

# Yield Management in the Railroad Industry Supporting Supply Chain Partnerships

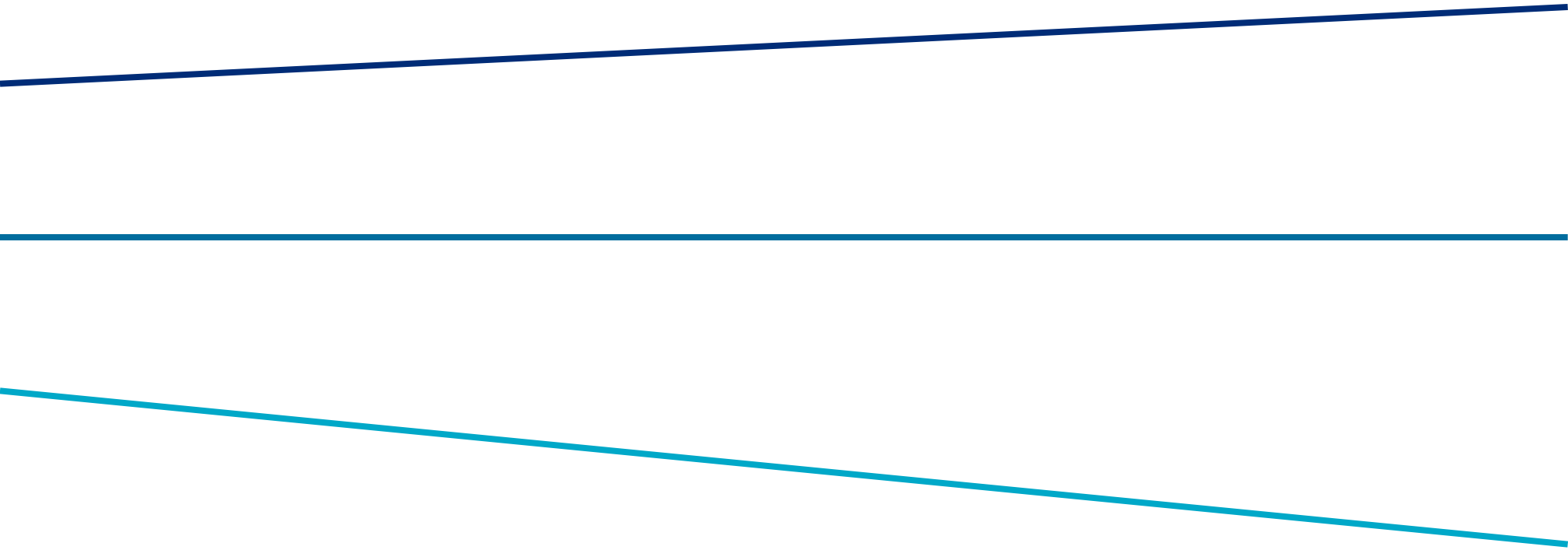
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Section 1

# CAPITAL ALLOCATION BUSINESS PORTFOLIO MANAGEMENT



## Classical yield management of maximizing profits generated by constrained assets is an obvious, but challenging, application of yield management in the railroad business

- Big data challenges – matching commercial and operating data can be complex and produces very large data sets
- Complexity of simultaneously optimizing multiple resources with different substitutability:

Resource	Fungible Across Customers	Fungible Across Business Units	Fungible Across Geography
Locomotives	✓	✓	✓
Cars	✓	✗	✓
Crews	✓	✓	✗
Track Capacity	✓	✓	✗
Terminal Capacity	✓	✗	✗

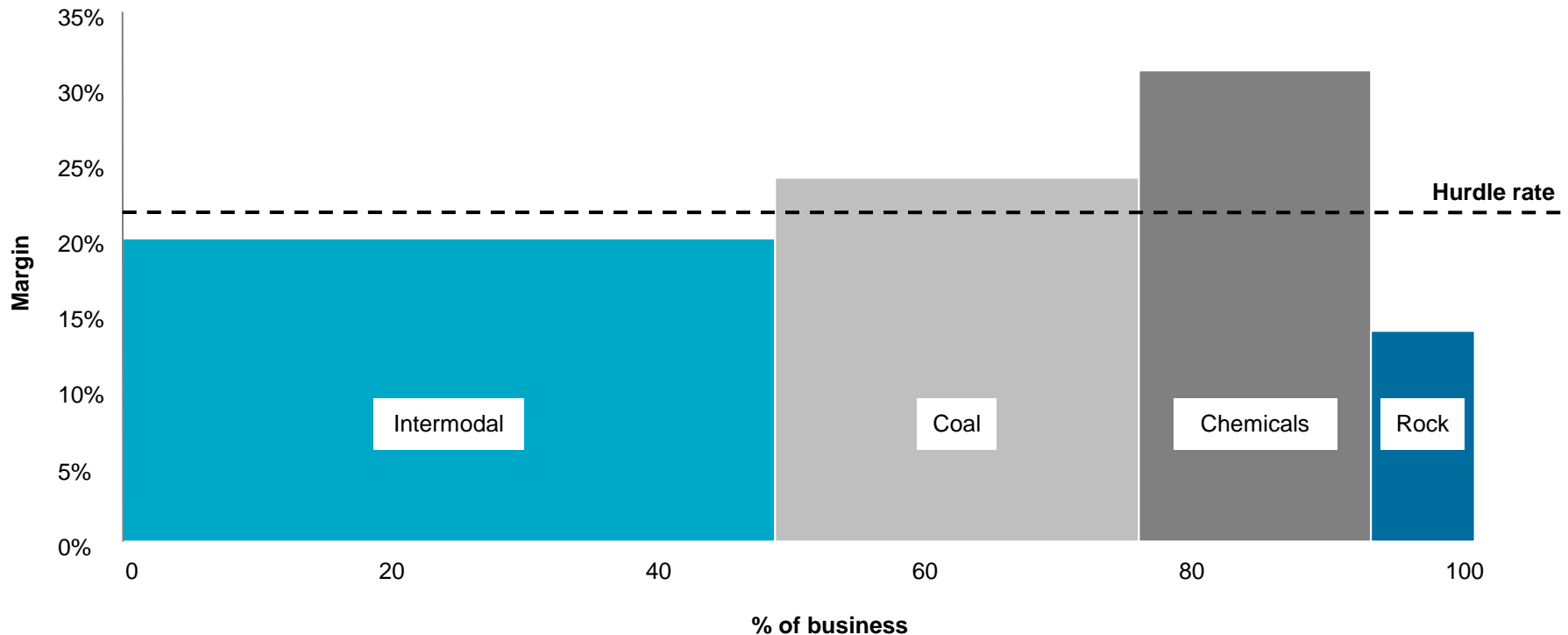
- Actually determining track and terminal capacity can be difficult
- Multiple business units and customers sharing train resources



- **Rather than launching a system to maximize the profitability of the entire network, application can begin with focused analyses around key identified bottlenecks**

## Double Tracking Project

Until all the capacity is utilized, business at margins below the corporate hurdle rate generate a positive contribution



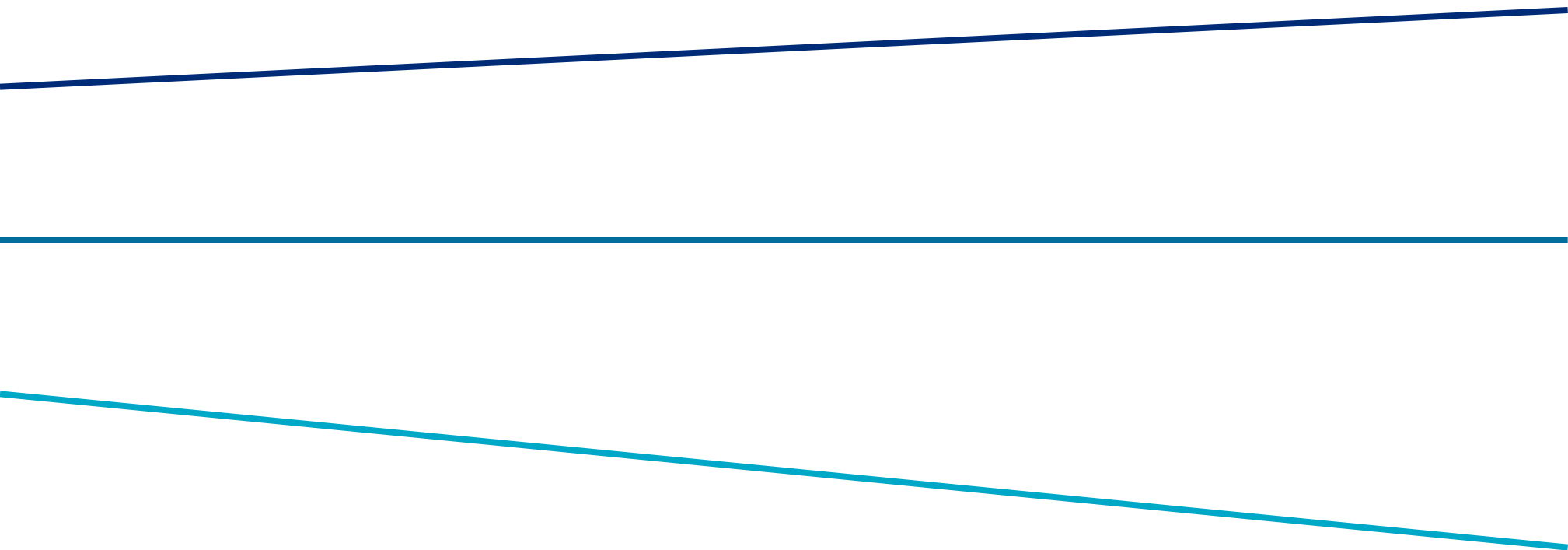
Once the capacity is fully utilized it is necessary to manage the portfolio of business on the line to meet or exceed the corporate hurdle rate by:

1. Improving the profitability of low yield traffic, and/or
2. Replacing low yield traffic with growth in high yield traffic

Section 2

# PRICING

## UNDERSTANDING AND MANAGING SUPPLY CHAIN VARIABILITY



# The travel industry is a leading user of 'transactional' yield management systems to maximize revenue and manage capacity

- Is it a partnership when:
    - you can't get a seat on the right flight, or a room at a convenient hotel or a car rental when you have an important meeting
    - On a long-term job, your room availability and negotiated rate is not protected when capacity is tight, the relationship does not feel like a partnership
  - Preferred customer programs can mitigate these issues
  - Transactional approaches to yield management do not work well in a supply chain partnership context
    - Capacity management is too rigid
      - Availability is not guaranteed
    - Pricing is highly variable
- 
- **Shutting down a key client's plant, missing a vessel connection at a port, or creating an inventory stock out because of tight capacity is not a stable supply chain partnership**
  - **Pricing volatility does not create a dependable logistics chain**



# Comparison of 'transactional' approach to yield management with supply chain partnership approach

## Transaction Yield Management

- Maximize capacity utilization
  - Booking system
- Price variability to manage demand and maximize revenue
  - React to customer behaviors
- Supplier focused

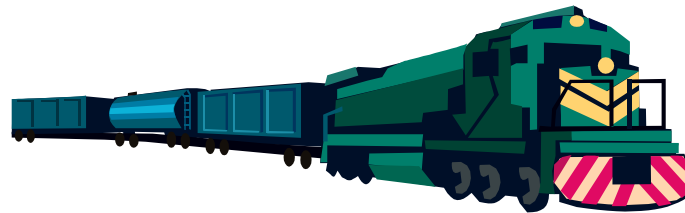


## Supply Chain Partnership

- Capacity Allocation
  - Understand and predict real capacity requirements
    - Demand forecast
    - Analysis of demand volatility
    - Customer needs analysis
- Price stability
  - Anticipate and influence customer behavior
    - Incentives for managing volatility
  - Build expectations of unused capacity into rates upfront
- Customer focused
  - Understand full supply chain
    - Sub-optimizing railroad's portion may be required to optimize overall chain
    - Extract full value for service provided

## Business to business relationships are not based on managing individual transactions but creating mutually beneficial long-term partnerships

- Railroads are increasingly focused on understanding the entire supply chain of which they are a part and creating partnerships with all parties in the supply chain to:
  - Minimize supply chain variability
  - Create contingency plans for supply chain interruptions
  - Optimize the entire supply chain (not just the railroad portion of it)
- Being a stable, reliable supply chain provider includes:
  - Stable predictable prices
  - Ability to accommodate reasonable volume variance

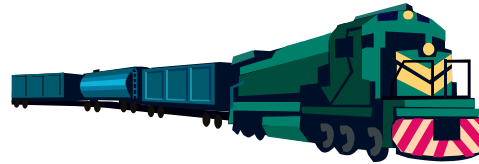


# Supply chains have inherent variability



## Production variability

- Production failures
- Material shortages
- Labor disruptions



## Transport variability

- Interchanges with other carriers
  - Shortlines
  - Class One's
- Lack of resources (crews, locomotives, cars)
- Disruptions from accidents, weather, maintenance windows
- Supply chain 'lumpiness'
  - Larger units (e.g. ocean vessels) feeding smaller units



## Distribution variability

- Market variance
- Excessive inventory
- Breakdowns of unloading equipment

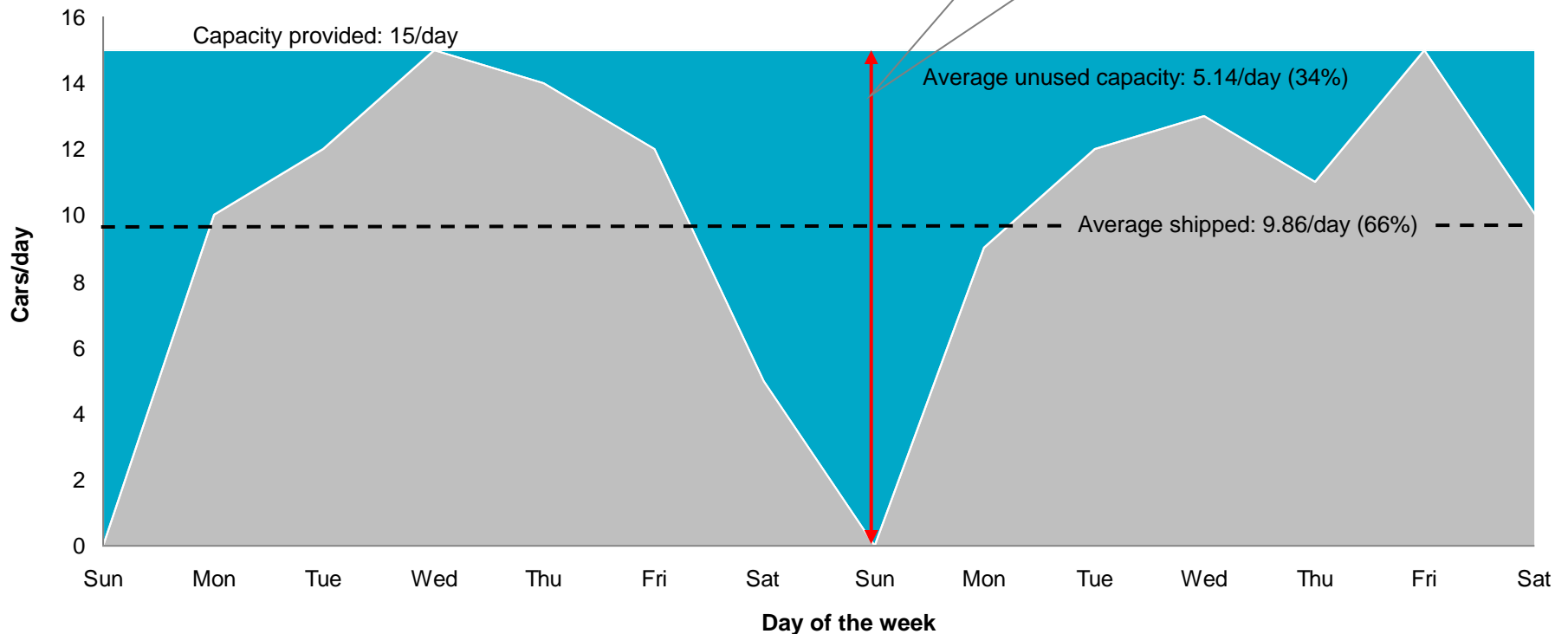


- **Variability increases supply chain costs, and therefore should be measured and incorporated into pricing**
- **Accommodating supply chain variability is what adds value to a partnership**
  - **If you don't know the cost of variability you cannot charge for it**

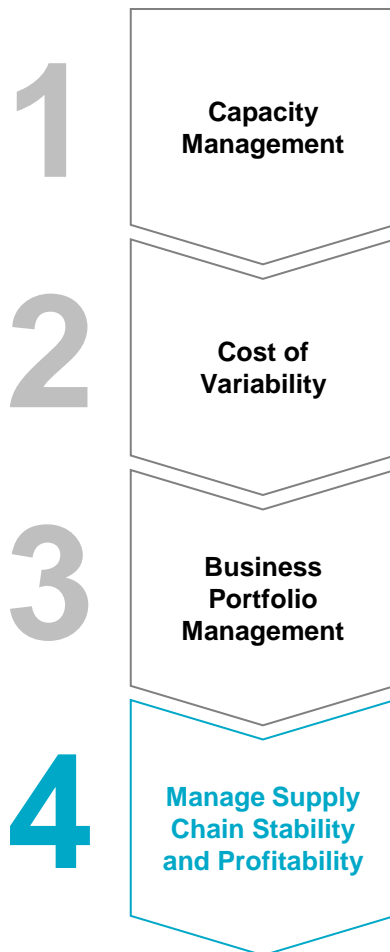
# Linking commercial and operational data is key to analyzing the cost of variability

## Requires new tools to handle big data problems

- Cost of resources provided not used
  - Utilizing Sunday to same level as other days would increase revenue 16+%
- Opportunity cost of lost contribution if space could otherwise have been used



# Creating a framework for understanding and managing supply chain variability



- Use variability analysis to create capacity plans
  - Determine train capacity for key customers and markets
  - Allocate resources (car and locomotive) across business
  - Manage terminal and corridor capacity across market segments
- Include analysis of railroad operating variance to allow for recovery to plan
- Factor variability into pricing decisions for contracts
  - Day of week and seasonal variability
  - Variability due to too little buffer in supply chain
- Work with supply chain stake holders to optimize supply chain cost of variability using incentive/penalty structures around volume variance
- Analyze profitability of contracts (including cost of variability)
  - Manage existing contracts and relationships to match new opportunities
  - Replace low profitability business with new opportunities at higher profit levels
- Create a framework with which to engage the customer in managing the supply chain
- Supply chain variability impacts capacity allocation and utilization
  - Constraining railroad profitability
  - Creating operational challenges in accommodating volume variability
- Understand, manage, and capture the full value of your supply chain relationships



**Railroads seem to be focused on accommodating, but not managing supply chain variability with approaches such as dynamic car scheduling**



Don't just  
accommodate supply  
chain variability.

Understand it,  
Manage it,  
Charge for it!

