



material handling  **logistics conference**
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Planes, Trains And FedEx: Trends In Modern Transportation

Track 3 Session 4



Supply Chain  **Forward.**

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Abstract

- ▶ **As networks unravel, fuel costs bounce and carriers retreat, we need to understand the future of logistics. This overview will provide insight into tomorrow's solutions for the transport of goods. Included will be innovations, cost comparisons and future thinking in various modes of movement.**

Agenda

- ▶ **Industry need: a more strategic approach to transportation**
 - ◆ **Complication: the underlying cost drivers are difficult to understand and so limit advancement**
- ▶ **Strategic solutions:**
 - ◆ **Program management**
 - ◆ **Transportation Business Intelligence**
 - ◆ **Aggressive intermodalism**
- ▶ **Key Takeaways**
- ▶ **Questions**

Industry's Challenge: Tactical Transportation Thinking

- ▶ **Transportation is the greatest supply chain cost . . . but maybe least understood**
- ▶ **Cost drivers are complex, highly variable and at best tedious and confusing**
- ▶ **The typical reality:**
 - ◆ **Advanced transportation management is a precision science . . . but the function is treated like a commodity**
 - ◆ **Senior management doesn't or cannot have the time to understand the details**
 - ◆ **Transportation is not treated strategically**

Most companies approach transportation tactically and leave \$MM's on the table

Why is this?

- Complexity and Competing Priorities

Business Process



1. Most organization's purpose is upstream of finished goods
2. Org structures tend to separate at finished goods stocking point
 - Upstream – manufacturing or merchandising
 - Downstream – finished goods logistics or distribution
3. Finished goods logistics tends to primarily focus on material control
 - Primary - Inventory positioning, accuracy, responsiveness
 - Secondary – ship to customer

In the grand scheme other functions typically have greater priority

A Strategic Approach should Include:

- ▶ **Best practice sourcing**
- ▶ **Data and measurement excellence**
- ▶ **Systems excellence**
- ▶ **Infrastructure enabling optimal mode selection**

Agenda

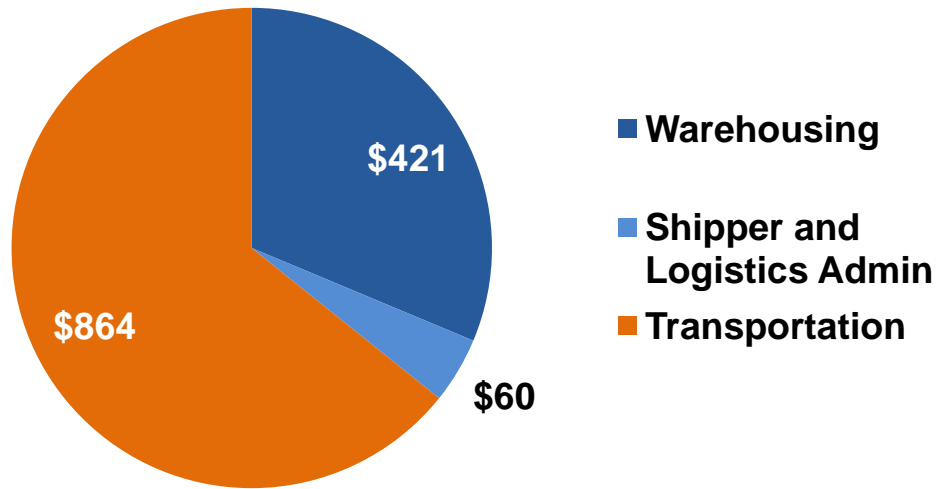
- ▶ A Need for Strategic Approach to Transportation Management
- ▶ **The Challenge of Understanding Transportation Costs**
- ▶ Strategic Solutions
- ▶ Summary
- ▶ Key Takeaways
- ▶ Questions

Key Point #1

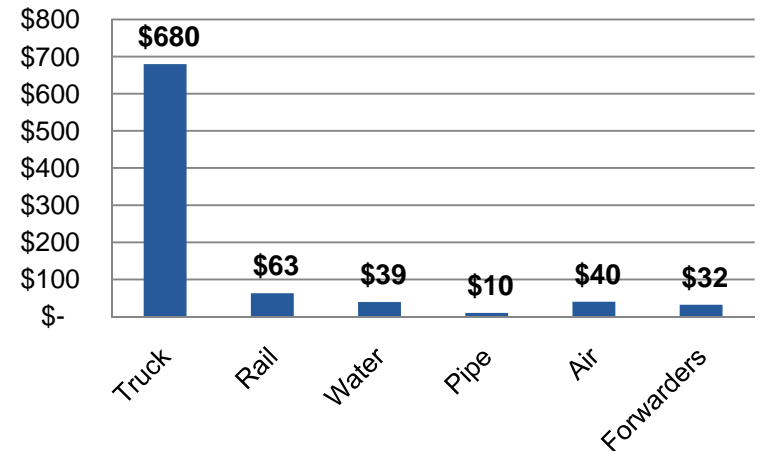
- ▶ **To really understand transportation...one must fully understand the underlying cost drivers**

Transport is the Greatest Logistics Cost Burden

US Logistics Costs – CY2008 (\$B)

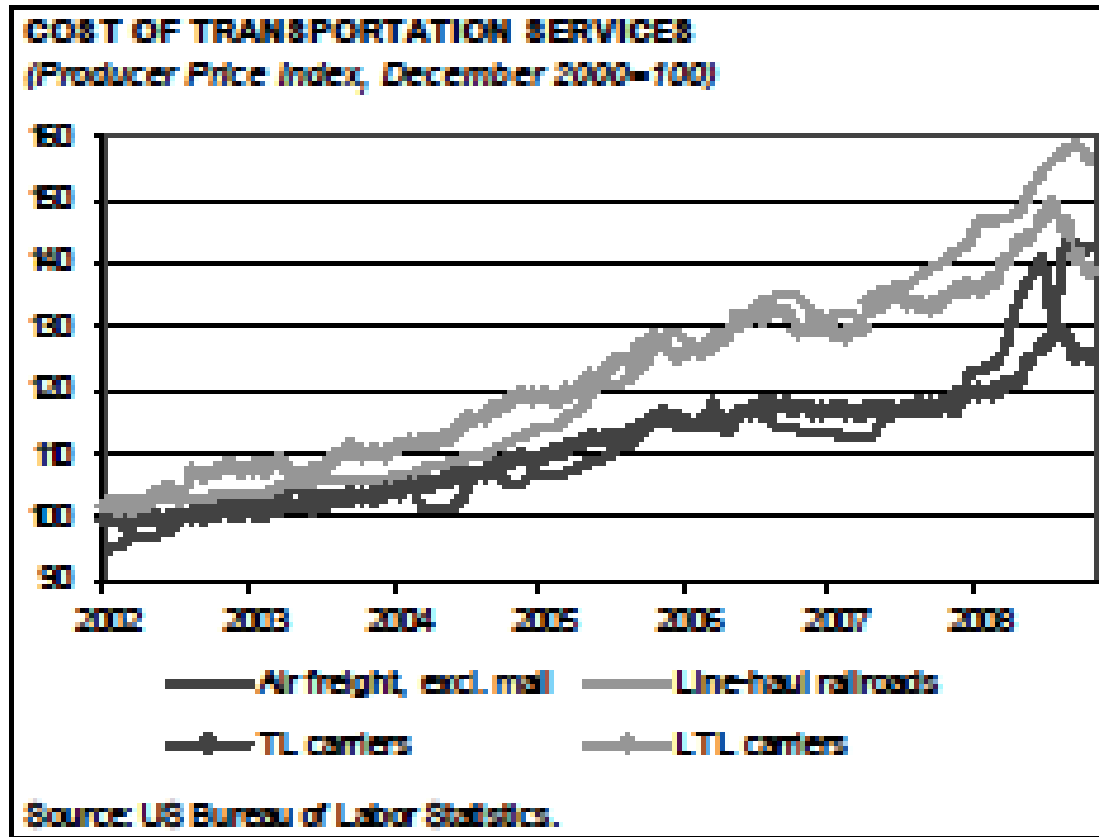


Trans Cost By Method (\$B)

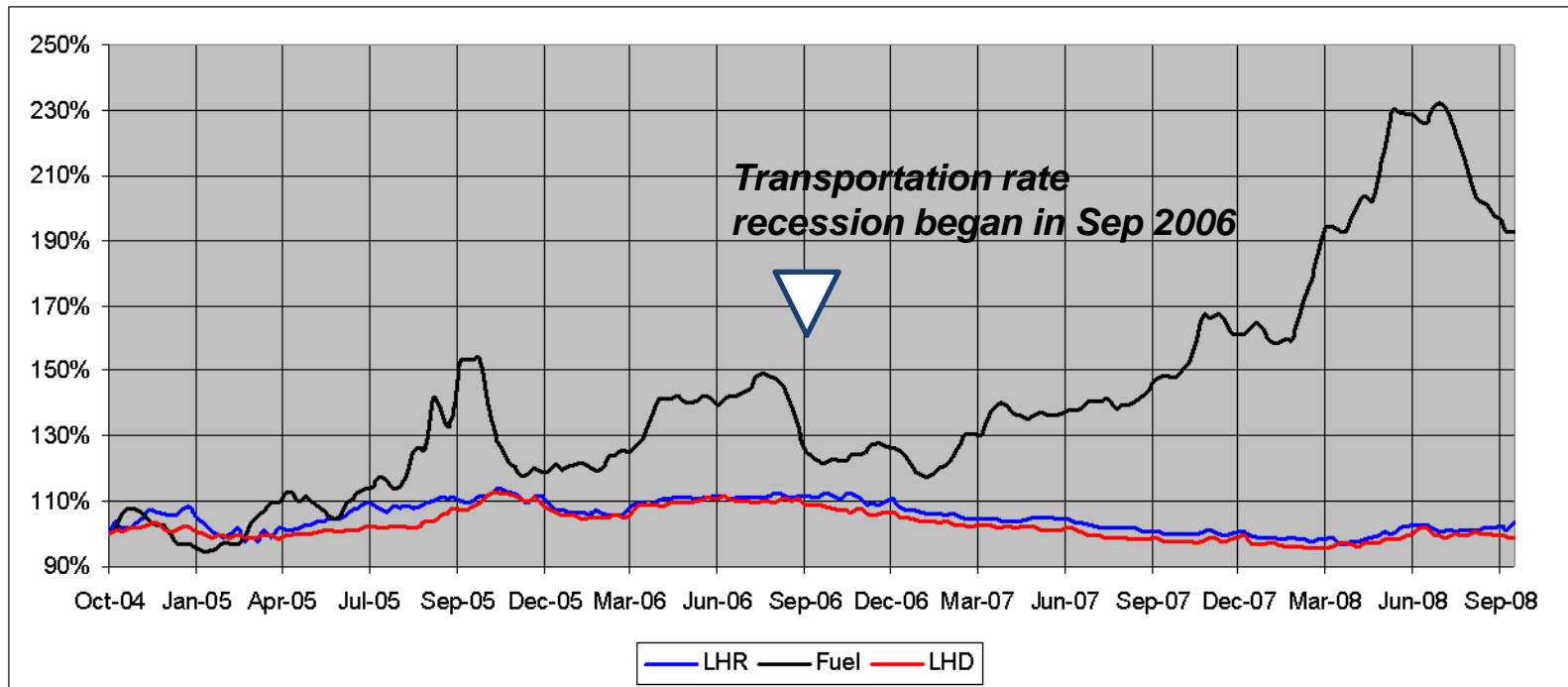


61% of \$1.3T logistics spend, dominated by truckload transportation

Most People See Transport Costs Continually Rising



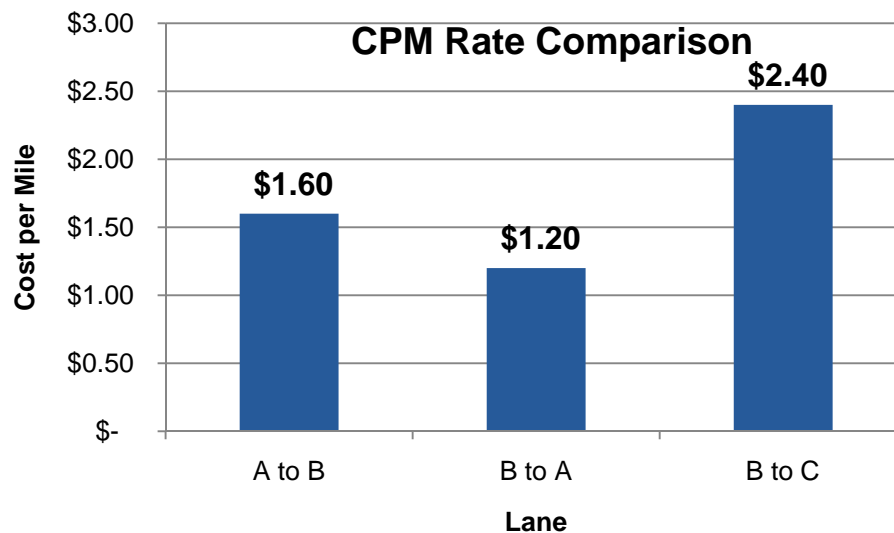
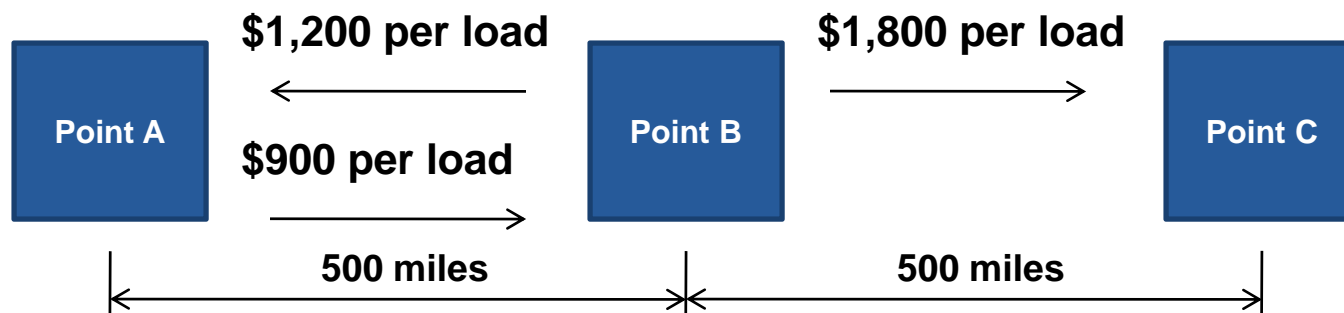
Unbundle the Costs to See a Different Picture



**Total costs are rising...but rates are decreasing!
Issue: isolating the costs**

Source:
Chainalytics Benchmarking

Rates for Similar Hauls Often Don't Seem to Compare



Hidden or Uncertain Cost Drivers Explain Cost Variances

- ▶ **Fuel**
- ▶ **Lane density**
 - ◆ **Waiting for another load**
 - ◆ **Re-positioning**
- ▶ **Time**
 - ◆ **Loading and unloading**
 - ◆ **Congestion**
 - ◆ **Regulated hours**

External factors drive costs but are difficult to isolate and explain

Typical Response to Transportation Complexity

- ▶ **For the casual observer – mystery and confusion**
- ▶ **For the transportation manager – focus on piecemeal initiatives**
- ▶ **Too detailed for Senior Management**
- ▶ **Too much effort/time to learn**
- ▶ **Too much complexity to build into systems and processes**

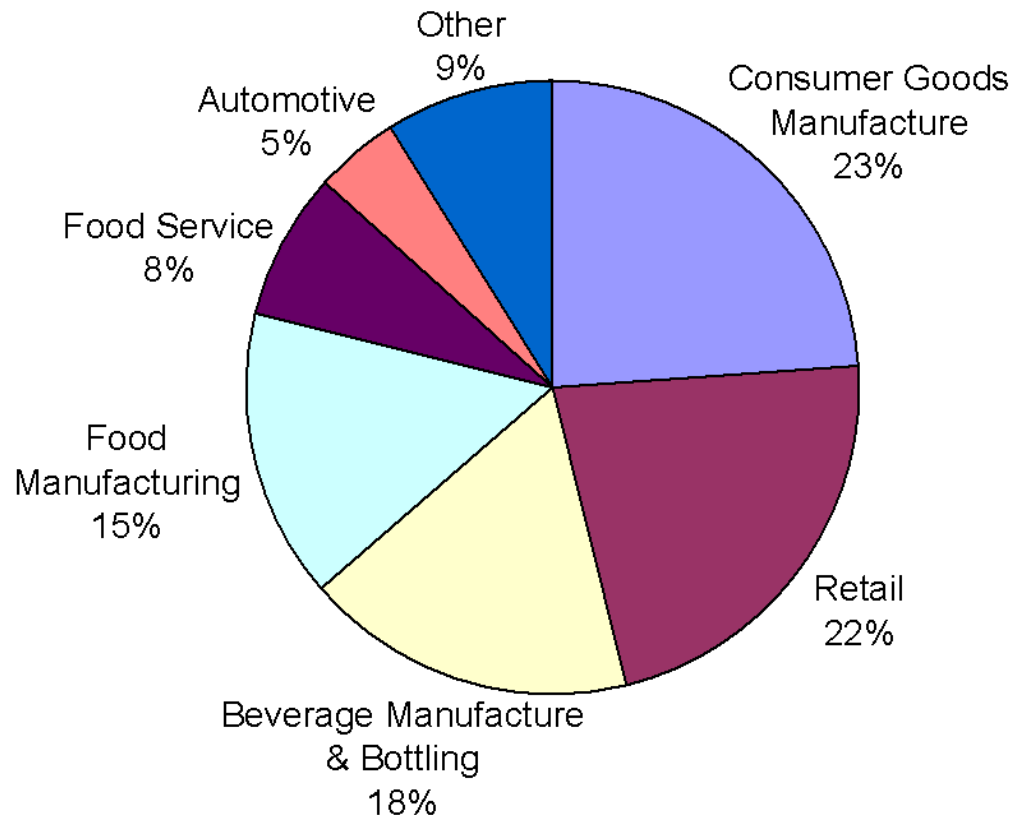
A Scientific Approach to Transportation Costs w/MBBC

Model Statistics

- Over \$12 billion in transportation spend
- Over 13 million loads
- 64 model participants varying in TL spend from \$12M to \$500M+
- Covers United States, Canada, and Mexico
- Equivalent to 4+% of the total North American for-hire truckload market
- 7 Models Developed
 - Long Haul Dry Van
 - Long Haul Refrigerated
 - Long Haul Flatbed
 - Intermodal
 - Short Haul Dry Van
 - Short Haul Refrigerated
 - Short Haul Flatbed

Source: Chainalytics

July 2009 MBBC Transportation Spend by Industry

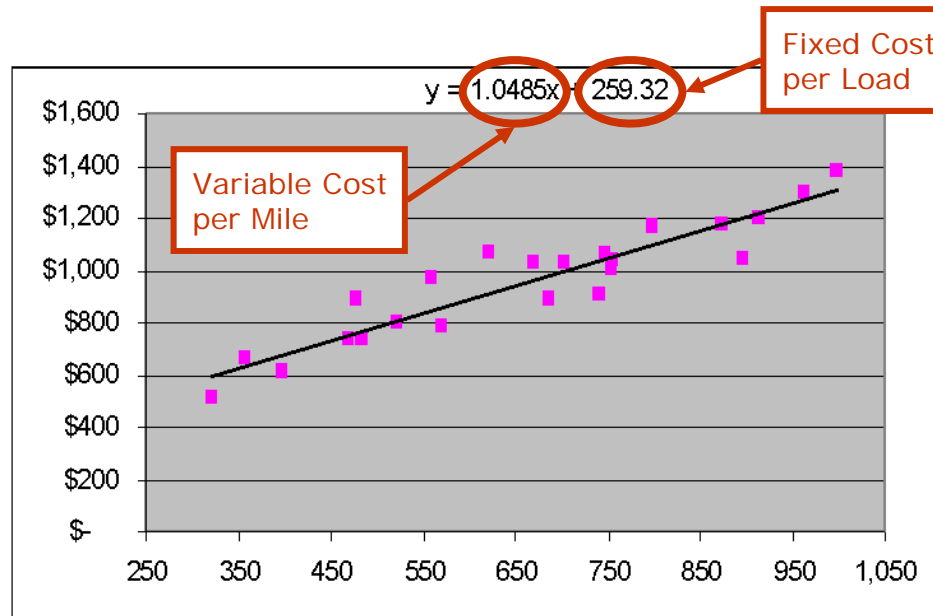


Benchmarking Costs Using Econometric Regression

Data

CPL	Distance
\$ 1,028	703
\$ 1,300	961
\$ 511	322
\$ 889	685
\$ 1,164	797
\$ 1,059	747
\$ 1,072	621
\$ 784	570
\$ 1,174	874
\$ 615	398
\$ 1,004	753
\$ 1,198	913
\$ 1,045	897
\$ 1,031	670
\$ 968	558
\$ 736	483
\$ 731	469
\$ 798	521
\$ 1,379	998
\$ 658	357
\$ 891	477
\$ 904	740
\$ 1,035	755

Econometric Regression



Explanatory Variables

- Distance
- Move Type
- Equipment
- Region
- Multi-stop
- Spot
- Volume

A primary goal is to enable members to better understand underlying costs

Quantify the Cost Impact of Practices

Practices

- Technology Used by Shippers
 - Electronic Tendering
 - Electronic Track & Trace
 - Electronic Shipment Updates
 - Consolidation Optimization
 - Optimization Based Bid Tool
- Payment Terms
 - Ranged from 10 days to 60 days
 - Median of 30 days
- Frequency of Bidding
 - More than once a year/Other
 - Annually
 - Less than once a year
- Centralization of Procurement
 - Centralize procurement by division

Cost Impact

No significant impact

Optimized bid tool reduces cost/load 1% - 3%

Payment terms >30 days increases cost/load 2%

Regular annual bidding reduces costs 3% - 8%

Centralized procurement reduces costs 2% - 7%

Source: CSCMP 2008 Presentation by Chris Caplice

Agenda

- ▶ A Need for Strategic Approach to Transportation Management
- ▶ The Challenge of Understanding Transportation Costs
- ▶ **Strategic Solutions**
 - ◆ **Program Management**
 - ◆ **Transportation Business Intelligence**
 - ◆ **Largescale Conversion to Intermodalism**
- ▶ Summary
- ▶ Key Takeaways
- ▶ Questions

Key Point #2

- ▶ **Strategic transportation management requires a program management approach**

Transportation Management Program

Transportation Function	Functional Scope	Key Program Elements
Procurement/ Carrier Relationship Management	Sourcing carriers and maintaining strong carrier relationships	<ul style="list-style-type: none"> • Annual procurement process: <ul style="list-style-type: none"> – External benchmarking – Procurement event using optimization technology – Post-bid compliance audit • Carrier scorecard with routine review
Modeling and Analysis	Maintaining measurements and modeling for continuous improvement	<ul style="list-style-type: none"> • Annual analysis of dedicated vs one-way carrier routing
Shipment Planning	Consolidate shipments into loads, plan routes, assign carriers	<ul style="list-style-type: none"> • Bi-Annual functionality assurance review of technology and practices
Shipment Execution	Tender freight, set appointment, execute shipment and follow-up, track and trace, trailer pool	

High volume shippers following this program will initially reduce transportation spend 5% - 15%, with sustained improvements of 3% - 6%

Case Study A: Program Management Recommendation

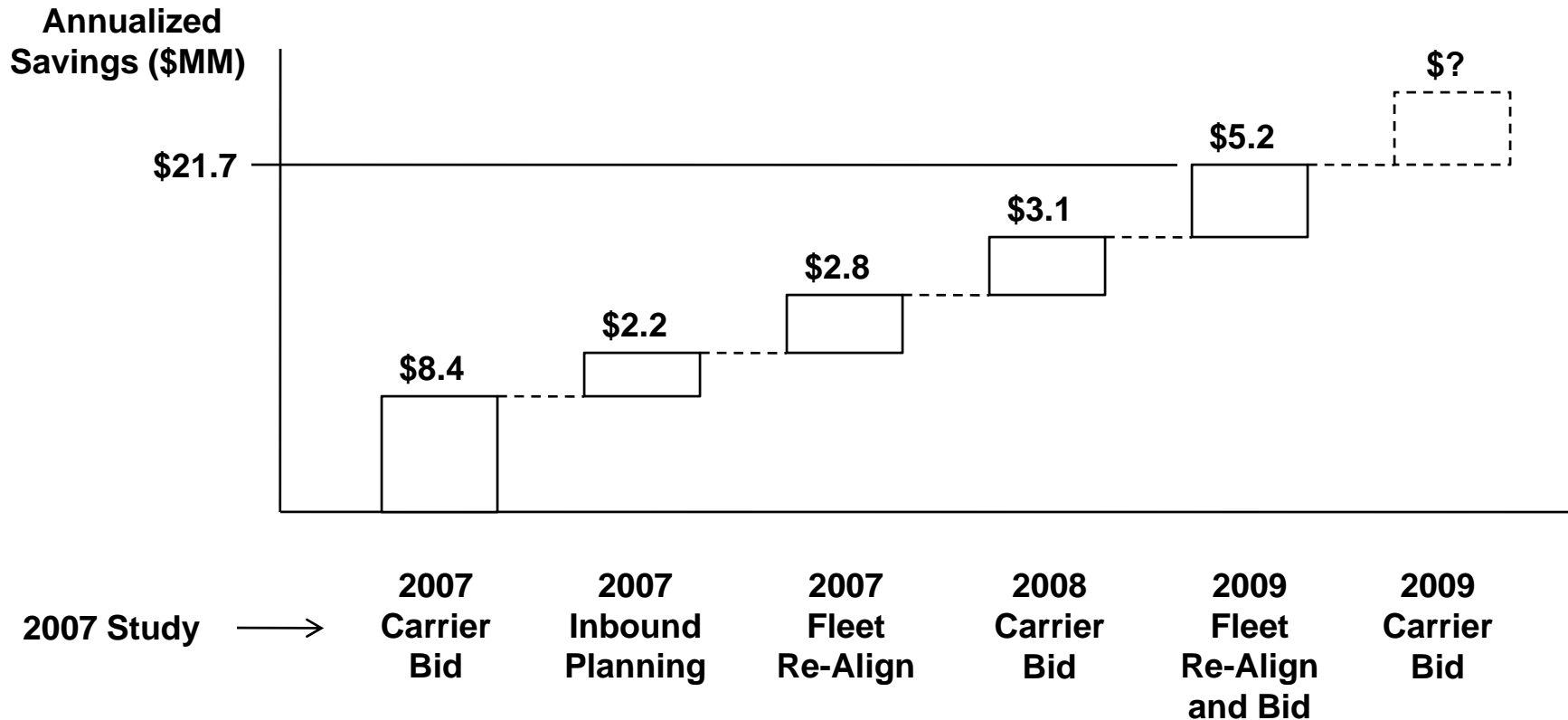
- ▶ **\$5B Discount Retailer**
- ▶ **\$300MM transportation spend – never analyzed**
- ▶ **Core competencies: buying and distribution**
- ▶ **Transportation competency: excellent daily tactical management**
- ▶ **Client's questions:**
 - ◆ **Are there opportunities for cost reduction?**
 - ◆ **What is the business case for improvement?**
- ▶ **Scope of Study:**
 - ◆ **Cost benchmarking**
 - ◆ **Fleet vs one-way modeling**
 - ◆ **Practices, systems and org assessment**

Case Study A: - Recommendations

Recommended Strategy	Initiative	Estimated Savings (000's)	Estimated Investment	Timing
Develop and implement a new transportation procurement process	Reduce TL Rates	\$1,500 - \$2,500	\$200 - \$250	1Q07
In-source transportation planning technology and processes	Ph 1 - Inbound Planning	\$3,400 - \$4,500	\$400 - \$550	1Q07
	Ph 2 - Inbound and Outbound Planning	\$4,200 - \$5,500	\$550 - \$800	1Q08
Implement a new fleet strategy	Optimize Fleet Service Territory	\$5,600 - \$7,500	\$150 - \$250	1Q07
	Re-Align Fleet for Furniture Deliveries			
	Relax Delivery Constraints/Allow Weekend Deliveries			
Change Transportation Organization Structure	Implement a New Functionally Oriented Organization to Support the Strategy	Strategic	None	
	Total	\$14,600 - \$20,000	\$1,300 - \$1,800	

Recommended a set of initiatives generating savings of \$15M - \$20M with an investment of \$1.3M - \$1.8M

Case Study A: - Implementation Results

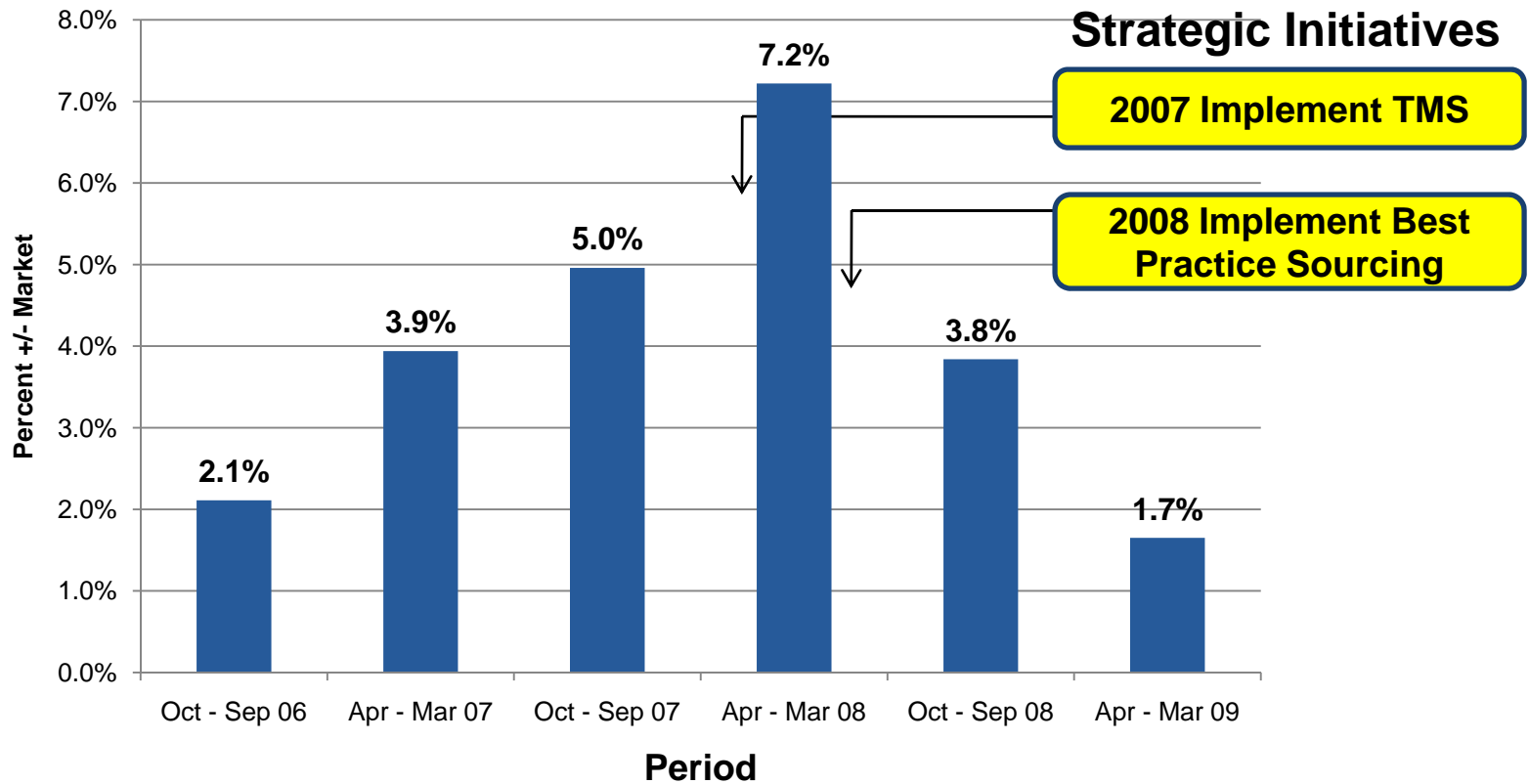


Program management approach reduced spend by 11%* and transformed management process

* Domestic spend only

Case Study B: Impact of Program Approach

TL Cost vs Market



5.5% reduction in TL cost to market = \$12.6MM

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Key Point #3

- ▶ **Understanding transportation cost drivers requires excellent information**

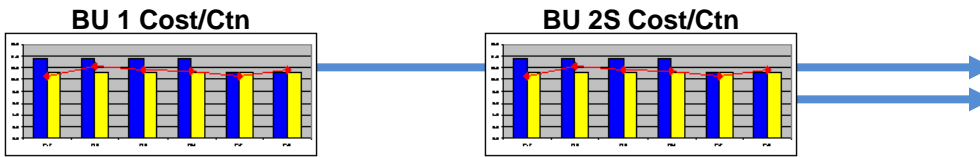
Transportation Business Intelligence

- ▶ **Significant client interest (3 clients, >\$1MM fees)**
- ▶ **Why now? What's new?**
 - ◆ **Data-cleaning capability has been mastered**
 - ◆ **Inexpensive dashboard and drill-down technology is now available**
 - ◆ **More prevalent use of advanced TMS**
- ▶ **Problem to overcome: Lack of actionable reports**
- ▶ **Innovations:**
 - ◆ **Isolating the key variables (eliminate the noise)**
 - ◆ **Providing lane-based targets**
- ▶ **Key benefits**

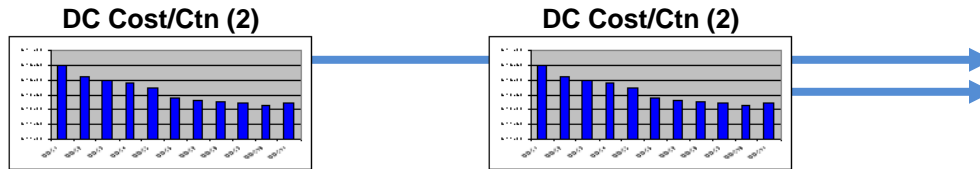
Innovation: Isolate Lane Costs from Other Drivers

Lane or Geo-Isolation

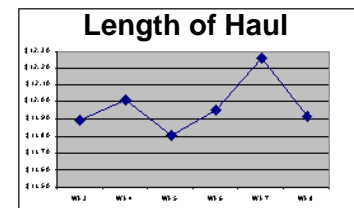
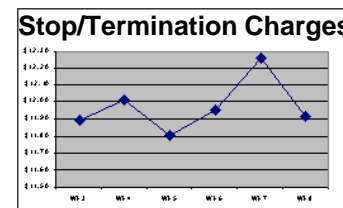
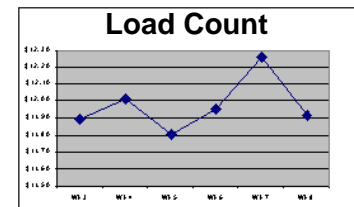
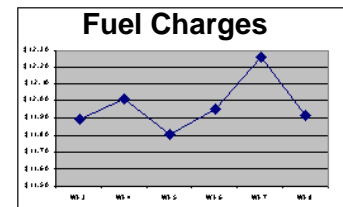
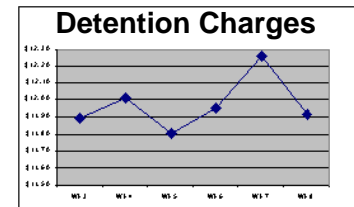
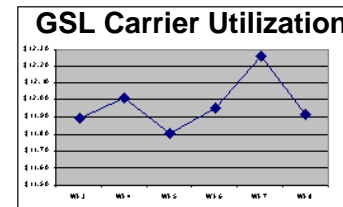
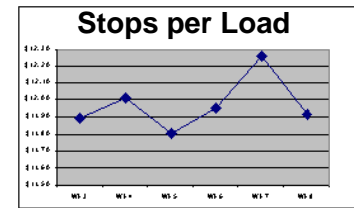
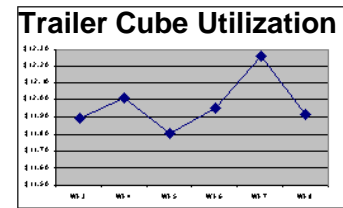
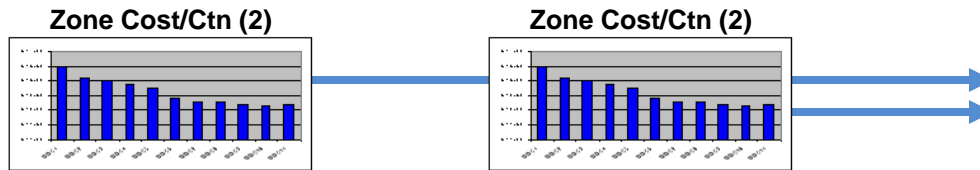
KPI Drilldowns



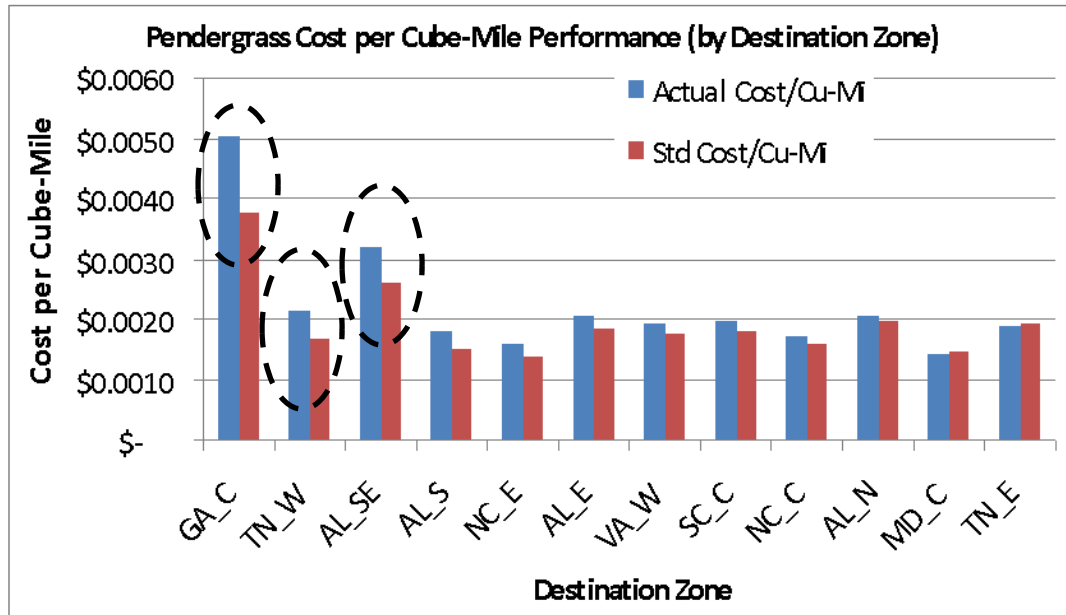
Drill down for next level in hierarchy (DC, Zone, Dest.)



Drill across at any level for KPI's



Innovation: Compare Actual to Target by Lane and Load Factor



Isolates out-of-spec cost by location and lane

Target:

- Model cost for lane
- Target load factor

vs.

Actual:

- Actual costs
- Actual load factor

If lane cost is over benchmark, or load factor below target, users see where it is happening to understand causes and search for solutions

Trans BI Explains how you are Doing

▶ Situation:

- ◆ Shipper's transportation costs are under plan by 13%
- ◆ Transportation volume is under plan by 7%

▶ Complication:

- ◆ Fuel cost per mile is 35% under plan (57% under last year)
- ◆ Rates have decreased 7% vs last year

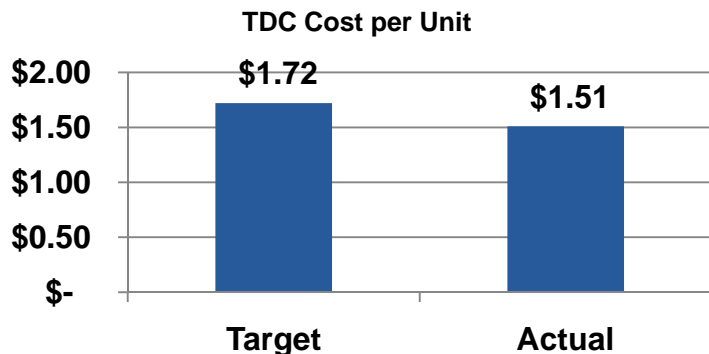
▶ Question: Is transportation doing better or worse?

Very difficult (impossible?) to answer without BI

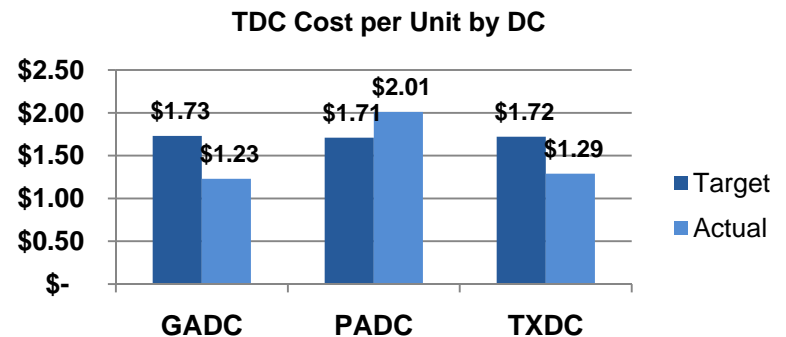
Trans BI Provides Actionable Reports that Enable Change

► Case Study:

- ◆ Aggregated (vs precise) cost targets, led to
- ◆ Discovery of routes focused on unrealistic constraints



No Problem



PADC Problem!!
- Is it target or actual?

► Result:

- ◆ Carrier-engineered routes focused on return home
- ◆ Re-designed routes for one-way moves
- ◆ Reduced 3500 miles per week (\$200,000 annualized)

Trans BI Drives Behavior Change

► Situation:

2 Regional Mgrs

RDC Regional Manager

RRC Regional Manager

19 DC Trans Mgrs

DC1 Trans Mgr
DC2 Trans Mgr

DC11 Trans Mgr

DC1 Trans Mgr
DC2 Trans Mgr

DC8 Trans Mgr

Pre-Trans BI:

- Lack of RM involvement
- 19 different practices
- Limited cross-BU practice sharing

Post -Trans BI:

- Common visibility
- Common practices
- Embraced targets
- Improved performance

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Key Point #4

- ▶ **Industry should aggressively push the use of Intermodal**

Largescale Conversion to Intermodalism

- ▶ **Observation: companies do not aggressively use IM, but should, due to significant economic and social benefits**
- ▶ **Cost and lead time comparisons**
- ▶ **Case studies**
 - ◆ **Co. B – IM conversion as part of transformation**
 - ◆ **Co. C**
 - **Started by building awareness & saved over \$3MM**
 - **Next – precision to enhance conversion rates**
 - ◆ **“Lane effectiveness” measurement of consortium companies**
- ▶ **Industry challenge:**
 - ◆ **Network alignment (shippers)**
 - ◆ **Competitive long haul timeliness and short haul pricing (providers)**

Are Companies Aggressively Using IM... True or False?

- ▶ **Personal data points indicate mostly passive use of IM**
 - ◆ **Client studies:**
 - One aggressive (Heavy discount retailer)
 - All others – use IM on opportunistic basis at best
 - ◆ **Primary mode decision maker from practice studies – Customer Service**
- ▶ **Conclusion: False...most companies can and should expand IM use**

Surprising Fact: a Class 1 RR's Largest Customer?

▶ **Question:**

- ◆ **Customer?**
- ◆ **Type of freight?**

▶ **Answer:**

- ◆ **UPS**
- ◆ **Parcel packages**

Why is IM Overlooked?

- ▶ **Customer service owns the mode decision**
- ▶ **Lack knowledge of IM cost advantage**
- ▶ **Lack knowledge of IM service**
- ▶ **Shippers do not practice segmentation strategies (balance service and cost objectives)**

Our Benchmark View of TL vs. IM Networks

MODE	# of Lanes	Volume	Annual Cost
IM	5,653	431,241	\$ 652,217,885.00
TL	168,334	5,101,692	\$ 5,681,892,112.00
IM/TL	3%	8%	11%

**TL dwarfs IM, most notably
in lanes serviced**

US IM Terminal Network



IM terminals in 69 major population or shipping centers

Source: Norfolk Southern

IM vs. TL Cost Comps

Based on 5,140 IM-eligible lanes:

MODE	Linehaul Cost	FSC	Total
TL	\$ 934,030,230.18	\$ 308,438,769.15	\$ 1,242,468,999.33
IM	\$ 813,729,587.52	\$ 154,219,384.58	\$ 967,948,972.10
Saving	\$ 120,300,642.66	\$ 154,219,384.57	\$ 274,520,027.23
Saving %	13%	50%	22%

**IM average of 22% savings
including fuel**

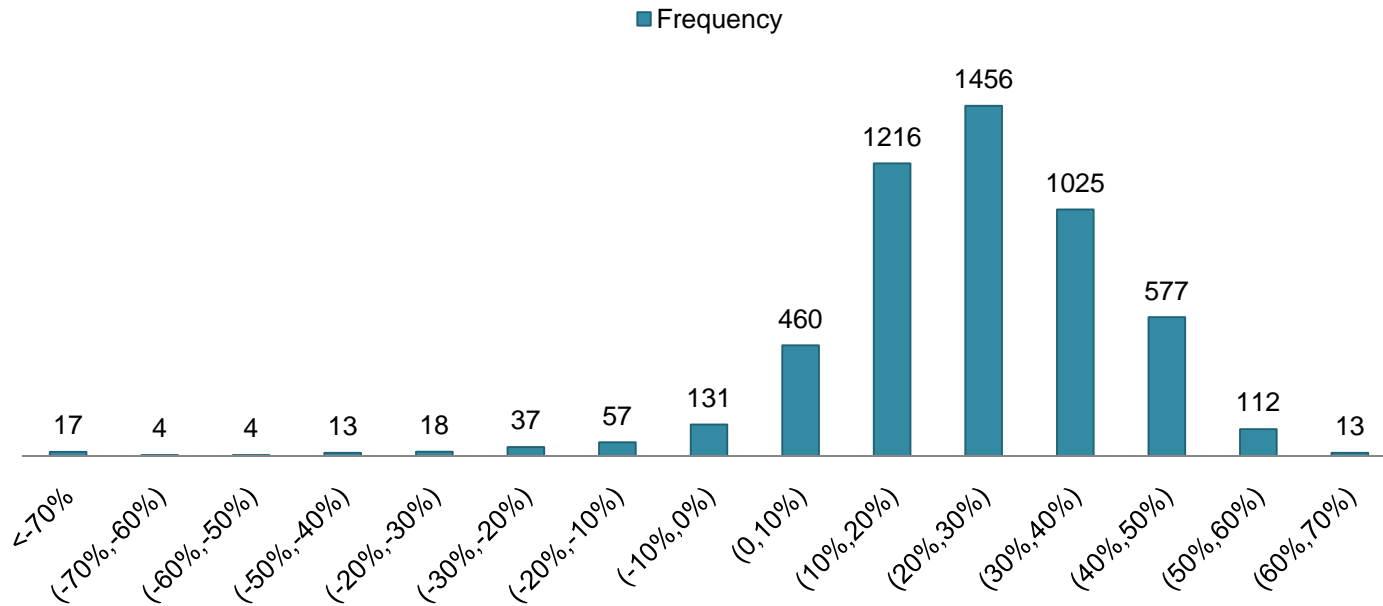
Source: Chainalytics MBBC 2008 Model 1

Note: 1. Base Fuel Cost \$1.20/gal, Surcharge \$0.01/mile, Increment \$0.06/gal, Current Fuel Price \$4.00/gal, FSC \$0.46/mile

2. TL and IM line haul rate are reported cost from MBBC members.

IM to TL Savings Distribution

Saving % distribution



Significant number of IM lanes > 30% savings

Source: Chainalytics MBBC Model 1 2008

Note: Savings includes FSC with fuel at \$4.00 per gallon

TL vs. IM

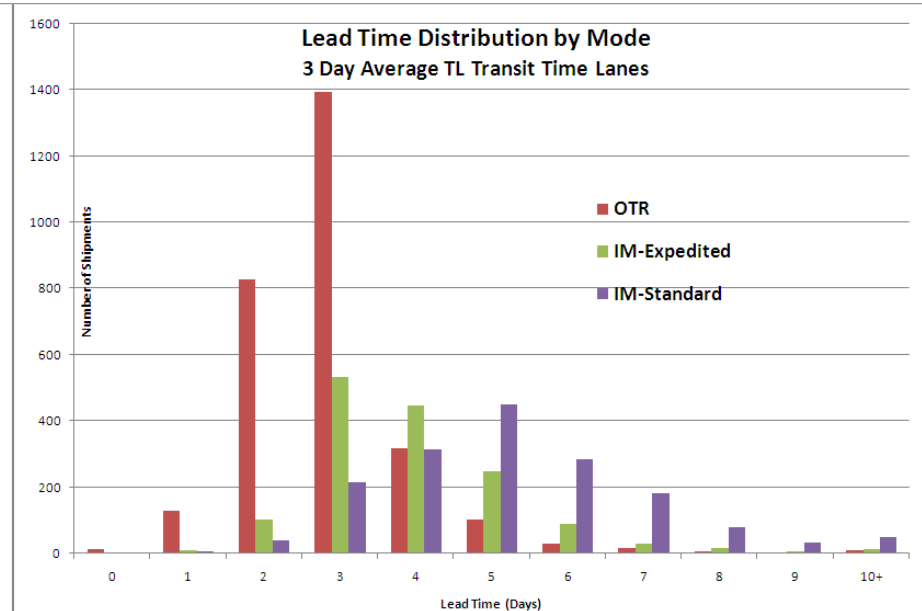
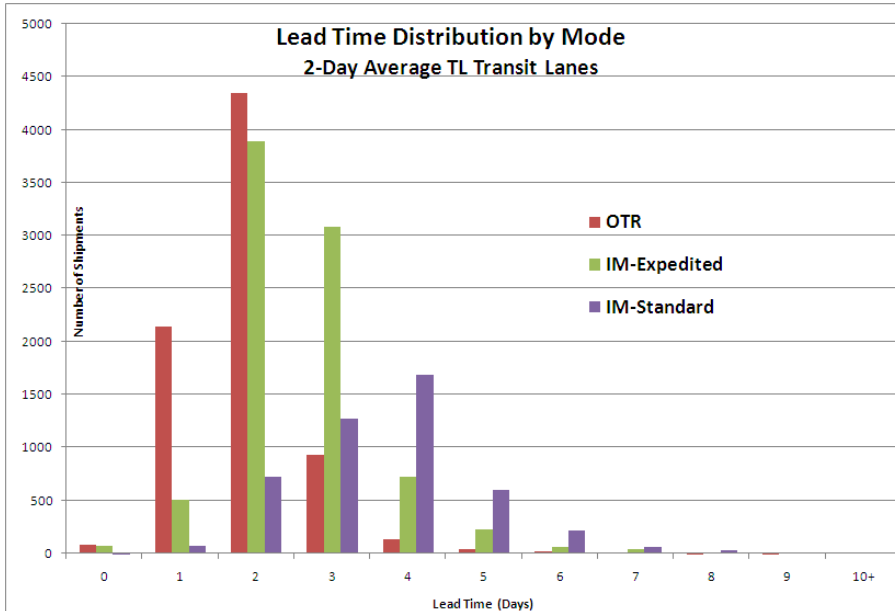
- Cost vs. Service (Short Transits)

2 Day TL Transit

Mode	Load Cost	Transit Time
OTR	\$1919	2
IM-E	\$1642	3
IM-S	\$1521	4

3 Day TL Transit

Mode	Load Cost	Transit Time
OTR	\$2705	3
IM-E	\$2162	4
IM-S	\$1796	5



Source: Client data; load cost includes fuel at \$0.29 and \$0.15 per mile

TL vs. IM

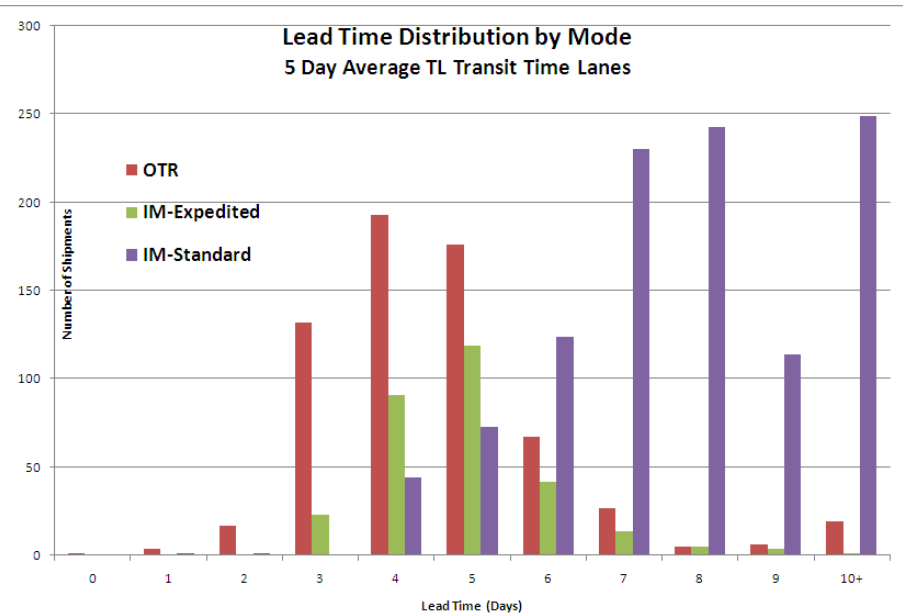
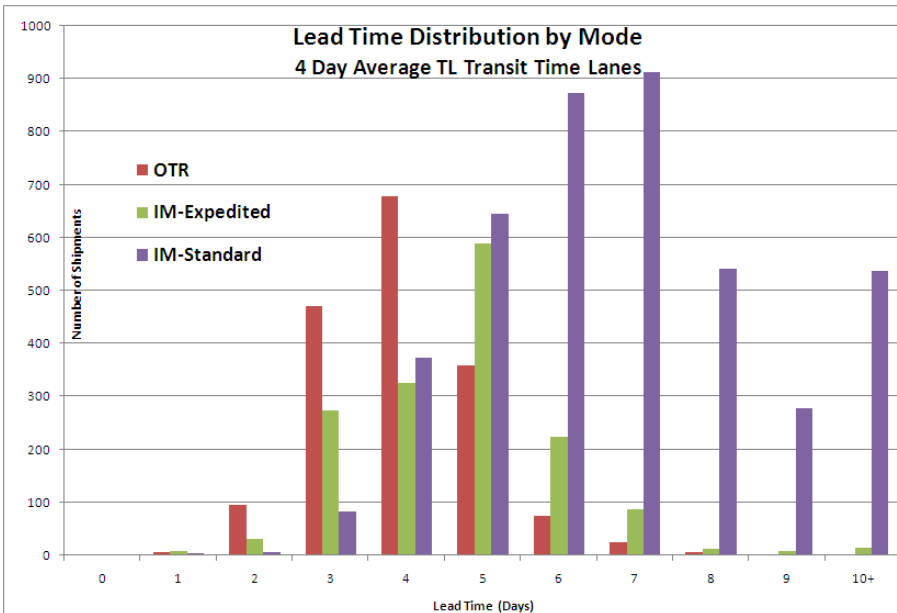
- Cost vs. Service (Long Transits)

4 Day TL Transit

Mode	Load Cost	Transit Time
OTR	\$2998	4
IM-E	\$2740	5
IM-S	\$1755	7

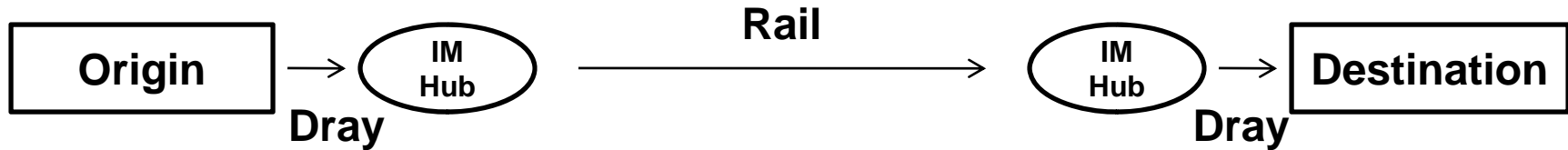
5 Day TL Transit

Mode	Load Cost	Transit Time
OTR	\$2820	5
IM-E	\$2607	5
IM-S	\$1593	8



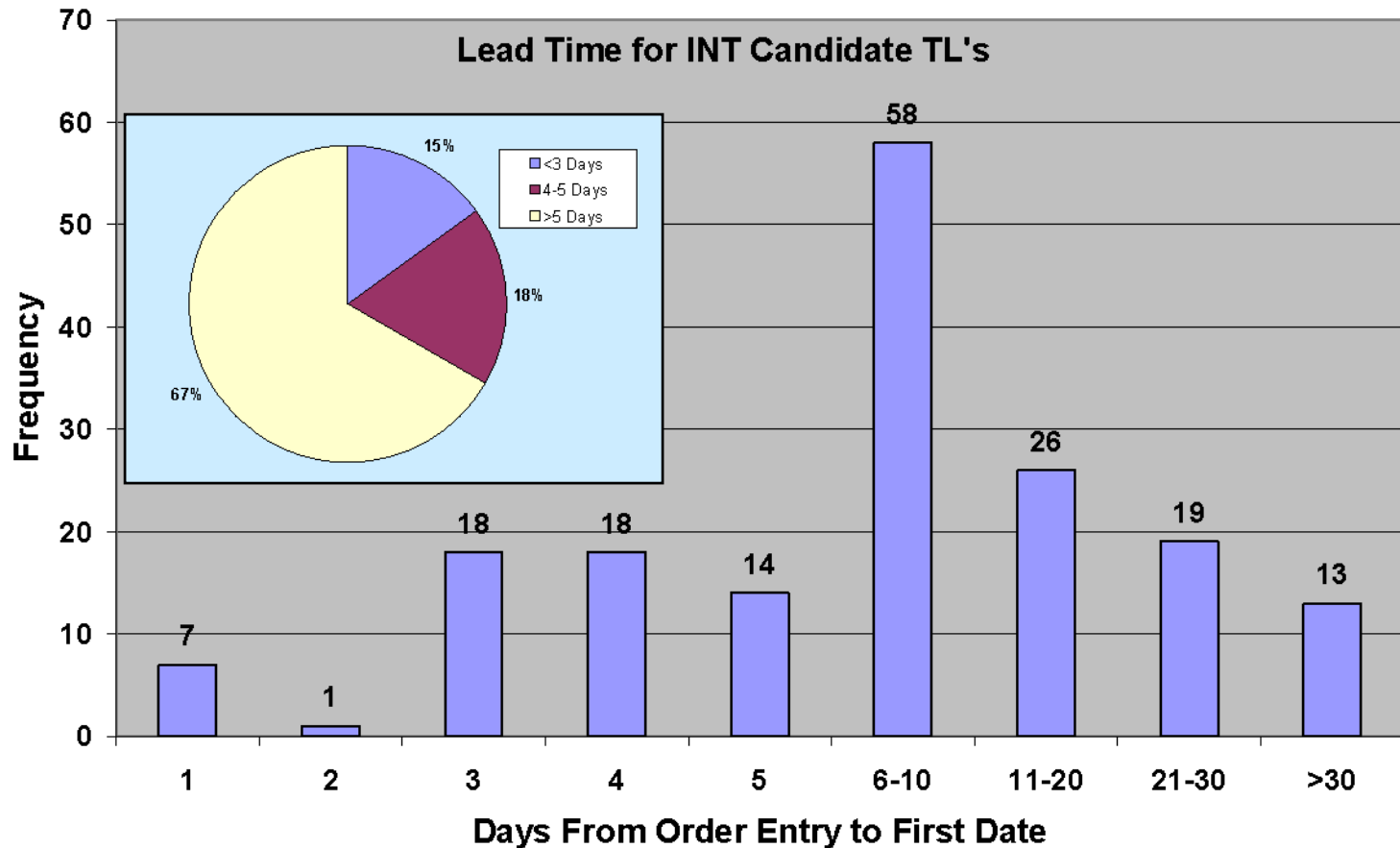
Source: Client data; load cost includes fuel at \$0.29 and \$0.15 per mile

The Dray Haul is Reportedly Driving IM Reliability Issues



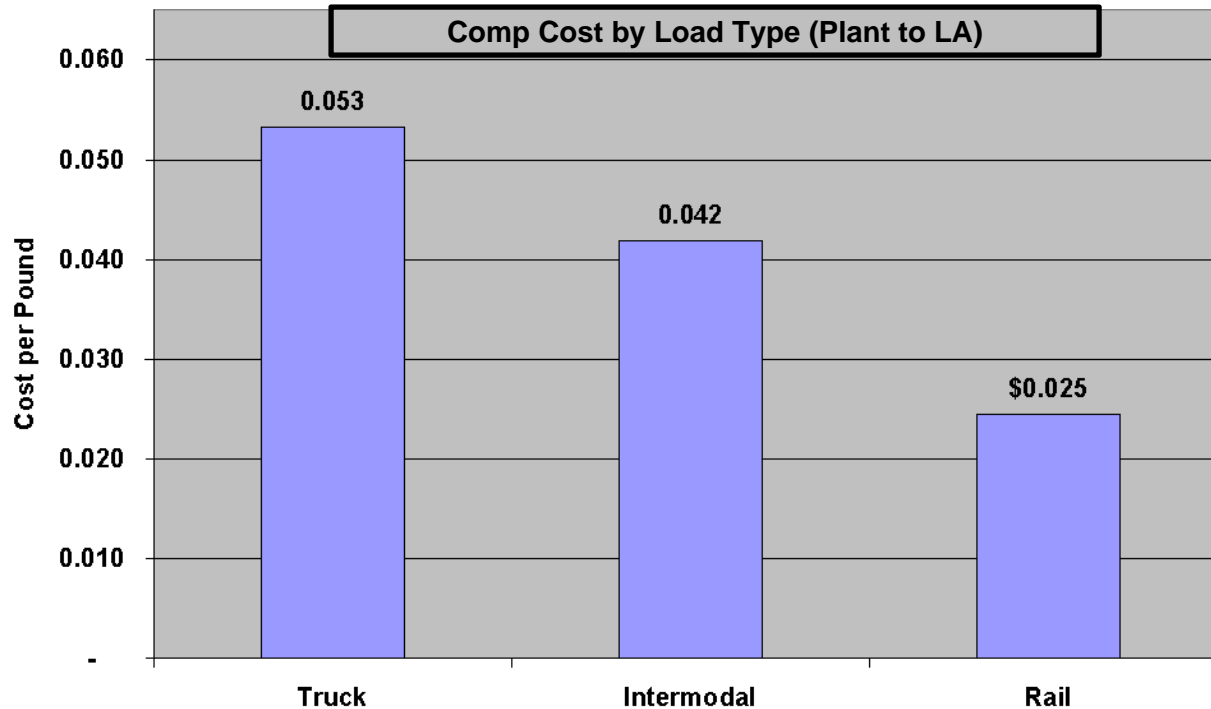
- ▶ **Rail leg: scheduled predictable service**
- ▶ **Dray legs: historically unreliable**
 - ◆ **Why? Reportedly delivery appointments are made on container arrivals rather than schedules**
 - ◆ **It is conceivable for shippers to be more proactive in managing dray operations and scheduling**

Case Study C: TL to IM Conversion



Only one-third of potentially converted loads demand TL timeliness

Case Study C: TL to IM Conversion

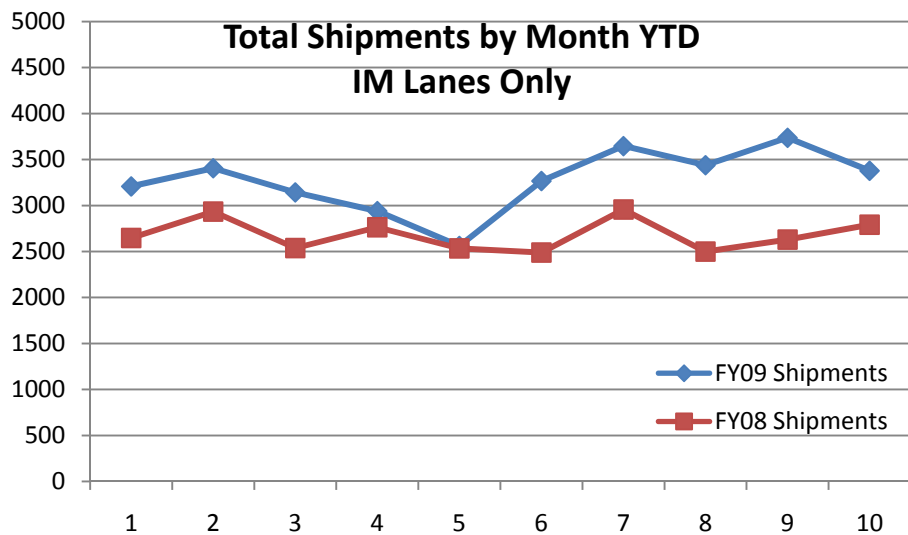


On 1 high volume lane:

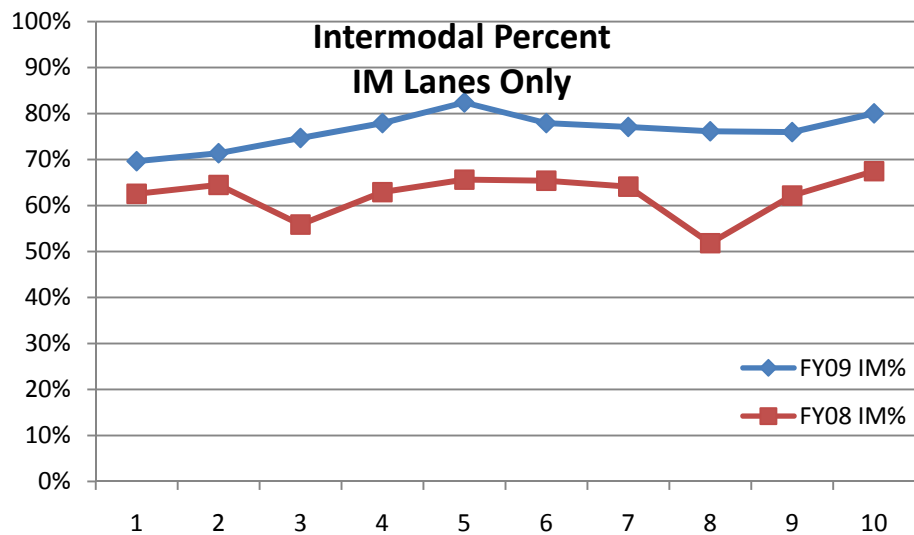
- Annual save opportunity on lane = \$650K
- Reduce Fuel Consumption by over 100,000 gallons/year

Total conversion over \$4MM annualized

Case Study D: IM Awareness Driving Conversion



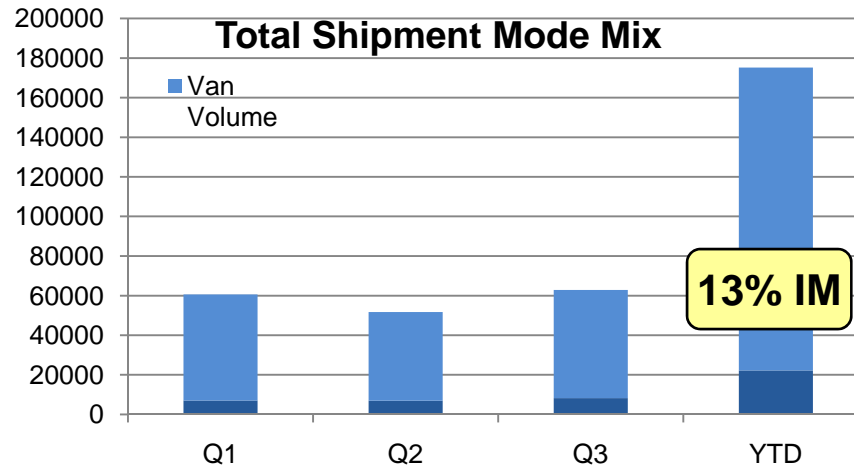
22% increase in IM eligible shipments FY09 vs FY08



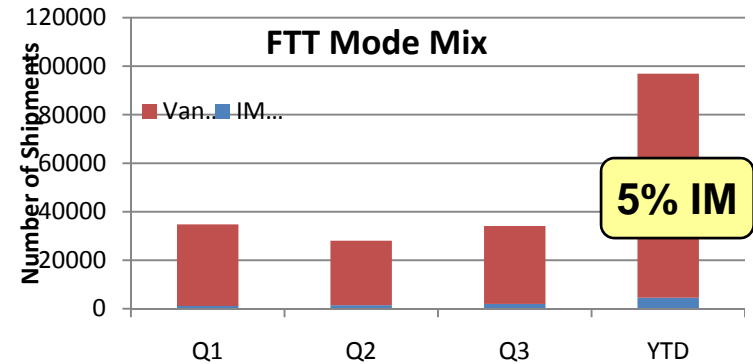
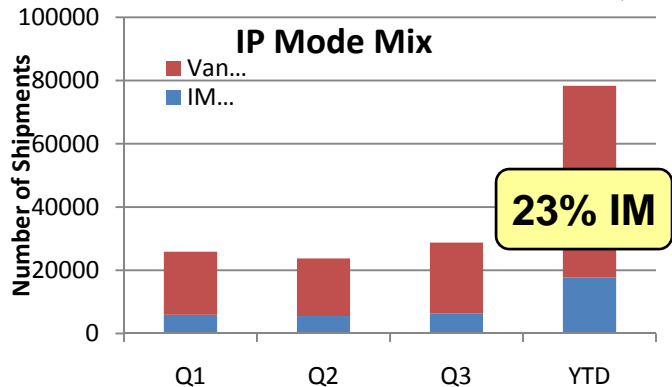
IM Pct increased from 62% to 76% of all IM eligible shipments

Using credible information, transportation increased awareness, increasing conversion, generating over \$3MM savings

Study D: IM Still a Small Part of Total Transportation



Note: data on this page reflects all lanes; data on previous page reflects IM eligible lanes only



Over \$7MM in un-captured conversion savings on existing lanes

Study D: Next Steps

▶ Situation:

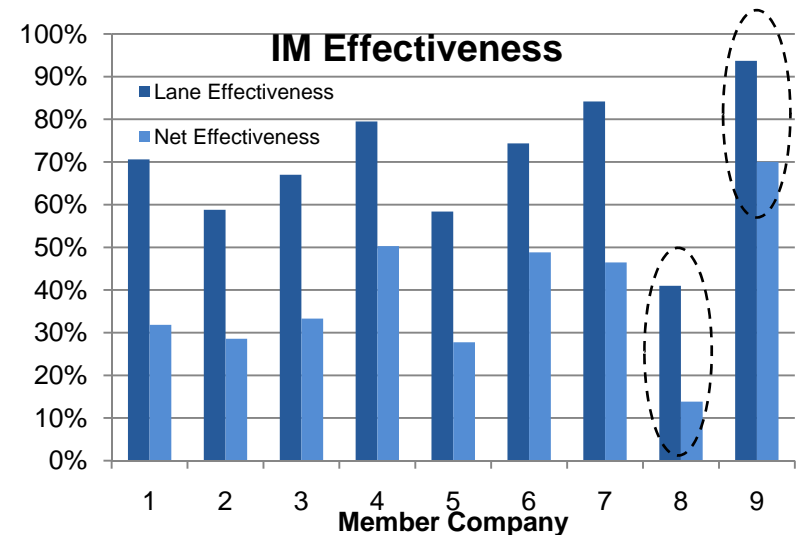
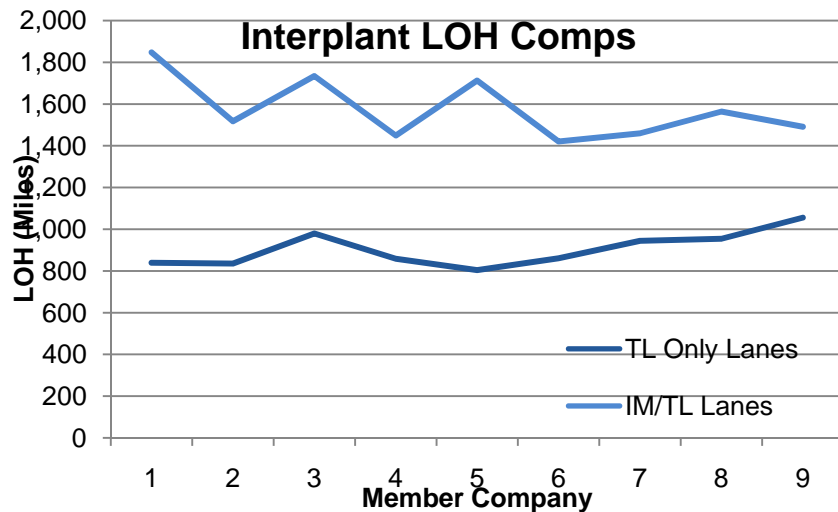
- ◆ **IM a cross-functional process owned by various functions (depending on flow path)**
- ◆ **Need to convert from generic to more precise decision process using real-time information**
 - **IP: WOS IM vs TL targets by SKU based on transit comps**
 - **FG: Customer segmentation**

▶ Objective:

- ◆ **Change business processes**
- ◆ **Provide accurate real-time reports for rapid decisions**
- ◆ **Conduct pilot, measure results, roll out**

Can We Measure IM Effectiveness to Identify Opportunity?

Step 1: Simple IM Effectiveness Measurement of Comparable Companies



Potential impact of equal IM effectiveness:

- TL capacity reduction of 25,000 loads per year
- LH cost reduction of \$5.4MM (interplant only)

Generic Rules do not Apply: Lane-Specific Focus is Required

Step 2: Examine alignment of SC network to IM network

▶ Leading Company

- ◆ 2 origins (of 12) top 80% IP volume
- ◆ Top IP origin:
 - 77 miles to IM terminal
 - 92% IM

▶ Lagging Company

- ◆ 9 origins (of 53) top 80% IP volume
- ◆ Top IP origin
 - 10 miles to IM terminal
 - 13% IM
- ◆ Top origin's top 5 destinations:
 - 154 IM loads (of 14,700)
 - Short hauls (Avg LOH 624 mi)
 - Only 1 lane IM cost-preferred (benchmarking)

IM is not cost competitive in the lagging shipper's short high volume IP lanes

IM Conversion Conclusions

▶ IM excellence requires:

- ◆ Overcoming service perceptions with facts
- ◆ Aligning your company's supply chain network with the US IM network
- ◆ More competitive dray service (particularly long hauls) and short haul pricing from providers

▶ Challenges:

- ◆ Provide valid cost vs service information to users
- ◆ Progressively re-align your company's supply chain flows into the IM network
 - New plants
 - Existing plant sourcing re-assignments
 - Mixing center locations
 - 3PL deployments

Agenda

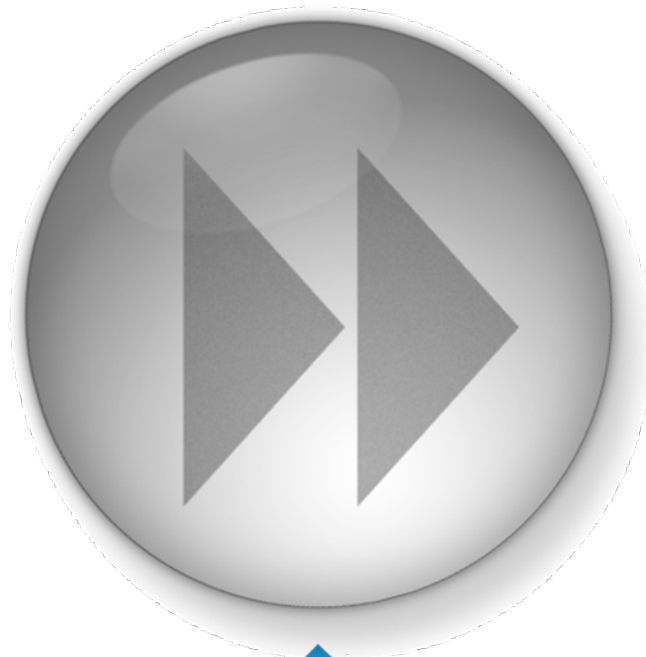
- ▶ A Need for Strategic Approach to Transportation Management
- ▶ The Challenge of Understanding Transportation Costs
- ▶ Strategic Solutions
 - ◆ Program Management
 - ◆ Transportation Business Intelligence
 - ◆ Largescale Conversion to Intermodalism
- ▶ **Summary**
- ▶ Key Takeaways
- ▶ Questions

A Strategic Approach Drives Sustainable Solutions

Solution	Strategic Leverage Point
Program Approach	Sourcing Systems Modal infrastructure
Trans BI	Data and information excellence
Intermodalism	Modal infrastructure Information excellence

Key Takeaways

- ▶ **Strategic approach (infrastructure-focused) rather than tactical approach (opportunistic-focus)**
- ▶ **Critical understanding: trans cost drivers**
- ▶ **Critical infrastructure points:**
 - ◆ **Sourcing**
 - ◆ **Data and information**
 - ◆ **Network (emphasizing IM)**
- ▶ **Result will be sustainable solutions and continuous improvement**
- ▶ **It requires an investment but the impact on profitability will be significant**



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Questions?