

Economic Evaluation of Improved Reliability

Highlights of Tolling White Paper 4



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Background

One irony of our transportation system, particularly the highway network, is that it is most unreliable when it is most needed. Peak commute times are the busiest, and because demand (the number of vehicles on the road) is higher than the supply (the amount of lane space available) the road becomes congested, the trip takes longer and is less reliable. This means that trip duration may vary from day to day. The lack of a dependable travel time is one problem that congestion pricing seeks to solve.

Defining and measuring travel time reliability

Defining and measuring reliability and determining its economic value is the subject of White Paper 4. As illustrated in the anecdotes on the next page, different types of highway users will value the economics of travel time reliability in different ways. As part of determining the benefits of a potential project, reliability would have to be defined and then assessed.

Congestion pricing

Congestion pricing is an overarching term used to describe measures that reduce congestion by charging drivers tolls that vary by time of day or traffic volumes. One of the primary benefits of congestion pricing is that it can re-introduce reliability to our highways by charging people higher prices when demand is highest. Pricing encourages people to take another route, take transit or carpool, travel at a different time of day, or change their destination. This reduces the number of vehicles, making travel times more reliable for those using the tolled facility. Improving reliability reduces the variability and uncertainty of travel. We know that this has an economic value.

Seven technical tolling and pricing white papers were prepared for ODOT in February 2009 as a way to consider concerns and issues for Oregon to address prior to developing a tolling/pricing policy in the future.

1. Is tolling an effective means of reducing greenhouse gas emissions?
2. Where, geographically, could tolling work and under what circumstances?
3. Forecasting change – how do we incorporate tolling into our regional transportation models?
4. What are the economics of transportation system reliability?
5. How should the economic and social effects of broad applications of congestion pricing be assessed?
6. How do you determine if tolling a project is a better alternative than other non-tolled options and how would you choose between a number of tolled alternatives?
7. Are truck-only toll lanes a viable option for Oregon?

This document highlights the White Paper 4 on the economics of travel time reliability. Find all papers online and provide your comments: www.oregon.gov/ODOT/TD/TP/Tolling_Background.shtml

Consider the following anecdotal statements:

“Usually a trip to the airport takes 20 minutes but this time it took 45. I tried to allow enough buffer time but congestion is so unpredictable.”

“I have to pick up my child at daycare, or it will cost me a dollar for every minute I’m late. I’d gladly pay a few bucks to know that my trip will always take the same amount of time. This helps me plan my workday better”

“We rely on just-in-time delivery to keep our warehousing costs down. . .”

Personal and commercial highway users

Past research and experience across the county provides good information on the personal value of travel time reliability. We also have a handle on the commercial costs of congestion, but not on the economic consequences of changing the reliability of highway systems. Each sector and segment of the commercial economy has very different ways of responding to and managing their transportation costs. This is because the total transportation cost of production varies greatly, depending on how each industry organizes its logistics support and production processes.

Not only do we need to consider the personal and commercial economic value of reliability, we have to consider the extent and type of pricing application being considered, and what direct and indirect effects will result.

Direct and indirect effects depend upon **the type of toll proposed**

For example, the effects of initiating a time-of-day charge on one lane of a multi-lane highway will be easier to assess than doing the same thing on all major highways and arterials in a region, or installing a pricing cordon in a downtown core, where people pay to enter a typically high-traffic area. The users of the highway will be directly affected by the charge.

An indirect effect is what happens elsewhere in the system. Drivers may give up certain types of activities altogether or businesses may have to compensate for additional “last mile” congestion or decreased reliability. So, if all the highways and major arterials in a region are tolled, it becomes more difficult to understand people’s choices and their economic effects across the system. In other words, the wider the pricing net is, the more complex it is to evaluate.

Conclusions

These are emerging issues across the country as more places investigate the value of congestion pricing. If Oregon should pursue congestion pricing, more work will need to be done to understand the economic effects in general, how they vary across commercial sectors in particular, and how those effects will differ depending upon the type of project being proposed.

Because this is a complex issue, Oregon may want to consider developing a uniform procedure to vet methodological approaches and/or to evaluate pricing proposals in the future.

For More Information

- Visit the Web site to read the white papers and complete a comment form:
www.oregon.gov/ODOT/TD/TP/Tolling_Background.shtml
- Email: Robert.A.Maestre@odot.state.or.us