Willingness to pay for management and preservation of natural, semi-urban and urban beaches in Italy

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Abstract

The main purpose of the study is to evaluate the economic value related to beach preservation by elicitation of the willingness to pay (WTP). This analysis is based on the results of about 5000 interviews conducted on 41 different Italian beaches. A Contingent Valuation (CV) – a closed-ended dichotomous choice model with a follow-up question - approach is used to elicit WTP. Results of the whole sample indicate that respondents would be willing to pay a contribution of almost 15 €/yr per user in order to preserve the beach. WTP is also calculated for natural, semi-urban and urban beach typologies. The analysis shows that beach typologies affect the WTP and similarities and significant differences of each typology are found according to respondents' sociometric indicators.

Keywords: Beach types; Users' perception; Willingness to pay; Beach management; Italy

1 Introduction

Coastal management is "*that process of managing a beach, whether by monitoring, simple intervention, recycling, recharge, the construction and maintenance of coastal control structures or by some combination of these techniques, in a way that reflects an acceptable compromise in the light of available finance, between the various coastal defence, nature conservation, public amenity and industrial objectives*" (Micallef and Williams, 2002; Simm et al., 1996). This definition seems to consider the entire spectrum of coastal conflict in that it addresses social, economic and environmental aspects of beaches as socio-ecological systems (SES) (e.g. Defeo and McLachlan, 2005; Botero and Hurtado, 2009). This approach considered beaches as multidimensional systems linked with and affected by one or more social systems where natural, socio-economic and administrative components interact (Micallef, 1996; Micallef and Williams, 2002; Williams and Davies, 1999). Approaches to the management of beach as SES have traditionally focused on a very limited number of functions, such as beaches as summer playgrounds and buffer spaces for storms (~~James, 2000;~~ Lozoya et al., 2014; Ariza et al., 2016). However, from the last century, beaches were expressly defined as SES especially due to new methodologies for capturing beach complexity in order to provide information

for sustainable management (Ariza et al., 2010; Botero et al., 2015; Semeoshenkova et al., 2015; Lucrezi et al., 2016; Rodella et al., 2017a; Bombana and Ariza, 2018). Among others, Anderies et al. (2004) and McLachlan et al. (2013) indicated four main interrelated elements that occurred for sustainable management of SES: (i) the physical beach i.e. the resource; (ii) users; (iii) managers; and (iv) services and public infrastructure. Following this elements, beaches are linked to services, implemented by managing institutions and, on the other hand, to the relationship between users and the resource (Peña-Alonso et al., 2018). In this context, the main coastal activity i.e. tourism requires an integrated approach of all aforementioned aspects that can be translated into a sustainable coastal tourism development (Mazzanti, 2002b).

However, coastal tourism induces environmental impacts and pressure on coastal and marine environments. In fact, since most activities of coastal tourism include second-home developments and seaside resorts, building patterns cause a loss of biodiversity, a major exposure to climate change phenomena, a loss of attractiveness, pollution and others (Honey and Krantz, 2007). Prioritization is dependent on the desired goal (e.g. nature conservation as opposed to improvement in recreational amenities linked to mass tourism) and on the beach environment considered. Economic valuation is, among others, a method that allows ranking and prioritising projects and policies on the basis of socio-economic and environmental costs and benefits (Ozdemiroglu and Hails, 2016).

Different approaches can be used for evaluating the economic value of beaches. Usually, the Contingent Valuation method (CV) is used to elicit the economic value by inferring individual's preferences in terms of willingness to pay (WPT) for public goods. It is the most consolidated stated preference elicitation technique of value since the early studies in the 80's (Diamond and Hausman, 1994), contained within the more general choice modelling approach (Hanley et al., 2001). Those methods are the only possible ways to estimate non market values from an ex ante perspective. In a coastal management approach, CV is used to analyzed the appreciation of recreational sites (Birdir et al., 2013; Lozoya et al., 2014; Logar and Van den Bergh, 2012; Pearce et al., 2006; Peng and Oleson, 2017) and users' interest on beach preservation (Marzetti et al., 2016). CV uses a direct questionnaire approach to elicit from potential users their maximum WTP for specified improvements in environmental quality. In particular, WTP has been used as an indicator of beach user interest for better management of beaches (Table 1 in Rodella et al., 2019). Maximum WTP is the monetary income-related measure that provides a value to the utility increasing ‘better management’ of environmental resources as a public good. It is the maximum price people would pay to obtain that improvement of quality in a contingent, experimentally created market setting (Hicks, 1939). Given that behavioural tracks do not exist for most public goods, their value should be unveiled by recreating experimental market settings, that somehow touch on marketing studies, but are applied with welfare economics purposes, namely measuring and weighting social costs and benefits of projects (Atkinson and Mourato, 2015).

Table 1 Types of beaches in the Italian littorals.

alt-text: Table 1

Beach type	NATURAL BEACHES. Located far from urban and semi-urban areas. Accessibility is reduced. Access is possible by private transport, on foot or by boat, but not by public transport. Such beaches are often preserved. Usually no facilities for users.		SEMI-URBAN BEACHES. Entities located in medium or low population density areas. With reduced accessibility and moderate attendance. The degree of artificiality of the coastline is less than at urban beaches. The number of facilities is limited.			URBAN BEACHES. Located in urban areas. With many types of commercial services, accommodation and facilities. Their recreational value is often far from their conservation value.		
Environment/Characteristics/recreational services	Located in marine or terrestrial protected area far from any population center. They are characterized by rustic seafront, forested-dunes area and/or coconut plantations and low level of interaction between human activities and environment. These beaches correspond to natural free beaches (almost no equipment, facilities or opportunities for commercial activities). These beaches presented only conservational characteristics		Located outside urban areas. These areas may be associated with permanent residence and a small supply of services (primary schools, religious centers, shops or cafes). These areas are identified by the simultaneous presence of equipped beaches and natural free beaches (for instance in adjacent stretches of coast that cover the littoral). These beaches presented both recreational and conservational characteristics			Located in an urban environment. With well-established utilities. Beaches present high or medium level of interaction between human activities and environment. Specialized services such as banks, postal services, and centers for business activity. In these areas, commercial activities related to the sea can be found. These beaches presented a~~an~~ high recreational level		
Shape	Linear, pocket beach		Linear, artificial embayed beach, pocket beach	Linear - artificial embayed beach		Linear, artificial embayed beach, pocket beach	Linear - artificial embayed beach	
Urbanization levels (Ariza et al., 2008)	They are found outside the main nucleus located close to very low-density urbanized areas (under 30% of the hinterland being urbanized) in uninhabited areas		They are found in a residential area outside the main municipality nucleus with a maximum of 50% urbanized hinterland (low density)			Located within the main nucleus of a municipality with over 60% of urbanized hinterland of high density		
Accessibility	Accessible by private transport if roads are close or within walking distance at a distance> 300 m of any road or by boat.	There is no seafront promenade.	Access by private transport.	There is public transport during the day with a frequency ≥1 h	Access not adapted for disabled users in a considerable part of the beach (>1/3 total ~~lenght~~length).	Accessible by public transport.	Some equipment such as umbrellas and hammocks, often require a fee.	Access to the beaches and facilities is adapted to the needs

								of disabled users.
Accommodation	Outlying villages (>500 m). Possible to find isolated buildings.		The availability of housing is low or nonexistent.	There may be a small supply of accommodation in residential complexes.	There may be small tourist villages inhabited all year round.	Accommodation/lodging in residential complexes.		
Facilities	No beach equipment.		Different services (public toilets, showers and footbaths, parking, access, regular cleaning …).	here are security and surveillance services.	The monitoring service is usually not permanent throughout the year.	With diverse facilities (restrooms, showers and footbaths, parking areas, good access, regular cleaning …).	There are security and surveillance services.	The monitoring service is usually permanent throughout the year.

CV's studies principally concern beach environment, issues and attributes such as water quality (Beharry-Borg and Scarpa, 2010; Peng and Oleson, 2017), erosion (Almansa et al., 2012; Lindsay et al., 1992; Logar and Van den Bergh, 2012; Marzetti et al., 2016; Matthews et al., 2017; Shivlani et al., 2003), Integrated Coastal Zone Management - ICZM (Marzetti et al., 2016), oil spill pollution and management (Liu et al., 2009; Riera et al., 2011) or beach management in general (Alberini et al., 2004; Blakemore et al., 2002; Zhai and Suzuki, 2008) (Table 1 in Rodella et al., 2019). One of the main topics addressed is the management of coastal erosion and beach preservation for improving recreational uses. For instance, applications of CV on coastal erosion include studies of congestion in public beaches (e.g. Rhode Island; Mcconnell, 1977); recreational benefits of beach nourishments (Bell, 1986; Silberman and Klock, 1988); factors that influence beach users' WTP for beach protection programs (e.g. in Maine and New Hampshire; Lindsay et al., 1992) or for beach restoration project (e.g. Korea; Chang and Yoon, 2017). However, literature in this field show a gap of information specifically concerning the physical attributes of the beaches, as their urbanization level, activity typology and touristic development, the presence of infrastructures and facilities and, more in general, the beach type. Moreover, WTP studies generally are carried out in small and homogeneous stretches of coast, therefore disconformities in coastal morphology and urbanization level are not taken into consideration. To extend the knowledge on these issues, this study examines WTP as an indicator of the socio-economic value of different beach types. For this reason, the first goal of this paper is the classification of beaches by the application of an integrated approach that considered several parameters (environment, recreational activities, beach shape, accessibility, urbanization level, accommodation and facilities). This approach allows us to classify beaches as natural, semi-urban and urban types considering the Italian coastal peculiarities. The second goal is to estimate the maximum users' WTP through the analysis of more than 5000 interviews conducted on forty-one Italian beaches. Users' profile, WTP values for 'better beach management', the incremental 'good' under analysis are obtained at national scale. The third goal is to analyze beach users according to their WTP considering independent variables (e.g. gender, age, educational level, frequentation) to understand the correlation between users and WTP. The fourth goal is to estimate WTP for natural, semi-urban and urban beaches. Logit regressions allows the evaluation of similarities and differences between each typology and in comparison with the national WTP value. This analysis is never applied before considering an integrated beach classification. This paper contributes to the coastal management literature comparing a WTP valuation in different beach types.

2 Study area

The study concerns forty-one beaches distributed along eleven coastal regions in Italy (Supplementary material 1 and ~~3~~ Interactive map data in Rodella et al., 2019 and Fig. 1). Twenty beaches border the Adriatic sea and are generally characterized by linear low sandy beaches in the northern regions (Veneto, Emilia-Romagna), while an alternance of pebbly - sandy linear beaches and pocket beaches characterise central and meridional regions (Marche, Apulia). These localities are mostly characterized by mass tourism during the summer seasons as reported by Bernini et al. (2015), Romano and Zullo (2014). More than 1,677,800 tourist arrivals per day and about 7,880,000 tourist presences per day were registered in Adriatic study sites in 2015 (Supplementary material 1 in Rodella et al., 2019).

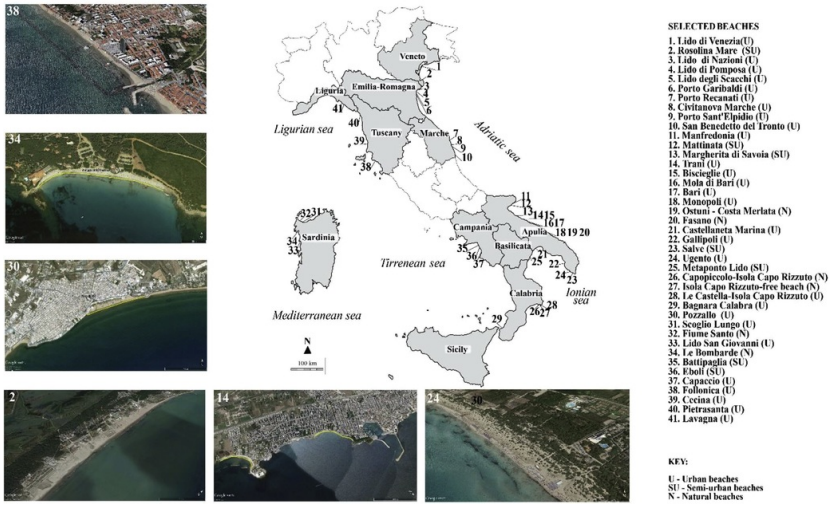

Fig. 1 Location map. Photos illustrate some of surveyed beaches: 38) Follonica (Grosseto, Tuscany); 34) Le Bombarde (Alghero, Sassari, Sardinia); 30) Pozzallo (Ragusa, Sicily); 2) Rosolina Mare (Rovigo, Veneto); 14) Trani (Barletta, Apulia); 24) Ugento (Lecce) (Source: Google Earth photos).

alt-text: Fig. 1

The eight Ionian beaches in Apulia, Basilicata and Calabria regions are generally linear except for the pocket beaches of Gallipoli and Isola Capo Rizzuto. Tourist arrivals per day were about 217,000 and tourist presences per day were more than 1,300,000 in the 2015 year. Tourist information regarding Isola Capo Rizzuto are unknown.

The thirteen beaches located in Tyrrhenian, Ligurian and Mediterranean littorals (Calabria, Sicily, Sardinia, Campania, Tuscany and Liguria) are linear and pocket beaches. However, the pocket beaches of Lavagna in Liguria and Scoglio Lungo in Sardinia are artificial. In 2015, the number of tourist arrivals per day in the Mediterranean and Tyrrhenian study sites was 679,494 and the tourist presences per day were 3,030,200.

The study areas encompass natural areas characterized by high landscape value due to the presence of dunes (Supplementary material 1 in Rodella et al., 2019), pinewoods, salt marshes and wetlands. Furthermore, many beaches are located in protected areas (Site of Community Importance - S.C.I.; Marine Protected Areas - M.P.A.; Special Protected Areas - S.P.A.) such as Rosolina Mare (beach n. 2; S.C.I. IT3270001, S.C.I. IT3270004; Supplementary material 1 in Rodella et al., 2019 and Fig. 1), Ostuni - Costa Merlata (beach n. 19; M.P.A. IT9140005 - Torre Guaceto e Macchia San Giovanni; Supplementary material 1 in Rodella et al., 2019and Fig. 1), Isola Capo-Rizzuto (beach n. 26 and 27; M.P.A. IT9320103 Capo Rizzuto; Supplementary material 1 in Rodella et al., 2019 and Fig. 1), Fiume Santo (beach n. 32; M.P.A. EUPAP174 Santuario per i Mammiferi Marini; Supplementary material 1 in Rodella et al., 2019and Fig. 1).

Several beaches are affected by many type of human and natural pressures. For instance, some beaches show erosion issues due to the presence of upstream structures that retain sediments (Manca et al., 2013; Utizi et al., 2016), subsidence (e.g. Adriatic coast; Simeoni et al., 2017a; Simeoni and Corbau, 2009), dune's damages (Corbau et al., 2015), storm surges and tides (Martinelli et al., 2010).

3 Materials and methods

3.1 Beach characterization and typology

The general beach characteristics have been defined by using high-resolution satellite images of 2017 year (Google Earth Pro V 7.3.2.5491 (August 2017), 1:10.000 scale, resolution of 2.1 m/pixel, server: kh.google.com, download link: http://www.google.com/earth/download/ge/) and by reviewing bibliographic data. Satellite images have been used to acquire physical data regarding the beach dimensions, the beach infrastructures and services (beach establishments, umbrellas, toilets, etc.), coastal defence and dune presence.

Given the heterogeneity of the Italian beaches, they have been classified according to their physical and functional characteristics, taking into account four beach classifications: beach shape; anthropogenic characteristics and beach activity expressed by Williams and Micallef (2009); urbanization levels defined by Ariza et al. (2008) as reported in Supplementary material 1 in Rodella et al. (2019).

The classification of Peña-Alonso et al. (2018) has been finally reviewed and adapted to the peculiarities of Italian beaches as reported in Table 1.

3.2 Beach users' perception, questionnaire and sampling

A questionnaire was used to elicit visitor preferences and willingness to pay for coastal preservation. The questionnaire was based on those used by Marin et al. (2009) and Rodella et al. (2017a) and was structured in three sections (Supplementary material 2 in Rodella et al., 2019):

- inquires about tourists' characteristics such as gender, age, educational level, employment status and place of residence as well as information about frequency and beach users' motivation;
- beach users are asked about their perception of physical and environmental featuress of the beach, including available services and equipments;
- examination of geomorphological problems, local management, the available surface per user, the coastal defence system and the willingness to pay for beach preservation.

Data were collected from June to September 2015. Only people over 16 years old were randomly selected and interviewed. In the case of a group visit, one person was interviewed in order to avoid the risk of doubling answers. They were also informed that there was no right or wrong answer and their sincere responses would be appreciated.

Statistical and descriptive analyses of users' perception surveys were performed using the Statistical Package for Social Sciences (SPSS) version 20 (Statistics Solutions) and Microsoft Excel version 2017 (Microsoft Office, Redmond, Washington, USA).

3.3 Contingent valuation and the experimental design

A Contingent Valuation (CV) has been applied to all interviews in order to assess the tourist's WTP for beach protection and conservation.

3.3.1 The model

A *close-ended* approach was used: it means that the individual WTP value was elicited by asking if one would be willing to pay for a given amount (BID). We implemented a dichotomous choice model (yes/no), and participants indicated if they would or not be willing to pay the selected amount.

The WTP question was:

"*In case that a financial fund is constituted in order to ensure the appropriate beach management, would you pay X € (for person) each season in this territory?*"

Based on the pilot groups and the aforementioned literature review, four different versions of the questionnaire were designed considering diverse sets of BIDs (2 € or 5 € or 10 € or 20 €). Table 2 reports the distribution of the four questionnaire versions for each beach use typology.

Table 2 Questionnaire distribution in beach use typology in relation to the BID.

alt-text: Table 2

BID (€)	Beach Type			Total (%)
	Natural (%)	Semi-urban (%)	Urban (%)	
No answer	2.0	0.7	2.2	1.9
2	25.8	24.3	25.2	25.2
5	26.6	24.1	23.4	23.8
10	19.6	27.0	23.5	23.7
20	26.0	23.9	25.7	25.4

We also provided a *follow-up* question, where the second offer amount is conditional on the respondent's response to the first amount because Double Bounded (DB) dichotomous choice has a higher statistical efficiency than a single-bounded DC

(Chang and Yoon, 2017). Therefore, if a person would not pay the indicated amount, then he will be asked if he will accept to pay half the amount. On the contrary, if he accepts to pay the indicated amount, then he will be asking if he will accept paying twice the amount.

3.3.2 The WTP estimation

The theoretical framework assumed for statistically eliciting WTP corresponds to the Hanemann (1989, 1984) model on dichotomous choice. According to microeconomic theory, Hanemann (1984) argued that individual utility derives from both environmental good characteristics and own income.

Table 3 shows the model assumption adopted for WTP estimation.

Table 3 Model assumption for WTP estimation.

alt-text: Table 3

Model Assumption	Equation
Utility-function U (j, Y, s), where j is a dichotomous variable associated to the use of a given beach ($j = 1$, use of the good; $j = 0$, non-use of the good), Y is the individual income, s is the socio-economic characteristics vector, e_j is the stochastic error term	$u(j, Y, s) = v(j, Y, s) + e_j \; (j = 0, 1)$ **(1)**
An interviewer would respond YES to the provided question only in case of Eq. (2), where x_i is the formulated BID.	$v(1, Y - x_i, s) + e_1 \geq v(0, Y, s) + e_0$ **(2)**
The probability distribution of the answer corresponds to Eq. (3). $\eta = e_1 - e_0$, $F\eta(\bullet)$ is the distribution function of η and the term Δv is equal to the difference	$\text{Prob}(YES\|x_i) = \text{Prob}\left[v(1, Y - x_i, s) + e_1 \geq v(0, Y, s) + e_0\right]$ **(3)** $\text{Prob}(YES\|x_i) = F\eta(\Delta v)$ **(4)** $\Delta v = v(1, Y - x_i, s) - v(0, Y, s)$ **(5)**
Assuming that $x_i \leq$ WTP, the probability of accepting the proposed BID is Eq. (6), where $G_{WTP}(\bullet)$ is the accumulated distribution function of the random WTP	$\text{Prob}(YES\|xi) = \text{Prob}(WTP \geq xi) = 1 - G_{WTP}(xi)$ **(6)**
Comparing (4) with (6), it derives a relationship between WTP and utility: Eq. (7)	$G_{WTP}(x_i) = F\eta(\Delta v)$ **(7)**
In order to estimate WTP, we handle $F\eta(\Delta v)$ as a logistic distribution function and, as a consequence, we adopt a logit model for describing the probability function Eq. (8), whereas we assume a linear model of the income, where utility is given by Eq. (9), where α_j is the constant term and β represents the marginal utility of income.	$\text{Prob}(YES\|x_i) = F\eta(\Delta v) = \frac{1}{1 + e^{-\Delta v}}$ **(8)** $U_i = \alpha_j - \beta Y$ **(9)**
If $\alpha = \alpha_j - \alpha_0$, it follows Eq. (10)	$\Delta v = \alpha + \beta x_i$ **(10)**
Matching (Eq. (10)) and (Eq. (8)) we obtain the logit-linear model that can be estimated by Maximum Log-likelihood Estimation (MLE)	$\text{Prob}(YES\|x_i) = \frac{1}{1 + e^{-(\alpha - \beta x_i)}}$ **(11)**
McFadden and Leonard (1992) and Cooper and Loomis (1992) recommended to estimating the median WTP – better trend indicator than the average value – from the univariate model (including only the BID as variable) and by applying Eq. (12)	$WTP_{median} = \frac{\alpha}{-\beta}$ **(12)**

The WTP is influenced by a number of independent variables, including socio-economic characteristics, individuals' preferences and knowledge about environmental issues (Piriyapada and Wang, 2014). Therefore, the multivariate model was applied in order to estimate the role of socio-economic variables in conditioning WTP. The variables that were used are described in Table 4.

Table 4 Description of variables used in the multivariate model.

alt-text: Table 4

Variable	Abbreviation	Description
Beach Shape		
Linear beach	S1	1 = Yes; 0 = otherwise
Artificial	S2	1 = Yes; 0 = otherwise
Linear and Artificial	S3	1 = Yes; 0 = otherwise
Pocket	S4	1 = Yes; 0 = otherwise
Level of recreational services		
Activity	A	1 = Recreation
		2 = Recreation/Conservation
		3 = Conservation
Level of urbanization		
Urbanization	C	1 = Natural
		2 = Semi-Urban
		3 = Urban
Gender of interviewed		
Gender	G	1 = Male
		0 = Female
Age of interviewed		
Age	A	Continuous variable
Level of education of interviewed		
Education	E	1 = Under high school
		2 = High school
		3 = Degree or upper
Residence of interviewed		
Residence	R	1 = Resident
		0 = Non-resident
Frequency of visiting		
Frequency	F	1 = first time
		2 = other visits
		3 = frequent visitor

We expected that some beach features should affect WTP. Beach shape was proxied by four *dummy* and binary variables. The level of recreational service was expressed by a variable considering three degrees of intensity: high, intermediate and low (highly conserved environment). The level of urbanization was expressed by three ordinal variables: natural beaches, urbanized beaches and urban beaches.

On the socio-economic characteristics of tourists, we considered the gender, the level of education, and the age of person interviewed as well as their residence and their frequentation of the specific beach.

The data from the questionnaire on WTP were elaborated using the statistical software Gretl®.As a testing procedure, we adopted the *Generalized likelihood-ratio test*, which allows us to evaluate a restricted model with respect to the adopted model (Bohrnstedt and Knoke, 1994). The statistic associated with this test is defined as:

$$\lfloor = -2\ln \Vert = -2\left[\ln \frac{L(H_0)}{L(H_1)}\right] = -2\left[\ln L(H0) - \ln L(H1)\right] \quad \textbf{(13)}$$

where $L(H_1)$ and $L(H_0)$ are the log-likelihood value of the adopted model and of the restricted model - specified by the formulated null-hypothesis - respectively. The statistic test $\lfloor$ has approximately a chi-square (or a mixed-square) distribution with a number of degrees of freedom equal to the number of parameters (restrictions), assumed to be zero in the null-hypothesis. When $\lfloor$ is lower than the correspondent critical value (for a given significance level), we cannot reject the null-hypothesis.

Specifically, the *Generalized likelihood-ratio test* was run to estimate suitability of the proposed model with respect to the restricted model without the constant term.

4 Results

4.1 Beach typology and users' perception

Considering the beach shape, 25 beaches were classified as linear principally located in Adriatic regions; 9 beaches were classified as pocket-beach, located in Apulia, Calabria, Sardinia and Tuscany regions; 4 beaches were identified as artificial embayed beach; 3 as artificial embayed beach - linear. General characteristics of these records are given in the companion data article (Rodella et al., 2019).

The use typology classification identified 6 natural beaches, 7 semi-urban beaches and 28 urban beaches (Rodella et al., 2019).

Almost 61% of sites selected were linear beaches consisting of natural (7%), semi-urban (15%) and urban beaches (39%). Pocket-beaches covered 22% of the cases consisting of natural (7%) and urban beaches (almost 15%). Artificial embayed beaches covered 10% (2% of semi-urban and 8% of urban beaches) and 7% were artificial embayed - linear beaches (only urban typology) (Rodella et al., 2019).

The questionnaire's distribution was primarily carried out in linear (2,263) and artificial embayed beaches - linear (1,651) followed by pocket beaches and artificial embayed beaches (Rodella et al., 2019). Urban beaches have been surveyed through 3754 questionnaires while semi-urban and natural beaches were less surveyed (787 and 627 respectively; Rodella et al., 2019).

Table 5 presents the socio-demographic statistics associated with the use classification. Gender balance was 57% female and 39.7% male and there were similar percentages between different use typology beaches. The interviewees were predominantly between 41 and 65 years old (43.5%) and between 25 and 40 years old (about 31%). However, the percentages of young users in natural beaches (20.3% of users < 25 years old and 40.6% from 26 to 40) were higher than in semi-urban and urban beaches. Tourism was principally of family type with children (46.1%) and couple (22.4%). Most beach users were not resident (more than 69%). Educational level slightly differed between beaches. Indeed, most respondents in semi-urban and urban beaches cited “college” (about 49%), while those in natural beaches indicated mainly “academic degree” (39.2%). Average annual income was generally less than 20.000 € but 19.5% of the respondents did not reveal their income. Income did not vary regarding beaches (Table 5).

Table 5 General and individual sociodemographic characteristics, frequentation and reason for choosing the beach.

alt-text: Table 5

Variables	Natural (%)	Semi-urban (%)	Urban (%)	Total (%)
Gender				
Male	41.1	44.7	38.6	39.7
Female	57.8	53.4	57.5	57.0
No answer	1.2	1.9	3.9	3.3
Age (years)				
<25	20.3	19.9	17.8	18.3
26–40	40.6	35.2	29.6	31.2
41–65	38.1	39.2	44.9	43.5
>65	1.0	5.7	7.7	7.0

Educational level				
Secondary school	12.9	12.4	16.0	15.1
College	45.7	49.7	49.1	48.8
Academic degree	39.2	34.9	33.4	34.3
No answer	2.2	3.0	1.5	1.8
Provenience				
Resident	25.0	21.4	33.1	30.5
Not resident	74.5	78.5	66.6	69.2
No answer	0.5	0.1	0.3	0.3
Country				
Italian	48.3	91.3	90.1	85.4
Foreign	.3	1.1	3.4	2.7
No answer	51.3	7.6	6.5	11.9
Predominant type tourism				
Alone	1.7	2.1	4.8	4.1
With partner	23.5	19.2	22.8	22.4
Family with sons	38.2	54.9	45.7	46.1
Friends	33.6	21.9	23.9	24.7
Someone else	2.6	1.7	1.7	1.8
Annual Income (€/year)				
Lower than 20.000	30.0	32.7	32.6	32.3
From 20.000 to 31.000	27.8	27.0	26.1	26.4
From 31.000 to 41.000	13.2	11.2	11.8	11.9
More than 41.000	10.8	6.5	10.1	9.7
No answer	18.2	22.6	19.1	19.5
Satisfaction of the holiday				
Yes	90.1	89.1	85.3	86.4
No	6.3	7.3	7.8	7.5
No answer	3.6	3.6	6.9	6.0
First time on the beach?				
Yes	25.2	21.5	13.1	15.7
No, I have already come some time	27.5	20.1	23.2	23.3
No, I come here regularly	46.7	56.8	60.4	58.3
No answer	.7	1.5	3.3	2.8

Duration of stay in the resort (day)				
Only one	12.4	9.8	12.1	11.8
From 2 to 7	26.0	23.2	17.8	19.5
From 8 to 15	23.5	24.1	16.5	18.4
More than 15	36.1	40.8	47.5	45.2
No answer	2.0	2.1	6.1	5.1
Reasons for choosing the beach				
Sea/beach	66.9	45.9	44.9	47.6
Nature and landscape	4.0	4.6	2.9	3.3
Cultural heritage	.5	1.7	.9	.9
Economic reasons	1.0	1.8	2.0	1.8
Play sport/amusement	2.8	1.8	1.0	1.4
Relax/quiet	6.6	15.2	11.4	11.3
Have a holiday home	10.1	11.2	13.4	12.7
Other	7.6	17.0	22.2	19.8
No answer	0.5	1.0	1.4	1.2

Beach users' answers differed regarding habitual frequency of the beach and holiday duration. The percentage of users that habitually frequented the same beach was higher in urban (60.4%) and semi-urban (56.8%) beaches than in natural beaches (46.7%; Table 5). The period of permanence for more than 15 days was 47.5% of users in urban beaches, about 40% in semi-urban and 36% in natural beaches. The principal reason for choosing the beach was sea and beach especially in natural beaches (almost 70%) compared to semi-urban (45.9%) and urban (44.9%) beaches or the holiday home (mean value of 12.7%). Other aspects such as relax/quiet (mean value of 11.3%) and nature/landscape (mean value of 3.3%) also played a role (Table 5).

4.2 WTP

More than 58% of the interviewed were willing to pay a positive monetary amount (Table 2 in Rodella et al., 2019). Fig. 2 reports the percentage of responses to the CVM questions on WTP for the beach resource protection; the probability of a "yes" to the initial BID 0 decreased when the BID level increased, and the reverse was true for the probability of a "no," (Fig. 2 a). On the other hand, the "yes" percentage did not regularly decrease with the increase of BID 1 in the follow-up question (Fig. 2 b). In particular, the highest positive answer was registered for 4€ (12.7%) and 10€ (13%), while the lower percentages were expressed for 1€ (1.5%) and 2.5€ (1.9%).

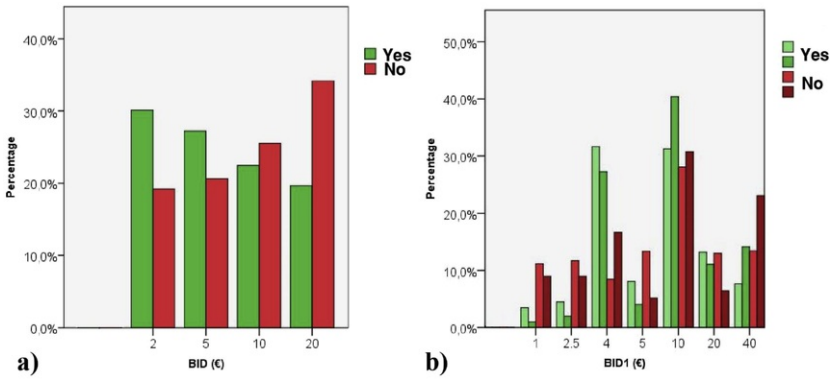

Fig. 2 Distribution of WTP response in the DB CVM: a) BID 0; b) BID 1.

alt-text: Fig. 2

Table 6 shows MLE estimations from the univariate logit regression application on the sample. Data collected amounts to n = 4126 - about 77% of the complete data set - because the non-answered interviews and the "protest votes" were not considered. It means that 42% of interviewed that were not willing to pay a positive monetary value represent the quota of people willingned to pay zero (this is different from the "protest vote"). The test on regression suggests that the preferred model would include the constant term. Signs of estimated parameters are consistent with economic theory and the related expected signs in formula (12), therefore we are able to estimate the median WTP to be 14.84 € (Table 6).

Table 6 WTP results. Estimation of the dichotomous logit model (single bounded) - follow up model (number of records = 4126) (S.E.: Standard Error; z: z-Statistic; D.F.: Degree of Freedom).

alt-text: Table 6

Variables		Coefficient	S.E.	z	p-value
Constant	α	**0.831**	0.054	15.31	0.000***
BID	β	**−0.056**	0.004	−12.19	0.000***
Test on regression					
LL value	***LL´ value***[a]	***χ2***	***D.F.***	***χ2 (0.95)***	**p-value**
−2737.73	−2859.88	244.3	1	3.84	0.000
***Median WTP* = 14.84 €**					

[a] Alternative model without the constant term.

Results from the application of the multivariate model are reported in Table 7. The *Generalized likelihood-ratio test* suggests that the preferred model includes the constant, so the proposed model was statistically significant on the whole. However, only some explanatory variables were found to be statistically significant. Concerning beach shape, we found that WTP tends to increase in case of presence of linear/artificial beach whereas it is expected to decrease in the other cases. However only two *dummy* variables – "Linear beach" and "Artificial beach" – reveal a statistically significant coefficient (for α = 10%). Therefore, the presence of these beach typologies (negatively) affects the WTP, instead mixed typology positively done ("Pocket beach" is a redundant variable because it is expressed as residual with respect to the other *dummy* variables").

Table 7 Estimation of the dichotomous multinomial logit model (number of records = 4126) (S.E.: Standard Error; z: z-Statistic; D.F.: Degree of Freedom).

alt-text: Table 7

Variables	Abbreviation	Coeff.	S.E.	z	p-value
Constant	α	**1.951**	0.479	4.073	0.000***
BID	β	**−0.056**	0.005	−11.946	0.000***
Use	U	**−0.261**	0.168	−1.555	0.120[a]
Urbanization	C	**−0.190**	0.081	−2.356	0.019**
Gender	G	**0.163**	0.066	2.454	0.014**
Age	A	**0.005**	0.002	2.287	0.022**
Education	E	**−0.011**	0.047	−0.236	0.815
Residence	R	**−0.116**	0.072	−1.611	0.106
Frequency	F	**−0.002**	0.030	−0.067	0.973
Test on regression					

LL value	*LL´ value*[a]	*χ2*	*D.F.*	*χ2 (0.95)*	p-value
−2719.27	−2813.22	187.9	1	3.84	0.000

[a] Alternative model without the constant term.

Findings also suggest that WTP would increase switching from a recreational use towards a conservation use and from a more urbanized environment to a natural scenario. Recalling that most environmental goods are of mixed nature, private and public (Cornes and Sandler, 1996) these results show that society values a relative shift from a private good user's oriented management to a more public good (non users) oriented management of the mixed resource. Indeed, both the "Activity (A)" and the" Urbanization (C)" variables show a negative estimated sign and statistically significant results by a statistical point of view (for α = 5% and α = 10%, respectively). Only some socio-economic variables appear statistically significant. We found that WTP would increase for males and for older tourists (both variables are significant for α = 5%). The level of education, the place of residence, and the frequency of visiting the observed beach do not appear statistically significant (data of demographic statistics are reported in Rodella et al., 2019).

Table 8 shows MLE estimations from the univariate logit regression application on the natural beach sample (n = 273) and median WTP of 20.55 €. Results from the application of the multivariate model on natural beaches are reported in Table 9. Only the place of residence was found statistically significant and WTP would increase in non-resident users more than residents. The level of education, gender and age did not appear statistically significant.

Table 8 WTP results. Estimation of the dichotomous logit model (single bounded) - follow up model for *natural beach typology* (number of records = 273) (S.E.: Standard Error; z: z-Statistic; D.F.: Degree of Freedom).

alt-text: Table 8

Variables		Coefficient	S.E.	z	p-value
Constant	α	**0.904**	0.213	4.25	0.000***
BID	β	**−0.044**	0.018	−2.49	0.013***
Test on regression					
LL value	***LL´ value***[a]	***χ2***	***D.F.***	***χ2 (0.95)***	**p-value**
−178.29	−181.45	6.32	1	3.84	0.000
***Median WTP* = 20.55 €**					

[a] Alternative model without the constant term.

Table 9 Estimation of the dichotomous multinomial logit model for natural beach typology (number of records = 273) (S.E.: Standard Error; z: z-Statistic; D.F.: Degree of Freedom).

alt-text: Table 9

Variables		Coefficient	S.E.	z	p-value
Constant	α	**3.075**	1.037	2.965	0.003***
BID	β	**−0.048**	0.018	−2.667	0.010**
Gender	G	**−0.207**	0.264	−0.784	0.431
Age	A	**0.015**	0.010	1.500	0.120
Education	E	**−0.100**	0.195	−0.513	0.606
Residence	R	**−1.157**	0.398	−2.907	0.004***
Test on regression					
LL value	***LL´ value***[a]	***χ2***	***g. libertà***	***χ2 (0.95)***	**p-value**
−172.46	−181.41	17.90	1	3.84	0.000

[a] Alternative model without the constant term.

Table 10 displays estimations from the univariate logit regression application on the semi-urban beach sample (n = 671) and the median WTP of 15.42 €. As observed for natural beaches, results of multinomial logit model for semi-urban beach typology (Table 11) indicated a significant correlation between WTP and non-resident users – indicating again the relevance of a strong public component non use value within the 'total economic value' of a beach- and, in addition, a correlation with the age variable.

Table 10 WTP results. Estimation of the dichotomous logit model (single bounded) - follow up model for *semi-urban beach typology* (number of records = 671) (S.E.: Standard Error; z: z-Statistic; D.F.: Degree of Freedom).

alt-text: Table 10

Variables		Coefficient	S.E.	z	p-value
Constant	α	**0.555**	0.132	4.19	0.000***
BID	β	**−0.036**	0.011	−3.11	0.002***
Test on regression					
LL value	***LL´ value***[a]	***χ2***	***D.F.***	***χ2 (0.95)***	**p-value**
−456.01	−460.88	9.74	1	3.84	0.000
Median WTP = **15.42 €**					

[a] Alternative model without the constant term.

Table 11 Estimation of the dichotomous multinomial logit model for *semi-urban beach typology* (number of records = 671) (S.E.: Standard Error; z: z-Statistic; D.F.: Degree of Freedom).

alt-text: Table 11

Variables		Coefficient	S.E.	z	p-value
Constant	α	**1.330**	0.563	2.362	0.018**
BID	β	**−0.034**	0.012	−2.833	0.003***
Gender	G	**−0.255**	0.160	−1.594	0.109
Age	A	**0.010**	0.005	2.000	0.040**
Education	E	**−0.065**	0.117	−0.556	0.582
Residence	R	**−0.365**	0.198	−1.843	0.065[a]
Test on regression					
LL value	***LL´ value***[a]	***χ2***	***D.F.***	***χ2 (0.95)***	p-value
−449.71	−460.89	22.36	1	3.84	0.000

[a] Alternative model without the constant term.

Table 12 shows MLE estimations from the univariate logit regression application on the urban beach sample (n = 3182). The median WTP was 14.48 € e.i. the lowest value with respect to other beach categories. The significative socio-demographic variable observed in the multinomial logit model was age variable (Table 13), as also verified for the semi-urban beaches (Table 11) and in the national sample (Table 7).

Table 12 WTP results. Estimation of the dichotomous logit model (single bounded) - follow up model for *urban beach typology* (number of records = 3182) (S.E.: Standard Error; z: z-Statistic; D.F.: Degree of

Freedom).

alt-text: Table 12

Variables		Coefficient	S.E.	z	p-value
Constant	α	**0.883**	0.062	14.23	0.000***
BID	β	**−0.061**	0.005	−11.69	0.000***
Test on regression					
LL value	***LL´ value***[a]	***χ2***	***D.F.***	***χ2 (0.95)***	**p-value**
−2099.49	−2169.87	140.76	1	3.84	0.000
***Median WTP* = 14.48 €**					

[a] Alternative model without the constant term.

Table 13 Estimation of the dichotomous multinomial logit model for *urban beach typology* (number of records = 3182) (S.E.: Standard Error; z: z-Statistic; D.F.: Degree of Freedom).

alt-text: Table 13

Variables		Coefficient	S.E.	z	p-value
Constant	α	**0.817**	0.243	3.362	0.000***
BID	β	**−0.061**	0.005	−13.062	0.000***
Gender	G	**−0.087**	0.075	−1.160	0.243
Age	A	**0.005**	0.002	2.423	0.047**
Education	E	**0.009**	0.053	0.170	0.860
Residence	R	**−0.006**	0.077	−0.078	0.936
Test on regression					
LL value	***LL´ value***[a]	***χ2***	***D.F.***	***χ2 (0.95)***	p-value
−2096.11	−2169.30	146.38	1	3.84	0.000

[a] Alternative model without the constant term.

5 Discussion

The average beach user of Italian coastline was an adult of more than 40 years old, which frequented the beach with their family, had an annual income of 20–31.000 € and was on a long holiday in coastal localities. In the survey it appears that beach visitors were mostly holiday makers not resident in the beach locality, although several sites were chosen by local people or by tourists that have a holiday home. In this context, although proximity and habitual frequentation of the beach play a great role, the main reason for choosing the beach was the beach environment and sea both in natural and in semi-urban and urban beaches. The results are in relative agreement with similar studies on stakeholder and user perspectives of beaches in Italy (Simeoni et al., 2017b). Emilia-Romagna, Italy (Bernini et al., 2015; Rodella et al., 2017a, 2017b), Veneto, Italy (Parente et al., 2017; Rodella et al., 2017c), Sant Pere Pescador, Costa Brava, Spain (Lozoya et al., 2014), the Caribbean coast of Colombia (Botero et al., 2013), England and Wales (Tudor and Williams, 2006; Morgan et al., 1993).

In the present study, 58% of those interviewed were willing to pay a positive sum of money to obtain an improvement as described by improved environmental management. As one would expect, the “yes” percentage was indirectly correlated with the initial BID which is supportive by the economic theory of demand (~~Kontogianni Kotchen et al., 2009~~ Kotchen et al., 2009; Wang and Jia, 2012). Our result showed an increase with respect to those obtained by Marin et al. (2009) in Riviera del Beigua, Italy and by Koutrakis et al. (2011) in Emilia-Romagna, Lazio and Liguria. Marin et al. (2009) performed a survey with 528 questionnaires and 36% of tourists and resident beach users were in agreement with a beach tax implementation for coastal quality improvement. Specifically, Koutrakis et al. (2011) found that 45.2% of users in Emilia-Romagna were willing to pay 1.1–2.86; 12% of users in Lazio (43% of people were

unwilling to pay and 45% did not answer) were willing to pay 0.50–0.96 € while 44% of users willing to pay a fee lower than 5 € in Liguria (WTP varied from 1.36 to 2.85 €). Therefore, considering the WTP mean values and the share of people expressing a positive amount obtained in our study, it seems that people have an increased interest and positive perception towards beaches and their protection in Italy. Furthermore, the mean WTP of 14.84 € calculated in our study for a beach-goer is a high value with respect to those previously reported (Table 1 in Rodella et al., 2019). Indeed, the mean value is higher (double in some cases) than those reported in previous surveys for Mediterranean beaches (Birdir et al., 2013; Marzetti et al., 2016). With regards to the method, a clarification must be made on respondents who have not answered to the WTP question. Individuals who object to the survey may simply not respond; some may give positive, but invalid bids (outliers); while others may state a zero value for a good that they actually value (protest zero bids). There are several possible reasons for this behavior some respondents may feel that it is unethical to place a monetary value on public goods such as wildlife or environmental quality, while others may argue that these goods should be provided "free of charge" (Curtis, 2001; Halstead et al., 1992*).* The problem of protest zero bids is of particular concern in dichotomous-choice contingent valuation, since a "no" response may be misinterpreted as willingness to pay less than the stated amount, rather than as a protest. In this study, we treated zero value as a preference including them in the data set. In this way, zero value sets the minimum limit on which median value has been calculated. This is a "legitimate zero response" so respondents were essentially valuing a proposed policy and did not discuss the market envisaged Mazzanti (2002a); McGuirk et al. (1989). For this reason, this method differs to the unwillingness to pay, where respondents do not agree with the nature of the market envisaged (protest vote).

The median WTP value can be used for (i) policy making and (ii) funding related purposes. As far as the policy realm is concerned, according to Cost-benefit analysis rationale, the mean value might be multiplied by the size of the relevant population in order to quantify the side of total benefits. If that sum is higher than the costs behind the implementation of the variation in beach management, the change is socially desirable and characterized by economic efficiency. In more technical terms, the Samuelson test would be passed if the aggregate benefits are higher than the total cost side of the 'project' (Samuelson, 1954). On the basis of the survey administered to the Italian population, the aggregate benefit is obtained by multiplying the mean WTP by the relevant population at stake. If the Italian population over 18 years old is taken as reference, around 49 Millions Italians have to be considered. The range of aggregate benefits across the specifications is thus between 712€M and 1.01 Billion. If employed people and pensioners are considered, the population shrinks to around 39 Million. The aggregate benefit range is thus between 564 and 801 M€. Those figures have to compared to the costs of implementing the projects to improve the beach management.

The second funding related point relates to a management and political economy choice. On the basis of the welfare estimation of the benefits in terms of WTP, one can operate on the elicited 'demand' for the good beach quality and set funding strategies that differ for distribution features. If the funding is more dependent on taxpayers, the correlation between payers and benefiters is usually low; if users pay, the correlation is high and the 'price' could be eventually used to regulate demand if carrying capacity critical thresholds are an environmental management problem. A mixed funding system where users and donors (who can be users and non-users) pay is also institutionally and economically sound: it bears less on users, it diversifies the funding participation, and it possibly extends demand in situ by lowering the potential price paid by users on the beach.

The setting of prices and taxes that might characterise the policy landscape and sites management presents various options: equity and efficiency features drive the choice on the basis of distribution 'preferences', once it is demonstrated that the overall benefits are higher than the costs (Mazzanti, 2002b). The difference between donations and taxes as payment method is actually relevant and a comparison could be carried out in future works, testing whether the two elicited WTP differ. This analysis should be interesting also because the Italian management of beaches presents cases where: people pay to access with gates; beaches where users only pay for services; free public spaces on the beaches. Therefore, beachgoers are familiar with different ways of beach management and payment and to date a predominant one does not really exist.

Considering the physical-geomorphological variables, beach shape showed a positive correlation of WTP with mixed beaches (an alternation of linear-pocket beach and artificial embayed littorals) and a negative correlation with linear beaches, pocket-beaches or artificial beaches. As reported in Supplementary Material S1 in Rodella et al. (2019), the mixed beaches in this study are Trani and Bari in the Apulia Region, Scoglio Lungo in the Sardinia Region and Lavagna in the Liguria Region. All these littorals are characterized by touristic harbors and therefore sailing and fishing boats. These features are two of the most anthropogenic appreciated elements that positively affect the landscape, as argued by Duvat (2012) for the beach of Orélon Island (France). Furthermore, these beaches are located in protected zones that are: the MPA of Posidonieto San Vito-Barletta (IT9120009) for the Trani and Bari beaches; the MPA of Pelagos Sanctuary for Mediterranean Marine Mammals (EUAP1174) encompassing the Tyrrhenian sea between the Liguria and Sardinia regions. The high environmental value of these marine areas, due to their abundance and biodiversity of species, probably affected the users' WTP of these beaches.

With regard to the other physical variables, WTP showed a negative correlation with the urbanization level indicating tourists would be willing to pay more for natural beaches than urban beaches, even though they generally preferred urban recreative beaches. This aspect was in agreement with results of previous surveys of users' environmental attitudes. For instance, Han et al. (2011), found that the most important factors that influenced respondents to pay was environment attitude, more than other physical and socio-demographic features. Williams and Barugh (2014) found that users of Playa Linda and Playa Choc-Mool (Mexico) respectively expressed a preference for an undeveloped/few facilities beach, in comparison with small-large resorts. The user propensity to pay more for natural beaches may be also related to the quality of the surrounding areas (or landscape) (Roca and Villares, 2008), even if in semi-urban or rural beaches the cleaning quality is a bit lower than in urban beaches. For the Italian regions studied, the landscape did not condition the choice of users when deciding which beach to visit, but it is important for global assessment and therefore to WTP.

Several studies have related certain socio-economic variables with pro-sustainable behaviours from different perspectives such as gender (Arcury et al., 1987; Laroche et al., 2001), age (Daniere and Takahashi, 1999), level of education (Pulido-Fernandez and Lopez-Sanchez, 2016) and income (Blakemore et al., 2002; do Valle et al., 2012). Our results suggested that men had a higher probability of paying than woman (Table 9). This was in disagreement with results from the CV literature, which shows that men have a lower awareness of environmental threats than women, because women are more sensitive to beach preservation than men (Marzetti et al., 2016; Stern et al., 1993). The age variable had a positive coefficient (Table 9) that was statistically significant across Italian samples, which means that in this particular sample the older visitors were relatively more acceptable to pay the BID offered than the younger ones, similar to results obtained by Piriyapada and Wang (2014). On the contrary, WTP was not affected by residence and frequentation of the beach localities when considering the national sample (Table 9). However, regarding the three identified beach typologies, we observed a correlation of WTP to non-resident users in natural and semi-urban beaches. This result probably indicates a higher WTP for users that to choose the beach for their physical characteristics and not for their proximity. On the other hand, urban beaches did not show this anomaly and resembled the national sample. This result is in agreement with Alves and Benavente (2014), which showed that local residents were much less willing to pay compared to visitors from the province of Spain. Local residents believed that they already pay enough taxes and assume that beach facilities and maintenance must be covered by these taxes.

6 Conclusions

This paper analyzed the willingness to pay for beach preservation in Italy considering beach typology and characteristics and users' perception. The CV results showed that the overall sample mean value was 14.84 € per user. Significant differences between the three beach typologies (natural, semi-urban and urban) supports our initial hypothesis. Indeed, WTP was 20.55 € for natural, 15.42 € for semi-urban and 14.48 € for urban beaches. In general, WTP showed a negative correlation with urbanization level and therefore tourists would be willing to pay more for natural beaches than semi-urban and urban beaches. This result provides important information for improving beach management and conservation of natural resources in the coastal environment. Therefore, particular management frameworks are necessary for beaches that have singular natural characteristics (both for its location and its users), and especially for those located in traditional tourist areas.

WTP was significantly correlated to some demographic characteristics of the users. For the national sample, our results demonstrated that WTP was positively correlated with gender and age. On the contrary, WTP in this study was not affected by residence in the beach localities, by educational levels and income. Nevertheless, people were willing to pay for coastal preservation in Italy, probably because tourists habitual frequent the beaches and were familiar with their management issues. These results about social characteristics suggest to policy-makers that they should pay specific attention to the categories of visitors who are less sensitive to beach preservation and less likely to pay.

In relation to beach characteristics, results showed a positive correlation of WTP and mixed beaches (an alternation of linear and artificial embayed littorals) that corresponded, in this study, to high value landscape littorals characterized by both physical and heritage features. On the other hand, artificial embayed beaches and linear beaches with high urbanization level showed a negative correlation with WTP.

This study presented some limitations which may help to explain the medium receptivity of the WTP. Users may have had difficulty in foreseeing the appropriate beach management scenario provided by the financial fund. A possible extension to this research would be to address the attitudes of tourists towards a financial fund in the context of a contingent valuation survey, using visual support materials that show the scenario of improved environmental quality of the beach (Hanley and Spash, 1994). Furthermore, considering that beach use is mainly concentrated in the period June–September (high season), the demand and the prices of hotels, rentals and supplies are higher during these months than during the rest of the year. As a consequence, WTP may be affected by these fluctuations. Therefore, two different values should be calculated in order to account for that seasonal difference. In this way, it will be possible to obtain data about beach economics for the entire year (i.e. bathing and non-bathing season).

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Uncited references

~~Ariza et al., 2012; Billé, 2007;~~ Simeoni et al., 2017b.

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Highlights

- Italian value of WTP for beach preservation is 14.84€.
- Italian beach-goers show low knowledge of beach issues and management.
- Logit model for evaluating the probability of a positive WTP are constructed.
- Beach urbanization level and beach typologies are significant predictors of tourists' WTP.
- WTP decreases from natural to semi-urban and finally to urban beaches.

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