) might you shift to carload?"



- **A large number of carload non-users buyers cannot envision using carload**
- **Of the 4 non-users (22%) that said they could make a shift, the average shift was 29% and median was 6%**

Source: Interviews
Note: If range was given (e.g. 15-20%), the midpoint of the range was used (17.5%)
Note 2: 11 carload non-users did not respond to this question

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