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## Factors Affecting the Willingness to Pay the Visitors of Large Parks in Mashhad: Applications of Multilevel Logistic Model

Hadi Rafiei Darani\*

*Tourism Economics Lecturer of at Academic Center for Education, Culture and Research (ACECR), Mashhad Branch, Iran*

*PhD Candidate in Agricultural Economics, Ferdowsi University of Mashhad, Mashhad, Iran*

Mohammad Ghorbani

*Professor of Agricultural Economics, Ferdowsi University of Mashhad, Mashhad, Iran.*

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### 1. Introduction

Green spaces and urban parks are very important due to their recreational uses and also their role in maintaining the ecological balance of urban citizenship. Given the increasing demand for the use of parks and public green spaces, the analysis of the factors affecting demands in terms of economic and social can help to predict the recreational and entertaining needs. However, the parks are failed to pricing market and valuation. So, willingness to pay (WTP) as an economic tools- the amount of money that the consumer intend to pay for the use of the services - can be a guide for market pricing particularly for non-market services. "Willingness to pay" can be estimated directly by asking people about their intendness to pay for services and also indirectly by calculating the costs they pay for these. Assessing the "willingness to pay" for services available in main parks in Mashhad city can provide a functional guideline for other parks specially about non markettig servicers. The was carried out to investigate the factors influencing the "willingness to pay" in three main parks in Mashhad (Mellat – Koohsangi – Vakilabad).

### 2. Theoretical Framework

Economic valuation provides data to differentiate between the inefficient use of environmental goods and services with the real value of these resources" in the process of decision-making, which finally leads to optimal management. Valuation is based on individuals preferences and can determine the monetary value of non-market goods and services. The economic value of urban parks is divided into two categories: use value and non-use values. The use value includes direct use value, indirect use value and selected value n line with this, non-use value includes the existence value and value of future generations. The overall valuation methods can be divided into three main methods: 1) valuation based on the market 2) valuation alternative market 3) valuation hypothetical market .Given the nature of parks and

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\* Corresponding Author: Email : hadirafiy@yahoo.com

seesights and the lack of real market for their goods and services, using the third approach, i.e the hypothetical market is used more than other models. One of the sub-methods of market hypothesis model is conditional valuation.

### 3. Methodology

Goldstein (1999) argued that the multilevel modeling considers complex structures of socio-economic life in a real world. Multilevel models (hierarchical) include of various structures: the horizontal (spatial), vertical cross-sectional time series, cross and repeated. In multilevel models, one or more explanatory variables coefficients are considered as a random or variable in order to design complex real world in the model. Thus, Multilevel models are based on patterns with variable coefficients. Given to the structure of multi-level modeling, we can suggest that variance-covariance structure of model changes with respect to hierarchical structure. A two-level model for data with binary dependent variable (binomial) with an explanatory variable is conceptually similar to simple multilevel modeling, however the dependent variable is binary. Therefore,  $y_{ij}$  is a binary response variable for samples  $i$  in cluster (group) of  $j$  and  $x_{ij}$  is an explanatory variable in cases.

### 4. Results & Discussion

The results of the percent correctly classified of our model is about 65.29 percent that indicates the high power of model forecast. The results demonstrate that visit duration variables, city of origin and level of education are not significant at 90 percent confidence level. The coefficient of origin city variable has three separate coefficient values which calculates for each park by summing coefficients with random sec component, however, this variable is not significant at 90 percent confidence level. In line with our results age is negatively associated with "WTP". Older individuals are less likely to pay for use of the park. Gender shows negative and significant effect at 95 percent confidence level. According to sign of coefficient and odds ratio it can be suggested that men are less likely than women (0.7093) in their willingness to pay for the use of park.

Income level is positively (at the level of 1%) associated with "WTP". Individuals with higher income are more likely of willingness to pay. Another variable is index of satisfaction of park that shows a positive and significant effect (at the level of 1%). The results of the field survey of mean of WTP for the three parks study reveals that the average willingness to pay per visitor is 13,995 Rials in Mellat Park, 4935 Rials in Koohsangi park and 2270 Rials in Vakilabad park.

## 5. Conclusions & Suggestions

Suggested recommendation based on our study can be summarized as follow: 1) improvement facilities and services in the park, especially for older people, 2) identify the incentive of men for going to the park, and providing services and facilities accordingly, 3) prepare opportunities for children to play and 4) finally improve security indices (moral and financial).

**Key words:** Urban park, Valuation, Multilevel Modeling, Heteroscedasticity between groups, Mashhad City

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