



Journal of Environmental Studies

Vol. 48, No. 1, Spring 2022

Journal Homepage: www.Jes.ut.ac.ir
Print ISSN: 1025-8620 Online ISSN 2345-6922

Estimating Recreational Value of Greenspace and Park Using Contingent Valuation Method (Case Study: Baharan Park, Meybod City)

Document Type
Research Paper

Gholamhosein Moradi^{1*}, Farnaz Dehghan Benadkuki², Mohammad Naser Fayazi², Elham Operajuneghani²

Received
Desember 2, 2021

1. Department of Environmental Sciences, School of Natural Resources & Desert Studies, Yazd University, Yazd, Iran
2. Department of Economics, Faculty of Economics, Management & Accounting, Yazd University, Yazd, Iran.

Accepted
May 12, 2021

DOI: 10.22059/JES.2022.334903.1008257

Abstract

To express the role and importance of the environment and express its monetary values, these resources need to be valued using appropriate methods. Therefore, in the present study, the recreational value of Baharan Park in Meybod city has been evaluated using the contingent valuation method. Also, using the logit model, the effective factors on the willingness of visitors to pay have been investigated to improve the situation and protect this park. To do so, first, the sample size was determined based on the Cochran method, and then the data were collected by questionnaire and a face-to-face interview. Based on the results, that the variables "visit duration" and "education level" positively affected and on the other hand, the variables "transportation vehicles" and "maximum offer amount" negatively affected the willingness to pay. According to the results, the monthly willingness to pay of each visitor was 38,350 Rials. Also, the monthly and annual willingness to pay of each household was evaluated at 161070 and 1932840 Rials, respectively, which indicates the high importance of this park.

Keywords: Contingent Valuation Method (CVM), Environmental Economics, Greenspace, Logit Model, Willingness to Pay

* Corresponding Author:

Email: moradi@yazd.ac.ir

Extended abstract

Introduction

Urban greenspace is a very important and vital element in urban planning so that parks and urban greenspace are usually considered as a very important solution to improve the quality of social life. Urban parks and greenspaces provide valuable recreational opportunities for the residents of cities. Nowadays, determining the real value of environmental resources is an important issue in resource investment and pricing. Environmental economists believe that there is a necessity for economic and recreational valuation of non-market services and benefits, such as parks and green spaces. Estimating the recreational value of parks is also effective in improving environmental policies and increasing human well-being and eventually, it could lead to achieving sustainable development.

There are various approaches to estimate the economic values of environmental resources. Common approaches such as market valuation are not applicable for the valuation of parks and green because of non-market services. The use of substitute market techniques is one of the price-based valuation methods for non-exchange ecological services of parks and green spaces, which refer to the expressed preferences in real markets. Contingent Valuation Method (CVM) is one of the most common and practical methods of economic valuation of non-market environmental services and resources based on the community demand for their protection and use.

Regarding the growing demand for public resorts and recreation areas in cities, the study of effective factors on people's demands can help to predict the needs of urban recreation and entertainment. So, the present study has been conducted to estimate the economic valuation of recreational activities and the effective factors of the willingness of visitors to pay for Baharan Park in Meybod city located in Yazd province. If the value of environmental resources is estimated in monetary units, it would be comparable to the value of other resources goods, and services and it would help policymakers and planners for the necessary support of these ecosystems.

Material and Methods

This study has conducted in Baharan Park located in Meybod city, Yazd province, Iran. The mean annual rainfall and temperature of this city are 60 mm and 19 °C, respectively (Meybod Meteorological Organization, 1398). The altitude of the study area is 1234 meters above sea level. Baharan Park is situated in the center of Meibod city, between 54°1'24" and 54°1'32" longitude and 32°12'32" and 32°12'59" latitude with an area of 23.2 hectares.

Data were collected by completing 169 questionnaires, which were determined based on the Cochran method. The questionnaires include information about the personal, social, and economic characteristics of visitors and questions related to the willingness of the visitors to pay. The essential assumption in this method is that some variables such as "age", "household dimension", "monthly income", "duration of visit", "gender", "occupation", "level of education", "transportation vehicle", and "season" play the main role in the willingness or unwillingness of people to pay.

In this study, the contingent valuation method was used to measure the willingness to pay and recreational value in parks and green spaces. Double-bounded Dichotomous Choice (DDC) was used among the different methods for evaluation of the willingness of visitors to pay. In the contingent valuation method, the model has a dependent variable with dichotomous qualitative choice. A logit regression model based on maximum likelihood is usually used for qualitative choice methods. Normal

and logistical distributions are used in the probabilistic logit model. The predicted probability values of this model are between zero and one. This method requires determining and selecting a higher bid to the initial bid, which is given a higher value to the "yes" answer and a lower bid to the "no" answer. In this study, three bids (20,000, 30,000, and 50,000 Rials) were asked in the form of related questions. Then, a logit regression model and STATA and SHAZAM software were used in order to analyze the data. The dependent variable was the willingness to pay (in Rials) and the independent variables were socioeconomic characteristics including age, household size, monthly income, duration of visit, gender, occupation, level of education, transportation, season. Based on the contingent valuation model, the logit model was fitted using Cragg-Uhler, Esterlla, Maddala, and Mc Fadden coefficients. Also, likelihood ratio tests and variance heterogeneity tests were used to ensure the reliability of the estimated model results. Conventional methods such as Breusch-Pagan-Godfrey and White test cannot be used to check for the presence or absence of variance heterogeneity in logit patterns. In this regard, there is an LM2 statistic to test the variance heterogeneity in logit patterns.

Discussion of Results

The results of variance heterogeneity tests indicated that the model does not have variance heterogeneity. The value of the probability ratio statistic was 41.04. Since this value is higher than the value of probability value, the total estimated pattern is statistically significant at the 5% level. The Maddala, Esterlla, Cragg-Uhler, and Mc Fadden coefficients for the estimated logit model, were 0.21, 0.23, 0.28, and 0.17, respectively. The percentage of correct predictions was 71%, and so this pattern is reliable for subsequent analysis since the correct predictable value for logit patterns is 60%.

The results of model estimation showed that between 15 independent variables, four variables are statistically significant ($P < 0.05$). Visit duration (with the coefficient of 0.114), education level (with the coefficient of 0.065), transportation vehicles (with the coefficient of 0.056), and maximum offer amount (with the coefficient of 0.114), significantly affect the willingness of people to pay to enter and improve the condition and maintenance of the park.

The average expected value of willingness to pay per visitor of Baharan Park was 2.2821. Also, the average willingness to pay for each visitor was evaluated at 38350 Rials to improve the condition and protection of Baharan Park in Meybod. The monthly and annually recreational value of this park is equal to 161070 and 1932840 Rials according to the average willingness to pay to each household.

Conclusion

In this study, the variable "education level" has a direct and significant relationship with the willingness of people to pay in Baharan Park. With an increasing educational level, the willingness to pay increases by 0.065 percent. Studies in this field show that the high level of education has led to their acceptance to pay for beauty functions because there is a positive relationship between education and recognizing the importance of the environment. People with higher education have more knowledge to protect natural ecosystems because of more information about the importance of natural resources.

According to the results of this study, the variable "transportation vehicles" has a significant negative relationship with the willingness of people to visit Baharan Park. If people do not use a personal car, the willingness to pay will decrease by 0.056 percent. Most visitors prefer to travel to the recreational areas by car. The variable "maximum offer amount" has a negative significant relationship with the

willingness of people ($P < 0.05$). In other words, visitors are less willing to pay the entrance fee with the higher amount of bids to enter Baharan Park.

The results of this study indicate that there is a willingness of visitors and tourists to pay in order to use and support the natural and cultural attractions of recreational areas. Therefore, due to the high potential of Baharan Park in attracting local and non-native tourists, the number of tourists and their willingness to pay will increase if the welfare facilities are created, the condition of the park is improved, and transportation is developed. Also, considering the recreational value of Baharan Park in Meybod city, planners and officials must change the economic attitude of tourists in the region to develop sustainable tourism and increase the number of visitors.