Highway and Rail Freight
Demand, Bottlenecks, and Needs

presented to

National Surface Transportation Policy and Revenue Study Commission

presented by
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Cambridge Systematics, Inc.

July 25, 2006

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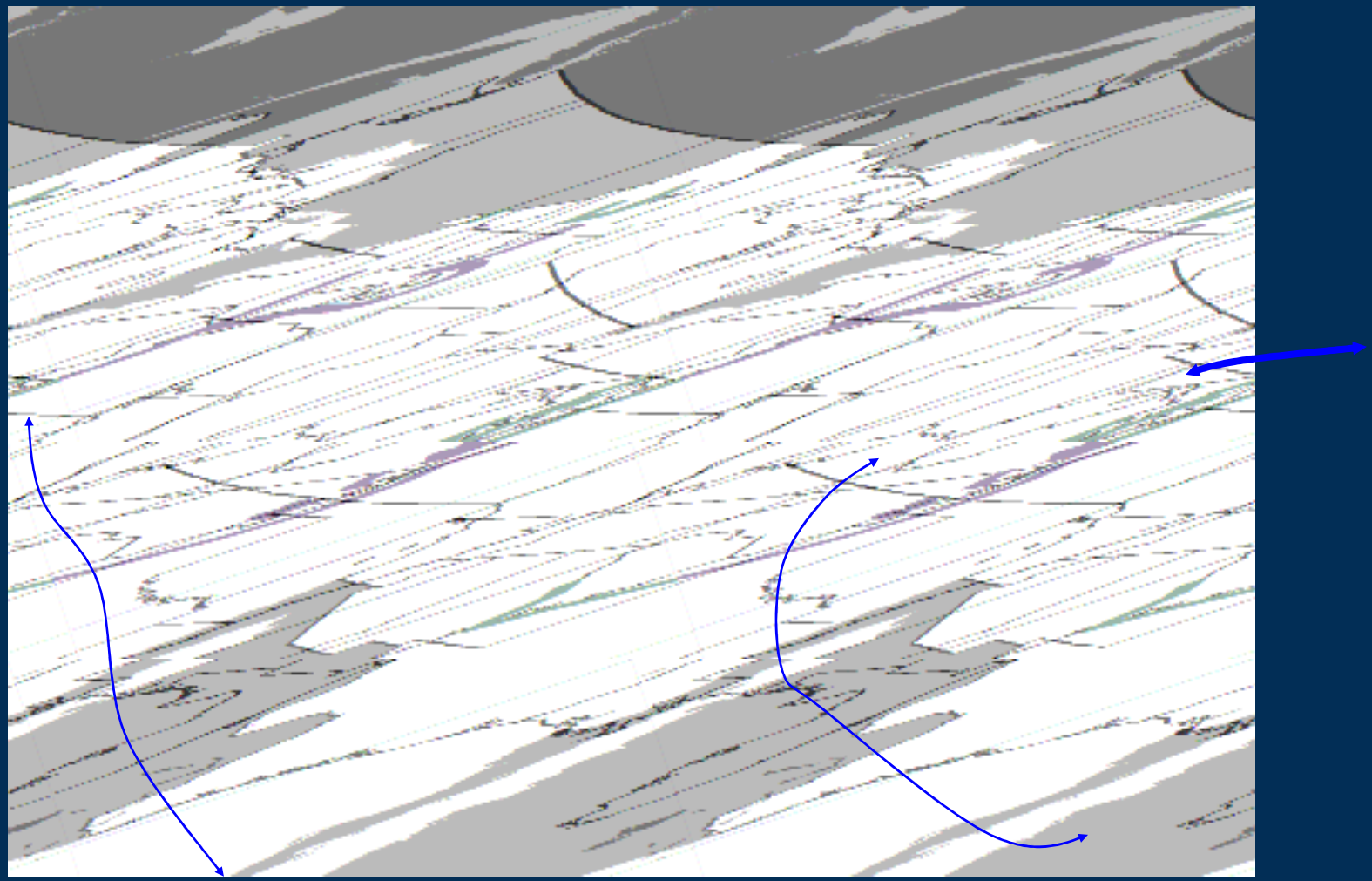
18th Century/Sail Era

Colonial economies were built on water transport; it cost as much to move a ton of goods 30 miles inland as across the Atlantic; 2 out of 3 settlers lived within 50 miles of the Atlantic coast; coastal and Atlantic trade dominated



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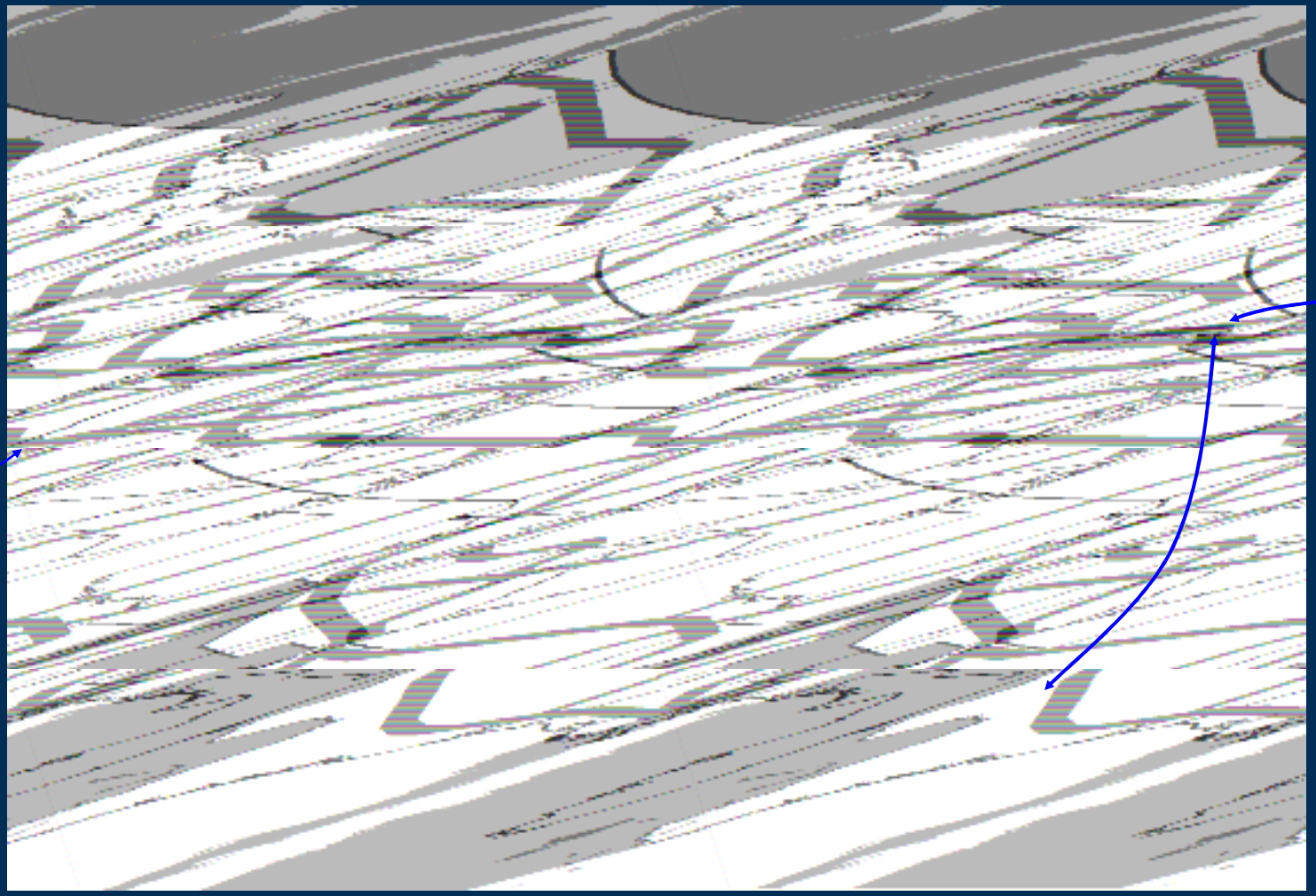
19th Century/Rail Era

Regional economies were built on rail technology, which freed business and industry from ports; east-west rail routes were built to follow development of the Midwest and West; domestic trade dominated



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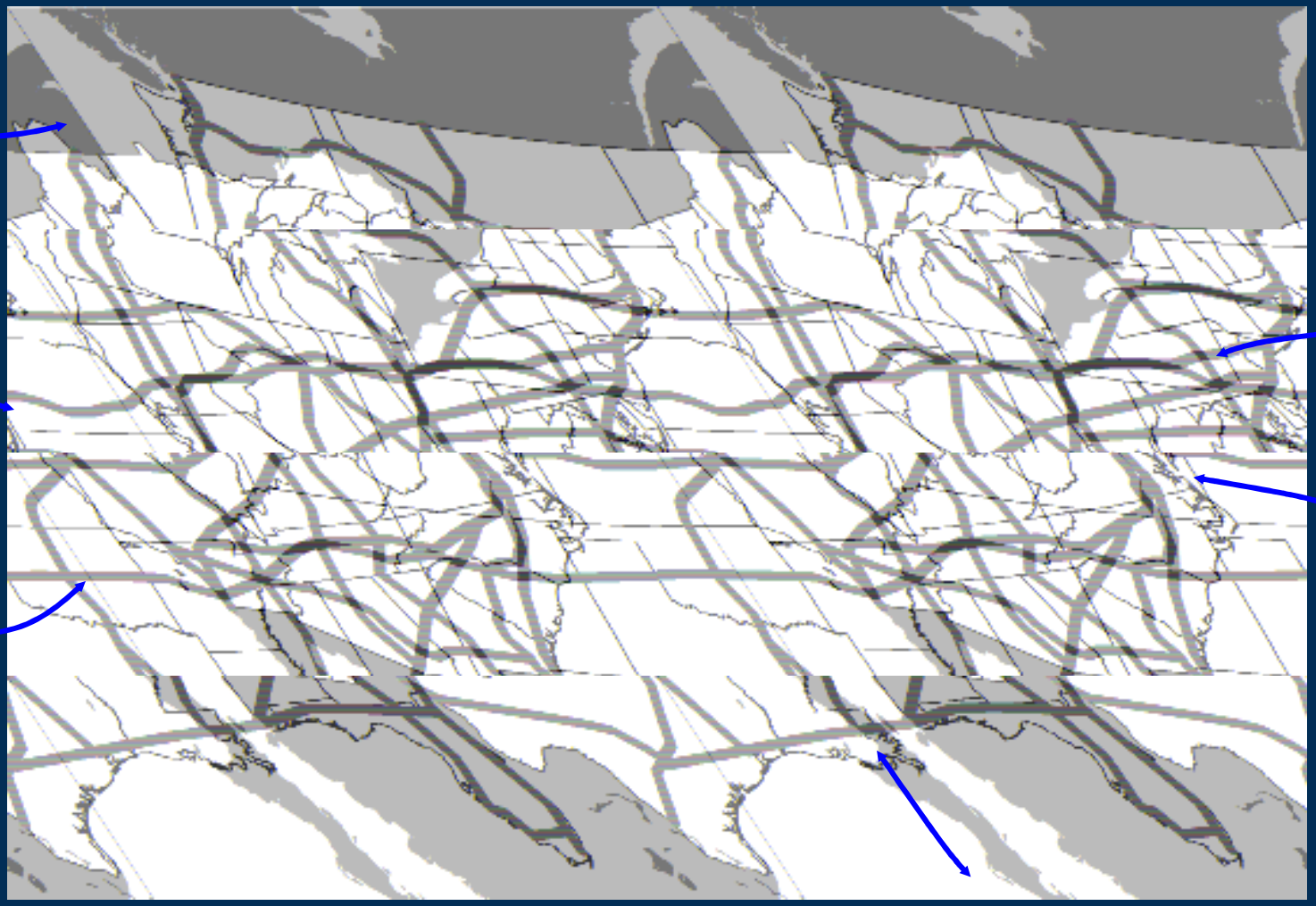
20th Century/Truck Era

National economy was built on truck and highway technology, which freed business and industry from rail terminals; an east-west and north-south Interstate highway grid was built to connect cities and regional economies; Pacific and Gulf trade expanded



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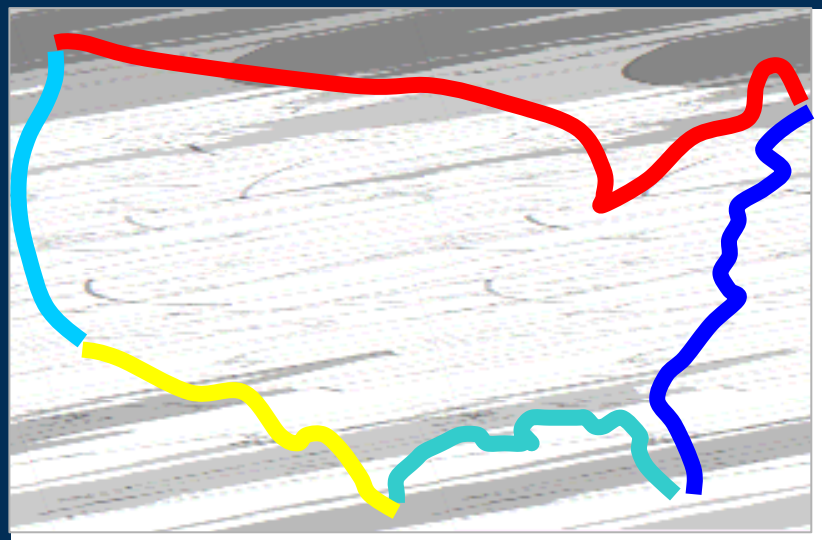
21st Century/Information Era

Global economy is being built on information, telecommunications, and low-cost, long-haul transport by water, rail, and air; north-south NAFTA trade is expanding



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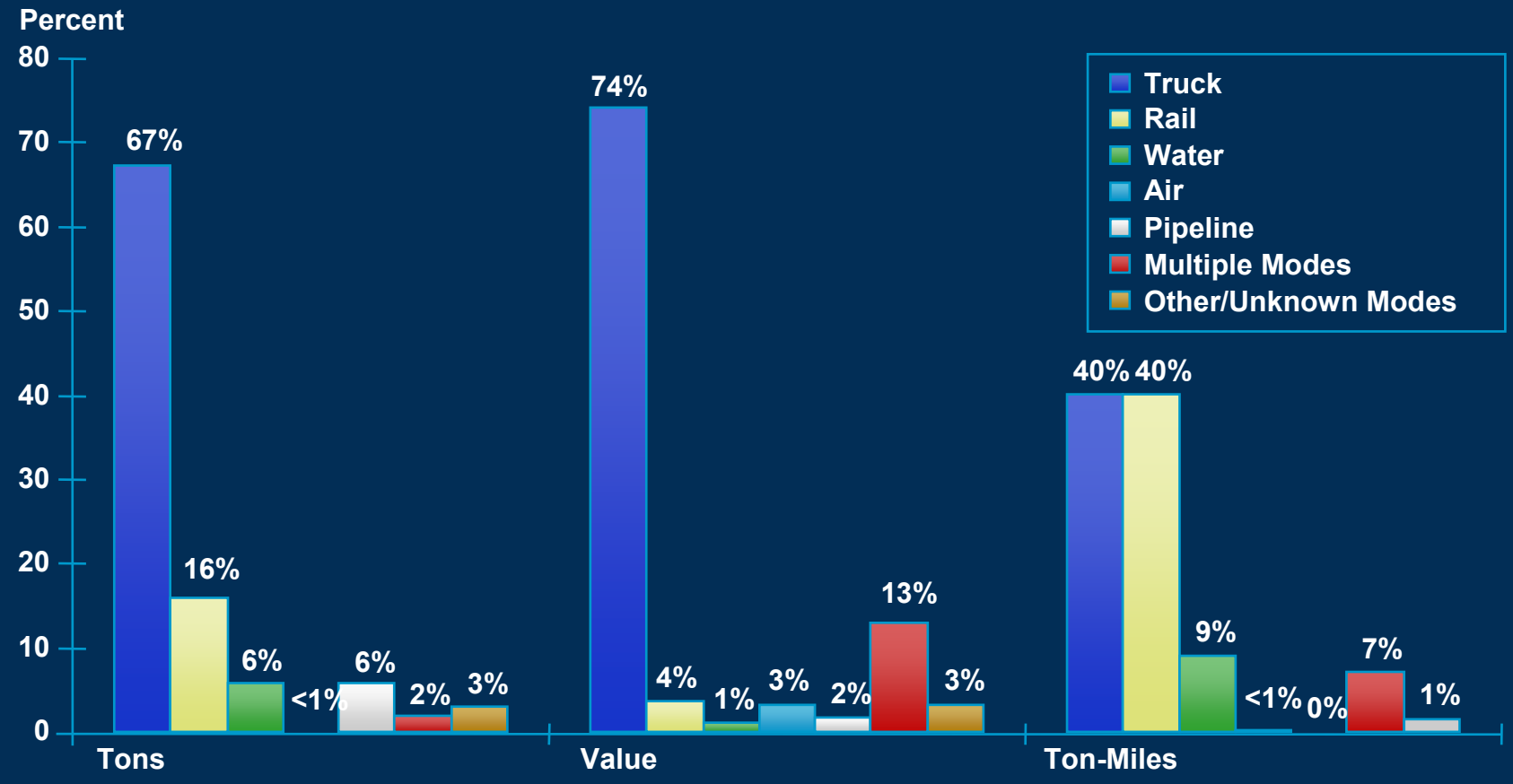
Freight Tons, Value, and Ton-Miles, 2002

Trucking dominates domestic freight movement; rail is critical to the movement of bulky, lower-value commodities and for heavy shipments moving long distances



Source: Bureau of Transportation Statistics and U.S. Census Bureau, "2002 Economic Census, Transportation, 2002 Commodity Flow Survey," Table 1b.

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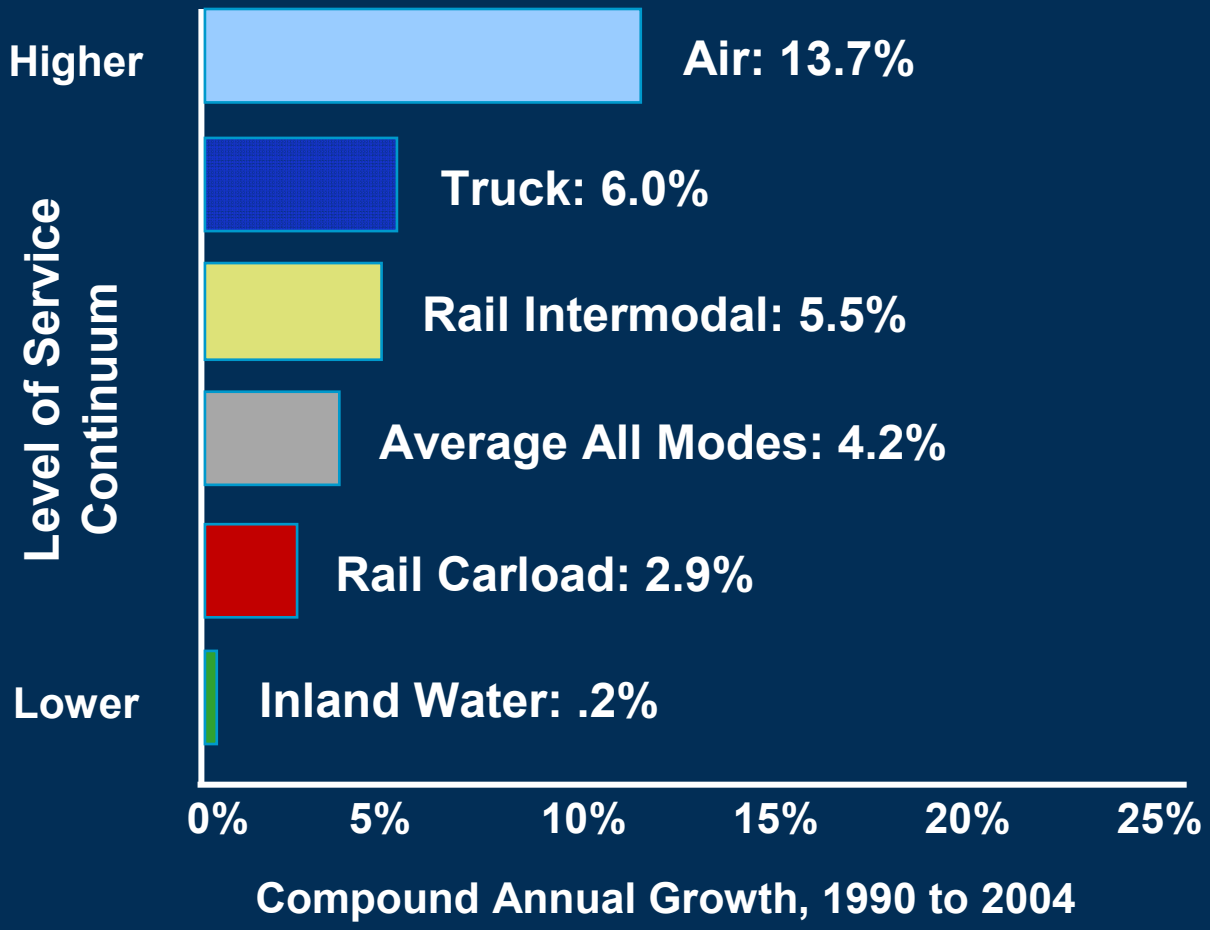
Freight-Tonnage Growth by Mode, 1990-2000

Shippers buy freight services based on shipment value, transport cost, and the need for speed, reliability, and visibility en route; higher-performing modes have grown faster; over the last decade, shippers have favored air and truck service



Source: Global Insight, Inc., TRANSEARCH data

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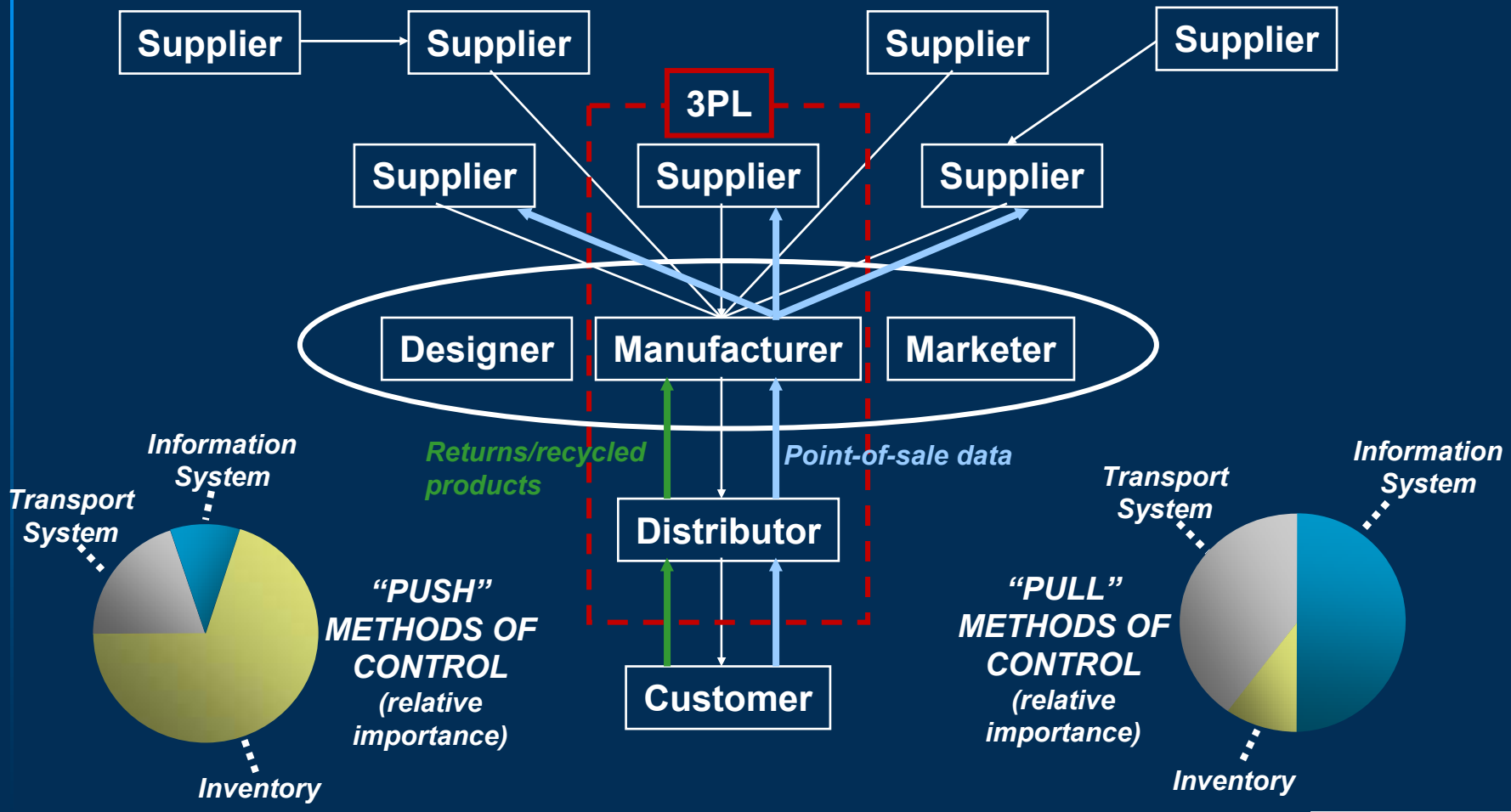
Business Supply Chains

Businesses continue to shift from push-logistics systems to pull-logistics systems, substituting efficient, low-cost freight service and information for high-cost inventory; shippers are more reliant on timely, reliable freight service, and the consequences of service failure matter more



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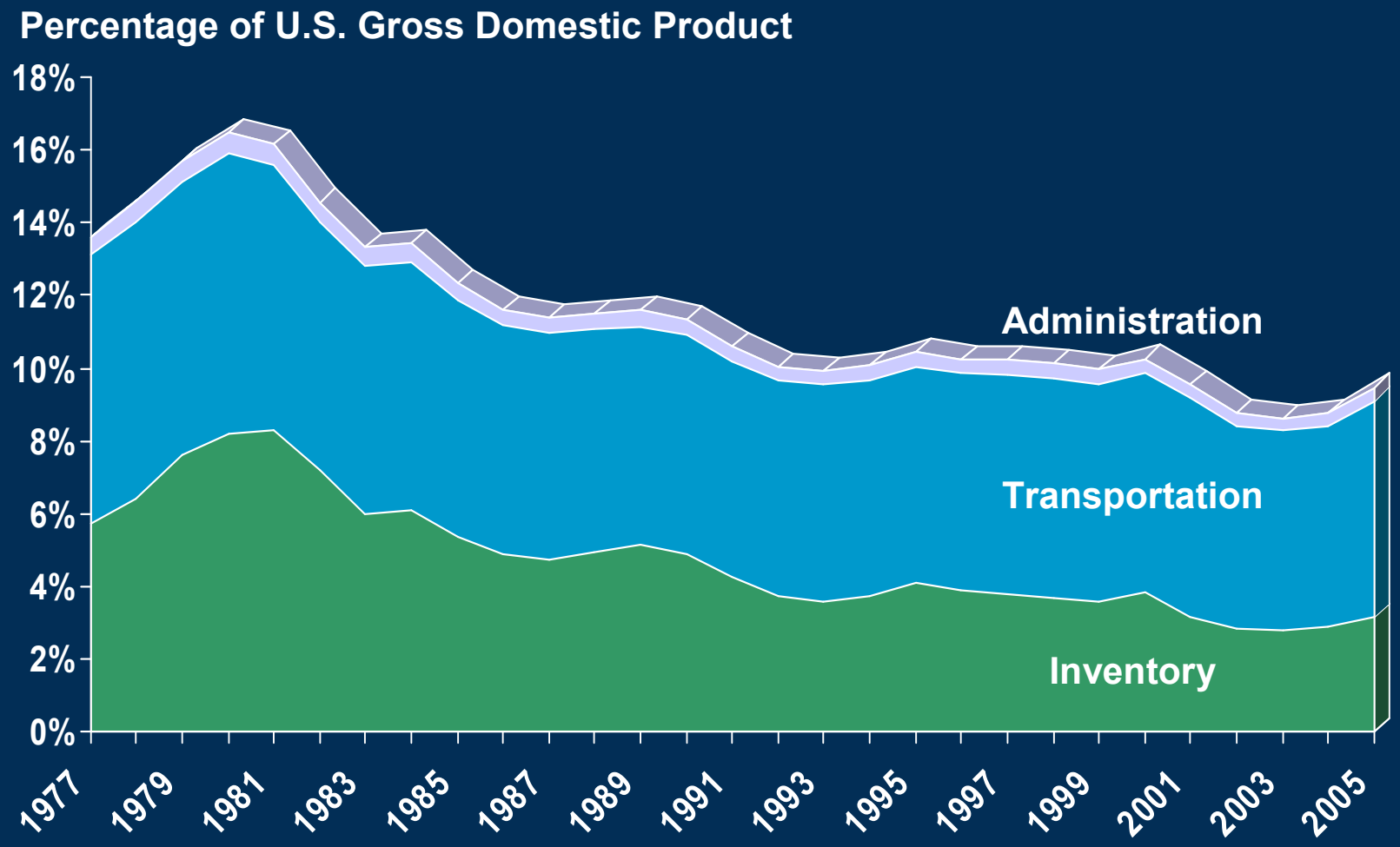
Total Logistics Cost

Greater supply chain productivity and lower logistics costs have been critical to US economic growth; but logistics costs are rising, driven by increasing fuel costs and congestion



Source: Rosalyn A. Wilson, *State of Logistics Report*, Council of Logistics Management, 2006

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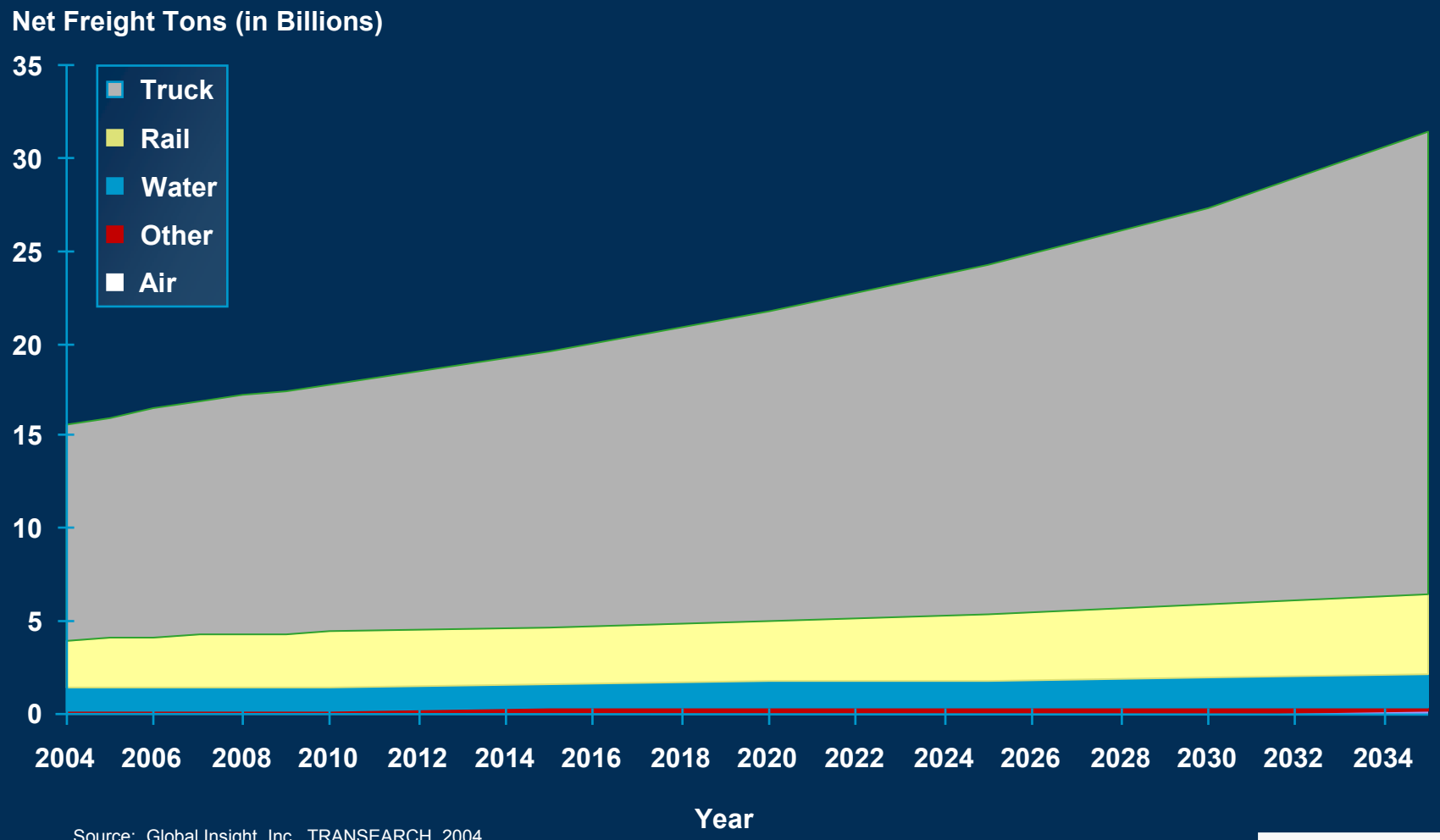
Freight Tonnage Forecast by Mode, 2004-2035

With moderate economic growth at about 3 percent CAGR, freight tonnage may double by 2035 (preliminary forecast)



Source: Global Insight, Inc., TRANSEARCH, 2004

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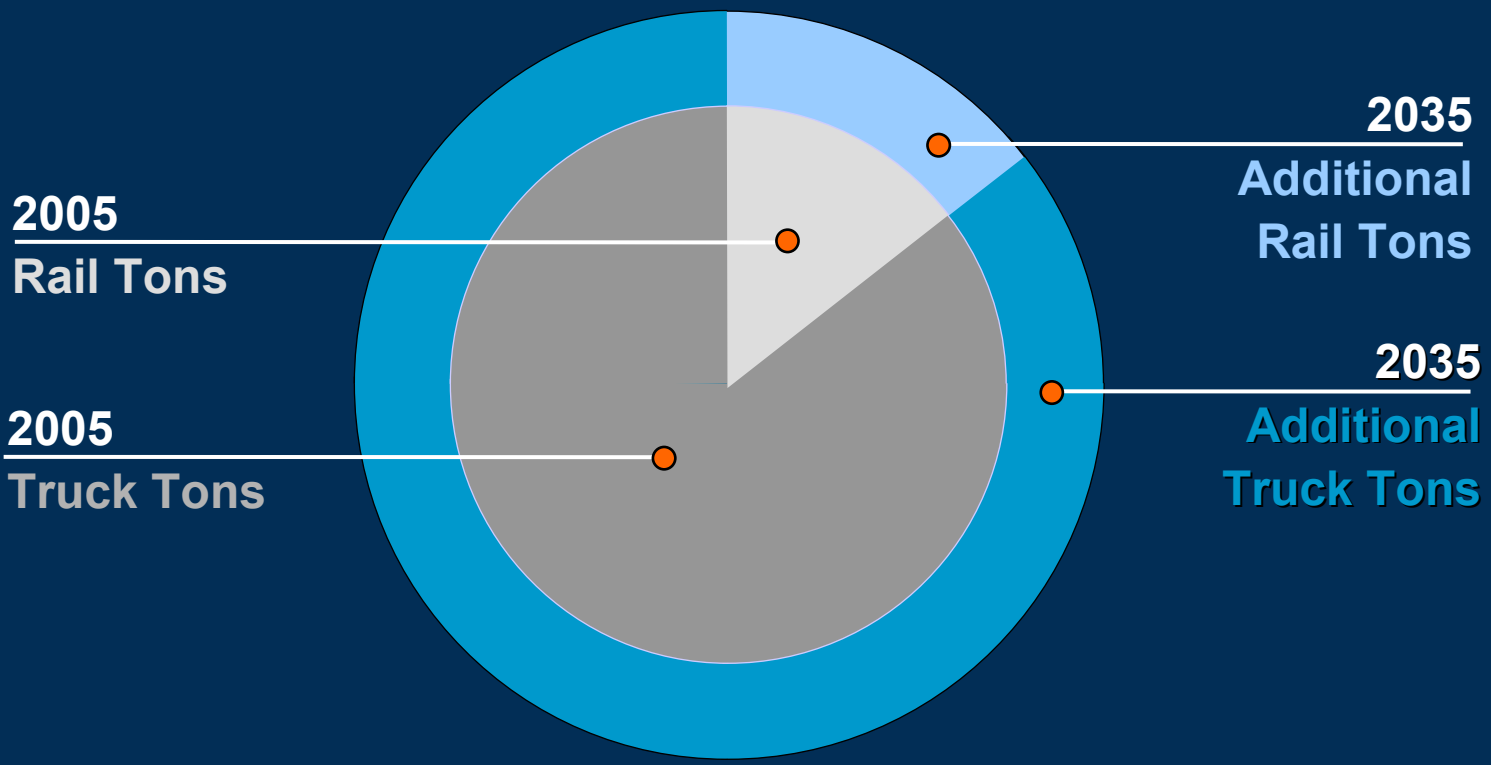
Freight System Capacity

Do the highway and freight-rail systems have the capacity to handle the growing volume of freight – even if mode shares remain constant?



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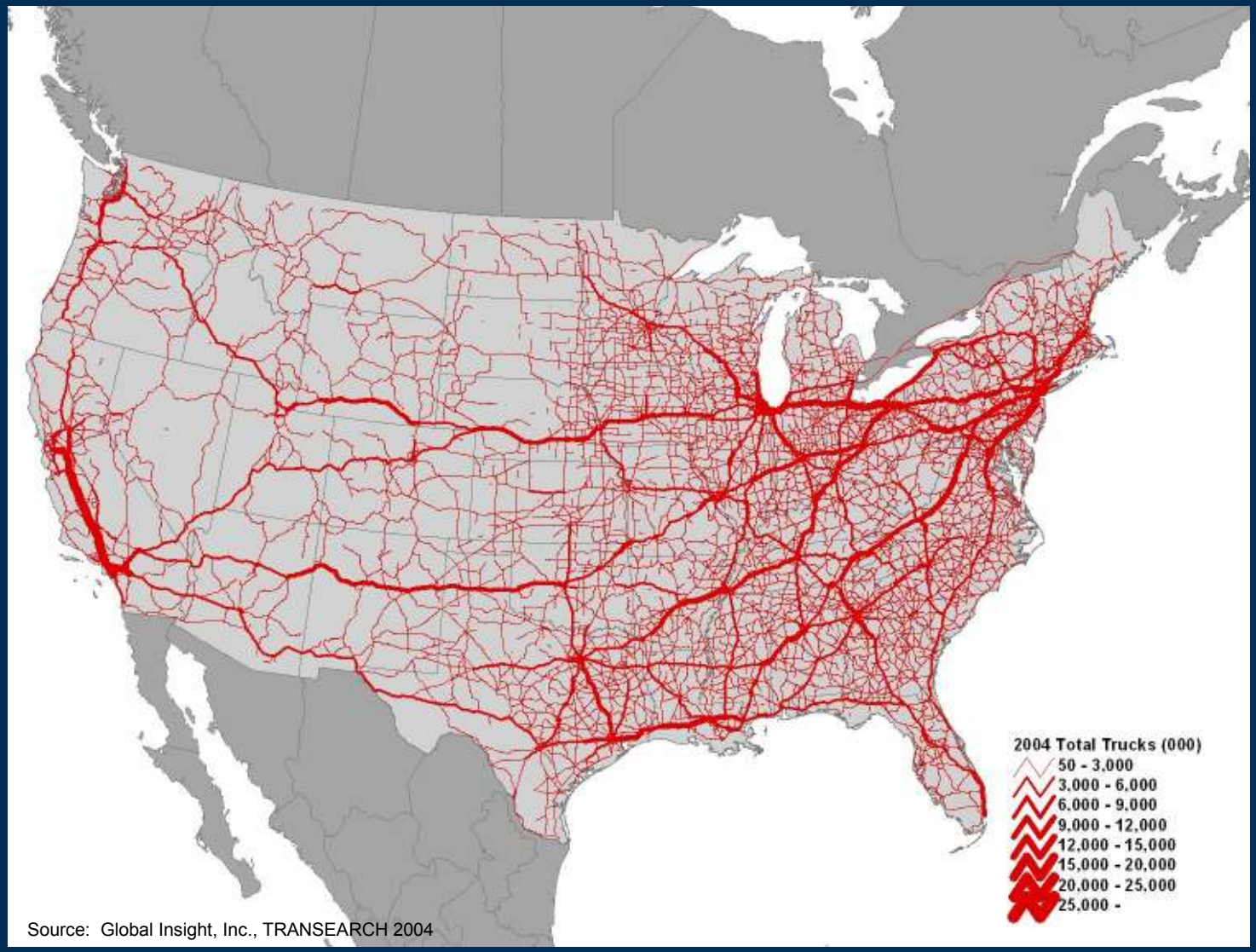
Freight-Truck Volumes, 2004

By 2035, trucking's share of total freight tonnage could grow from 74 percent to about 80 percent; truck tonnage may increase by 110 percent and truck ton-miles by 120 percent (preliminary forecasts)



Source: Global Insight, Inc., TRANSEARCH 2004

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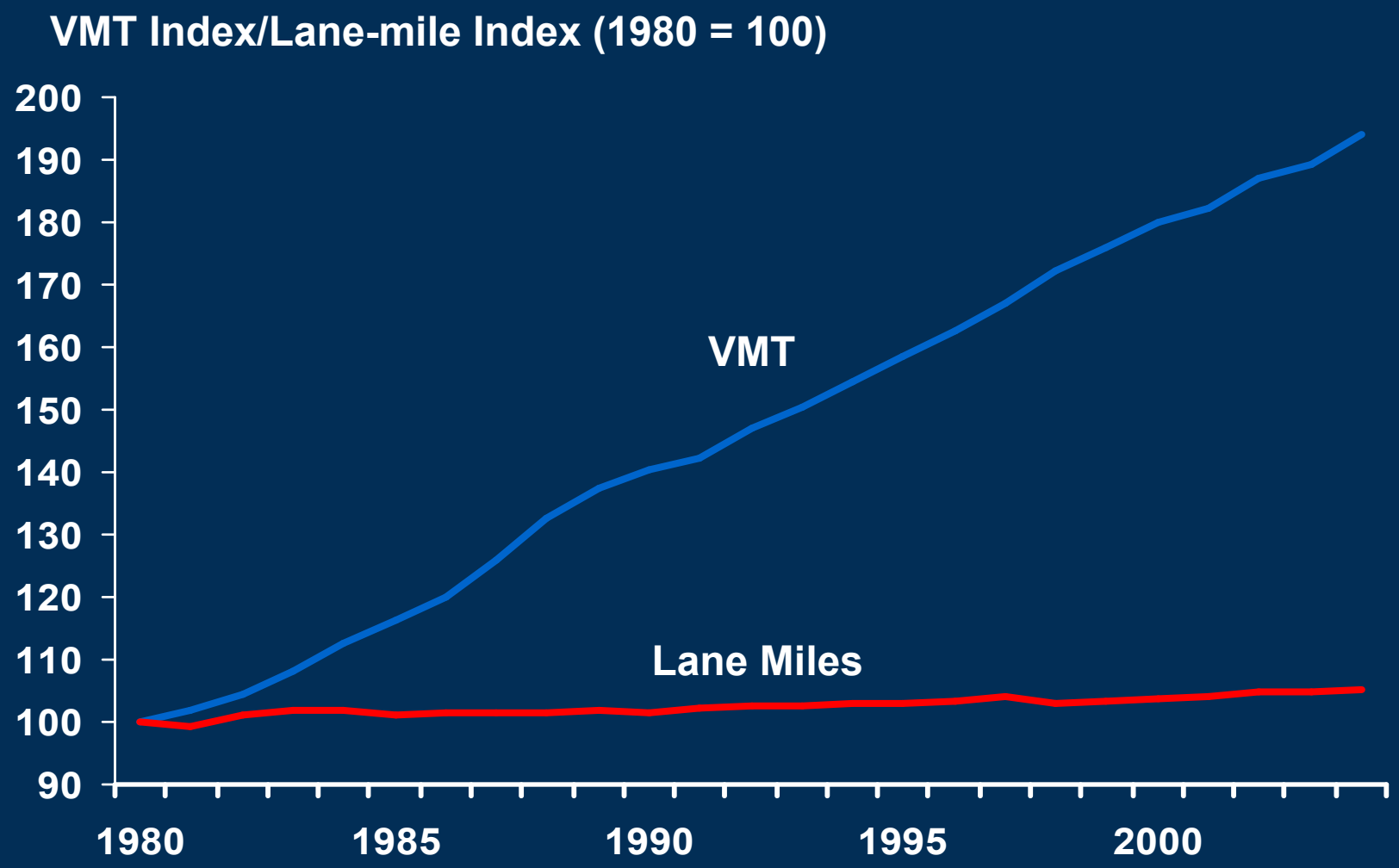
Vehicle Miles of Travel and Lane Miles, 1980-2004

VMT has doubled over the last decades, tracking population and economic growth (GDP); truck VMT has grown faster than auto VMT in recent years



Source: Federal Highway Administration, Highway Statistics

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Congested Highways, 1998

Congestion disrupts freight-truck service by making trips slower, less reliable, and more expensive

Source: FHWA Freight Analysis Framework

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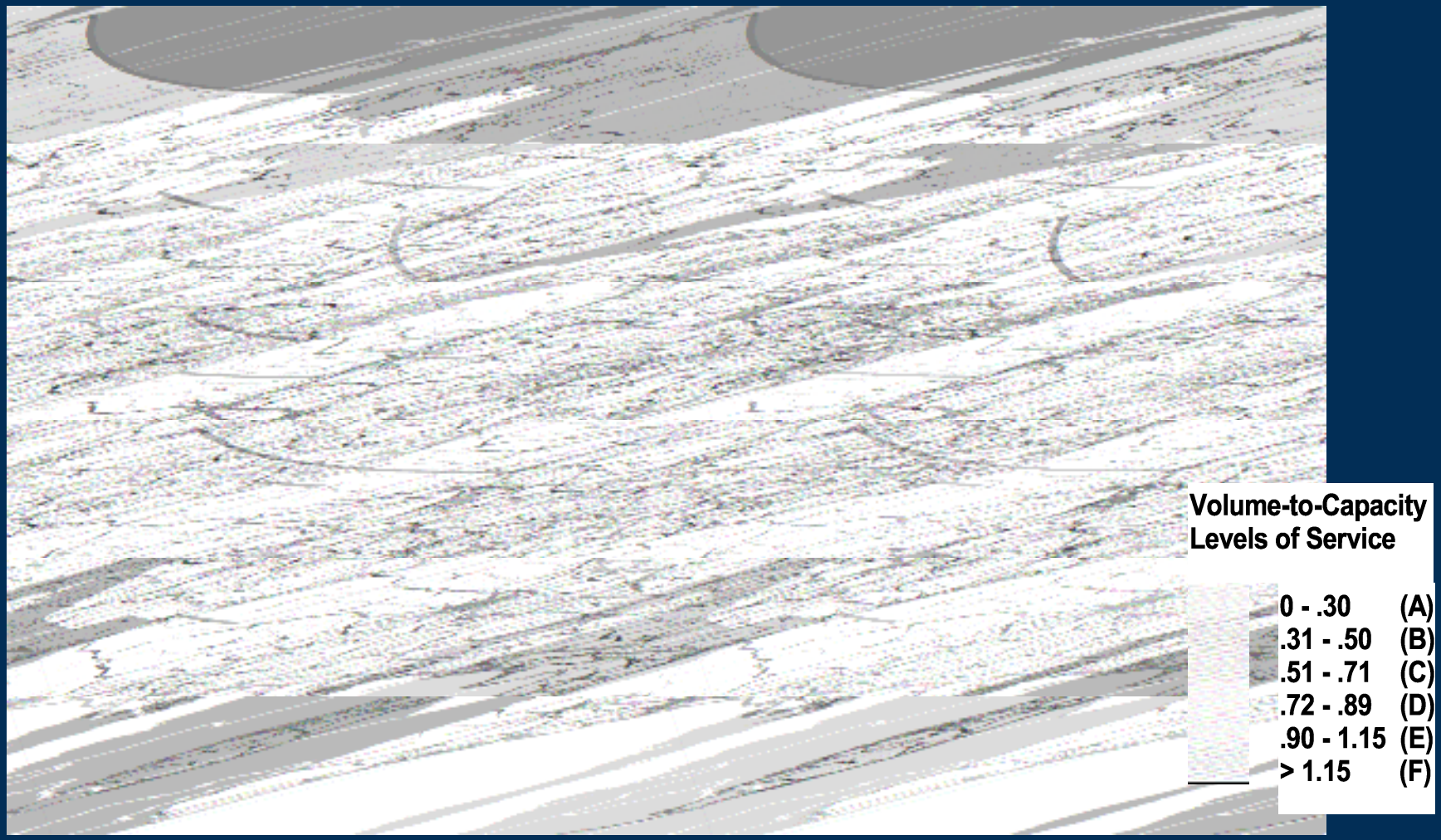
Potential Congested Highways, 2020

As traffic grows, trucks will be exposed to more congestion and delay; without additional capacity, improved productivity, or pricing, logistics costs will likely rise



Source: FHWA Freight Analysis Framework

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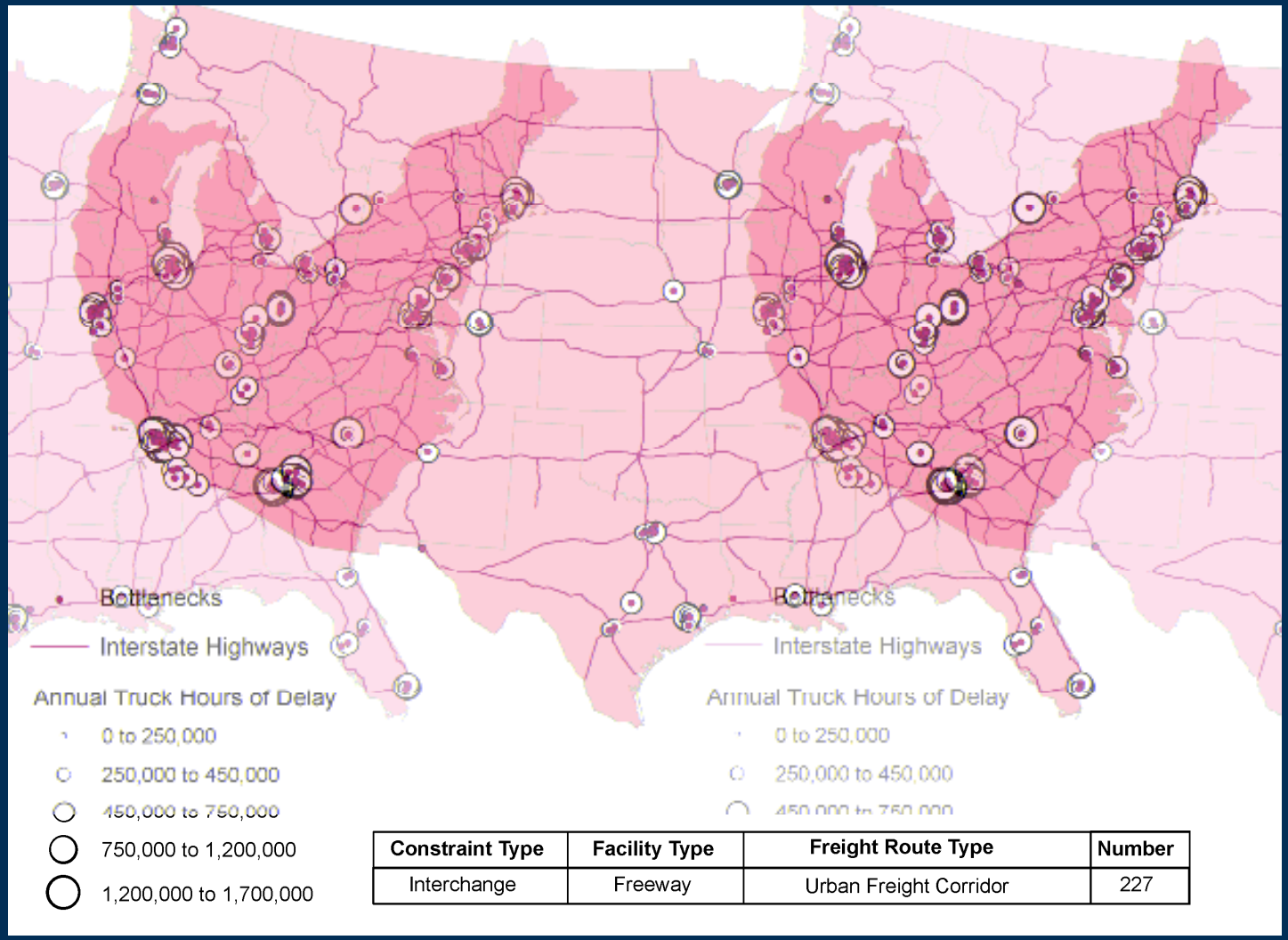
Major Freight-Truck Bottlenecks, 2004

Highway bottlenecks caused 240 million hours of delay and cost truckers $8 billion in lost time in 2004; urban Interstate interchange bottlenecks accounted for most of the delay—about 124 million hours of delay at a cost to truckers of $4 billion



Constraint Type	Facility Type	Freight Route Type	Number
Interchange	Freeway	Urban Freight Corridor	227

Source: Cambridge Systematics, Inc., "An Initial Assessment of Freight Bottlenecks on Highways," for FHWA, October 2005

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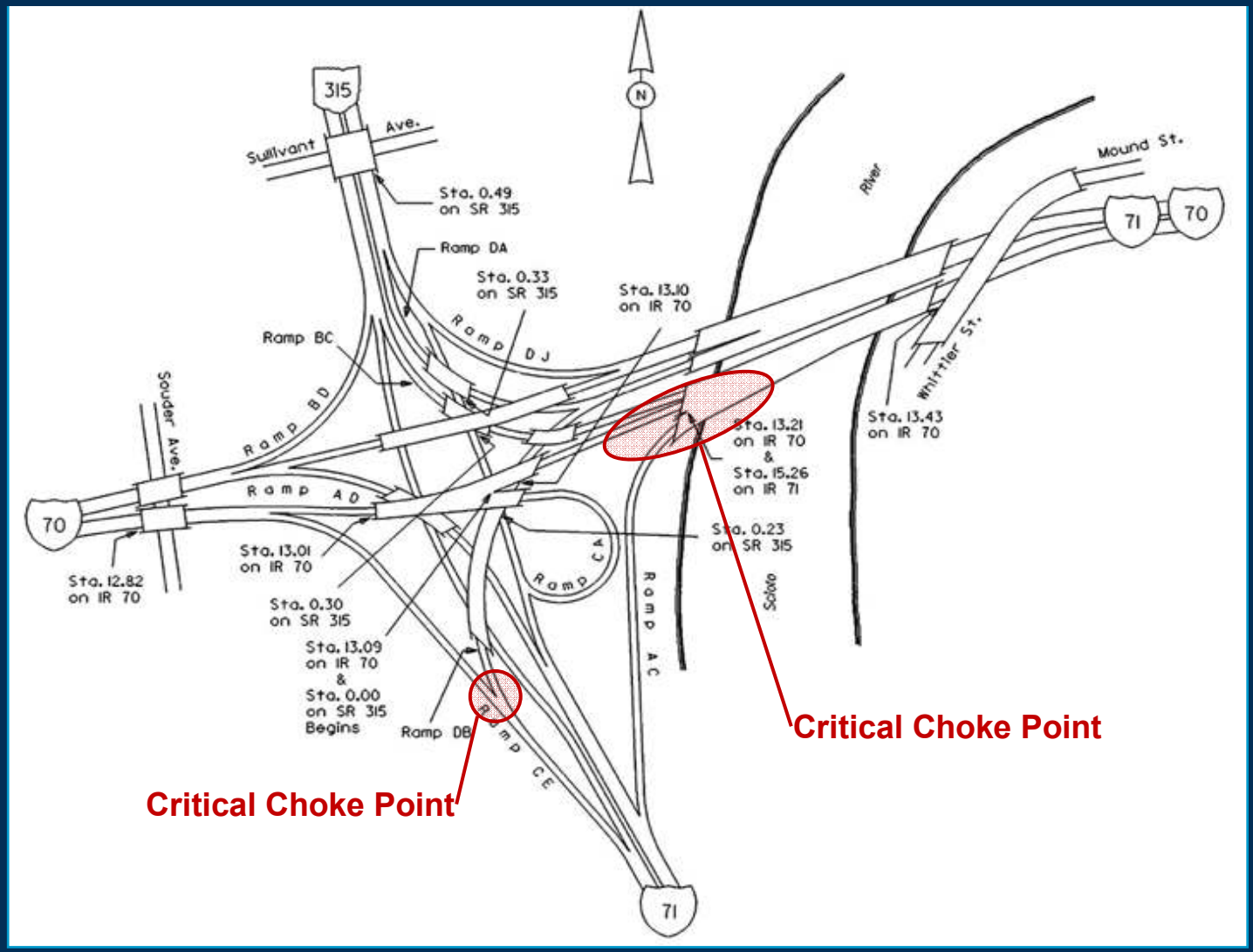
Columbus (OH) I-70, I-71, SR-315 Interchange

Precisely tailored improvements such as the redesign of a single ramp or repositioning of a merge lane, coupled with better corridor traffic management, can be cost effective at reducing delays



Source: Cambridge Systematics, "Ohio Freight Mobility," for Ohio DOT, October 2005

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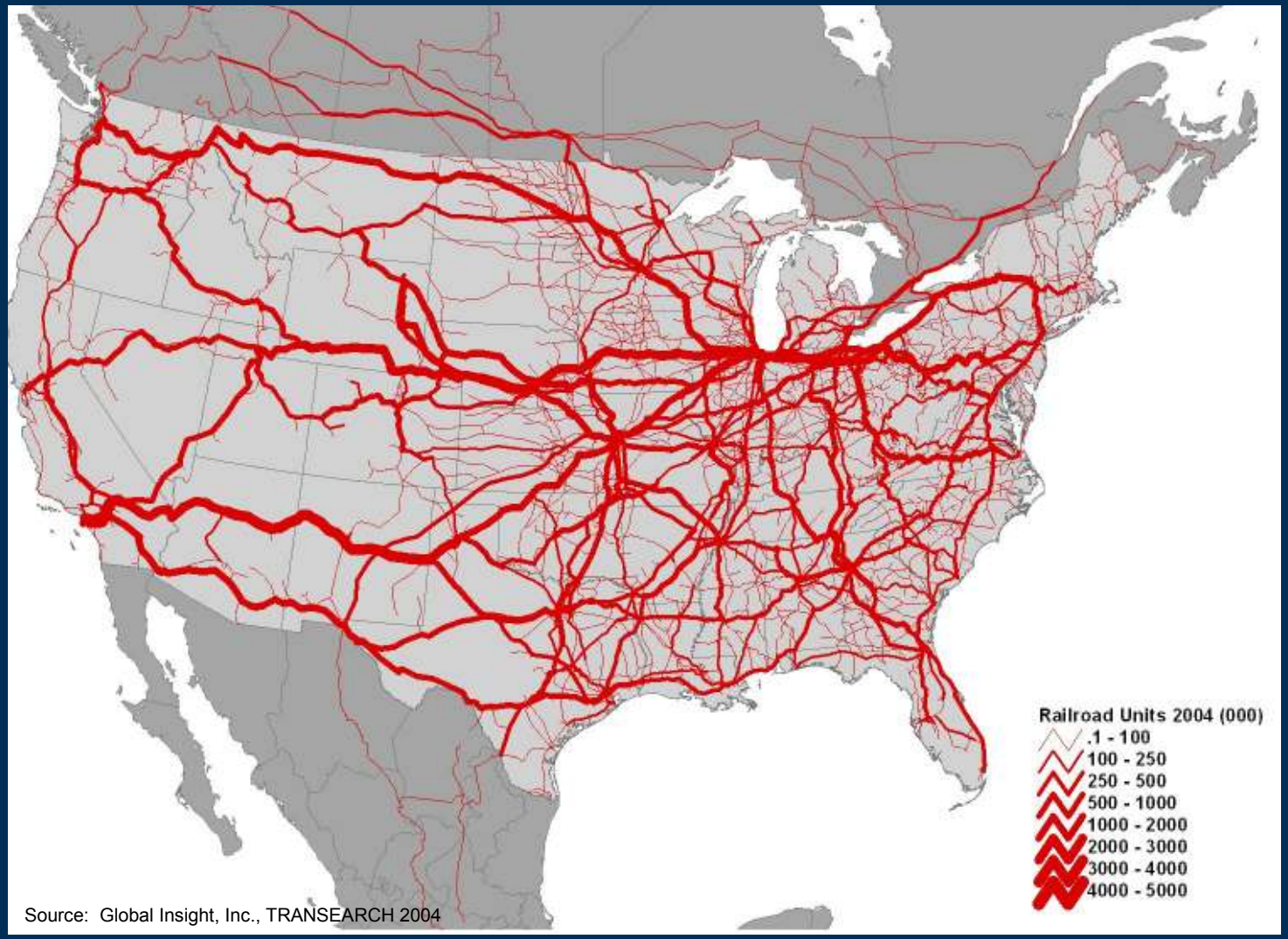
Freight-Rail Volumes, 2004

(Railcars and Intermodal Container/Trailer Units)

By 2035, rail's share of total freight tonnage could shrink from 17 percent to about 14 percent; but rail tonnage may increase by 60 percent and rail ton-miles by 70 percent (preliminary forecasts)



Source: Global Insight, Inc., TRANSEARCH 2004

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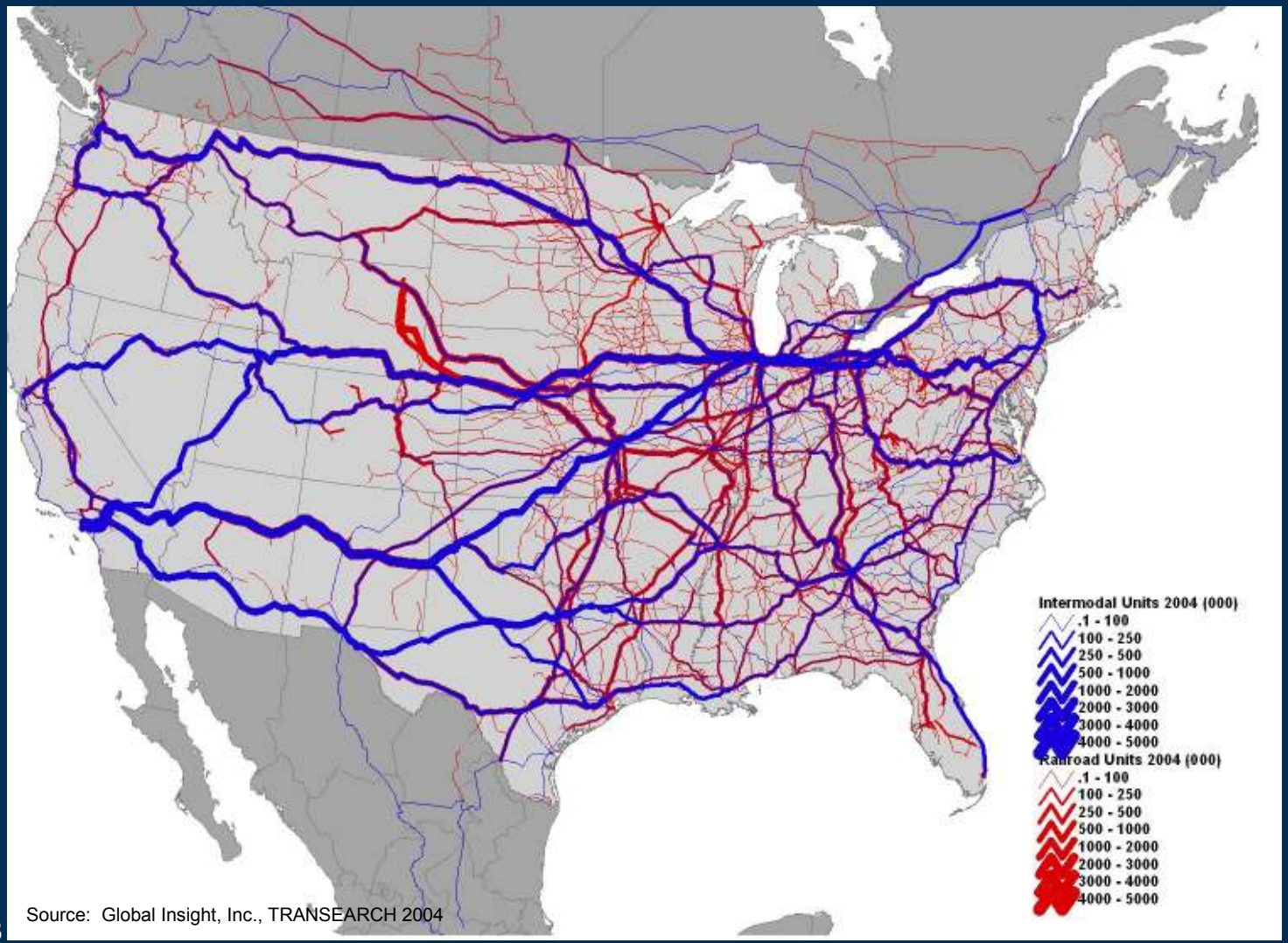
Intermodal Freight-Rail Volumes, 2004

(Intermodal Container/Trailer Units vs. Total Freight-Rail Units)

Freight-rail demand is straining current rail capacity; railroads are using pricing to turn aside lower-profit freight; in some corridors, intermodal is squeezing out carload, and international is squeezing out domestic



Source: Global Insight, Inc., TRANSEARCH 2004

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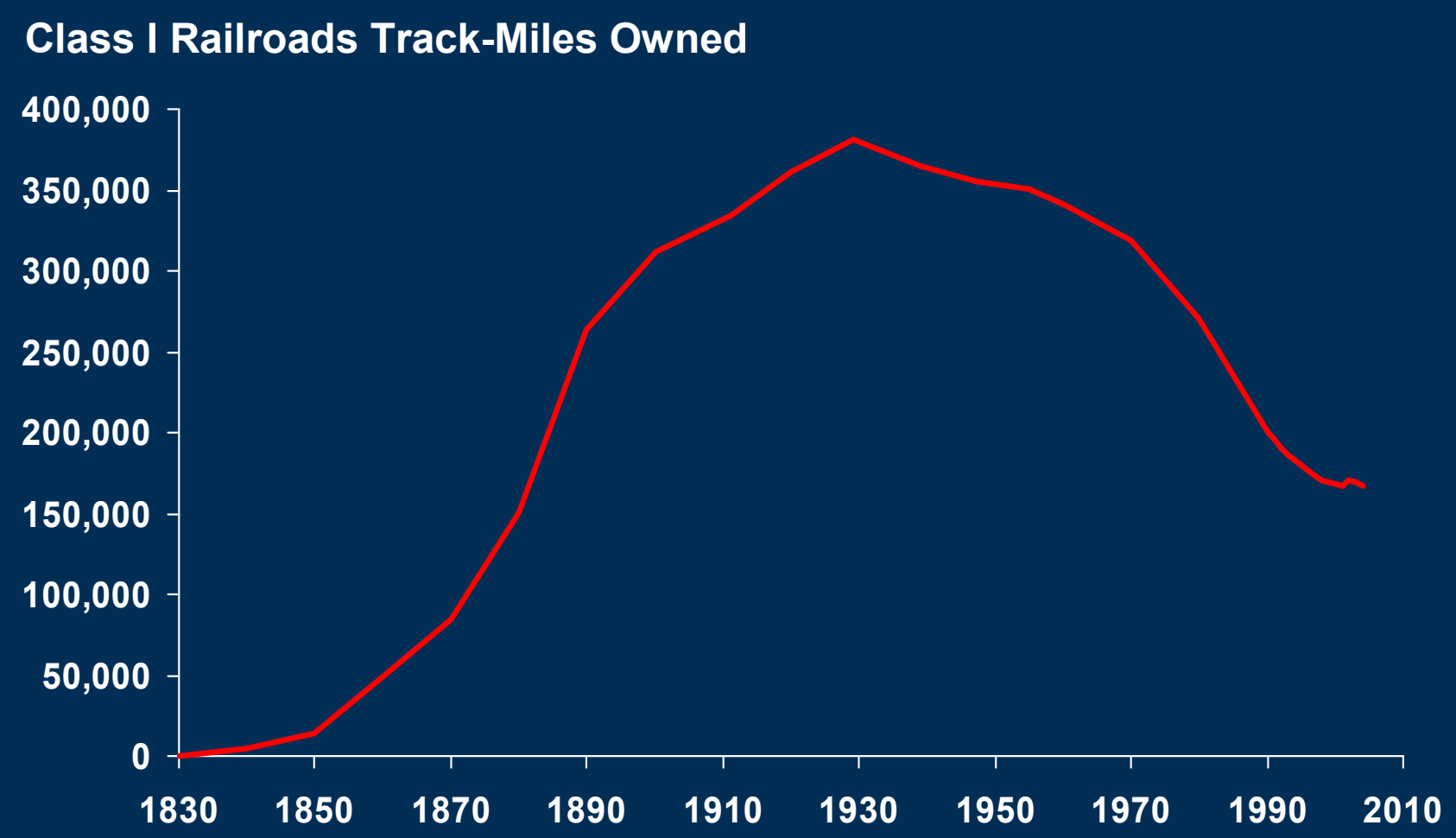
Rail Network Today

Today's rail network has been rationalized and downsized to a core network that is descended directly from the 19th Century design



Sources: L. Thompson/World Bank and American Association of Railroads

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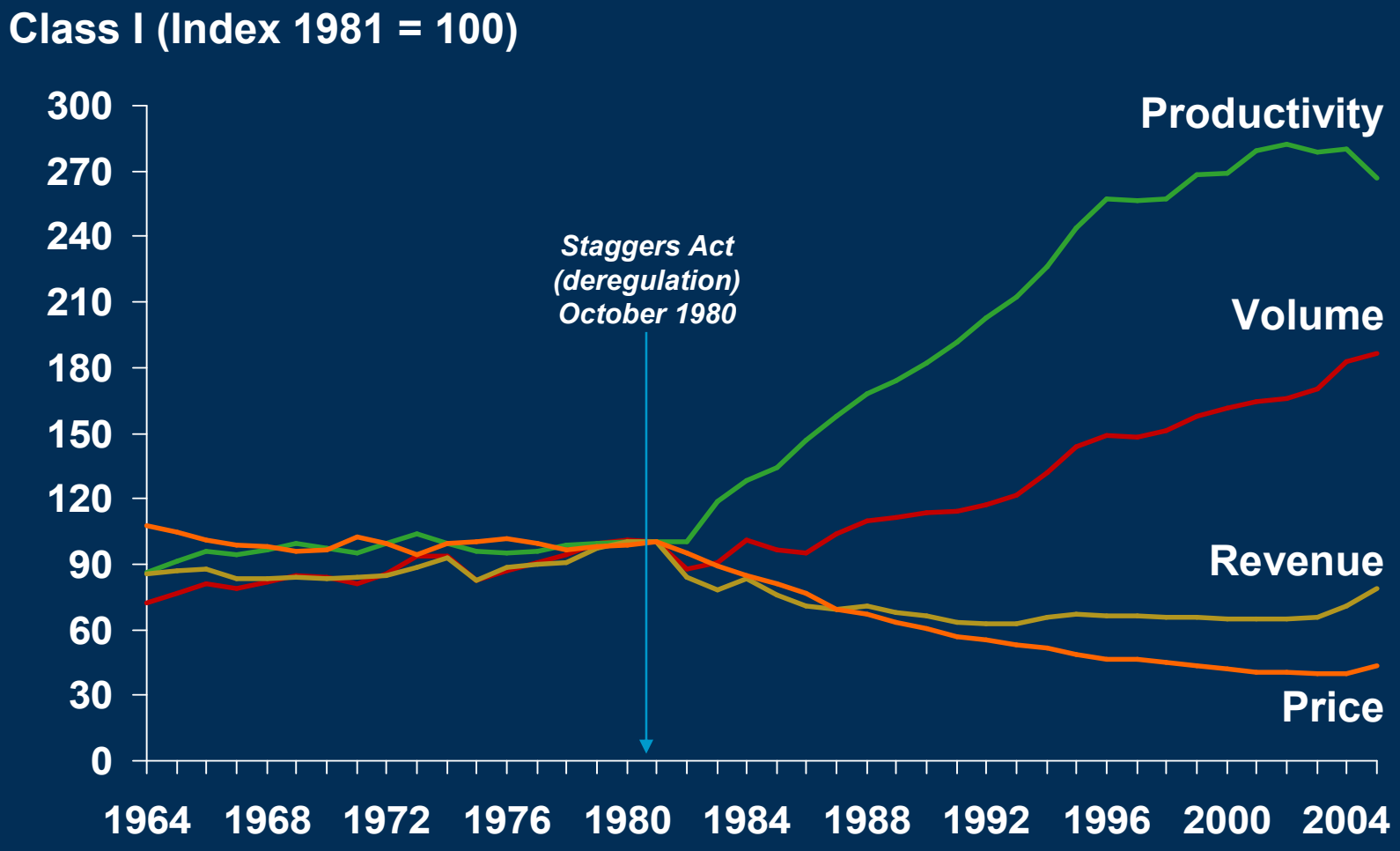
U.S. Railroad Performance, 1964 to 2005

The rail industry today is stable, productive, and competitive with enough business and profit to operate, but it is not yet attracting capital fast enough to replenish its infrastructure quickly or keep pace with demand and public expectations



Source: American Association of Railroads

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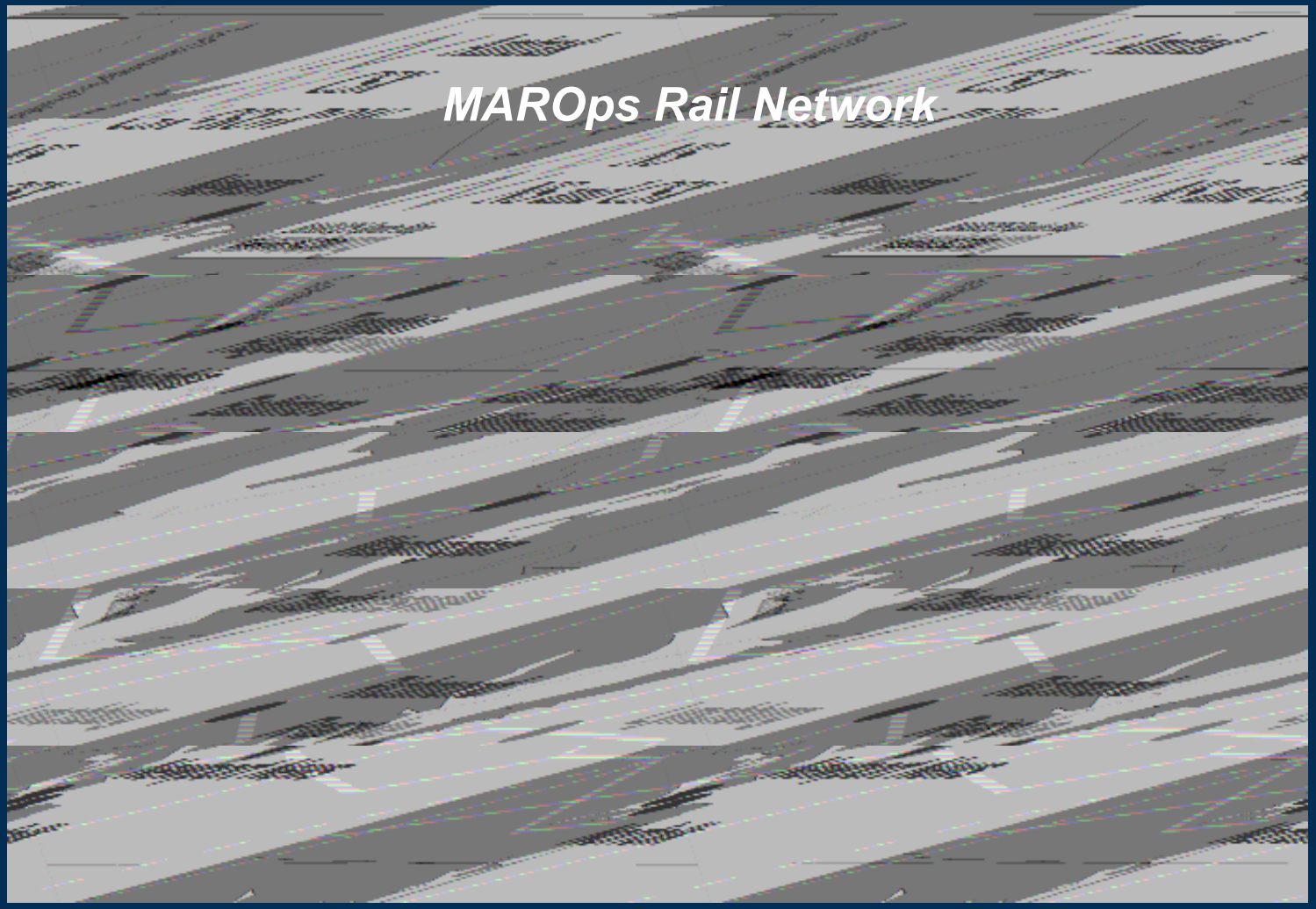
Mid-Atlantic Rail Operations Study

Sponsored by CSX, NS, Amtrak, NJ, PA, DE, MD, VA and the I-95 Coalition, the program identified $6.2 billion of public-private improvements over 20 years; the near-term program covered $2.4 billion of bridge, clearance, capacity, and connector project within 5 years



Source: Cambridge Systematics, Inc. for the I-95 Corridor Coalition

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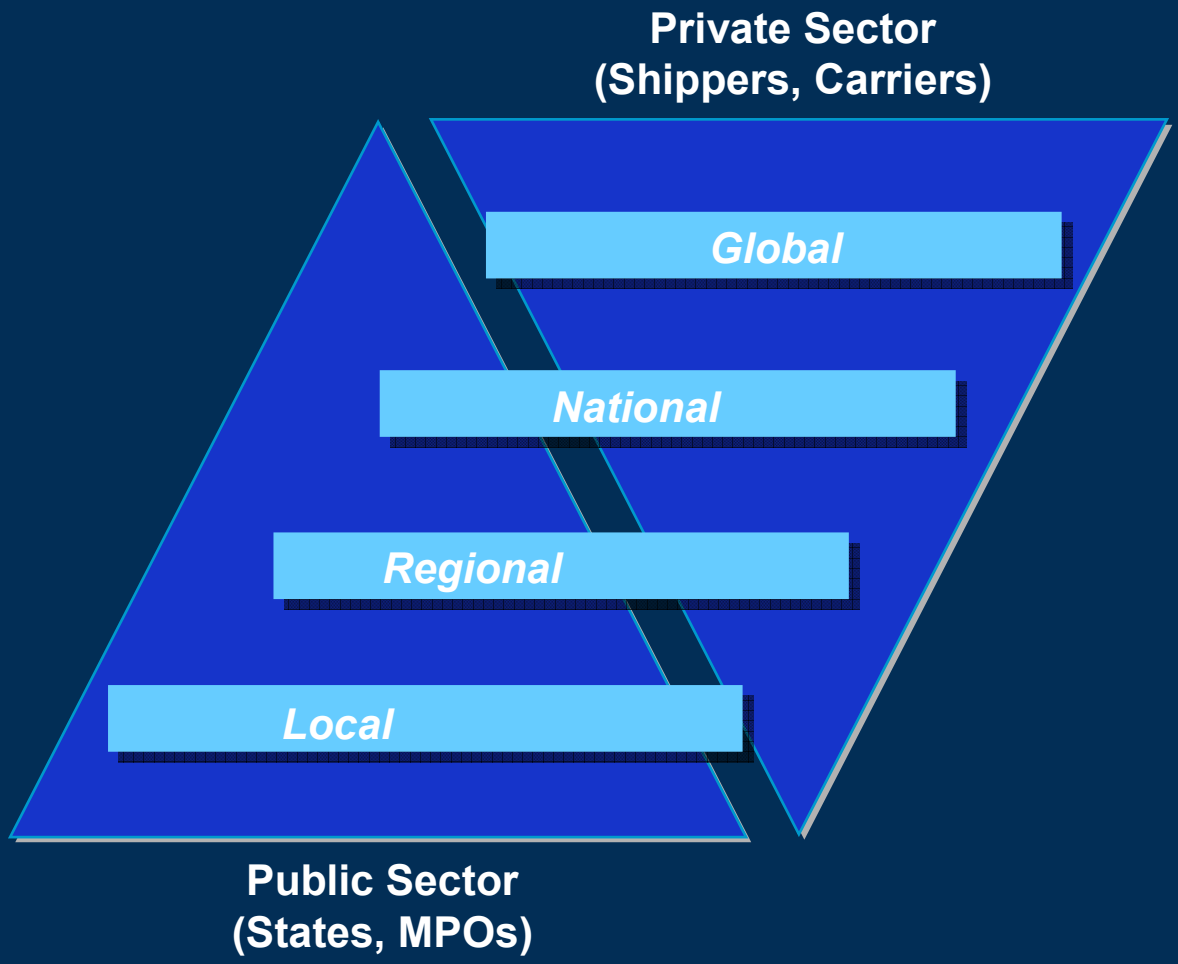
Freight Transportation Perspectives

Scale and scope of public and private freight transportation planning and investment are mismatched: the state and MPO focus is regional and local; the private sector focus is increasingly national and global



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Key Issues

- Reaffirming the importance of the freight transportation system to the national economy
- Re-linking transportation investment to economic development
- Addressing nationally and regionally significant highway bottlenecks and rail choke points
- Increasing investment in freight transportation – capital, labor, and operations
- Reorganizing our institutional structures for planning and investment

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