

Session Code: EC
LOOMING TRENDS IN LOGISTICS

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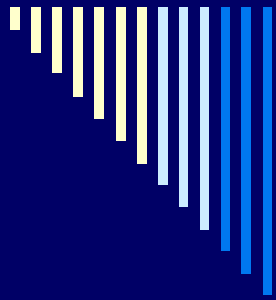
Portland State University

Michael E. Smith, Ph.D.

Western Carolina University

Monday, May 5, 2008

3:50 – 4:50



Agenda

- Infrastructure
 - Current State
 - Growth
 - Congestion
- Sustainability
- Risk
- Technology
- Additional Topics



Logistics Perfect Storm

- Comments from a Vice President of Logistics
 - Growing Congestion
 - Growing Capacity Constraints
 - Infrastructure
 - Mode Compounding
 - Potentially Erratic Lead Times
 - Increased Costs
 - High Fuel Prices
 - Equipment Costs
 - Impacts on Inventory and Lean Operations
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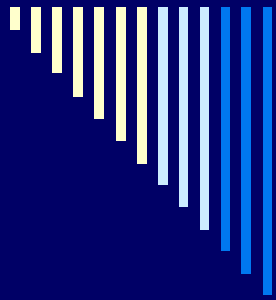
Logistics Perfect Storm

- Chronic Shortage of Long Haul Truckdrivers
 - Turnover
 - Hours of Service
 - Chronic Shortage of Rail Engineers
 - Shortage of Motive Power
 - Aging Rail Car Fleet
 - Maritime Labor Shortage
 - Chronic Shortage of Diesel Mechanics
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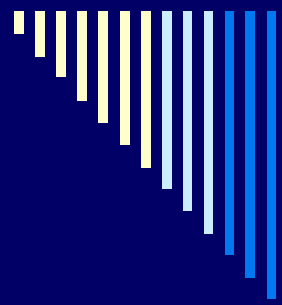
Logistics Perfect Storm

- ❑ Shortage of Eastbound Pacific Container Capacity
 - ❑ West Coast Port Congestion
 - ❑ New Classes of Container Vessels
 - ❑ Port Requirements of New Vessels
 - ❑ Additional Air Freight Capacity
 - ❑ Airport Requirements of New Aircraft
 - ❑ Security Constraints and Delays
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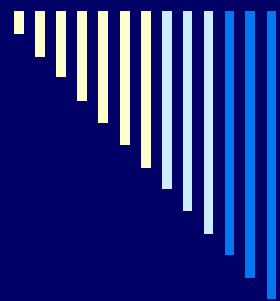
Logistics Perfect Storm

- Chronic Underfunding of Logistics Infrastructure
- READ THE STATE TRANSPORTATION PLAN
 - Bridge Repair and Replacement
 - Road Maintenance
 - Bottleneck Removal
 - Multimodal Interchange/Transload
 - Capacity Expansion



American Society of Civil Engineers 2005 Infrastructure Report Card

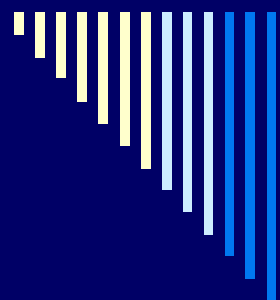
<input type="checkbox"/> Aviation	D+	<input type="checkbox"/> Roads	D
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<input type="checkbox"/> Drinking Water	D-	<input type="checkbox"/> Solid Waste	C+
<input type="checkbox"/> Energy	D	<input type="checkbox"/> Transit	D+
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“State of Logistics Report”

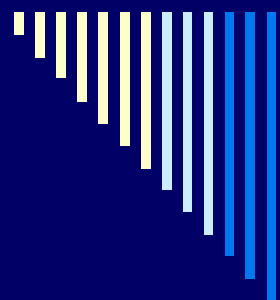
Council of Supply Chain
Management Professionals (CSCMP) 2006

- ❑ TransPacific Container Surcharge \$400
- ❑ Border Delays Cause Truckers to Decline Service
- ❑ U.S. Logistics Costs Up 15% in 2005
- ❑ Driver Shortage Estimate: 87,000
- ❑ Driver Turnover Rate Over 100 %
- ❑ Truck Rates Increase 6.6% in 2005
- ❑ Rail Rates Increase 11.9% in 2005



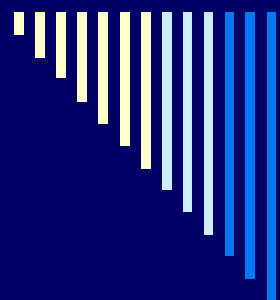
“State of Logistics Report” CSCMP 2006

- Logistics Costs As A Percent of GDP
 - 2005: 9.5
 - 2006: 9.9
 - Ocean Carriage Spending Up 61% from 2000 to 2006.
 - International Air Freight Spending Up 88% from 2003 to 2005
 - “Capacity (workers, infrastructure and equipment) is not keeping pace with growth in volume.”
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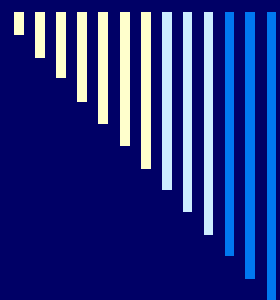
“State of Logistics Report” CSCMP, 2007

- Railroads
 - Total Volume Up 4.5%
 - Carloads Up 3%
 - Intermodal Up 5%
 - Rail Rates Up 12%
 - Revenue/Ton Mile Up 20%



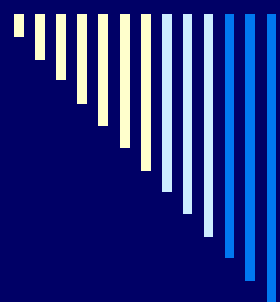
“State of Logistics Report” CSCMP, 2007

- Trucking
 - Tonnage Down 1.3%
 - Driver Turnover
 - 121% Long Haul
 - 112% Short Haul
 - Trucking Costs Up 8.8%
 - Almost All From Fuel Surcharges
 - Fuel Surcharges Kept Trucking in the Black



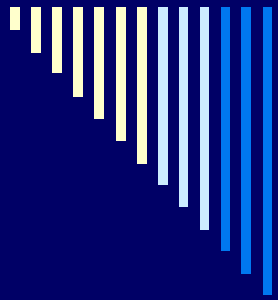
“State of Logistics Report” CSCMP, 2007

- Air Freight
 - Ton Miles Up 4.4%
 - Costs Up 7.6%
- Air = 45% of Value of Goods from Offshore and Growing
- Fuel 30% of Air Costs



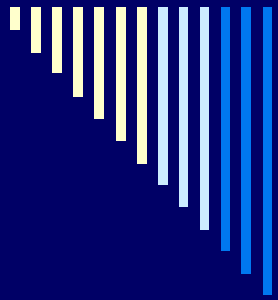
“State of Logistics Report” CSCMP, 2007

- Maritime Spending Up 7.9%
- Warehouse Costs Up 12%
- Inventory Carrying Costs Up 3.5%



“State of Logistics Report” CSCMP, 2007

- Overall Costs of Business Logistics
 - Up 11%
 - Now = 9.9% of GDP
 - 9.5% Last Report
 - 8.6% Low in 2003
 - Transportation Costs Up 9.4%
 - 6.1% of GDP



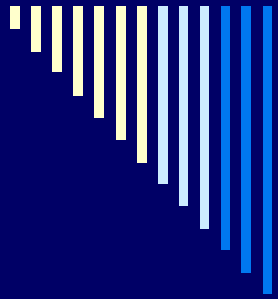
“State of Logistics Report” CSCMP, 2007

- Hiway Traffic Up 25% Last 10 Years
- Collaboration and Information Sharing Largest Contributors to Cost Containment
- “Everybody understands something has to be done about the infrastructure and everybody has to be involved.”



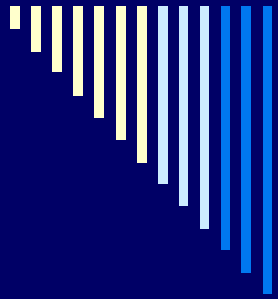
The Northwest Example

- Population Increase in Next 15 Years
 - Washington +23%
 - Oregon +25%
 - Port of Portland Forecast
 - Cost of Congestion Study
 - Trucks Between Seattle and Portland
 - Chronic Underfunding of Infrastructure
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The National Example

- Population 400 Million by 2043
- 2005 Transportation Bill
 - \$286 Billion Over 5 Years
 - 6373 Earmarks
 - Expires in 2009



The Global Example

□ UN Forecast

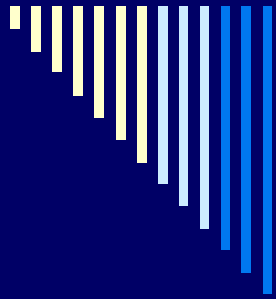
World Population 2007: 6.78 Billion

World Population 2050: 9.2 Billion

Today: Half of Population in Urban

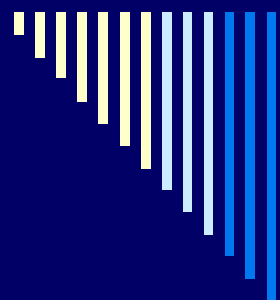
2050: 70% in Urban Areas

2050: 27 Mega-Cities of Over 10 Million



The Net Results

- ❑ Infrastructure Deteriorating Faster than Repair
- ❑ Congestion at All Levels
- ❑ Difficulty Locating Logistical Capacity
- ❑ Increased Lead Times
- ❑ Increased Inventories
- ❑ Increased Costs
- ❑ Increased Supply Chain Uncertainty and Risk
- ❑ We Are Falling Behind Other Countries



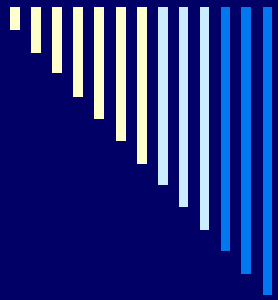
Combating the Perfect Storm

- Federal Highway Administration Meeting
 - Transportation Planning
- Federal Funding
 - 2005 Transportation Bill Expires in 2009
- State and Local Funding
- State and Local Transportation Planning



Combating the Perfect Storm

- “Freight Doesn’t Vote”
 - Legislators Need Education
 - Critical Nature of the Problem
 - Its Importance to Local and National Competitiveness
 - Legislators Need Encouragement
 - To Reevaluate Priorities
 - To Fund Infrastructure Repair, Enhancement
 - To Fund Logistical Research
 - We Need to Speak With One Voice
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Final Thoughts on Infrastructure

- Population and Congestion are Growing Rapidly
- Costs of Congestion are Skyrocketing
- Supply Chain Costs, Lead Times and Variability are Increasing



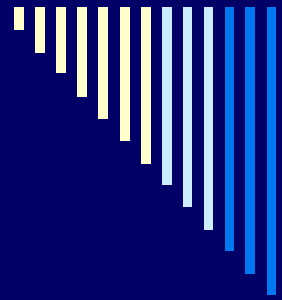
Logistical Risk Management

- Global Supply Chains Increase Risk
 - Continuity (Risk) Planning
 - Suppliers' Plans
 - Carriers
 - Numbers of Suppliers
 - Emergency Inventory
 - Disaster Planning
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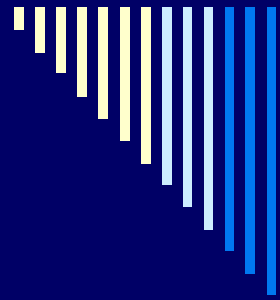
Risk: Size vs Probability

- ❑ Differing Actions Have Different Probabilities and Costs
 - ❑ We Overemphasize High Cost, Low Probability Events
 - ❑ We Underemphasize Lower Cost, High Probability Events
 - ❑ Single Source or Multiple Sources?
 - ❑ **Risk** of Supplier Failure vs **Cost** of Failure
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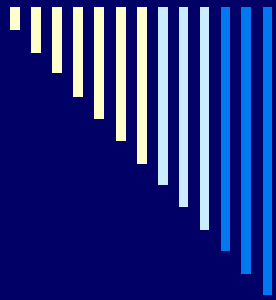
Supply and Logistics Disaster Planning

- Identify Risks
- Evaluate Probabilities
- Plan Responses
- Identify Required Resources
- Identify Sources



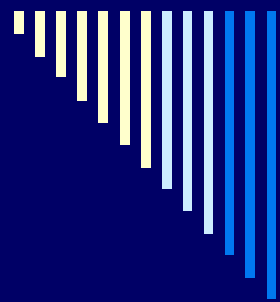
Risk Mitigation Strategies

- ❑ Much Better Forecasting
- ❑ Look for Causes of Change
- ❑ Intense Market Study
- ❑ Hedging
- ❑ Reduce Lead Times
- ❑ Superior Supplier and Carrier Communication
- ❑ Emphasis on Supplier and Carrier Partnerships
- ❑ Problem Prevention Plans



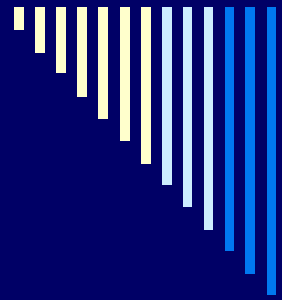
Thoughts on Risk Management

- Planning is Key for All Emergencies in Supply Management
- Identify Risks and Probabilities
- Identify Appropriate Responses
- Identify Resources
- Negotiate Agreements
 - Materials, Services, Actions
- Review Stand-by Agreements Regularly
- Hope



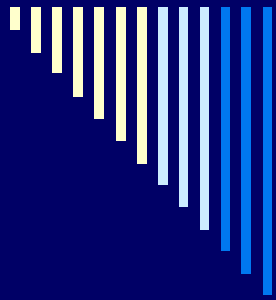
Technology and Productivity

- Management Improvement from More and Better Information
- Optimization Models
 - Transportation Management Systems
 - Warehouse Management Systems
 - Network Optimization and Routing
- RFID Systems
- Using Technology to Foster Collaboration and Supply Chain Communication



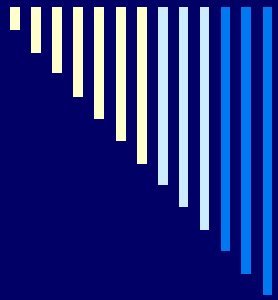
Technology Risks

- Bad Selection Process
- Lack of Training
- Late Adopter



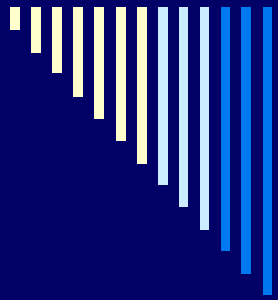
Sustainability

- Global and Strategic Focus
 - Hottest Topic in Business
 - China, Japan, Europe
 - Increased Scope
 - Environmental
 - Energy
 - Process Wastes
 - Supplier and Carrier Selection (and Elimination)
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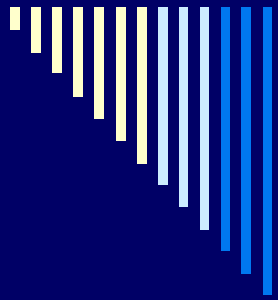
Sustainability in Transportation

- Low Sulfur Fuels
- Alternative Fuels
 - Ethanol
 - Biodiesel
- Long Term Solutions
 - Fuel Cells
 - Solar
 - Others?



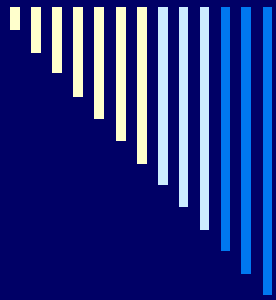
Sustainability in Transportation

- Wind Energy
- Solar
- Hybrid Logistical Applications
 - Trucks
 - Tugboats



Additional Trends in Logistics

- Forecasting
 - Reverse Outsourcing
 - Industry Consolidation and Privatization
 - Inflation
 - Retirements
 - Immigration
 - Education
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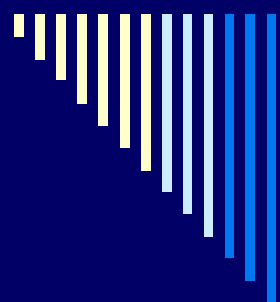
Forecasts for Logistics

- Currency Exchange Rate Fluctuations
- Oil Prices
- Rate of Inflation
- Labor Contract Expiration
 - Longshore
 - Supplier
- What's Important to Your Organization?



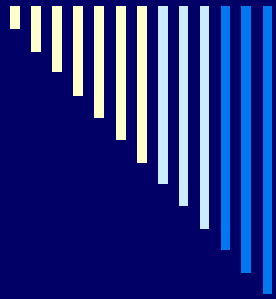
Reverse Outsourcing

- ❑ Increased Logistics Costs
 - ❑ Customs Clearance Delays
 - ❑ Long Lead Times
 - ❑ Hidden Costs
-
- ❑ Firms Move Production from China to Mexico
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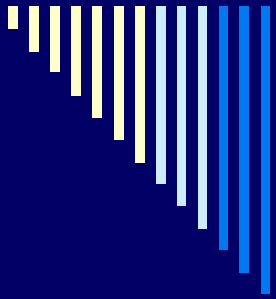
Global Industry Consolidation

- Airline Consolidation
- Other Transportation Industry Consolidation
- Raw Material Industry Consolidation
- Privatization



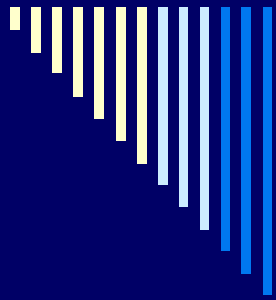
Inflation

- ❑ Oil Prices Over \$100/bbl
- ❑ Global Economic Expansion
- ❑ Cartel Control of Basic Raw Materials
- ❑ Weak Dollar
- ❑ Industry Consolidation
- ❑ Largest Iron Ore Supplier Contracts with Two of Largest Steel Producers + 65%



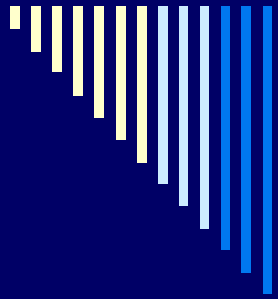
Inflation

- Producer Price Index Up 7.4% in Last 12 Months - Largest Increase Since 1981
- Gas: Up 90%
 - Feb 03 \$1.71
 - Feb 08 \$3.25
- Diesel:
 - Last Year \$2.62
 - Today \$3.60 (a record)
- Medicare and Medicaid Forecast
 - 2017: Medical Care Up X 2 from Today
 - 20% of GDP



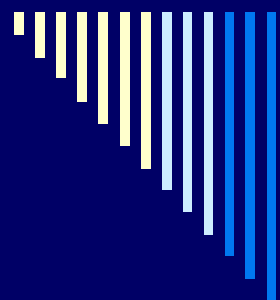
Retirements and Labor Concerns

- ❑ Labor Shortage
- ❑ Loss of Institutional Memory
- ❑ Loss of Practical Knowledge
- ❑ Education of Replacements
- ❑ Need Focus on Processes to Capture Knowledge
- ❑ Need to Attract New Employees
- ❑ Immigration



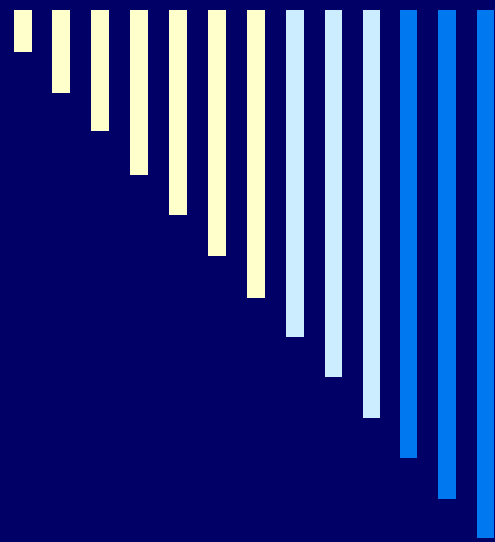
Education

- Increasing Logistics Complexity
- Increasing Pace of Business
- Global Scope
- Professional Skills and Knowledge



Summary

- ❑ Infrastructure Constraints
- ❑ Sustainability
- ❑ Risk
- ❑ Technology
- ❑ Supplier Relocation and Concentration
- ❑ Inflation and Economic Concerns
- ❑ Labor Concerns
- ❑ Education



Questions,
Comments
Observations,
Conclusions,
Arguments?
