

11-200: Integrating Assessment of the Economic Benefits of Transportation Improvements in Project-Level Alternatives Analysis

Topic Area: Others (Project Level Application of Cost/Benefit Analysis)

Tim Roberts (Corresponding Author)
Senior Transportation Planner
City of Colorado Springs
30 S. Nevada, Ste 405, Colorado Springs, CO 80919, USA
troberts@springsgov.com
Tel: 719-385-5481
Fax: 719-385-5497

Maureen Paz de Araujo
Senior Transportation Planner/Professional Associate
HDR Engineering
2060 Briargate Parkway, Ste 120, Colorado Springs, CO 80920, USA
maureen.pazdearaujo@hdrinc.com
Tel: 719-272-8833

Meiwu An
Transportation Engineer/Planner II
Pikes Peak Area Council of Governments
15 South 7th Street, Colorado Springs, CO 80905, USA
man@ppacg.org
Tel: 719-471-7080 x 146

Abstract: As resources to finance transportation system improvements become increasingly limited, the need to maximize the value of improvement investments is paramount. As a part of project-level alternatives analysis, benefit-cost analysis offers a means to objectively and quantitatively evaluate the relative value of differing strategies. This paper presents a benefit-cost analysis methodology to evaluate transportation improvement alternatives for an urban arterial corridor in Colorado Springs. A regional travel demand model is used to evaluate the impact of each alternative on regional route choice. Regional model results are then fed into the traffic simulation models for each alternative, and alternative-based estimates of total delay and travel time for the study corridor are developed from each simulation model. Total vehicle hours traveled (VHT) savings resulting from each proposed alternative in comparison with a no action scenario is estimated by tracking each individual vehicle's travel time from its origin to destination. VHT savings are converted into dollar benefits, including travel time savings for road users, vehicle operating cost savings, environment cost savings. The cost include in the analysis are engineering design, right of acquisition, construction cost, operation and rehabilitation cost, and maintenance cost during a project's life cycle.

Benefit cost analysis is then conducted to estimate B/C ratios for each corridor-level improvement strategy using TREDIS (TRansportation Economic Development Impact System). TREDIS incorporates default economic value factors for the study region such as driver and occupant time saving benefits, vehicle cost savings, and environment cost savings (dollars per VHT or VMT). Economic development opportunities and public involvement associated with each alternative is also taken into account during the analysis.

Keywords: Corridor planning, project prioritization, alternatives analysis, BCA analysis, micro-simulation, public involvement, partnerships, economic development benefits.