



Warehouse Location Strategy

The Impact on Overall Logistics Costs

Sponsored by:

PDC

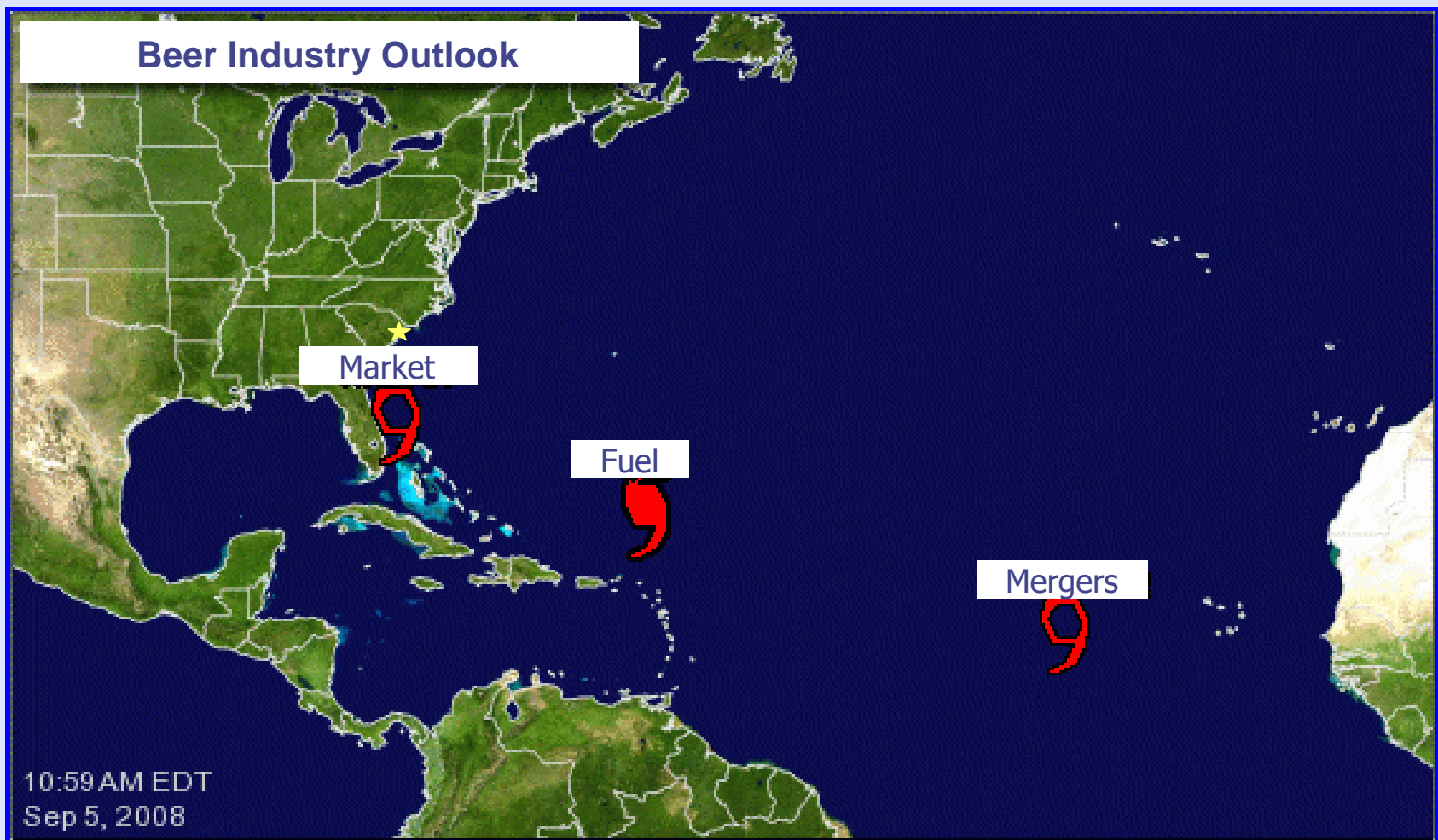
Precision Distribution Consulting, Inc.

Presented by:

SCPI
Supply Chain Process Improvement, Inc.

'Hurricane' Preparedness

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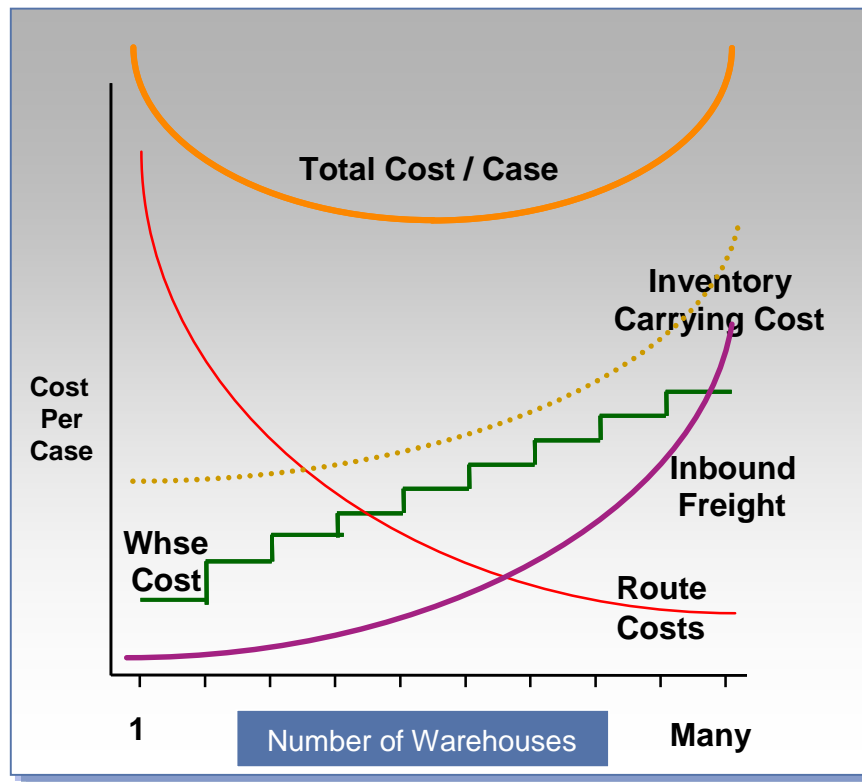
What must we do to prosper given our market and competition?



Warehouse Location Strategy Defined

Location Strategy is...

A strategic analysis that defines the number, location, and function of network facilities (warehouses or cross docks), equipment and resources while maintaining delivery service levels



When to Use

- Acquisition
- Facility Relocation
- Facility Consolidation
- Territory Redesign
- Brand Integration

The objective is to minimize total cost over the long term ...

Location, Location, Location

- ❑ **Location drives performance**
 - **Driving miles; access to roads**
 - **Equipment utilization**
 - **Volume; Operational efficiency**
 - **Workforce**
 - **Other costs; taxes, utilities**

- ❑ **Advantage of fewer warehouses**
 - **Volume to Support Automation**
 - **Combined overhead**
 - **Less safety stock inventory**
 - **“Simpler” to manage**



“But what is the Best Location and what will our Route Costs be...?”

The Analysis Components

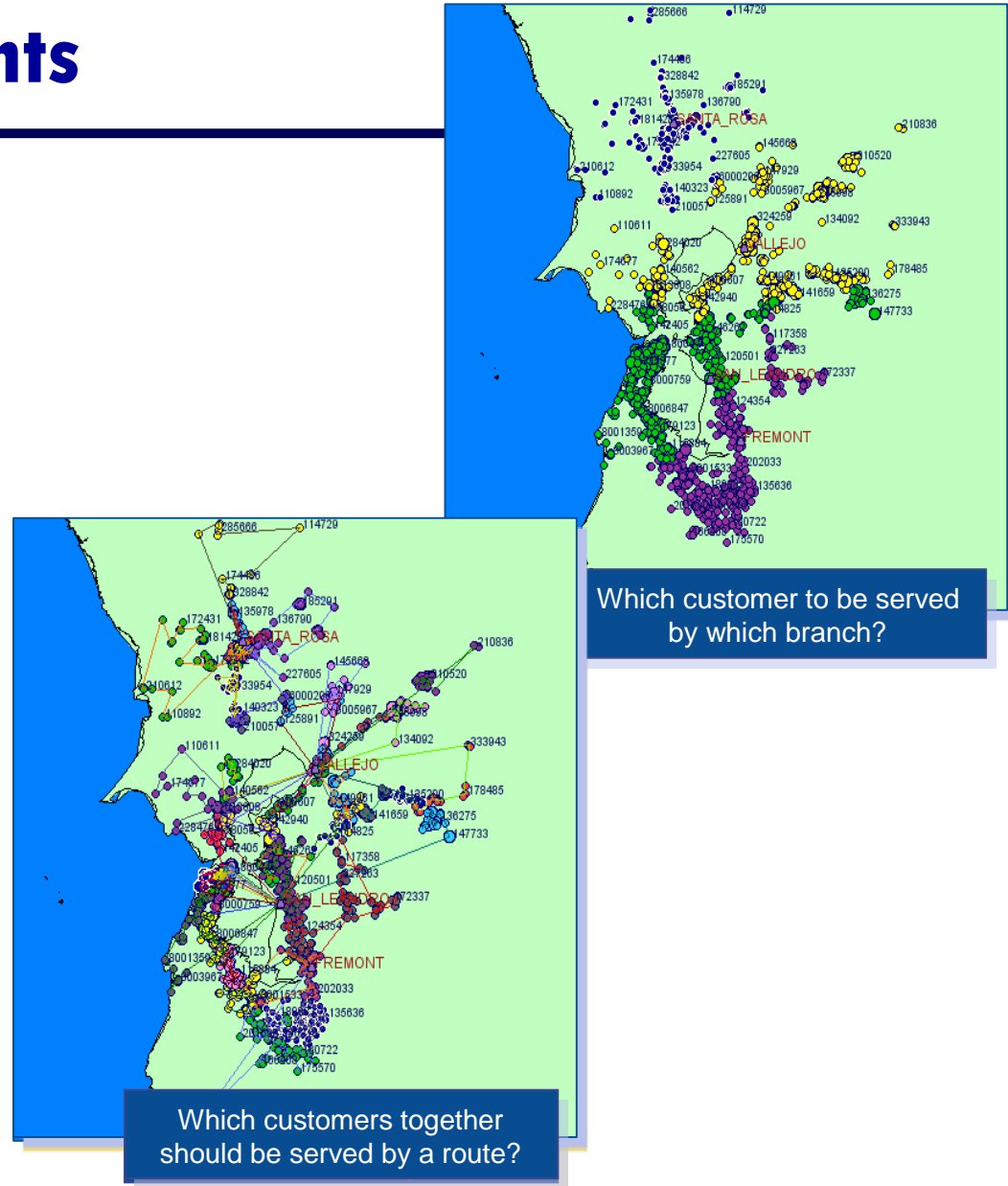
□ Simultaneously decide

- Facilities; Number, Location, and Size
- Facility Territories
- Route Territories



□ While Considering

- Inbound costs
- Facility costs
- Outbound costs
- Customer service requirements

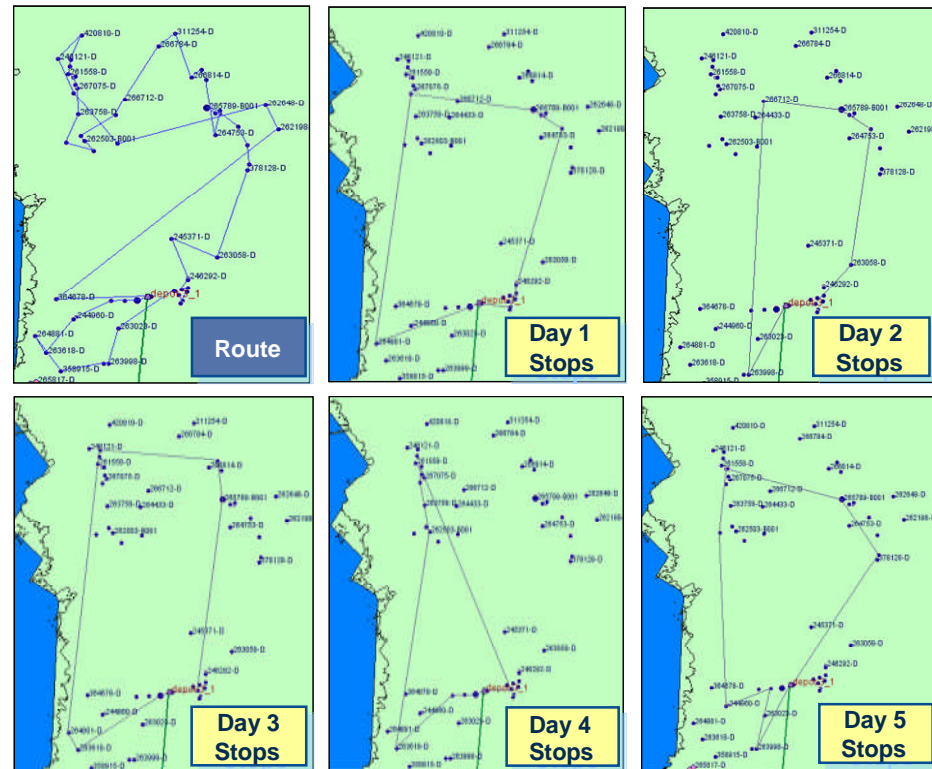
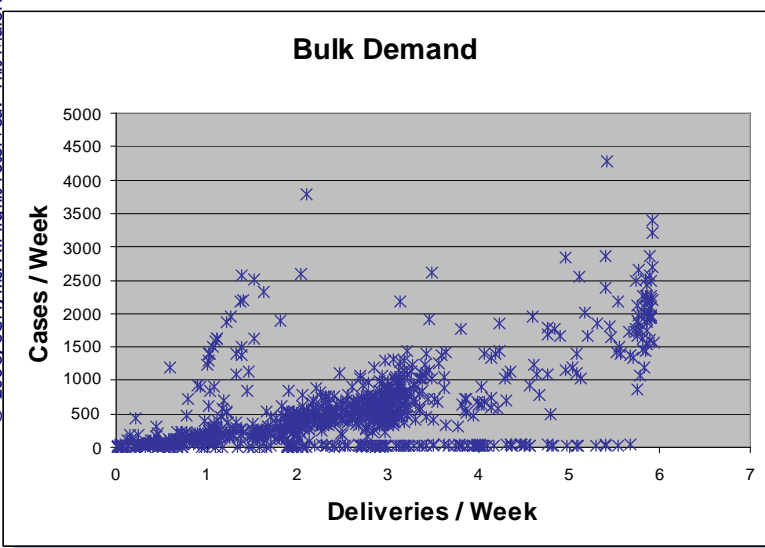
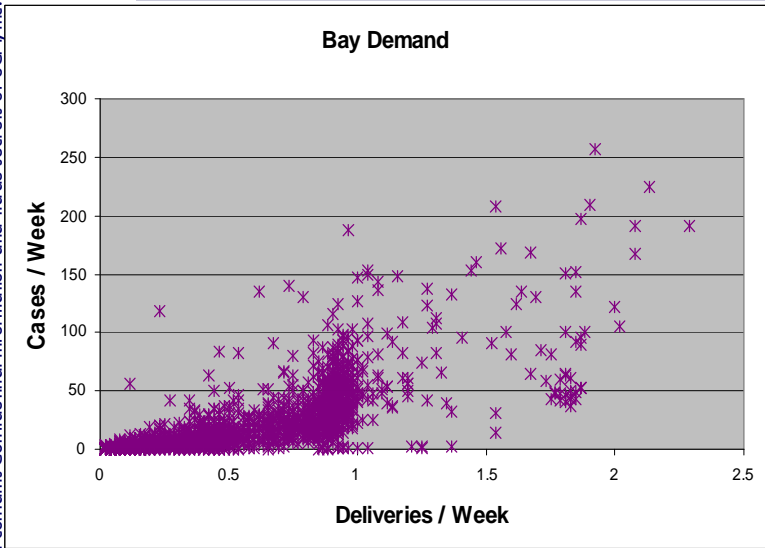


Combined network optimization and routing typically by Truck Type

What's So Complex About it?

CASE DEMAND v. DELIVERY FREQUENCY

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Analysis Must Comprehend the Complexity of Delivery Frequency

An aerial photograph of a vast, circular, light-colored crater or impact site in a desert landscape. The crater is filled with a complex network of ridges and valleys, creating a textured, almost maze-like appearance. The surrounding terrain is a mix of light and dark brown, suggesting different soil compositions or vegetation. The sky is a clear, pale blue. The text "What To Look For" is overlaid in the center of the image in a bold, red, sans-serif font with a black outline.

What To Look For

Strategic Analysis v. Daily Routing

- ❑ Daily routing tools aren't built for open/close analysis and most strategic tools have difficulty modeling routes
- ❑ Look for transportation optimization tools that can effectively model multi-stop routes.

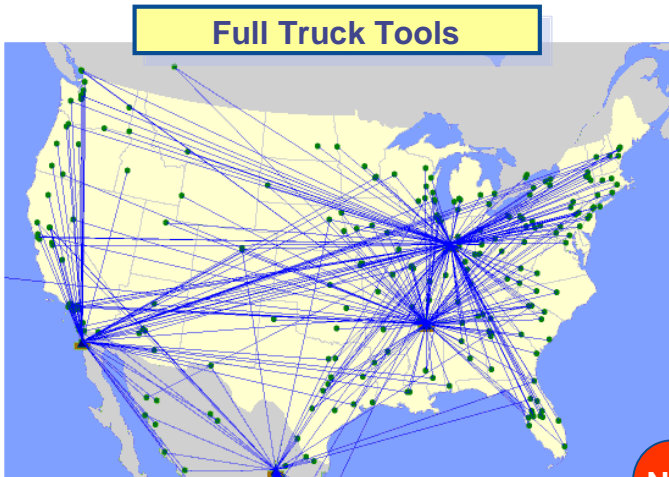
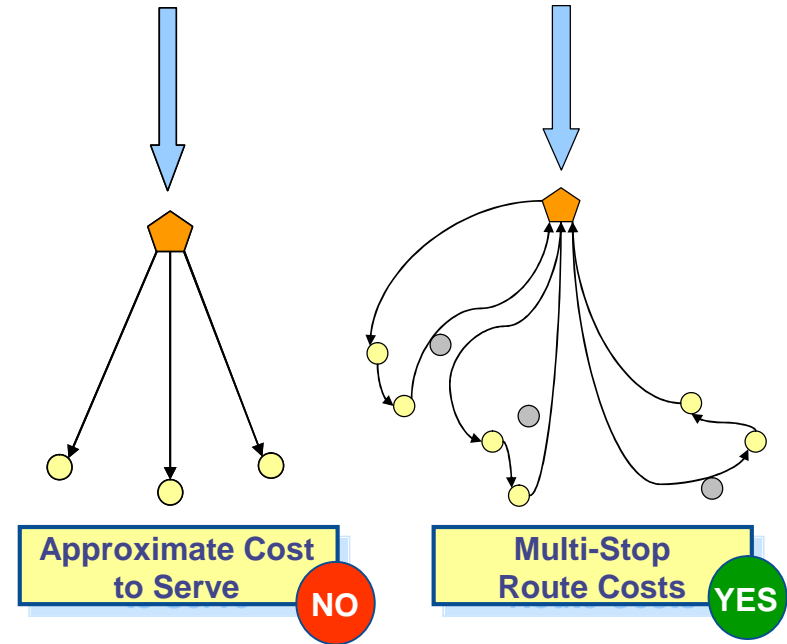
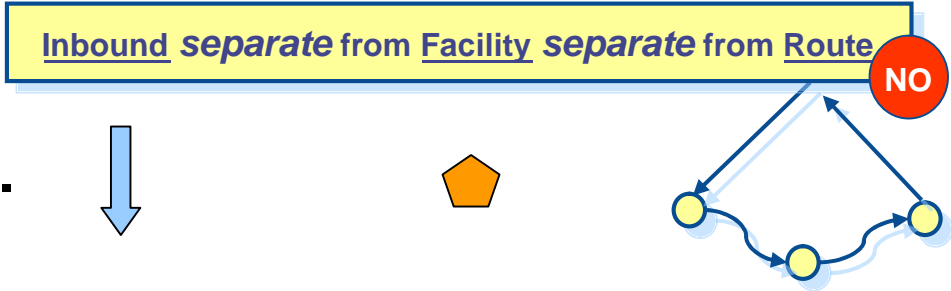
Cost Driver	Variables
Miles	Per Mile Lease Costs, Fuel, Inbound Transport
Routes	Driver, Per Unit Lease Costs, Trailer Capacity

- ❑ The ability to accurately model current operating costs and constraints in order to understand the impact and benefit of both demand and supply side changes

Minimizing Routes for Available Equipment Minimizes Costs!

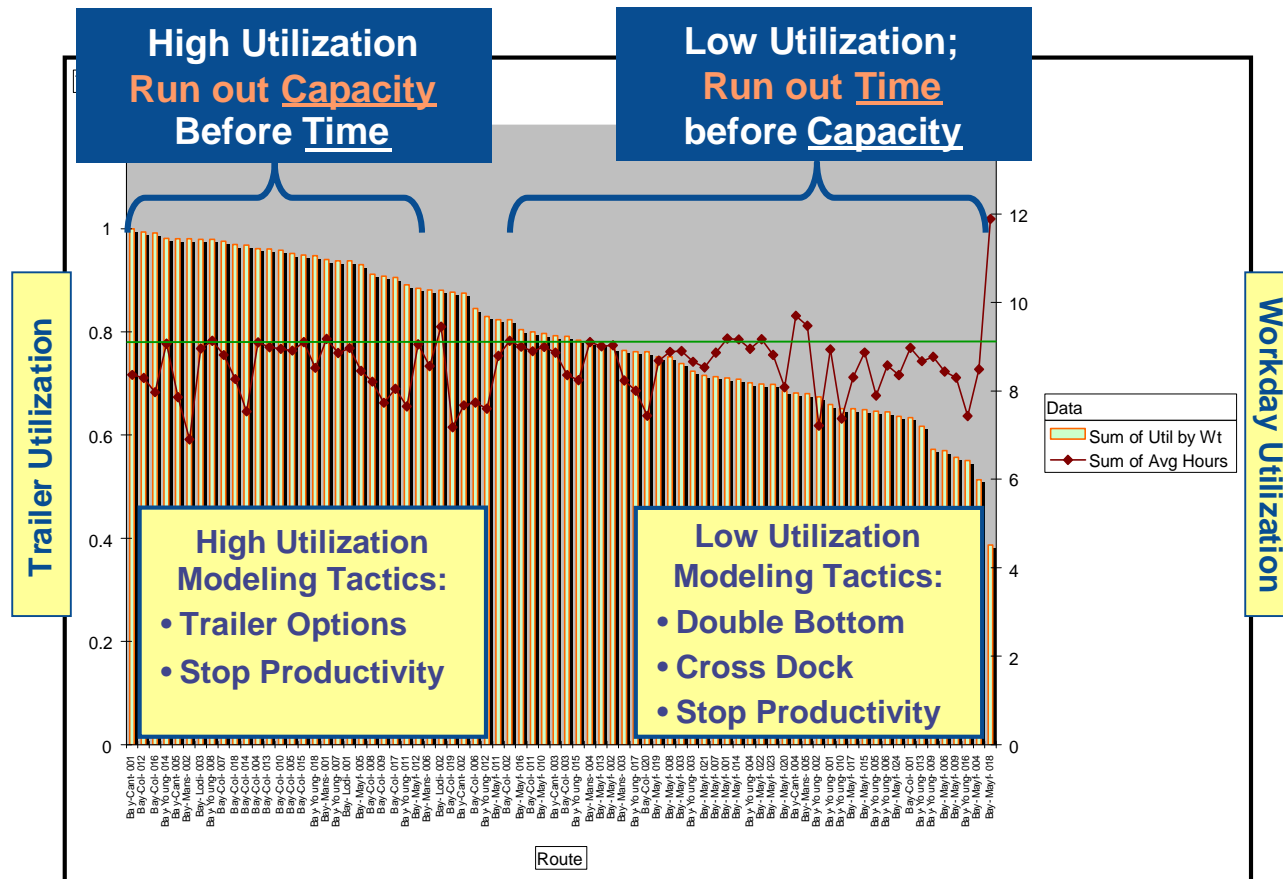
Typical Mistakes

1. **Winging it!**
2. **Static spreadsheet models**
3. **Separate analysis for facility vs. inbound vs. routes**
4. **Using standard network optimization tools built for full truck analysis (LogicTools, etc..)**
5. **Approximate modeling of customers (grouping them before loading into modeling tool).**



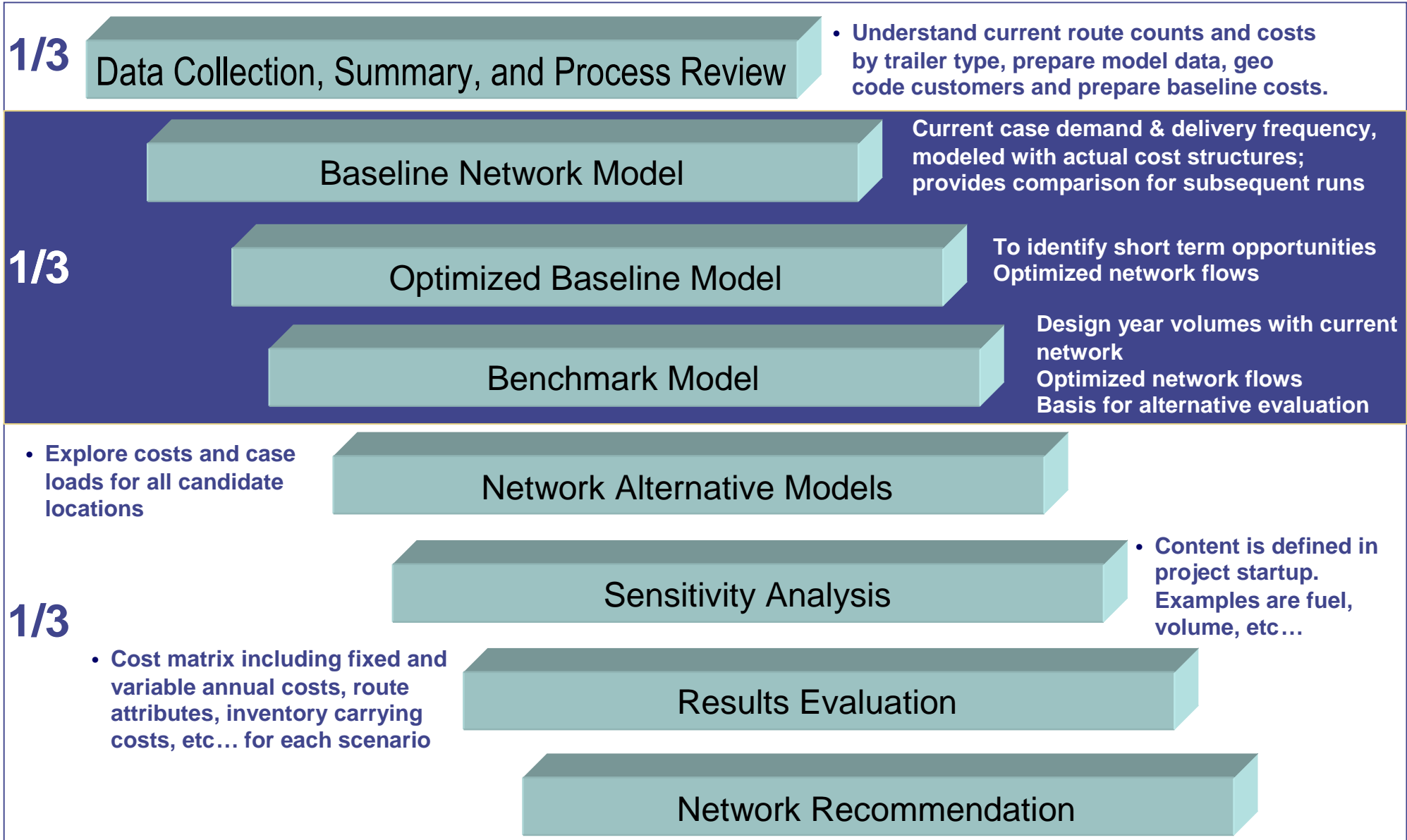
DSD Model – Route Utilization

- ❑ Location consolidation, in particular, will add miles and challenge stem time rules of thumb
- ❑ Consolidation may provide the volume (and capital?) required to improve route efficiency at the warehouse



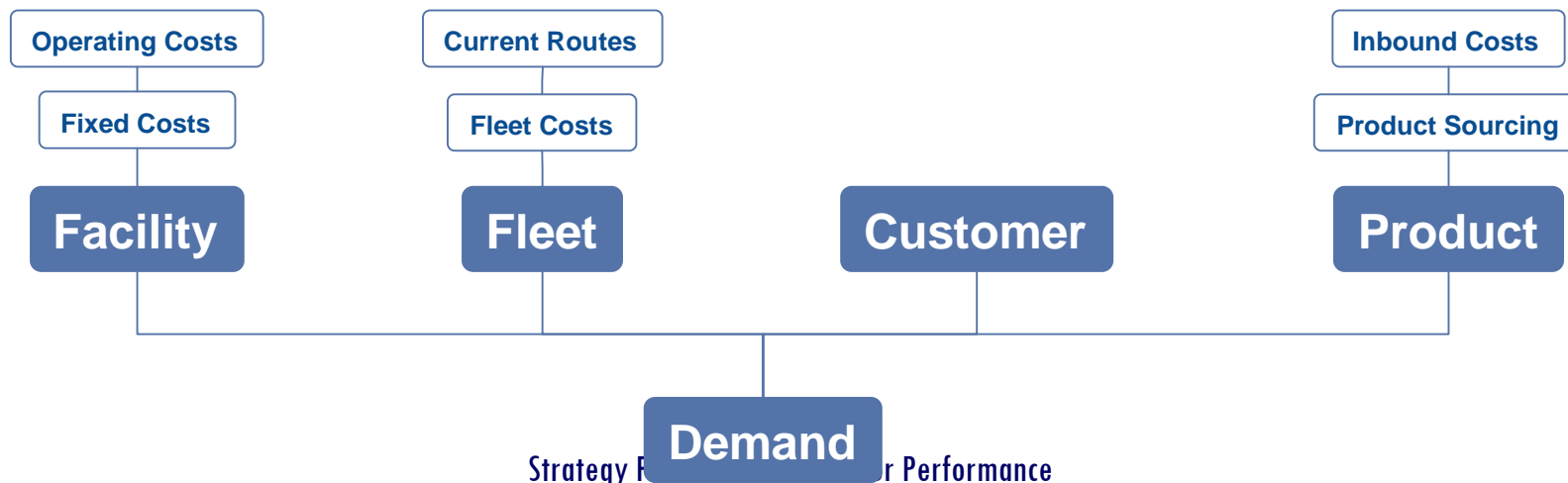
Strategy For Profit - Tactics For Performance

DSD Modeling - Typical Project Sequence & Timing



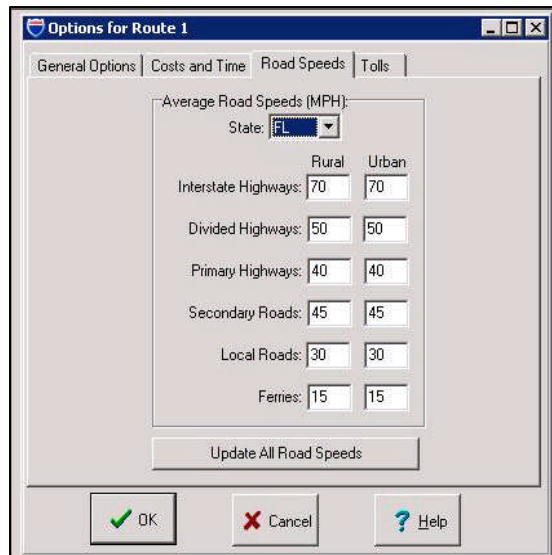
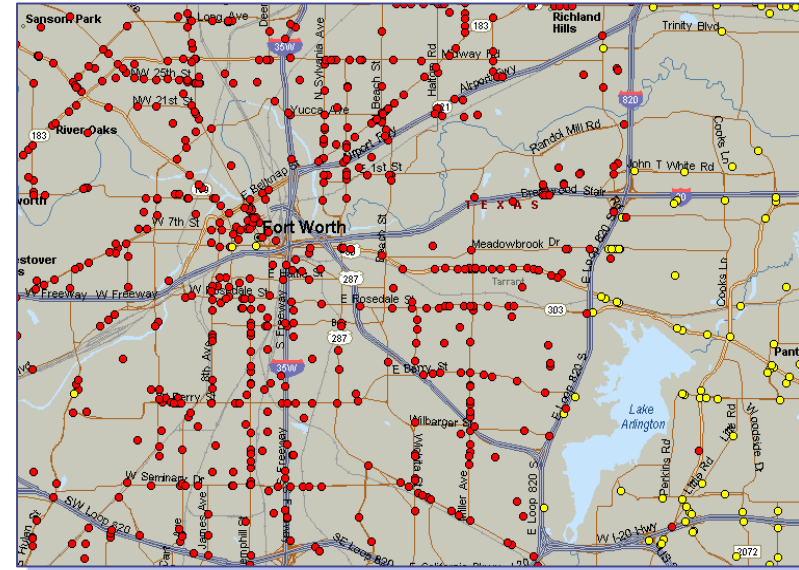
DSD Model - Typical Data Inputs

- ❑ **Current state data**
 - Actual Delivery Costs
 - Current Route Count, Miles Driven
- ❑ **Customer Data**
 - Location Geo Code
 - Customer Name & Address
 - Case Demand & Frequency
 - Delivery Format, Current Warehouse
- ❑ **Item / Facility (Whse/Cross dock)**
 - Facility Location, Capacity, Fixed & Variable Costs, Real Estate Value
 - Product Suppliers, Locations, Inbound / Transfer Costs
 - Inventory Snapshots
- ❑ **Delivery Data**
 - Working Hours, Fixed & Variable Costs, Stop Times, Equipment Capacity



DSD Modeling: Fit to Capacity and Time

- Demand volume and frequency is satisfied considering:
 - Equipment Costs & Capacity
 - Drive time
 - Stop time
 - Work time
 - Fleet capacity



- Routes are not determined in advance of the modeling; tools utilize road data (e.g. PC Miler) to ensure accuracy of results

Modeled with Operational-Like Detail

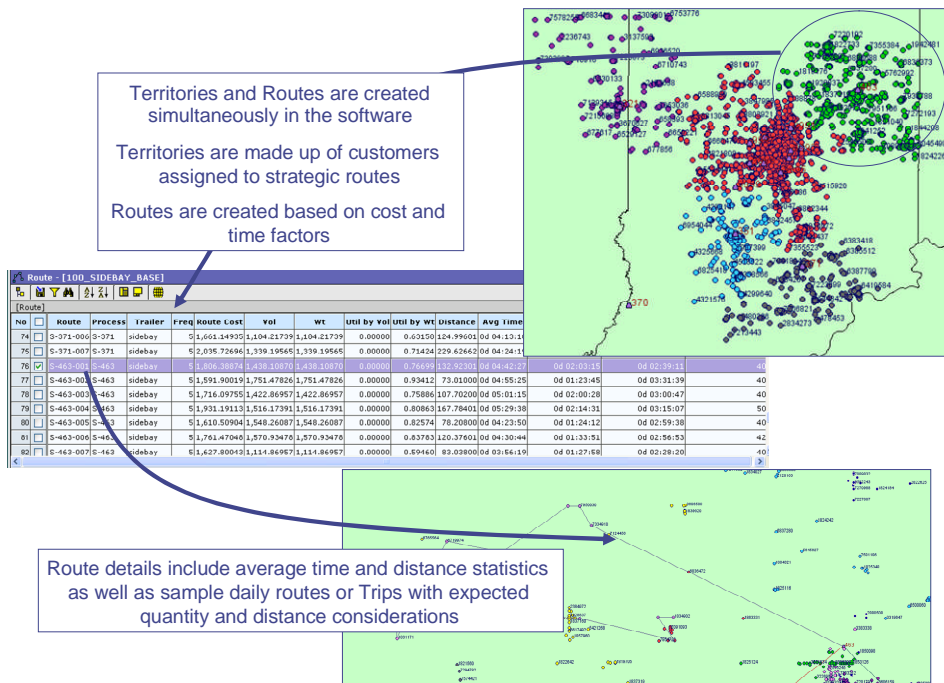
DSD Model - Typical Model Outputs

Multiple scenarios are run for each analysis:

- Optimize current locations
- Best single candidate
- Forced candidate
- Drop 2, add 1 from candidates

Scenario outputs include:

- Cases by location
- Total Cost / Cost Per Case
 - Route Costs
 - Inbound costs
 - Inventory carrying costs
 - Labor Costs
 - Warehouse Costs
- Route Info
 - Route count by trailer type
 - Route Miles
 - Average stem, travel and stop time
 - Average MPH
 - Territories
 - Trailer Utilization



Scenario Outputs Compared Against Baseline

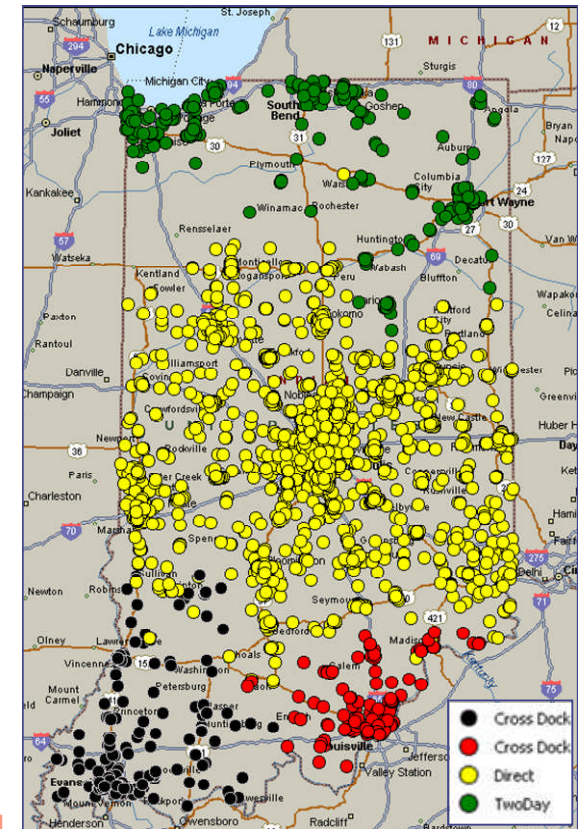


**Warehouse
Relocation
Case Study**

Background - Warehouse Relocation

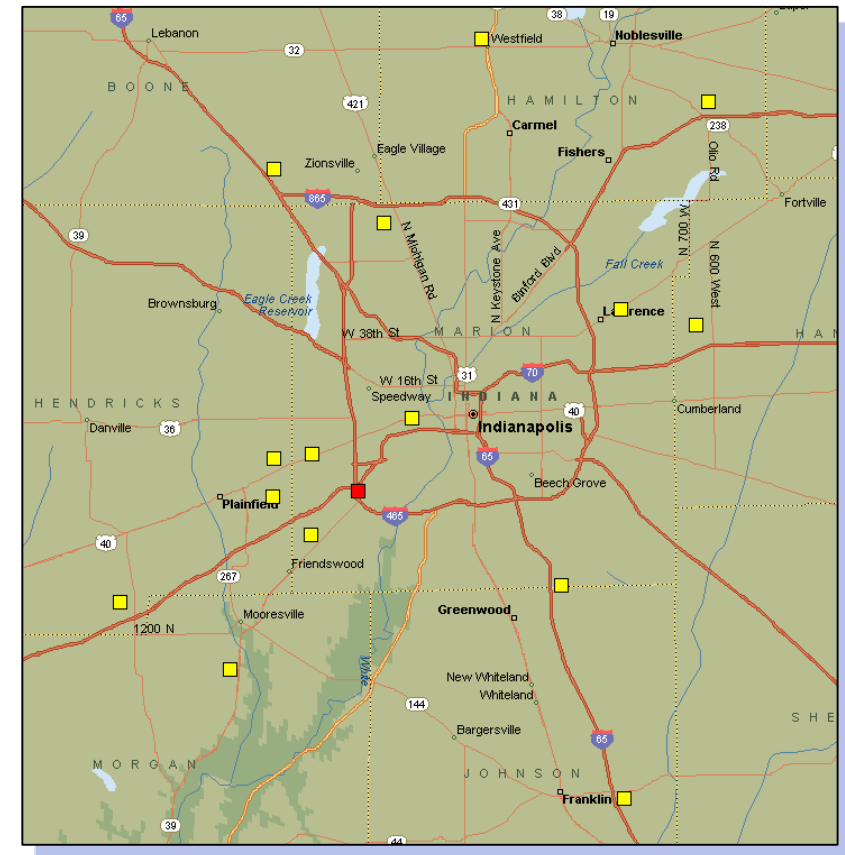
- ❑ Current warehouse operation was out of space and had inefficient layout for expanding brands and volume.
- ❑ Additional shared services operation couldn't fit on site and required additional leased property.
- ❑ Employee retention would be a big factor in any relocation decision.
- ❑ Questioned current use of cross docks in southern part of territory.

- ❑ What are best of candidate locations for new combined warehouse & shared service yard?



Location Strategy – Warehouse Relocation

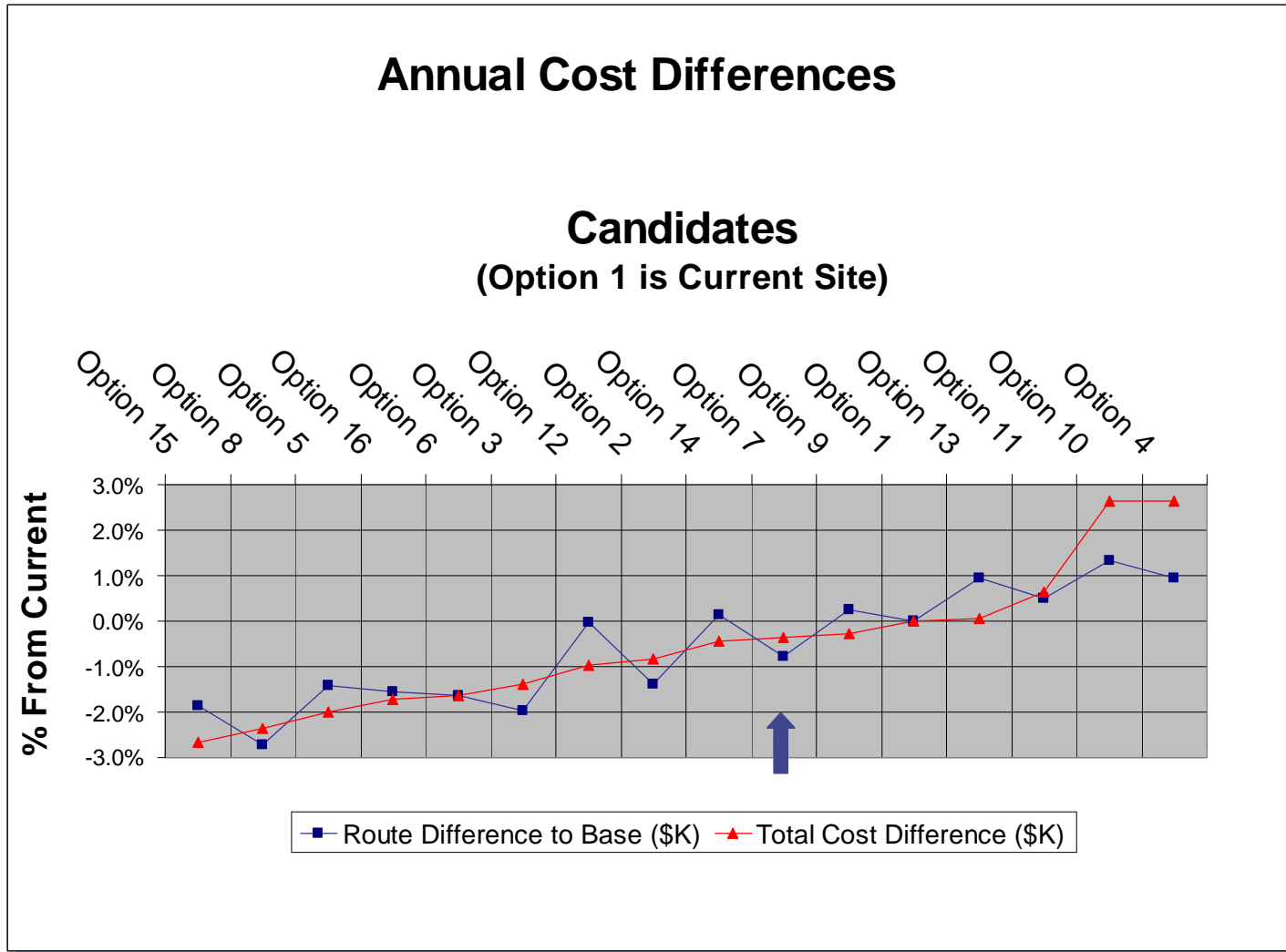
- ❑ Analyze fifteen potential sites within 30 miles radius for delivery and shared services costs.
- ❑ Determine best site for investment based on operating cost factors along with taxes and other incentives.
- ❑ Provided initial center-of-gravity location; proved to be oversimplified by not accounting for dynamics of:
 - Frequency
 - Road speed
 - Cross docks
 - Truck capacity



Two Locations Added After First Round; 10% More Effort to Include

Candidate Costs - Warehouse Relocation

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Center-Of-Gravity Selection Closest to Option 7

Results – Warehouse Relocation

Background

Distributor volume and brand growth had exceeded the capacity of the current warehouse operation. New locations needed to be considered for a new warehouse and shared services location.

Warehouse Location Strategy

Analyze potential sites for total inbound, route and shared services costs. Determine best site for investment.

<u>Results</u>	<u>Previous</u>	<u>Best Option</u>
Number of Delivery Warehouses/Truck Yards	2	1
Number of Cross Docks	2	2
Annual Delivery Miles	Base	+2.7%
Delivery Routes / Cross Dock Routes	Base / Base	-2 / -2
Annual Logistics Costs <u>Savings</u>	-	2.7%

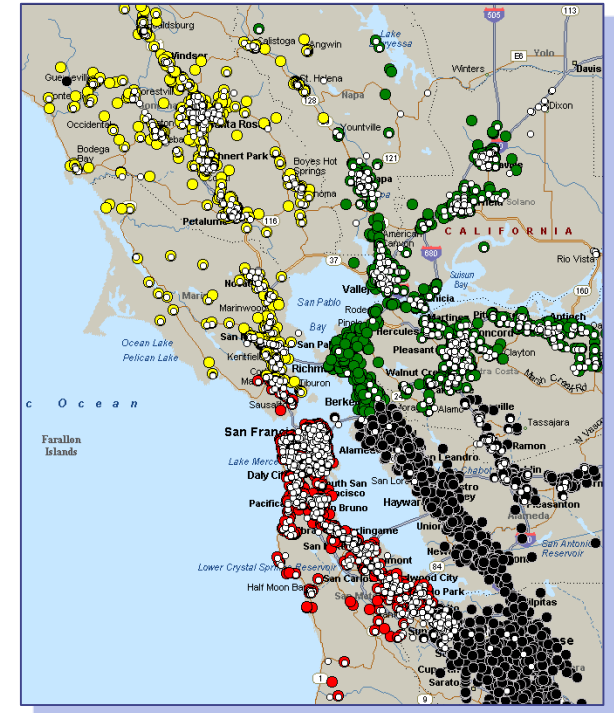
Transportation Savings of 2¢ Per Case

An aerial photograph of a vast, arid landscape, likely a salt flat or a natural formation. The terrain is characterized by a large, circular, crater-like structure in the center, surrounded by a network of ridges and valleys. The colors range from light beige to dark brown, indicating different mineral compositions or soil types. The overall scene is desolate and expansive.

Integration / Consolidation Case Study

Background - Integration / Consolidation

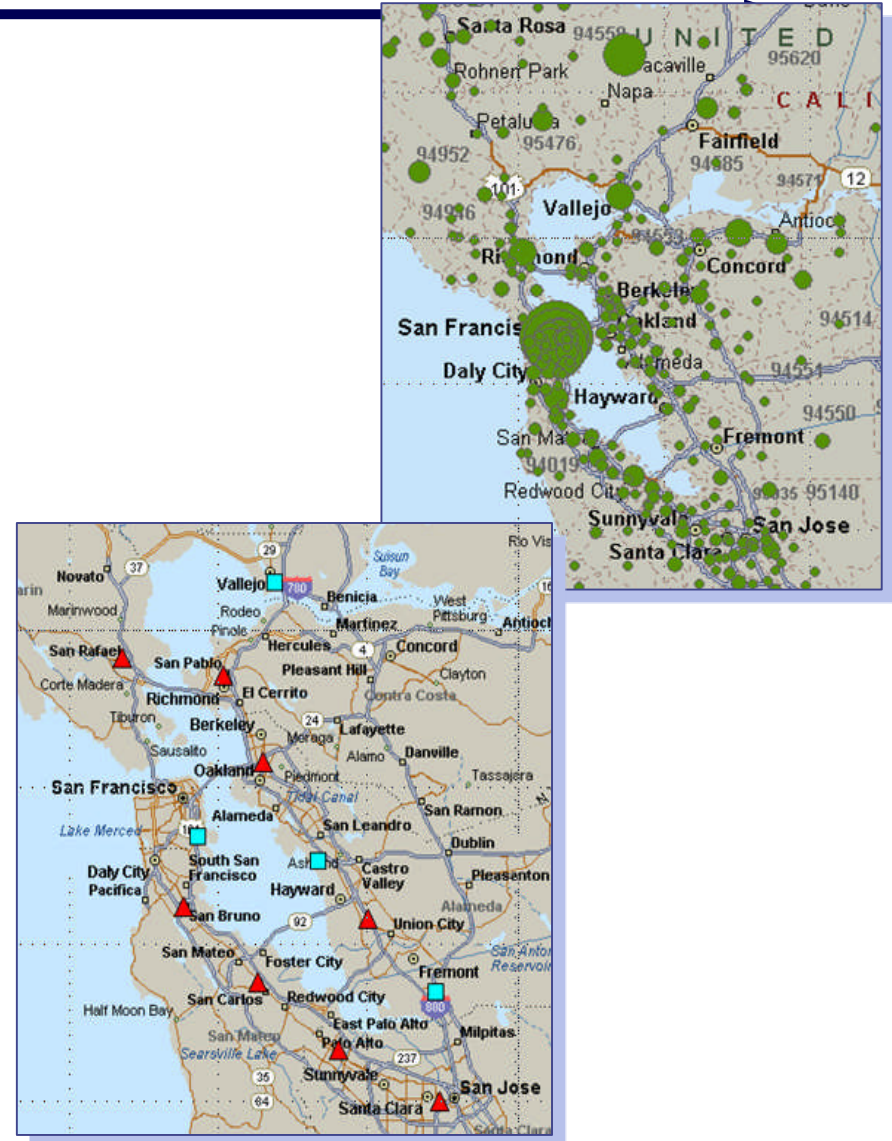
- ❑ Current west coast warehouse network included high value real estate that wasn't very efficient for current operations
- ❑ Additional brands had been acquired that included a more efficient leased warehouse and additional fleet – warehouse was being sought by adjacent tenant
- ❑ Interest to know impact of selling other smaller owned warehouse
- ❑ Traffic and toll costs were a location factor



- ❑ How much would costs increase if high value real estate were sold and all brands were delivered on each route truck?

Location Strategy – Integration / Consolidation

- ❑ Analyze eight potential sites for delivery and inbound costs. Determine best site for operating efficiency based on operating cost factors along with gain from real estate sale.
- ❑ Model integrated business baseline; rebalance territories
- ❑ Provide insight on sensitivity to number of warehouses
 - Drop 1
 - Add 1, Drop 1
 - Add 1, Drop 2
 - Etc...



Right Location Can Actually Reduce Costs

Analysis Results – Integration / Consolidation

Background Minimize operating costs impact from closing and selling high value warehouse asset and consolidating DSD network into new or existing facilities

Warehouse Location Strategy Model current sites for integrated business baseline. Analyze eight potential sites for delivery and inbound costs. Determine best site for operating efficiency based on operating cost factors along with gain from real estate sale.

<u>Results</u>	<u>Previous</u>	<u>Best Option</u>
Number of Delivery Warehouses	5	3
Annual Delivery Miles	Base	+0.6%
Delivery Routes	Base	-5
Annual Operating Costs Savings	-	3.8%

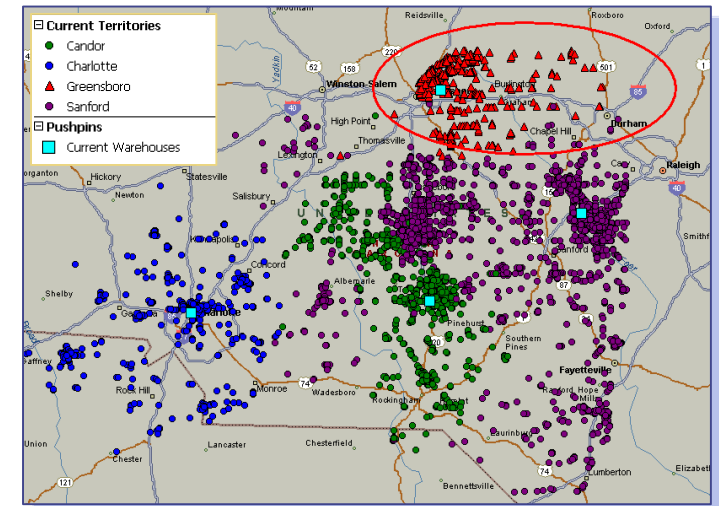
Close Three, Open One with 4¢ per Case Transportation Savings!

An aerial photograph of a vast, circular, crater-like structure in a desert landscape. The structure is filled with a light-colored, possibly saline, material and is surrounded by a dark, rocky rim. The surrounding terrain is a mix of light and dark patches, suggesting a complex geological formation. The text "Acquisition / Consolidation Case Study" is overlaid in the center of the image in a bold, red, sans-serif font.

**Acquisition / Consolidation
Case Study**

Background - Acquisition / Consolidation

- ❑ Distributor had grown through acquisition but had not yet consolidated operations.
- ❑ Had new opportunity to add to current territory and wanted to understand cost effect of operations
 - Use current warehouses
 - Consolidate to candidate locations
- ❑ Questioned current use of cross docks.

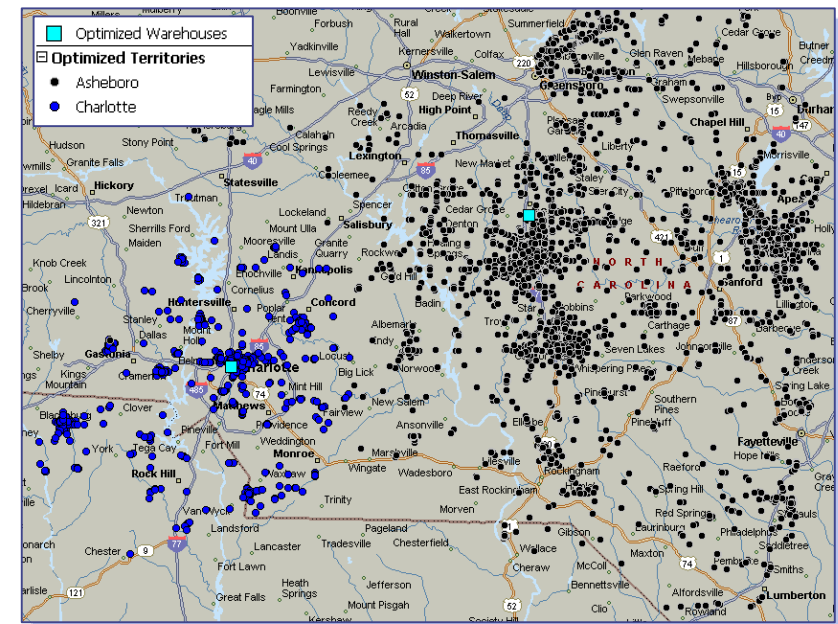


- ❑ What are best of candidate locations for new high volume warehouse under current and potential volume?
- ❑ Should we continue to use cross docks?

Opportunity to Right-Size Warehouse & Consolidate Operations

Location Strategy – Acquisition / Consolidation

- ❑ Analyze half dozen potential sites for delivery and inbound costs.
- ❑ Determine best site for investment based on operating cost factors along with taxes and other incentives.
- ❑ Acquisition model inputs vary
 1. Have customer address, case demand and delivery frequency
 2. Have total case demand and approximate county/zip code coverage



Results – Acquisition / Consolidation

Background

Wholesaler had grown through acquisition but had not yet consolidated operations. Had new opportunity to add to current territory and wanted to understand cost effect of operations; using current warehouses, and consolidating to several candidate locations.

Warehouse Location Strategy

Analyze both current and candidate sites to determine:
 (1) short term gains from territory adjustments within current locations
 (2) best consolidated location for current volume
 (3) best consolidated location for current + acquisition volume

<u>Results</u>	<u>Previous</u>	<u>Consolidated</u> (2)	<u>Full Volume</u> (3)
Number of Delivery Warehouses	Base	-1	-1
Volume Increase	Base	n/c	+19.7%
Annual Delivery Miles	Base	+4.0%	+20.6%
Delivery Routes	Base	-3%	+13%
Annual Operating Costs <u>Savings</u>	-	2.5%	1.6%

Short Term and Long Term Savings Identified From New Location

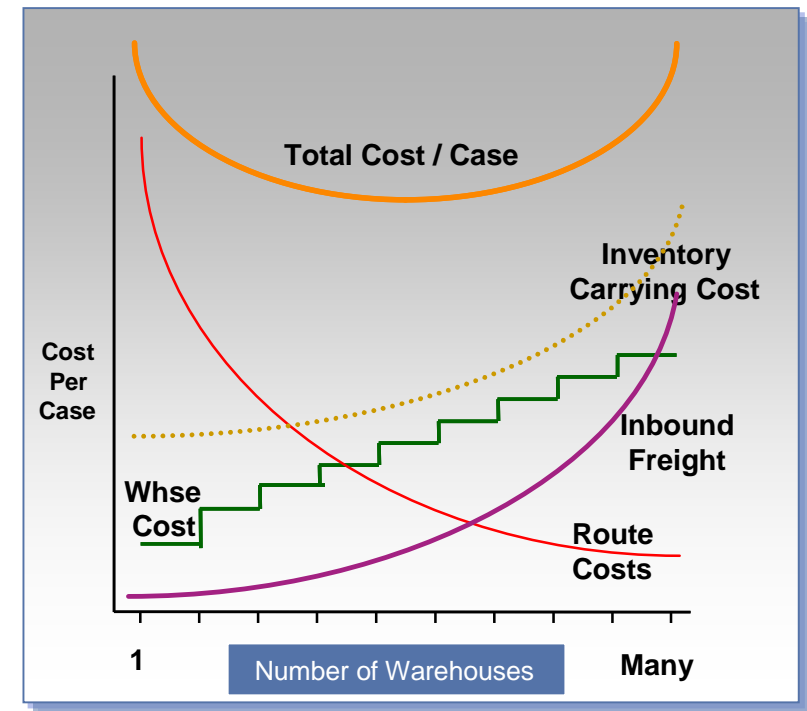


**Final
Thoughts**

Summary



- ❑ The complexity of operational improvements or location changes begs for thorough evaluation
 - Acquisition
 - Facility Relocation
 - Facility Consolidation
 - Territory Redesign
 - Brand Integration
- ❑ The tools exists to accurately analyze your costs
- ❑ Take the time and do it right; putting your operations in the right location will save you every day!





Thank You

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