Valuing the nature-based recreational benefits of Iloilo river esplanade using the travel cost method

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ABSTRACT

This paper presents the assessment of the economic value of the Iloilo river esplanade, a recreational site in Iloilo City. The objective of the study is to evaluate the demand for the site or recreation therein using the travel cost method. Data was gathered through online surveys of 385 college students from five universities in Iloilo City who had visited the place. By employing a negative binomial model, the analysis resulted in an estimated economic value of Php 5,120.33 (US$ 93.9) per person per trip. Variables such as travel costs, age, distance, group size, sex, and the visitor's civil status are significant factors on the number of trips to Esplanade. Travel cost has a negative relationship with the trip's frequency and distance is a factor affecting the number of visits undertaken, indicating that as the as the trip distance increases, the total number of trips decreases. The results presented in this study can improve the quality of the recreational and environmental services of the Iloilo river esplanade, as the findings can assist in identifying the variety of services that the place could offer based on the visitors' demand. Further, the study can provide valuable inputs in resource and policy planning, as well as assist resource managers and the local government of Iloilo City in making crucial decisions to improve the overall experience for visitors to the Esplanade and ensure the continued preservation of the recreational site to maximize its nature- based and recreational benefits.

Keywords: Consumer surplus, Iloilo River esplanade, non-market valuation, recreational

INTRODUCTION

Many environmental goods and services are rarely traded in normal markets due to their feature as public goods and the fact that they frequently take the form of externalities that are outside the control of producers and consumers. Because of this, the environment, which the market cannot directly price, is considered non-pecuniary and intangible. The environment is also necessarily overconsumed and exploited because there is no price tag for the environment in the absence of intervention, which leads to market failure (Quah and Tan, 2019). It is also vital to consider society's level of preference for the environment in relation to other goods and services to calculate environmental products and services to provide and preserve. The distribution of scarce resources among competing uses is justified by using this value metric to provide information for decision-making and policymaking. In response, economists have developed a range of valuation techniques, collectively referred to as nonmarket valuation techniques, to calculate the worth of commodities and services for which there is either a deficient or no market (Morrissey, 2020).

There are only limited marketplaces for a few environmental goods and services. Estimating the value of improvements in environmental quality in the absence of markets is a challenge for the analyst. Economists frequently use revealed or stated preference ways to value non-market benefits and costs when employing non-price-related methodologies. The revealed preference method examines the choices people make (as determined by their deeds) to assess the worth of non-market goods and services. Based on Freeman et al. (2014), it comprises Travel Cost Method and Hedonic Method. The stated preference method uses survey-based techniques for non-market valuation. It consists of Contingent Valuation and Conjoint Analysis (Freeman et al., 2014).

People are asked regarding their willingness to pay or accept given several hypothetical options for their stated preferences (Bonner, 2022).

This study used the Travel Cost Method (TCM) in the economic valuation of the Iloilo river esplanade. TCM is regarded as the first technique used to assess a non-market good's economic value. TCM is based on the fundamental premise that every person is both actually and theoretically willing to visit a location to receive benefits without spending an entrance fee (Malahayati and Fitrawati, 2020). People are thought to be cost-sensitive when it comes to travel, which means that since the unit cost of a journey is lower for those who live closer to the site than those who live farther away, they will visit more frequently (Ezebilo, 2016). This concept is consistent with microeconomic theory, which states that greater costs or higher price for commodities result in less consumption (Besanko and Braeutigam, 2011). The justification for utilizing TCM is that it offers trustworthy estimates based on actual behaviors, making it the best method for modeling the use-values of recreational resources. Additionally, it is regarded as the most reliable method of environmental goods evaluation for benefit transfer analyses related to recreational activities (Zandersen and Richard, 2009).

Recreational areas play an important role in managing natural resources and provide significant value to a country. However, assessing their economic value can be difficult as they are considered non-market goods or services, which cannot be easily quantified using standard methods. To determine this value, the travel cost method (TCM) is often utilized. TCM is rooted in the idea that the value of recreational areas is reflected in the costs (e.g., time, transportation, and expenses) that individuals are willing to bear to access the area.

The Iloilo Esplanade is a quiet place for strolling that runs parallel to the Iloilo River; it likewise serves as a good demonstration of the city's commitment to the Iloilo River's recovery and protection and encourages healthy, active lifestyles. One of the Iloilo Government's aims for its people is promoting tourism in line with the idea of conserving nature's beauty and developing the recreational benefits found in Esplanade. However, given the surging advancements and modernization that are currently taking place in the city, the matter of tourism sustainability is becoming an increasingly pressing concern. Collado (2019) stressed that despite the influx of tourists, there is still a need for environmental protection that promotes development and management of river-based tourism while promoting awareness of environmental conservation.

The natural resources of the Iloilo river esplanade, including its mangroves and fish populations, are likely subject to destruction due to the city's growing population. According to Philippine Center for Investigative Journalism, domestic wastewater ends up in the Iloilo river due to the absence of a citywide sewerage system. The situation calls for Iloilo City Government's need to provide actions wherein appropriate policies and programs must be implemented to protect and develop the site, increase tourism engagement, and conserve the natural resources found in Iloilo river esplanade. The TCM allows for the estimation of the economic values of the Iloilo river esplanade. At present, there have not been any published valuation studies conducted to evaluate the recreational value of the Iloilo river esplanade using non-market valuation techniques. Therefore, this present study is attempting to fill this literature gap by being the first non-market valuation study to determine the recreation demand of the Iloilo river esplanade.

The main purpose of this study is to estimate the recreational value of the recreation site using individual TCM (Appendix 1). Specifically, the study also aims 1) to determine the respondent's travel expenses from residence to the site and vice-versa, 2) to determine respondents' Willingness to Pay (WTP) for entrance fees and other recreational fees in the area and 3) to determine the factors that significantly affect the number of visits to the Iloilo river esplanade.

This research will provide the foundational knowledge needed to protect, promote, and conserve the Iloilo river esplanade. Along with increasing awareness of the importance of the site, this will increase the understanding of how the residents of Iloilo can maintain and protect the site's natural resources. This may boost participation from students, educators, and residents in promoting the site through existing channels. The results of this study will also be beneficial to tourists and travelers, as they will be provided with information on the costs associated with visiting the place and the different recreational activities available in the area. All data based on the study's findings can also contribute to the Department of Tourism's decision-making and policy preparation that is beneficial to the development and maintenance of the site.

An economic valuation of this recreational site can show its benefits to people, and help improve its current state, as well as introduce this recreation site to people on a national and international scale. It is hoped that the findings of this study can be used to enhance the recreational and environmental services offered at Iloilo river esplanade and to provide a wider range of services based on what visitors want.

MATERIALS AND METHODS

Study site

The 8.1-kilometer-long Iloilo river esplanade (10°42'4"N 122°32'49"E) is a linear park and esplanade that runs alongside

the Iloilo river in Iloilo City (Fig. 1) was selected as the study site. The innovative landscape project that extends along both banks of the Iloilo river, from Carpenter's Bridge in the Mandurriao and Molo districts to Muelle Loney Bridge in the City Proper and Lapuz districts revitalized a once-neglected riverbank and created a memorable open space that is essential to modern urban civic life. According to Albay (2021), Iloilo City actively supports environmental conservation despite its high rate of urbanization. Anecdotal data suggests that real property values along the banks of the Iloilo river in Iloilo City have skyrocketed since the rehabilitation began due to the regeneration of the river and its pockets of mangroves.

Due to its beautiful garden and impressive landscape design, the Esplanade became one of the city's main tourist attractions. In a recent report by the city government, Iloilo esplanade is the city's most popular tourist attraction, ranking first among the top three (City Government of Iloilo, 2020). This river park reclaimed a key thoroughfare for pedestrians and created a space of civic empowerment as well as offers a location for relaxation and quiet that revitalizes the relationship between the river, city, and people as part of the Iloilo river rehabilitation initiative.
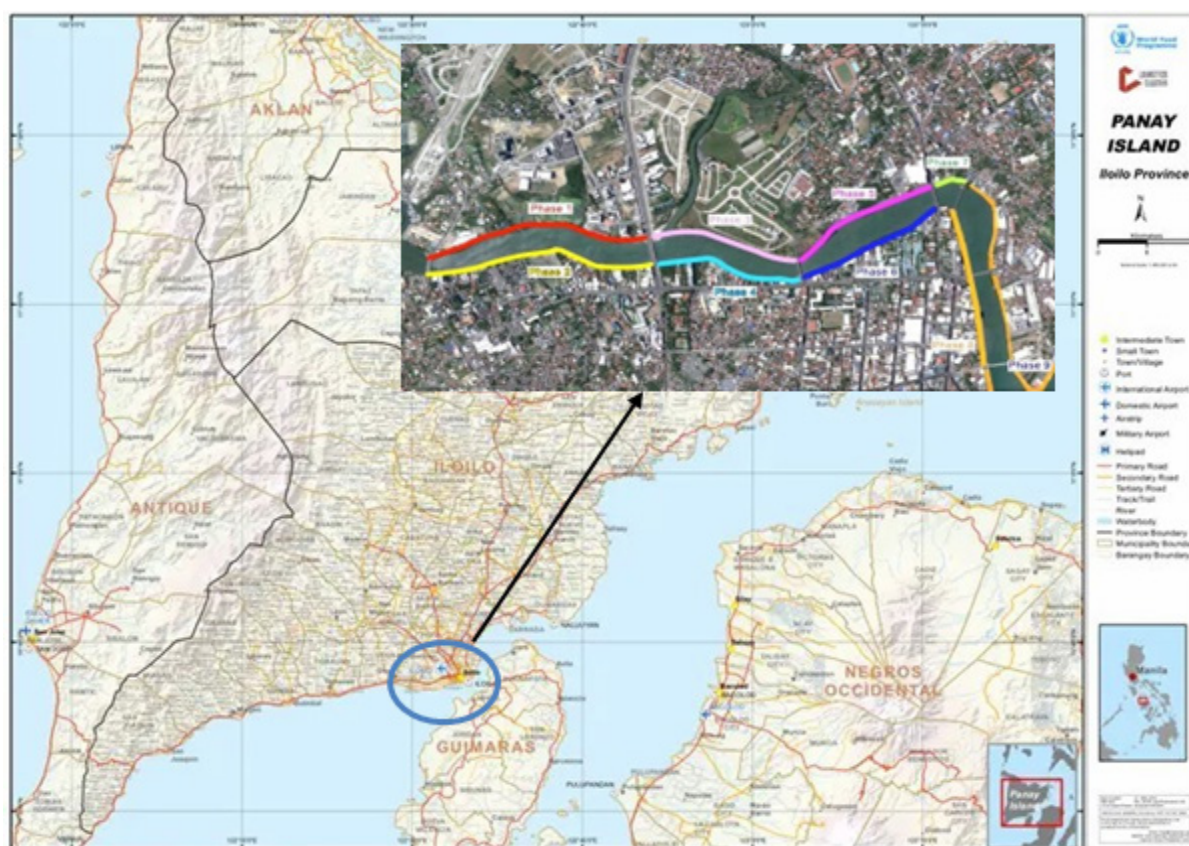
Figure 1. Map of Iloilo City with Iloilo river esplanade. Adopted from Reliefweb, (2014).

Framework of the study

The conceptual framework of this study is shown in Figure 2. The framework took reference from the study of Iamtrakul et al., (2005), where the characteristics of variables are classified into three: socioeconomic, activity, and travel. In accordance with Iamtrakul et al. (2005) valuation of public parks, this study i dentified the patterns of park user's behavior to suggest policies in relation to the conservation of green space with the prevailing urbanization. The variables

were classified into three for better and more comprehensive analysis in relation to the visitor's behavior to measure the economic value of the Iloilo river esplanade. With these classifications, the study was able to identify which factors of individuality and uniqueness of the visitors play the major role that significantly correlated with their patterns of behaviors of their visitation.
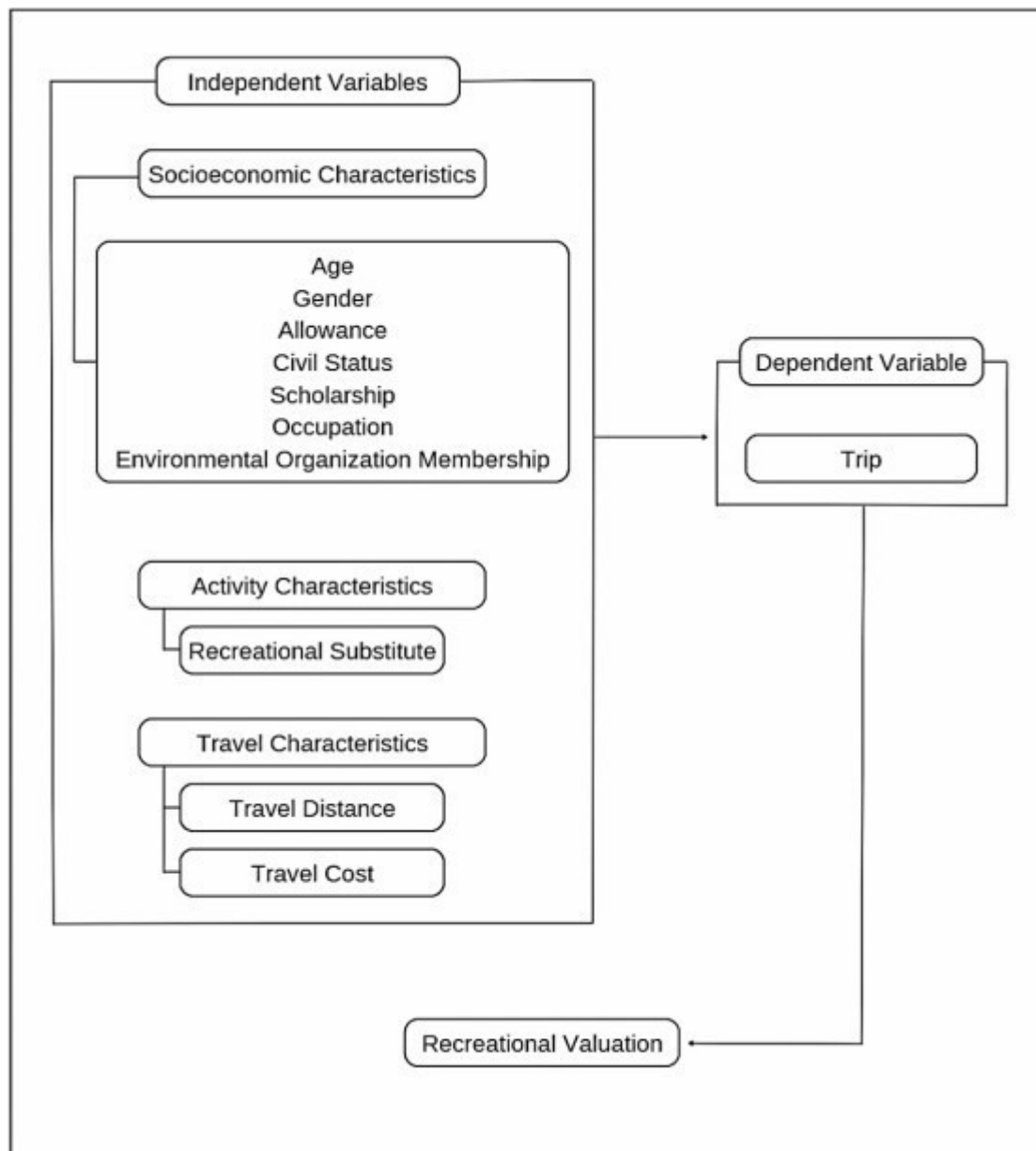
Figure 2. Conceptual framework of Iloilo esplanade river valuation (Iamtrakul et al., 2005).

As a result, in the Iloilo river esplanade's case, the study specifically analyzed the correlation between the dependent variable (number of trips) and the independent variables (age, gender, allowance, civil status, scholarship, occupation, membership of environmental organization, recreational substitute, travel distance, and travel cost) in accordance with the several reviewed related works of literature.

Sampling method

The respondents were selected from five universities in Iloilo City namely; (1) Central Philippine University, West Visayas State University-Main Campus, Iloilo Science

and Technology University-Main Campus, University of San Agustin and the University of Iloilo. The researchers were unable to acquire the total population for each of the five schools due to time and financial constraints. Hence, the sample size of 385 was obtained using Cochran's formula (Equation 2) (COCHRAN, 1977, as cited in Chaokromthong and Sintao, 2021):

$$n = \frac{z^2(p)(q)}{e^2} \qquad \text{Eq 2}$$

$$n = \frac{(1.96)^2(0.5)(0.5)}{0.5^2} \qquad \text{Eq 3}$$

$$= 384.16$$

Where:
n = sample size
p = estimated proportion (p=0.5)
q = 1 - p
e = acceptable sampling error (e = 0.05)
z = z-value at reliability level or significance level; 95% or 0.05 significance level = 1.96

For uniformity of the number of respondents, the sample size was set at 400. Quota sampling was used to perform further demographic breakdowns, such as segmenting the population into quotas in terms of gender (i.e., 200 males and 200 females) but with the condition that students who had visited Esplanade could only be included. However, there were 385 valid responses, and due to the higher volume of female students in the said five universities, the male respondents of the study only account for 39% while females accounting 61%. Quota sampling is a non- probability sampling technique that begins with a description of the population, then generates quotas for the unit structures that will be sampled before finally choosing individuals to fit within these quotas (Iliyasu and Etikan, 2021). Iliyasu and Etikan (2021) also state that this sampling approach is less costly, straight forward, convenient, and stress-free to use even though it does not provide a good representative of the population. It is also appropriate for this study since it helps with time and financial restrictions, aids in data gathering, and makes sure that the quantity and variety of respondents to the survey are adequately tracked.

Due to some restrictions and risks of the pandemic brought about by COVID-19, the study also employed the non-probability sampling, which is snowball sampling in distributing the questionnaires. This technique served as a convenient manner of locating the respondents. According to Bhat (2018), the snowball sampling method can be utilized when performing a direct approach on a population that is hard to locate and has no official list of respondents' names. As with the nature of a snowball, the sample size can grow exponentially, allowing researchers to reach certain conclusions. However, as stated earlier, this study has limitations on the desired number of respondents, by calculating sample size using Cochran Formula without population size, as quota sampling was added.

Data collection

A structured questionnaire was designed to obtain the trip data required to apply individual TCM to the Iloilo river esplanade. To evaluate the questionnaire, a pilot study was conducted on November 4, 2022, with 35 respondents participated through Messenger application. Based on feedback and comments obtained from the respondents, the survey questions were adjusted and improved. The final online survey was formally conducted from November 25 to December 9, 2022. The questionnaire survey included questions about the size of the traveling group, the respondent's home location, the number of times the respondent had visited the recreational site in the last twelve months to enjoy the activities offered, the round-trip distance traveled, the duration (in hours) of the round trip, duration of the visit, whether the respondent had an alternative recreational site destination, and some demographic information about the respondents.

RESULTS

Respondent's socio-economic characteristics

Results in Table 1 shows the distribution of respondents in five universities in Iloilo City. Only respondents who have visited the Iloilo river esplanade were considered in the study. Most number of respondents were students from West Visayas State University - Main Campus (29.9%) followed by students at Central Philippine University (26%).

Table 1. Distribution of respondents from different universities (N=385).

University/School	Frequency	Percent
Central Philippine University	101	26.0
West Visayas State University- Main Campus	115	29.9
Iloilo Science and Technology University- Main Campus	78	20.25
University of San Agustin	51	13.24
University of Iloilo	40	10.30

Majority of the respondents were female (61%). This could also be due to the high volume of female students enrolled in the five universities. Male only accounted for 39%. On the other hand, Table 2 shows the details of the representation of the number of visitors in different age bracket. It indicates that 21 to 24 year-old students mostly visit the Iloilo river esplanade.

Table 2. Age distribution of respondents (N=385).

Age (year)	Frequency	Percent
18-20	140	36.36
21-24	243	63.11
25-28	2	0.50

Majority of the respondents were third-year college students (63.63%), followed by second year students (16.88%). In addition, 33% of these students have a scholarship and have been receiving an allowance from it. Details of distribution by year level are shown in Table 3.

Table 3. Education level of respondents (N=385).

Year level	Frequency	Percent
1st Year	34	8.83
2nd Year	65	16.88
3rd Year	245	63.63
4th Year	40	10.38
Nth Year	1	0.26

Some of the respondents were working students (7%), and the remaining (93%) are nonworking or full-time students (Table 4). The income incurred from working could be an additional allowance for these students.

Table 4. Occupation of the respondents (N=385).

Occupation	Frequency	Percent
Working Students	27	7.0
Non-working Students	358	92.98

Respondents were also asked to indicate their weekly allowance. Table 5 shows that most of the students received a weekly allowance between Php 501–Php 1000 (39.7%). In the Philippines, parents are expected to give allowance to their children for education.

Table 5. Respondent's weekly allowance (Php).

Weekly allowance (Php)	Frequency	Percent
> 500	108	28.05
501-1000	153	39.70
1001-1500	53	13.76
1501-2000	31	8.05
2001-2500	12	3.1
2501-3000	11	2.8
3001-3500	2	0.50
3501-4000	0	0
4001-4500	1	0.25
4501-5000	8	2.07
5000 <	6	1.55

Travel cost of students to Iloilo river esplanade

The Travel Cost Method was used to measure the economic value of the site by getting the student's willingness to pay to for the recreational site based on their time and money spent during visitation. Hence, the number of visits and the amount spent on travel played a major role in establishing the demand curve of the site and the respondent's consumer surplus. Table 6 shows that most of the respondents (23.63%) had visited the site at least twice in the last 12 months.

Table 6. Respondents number of annual visits to the Iloilo river esplanade (N=385).

Number of visits	Frequency	Percent
1 time	74	19.22
2 times	91	23.63
3 times	68	17.66
4 times	37	9.61
5 times	35	9.09
6 times	17	4.41
7 times	11	2.85
8 times	10	2.59
9 times	2	0.52
10 times	40	10.38

Based on the survey results, Table 7 indicates that majority (70.12%) of the espondents reaches the site in less than one hour. Table 7 also shows that as travel time increases, the number of respondents visiting the site decreases. Consequently, the results show that most number of the respondents (48.83%) spend at least an hour at the site and only 1.30% stay for more than 4 hours (Table 8).

Table 7. Travel time of respondents to access the Iloilo river esplanade (N=385).

Time (h)	Frequency	Percent
> 1	270	70.12
1.1-2	107	27.79
2.1-3	7	1.82
3.1-4	0	0
4.1<	1	0.26

Table 8. Amount of time spent by the respondents in the Iloilo river esplanade (N=385).

Time (h)	Frequency	Percent
> 1	188	48.83
1-2	133	34.54
2-3	51	13.24
3-4	7	1.81
4-5	5	1.30
5 <	1	0.26

Majority of the respondents (83.37%) spent less than Php 1,000.00 in visiting the site. The minimum amount spent is Php 1.00 while maximum round trip travel costs which include additional cost spent inside the site (e.g., food, recreational activities) is Php 6,500.00 pesos (Table 9). The average round-trip travel cost is Php 647.00. Eating is not allowed along the park or garden area but there are dining areas allotted for those who would like to eat.

Table 9. Amount of money spent by the respondents in visiting the Iloilo river esplanade (N=385).

Round trip travel cost (Php)	Frequency	Percent
> 1000	321	83.37
1001-2000	48	12.46
2001-3000	10	2.6
3001-4000	2	0.50
4001-5000	2	0.50
5000 <	2	0.50

Table 10 shows the different recreational activities in the Iloilo river esplanade. Majority of the respondents enjoy walking along the esplanade (78.35%) together with nature seeing (67.53%). Spending quality time with loved ones and friends (57.47%) is also a favorite activity among the respondents. Initially, Iloilo river esplanade is only a part of the Iloilo river rehabilitation program, but now it provides a space for leisure and tranquility while strengthening the relationship between the river, city, and people.

Table 10. Recreational activities.

Recreational activities	Frequency	Percent
Boating	9	2.32
Cycling	27	6.96
Walking	304	78.35
Jogging	119	30.67
Sightseeing	262	67.53
Food tripping	159	40.98
Fishing	4	1.03
Group Studying	27	6.96
Photo shooting/Fun shooting	130	33.51
Dancing/Zumba	44	11.34
Religious Activities	7	1.80
Quality time with loved ones, friends, etc.	223	57.47

Note: Respondents are allowed to indicate multiple responses.

Willingness to pay user fees

Results indicated that respondents are willing to pay for user fees with boat rentals (83.89%) having the highest percentage among all the user fees (Table 11). The willingness of visitors to pay for user fees could be a good starting point to start raising funds for maintenance and improvement of Iloilo river esplanade.

Table 11. Willingness to pay user fees (Php) (N=385).

		Entrance fee	Boating fee	Cycling fee	Boat rental	Bicycle rental	Cottage rental
Yes	Frequency	212	323	155	343	330	274
	%	55.06	83.89	40.25	89.09	86.31	71.16
No	Frequency	173	62	230	42	55	111
	%	44.93	16.10	59.74	10.91	14.28	28.83

Respondents who are willing to pay for entrance fee were further asked how much they are willing to pay for the entrance fee with a specific amount. Results indicated that 19.81% of the respondents are willing to pay Php 50.00 as an entrance fee to Iloilo esplanade, followed by P10 with 16.50% of the respondents. However, most of the respondents (61.86%) chose not to respond. The details of respondents' willingness to pay for entrance fee are shown in Table 12.

Table 12. Respondents' willingness to pay for entrance fee with particular amount (N=212).

	No answer	0	5	10	20	25	30	35	50	60	75	80	100
F	64	2	5	35	11	15	19	3	42	1	2	2	11
%	30.18	0.94	2.35	16.50	5.19	7.07	8.96	1.41	19.81	0.47	0.94	0.94	0.051

DISCUSSION

The Iloilo esplanade was a formerly neglected riverbank but is now a famous river park in Iloilo City that was rehabilitated, resulting in a dynamic, walkable, and memorable open space that is essential in today's urban civic life (PGAA Creative Design, 2018). Iloilo esplanade is a public-sector initiative. Initially, it is a project that intends to build pedestrian esplanades on both banks of the Iloilo river. A Php1.99-billion expansion road project aims to serve as an alternate route from Iloilo City and towns of southern Iloilo province (Yap, 2022). It is an existing dike road with no shade that was initially created for flood management (PGAA Creative Design, n.d.). However, the renovation demonstrated its influence on public amenities and a now favored tourist destination among Ilonggos. Alcala-Hall (2024) and Albay (2021) noted that along with other infrastructure projects that include Esplanade, the inaugural experiment of a private sector-inclusive framework was the 2005 Iloilo river development master plan, which entailed long negotiations with businesses affected by clearing, widening, and improvements. Infrastructure planning became more open and participative, with the city government holding multi-stakeholder dialogues that included academics, urban poor, private sector, and regional administrators.

The Iloilo river esplanade's recreation demand was estimated using an individual TCM analysis. According to Czajkowski et al. (2019), the individual travel cost method regards visits to a location as the quantity demanded, whereas the cost of the trip is the price of access to the site. These presumptions lead to the following demand function:

$$r_i = (p_i, Z_i) \qquad \text{Eq 4}$$

In this equation, r_i is taken as the number of trips by an individual i to Iloilo river esplanade during a specific period, pi as the access cost to the site (i.e., travel costs and itsopportunity costs), and Z_i as the vector of individual factors that are thought to influence how many trips a person takes. In the study's case, the recreation demand function is estimated using survey data, in which the number of trips that an individual will make to a recreation site is predicted by travel expenses, including time and distance costs, age, gender, group size, substitute site, allowance, and other socioeconomic variables. The estimated visitor consumer surplus or non-market value of the recreational site can then be derived using the resulting demand function (Du Preez and Lee, 2016).

In addition, this study employed two count data models, the Poisson and Negative Binomial models. The former model was considered because the truncated and non-negative integer nature of trip data, along with the likelihood of over- dispersion concerns, may induce biased estimators when the recreation demand function is estimated using the ordinary least squares (OLS) method (Du Preez and Lee, 2016). According to Czajkowski et al. (2019), econometric problems, such as truncation, many zero trips in the data, and preference heterogeneity can all be handled by count models' adaptability. However, as a member of the linear exponential family, the Poisson model, in particular, has the main benefit of having unbiased parameters as long as the fundamental demand relationship is also linear exponential. The Poisson model's form is expressed in terms:

$$(x_i,\beta) = \frac{e-(x_i,\beta)m(x_i,\beta)y_i}{y^1_i} \qquad \text{Eq 5}$$

Where:
y_i = stands for the possibility that an individual with the set of the trip and individual characteristics
x = will visit the recreation area for a predetermined amount of times (y_i=1,2,3...)
x = for the vector of the trip's characteristics, such as trip cost and trip distance
m = for the mean number of trips taken
β = for the vector of parameters to be estimated (Du Preez and Lee, 2016)

However, the Poisson model makes the strong assumption that the conditional mean and variance are equivalent, which may lead to misspecification in many data sets for recreational demand models. In these data sets, the variance is frequently greater than the conditional mean, which is an overdispersion (Bin et al., 2005).

On the other hand, the latter model, the Negative Binomial, is a Poisson substitute that permits the conditional mean to be overdispersed. As trip data are frequently overdispersed, the Poisson is an excessively constrictive model. It undervalues the standard errors and overstates the t-statistics although its maximum-likelihood estimator is still consistent. According to Martinez-Espineira and Hilbe (2008), the negative binomial model should be used if the overdispersion problem is substantial. In this study, a negative binomial was, therefore, used because of overdispersion concerns.

As for the variable choices, the study adopted the econometric model proposed by Martinez- Espineira and Amoako-Tuffour (2009). The dependent variable, which the two researchers claim, should be either the number of visits made by persons (ITCM) or the number of visits done by residents of a certain zone (ZTCM). On the other hand, the independent variables should describe the travel expenses in each scenario. In the latter variable, it is also possible to integrate socioeconomic information about the persons (or the zone of origin), such

as zonal populations, socioeconomic data about study participants, information about alternative sites, and environmental quality indicators inter alia. However, for each respondent's travel expenses, only variable costs, such as those for distance and trip costs, were included. Additionally, the study included the likelihood of having substitute locations. Smith and Kaoru (1990) as cited in Freeman et al. (2014), contend that the exclusion of substitutes causes an overestimation of consumer surplus. According to a variety of academic studies, visitors who travel from the same point of reference to a site could regard the site quite differently because one of them has access to a substitute site while the other does not. In this study, a dummy variable was used to account for the possibility that survey participants could have a substitute recreational site in Iloilo City other than the Iloilo river esplanade. According to by Martinez-Espineira and Amoako-Tuffour (2009), this dummy variable would reflect if a person had a substitute site, is on an extended trip, a day trip, or is simply stopping by as part of a multi-purpose trip. The questionnaire included a particular question to find out if the suvey participants had a substitute recreational site. If the respondents proposed a different site, a value of one was applied; otherwise, it was zero.

Table 13 displays the outcomes of using the count data model in Stata. As with the prior hypothesis, the trip cost variable's estimated coefficient (TCost) is significant and negative. The variable's coefficient's negative sign supports the presence of a downward- sloping demand curve for the number of visits an individual makes to Esplanade. This implies that as travel expenses increase, fewer tourists will visit Iloilo esplanade, which is consistent with the Law of Demand. The Law of Demand states, according to Santiago and Bulayog (2019), that the number of visits and total travel expenses are inversely correlated. This suggests that as total travel expenses rise, the number of visits declines, all other things being unchanged. Similar findings have been made by Santiago and Bulayog (2019) and Du Preez and Lee (2016).

Table 13. Travel cost recreation demand model results (N=385).

Variable	Coefficient	Standard error
Constant	-.0147527	.6921553
Number of people in the group (Group)	-.0189857	.0095135**
Age	.1289071	.0304289*
Travel Costs (TCost)	-.0001948	.000057***
Weekly Allowance (Allowance)	-.0000117	.0000217***
Distance (Dist)	-.1652718	.070192*
Scholarship (Scholr)	-.1167468	.0737788*
Female	-.1230181	.0717303*
Single	-.8236145	.3939309
environmental organization (MemEnv) Working Student (WorkStud)	.211764	.1564986
	-.0137524	.1275563
Substitute	.0127184	.0688425
Number of Observations	385	
log-Likelihood	-843.07792	

***significant at 1%   **significant at 5%   *significant at 10%

The TCM or demand model accounted for additional factors in addition to the trip cost variables. Although statistically significant, the respondent's weekly allowance (Allowance), as shown, displays a negative sign. This indicates that as weekly allowance increases people are more likely to not visit the Iloilo river esplanade. According to Legaspi et al. (2014), as students' allowance increases, so do their spending levels which can explain why the relationship between the weekly allowance and trips to Iloilo river esplanade is negative. It might be the case that, as weekly allowance increases, students rather spend money on food, groceries, fares, printing and photocopy, laundry, and savings instead of park visits. On the other hand, results indicate that people who are members of an environmental organization are more likely to visit the Iloilo river esplanade. In Christiernsson's travel cost approach study (2003), their survey results showed that personal interest is a socio-economic factor that could affect the value a person puts on a recreational site. This includes whether the respondent is a member of an environmental organization. Individuals who are members of environmental organizations may have higher average values for natural resources, which in this case is the Iloilo river esplanade. Thus, the number of visits an environmental organization member makes to natural resources is expected to be higher than those who are not members.

Similar to Du Preez and Lee (2016) and Martinez-Espineira and Amoako-Tuffour (2009), the coefficient of the gender variable (Female) is significant with a negative sign, indicating that men are more likely to visit the Iloilo river esplanade. According to Du Preez and Lee's (2016) study, men are more likely than women to go mountain bike to the Trans-Baviaans event. Visits to parks, like the one on the Iloilo river esplanade, can, however, have different reasoning from the biking event. In Saleem and Kamboh's (2013) study, they explored how gender, age, and education influence the motivation and intention of park visits. It was ascertained that gender was the greatest element in describing why individuals visit parks at different times of the day. Further, the two scientists determined a conclusion that the majority of park visitors were men. Male respondents spent the most time walking, jogging, and feeling satisfied at the park. Female respondents, on the other hand, stated that they visit parks mostly to admire nature. Additionally, they discovered that the majority of the male respondents were interested in spending two to three hours in the park each morning and evening to interact with friends and enjoy the scenery. This is about equal to the 1.7 hours on the average those visitors to esplanade spent.

The individual consumer surplus can then be multiplied by the overall number of visits made during the year to determine the entire annual consumer surplus, which is equal to the yearly recreational value of the Iloilo river esplanade (Zin et al., 2019)

This consumer surplus of P5,120/ visitor connotes that on the average each respondent/ visitor generated benefit equivalent to this amount, which when aggregated to the overall number of visits by the respondents/ participants accounted for that year (which was still under pandemic) amounted to total benefits of 7.5 million pesos.

CONCLUSION AND RECOMMENDATIONS

The study shows that taken together, the independent variables had a significant effect on recreation demand, which reflects variables of age, group, travel costs, distance, sex, and civil status—which overall have a significant role in attracting visitors to the Iloilo river esplanade. It is also important to note that the variable sex is significant with a negative sign, indicating that men are more likely to visit the Iloilo river esplanade to enjoy recreational activities. Meanwhile, the allowance, scholarship, substitute

site, membership in the environmental organization, and occupation as variables had no significant effect on recreation demand. Travel cost has a negative relationship and significant effect on recreation demand, supporting the presence of a downward-sloping demand curve for the number of visits to the Iloilo river esplanade. The distance is also a main factor affecting recreation demand to access the recreation site, demonstrating that, as trip distance increases, the total number of trips will decrease. This study also estimated the individual consumer surplus per visit for the sampled college student to access and visit the Iloilo river esplanade to be Php 5,120.33. The overall annual consumer surplus is calculated by multiplying the consumer surplus per visit by the number of visits made during the year. In this case, the overall annual consumer surplus is equal to Php 7,521,764.44, which represents the yearly recreational value of the Iloilo River Esplanade, with respect to the respondents covered by the study. Furthermore, the results of this study can improve the quality and improvement of recreational and environmental services of the Iloilo River Esplanade and provide varieties of services that could be supplied based on the visitors' demand. The results further indicated that the majority of visitors to Iloilo Esplanade visit the site to spend time with their family and friends. Additionally, a high percentage of visitors are aware of the importance of mangrove preservation and the role they play in maintaining the food web in aquatic environments. The cleanliness of the site is also seen as an important factor in attracting visitors, with many willing to pay for improved environmental and recreational services. The study also found that boat rental was the most popular user fee among visitors. However, many visitors did not want to pay boat rental, and some did not indicate that they would be willing to pay an entrance fee to the site. Many visitors also highly recommended to have nature-preservation activities such as trees and mangrove

planting as other activities in the area.

The travel cost method is used to estimate economic use values of Iloilo river esplanade that are used for recreation. People are willing to pay to visit the site can be estimated based on the number of trips that they make at different travel costs. However, TCM has its limitations. It is assumed that individuals take a trip for a single purpose to visit a specific recreational site. Thus, if a trip has more than one purpose such as the case of Iloilo river esplanade, the value of the site may be overestimated. It can be difficult to apportion the travel costs among the various purposes. In addition, there could be a debate whether to include the opportunity cost of time, or the value of time spent traveling. Because the time spent traveling could have been used in other ways, it has an "opportunity cost." Opportunity cost should be added to the travel cost, or the value of the site will be underestimated. However, if people enjoy the travel itself, then travel time becomes a benefit, not a cost, and the value of the site will be overestimated.

Overall, these results suggest that visitors appreciate the natural beauty of the site and would like to see it preserved and improved in the future. The study's findings can be used as basis to improve the overall experience for visitors to the Iloilo River Esplanade by enhancing the quality of environmental services and expanding the available services and infrastructure. This includes creating a variety of recreational activities and services, implementing regulations to ensure visitors' safety, and providing educational opportunities to promote and foster awareness about environmental conservation and the importance of recreation. The findings presented in this study are hoped to provide valuable inputs in resource and policy planning, as well as assist resource managers and the Local Government of Iloilo City in making important decisions to improve the overall experience for visitors to the

Esplanade and ensure the continued preservation of the recreation site.

Moreover, this ITCM study provides prospects for applying the research method in other recreational sites/ activities like the mangrove forest conservation and regeneration in the Guang-guang Mangrove Park and Nursery, Davao Oriental discussed by Inoco and Villegas (2024), and the the potential agritourism sites in the five selected areas in Davao Oriental, for which Alzate (2018) established baseline information; and the potential megafauna watching as tourist activity in an ecologically critical area of Dahican, Mati City for which Jimenez et al., (2015) explained their concern on the megafauna in the area

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APPENDIX:

The travel cost method

The Travel Cost Method has three variations: a zonal travel cost approach that mostly relies on2 secondary data and incorporates a small amount of visitor data, an individual travel cost strategy that is based on a more thorough visitor study, and a random utility approach using more complex statistical methods, survey data, and other data (King and Mazzotta, 2000). The paper utilized an Individual TCM which calculates the consumer surplus by examining the behavior of specific tourists and the expenses incurred for recreational activities. These observations are used to calculate the relationship between socioeconomic characteristics, the cost per visit, and the number of visits made by a specific number of people within a given time period (Rosato and Defrancesco, 2002).

The individual travel cost method employs individual data, and the dependent variable is the average number of visits made by each individual, allowing for a wide range of visits per person (Hwang, 2018). The demand function calculated by Individual TCM depends on the individual travel cost as well as a few other socioeconomic factors like sex, age, income, and education (Loomis et al., 2009).

However, ITCM also has its limitations as stated by King and Mazzotta (2000). TCM's range of usage is constrained because it necessitates user involvement. It cannot be used to assign values to elements of the site's surroundings and operations that visitors do not deem worthwhile. Off-site values that the website

supports cannot be valued using it. Most notably, non-use values cannot be measured using it. Sites with distinctive traits that are prized by visitors will therefore be undervalued. Furthermore, TCM assumes that individuals perceive and react to changes in travel costs in the same manner as they would to changes in admission prices.

In this equation *Vij* is equal to the number of visits by the individual *i* to site *j* per year. *Cij* is the total travel cost of an individual i by visiting the site *j. Si* is a vector of the individual's socioeconomics factors (Loomis et al., 2009).

The survey data in ITCM is estimated using regression analysis of the correlation between the number of visits, travel expenses, and other important variables. The area beneath this demand curve represents the average consumer surplus, and the regression equation provides us with the demand function for the "average" site visitor. To calculate the site's total consumer surplus, multiply this by the population of the relevant region (where visitors are from) (King and Mazzotta, 2000).

Other than merely travel expenses, there are many other factors that affect recreational activity, and by leaving them out of the visitation equation, the OLS estimates run the danger of being biased. Individual preferences that affect leisure activity, such as sex, age, income, and education, are the facts that should be incorporated into the visitation equation (Stoeckl and Mules, 2006). The Individual Travel Cost Method's (ITCM) advantage is that it is more closely related to the individual behavior theory of microeconomic utility maximization (Timah, 2011). Instead of averaging over all the people inside the zone, the ITCM includes individual-specific values of explanatory variables to explain individual visits. In comparison to other TCM variations, the results of ITCM are more accurate, as it involves more data gathering and analysis.