

The Logistics Analysis that Drives Industrial Site Selection



April 18th, 2023



About Joe Dunlap



CBRE's US Supply Chain Consulting practice is part of a [broader consulting business unit](#) joined with colleagues having expertise in Incentives, Labor Analytics, and Location Intelligence, just to name a few.

Leads CBRE's Global Supply Chain Consulting practice, a consulting practice of 40+ resources stationed in Singapore, Tokyo, Melbourne, Paris, Madrid, London, Poland, Toronto, and across the US.

Has more than 30 years of experience specializing in supply chain transformations, supply chain network design, transportation analysis, distribution operations, facility design, demand planning, execution systems, and business-case development, among other areas and has authored two patents for automated source tagging.

Before joining CBRE, served in various supply chain/ logistics roles at United Parcel Service, Fortna, Accenture, Dematic, Siemens, serving hundreds of clients across various industries, including Automotive, Consumer Goods, Communications & High-Tech, Food & Beverage, Pharmaceuticals, Parcel & Postal, Retail.

Session Overview

In this session you'll learn how occupiers evaluate their supply chain location requirements before going through labor analysis, the incentives process, or site selection. You'll take away from this session an understanding of the drivers of Industrial site selection to enable you to ask prospect companies why they want to be in your community and what their business justifications are for doing so. This understanding should help the EDO to incentivize the desired tenant businesses to complement goals in their state or market.

Supply Chain Consulting

[CBRE Supply Chain Consulting](#) helps clients solve complex business problems and build distinct advantage through supply chain transformations.

We focus on determining the most effective supply chain strategy, supported by a relevant network and infrastructure footprint that meets current and future operational needs. We deliver exceptional, tailored outcomes built on clients' specific business priorities, strategies and supporting data.

Occupier

Supply Chain Strategy

Our supply chain strategy offering helps clients holistically align their operational needs and capabilities with their Retail and Industrial footprints to enable growth, reduce costs, and improve productivity.

Facility Concept Design

FCD applies a client's inside-the-four-walls data and processes along with growth expectations to consider alternative processes, automation, and appropriate storage media before developing a concept design.

3PL Outsourcing

Supply Chain Consulting's outsourcing methodology consists of steps to help clients define what and why they want to outsource, prepare and solicit an RFP and select the best warehouse operator(s).

Network Design

Supply chain network design defines the configuration which provides the best balance of cost minimization, service excellence, risk mitigation, and complexity based on customer requirements.

Operations Assessment

Inside-the-four-walls assessment of operations provides an understanding of operational constraints and improvement opportunities.

Business Case Development

Supply Chain Consulting's discounted cash flow (DCF) analysis helps consider various options compared to a baseline cash flow prior to initiating more complex projects.

Investor

Logistics Competitiveness

A Logistics Competitive Analysis quickly highlights and scorecards the qualitative and quantitative benefits of the site relative to competitive properties and markets.

Total Logistics Comparative Analysis

In addition to comparative analysis of transportation, incremental analysis of labor and real estate round out a total logistics perspective as to how prospective occupiers will view the investor's site.

Transportation Comparison Analysis

This analysis considers the investor property and similar competitive properties by contrasting shipments from the investor sites and competitor sites to and from each of the top 100 MSAs, localized sites, or markets to understand the cost and time-in-transit advantages and disadvantages.

Occupier Targeting Support

What we colloquially call "reverse engineering the Supply Chain Network Design," this offering considers property attributes to target user segments most likely to value the property over competitive sites. By scrutinizing targeted user groups, an endeavor will be made to understand occupier logistics footprints by analyzing whether potential occupiers are already in the market and eyeing possible relocation at lease expiration or not in the market and likely a gap in their logistics footprint. Results are used to feed the brokerage team in a laser-focused campaign.

Fundamental Alignment



Business Imperatives

Crucial changes to the business often trigger changes in the supply chain and changes in the company's supply chain tend to create changes in real estate – Alignment is required between business strategy, supply chain, and real estate.



Drivers of industrial site selection

Ocean shipping rates declining, domestic freight costs growing along with fixed facility costs



Transportation Costs

▼ -84.0%

Ocean Shipping Rate
Annual cost decrease to ship a 40-foot container from Shanghai to Los Angeles.

Source: Drewry Container Port Index, April 2023

▼ -9.7%

Cass Freight Index - Expenditures
Average year-over-year decreases in domestic freight costs. Includes all domestic transportation modes (truck, rail, air) .

Source: Cass Information Systems Inc, February 20223

Facility Costs

▲ +18.0%

U.S. Industrial Asking Rent Growth
2021 year-over-year asking rent growth was an all-time record.

Source: CBRE Research, December 2022

▲ +2.3%

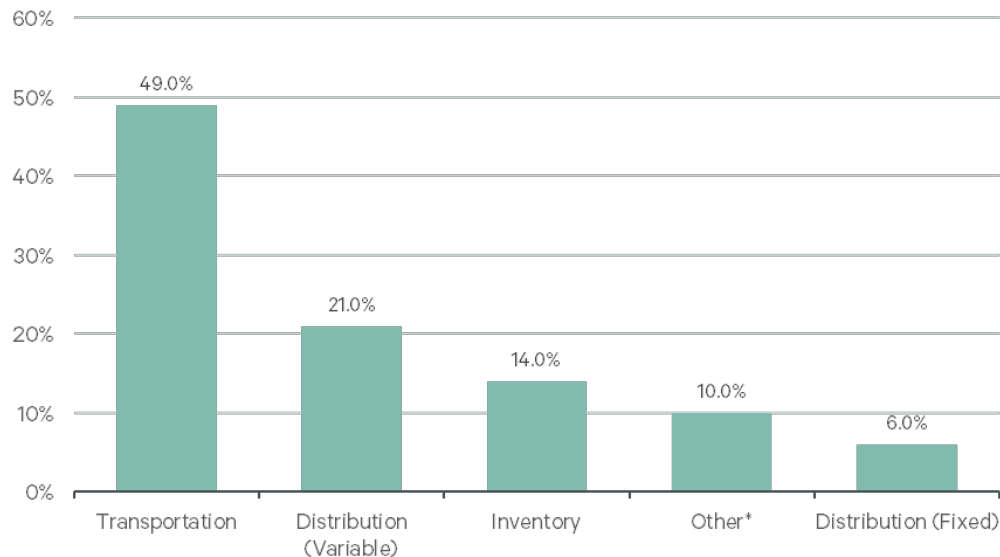
Average Hourly Warehouse Wages
Compares the national hourly wage increase for a non-supervisory warehouse worker from January 2022 with January 2023.

Source: CBRE Labor Analytics

Logistics as % of Sales/US Business Logistics Cost

From year to year, logistics costs as a percentage of sales vary and are mostly derived from distribution fixed / handling along with inbound and outbound transportation cost.

Typical Logistics Costs as % of Sales



*Other includes reverse logistics, customer services, planning and administrative functions.

Source: CBRE SCC analysis of 2021 CSCMP State of Logistics Report

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Points to consider:

- Segmented usually by industry type: CPG, food/beverage, retail, electronics and high tech, pharmaceutical, etc.
- Varies by products value: i.e., relatively high COGS generally has a lower logistics cost as a percent of sales, whereas grocery, for example, has a relatively low COGS and a subsequently higher logistics cost as a percent of sales
- Within each industry can also vary: For example, Retail ranges widely based on operating model – i.e., flow through, hold & flow, frequency of delivery, SKU counts, etc.

Logistics as % of Sales/US Business Logistics Cost

The example below illustrates the logistics math for a \$1B company will spend on average about \$80M per year in recurring logistics spend

Metric	%	Value
Total Revenue	Benchmark %	\$1,000,000,000
Logistics Cost as a % of Sales	8.04%	\$80,400,000
Transportation	49.0%	\$39,396,000
Distribution (Variable)	21.0%	\$16,884,000
Inventory	14.0%	\$11,256,000
Other*	10.0%	\$8,040,000
Distribution (Fixed)	6.0%	\$4,824,000
Total Logistics Cost	100.0%	\$80,400,000

*Other includes reverse logistics, customer services, planning and administrative functions.

Source: CBRE SCA analysis of 2022 CSCMP State of Logistics Report

Points to consider:

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- Within each industry can also vary: For example, retail ranges widely based on operating model – i.e., flow through, hold & flow, frequency of delivery, SKU counts, etc.
- Varies from year to year: when the economy is contracting, logistics cost as a percent of sales is typically near the low end of the range or trending in that direction and when the economy is expanding, it is typically on the high end of the range or trending in that direction

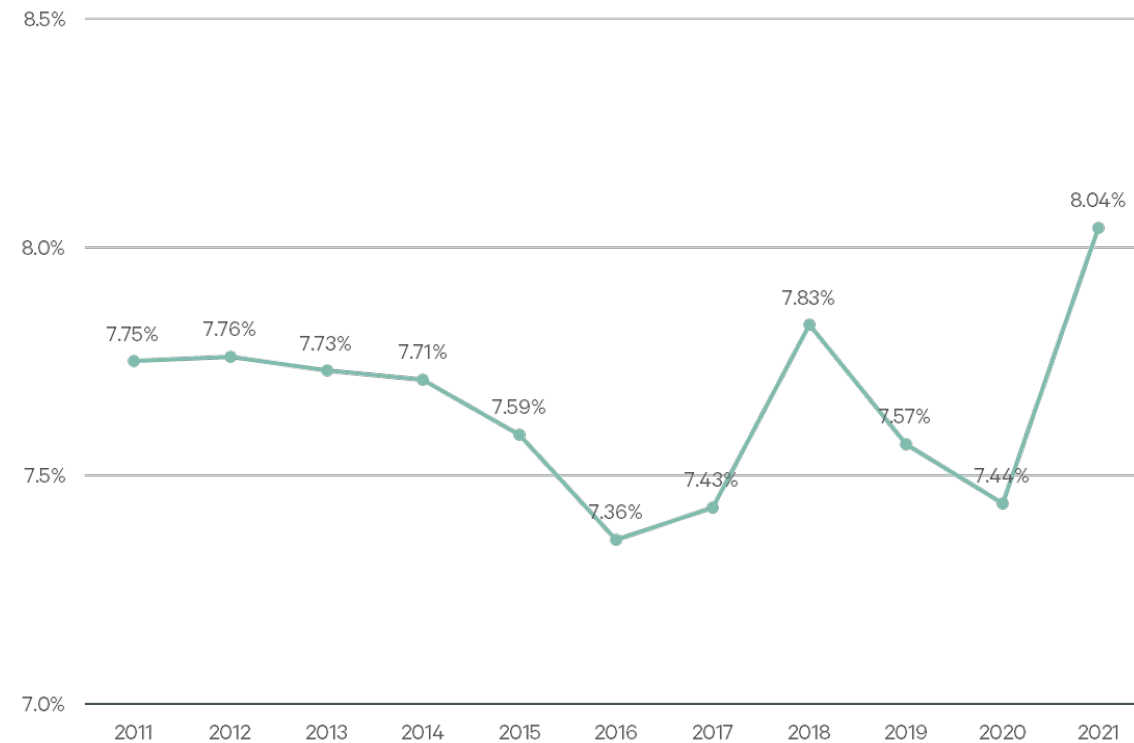
Anatomy of a Client's Logistics Spend

Understanding the cost drivers in each logistics area will help you discuss trade-offs with your supply chain colleagues.

	P&L Line Items	%	Sub-Items	Cost Drivers
Logistics Costs	Transportation Costs	45-70%	- Inbound Transportation (sometimes part of COGS) - Outbound Transportation - Transfers	- Distance - Cube - Weight - Volume - Mode - Number of trips/shipments - Physical attributes (frozen, refrigerated, ambient, haz mat, etc.) - Rates, fuel, surcharges
	Variable Facility Costs (incl. labor)	15-25%	- Payroll - Payroll taxes 401k plan - Employee medical - Contract / temporary labor - Recruiting - Employee morale - Supplies - Rental equipment - Maintenance & repair	- Volumes - Processes & automation - Productivity - Number of FTEs - Skills & scarcity - Wage rates - Operating days / hours
	Inventory Carrying Costs	12-16%	- Cost of goods sold - Capital costs - Financing charges - Inventory services cost - Inventory risk cost such as shrinkage, pilferage, damages and obsolescence	- Interest rates - Order cycle times - Sales
	Other Related Costs	7-12%	- Customer Service - Order management - Returns & reverse - logistics Administration	- Customer call frequency - Order channels - Order mgmt software - Return rates - Customer share of return cost
	Fixed Facility Costs (incl. CRE)	3-6%	- Rent / lease - Utilities - Telecom - Insurance - Depreciation - Interest - Property tax - Mgmt salaries	- Location - Size - NNN Rate - Clear height - Floor thickness / flatness - Construction type

Trendline

For the past 10 years or more, logistics as a percent of sales have typically run between 7.3% and 8.1%



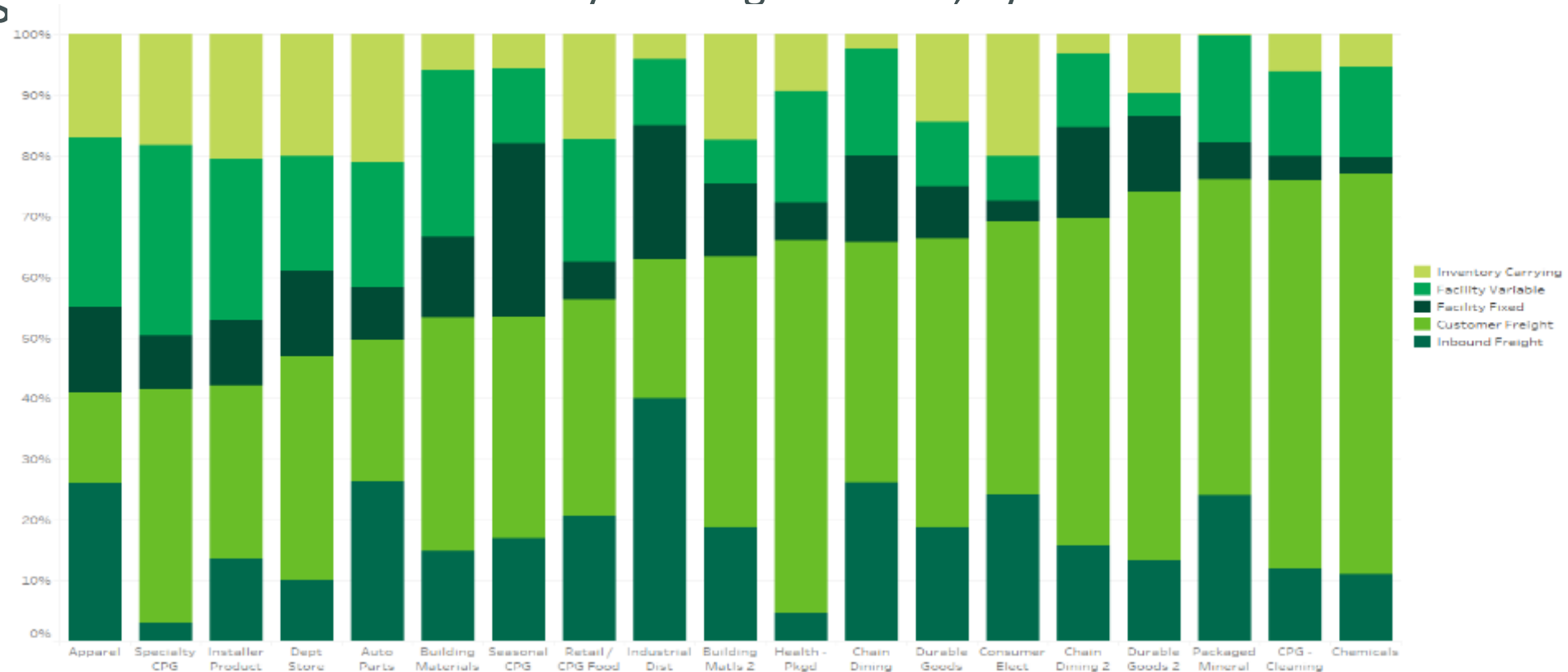
Source: CBRE SCA analysis of 2022 CSCMP State of Logistics Report

Points to consider:

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- The economy clearly slowed initially during the pandemic and logistics as a percent of sales tumbled.
- As container volume increased, container rates sky-rocketed, drayage and trucking capacity were constrained in 2021, so we fully expect logistics as a percent of sales to reflect a higher percentage.

Cross-Industry Logistics Cost Profiles

Logistics cost profiles vary widely from industry to industry, company to company with combined inbound and outbound transportation costs usually the largest factor, by far.



Trade-Offs

Trade-offs in logistics components are made in order to minimize total logistics costs given service level objectives.

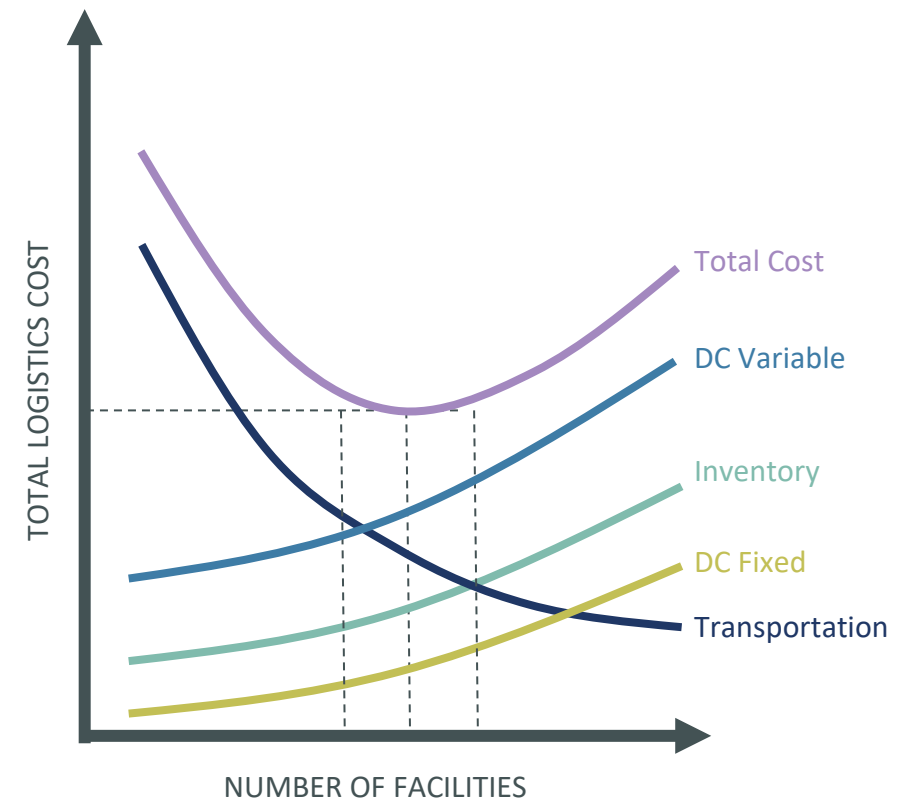
VARIABLE WAREHOUSING COSTS More warehouses typically mean more head count and labor required to process volume.

INVENTORY COSTS Inventory costs increase with the number of facilities where the client maintains a safety stock of all (or most) products at each facility. More total space is required overall.

FIXED WAREHOUSING COSTS More warehouses mean more space to be owned, leased or rented.

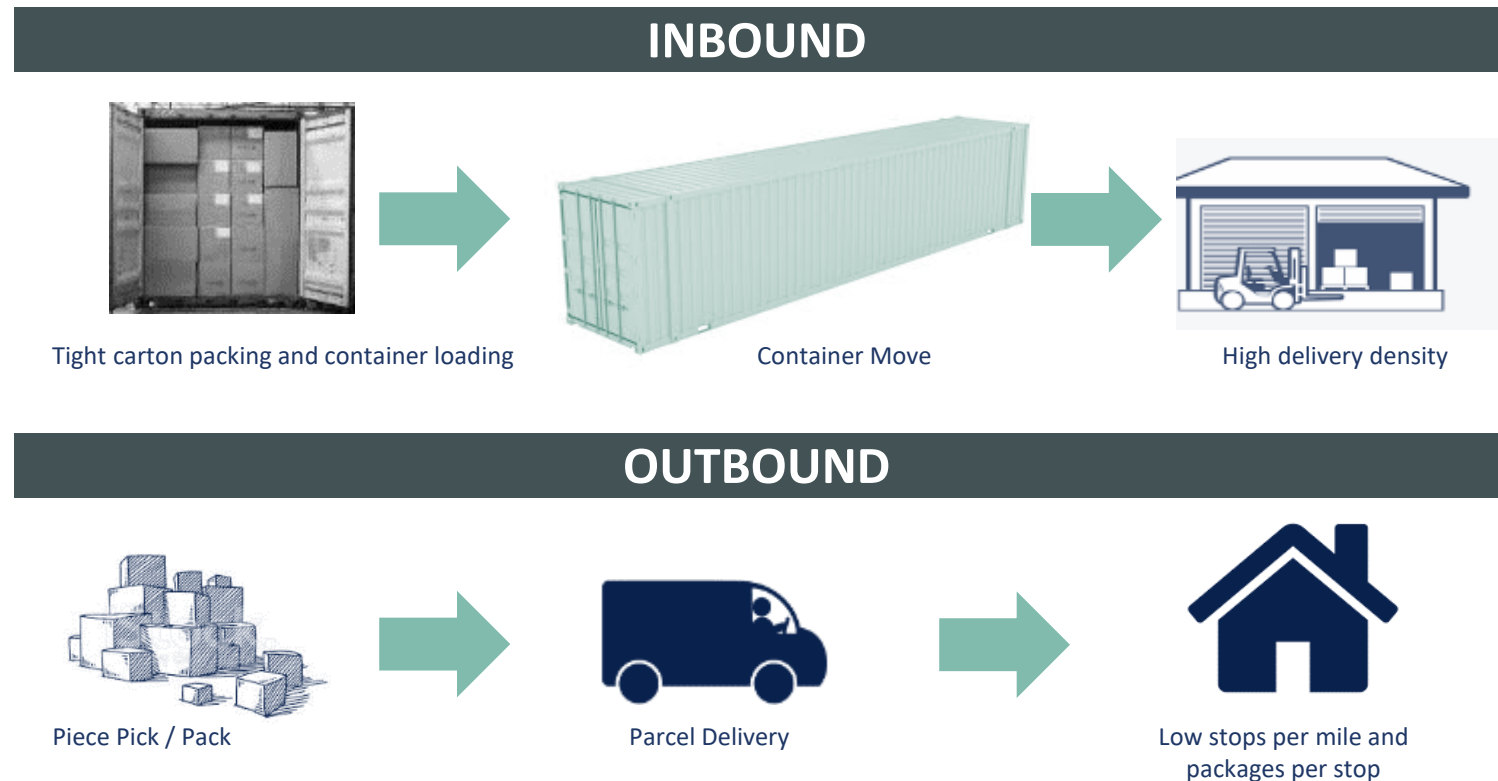
TRANSPORTATION COSTS Transportation costs initially decline as the number of facilities increase due to proximity.

Four primary factors influence the number of facilities a firm chooses to maintain:

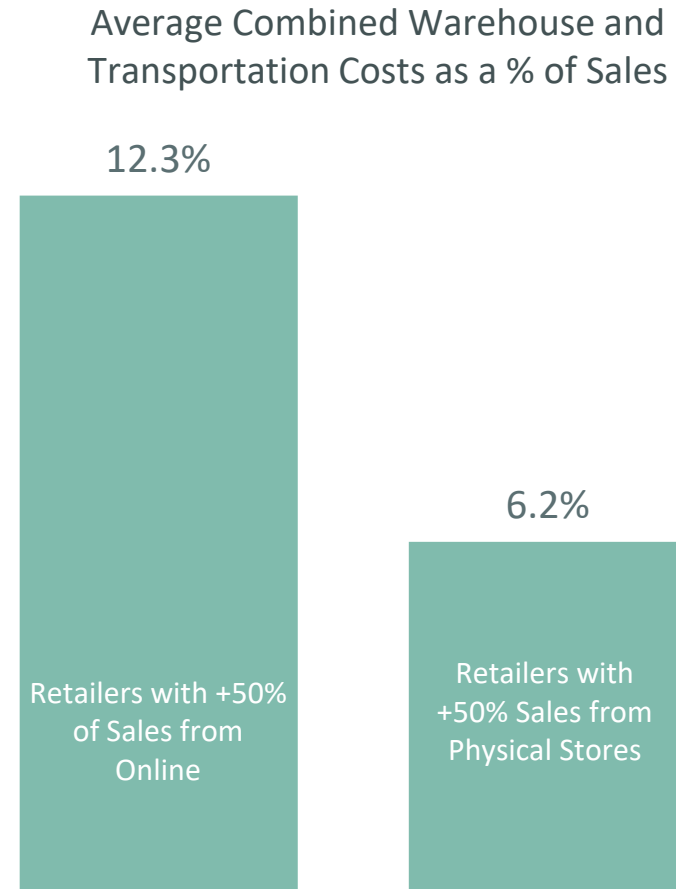


Outbound is Generally More Expensive than Inbound

There is a logical reason why outbound transportation is typically three to five times more expensive compared to inbound transportation.



The high cost of free delivery may restrict e-commerce growth while driving reliance on a brick-and-mortar store network



Source Freightwaves, January 2021.



1. Logistics **costs** are twice as high for e-tailers vs. brick-and-mortar players



2. Home delivery & returns **erode profit margins**. Very few (if any) pure play e-tailers are profitable



3. Increase in returns (“reverse logistics”)



4. Increased interest in leveraging the store

Logistics Cost vs. Service

Striking the right balance between acceptable logistics costs and speed is crucial to achieving revenue goals, gaining market share and customer expectations.



Four Most Common Decision Criteria

Companies make regular logistics decisions largely around balancing the following criteria.

1. Speed

- Minimize time on water
 - Shorter water moves
 - “First off” destination ports
- Truck over rail
- Faster picking process

3. Reliability / Variability

- Obtain control of goods at destination port (“origin to port” vs. “origin to door”)
- Minimize time on water
- Truck over rail
- If importer is unsure of destination for imported goods at time of shipment, importer may deconsolidate at or near the port

2. Cost

- Bundled transportation to final destination (“origin to door” instead of “origin to port”)
- Ocean moves to destination port closest to destination
- If destination is inland, several hundred miles from the port, and is near an intermodal hub, use intermodal vs. truck for “destination port to door” transportation
- Low density items may move more economically in a larger truck trailer than a smaller sea container

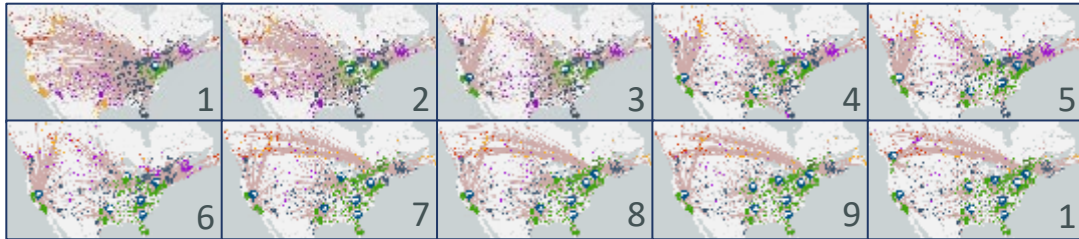
4. Complexity

- Smaller and less sophisticated importers prefer “door to door” service
- Importers may require actions to make goods “delivery ready”, often done at facilities near the destination port:
 - Palletizing
 - Customer value-added services (e.g., tagging)
 - Late-stage finishing (e.g., take generic item and place in customer-specific packaging)

Top 10 US/CAN Nodes for ECOM/DTC

An internal study was conducted for a fictitious digitally native retailer whose demand profile looks like population distribution

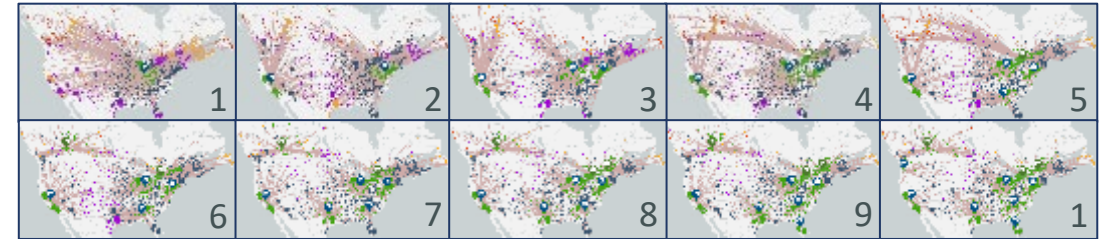
Parcel Best TNT



# of Nodes	Market (% of Population Served)	Average Days Time-in-Transit	Average Distance Node to Customer
1	Harrisburg, PA (100%)	2.5	1,119
2	Cincinnati, OH (73%), Allentown, PA (27%)	2.2	865
3	Cincinnati, OH (50%), Allentown, PA (26%), Fresno, CA (24%)	1.8	525
4	Cincinnati, OH (32%), Allentown, PA (27%), Fresno, CA (21%), Shreveport, LA (20%)	1.6	435
5	Harrisburg, PA (28%), Fresno, CA (21%), Chicago, IL (19%), Greenville, SC (17%), Shreveport, LA (15%)	1.5	388
6	Harrisburg, PA (28%), Fresno, CA (21%), Chicago, IL (19%), Shreveport, LA (15%), Greenville, SC (11%), Jacksonville, FL (6%)	1.5	355
7	Harrisburg, PA (21%), Fresno, CA (21%), Chicago, IL (18%), Shreveport, LA (15%), Greenville, SC (11%), Montreal, QC (8%), Jacksonville, FL (6%)	1.4	352
8	Fresno, CA (21%), Chicago, IL (18%), Shreveport, LA (15%), Harrisburg, PA (11%), Greenville, SC (11%), Albany, NY (10%), Montreal, QC (8%), Jacksonville, FL (6%)	1.3	340
9	Fresno, CA (20%), Fort Wayne, IN (14%), Shreveport, LA (12%), Albany, NY (10%), Greenville, SC (10%), Harrisburg, PA (10%), Kansas City, MO (9%), Montreal, QC (8%), Jacksonville, FL (6%)	1.3	321
10	Fresno, CA (15%), Fort Wayne, IN (14%), Shreveport, LA (12%), Albany, NY (10%), Greenville, SC (10%), Harrisburg, PA (10%), Kansas City, MO (9%), Montreal, QC (8%), Jacksonville, FL (6%), Seattle, WA (6%)	1.2	281

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Parcel Least Cost

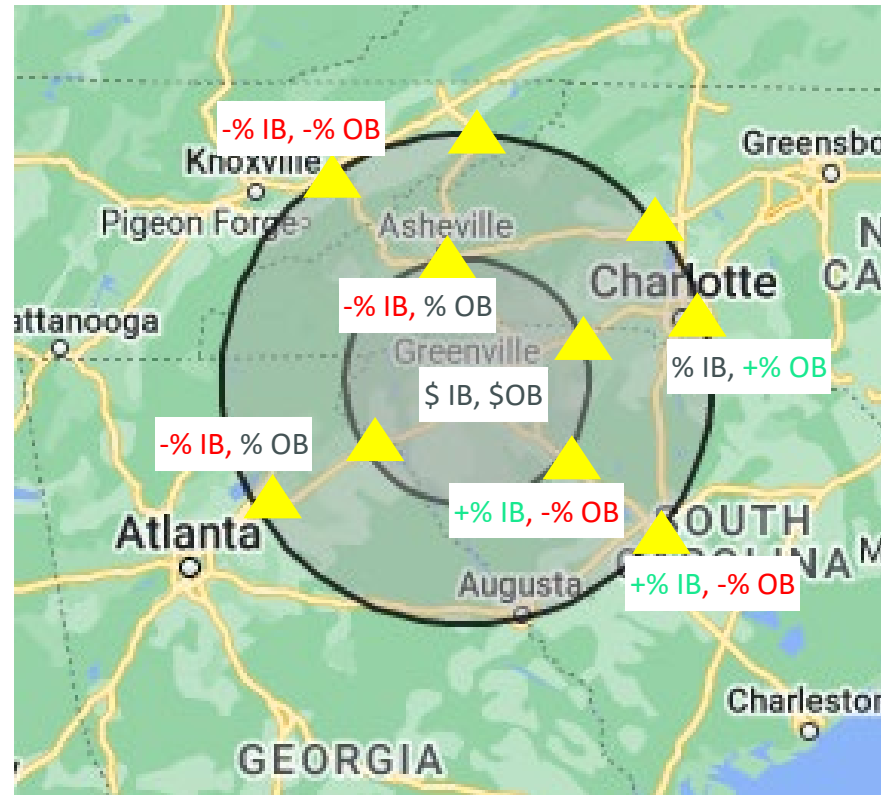


# of Nodes	Market (% of Population Served)	Average Days Time-in-Transit	Average Distance Node to Customer
1	Indianapolis, IN (100%)	2.4	959
2	Harrisburg, PA (75%), Fresno, CA (25%)	2.0	672
3	Indianapolis, IN (46%), Philadelphia, PA (32%), Fresno, CA (22%)	1.8	517
4	Indianapolis, IN (44%), Philadelphia, PA (27%), Fresno, CA (22%), Oshawa, ON (7%)	1.7	507
5	Montgomery, AL (27%), Philadelphia, PA (23%), Fresno, CA (22%), Fort Wayne, IN (21%), Toronto, ON (7%)	1.7	424
6	Montgomery, AL (27%), Philadelphia, PA (22%), Fresno, CA (21%), Fort Wayne, IN (21%), Toronto, ON (6%), Calgary, AB (3%)	1.6	388
7	Allentown, PA (20%), Fresno, CA (19%), Fort Wayne, IN (19%), Augusta, GA (17%), Dallas, TX (16%), Oshawa, ON (6%), Calgary, AB (3%)	1.4	320
8	Allentown, PA (20%), Fresno, CA (19%), Fort Wayne, IN (19%), Augusta, GA (17%), Dallas, TX (16%), Oshawa, ON (4%), Montreal, QC (3%), Calgary, AB (3%)	1.4	309
9	Allentown, PA (20%), Fresno, CA (19%), Fort Wayne, IN (19%), Dallas, TX (16%), Greenville, SC (11%), Lakeland, FL (6%), Toronto, ON (4%), Montreal, QC (3%), Calgary, AB (3%)	1.3	288
10	Allentown, PA (20%), Fort Wayne, IN (18%), Dallas, TX (16%), Fresno, CA (14%), Greenville, SC (11%), Lakeland, FL (6%), Portland, OR (4%), Toronto, ON (4%), Montreal, QC (3%), Calgary, AB (3%)	1.3	262

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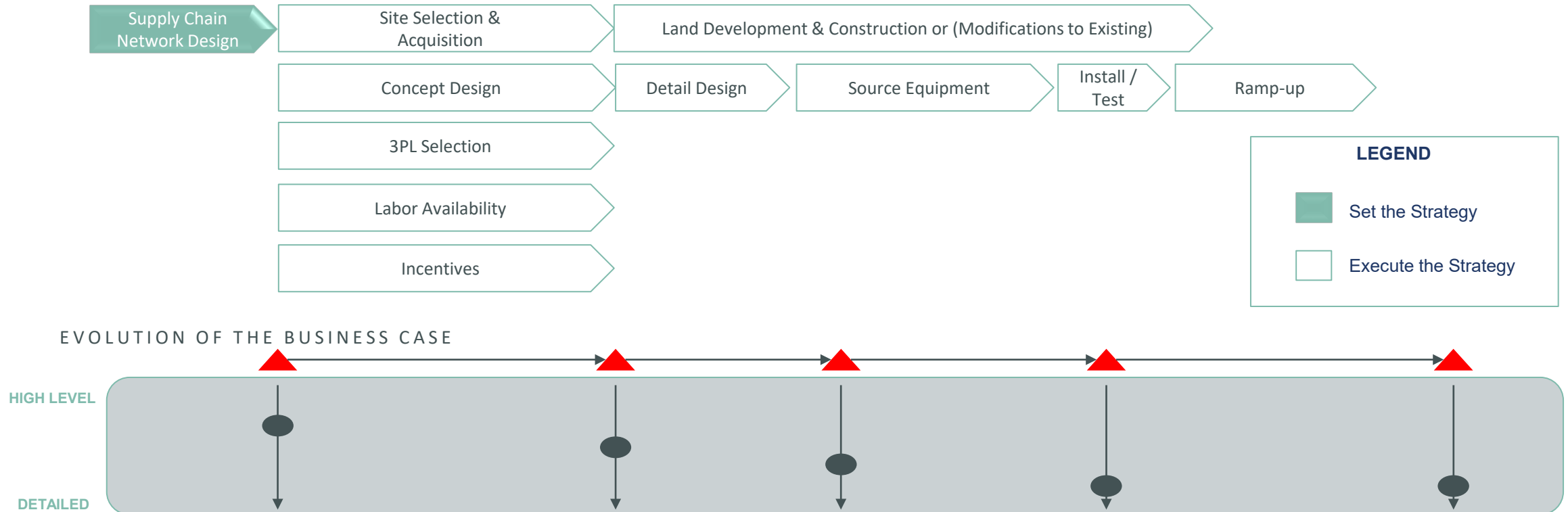
Transportation Zone of Indifference

In a perfect world, the best building and labor exist exactly where you need it. These are tradeoffs considered relative to optimal transportation.



Typical Occupier Lifecycle

Results from a network design often result in incentives, site selection, facility redesigns / retrofits or design / build / implementations of new facilities



Supply Chain Network Design

Supply chain network design defines the supply configuration which provides the best balance of cost minimization, service excellence, risk mitigation, and complexity management based on customer requirements.

Addressable Questions

- How many “nodes”?
- Where should they be?
- What are the approximate sizes of each?
- How many workers are needed in each?
- What is the business case?

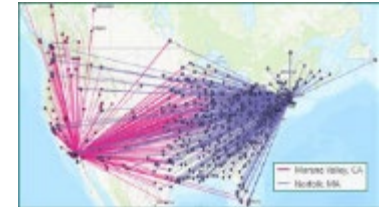
Project Types

- Center of Gravity (COG)
 - Estimate the geographic center among various points based on some unit of measure.
- Supply Chain Network Design
 - Identify the optimal number, location and size of facilities, territories served by each.
- Flow Path Optimization
 - Identify how products optimally flow through the network.
- Local Optimization
 - Identify the best locations based on local drive-time considerations.

SUPPLY/DEMAND DATA



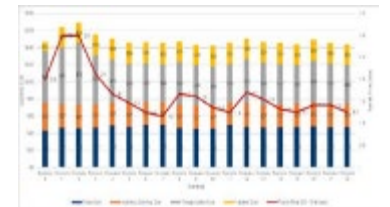
CURRENT STATE



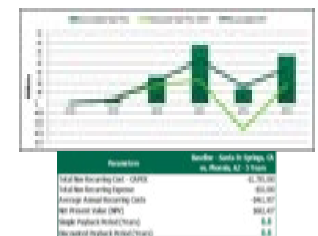
FUTURE STATE



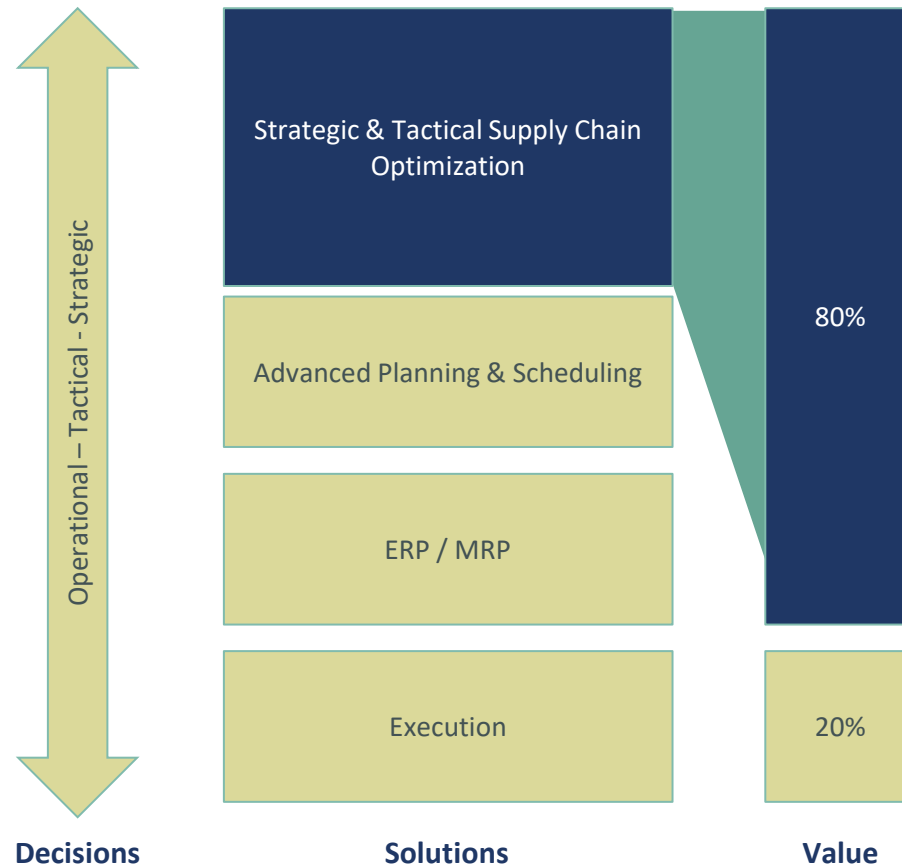
COST MODEL



BUSINESS CASE



As most supply chain costs are locked in the infrastructure, network design is critical in order to realize step changes



Most a supply chain's lifecycle costs are locked-in at the start...

- Manufacturing / supplier network
- Distribution network
- Inventory locations
- Inventory levels
- Service policies

Source: AMR Research

Questions?



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