



Transportation Economics for Non-Economists



Transportation & Economic Vitality

Fact or Fiction

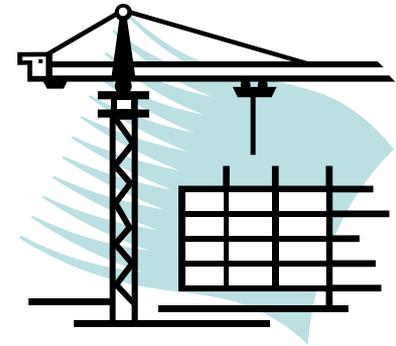
- ? Major transportation innovations affect economic opportunity and land use.
- ? The clustering of activity and/or populations results in more productive cities and regions.
- ? Oregon is more trade-dependent than many states in the nation.
- ? Truck freight movement and rail freight movement are interchangeable.
- ? New transportation facilities/services by themselves are sufficient to induce new business/residential development.

Transportation & Economic Opportunity



Trade & Freight in Oregon

Transportation & Development



Transportation & Economic Opportunity



Transportation Innovation



Technological breakthroughs → a faster way to move

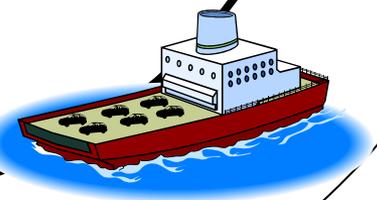
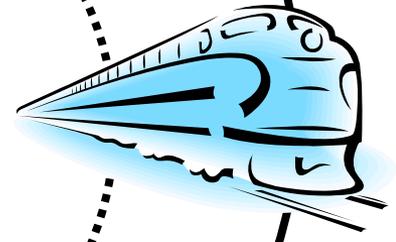
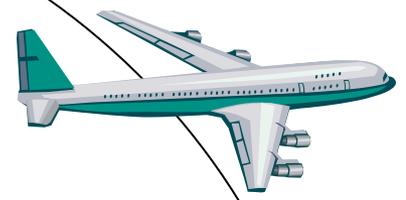
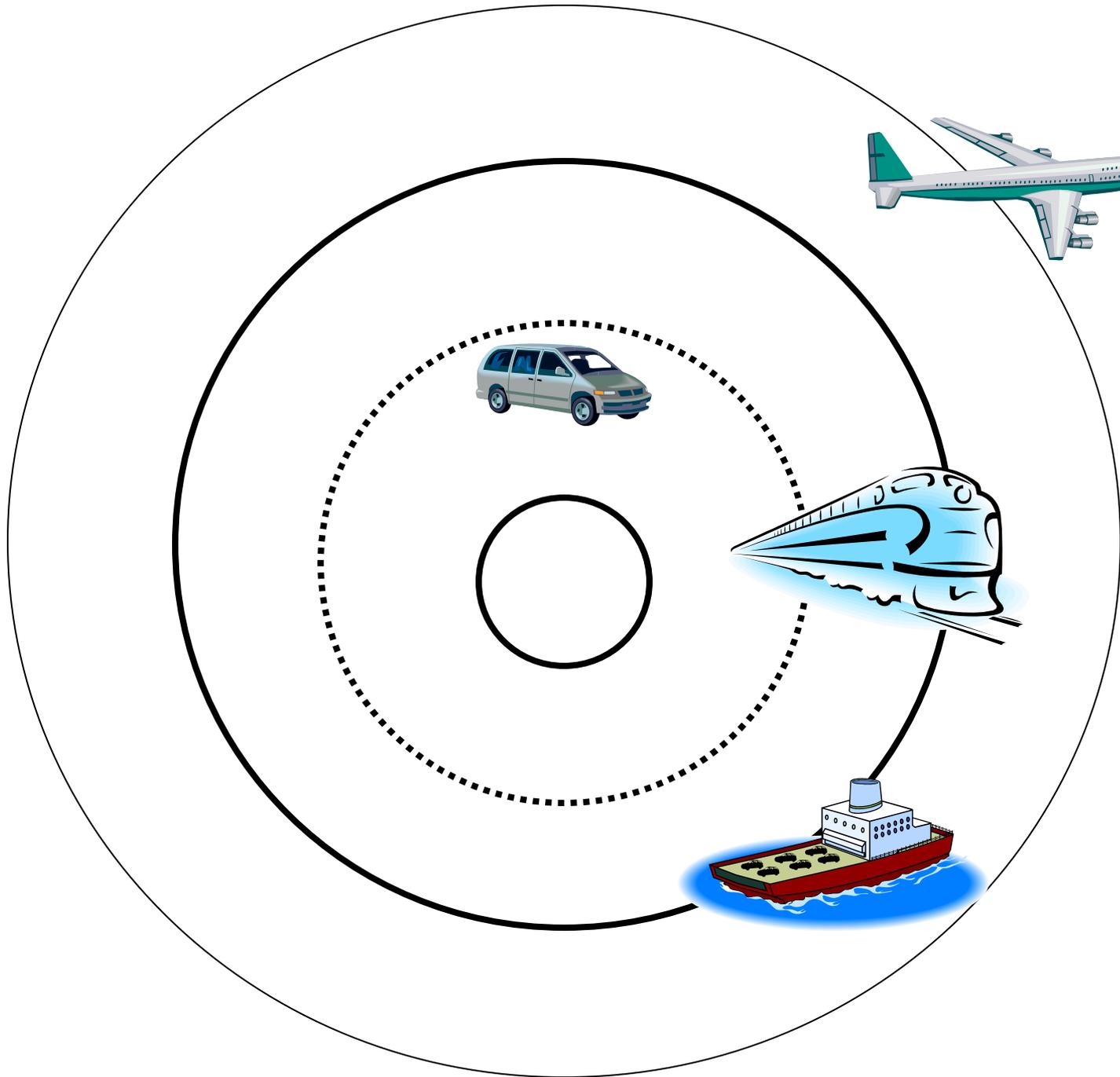
A transportation network is built or adjusted for new technology

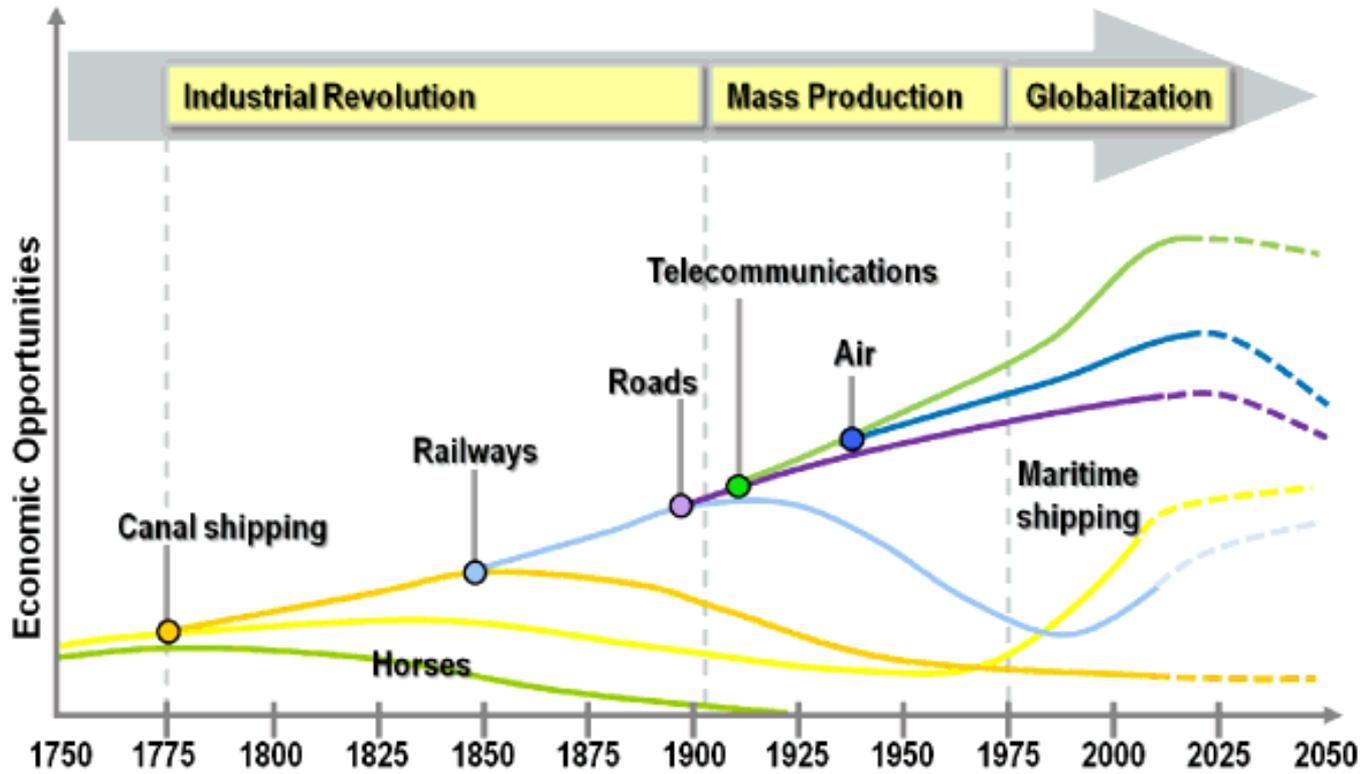
People and/or companies change their geographic locations

Air Transportation Adoption Timeline

- 1903** First manned, powered, controlled flight of heavier than air craft
- 1918** First official U.S. airmail flight
- 1925** Private contracting for U.S. Postal airmail becomes legal
- 1929** Manufacturers and warehouses begin to build closer to airports
- 1938** Annual airline passengers reach over 1 million
- 1940** First all cargo flight service
- 1947** Regular non-stop transatlantic passenger service begins

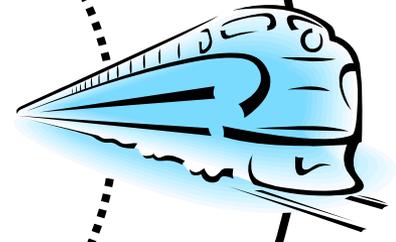
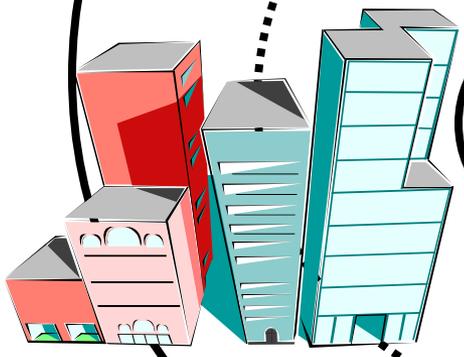
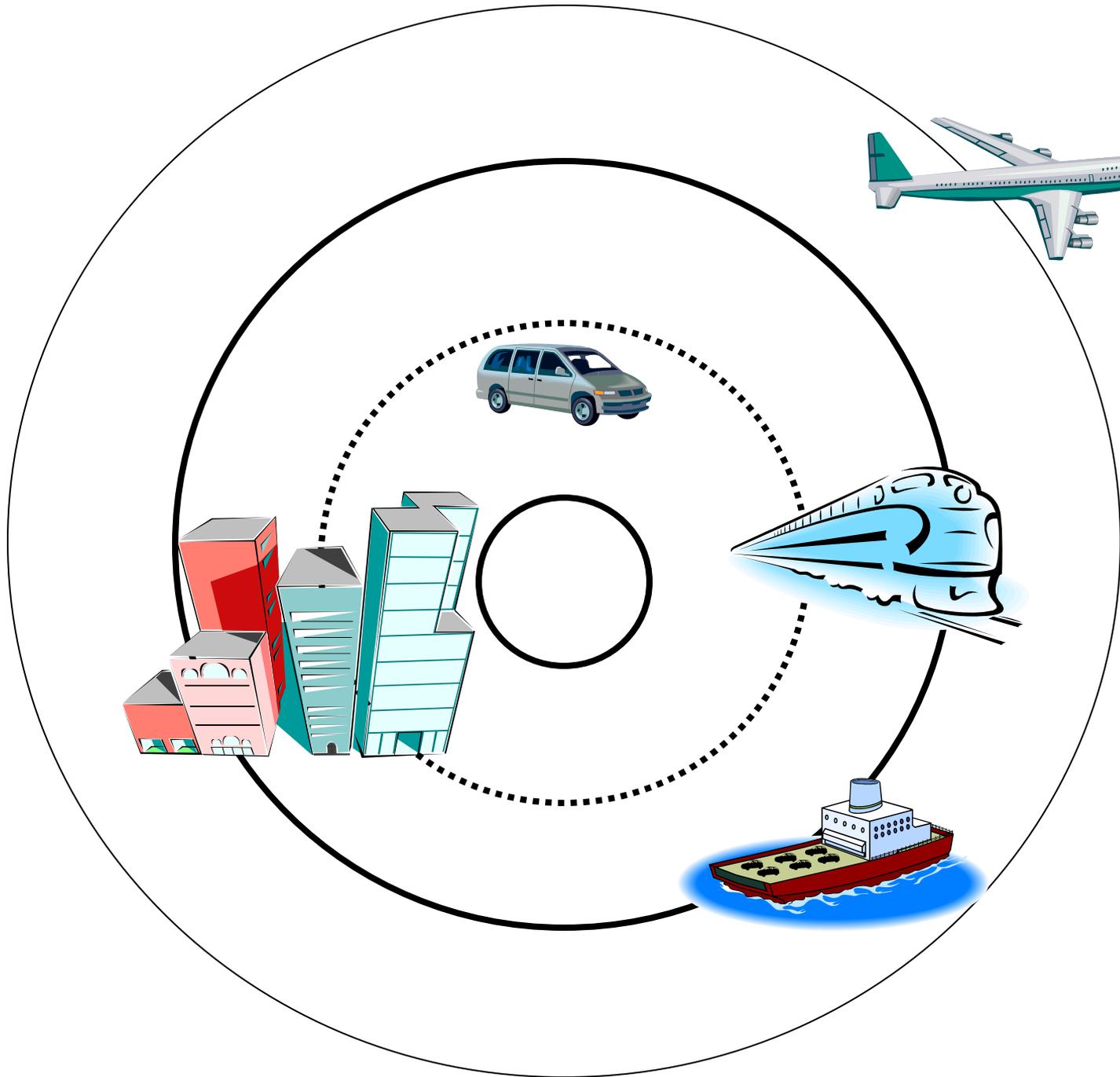






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Source: The Geography of Transport Systems, which adapted it from HOP Associates (2005) "Time, mobility and economic growth", <http://www.flexibility.co.uk/issues/transport/time-mobility.htm>





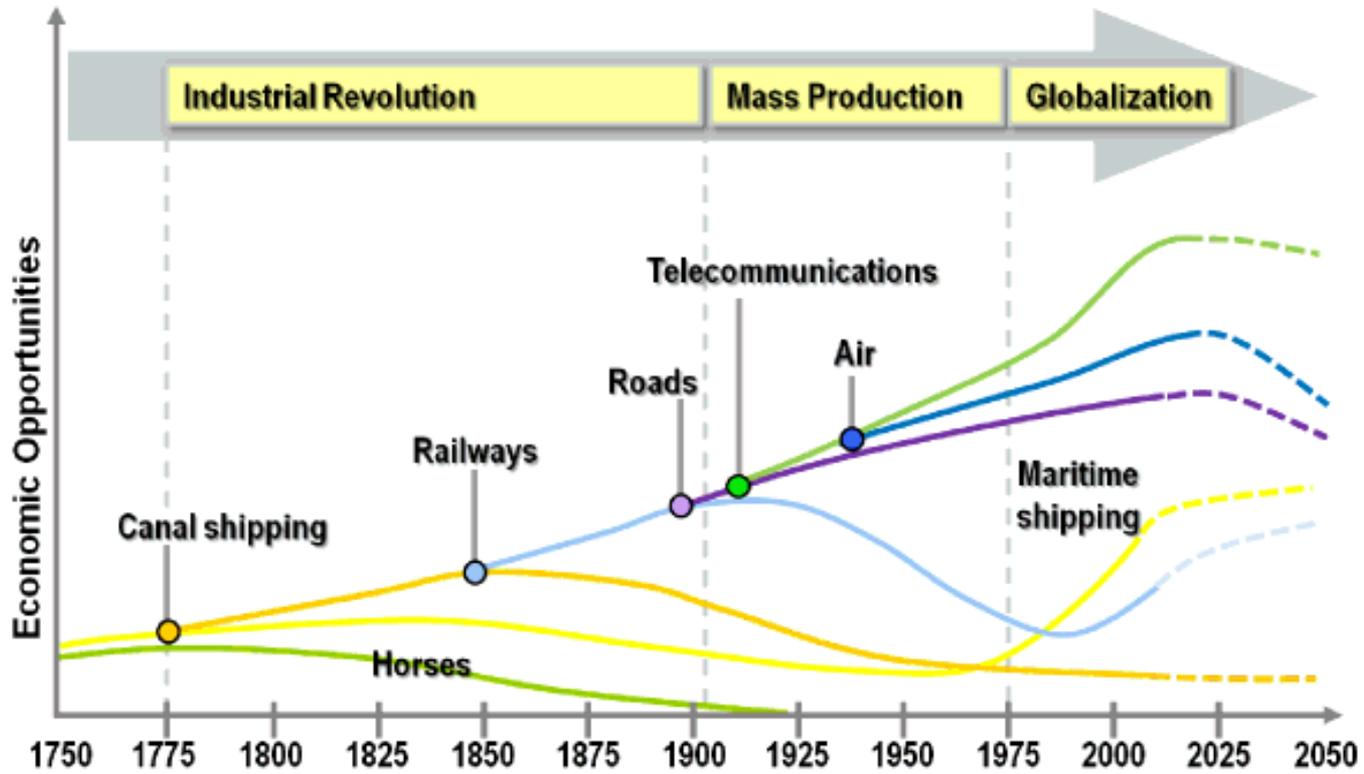
Agglomeration: advantages of "clustering" for activities and populations

There are three major categories of agglomeration economies:

Urban: Benefits from clustering of population including: common infrastructure (e.g. utilities or public transit), the availability and diversity of labor and market size, sharing knowledge.

Industry: Benefits from clustering of industry activities, such as their respective suppliers, employees, or customers. This favors the emergence of industry clusters.

Localized: Benefits from clustering of a set of activities near a specific facility: a transport terminal (logistics parks), a seat of government (lobbying, consulting, law).



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Fact or Fiction

Fact

Major transportation innovations affect economic opportunity and land use.

Fact

The clustering of activity and/or populations results in more productive cities and regions.

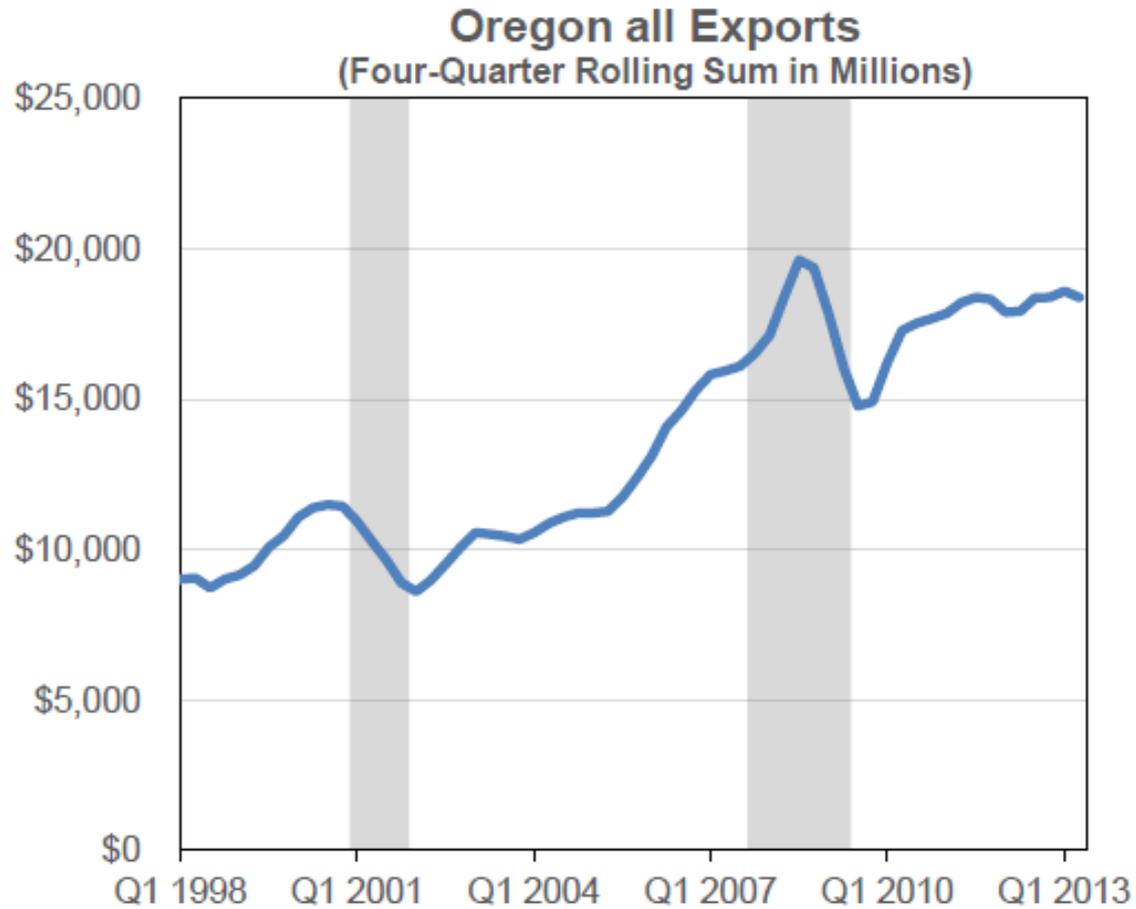


Trade & Freight in Oregon



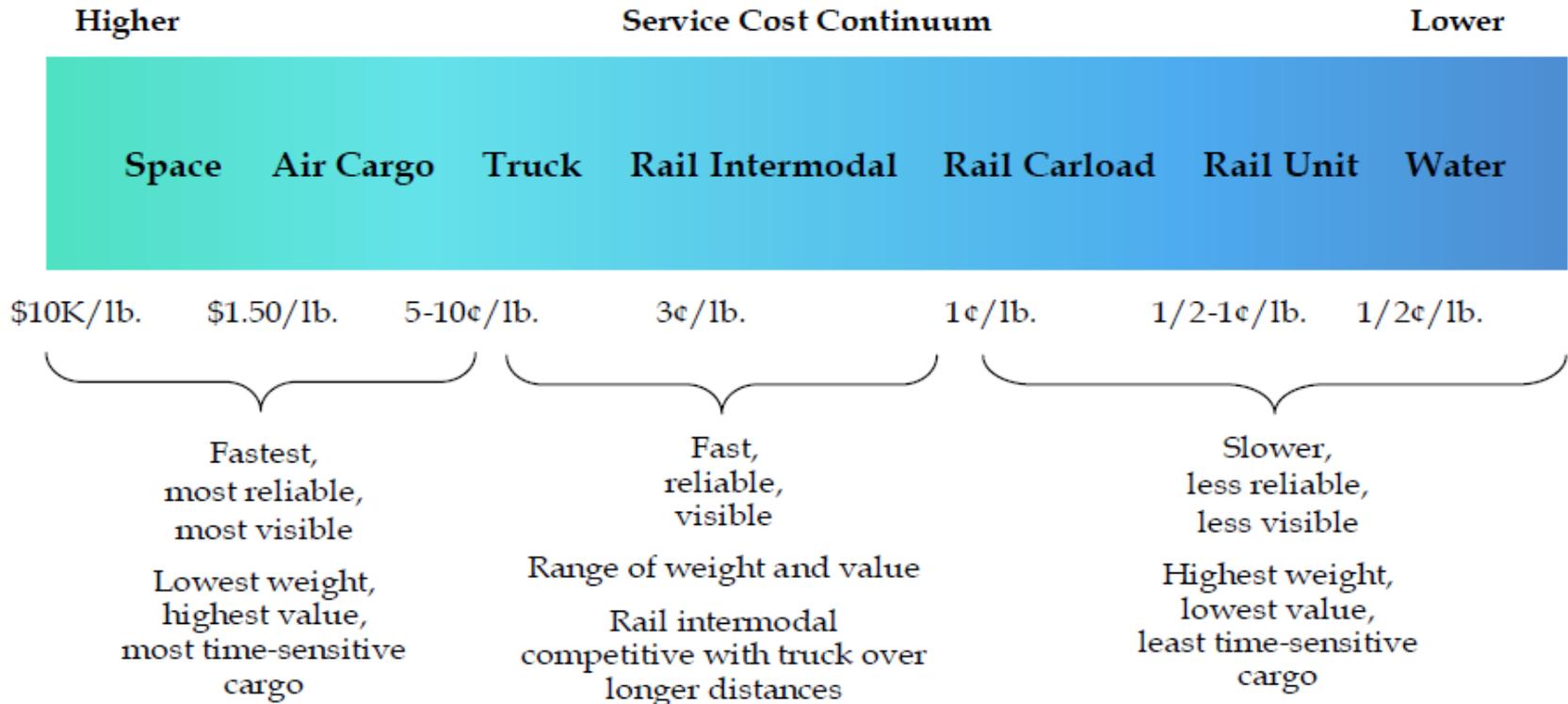
Trade Reliance of Oregon

- ❖ In 2008, over 27% of all Oregon jobs were supported by international trade (imports and exports).
 - ❖ Portland ranked 11th among the 100 largest U.S. metro areas in terms of total export volume in 2012.
- ❖ Exports were an early bright spot for Oregon in the otherwise slow post recession recovery. However, from 2010-2012 Oregon's GDP grew at a faster rate than its exports.
 - ❖ Oregon is more trade-dependent than many states in the nation. In terms of exports as a percentage of state GDP, it ranked in the top 10 states 2007-2009, falling to 18th in 2011.
- ❖ Most U.S. (and Oregon) imports are raw materials, components, and machinery used to produce goods and services in the U.S. – 60% of Oregon's imports in fell into this category in 2008.



Source: *Oregon Economic and Revenue Forecast*, September 2013, Office of Economic Analysis

Freight Transportation Service Spectrum



Source: Freight Rail Bottom Line Report – AASHTO

Transportation Dependency of Oregon's Top Industries

Industry Sector	Highway	Railroad	Water/ Marine	Air	Pipeline
Agriculture, Forestry and Fishing;	High	High (except fishing)	Medium	Low (except Fishing)	Low
Computer and Electronics Manufacturing;	High	Medium	Medium	High	Low
Food Manufacturing;	High	Medium	Medium	Low	Low
Machinery Manufacturing and Metals Manufacturing;	High	High	High	Medium	Low
Wood and Paper Manufacturing;	High	High	High	Low	Low
Retail Trade;	High	Medium (Except long distance)	Medium	Low	Low
Services and Other.	Low	Low	Low	Low	Low

Source: Cambridge Systematics with data from Parsons Brinckerhoff, "Relationship of Freight Transportation to Economic Development."

Fact or Fiction

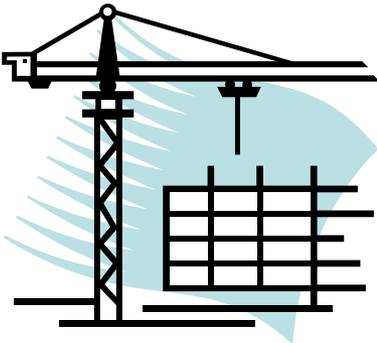
Fact

Oregon is more trade-dependent than many states in the nation.

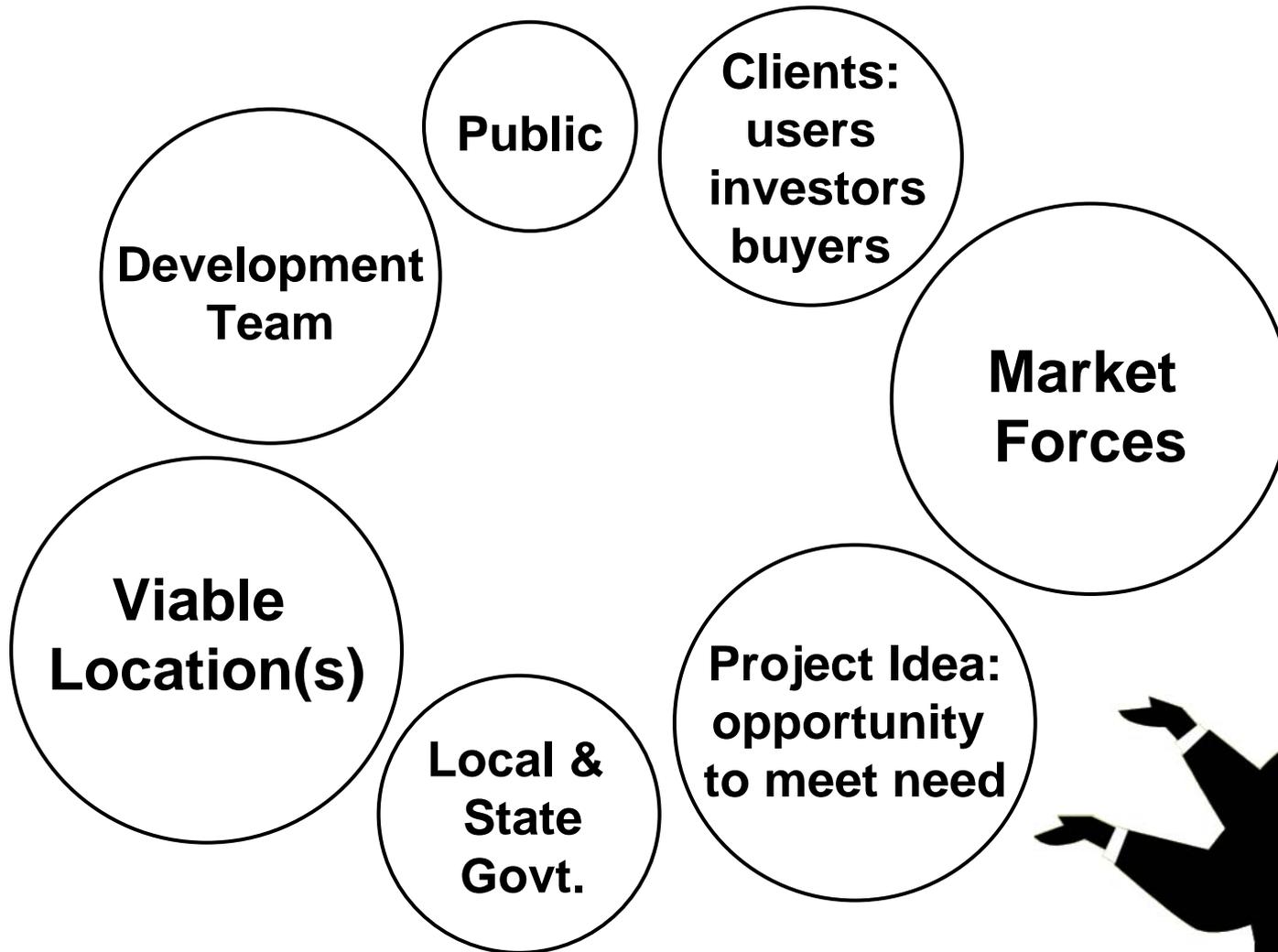
Fiction

Truck freight movement and rail freight movement are interchangeable.

Transportation & Development

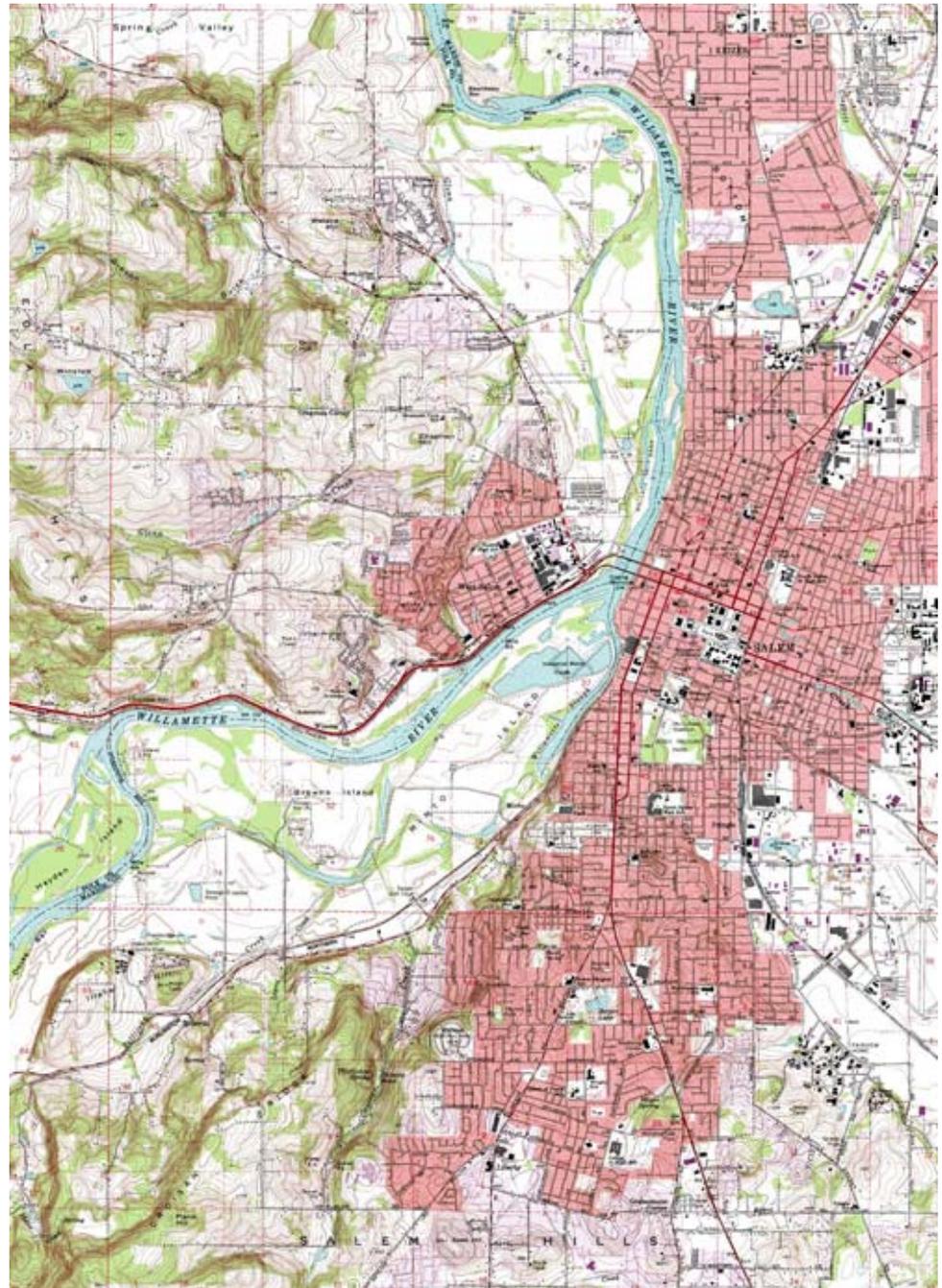


Developers Juggle Many Considerations



Viable Location (factors in site selection)

- **Physical features**
- **Transportation**
- **Price of the land**
- **Zoning**
- **Utilities**
- **Government services/costs**
- **Local attitudes**
- **Local market forces**



Considerations by Development Type



Industrial

- Transportation linkages (shipping time is money)
- Adequate site size and configuration with room to grow
- Utilities with sufficient capacity to handle requirements
- Avoiding conflicting land uses
- Proximity to resources and housing

- Accessible and desirable location
- Adequate site size and configuration to meet building design and parking needs
- Access to technological infrastructure



Office

Considerations by Development Type



Retail

- Sufficient population/households with right income and demographic mix within market area
- Visibility and traffic (pedestrian or auto)
- Accessible site of sufficient size

- Amenities such as neighborhood parks and schools
- Availability of transit
- Proximity to freeway access and/or employment nodes
- Proximity to shopping districts



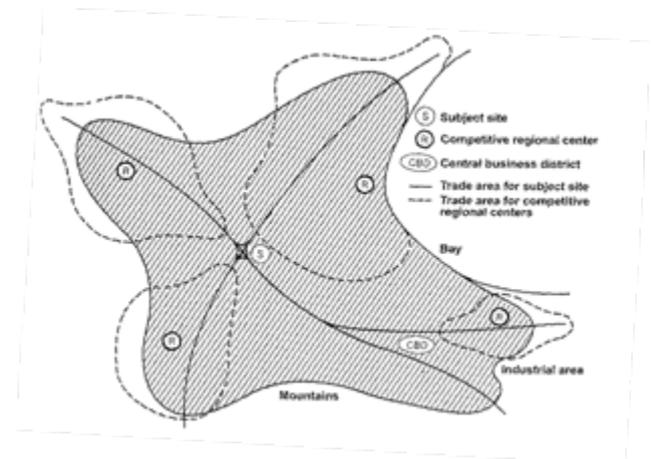
Residential

Project Feasibility and the Bottom Line

Condominium Pro Forma

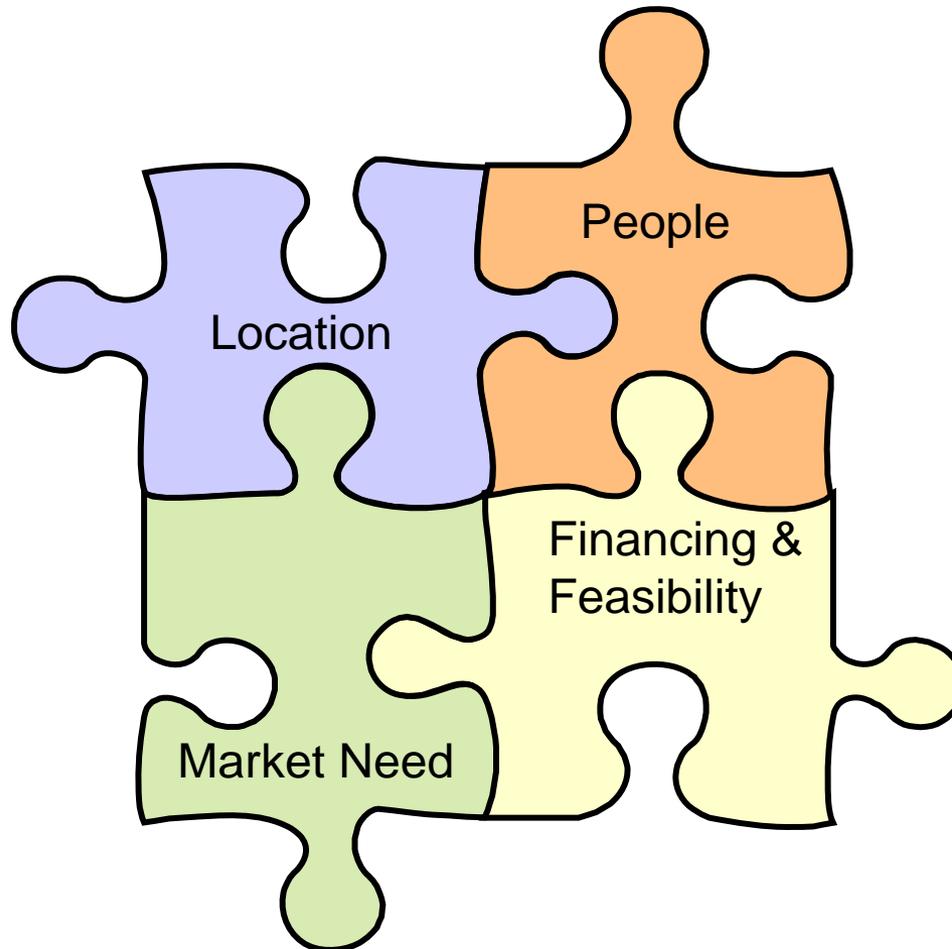
	Per Unit Estimate	Total Project Estimate	Comments
A. Project Characteristics			
Residential Units		245	Increased from prior program of 223 units
- Townhouses		0	
- Condominiums		245	
Parking Spaces		319	
- Residential	1.30	319	Adjusted up @ 1.3 spaces per du
- Retail (per 1,000 sf)	0.00	0	
Density (Units per Acre)		184	Approx 24 floors concrete construction
Net Rentable Area (sf)		333,777	
- Residential	1,076	263,510	
- Retail		70,267	Includes 50,000 sf health club
Gross Building Area		539,844	Residential units & structured parking
- Residential		329,388	
- Retail		87,834	
- Parking		122,623	Below + above grade levels (@ 385 sf)
Floor Area Ratio (FAR)		8.1	Excludes below grade parking
B. Development Budget			
Site Cost	\$21,940	\$5,375,000	NMI estimated @ \$93 per square foot
Residential Construction	\$201,670	\$49,408,000	Per square foot construction cost of \$150
Retail & Other Construction	\$26,890	\$6,588,000	Per square foot construction cost of \$75
Parking Construction	\$29,030	\$7,112,000	Per space construction cost of \$22,330
Indirect Development Costs	\$64,400	\$15,777,000	Estimated @ 25% of direct construction
Infrastructure/Extra Cost Items	—	—	Included in site cost
Total Development Cost	\$343,930	\$84,260,000	
C. Project Revenue			
Condominium Sales	\$336,920	\$82,545,000	Condo sales at \$313.25 per square foot
Retail Space Sales Value	\$70,840	\$17,356,000	Retail space value of \$247.00 per sq ft
less Sales Expense	(\$12,230)	(\$2,997,000)	Assumes sales expense of 3%
Net Sales Revenue	\$395,530	\$96,904,000	
D. Net Profit			
Project Revenue less Expense	\$51,610	\$12,644,000	
Return on Net Revenue		13.0%	As % of net revenue
Return on Development Cost		15.0%	As % of development cost
E. Financial Incentive Need			
As Equity Infusion	\$0	\$0	For project breakeven @ 15% target return

Retail Trade Area – Market Study



Bottom Line: Does it pencil?

**A Project Occurs Only if Pieces Come Together
within Developers Planning Time Frame**



Business Perspective on Location Factors

Factors

Rent/price

Access to/from markets/consumers

Transportation access for employees

Condition of building

Business/property taxes

Availability of parking

Security/lack of crime

Proximity to executive's residence

Transportation access for delivery/supply

Availability of labor

Zoning and other land use regulations

Expandability

Special incentive programs

Land availability

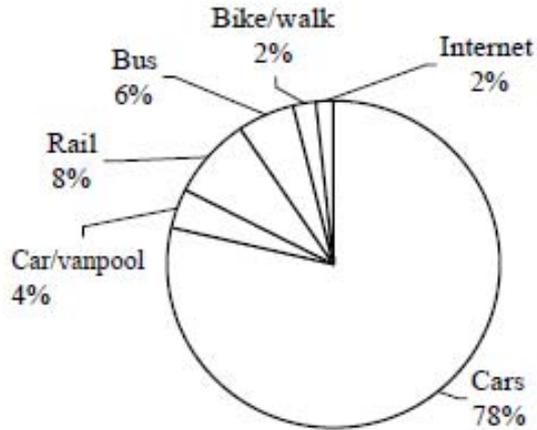
Other major influences on business location decisions:

Firm characteristics/business activity attributes

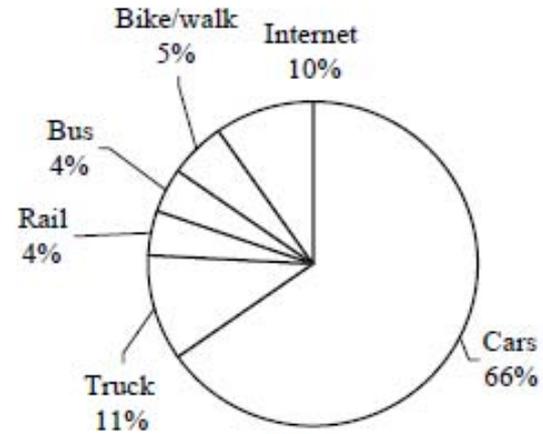
Agglomeration effects

Mode Reliance by Business Need

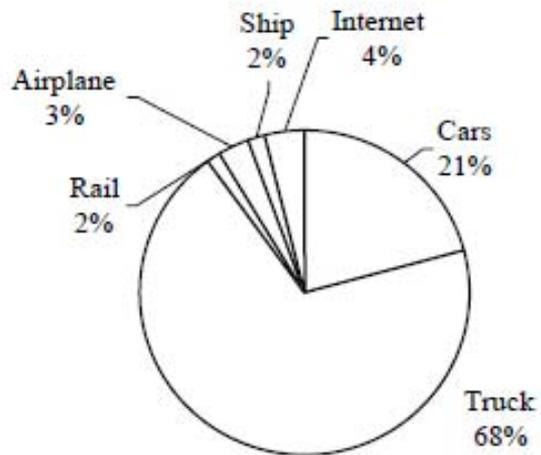
Employee Commute



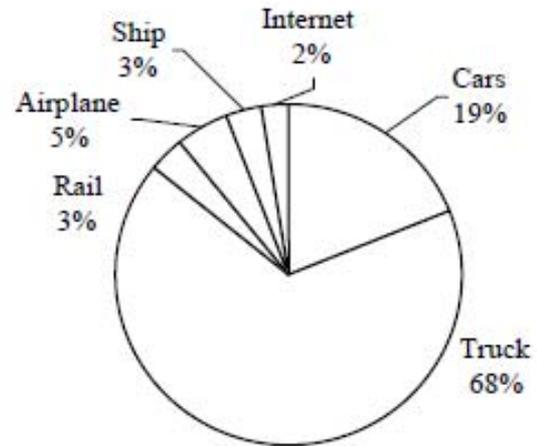
Customer



Supplies

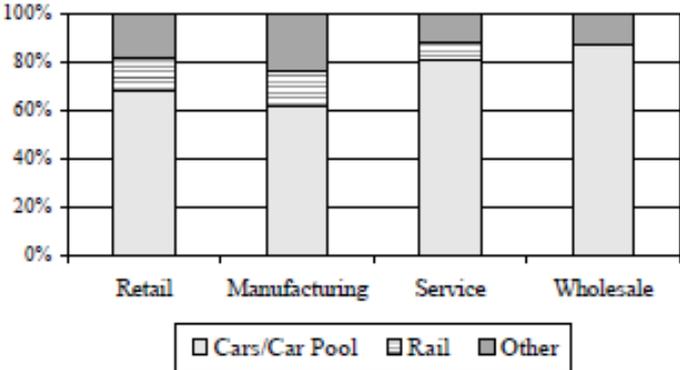


Delivery of Products and Services

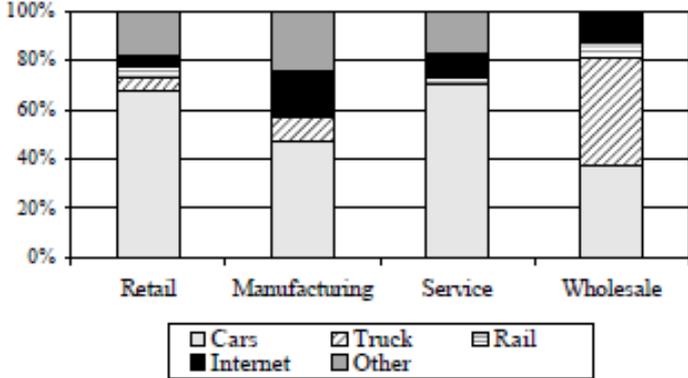


Mode Reliance by Business Type and Need

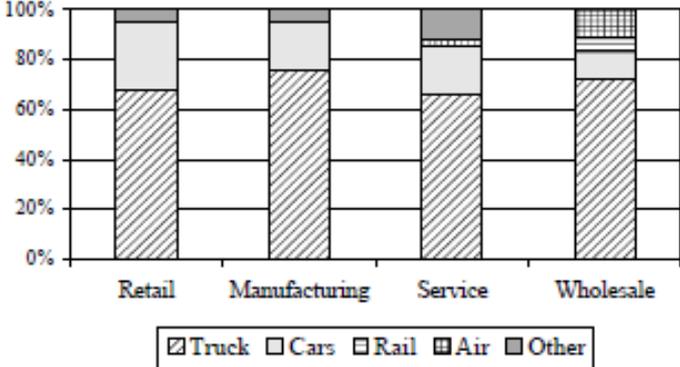
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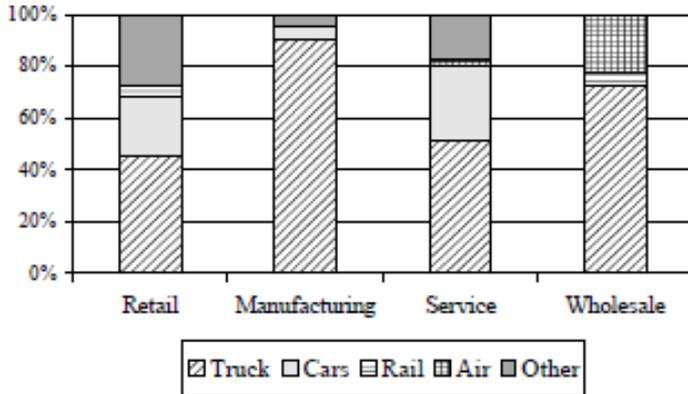
Customer



Supplies



Delivery of Products and Services



Understanding Business Needs, Market Forces, and Development Basics Makes for Better Transportation Policy and Planning



Fee or Value Capture – Legal structures that recognize developers need for certainty upfront are more likely to capture funds without inhibiting growth.

Land Use & Transportation Demand – Durability and costs of modifying buildings, costs of relocation, and the variation in needs by land use type limit the speed with which land use changes can impact transportation demand.



Transportation Facilities – Understanding the influence of market forces on land use, travel demand and travel patterns leads to better transportation facility planning.

Transportation and Development – Recognizing that transportation facilities/services by themselves are not sufficient for development can assist in development of transportation policy, communications, and planning for vital communities.



Fact or Fiction

Fiction

New transportation facilities/services by themselves are sufficient to induce new business/residential development.



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