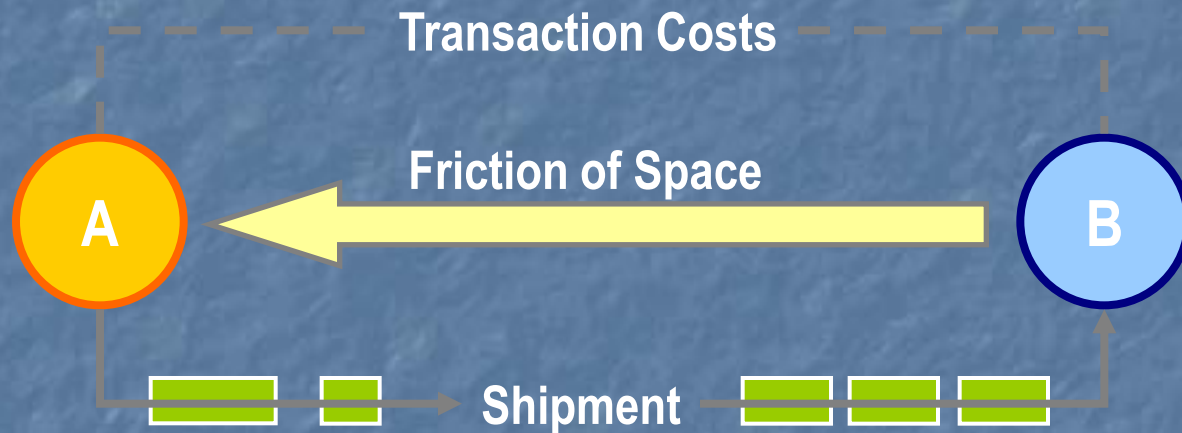


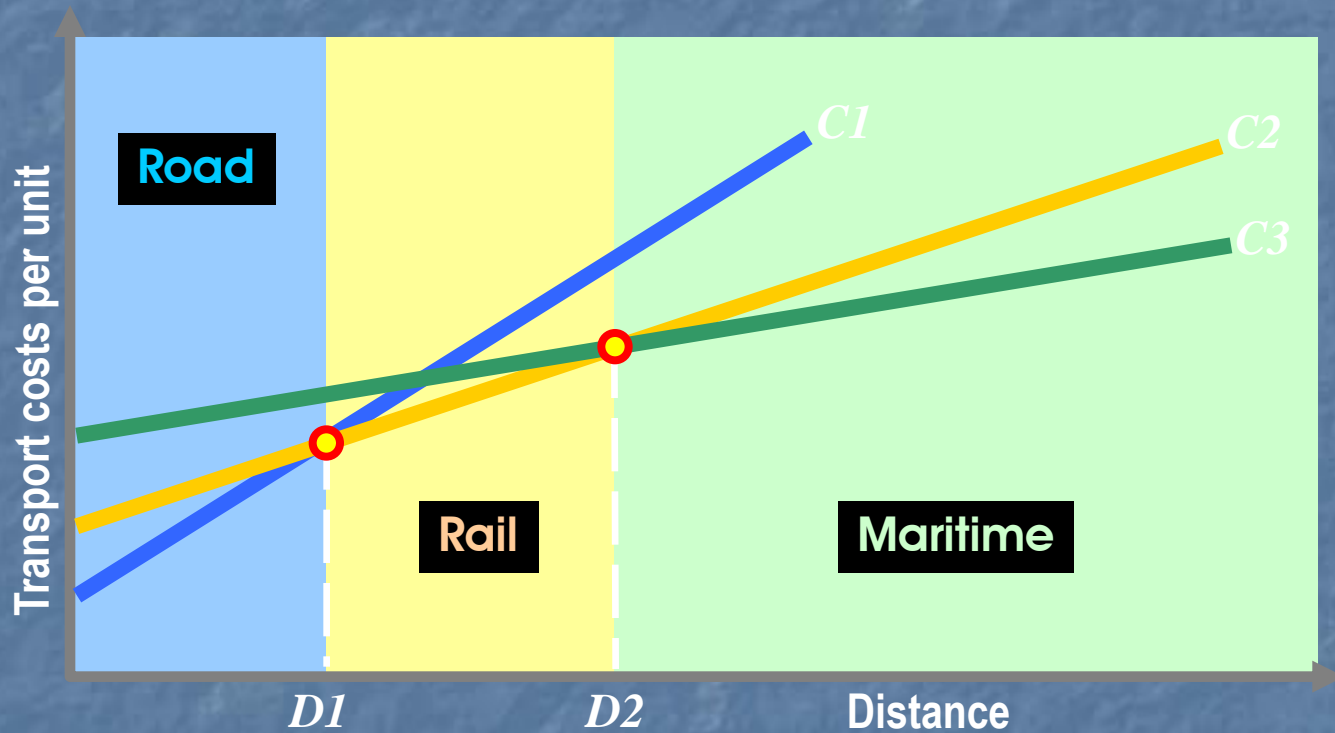
Transport Costs

Factors and Issues

Components of Transport Cost



Distance, Modal Choice and Transport Costs



Shape of Transport Cost Curves

- Many simple models, such as Von Thunen and Weber view transport costs as:
 - 1. Proportional to distance
 - 2. Each additional unit of distance adds an equal increment of cost
- In reality transport costs are less than proportional to distance—why?
- **Existence of fixed costs of transport facilities incurred regardless of length of journey**
- Fixed or terminal costs (interest on capital, costs of maintaining plant and equipment, depreciation) dilute the unit cost as distance increases
- Therefore costs per mile tend to decline with increasing distance

Fixed and Operating Transport Costs

Mode	Fixed/Capital Costs	Operating Costs
Rail or Highway	Land, Construction, Rolling Stock	Maintenance, Labor, Fuel
Pipeline	Land, Construction	Maintenance, Energy
Air	Land, Field & Terminal Construction, Aircraft	Maintenance, Fuel, Labor
Maritime	Land for Port Terminals, Cargo Handling Equipment, Ships	Maintenance, Labor, Fuel

Fixed and Running Costs

- Highway and trucking costs are only slightly less than proportional to distance
- This is due to very low terminal charges (fixed costs are only 10 % of total)
- Rail and Water- relatively high terminal charges but lower line haul costs
- Rail and Water networks are coarser than highway- fewer terminal facilities but larger in scale
- Containerization has helped reduced costs and port costs are becoming more and more efficient

Structure of Airline Costs

- Fixed/Overhead- carrier's capital especially aircraft **17 %**
- Operating-Direct-dependent on type of aircraft: flight crew, fuel, maintenance, depreciation, landing fees, leasing **60 %**
- Operating-Indirect- passenger related: passenger services, ticketing, station and ground costs, administrative **23%**

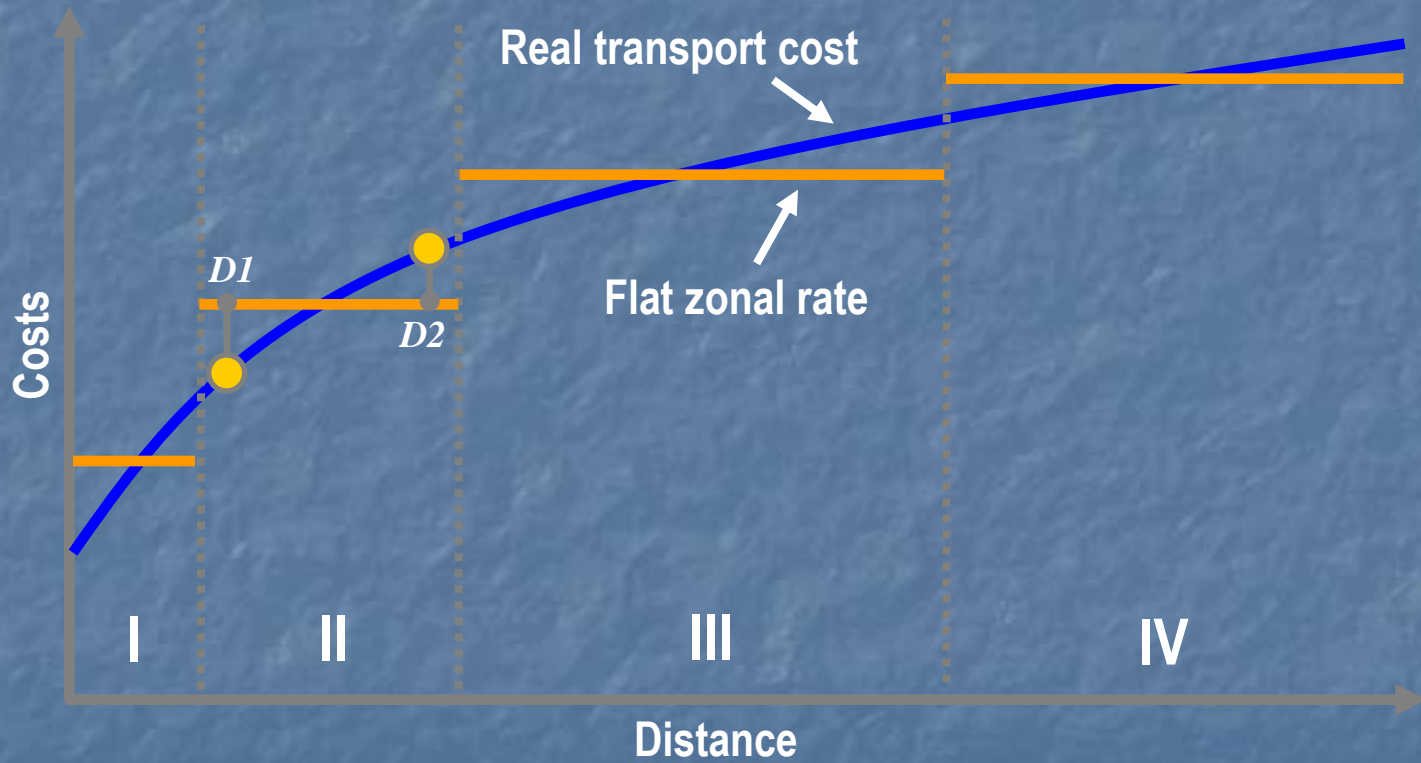
Fixed and Variable Costs and Service in the Transportation System

Characteristic	Fixed Infrastructure	Variable Costs
Examples	Highways, rail tracks, airports, ports	Trucks, railcars, planes, ships
Ownership	Mostly public	Mostly private
Lifespan	Very long (decades)	Short to average (5 to 20 years)
Rate of change	Slow	Rapid redeployment
Impact on service	Shapes accessibility	Shapes level of service
Competition	Level the playing field	Source of comparative advantages

Cost Variations in Transport

- **Postage Stamp Rates**- simplest possible structure – uniform rate irrespective of distance
- **Blanket Rate**- similar rates for broad zones
- Example: Freight rates for lumber
- Origin zone: Washington/Oregon to:
- Montana- .76-100/ 100lbs
- Colorado-Wyoming- 1.11
- Texas-Louisiana- 1.36
- Minnesota-Nebraska, Kansas- 1.26
- Tennessee, Alabama Georgia- 1.50
- Indiana>>>>New England – 1.48
- **Distance Zones**

Zonal Freight Rates



Cost Variations in Transport

- Differences in Cost of Services:
- **Loading characteristics**- light, bulky goods demand higher charges than heavy, compact articles
- **Size of Shipment**- large, single consignments permit economies in administration and terminal costs
- **Susceptibility to Loss and Damage and Risk Liability**- a. fragile and/or perishable goods- b. refrigerated, insulation and special packaging
-

Cost Variations in Transport

- **Elasticity of Demand**- goods of high unit value are better able to bear costs of transport than low value goods- **“charge what traffic will bear”**
- **Competition between Transport Modes**
- Example: Rail wishes to compete with trucks on short haul must keep rates down
- **Example: Rail Movement of Phosphate Rock from Tampa**
- Norfolk .62 rate per ton/mile
- Lynchburg .95 Knoxville 1.10
- Greensboro 1.11 Montgomery 1.37
- Pensacola .97
- Other examples: **Wine ship Angelo Petri**

Wine Ship and Transport Costs

- Wine grapes- 80% come from California
- Tanker ships can penetrate the Central Valley- converted oil tanker 26 stainless tanks 2.5 mil gals
- Shipped in bulk from California to East Coast
- Logistics problem of small region producing large amount of wine to distribute nationwide
- Shipping wine in bottles or bulk means large cost difference
- Rail only – bulk shipment from the West Coast to East and Midwest then bottled and shipped at higher rates
- Wine ship operation impacts- lowers rate by sea to bottling plants
- Wine ship competes with rail operations

Conditions Affecting Transport Costs

Condition	Factors	Example
Geography	Distance and accessibility	Long distance rates
Type of product	Packaging, weight, perishable	Seafood; time sensitive goods
Economies of scale	Shipment size	Container vs less than container
Trade imbalance	Empty travel- "back haul rates"	Wine ship
Infrastructure	Quality of Surface	Natural disasters
Mode	Capacity, limitations, operational conditions	Air cargo; rail bulk; distance limits?

Conditions Affecting Transport Costs

Condition	Factors	Example
Elasticity of Demand	High value versus Low value goods	Grain vs.
Fabrication in transit	Uniform rate to capture business	Grain to cereal
Infrastrucure	Quality of surface	Natural disasters; IHS
Competition and regulation	Cost reductions to capture traffic	Rail vs. highway

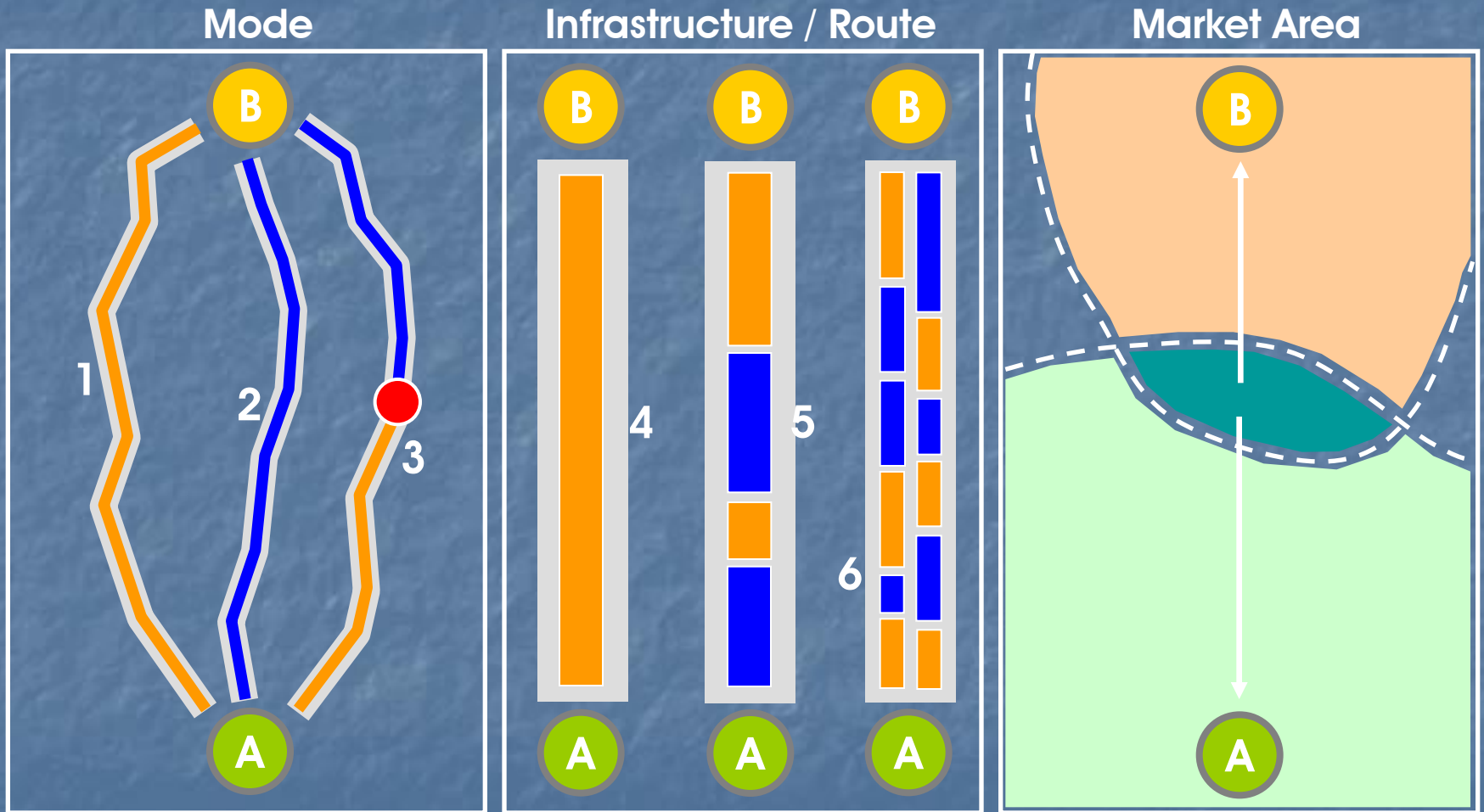
Transport and Market Areas

- Market areas are carved out of space by interactions between supply and demand
- If product is standardized each market point will buy from production center that can supply it most cheaply
- Market areas are shaped by cheap or limited access routes which might expand market boundary
- Example: Inter-coastal trade via Panama Canal- producers located on either coast can ship to the other coast more cheaply than rivals inland
- This route more and more important given jams in port facilities

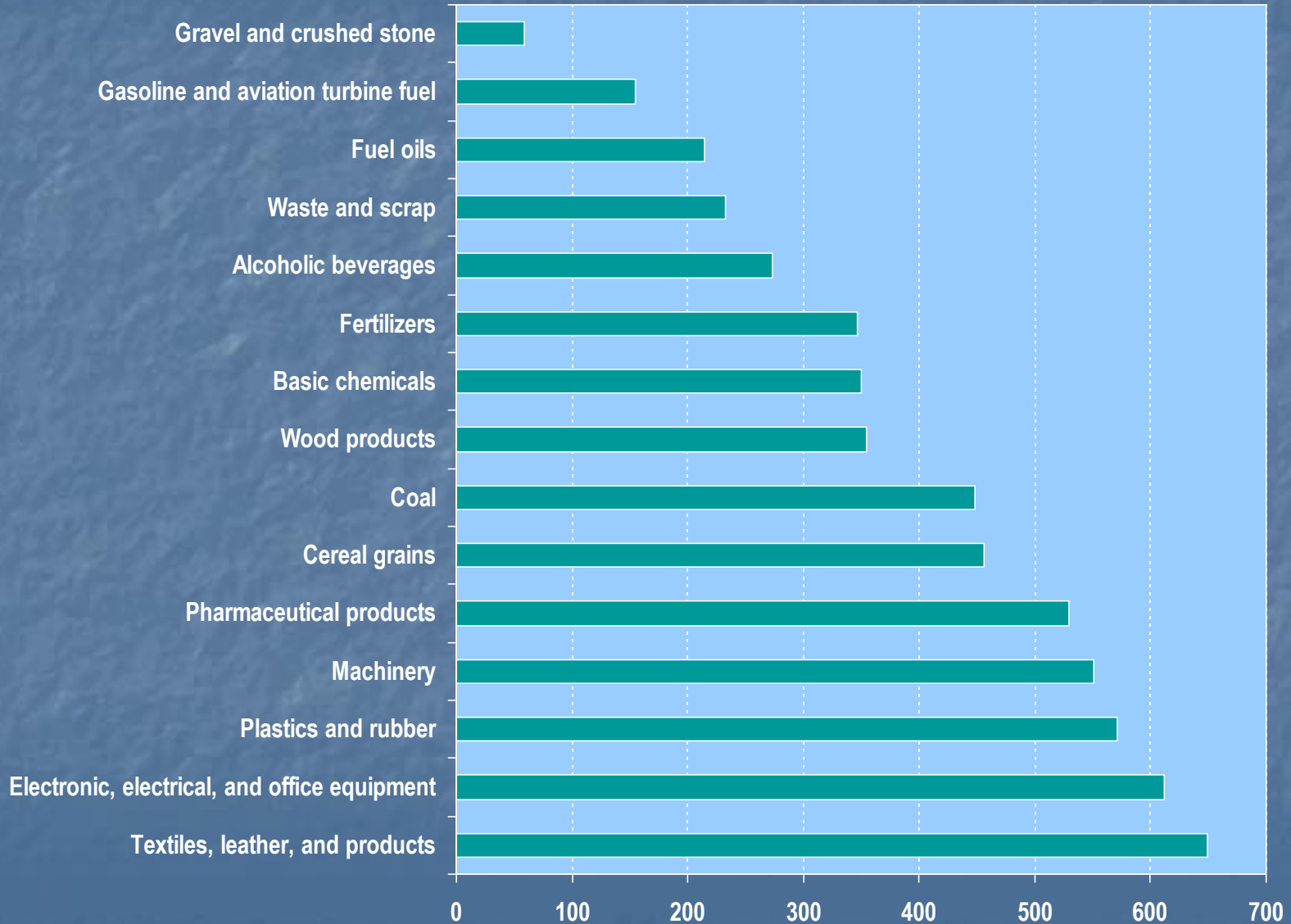
Market Boundary Overlap

- Boundaries between market areas are often blurred
- Implies absorption of distribution costs by buyer, seller or shipper
- **Geographical Price Discrimination**- extra costs of long distance distribution not reflected in price of commodity
- Seller will profit by adjusting or taking control of delivered prices not in accord with transfer rates
- Push down price where competition is high and demand is elastic
- Push price upwards where competition is low and demand is inelastic
- **Freight Absorption**- another form of geog price discrim
- Discriminate against near buyers so sellers assume transport costs to distant markets
- Sellers often has more intense competition in remote market than at home
- Freight absorption usually takes form of uniform price over large areas: toothpaste

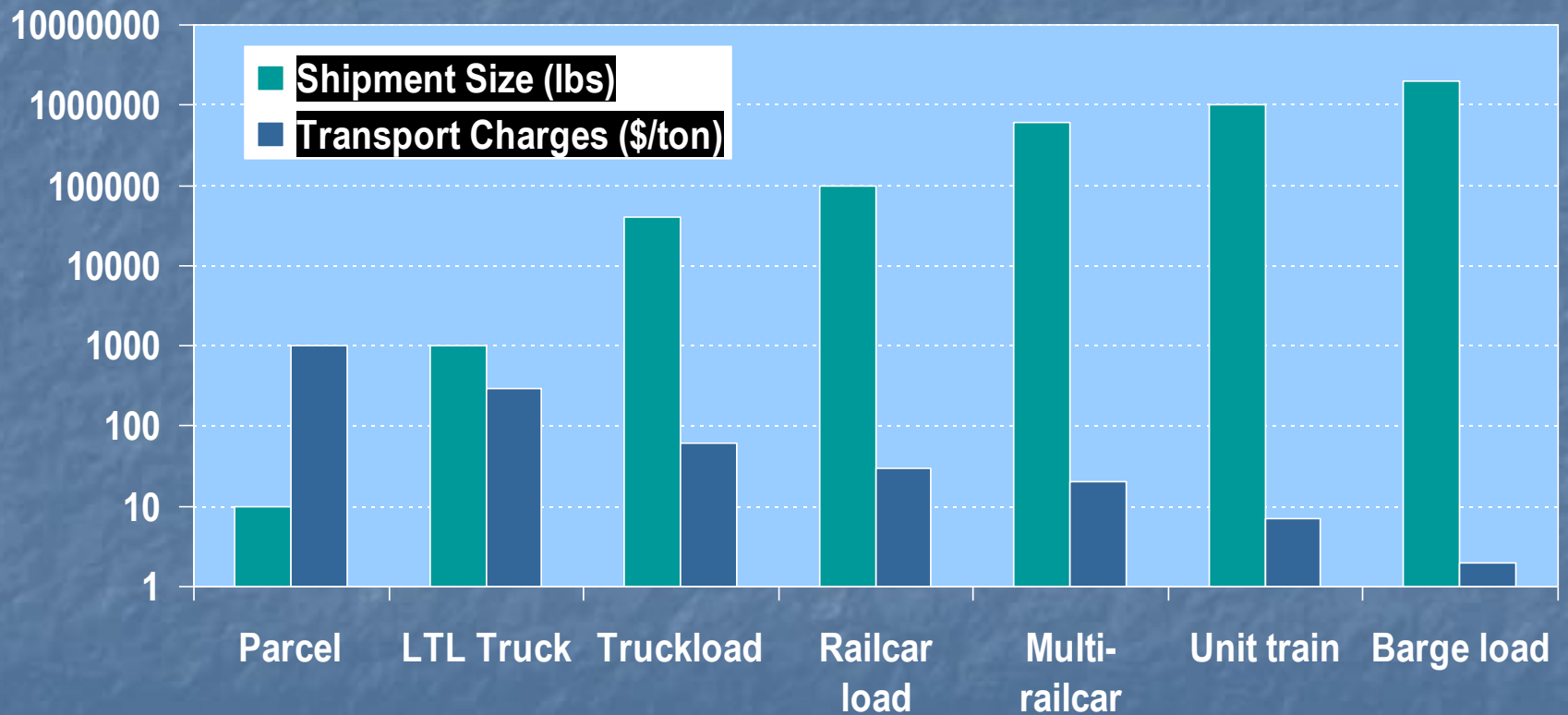
Modal Competition



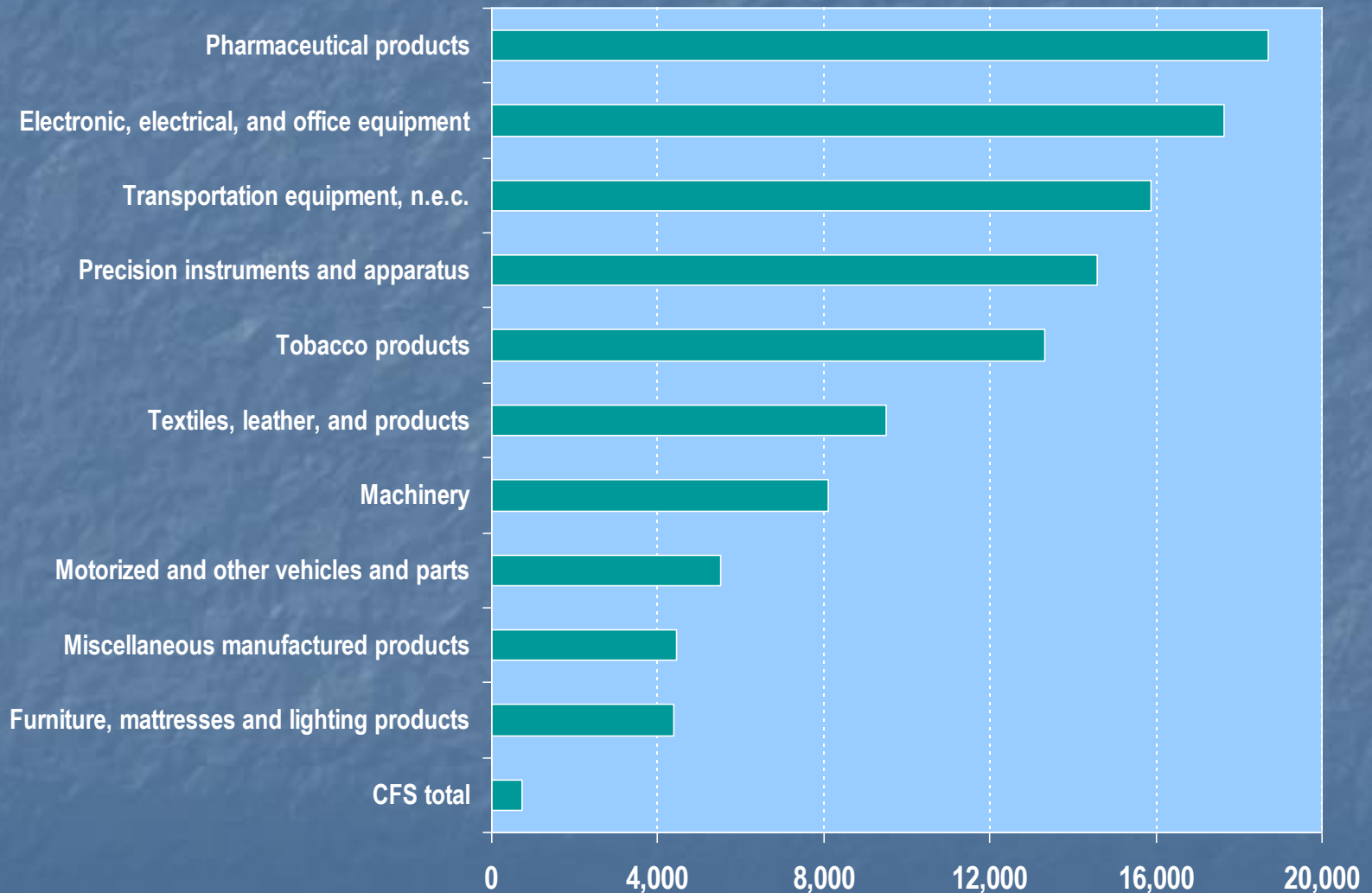
Average Length of Haul by Major Commodity Group, 2002



Shipment Size and Transport Costs



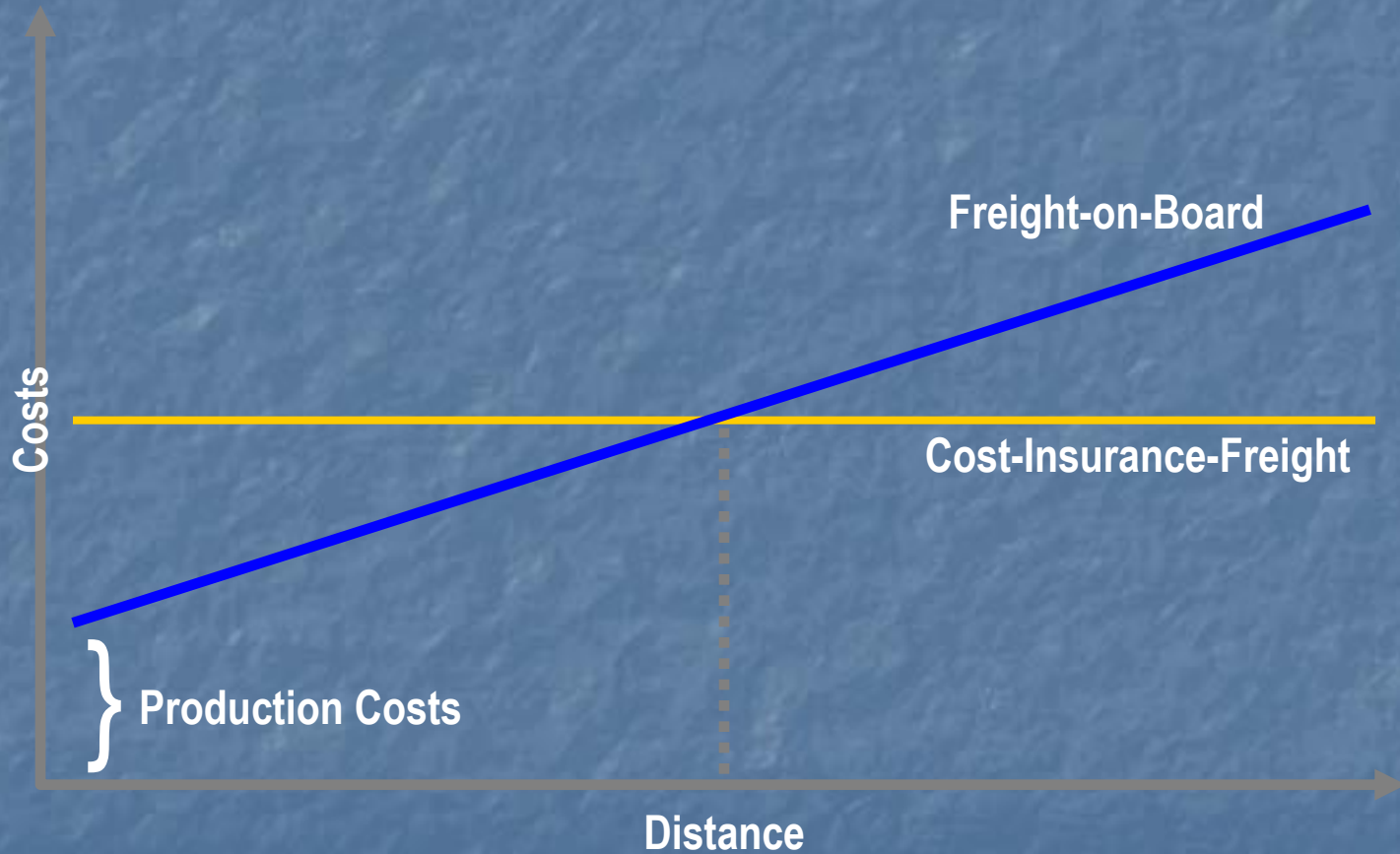
Top 10 Commodity Groups Ranked by Value Per Ton, United States, 2002



Transport Costs by Industry Type, 1999



FOB and CIF Transport Costs



CIF and FOB

- CIF- trade term requiring the seller to arrange for the carriage of goods by sea to a port of destination, and provide the buyer with the documents necessary to obtain the goods from the carrier.
- FOB- A trade term requiring the seller to deliver goods on board a vessel designated by the buyer. The seller fulfills his obligations to deliver when the goods have passed over the ship's rail.

When used in trade terms, the word "free" means the seller has an obligation to deliver goods to a named place for transfer to a carrier