

# New Approach to Economic Evaluation of Labor-Intensive Transportation Systems

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Simple point estimates of easily measured costs and benefits may have provided sufficient information to stem grossly inefficient pork-barrel projects and to guide, at least crudely, capital- and energy-intensive transportation investments. With the increased concern for environment, quality of life, and energy conservation, however, planners now must incorporate these more difficult-to-measure variables in their analyses. The managerial economics literature has provided easy-to-use tools for decision making under uncertainty for more than a decade (1). Recently social planners have begun adopting some of these concepts.

Applying these tools for decision making and planning under uncertainty to a proposed bicycle-pedestrian transportation system on a medium-sized university campus generated important low-cost, easy-to-use information. Both benefits and costs contained a number of difficult-to-measure social and environmental variables such as loss of consumer surplus to restricted drivers and increased exercise and recreation for pedestrians and bicyclists. After the data were ranged from expected low to high values, a computer simulation model generated a distribution of costs and benefits with an expected benefit-cost ratio of 1.7:1 and probability of failure between 2.6 and 26 percent. Failure of the bicycle-pedestrian system (restricting parking and driving and developing other forms of transportation) would entail a low financial cost—\$346,000 of fixed investment—and would be easily reversible. A hand-calculated example of the technique is presented by Everett (2).

## REFERENCES

1. D. B. Hertz. Risk Analysis in Capital Investment. Harvard Business Review, Jan.-Feb. 1964, pp. 79-95.

2. M. D. Everett. Benefit-Cost Analysis for Labor Intensive Transportation Systems. Univ. of Southern Mississippi, in press.