Prioritizing Transportation Projects in Utah using Economic Development Criteria

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Abstract: Finding transportation projects that are needed within a state is not generally a problem for state department of transportation (DOT) officials. Finding funding for transportation projects within a state; however, can be a problem for state DOT officials. Determining which projects to fund as part of the Long-Range Plan (LRP) and Transportation Improvement Program (TIP) processes is a challenge that must be addressed on many levels in order to best utilize the limited funding that is available to a state. A number of factors are generally considered in making funding decisions. Common factors include congestion, environmental impacts, safety impacts, operational impacts, and economic development criteria. The purpose of this paper is to summarize a project prioritization process developed for the Utah Department of Transportation that is focused on economic development criteria. The process is a relatively simple and affordable methodology wherein a Policy Delphi approach was used to prioritize measures of effectiveness (MOEs) that could be used to estimate job creation and retention potential. Initially, nine MOEs were identified to evaluate the economic development potential of transportation improvement projects. These nine MOEs were aggregated into four base criteria and one bonus criterion for use in analysis. The criteria include: 1) population and education, 2) existing infrastructure, 3) economic attractiveness, 4) tourism, and the bonus: economic choke-points.

INTRODUCTION

Finding transportation projects that are needed within a state is not generally a problem for state department of transportation (DOT) officials. Finding funding for transportation projects within a state; however, can be challenging. Determining which projects to fund as part of the Long-Range Plan (LRP) and Transportation Improvement Program (TIP) processes must be addressed on many levels in order to best utilize the limited funding that is available to a state.

A number of factors are generally considered in making funding decisions. Common factors include congestion, environmental impacts, safety impacts, operational impacts, and economic development criteria. The purpose of this paper is to summarize a project prioritization process developed for the Utah Department of Transportation (UDOT) that is focused on economic development criteria. The process is a relatively simple and affordable methodology wherein a Policy Delphi approach (Linstone and Turoff 1975) was utilized to prioritize measures of effectiveness (MOEs) that could be used to estimate job creation and retention potential. Initially, nine MOEs were identified to evaluate the economic development potential of transportation improvement projects. These nine MOEs were aggregated into four base criteria and one bonus criterion for use in analysis (Schultz and McGee 2009; Schultz et al. 2010).

The results of this research have been published previously in the literature (Schultz and McGee 2009; Schultz et al. 2010). As a result, this paper will briefly outline the literature review, results, and conclusions, while the reader is encouraged to obtain the original documentation for details on the analysis.

LITERATURE REVIEW

From the literature review, the following are considered the key concepts learned. For a more detailed discussion of each of these concepts, refer to the literature (Schultz and McGee 2009):

- Transportation itself is not enough to induce economic development (Ewing 2008, Forkenbrock 1990, Gkritza et al. 2007, Rephann and Isserman 1994).
- The large economic benefits that followed major transportation improvements, such as the Interstate system, are no longer being seen (Ewing 2008, Gkritza et al. 2007, Weisbrod 2000).
- A time lag exists for experiencing all of the possible benefits due to a transportation project (Alam et al. 2005, Rephann and Isserman 1994).
- Project type plays a large role in the possible economic potential provided to an area (Gkritza et al. 2007).
- Location is a major descriptor of the ability of a project to provide economic potential (CSI et al. 2008, Gkritza et al. 2007).
- Businesses located in or near large population centers have greater access to labor markets and employees (CSI et al. 2008, Gkritza et al. 2007).
- Businesses will generally locate near institutions of higher learning to have greater access to a skilled/trained workforce (CSI et al. 2008, Gkritza et al. 2007).
- Existing infrastructure (e.g., power, water/sewer, transportation, telecommunications) contributes to the attractiveness of an area (Gkritza et al. 2007).
- If transportation projects improve the productivity of a business, it is essentially providing a boost to the competitiveness of that business (CSI et al. 2008).
- Congestion affects several aspects of the economy and will greatly affect the ability of companies to be competitive (CSI et al. 2008, Schrank and Lomax 2007).
- TREDIS® and REMI® TranSight™ are very comparable software; they both attempt to analyze economic benefits of transportation projects (Kreis et al. 2006).
- Surveys continually show that job creation and retention are the most important factors to communicate to the public (Gkritza et al. 2007, Schultz et al. 2006, Weisbrod 2000).

RESULTS

The economic development component of the project prioritization developed for UDOT began with the formation of a technical advisory committee (TAC) comprised of experts in the field who would be utilizing the process. The TAC used information from the literature review as well as from other experts in the field (e.g., the Ohio Department of Transportation (2006) Transportation Review Advisory Council or TRAC) to finalize the economic development criteria. A foundation of possible criterion was created and a Policy Delphi approach (Linstone and Turoff 1975) was utilized to converge upon the criteria to use in the economic development tool. Each MOE was chosen because it was determined to provide a broad view of the factors affecting economic development. Care was also taken in the Utah example to avoid double counting metrics used in other performance measures of the project selection process (i.e., congestion, environmental impacts, and safety). The broad range of MOEs also provided a good balance for considering the time lag of economic benefits. These criteria were chosen as they are expected to provide the potential for job creation caused by the transportation improvement project. The finalized nine MOEs include: 1) population, 2) higher education infrastructure, 3) existing infrastructure, 4) recent economic success, 5) economic hot spots, 6) size of project,

7) expert feedback, 8) tourism, and 9) economic choke points (Schultz and McGee 2009; Schultz et al. 2010).

Because nine MOEs were identified by the TAC for finalization, simplifying the presentation of the results was important to avoid complexity. It was suggested that the MOEs be aggregated to make the results easier to understand. The research team consolidated the nine MOEs into four aggregate criteria and one bonus criterion: 1) population and education, 2) existing infrastructure, 3) economic attraction, 4) tourism and the bonus: economic choke points. Along with aggregating the MOEs into four main criteria and one bonus criterion, the aggregate criteria were also recommended to be weighted according to their importance to the economic potential of an area. This assessment was based on the literature review and discussions with supporting field experts. For the scoring process, the total points possible for the economic development criteria was set at 100, with the potential of 10 bonus points from economic choke points, as summarized in Table 1. Additional details, including sub-scoring and detailed analysis results, are available in the literature (Schultz and McGee 2009; Schultz et al. 2010).

Table 1: Scoring Criteria (Schultz et al. 2010)

Criteria	Points Possible
1) Population and Education	
Two sub-criteria are analyzed: 1) population within a 20-mile radius of the project and 2) education within a 40-mile radius of the project	10 points each
Total Points Possible	*20*
2) Existing Infrastructure	
Evaluated by proximity to the transportation improvement project. Six different types are evaluated: 1) electrical power (transmission lines), 2) culinary water, 3) railway mainline/spur, 4) freeway interchange, 5) industrial level sewer, and 6) advanced communications	5 points each
Total Points Possible	*30*
3) Economic Attractiveness	
Four sub-criteria are analyzed: 1) recent economic success of area, 2) economic hot spots, 3) size (cost) of the project, and 4) expert feedback	10 points each
Total Points Possible	*40*
4) Tourism	
Evaluated by proximity to a tourist attraction (Non-urbanized[1] area radius is 50 miles and urbanized[2] area radius is 10 miles) as well as achievement of state goals and the transportation improvement project classification	
Total Points Possible	*10*
Total Points Available	**100**
Bonus: Economic Choke Points	
Evaluated based on the priority given by the UDOT region or district	
Total Points Possible	*10*
Total + Bonus	**110**

[1]Non-urbanized: Areas with a population of less than 50,000 (AASHTO 2004)
[2]Urbanized: Areas with a population of more than 50,000 (AASHTO 2004)

CONCLUSIONS

This paper has briefly summarized economic development analysis criteria that provide a relatively simple and affordable methodology and procedure to include economic development criteria in the decision-making process. A simplified Policy Delphi approach was used to prioritize MOEs that act as a surrogate to job creation and retention for use in such analyses. Nine MOEs were recommended to evaluate the economic growth potential of transportation improvement projects. These nine MOEs were aggregated into four criteria along with a bonus criterion that would aid in providing input from all areas of a given state. The full criteria developed include: 1) population and education, 2) existing infrastructure, 3) economic attractiveness, 4) tourism, and the bonus: economic choke-points. More detailed information on the process and the development of the economic development criteria can be found in the literature (Schultz and McGee 2009; Schultz et al. 2010).

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