Journal of Applied Economics. Vol XV, No. 1 (May 2012), 25-49

LEISURE AND THE NET OPPORTUNITY COST OF TRAVEL TIME IN RECREATION DEMAND ANALYSIS: AN APPLICATION TO GROS MORNE NATIONAL PARK

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Submitted October 2009; accepted July 2011

Using count data models that account for zero-truncation, overdispersion, and endogenous stratification, we estimate the value of access to recreational parks. The focus is on the empirical estimation of the proportion of the wage rate that best approximates park visitors' opportunity cost of travel time within the cost of their trip and its effects on estimated consumer surplus. The fraction of hourly earnings that corresponds to the opportunity cost of travel time is endogenously estimated as a function of visitor characteristics, rather than fixed exogenously. In this case, which deals with a relatively remote recreational site, the relevant opportunity cost of time for most visitors appears to represent a smaller fraction of their wage rate than commonly assumed in previous similar studies.

JEL classification codes: Q24, Q26
Key words: opportunity cost of travel time, endogenous stratification, on-site sampling, overdispersion, recreation demand, travel cost method

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I. Introduction

In order to value properly natural protected areas that are recreational destinations, their benefits and impacts must be clearly documented and demonstrated. However, since access to natural recreational sites is often only subject to nominal entry fees that clearly underestimate the maximum willingness to pay by most visitors, their value to the public is unknown and must be estimated through non-market valuation methods.

The most commonly used valuation method applied to the case of natural recreation areas is the Travel Cost Method. This method relies on the estimation of a demand function that explains the number of trips according to the cost faced by the visitor to reach the site and other characteristics of the household. Recent applications of the Travel Cost Method are usually based on count data models, since the dependent variable in the demand function, the number of trips, can only take on nonnegative integer values.

Visitors to recreational sites face three main types of costs: non-time travel costs, travel time costs, and on-site time and non-time costs. The focus of this article is the estimation from the data of the relevant fraction of the wage rate that best approximates the perceived net opportunity cost of travel time as part of the household's overall cost of the trip. Following the literature, we assume that households respond to travel time costs exactly in the same way that they respond to non-time travel costs and we assume that the opportunity cost of time can be proxied by a proportion of the wage rate. Under these assumptions, we endogenously estimate that fraction of hourly earnings that corresponds to the net opportunity cost of travel time for each household as a function of its characteristics. We show that this approach proves to dominate the more restrictive ones often used in previous studies, which traditionally calculated the opportunity cost of time based on an arbitrary fraction of the wage rate fixed exogenously and common for all households. To our knowledge, there is no published study that uses a flexible approach like ours to the valuation of travel time while simultaneously addressing the problems of truncation, overdispersion, and endogenous stratification that affect studies based on data collected on site.

Section II briefly outlines the Travel Cost Method. This is followed by a description of the survey and the data collection procedures in Section III. The econometric and estimation issues are dealt with in Section IV, while Section V contains the description of the data and the definition of variables used for the econometric analysis. The estimation results (Section VI) and the conclusions (Section VII) follow.

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