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Tourism recreational value of Rock Garden Chandigarh, India

Parks and gardens have significant amenity and recreational value contributing towards quality of urban life. Many of the intangible benefits of such parks/gardens are neither correctly assessed nor incorporated in to benefit-cost analysis of developmental or commercial projects and in budget allocation process, especially in developing countries. Chandigarh, a well-planned and modern city of India, is known for its urban parks and gardens worldwide. Among various tourist places of the city, Rock Garden assumes premier importance for the tourists. Unlike other parks and gardens of the city, it consists of a series of interconnected rocky grottoes, walkways, landscaped waterfalls and thousands of animal or humanoid figures made out of waste and discarded materials. In a case study undertaken during 2002-04 by using *travel cost method* on the domestic tourists, it was found that this strange and whimsical garden account for about seventy percent of annual recreational use value accruing to the city's overall urban parks and gardens from the view point of domestic tourists.

Key words: Chandigarh, Rock Garden, domestic tourists, travel cost method

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Introduction

Chandigarh, also called the 'City Beautiful', designed by Famous French Architect Le Corbusier, is famous for its urban greenery and well planned landscaping. The city is known for its prominent vegetative parks and gardens like Rose Garden, Rock Garden, Bougainvellia Garden, Hibiscus Garden, Garden of Fragrance, Rajendra Park, Leisure valley, Fitness trails, Shanti Kunj, Terraced Garden etc. Among various parks and gardens of the city, the Nek Chand's Rock Garden is unique in the sense as it expresses the fragility of the environment and the need for conservation of the earth's natural resources. The garden consists of objects made from non-biodegradable industrial and urban waste. It nestles amidst 10 ha of woods in the form of an open air exhibition hall, theatre trove and a miniature maze, all rolled into one vast fantasy land of art and landscape. This garden is a monument of international importance which addresses the global problem of balancing industrial development with sustainable development of environment. The Rock Garden, Chandigarh may rightly be called as one of the modern wonders of the world and has clear potential to be a heritage site.

A study was conducted to estimate recreational use value of Chandigarh city's parks and gardens, including Rock Garden, during 2002-04 based upon data from Indian tourists and using travel cost methodology (Chaudhry, 2006). The results of such studies could be valuable for bureaucrats, politicians and policy makers in decision making , urban land use panning and in budget allocation process for urban parks/gardens.

Methodology

To estimate recreational value of an environmental resource or site that is used for tourism recreational purpose, travel cost method (TCM) is the most commonly used method by the environmental economists. The basic premise of this method is that the time and travel

cost expenses which tourists incur to visit a site represent the "price" of access to that particular site. Thus, people's willingness to pay (WTP) to visit the site can be found out based on the number of trips that they make at different travel costs. Originally, Harold Hotelling suggested the TCM in 1947, when the US National Park Service wanted to know how economic principles could be utilized to demonstrate economic values produced by National Parks. Hotelling suggested that the travel costs an individual incurs to visit a recreation site could be utilized as an implicit price for that site's services. Clawson (1959) developed a travel cost model within the economic framework, which was modified by Clawson and Knetsch (1966). Later a number of travel cost models were developed to estimate the recreational value. Among various methods, the Clawson and Knetsch method is most popular and is empirically tested in developing countries as well (Tobias and Mendelsohn, 1991).

Mainly, there are two versions of this method i.e zonal travel cost method (ZTCM) and individual travel cost method (ITCM). Zonal travel cost method (ZTCM) version was used in the present study as tourists come to the city from different states of India. In this method, the visitors are divided into different zones e.g. concentric circles around the study site. A visitation rate is then calculated for each zone, which is defined as follows:

Visitation rate = (Number of visits to the site per year from the zone)/ (Total population of the zone)

In this way, the effect of population on visitation is accounted for. The visitation rate speaks about the average number of visits made by each resident of the zone to the site during a year. In the present study, based on data collected from the tourists during the survey, the relationship between visitation rate and travel cost was worked out using regression analysis. This led to the creation of a so-called "whole experience" demand curve based on visitation rates. To estimate the consumer surplus accruing from the site, the "whole experience"

demand curve was used to estimate the actual number of visitors and also to visualize as to how the numbers would change according to different hypothetical entrance fees at the recreational site- in essence constructing a classic inverse demand curve. It was assumed that an entrance fee was viewed by the visitors in the same way as travel costs to reach the site. It was also assumed that households had equal taste and preferences. The total area under this demand curve would give the total economic benefits of the site to the visitors (US Water Resource Council, 1983). The travel cost method has some common biases like multi-site visit, multi-purpose visit and opportunity cost of travel & on-site time that were properly addressed during data collection stage and during the analysis stage as well.

Data Collection and Responses

A questionnaire was prepared for the tourists to record the details about place of residence, the mode of transport used, cost of travel, time spent on travel etc. Information about the socio-economic status like occupation, education and household income was also sought. Some pertinent questions on urban greenery, city's parks/gardens and environmental conservation were specifically asked from the respondents and in this way tourists' perception and interest in these fields were obtained. One such question was about the most liked tourist site in the city and the reasons thereof. Out of 904 tourists-families, 568 answered this question. Rest either could not decide about the choice or mentioned that all sites were equally good. Nek Chand's Rock Garden, received maximum number of responses (392/568) followed by Sukhna lake (132/568). Majority of the tourists mentioned that they had not visited such kind of garden in the past and according to them Rock garden presented a wonderful example of environmental conservation by creating beauty out of waste. About 89 % of tourist families considered that urban parks and gardens of the city were responsible to the extent of more than seventy five percent in making city attractive from tourism point of

view and other features of the city like its unique architecture, infrastructure, culture etc accounted for less than twenty five percent weight age in this regard.

Target Groups

Interviews were taken in person during the summer and winter seasons of the year 2002-03. All the tourists, willing to participate in the survey, were included in the study. Care was taken that the sample must represent the true population as far as possible, taking proper proportion of "frequent visitors" (mostly from neighboring states of Punjab and Haryana) and other "non-frequent visitors", mostly from far distant areas. All the interviews were conducted at prominent tourist places of the city like Rock Garden, Sukhana Lake, Rose Garden and Leisure valley. Before filling up of questionnaire, the tourists were asked specifically asked to mention about the primary objective of their visit to the city. If their purpose of visit to the city was not tourism, then they were not considered for the interview. Only adult visitors i.e. above 20 years in age and head of the family/group, who had a defined source of income, were interviewed because they were considered as more realistic in making personal valuations of their recreational experience at the site *vis-à-vis* their budget constraint (Navrud and Mungatana, 1994). During the course of survey, a total of 1120 groups were interviewed taking in to account the representative samples of frequent and non-frequent visitors. Out of this, 154 were excluded as their main objective of the visit to the city was not tourism, while 62 groups/families produced incomplete information. Thus there were 904 complete questionnaires or respondents.

Results

The domestic tourists were segregated district-wise for TCM analysis. Average travel cost per visitor was calculated for each district based upon travel cost data revealed by the tourists. The zonal data model was developed using concentric circles of 100 Km. intervals

from the site. The population figures for different districts was taken from the census data 2001 available with the Directorate of census operations, Ministry of Home affairs, Government of India office at Chandigarh. Travel cost per person for each zone was calculated as weighted average travel cost taking in to account the number of visits from different districts falling in that particular zone and average travel cost per person in each district. The analysis was conducted using the Statistical Package for the Social Sciences (SPSS 8.0.for windows).Regression was carried out on the zonal model with the visitation rate as the response variable and travel cost as explanatory variable as prescribed by US water resource council (1983). A plot of the fitted model of the "whole experience demand curve" was generated through regression (Figure 1). A conservative estimate of 0.30 millions domestic tourists per year or 822 numbers per day from a distance up to 1000 km. from Chandigarh was taken in the analysis. The "whole experience demand curve" was then used for estimating number of tourists at different hypothetical entrance fees and the resultant "net recreational demand curve" was plotted between number of visitors and travel cost with added entrance fee (Figure 2). The area under this curve (considering the present actual entrance fee of Rs. 10.00 only at Rock Garden) gives the consumer surplus of Rs. 2, 53, 000.00 for the urban parks/gardens and landscape features of the Chandigarh city per day by the tourists. Dividing this figure by 822 i.e. average numbers of tourists per day, we get net benefits received by each individual from recreational experience as Rs. 308/- per individual visit. This is a measure of average willingness to pay for the recreational benefits provided by the urban parks and gardens of the city based on the results derived from the sample data. Annual recreational value of the urban parks/gardens of the Chandigarh, thus, comes out to be Rs. 2, 53, 000 x 365 = Rs. 308 x 0.30 millions = Rs. 92.40 millions

Discussion and Conclusion

Rock Garden, Chandigarh was rated as number one tourist spot in the city by the domestic tourists. Nearly 70 % of the tourists (392/568) voted in favor of Nek Chand's Rock Garden as number one tourist spot of the CITY BEAUTIFUL. Therefore this garden deserves an annual recreational value of Rs. 64.68 millions out of Rs. 92.40 millions from domestic tourists' point of view based on 2002-03 price level. This is a conservative estimate of annual tourism recreational value of Rock Garden, Chandigarh because data from foreign tourists has not been considered in the analysis. The actual annual tourism value of this garden seems to be much higher, if foreigner's data is also taken in to account. This also proves the fact that this tourist spot is a must on the itinerary of every visitor to Chandigarh and city's administration should pay adequate attention in maintaining this particular site for the tourists. It is worth mentioning that the Rock Garden creation work done by Mr. Nek Chand at Chandigarh has been lauded in most of the European countries, USA and Australia. The first significant recognition of his work came from Paris. The highest distinction (Grand Medaille de Vermeil) that the Municipality of Paris can bestow on any one has been conferred on Mr. Nek Chand in 1980. As of now, there are six gardens on the like of Rock Garden abroad- two in France, two in Germany and two in Britain, all created under the able guidance & supervision of Mr. Nek Chand.

References

Chaudhry, P. (2006). Recreational use value of Chandigarh city's urban forestry. *Current Science,* 91(11), 1440-1441.

Clawson, M. (1959). Methods of measuring the demand for and value of outdoor recreation, *Resources for the future*. London.

Clawson, M and Knetsch, J. (1966). Economics of outdoor recreation. *Resources for the future*. John Hopkins University Press. Baltimore

Navrud, S. and Mungatana, E.D. (1994). Environmental valuation in developing countries: The recreational value of wildlife viewing. *Ecological Economics*, 11, 135-151.

Tobias, D and Mendelsohn, R. (1991). Valuing ecotourism in a tropical rain-forest reserve, *Ambio*, 20(2), 91-93

U.S. Water Resource Council. (1983). Economics, environmental principles and guidelines for water and related land resources implementation studies. US Government printing office. Washington, DC
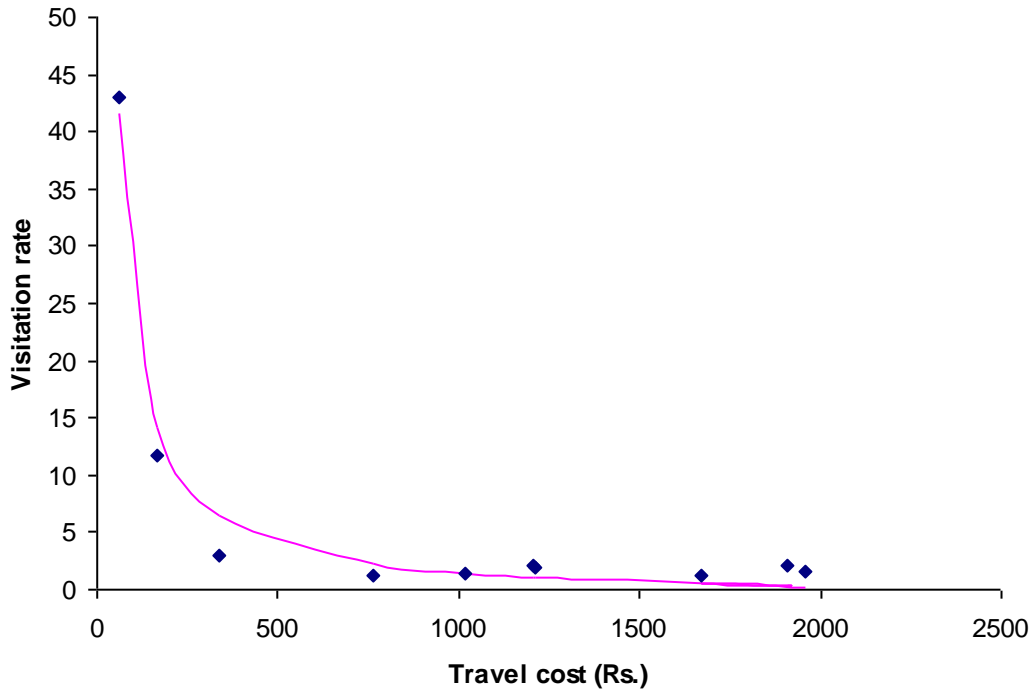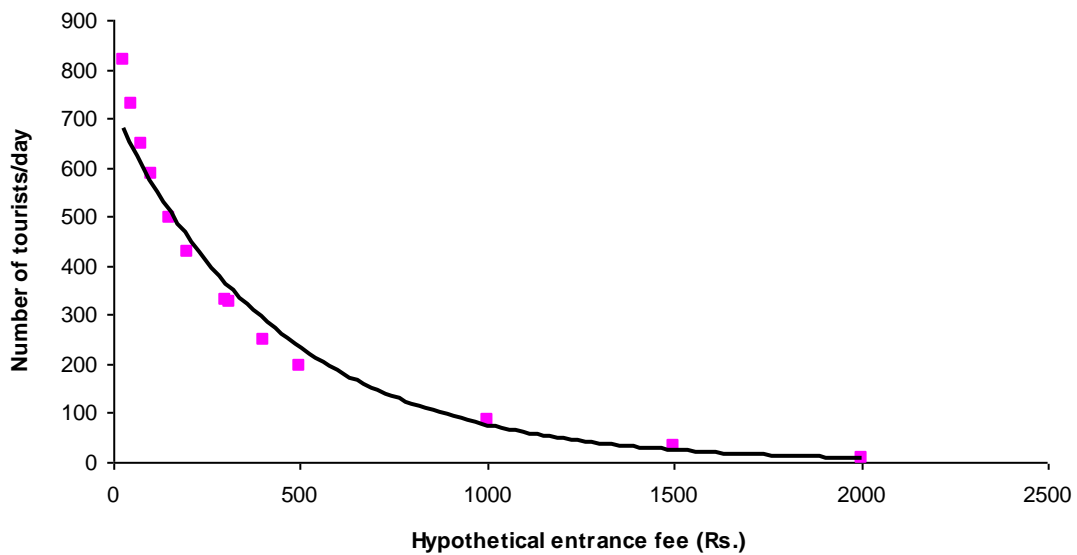
Figure 1. whole experience demand curve

Figure 2. Net recreational demand curve