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# Assessing Tourists' Willingness to Pay for Waste Management in Public Parks of District Peshawar

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**Abstract**

Tourism is a phenomenon that includes mobility and activities associated with the provision of services required during and after travel. This study aims to determine the value that tourists allocate to the improvement of waste management in public parks in Peshawar District, Khyber Pakhtunkhwa (KP). The data were collected from 400 respondents through face-to-face interviews by using an open-ended elicitation format. Contingent Valuation Method (CVM), a method widely used to estimate non-marketed valuation, was adopted for conducting the survey. For data analysis, a linear regression model was used.

Results of the study reveal that 93 percent of the respondents are willing to pay a premium for waste management in public parks. Outcomes of the study also show a positive and significant relationship of age, education, income, employment, and household age with willingness to pay. Overall, tourists are willing to pay an 18 percent price premium for better waste management in the public parks of Peshawar district. A new and better waste management system in public parks in District Peshawar must be introduced using a small contribution fee imposed on tourists, as they are already willing to pay a little more to have cleaner parks with better maintenance.

**Keywords:** Tourism, Waste Management, Willingness to Pay, Contingent Valuation Method, Peshawar District

## Introduction

Tourism is the phenomenon that describes how people temporarily move away from their homes and the activities and services developed to support that travel. According to Dominguez and colleagues and Inkson and Minnart (2018), the World Tourism Organization argues that tourism entails the activities of people to go to locations outside their usual environments and stay there for between a single night and a year, for leisure, business, and activities of other kinds. The tourism sector is the most exposed to shocks from outside, such as political unrest, terrorism, natural calamities, and changes in the exchange rate, making it more sensitive than other sectors (Cheer & Lew, 2017;

Causevic & Lynch, 2013; Alam & Mingque, 2018). Although tourism brings a country much revenue, it impacts the country's ecological sustainability negatively. The industry generates more than $600 billion in taxes paid to governments annually, thus contributing significantly to the economy of other countries (Mihalič, 2013; Calero & Turner, 2020; Fang, 2020; Cetin et al., 2017). Sustainable tourism sees to the use of resources for travel and other activities in such a way that the natural and cultural, social, and economic surroundings of a region remain healthy and unharmed (Liu, 2020; Andrews, 2021; Zubritckaia, 2015; Sharply, 2020).

Both natural and artificial parks contribute significantly to tourism by providing recreation, preserving biodiversity, and enhancing the local economy (Ervina and Octavinary, 2017; Lebrun et al, 2011; Tribe, 2020). However, many of these parks are poorly funded and managed, causing their social and environmental benefits to be missed (Evans and Stoddart, 2017). Tourism in South Asia, particularly in Pakistan, India, and Nepal, has been seen as an avenue to achieve socio-economic development, job creation, and poverty alleviation (Parajuli, 2018). The diverse topographic features of Pakistan, which include high, snow-covered mountains, beautiful lakes, and deserts alongside the sea, provide an opportunity for tourism (Qasim, Ali, and Aqeel 2024; Timothy and Nyaupane, 2022). Reports show the sector accounted for 6.9% of the country's GDP in 2017, with estimates suggesting the tourism sector has been growing steadily (Ahmad 2011, Khan et al, 2022). Particularly, the province of Khyber Pakhtunkhwa (KP), with its snow-covered mountains and green valleys, and rich culture, poses as a prime tourist attraction (Ali et al, 2017; Ahmed & Riaz, 2024; Shi & Zheng, 2024). The expansion of the tourism sector leads to the proportional growth of construction-related waste as well as the recreational and leisure areas used by tourists. The Angelokova et al. 2012) associate the overwhelming need to manage waste with the necessity of keeping the visited areas intact and attracting environmentally conscious tourists. The created tourist infrastructure and recreationally used areas affect the areas visited by the tourists. The temporary customers and tourists exert an overwhelming effect on the waste created. Creating tourist waste recycling activities and monetary support systems designed for waste-reducing activities to tourists represent sustainable waste management practices (Edgell, Sr, 2019; Go and Govers, 2000). The poorly managed waste brings along environmental degradation, lower visitor satisfaction, and poor awareness.

Waste encompasses three physical forms: solid, liquid, and gas, and can be classified into households, municipalities, or industries. Proper and efficient management of all waste types involves collection, transport, treatment, and final disposal (Abdel-Shafy & Mansour, 2018; Demirbas, 2011). Many countries in the Global South suffer from the problem of neglect of waste management due to rapid urbanization, the disrepair of facilities, and the absence of legislation (Medina, 2010). Open dumping and burning waste are the most common practices. Integrated approaches to managing waste, such as recycling, composting, and recovery of materials, represent the most beneficial forms of waste management (Ferronato & Torretta, 2019; Rodic & Wilson, 2017). Composting of organic waste enhances soil fertility and decreases the extent of pollution (Sharma & Jain, 2020; Ayilara et al., 2020; Sánchez et al., 2017). Meanwhile, the amount of waste generated by households worldwide continues to increase. This expansion poses ever greater risks to the environment and public health (Abbasi, 2018; Pillai & Shah, 2014).

Peshawar, one of the oldest and continuously inhabited cities in Pakistan, is historically and culturally significant. The city contains major public parks- including Shahi Bagh, Jinnah Bagh, and Wazir Bagh Army stadium, which are parks, and are major providers of public health and recreational facilities (Kazmierczak, 2013; Giles-Corti and Donovan, 2002; Aman et al., 2019). However, despite their important role as urban green spaces, most of these parks suffer from neglect and inadequate waste management. As tourists and visitors use these public parks, the volume of litter grows, increasing environmental degradation and health hazards (Yang et al, 2010). Although city officials have implemented waste management plans, these efforts have been largely ineffective. Therefore, the purpose of this study is to assess the potential for improved waste management to promote sustainability in the public parks of District Peshawar, by examining tourists' willingness to pay and

their participation in supporting sustainable tourism objectives

**Objectives of the study**

- To examine tourists' understanding and awareness of waste management practices in public parks of District Peshawar.
- To identify the socio-economic, demographic, and perceptual factors that influence tourists' willingness to pay for improved waste management services
- To quantify the extent to which visitors are willing to contribute financially to enhance waste management in public parks
- To provide insights for policymakers to design sustainable and effective waste management strategies in recreational areas

## Literature review

The interplay between tourism and waste management is critical in developing countries, where increasing visitor numbers and rapid urbanization strain public spaces. In Khyber Pakhtunkhwa (KP), Pakistan, public parks are overwhelmed by domestic waste, while municipal waste management remains limited and ineffective. This highlights the need to explore tourists' willingness to pay (WTP) for improved park services as a mechanism for sustainable tourism and economic development.

Environmental quality strongly influences tourist behavior, and evidence shows visitors are willing to contribute financially to maintain parks and heritage sites (Abdullah et al., 2018; Ariffin et al., 2016; Birdir et al., 2016). Socio-economic factors such as income, education, age, and household size consistently affect WTP, while social, health, and environmental benefits further motivate contributions (Bollino et al., 2006; Grosbois, 2021; Halkos et al., 2022; Wilson et al., 2018). The Contingent Valuation (CV) method remains the most common tool for estimating WTP for non-marketed environmental goods (Hanley et al., 2009; Hasan et al., 2020). In Pakistan, younger visitors and women show higher WTP, reflecting their engagement with environmental and social benefits (Hussain et al., 2004; 2012).

Challenges in waste management are compounded by unplanned urbanization, poor governance, and insufficient integration of poverty alleviation and environmental planning (Khanum et al., 2008; Mufti et al., 2021). Most waste is organic, suggesting composting and community participation as sustainable solutions (Soni et al., 2018; Mello et al., 2021). Tourism studies in Lahore, Sindh, and Sri Lanka further highlight income, education, and ecological awareness as key determinants of WTP for cultural and environmental amenities (Mahboob et al., 2020; Sayira et al., 2015).

Parks also contribute to public health, social cohesion, and overall well-being, reinforcing the broader societal value of environmental management (Bedimo-Rung et al., 2019; Hafeez, 2021). Rising tourist numbers, particularly in mountain and urban parks, intensify waste challenges, yet WTP-based funding offers a viable pathway to enhance park infrastructure and services (Orakzai et al., 2024). Collectively, the literature underscores a strong correlation between WTP, socio-economic factors, governance, and environmental quality, providing a robust foundation for policy interventions aimed at sustainable urban tourism and effective waste management in Pakistan.

## Research Method

### Study area

This research was conducted in Peshawar district, encompassing the city's eight administrative zones, including a designated green zone. Peshawar, often called the "City of Flowers," currently has over 85 square miles of parks, which significantly contribute to the urban landscape. The parks are managed and maintained by the Peshawar Development Authority. Rapid urban expansion, driven by real estate development, has led to city beautification and the creation of new recreational spaces. Notable public parks in Peshawar include Wazir Bagh, Shahi Bagh, Jinnah Park, Tatara Park, Bagh-e-Naran Park, Chacha Younas Park, Ghani Bagh Park, and Shah Alampi Park.

**Data Collection**

A systematic questionnaire was used to gather primary data. Surveys were sent to participants, and in-person interviews took place at various Peshawar public parks.

**Sampling Technique and Sample Size**

The initial data collection for this research was guided by Cochran's sampling method, drawing on established sampling theories. The process began with the selection of several parks in Peshawar. Within each selected park, tourists were randomly chosen to participate. This process continued until a total of 400 respondents were surveyed, following a convenience sampling approach.

Convenience sampling was used to facilitate the practical selection of participants, focusing specifically on tourists. An estimate of park attendance at each site helped determine the ease of accessing respondents and informed the selection of parks. Subsequently, random selection within these parks ensured a representative sample of tourists. The data collection concluded once 400 respondents were reached, after which the data were compiled, organized, and prepared for analysis

$$n_0 = \frac{z^{2.}\, P.\, (1-P)}{e^2}$$

Were,

n = sample size
z = standard error (typically 1.96)
p = population proportion
q=1−p
e = sample error

To determine the proportions of different responses, Descriptive Statistics was used. In this research, different components that contributed to tourists' willingness to pay (WTP) were evaluated with a linear regression model. Data analysis was carried out with Stata statistical software.

**Theoretical Framework**

This study seeks to assess the value respondents place on, and their willingness to pay for, improvements in waste management in public parks in District Peshawar. To achieve this, the Contingent Valuation Method (CVM) was employed, as it is particularly well-suited for such objectives. CVM is an economic survey-based approach that estimates the value individuals assign to goods and services that are typically not available in the market, especially those related to the environment and the benefits provided by ecosystems. Both use and non-use values of environmental improvements are captured by asking respondents how much they would be willing to pay for specific enhancements.

CVM is widely regarded as the most flexible and commonly applied valuation method, allowing researchers and policymakers to quantify public demand for non-market environmental benefits, recreational services, and ecosystem or health-related functions. Various question formats can be utilized to measure willingness to pay, including open-ended questions, payment cards, and dichotomous choice approaches.

This study employs an open-ended elicitation approach to measure respondents' willingness to pay for improved waste management in public parks. In this approach, participants are directly asked how much they would be willing to contribute to the enhancement of park services. The method is straightforward and uncomplicated, providing a clear insight into how individuals value the parks. Compared to other techniques, the open-ended bidding format is simple to implement and generates detailed, informative data that reflects each respondent's personal valuation. This approach is particularly well-suited to the objectives of the present study.

Empirical Model

All authors in the literature agree that many different techniques have been employed to analyze the

association of independent and dependent variables. They also agree that the techniques apply to estimating the exact monetary value that customers are willing to pay to obtain better quality food and/or services. An open-ended question response is to be analyzed to estimate the willingness to pay and to determine the factors that influence it using a linear WTP model.

$$WTP_j = \beta o + \sum_{i=1}^{n} \beta i \, Xij = \varepsilon$$

Where,

WTPj: is the WTP of the $j^{th}$ respondent for the improved waste management services. Xj: Vector of demographic and socioeconomic characteristics of the jth respondent.

To determine WTP, one can start by establishing a relationship between WTP and {age, gender, employment status, education level, household size, monthly income level, location, visits to parks, monthly expenditure on parks, pollution in parks}' etc. Nonetheless, consumer willingness to pay factors can be expressed as.

$$WTP_i = \beta_0 + \beta_{1Age_i} + \beta_{2Gender_i} + \beta_{3Education_i} + \beta_{4HHSize_i} + \beta_{5Income_i} + \beta_{6Location_i} + \beta_{7ParkVisits_i} + \beta_{8MonthlyParkExpenditure_i} + \beta_{9EnvActivities_i} + \beta_{10EmploymentStatus_i} + \beta_{11EnvPollutionPerception_i} + \beta_{12EnvAwareness_i} + \mu_i$$

Where:

- $WTP_i$= willingness to pay of tourists i
- $\beta_0$= intercept
- $\beta_1, \ldots, \beta_{12}$= parameters to be estimated
- $\mu_i$= error term for tourist i.

**Results and Discussion**

**Sociodemographic and Socioeconomic Characteristics**

This socio-economic and demographic information provides important context for understanding respondents' willingness to pay for improved waste management in Peshawar's public parks and highlights the various factors that may influence their financial participation.

An analysis of the socio-economic and demographic characteristics of the respondents provides a clear understanding of the sample composition. According to the Nature Pakistan report, 97.5% of the 400 respondents were male, indicating a significant gender imbalance. In terms of occupation, 56% were employed in government positions, 35.5% were business owners, and 8.5% were engaged in other fields, reflecting a moderate diversity of professions. The respondents' ages ranged from 25 to 90 years, with an average age of 42, showing a wide age distribution. Education levels also varied, with an average of 8.19 years of schooling, highlighting the diversity in educational attainment. Household sizes ranged considerably, with a mean of 6.69 members, indicating different family structures. Income levels displayed a broad range, from a minimum of 11,000 to a maximum of 150,000, with an average income of 46,780, suggesting significant economic diversity among respondents. Employment status showed a mean of 0.54, suggesting that roughly half of the respondents were employed. Table 1.

**Table. 1: Respondents' Sociodemographic and Socioeconomic Characteristics**

| Variables | Observation | Mean | Std.Dev | Min | Max |
|---|---|---|---|---|---|
| Age | 400 | 42.015 | 11.48672 | 25 | 90 |
| Gender | 400 | .975 | .1563205 | 0 | 1 |
| Education 1-5 | 400 | 8.19 | 6.647132 | 0 | 18 |
| Location | 400 | .61 | .4883608 | 0 | 1 |

| | | | | | |
|---|---|---|---|---|---|
| HHS | 400 | 6.685 | 2.804539 | 2 | 15 |
| Income | 400 | 46780 | 23419.71 | 11000 | 150000 |
| Employment | 400 | .54 | .4990216 | 0 | 1 |

Table 2 presents the distribution of respondents based on how often they visit public parks. Out of the 400 participants, 12.2% reported visiting the parks daily. The majority, about 64%, indicated that they go to the parks weekly, while the remaining 24% visit the parks on a monthly schedule.

**Table 2: Tourists' Visit to Parks**

| Visiting Parks | Frequency | Percent |
|---|---|---|
| Daily | 50 | 12.2 |
| Weekly | 254 | 63.8 |
| Monthly | 95 | 24.0 |
| Total | 400 | 100.0 |

**Tourists' Perception Regarding Attention on Environmental Issues in Peshawar**

Table 3 illustrates respondents' views regarding environmental concerns in Peshawar. According to the survey results, 18.2% of participants felt that environmental issues in the city are receiving increased attention. Another 74.8% believed that these issues are being acknowledged to some extent. The remaining 7% did not agree with the statement presented in the survey.

**Table. 3: Whether or not to Pay More Attention to Environmental Issues in Peshawar**

| Attention to Environmental Issues | Frequency | Percent |
|---|---|---|
| Yes | 74 | 18.2 |
| Partly | 298 | 74.8 |
| Never | 27 | 7.0 |
| Total | 400 | 100.0 |

**Tourists' Participation in Environmental Activities**

Table 4 illustrates all respondents' participation in environmental activities. Of the total 400 respondents, 101 (25.2%) participated in some environmental activities and thus replied positively to the activities, while 299 (74.8%) respondents replied negatively, indicating that they did not participate in any environmental activity

**Table. 4: Whether or not they often participated in Environmental Activities**

| Participated in the Environmental Activities | Frequency | Percent |
|---|---|---|
| Yes | 102 | 26.2 |
| Never | 298 | 73.8 |

| | | |
|---|---|---|
| Total | 400 | 100.0 |

**Respondents' Satisfaction with the Current Environmental Situation**

Table 5 provides information on respondents' level of satisfaction with their current environmental condition. Out of 400 total respondents (100%), 279 (69.8%) were dissatisfied with the environmental situation currently, 94 (23.5%) were somewhat satisfied, and 27 (6.8%) were completely satisfied.

**Table. 5: Respondents' Satisfaction with the Current Environmental Situation**

| Satisfaction with Environmental Situation | Frequency | Percent |
|---|---|---|
| Not Satisfied | 278 | 69.8 |
| Fully Satisfied | 28 | 6.8 |
| Satisfied | 95 | 23.5 |
| Total | 400 | 100.0 |

**Which kind of Environmental Pollution is more serious and needs more Attention**

In Table 6, the analyzed perceptions of respondents regarding the various forms of environmental pollution demonstrate that 63.8% of respondents view Air Pollution as more serious, 22% of respondents view water pollution as more serious and require more attention, 11.2% of respondents view Solid Waste Pollution as fairly serious, and the remaining 3% perceive Noise Pollution as the more serious type of environmental pollution requiring more attention.

**Table. 6: Respondents' Perception Regarding Types of Pollution**

| Types of Pollution | Frequency | Percent |
|---|---|---|
| Water pollution | 87 | 22.0 |
| Air Pollution | 256 | 63.8 |
| Solid Waste Pollution | 44 | 11.2 |
| Noise Pollution | 13 | 3.0 |
| Total | 400 | 100.0 |

**Negative Effects of Waste Products in Public Parks**

Table 7 illustrates the Environmental Impact of waste in Public Parks. Regarding the study findings, there is a discordance of opinion on the Environmental Effects of Park Waste. As evidenced, out of 400 respondents, the majority (80%) of respondents have an affirmative view concerning Public Park Waste's Negative Environmental Changes, while 20% of respondents have a negative view concerning Public Park Waste's Negative Environmental Changes.

**Table. 7: Negative Effect of Waste Products in Public Parks on the Environment**

| Respondents Perception | Frequency | Percent |
|---|---|---|
| Disagree | 81 | 20.0 |
| Agree | 319 | 80.0 |
| Total | 400 | 100.0 |

**Engagement in Environmentally Friendly Practices**

Table 8 depicts the respondents' perceptions concerning the collaboration between the Municipal Corporation and the local community for the implementation of eco-friendly practices aimed at the efficient management of waste in public parks while minimizing the adverse effects on human health. The findings indicated that 97.2 percent of respondents were in support of the assertion, whereas 2.8 percent of respondents were opposed to the assertion

**Table. 8: Municipal Corporation and local community with Waste Management**

| Respondents' Perception | Frequency | Percent |
|---|---|---|
| Yes | 388 | 97.2 |
| No | 12 | 2.8 |
| Total | 400 | 100.0 |

**Representation of the agreement to pay the price**

Table 9 shows the willingness to pay a premium that respondents are willing to pay for waste management in public parks. Results of the study show that about half of the respondents are willing to pay 20 rupees more for waste management services in public parks. It is also evidenced that 25 percent of the respondents are willing to pay a price premium of rupees 10 for the best waste management practices in public parks.

**Table. 9: Respondents' Willingness to Pay for Waste Management**

| **WTP** | **Frequency** | **Percent** |
|---|---|---|
| 0 | 35 | 8.7 |
| 10 | 102 | 25.7 |
| 20 | 175 | 43.0 |
| 30 | 45 | 11.4 |
| 40 | 27 | 7.1 |
| 50 | 13 | 3.1 |
| Total | 400 | 100.0 |

**Determinants of Willingness to Pay**

Table 10 depicts determinants influencing tourists' willingness to pay for waste management in public parks of the district of Peshawar. The analysis follows a description of tourists' WTP toward the waste management in public parks in Peshawar City, which is obtained from a sample of 400 respondents. The intercept or constant term of the model is -7.342822, representing the base WTP when all other variables are zero. This figure has a statistical significance of p=0.000. Overall significance of the model is depicted with the f-statistic of 53.67 and Prob > F = 0.0000, while the R-squared is 0.4503, thus explaining about 45% of the variation in WTP.

Results of the study showed that age of respondents is positively influencing their willingness to pay for waste management in public parks. A positive sign of age coefficients indicates that with an increase in age, more is the respondent's willingness to pay for better waste management in the study

area. Results highlighted that with one year's increase in age of the respondent, their willingness to pay is increased by 40%. More aged people are concerned about their health, and visits to parks provide health benefits like walking, jogging, and other outing exercises. These results were in line with findings by Khan et al. (2018, 2019, and 2022).

The results of the study showed that the education of the respondents is positively influencing their willingness to pay for waste management in public parks. A positive sign of education coefficients indicates that with an increase in education, respondents are willing to pay more for better waste management in the study area. The results underpin that when there is a one-year increase in the education of the respondents, their WTP increases by 40 percent. Educated people are more concerned about their health, and a visit to parks provides health benefits like walking, jogging, and other outing exercises. The results of the study revealed that the number of family members of the respondent negatively influences their willingness to pay for waste management in a public park. The negative sign of household size states a negative but insignificant correlation with WTP. Its coefficient stands at -0.291.

Results of the study showed that the income of the respondents is positively influencing their willingness to pay for waste management in public parks. Positive signs of income coefficients mean that with an increase in income, the respondents are willing to pay more for better waste management in the study area. Results highlight that when there is an increased income level of the respondents, their willingness to pay is increased by .0000551 percent. The evidence shows that the employment status of the respondents is positively influencing their willingness to pay for waste management in public parks. A positive sign of the employment coefficients indicates that when the employment status of the respondent is better than the respondents are more willing to pay more for better waste management in the study area. The results depict that when the employment status of the respondent is better than the willingness to pay increases by 4.689973. Employed people are more concerned about their health, and visits to parks provide health benefits through activities like walking, jogging, and other forms of outdoor exercise.

**Table. 10: Determinants of Willingness to Pay for Waste Management**

| WTP | Coef. | Std. Err. | T | P>\|t\| | [95% conf. | interval |
|---|---|---|---|---|---|---|
| Age | .4057576 | .0365305 | 11.09 | 0.000 | .3338082 | .477487 |
| Location & Area | 3.468597 | .8475085 | 4.08 | 0.000 | 1.80236 | 5.135734 |
| Education | .4091955 | 0.632243 | 6.46 | 0.000 | .2847658 | .5334052 |
| HHS | -.2918346 | .1544791 | -1.88 | 0.601 | -.5956531 | .0117839 |
| Income | .0001551 | .0000289 | 2.91 | 0.003 | .000028 | .0000822 |
| Employment | 4.688973 | .8366211 | 5.60 | 0.001 | 3.045131 | 6.334705 |
| Intercept | -7.341822 | 1.982146 | -3.69 | 0.001 | -11.24005 | -3.445393 |
| Number of respondents = 400, F value (53.57), R-Squared (0.45) | | | | | | |

**Mean Willingness to Pay of respondents**

Based on the sample size of 400 observations, Table 11presents the stated willingness to pay for waste disposal in public parks in the District of Peshawar. This results in an estimated mean WTP of

18.33 units of local currency with a standard error of approximately 0.404, hence a good degree of accuracy in the estimate. The t-value of 45.40 and the p-value of 0.000 further supported this estimate to be statistically significant, hence clearly indicating that the mean WTP is meaningfully different from zero. Also, the 95% confidence interval range of 17.54 to 19.12 units of currency presents the reliability of this estimated mean WTP by giving a narrow range we are certain contains the true mean WTP. In fact, these findings signal that public funding mechanisms can be utilized to support environmental sustainability initiatives with strong evidence of substantial willingness to pay by visitors visiting the District of Peshawar for waste management initiatives in public parks.

**Table. 11: Mean WTP**

| | Margin | St. Err | t | P>\|t\| | [95% Conf. Interval] | |
|---|---|---|---|---|---|---|
| Cons | 18.31 | .4037355 | 45.35 | 0.001 | 17.53615 | 19.12363 |

**Variance Inflation Factor (VIF)**

The diagnostic tests that were conducted in the analysis of factors affecting visitors' WTP to improve waste management in public parks include the Breusch-Pagan/Cook-Weisberg test for heteroscedasticity in model residuals and the VIF test-one, indicating multicollinearity among independent variables, are shown in Table 12. The VIF results indicated that the majority of independent variables, or those in the narrow range of 1.05 to 1.20, were significantly lower than the widely accepted criteria of 5. Among these variables were Age in years, Employment, Location, Income, Household Size-HHS, years of Education, and Age in years. This indicates that the predictors are, at the very least, free of multicollinearity, meaning that every variable in this model contributes uniquely and is independent of the other variables. The average variance of all the variables combined was 1.10, indicating that multicollinearity is not an issue and confirming the validity of the coefficients obtained from this study.

Overall, the regression model's estimates are reliable; considerable multicollinearity does not exist. Heteroskedasticity, however, may necessitate the use of corrective procedures that take changes in the dependent variable into account or use robust standard errors. This will contribute to maintaining the reliability and integrity of the model outcome for the amount of money visitors are willing to spend on trash management activities that are mandated at public parks.

**Table. 12: Variance Inflation Factor (VIF)**

| **Variables** | **VIF** | **1/VIF** |
|---|---|---|
| Income | 1.20 | 0.835808 |
| HHS | 1.15 | 0.870452 |
| Education in years | 1.08 | 0.924891 |
| Age in years | 1.08 | 0.927517 |
| Employment | 1.07 | 0.937469 |
| Location | 1.05 | 0.953858 |
| Mean VIF | 1.10 | |

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