

From Hours to Output: Getting Economic Impacts Right in Transportation Investment Analysis

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Abstract

Transportation investment analysis is increasingly important as a decision-making tool, and input-output (I-O) analysis is frequently used in such efforts to estimate a project's regional economic impact – not just from construction spending, but also from the ongoing effects of time savings, vehicle operating costs, and other transportation price changes.

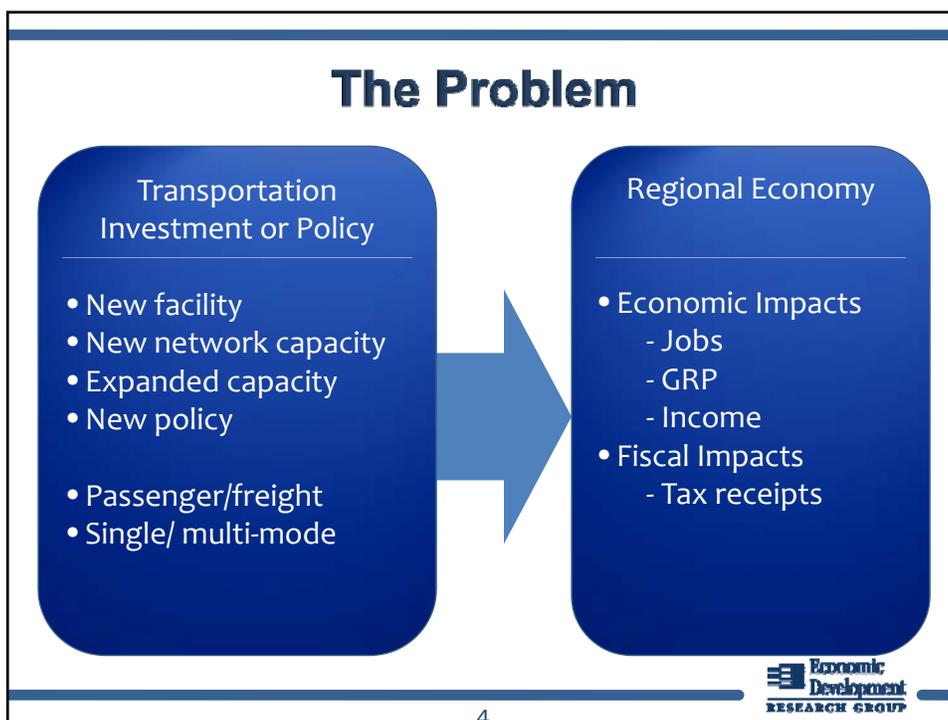
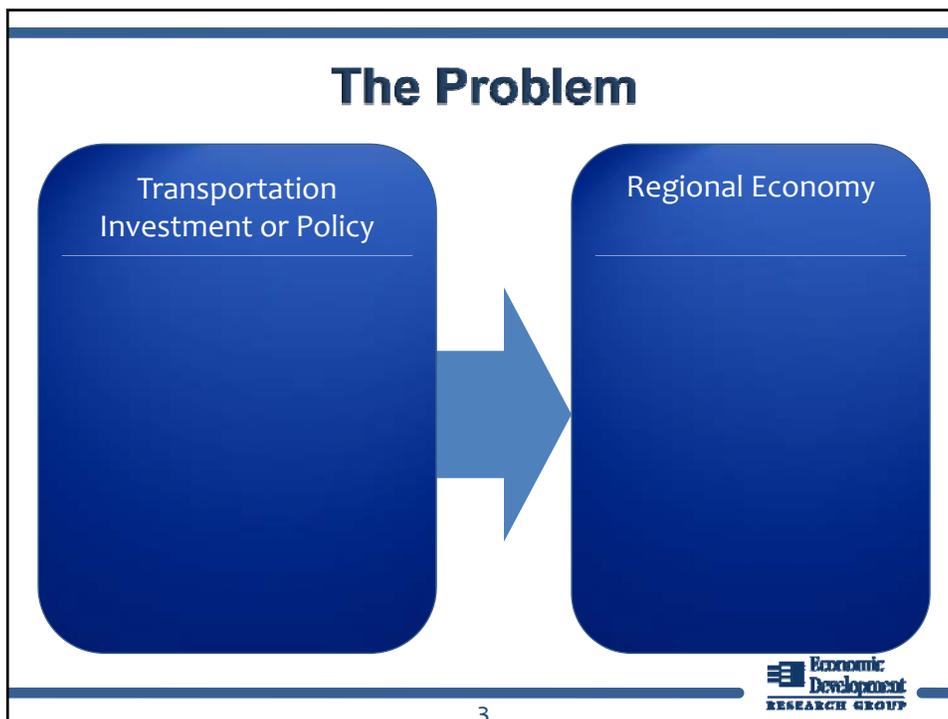
And yet, a review of professional work in this area reveals a wide gap in the understanding of how changes in travel performance – for example, from highway congestion relief or a public transportation investment – should be used in informed I-O analysis.

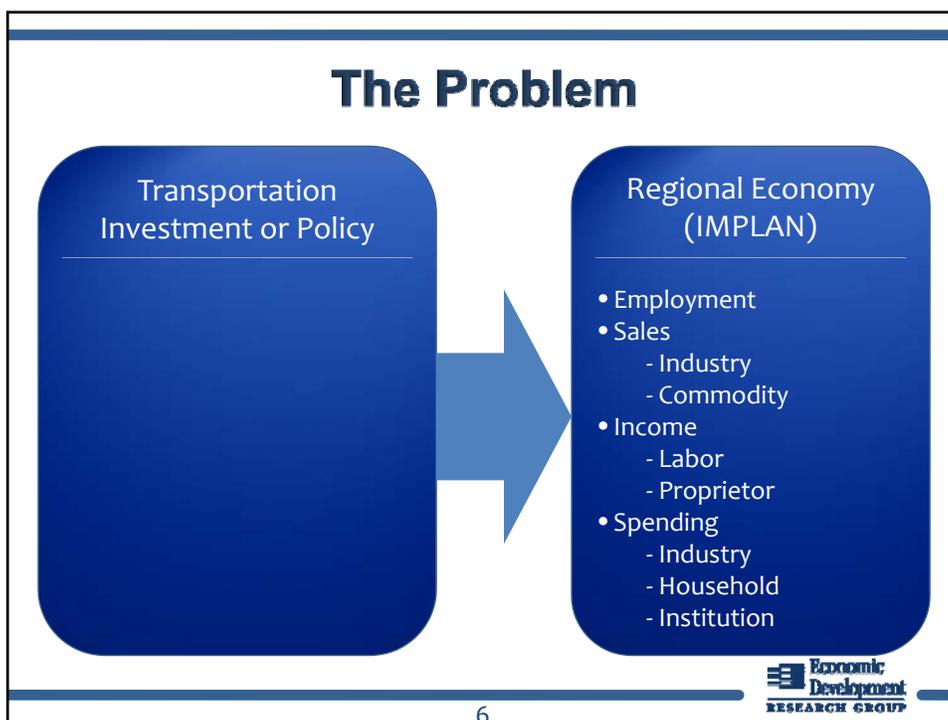
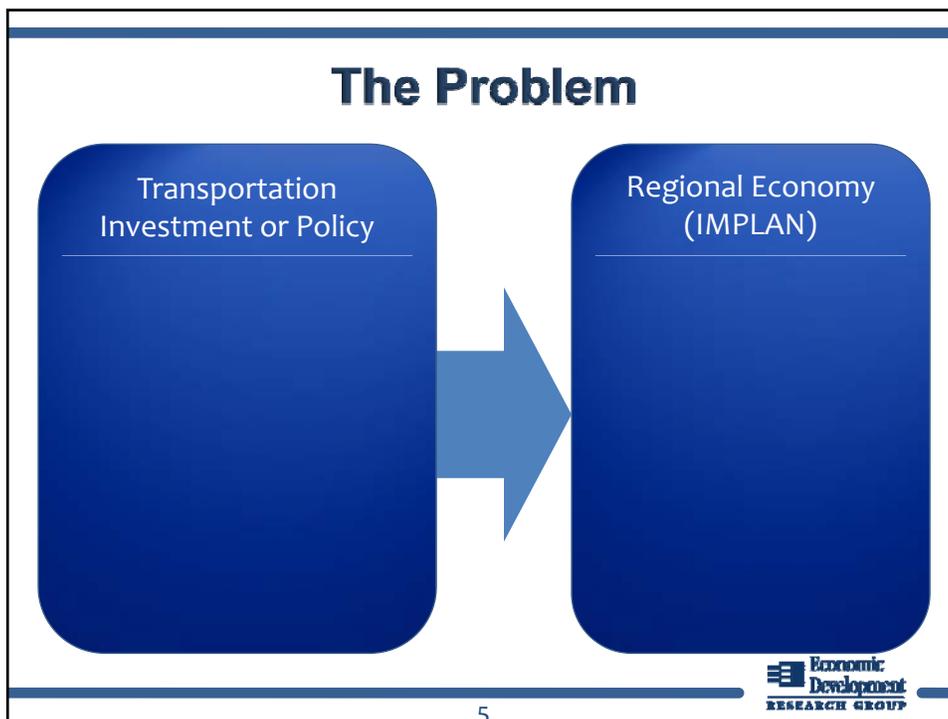
As an unfortunate but not uncommon example, total monetized benefits (including personal time savings) are simply treated as a net increase in regional output and fed directly into an I-O model. In reality, translating time savings (and other transportation cost savings) into business sales and other direct economic impacts is a more complicated process that requires an understanding of the competitive nature of local industry as well as underlying social accounting flows.

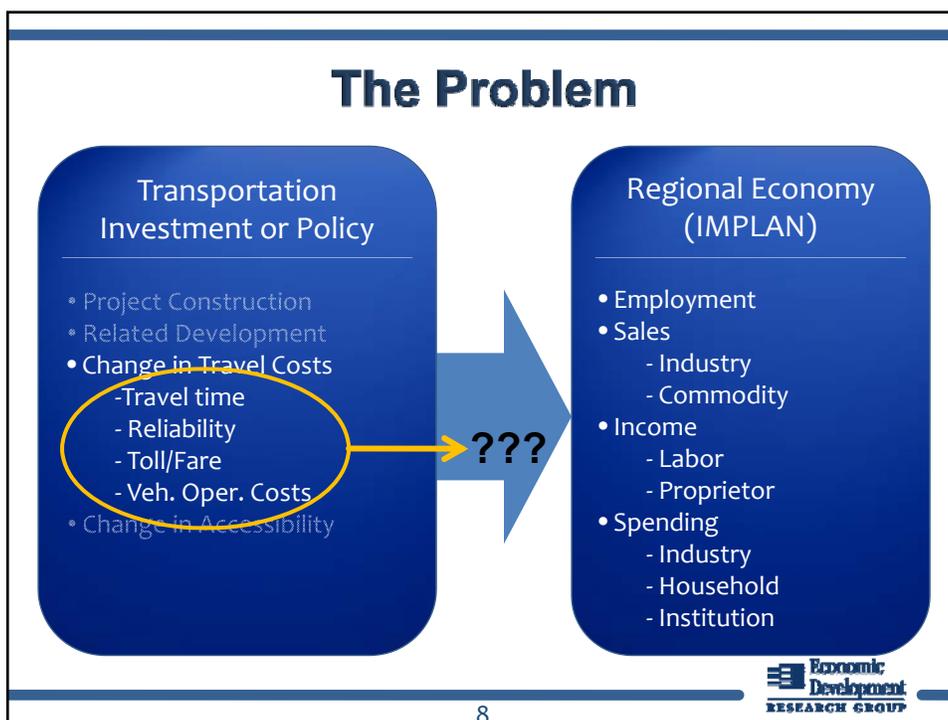
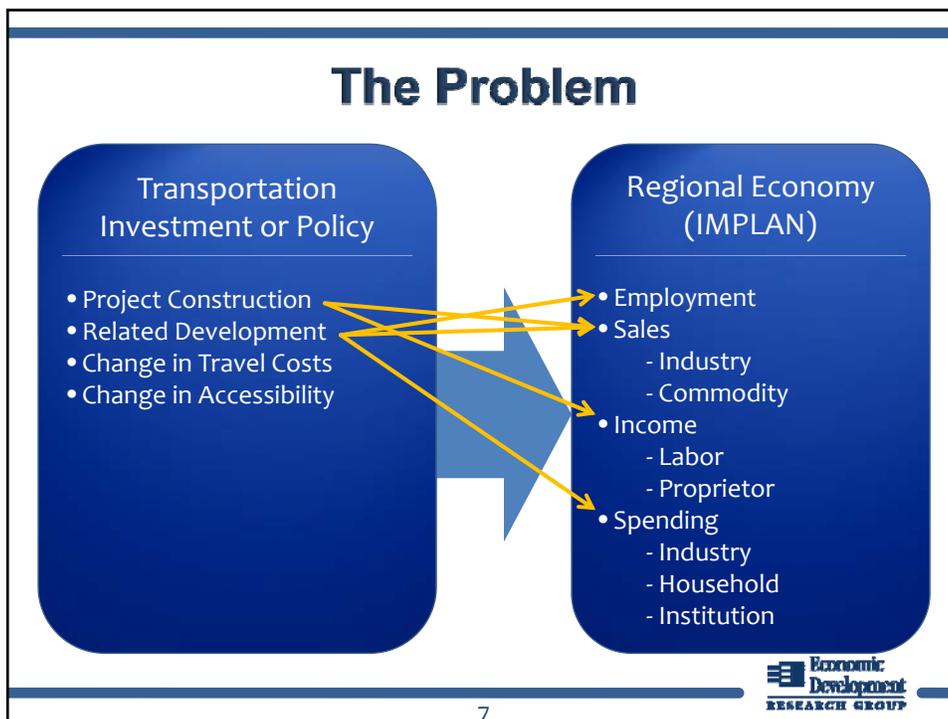
In this paper, we lay out a straightforward and economically sound method for translating transportation benefits into direct economic impacts for use in I-O models. We then demonstrate the magnitude of error that can be eliminated using the proposed technique, compared to less informed methods.



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The Wrong Way

Travel Cost Savings => Add'l Regional Output

"If businesses use their cost savings to expand, the cost savings could potentially support over 139 new jobs..."

"... we presume that in the short-run, the manufacturers will increase their production by the amount of the transportation cost reductions, rather than increase profits."

The Real World

In reality, the link between transportation cost savings and increased industrial production is indirect and complex.

For households, transportation is a derived good reflected in expenditures.

For businesses, transportation is a necessary cost of production.

The Real World

Household out of pocket costs	<ul style="list-style-type: none"> • Vehicle ownership costs • Fuel and maintenance costs • Tolls and fares 	<div style="border: 1px solid #ccc; border-radius: 5px; padding: 5px; display: inline-block;">Reallocate HH spending</div>
Household time and reliability	<ul style="list-style-type: none"> • Personal trips? • Commute trips? 	<div style="border: 1px solid #ccc; border-radius: 5px; padding: 5px; display: inline-block;">Capitalization</div>
Industry on-the-clock travel	<ul style="list-style-type: none"> • Vehicle costs • Toll/fare costs • Wage costs 	<div style="border: 1px solid #ccc; border-radius: 5px; padding: 5px; display: inline-block;">Production cost change</div>
Industry freight travel	<ul style="list-style-type: none"> • LTL, for hire, or own account? • Travel time and reliability • Shipping fee 	<div style="border: 1px solid #ccc; border-radius: 5px; padding: 5px; display: inline-block;">Production cost change</div>

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The Real World - Businesses

Initial impact	Industry Option	... to be used as:	... for direct impact:
Production cost change	Keep as profit	Proprietor's income	Final demand
		Profits/ dividends	Leakage (no impact)
	Pass on to customers	Increase market share	Increase output if demand is elastic
		Maintain market share	Price change affects industry demand patterns
	Reinvest in industry	Labor or Capital	Increase output if demand is elastic

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What's at stake?

Accuracy

- Equating travel cost savings to output can grossly **overstate** the magnitude of economic impacts from a transportation investment
- These (wrong) techniques can **understate** impacts to transportation-dependent industries with the right kind of production growth potential

Defensibility

- A microeconomic approach takes into account the **mechanisms** by which travel cost savings are “processed” by households and businesses into direct changes in supply and demand

Our Solution

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