

ESTIMATING THE ECONOMIC IMPACTS OF MULTIMODAL TRANSPORTATION IMPROVEMENTS

PROBLEM

Among possible transportation improvements, some may be far more effective than others in helping Maryland's economy, preserving existing jobs, attracting employers with desirable jobs to the state, improving productivity and stimulating long-term economic development. The Maryland State Highway Administration (SHA) planners and engineers are increasingly expected to consider such benefits but lack sufficient tools. Existing methods for evaluating the benefits of transportation projects focus largely on travel time savings and crash reductions but are not designed for estimating other important benefits, such as the consumer surplus resulting from transportation improvements and the impacts of projects on employment, regional economic activity and development.

OBJECTIVE

The objective of this research was to develop a tool for SHA to quantify the broader economic benefits of different types of transportation infrastructure investment projects. The methods and tool developed are suitable for integration with the evaluation methods, processes, and software currently used by SHA, and applicable to evaluating projects at different scales, including spot, segment, corridor and statewide system levels. The tool consistently evaluates projects across various modes, for passenger and freight transportation, as well as in urban, suburban and rural areas.

METHODOLOGY

The University of Maryland research team first integrated the Maryland Statewide Transportation Model with the SHRP2 C11 tools. Selected parameters in the original SHRP C11 tool, such as value of time, value of reliability, and productivity elasticity were then calibrated with Maryland-specific data. The integrated tool was demonstrated through four case studies.

RESULTS

The estimated broader economic impacts in each case study included considerations for improvements in travel reliability, market accessibility and freight connectivity, which were also compared with direct project benefits resulting from travel time savings. The main results are summarized below:

- The Inter-County Connector (ICC) yields annual broader economic benefits of approximately \$13.8 million, which is 25 percent of the estimated annual direct benefits.

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- Express Toll Lanes (ETL) on I-95 north of Baltimore yields annual broader economic benefits of approximately \$7.6 million, which is 8.5 percent of the estimated annual direct benefits.
- Local connector construction (LOCAL) yields annual broader economic benefits of approximately \$1.5 million, which is 18 percent of the annual direct benefits.
- An additional lane along I-695 West of Baltimore improves the Port of Baltimore’s intermodal connectivity slightly more than an additional lane along I-95 near downtown Baltimore.

Case Studies	ICC	ETL	LOCAL
Project Cost Estimated by UMD	\$2,560 M	\$756 M	\$75 M
Annual Direct Project Benefits	\$53.5 M	\$89 M	\$8.7 M
Equivalent Annual Flow	-\$144.6M	\$26.4	\$4M
Annual Broader Economic Benefits	\$13.8 M	\$7.6 M	\$1.5 M
Broader Economic Benefits as a Percentage of Direct Benefits	25%	8.5%	18%

RESEARCH VALUE

The integrated tool for estimating the broader economic benefits can be applied in existing SHA processes and procedures. Better decisions in selecting and prioritizing improvements that appropriately account for short-term and long-term economic impacts of those improvements will help SHA in allocating its resources more effectively and attracting desirable economic activities to the state.

REPORT INFORMATION

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Link to Final Report: http://www.roads.maryland.gov/OPR_Research/MD-16-SHA-UM-3-17_Economic-Impacts_Report.pdf