Economic Development
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Speaking Transportation Economics

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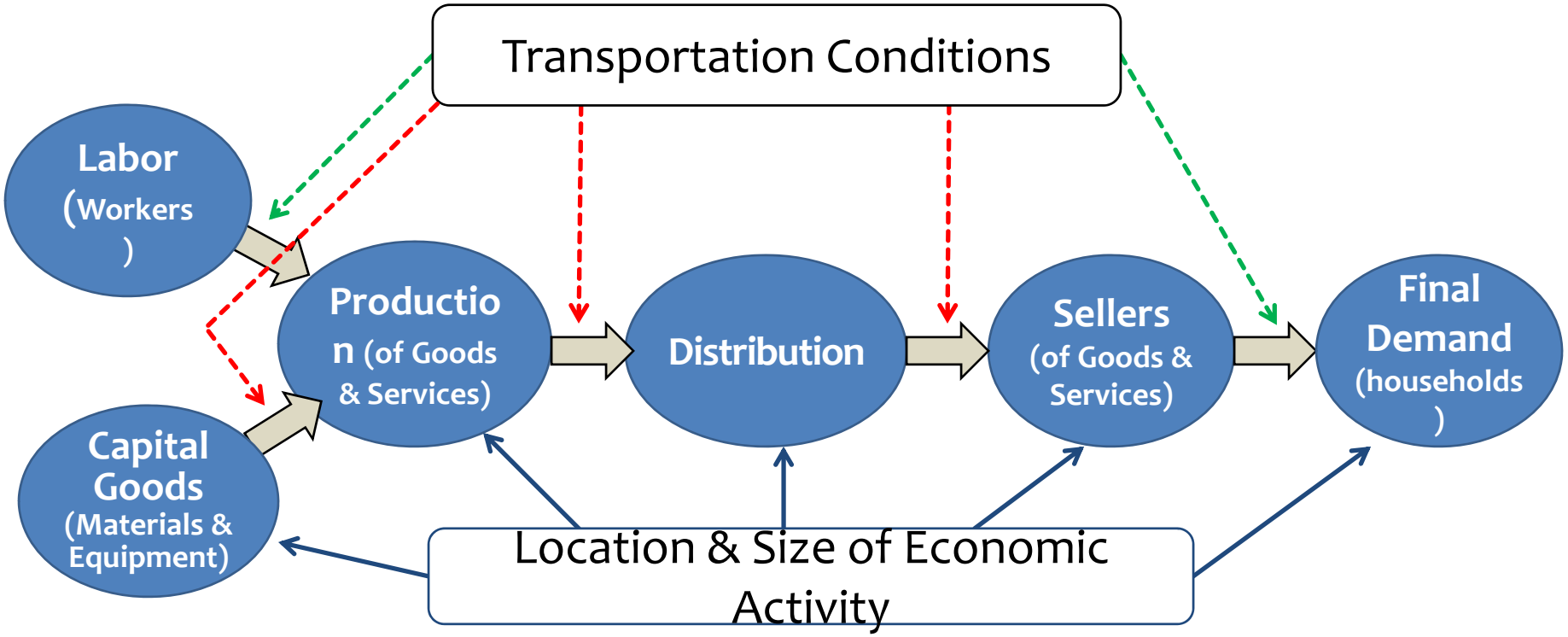
Transportation Effects on Economic Growth

Connections that drive economic and land development

1) **Access to Markets**
2) **Access to Workforce**
3) **Access to Supply Chain**
4) **Inter-City Linkages**
5) **Feeder Systems**

Transportation's Role in the Economy



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What's A Benefit?

- Benefits are always ***absolute*** gains to the economy that can be measured in ***real dollars***.
- They arise in three ways:
  - ***SAVING MONEY*** to Households and Businesses
  - Increasing ***PRODUCTIVITY*** of Businesses
  - Attracting, Creating or Expanding ***NEW ECONOMIC ACTIVITY***

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Money-Saving Benefits

- Vehicle Operating Costs
  - Same Activity, Less Mileage on Vehicles or
  - Same Mileage, but better travel conditions
- Travel Time
  - Same Activity, Fewer Hours Spent Traveling

Money-Saving Benefits

- Reliablility
  - Greater Certainty about Arrival Times
- Safety
  - Fewer Crashes and Fatalities
- Environmental
  - Less Emissions, Public Health, Wildlife and other Benefits

Productivity Benefits

- Market Access
  - More buyers, suppliers and workers to use from
- Site Efficiency
  - Business can produce more with the same resources because of site-specific features

Enlarging the Scale of Market Access

- Transportation determines effective market size & density
- Market size enables "returns to scale" through access to broader & more specialized labor, supplier and customer bases.
- These "agglomeration benefits" increase productivity and thus economic competitiveness and growth

Labor Market - Chicago (40 min commute area)

Same Day Delivery Mkt – Portland, OR (3 hr. area)

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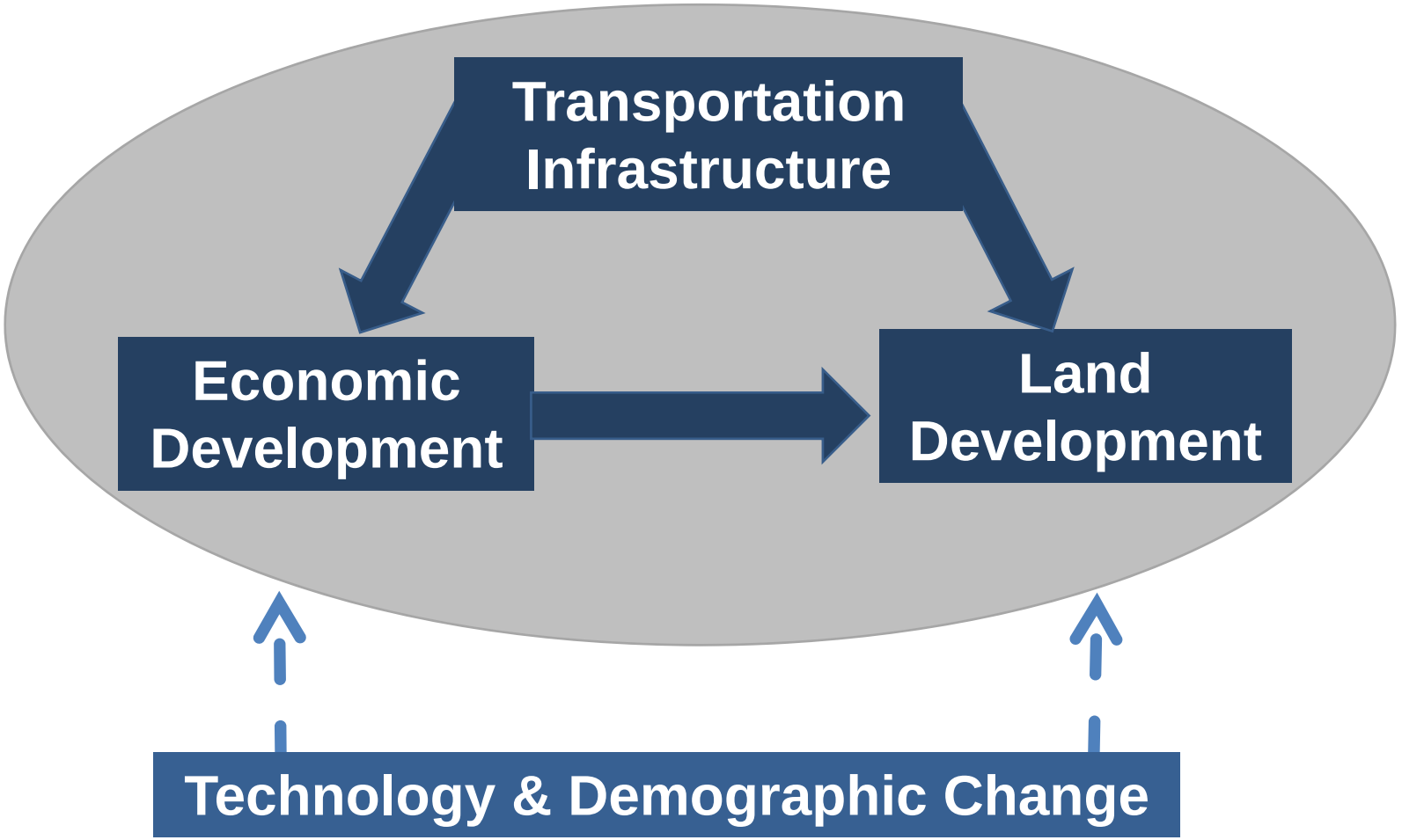
Contingent Development Benefits

- New Business Attracted (or Created)
  - Must be “net-new” to the state or region
  - Only count “value-added”
  - Do not count “transfers”

How Does It All Fit Together?



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What's an Impact

- Impacts show what the economy ***does with*** its benefit
- Over 10 years, a firm saves ***$100,000*** in reliability time and invests it in a new machine, the firm can then..
- Make and Sell ***$225,000*** worth of additional goods
- Retain ***$20,000*** in additional profits
- Employ 2 new workers
- Pay $***130,000*** in wages

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Benefits and Impacts

- Economic BENEFIT = $100,000
- Economic IMPACTS:
  - $225,000 Business Output (Goods Sold)
  - $20,000 Business Profits
  - 2.3 Jobs
  - $130,000 in Wage Income
  - Tax Revenue, etc. etc.

Sources of Impacts

- Transportation Efficiency
  - Using the benefit from transportation system performance (savings)
- Market Access
  - Using the benefit from increased productivity

Sources of Impacts

- Contingent Development
  - Often not a benefit, but derived from new business attracted (not simply relocated)
- Construction
  - The multiplier effects of capital and operational outlays
- Adverse Tax/Tolling Impacts
  - Multiplier effects of taxing/tolling or other revenue mechanisms

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What are Multiplier Effects?

- Apply Only to Impacts (never benefis)
- Induced Effects
  - Money is “re-spent” in the economy
- Indirect Effects
  - Market is made for supporting inputs to production

What about Intangibles?

- Beauty, Wildlife, other strategic outcomes?
  - Never occur in transactions
  - Often distributive in nature
  - Often long-term vs. short-term
  - Best NOT to be monetized

Multi-Criteria Analysis

Measure	Score	Weight	Weighted Score
Safety	3	4	12
Environment	2	4	8
Mobility	3	3	9
Livability	3	5	15
Future Generations	1	2	2
TOTAL SCORE			**37**

Why Multi-Criteria Analysis?

- Avoids indefensible dollar values
- Avoids distraction of public debate
  - Focuses debate on performance areas and not on “what’s a bird’s life worth”
- Recognizes time-value of money and importance of long-term benefits.

Engaging the Discussion

- What kind of outcomes are the most important?
- Who experiences these effects and how?
  - What might the benefits and impacts be?

Triple Bottom Line

- Developed for multi-national corporations to demonstrate corporate social responsibility
- Shifts business focus from “firm-focused” to “societally focused”
  - Environmental Benefits
  - Social Benefits
  - Economic Benefits

Triple Bottom Line

- Often most important outcomes are not on the "Triple Bottom Line"
  - Distributive effects
  - Non-Monetizable effects
  - Strategic Objectives (Modal Diversity, Target Industry, Historic Preservation)

- When investment is public, all benefits may be both "economic" and "societal"

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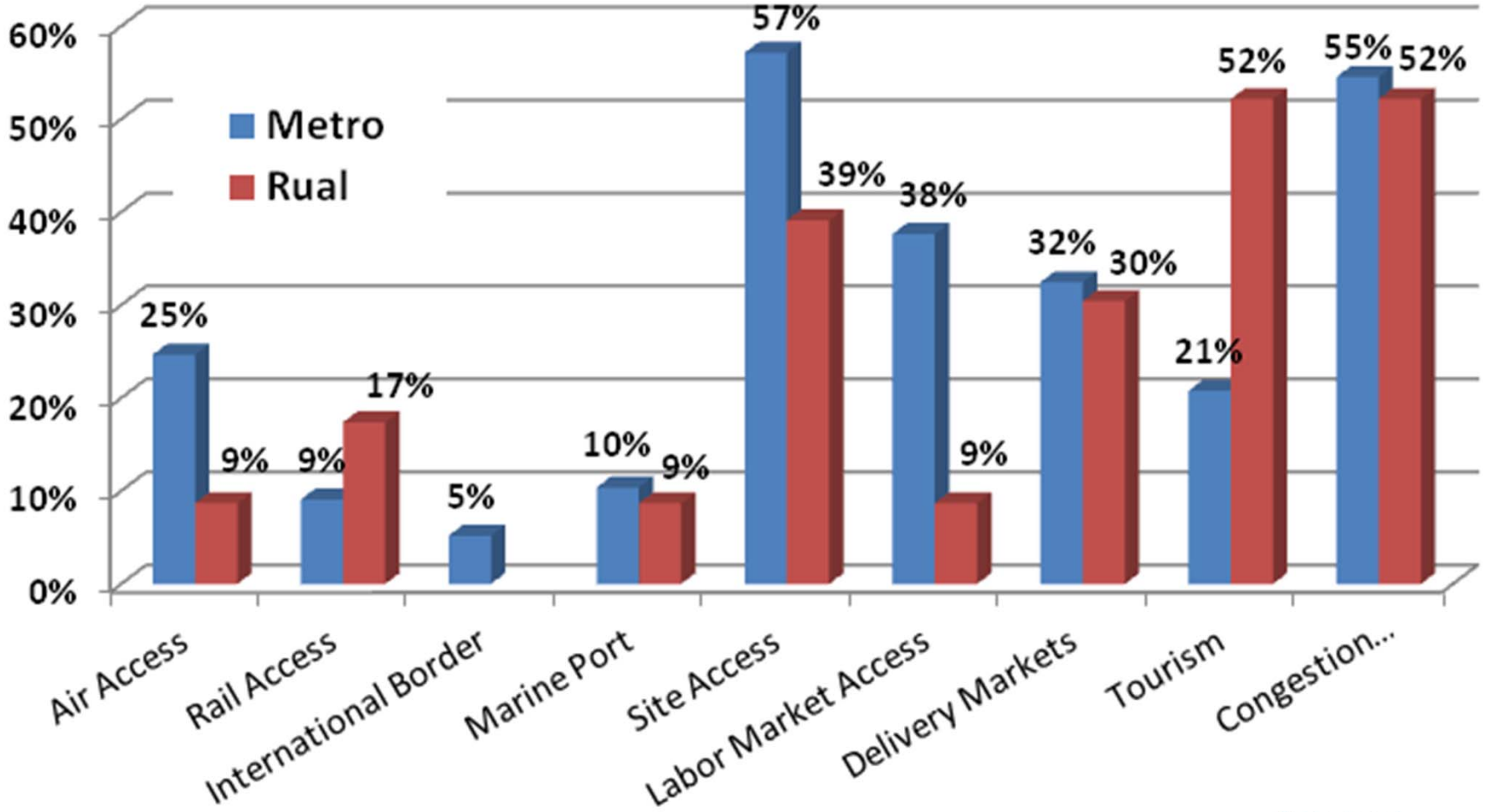
Motivation for Road Projects

US Survey: % of Projects by Stated Motivation



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Case Example: Economic Factors in Appraisal

	CBA	MCA			Rating	Appraisal	
Rating Criteria	**USDOT**	**OH**	**WI**	**MO**	**KS**	**DfT**	**Scot**
Traveller Benefit and Environment							
Efficiency: Travel time, cost, level of service	X	X	X	X	X	X	X
Safety (accident rate)	X	X	X	-	X	X	X
Pollution emissions/air quality/greenhouse gas	X	X	X	X	-	X	X
Transportation Drivers of Business Productivity							
Intermodal facilities, access & interchange	*(x)*	X	*(a)*	X	*(a)*	X	X
Reduce localized congestion bottlenecks	*(x)*	X	X	X	X	*(b)*	*(b)*
Connectivity to key corridors or global gateways	*(x)*	-	X	X	*(a)*	-	-
Labour market access	*(x)*	-	*(a)*	-	*(a)*	*(a)*	*(a)*
Reliability of travel times	*(x)*	-	*(a)*	-	*(a)*	X	*(b)*
Truck freight route, supply chain impact	*(x)*	X	*(a)*	X	X	-	-
Localized Outcomes							
Location: regeneration of distressed area	-	X	-	X	-	X	X
Land use: supports cluster or in-fill development	-	X	-	X	X	X	X
Econ Policy: support target industry growth	-	-	-	X	X	-	-
Local public support	-	-	X	-	X	-	-
Leveraging private investment	-	X	-	-	-	-	-
Macroeconomic Outcomes							
Productivity	X	-	-	-	-	X	X
Jobs(support job growth/reduce unemployment)	-	X	X	-	-	-	-
Gross Regional Product or Value Added	-	-	-	-	X	-	-

X = factor explicitly included as an element of the rating system;
(x) = factor implicitly allowed via calculation of additional productivity benefit in CBA
(a) = factor implicitly included as a component of the macroeconomic productivity calculation (using TREDIS in US and agglomeration benefit guidance for DfT and Transport Scotland);
(b) = factor included in travel efficiency benefit shown above
" - " = factor not formally recognized as a separate element of the rating system, but may still be considered through other elements of the project appraisal and selection process

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Takeaways (Triple Bottom Line)

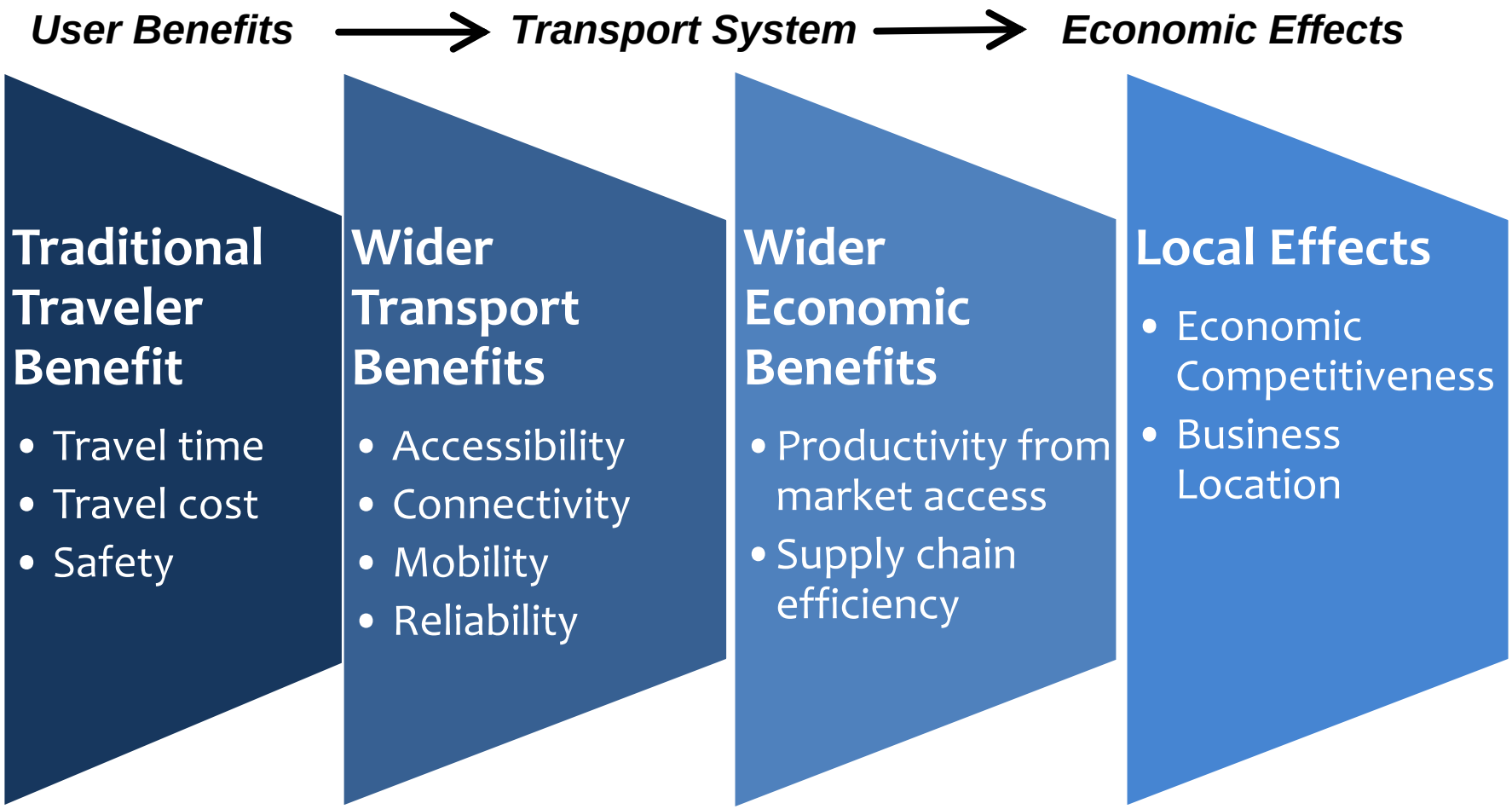
- Can be one helpful way of reporting benefits
- A good approach looks at additional factors beyond the TBL
- A good traditional BCA will include all TBL elements (and more) regardless of whether TBL is reported.
- Should not be a rigid structure

Using Transportation Economics

Policy and Planning Considerations

- Strengthen intercity / international routes and facilities (road, rail, air), with feeder services.
- Strengthen local commuting & delivery routes (road, rail) to facilitate scale economies.
- Be aware of unforeseen implications concerning wider economic and land development
- Recognize emerging business clusters, requiring non-radial travel. Allow for densification, and agglomeration economies.
- Move to performance metrics and goals for improving *access & connectivity* (enabling productivity).
- Recognize changing industry and demographic patterns

Performance & Impact Measurement



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Economic Methods Available

- Cost-Benefit Analysis
  - (including TBL)
- Economic Impact Analysis
- Multi-Criteria Analysis
- Market Studies
- Trade Studies
- Financial and Fiscal Studies

Transportation Business Processes

- Feasibility Analysis
  - BCA
  - Economic Impact Analysis (possibly)

- Corridor Studies
  - B/C Analysis
  - Multi-Criteria
  - Economic Impact (Including Fiscal)
  - Market Studies

Transportation Business Processes

- Environmental Documents (NEPA)
  - BCA
  - Economic Impact Analysis (possibly)

- Policy Evaluation Studies
  - B/C Analysis
  - Multi-Criteria
  - Economic Impact (Including Fiscal)
  - Market Studies

Transportation Business Processes

- Long-Range Planning (Performance Based)
  - Service Packages
  - B/C Analysis
  - Multi-Criteria
  - Economic Impact (Including Fiscal)
- Prioritization and Programming (STIP/TIP)
  - BCA
  - Multi-Criteria

Transportation Business Processes

- Long-Range Planning (Performance Based)
  - Service Packages
  - B/C Analysis
  - Multi-Criteria
  - Economic Impact (Including Fiscal)

- Prioritization and Programming (STIP/TIP)
  - BCA
  - Multi-Criteria

Key Concepts

- There is a large “menu” of economic methods available
- Most will utilize concepts of economic benefit, economic impact and normative weights
- There are free and paid software tools and techniques available
  - Search Terms: Transportation BCA, Transportation Economic Impact, Sustainable Return on Investment

Key Concepts

- No “Silver Bullets” – Key is knowing when to use which approach
- Be leery of over-dependence on dollars as the measure of all possible values
- When in doubt ask what the original rationale for the project was – identify beneficiaries
- Ultimately ***people***, and not numbers or tools make decisions.

Thank You

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