

Presentational, Attitudinal and Functional Form Issues in the Analysis of Motorists' Stated Preference Route Choice Data

Mark Wardman⁺, Gerard Whelan⁺, Brian Vaughan⁺⁺, Paul Murphy⁺⁺ and Geoff Hyman⁺⁺⁺

+ Institute for Transport Studies, University of Leeds, UK

++ Faber Maunsell

+++ Department for Transport, UK

Presented to the European Transport Conference, Noordwijkerhout, 17-19 October 2007.

Abstract

The most common areas of Stated Preference (SP) application are to choice contexts which do not yet exist or where the attribute variation is far from ideal for Revealed Preference (RP) modelling. Although tolled routes and crossings exist, all drivers within a specific road user category face the same toll and hence its effect cannot be disentangled from any route specific effects. The variations across routes in petrol cost in particular and to a lesser extent journey times are typically poor from a choice modelling perspective.

Primarily for these reasons, but also because of the lower unit costs of data collection, SP has been widely employed in the context of new tolled roads and facilities. The move to the private financing of new infrastructure centred around competitive tendering has also provided a stimulus to such studies.

Many of these motorists' route choice SP applications are routine in nature, offering trade-offs between time and toll with petrol cost and other variables, such as road surface or some representation of reliability, on occasions making an appearance. Relatively little attention has been paid to methodological issues such as the functional form of behavioural response, the nature of SP responses in what is a contentious choice context, the impact of different means of presentation, and the realism of the choice task.

As part of a study conducted for the UK Department for Transport and centred around the new privately financed M6 Toll Road in the West Midlands area of Great Britain, over 3200 motorists completed SP exercises that explored a number of interesting and important methodological issues. Those reported in this paper are:

- Whether the unit valuation of a time saving differs according to the size of the time variation and also the proportion it forms of the overall journey;
- The degree to which the response to the introduction of tolls on existing roads differs from variations in the tolls on an existing tolled motorway;
- The extent to which the unit sensitivity to toll varies with the size of the toll charge;
- Whether the sensitivity to toll and to time valuations depends on whether a given time saving is offered as a series of savings on three separate tolled routes or as a single time saving on just one (extended) new motorway;

- Whether the presentation of time variations as changes on current situations leads to different time valuations to those obtained from presenting absolute journey times from the same experimental design;
- The extent to which the perceived realism of time and petrol cost variations influences their respective estimated coefficients;
- Whether the removal of petrol cost as a design variable influences the estimated time valuations;
- The influence of including A roads alongside the two motorway alternatives on estimated time valuations;
- The impact of including time of day choice in addition to route choice on the estimated time valuations;
- The impact of attitudes to tolls on the sensitivity to toll changes.

* Dr Whelan is now at MVA Consultancy (gwhelan@mvaconsultancy.com)