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A Choice Modelling Approach for Assessment of Use and Quasi-Option Values in Urban Planning for Areas of Environmental Interest

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Abstract

This study adopts a discrete choice modelling methodology to evaluate individuals' preferences over planning alternatives for an urban site of environmental interest. Since such projects involve some uncertainty and irreversibility, a special attention is devoted to the estimation of the quasi-option values which are associated to project development. Two distinct measures for the quasi-option value are estimated, and both coefficients indicate that the public places a significant value on reduction of the possibility of adverse irreversible effects: a more prudent development strategy is valued about four times more than a procedure that provides a lesser hedge against undesired outcomes. Furthermore, the study involved elicitation of intertemporal preferences over projects with different time spans, and estimation of the implicit discount rates: the values obtained seem high if compared to standard discount rates applied to public projects, but not far from current interest rates on consumption.

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Summary

This study adopts a discrete choice modelling methodology to evaluate individuals' preferences over planning alternatives for an urban site of environmental interest. Since such projects involve some uncertainty and irreversibility, a special attention is devoted to the estimation of the quasi-option values which are associated to project development. Two distinct measures for the quasi-option value are estimated, and both coefficients indicate that the public places a significant value on reduction of the possibility of adverse irreversible effects: a more prudent development strategy is valued about four times more than a procedure that provides a lesser hedge against undesired outcomes. Furthermore, the study involved elicitation of intertemporal preferences over projects with different time spans, and estimation of the implicit discount rates: the values obtained seem high if compared to standard discount rates applied to public projects, but not far from current interest rates on consumption.

Keywords: Urban Planning, Environmental Values, Choice Modelling, Use Values, Quasi-option Values, Discounting

JEL Classification: C35, Q51, R41

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1. Introduction

The European Union has recently introduced the criterion of Strategic Environmental Assessment (SEA, directive 2001/42/EC) as a tool to evaluate land planning actions. The major innovation concerns the participation level of local communities to the decision process. The purpose of the SEA-Directive is *to ensure that environmental consequences of certain plans and programmes are identified and assessed during their preparation and before their adoption. The public and environmental authorities can give their opinion and all results are integrated and taken into account in the course of the planning procedure. After the adoption of the plan or programme the public is informed about the decision and the way in which it was made* (SEA, Legal Context). The directive 2003/35/EC further pursues the objective of improving public participation in plans and programs related to the environment, along the lines drawn in the Aarhus Convention. The Aarhus Convention establishes a number of rights of the public (individuals and their associations) with regard to the environment: a) the right of everyone to receive environmental information that is held by public authorities ("**access to environmental information**"); b) the right to participate in environmental decision-making ("**public participation in environmental decision-making**"); c) the right to review procedures to challenge public decisions that have been made without respecting the two aforementioned rights or environmental law in general ("**access to justice**"). In particular, the directive requires Member States to ensure that:

(a) the public is informed, whether by public notices or other appropriate means such as electronic media where available, about any proposals for such plans or programmes or for their modification or review and that relevant information about such proposals is made available to the public including inter alia information about the right to participate in decision-making and about the competent authority to which comments or questions may be submitted;

(b) the public is entitled to express comments and opinions when all options are open before decisions on the plans and programmes are made;

(c) in making those decisions, due account shall be taken of the results of the public participation;

(d) having examined the comments and opinions expressed by the public, the competent authority makes reasonable efforts to inform the public about the decisions taken and the reasons and considerations upon which those decisions are based, including information about the public participation process.

Adoption of the required measures at the national and local levels should hopefully modify the traditional top-down approach in environmental and urban planning. The benefits arising from the

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bottom-up approach, recommended by the European Union, are twofold: first, empirical evidence shows that often the community participation at the decision and implementation stages of the planning process increases its effectiveness (see, for example, Beierle and Cayford, 2002). Furthermore, requiring the community to participate in the planning process, may provide an effective tool for democratic control over the planning process.

Yet, it could be argued that an effective control should not be limited to the stage of decision making over different plans or programs, but, once a project has been selected, it should also apply at the development stage, in order to ensure correspondence with the approved project, and achievement of pre-defined quality standards. This is an aspect that is usually overlooked in discussions concerning democratic participation in environmental and urban planning activities. Since urban planning in areas of environmental (as well as in areas of historical and artistic) interest may involve irreversible adverse effects, it seems that, if social preferences express a need of a tight control over the project development stage, this should be warranted. An often cited problem in public calls for competition to assign a contract for project development is that the minimum cost criterion overcomes other important elements, such as, for example, work safety or quality standards.

In projects involving irreversible effects on high value sites, it could be worth to pay more for an execution method that is less susceptible to produce undesired outcomes. If public participation in the planning decisions is called for, then public preferences should also guide the decision makers' choice between a cheaper and more hazardous, or a more expensive but also more reliable development method. Further, when the planning choices have irreversible effects –either in economic terms, when sunk costs are relevant, and especially in environmental terms, when an ecosystem is irreversibly lost- it is important to explicitly include in the assessment of alternative projects the option (or quasi-option) value that a more precautionary execution scheme holds compared to an alternative procedure which carries a higher risk of producing adverse irreversible effects. In the literature, the term option value is more strictly related to the notion of a risk premium that risk averse individuals are willing to pay in order to avoid a risky prospect. When dealing with decision making under uncertainty and irreversibility, it is more appropriate to use a different notion of option value, often referred to as quasi-option value, which is independent of the assumption of risk aversion. In the following we will use the two terms interchangeably, always referring to the second type of notion, unless otherwise specified. The seminal theoretical contribution in this field are Arrow and Fisher (1974) and Hanemann (1989); more recent developments (Fisher, 2000) address the issue of building a theoretical framework which would include the notion of option value as expressed in the theory of financial markets (as in Dixit and Pindyck, 1994): see Mensink e Requate (2005). The quasi-option value may be interpreted as the value of information: in the words of Howard (1996), an option is an alternative that permits or may permit a future decision following revelation of information. In practice, quasi-option values are characterized by the specific choice context. In consumption choices over durables, the existence of a quasi-option value is implied by choices involving purchase of an extended warranty, with the aim to remedy a possible unsatisfactory performance. In situations where development produces irreversible effects, a possible strategy could be to defer development, or to develop less. Another way, when feasible, is to adopt a sequential development method, which allows correction of deficiencies if the results in the first lot turn out to be poor. This is the framework that will be adopted in the present paper in order to measure the social option value associated to the opportunity of using learning to redress irreversible adverse effects. The willingness to pay (WTP) to select an implementation mode which allows tight monitoring and control of the project development will be the first measure of quasi-option value that we will attempt to estimate. As far as we know, the applied literature on this specific issue is quite scant: one interesting application is the work by Bosetti et al. (2004), on a development project of a natural area.

Zhao and Kling (2004) and Corrigan et al. (2007) further build on the notion of option value and value of information, suggesting the notion of commitment cost, which is the value of potential future learning on the effects of the development of a project. If the subject expects that she can learn about the value, then she may choose to wait for more information before making a decision, and will be willing to pay something less to have the project developed today rather than next year. As they put it, *from a pure modeling perspective, real option theory addresses the question of "when to purchase a good given the payoffs and current and future information," while the commitment cost model addresses the mirror question of "what price is needed to induce the agent to purchase the good now, given the payoffs and current and future information." More importantly, the answer to the second question provides researchers with a WTP measure (i.e., the price at which the agent will purchase the good), a measure that is routinely used in welfare analysis.*

One aim of the present paper is to focus on the WTP measure associated to the first question, i.e. what price the agent is willing to pay to ensure that useful information is obtained before undertaking the development of a project. Such WTP can be interpreted as a quasi-option value of

delaying an investment in order to gather useful information, and this will be the second measure of quasi-option value that we will attempt to estimate.
Land planning projects generate cost and benefits flows in the long run, and their assessment involves a decision on which procedure should be used to translate future values into present values (EPA, 2000). The standard procedure is to apply some function related to the market interest rate. However, such a procedure has been the object of a wide debate in both the theoretical and experimental economics literature[1]. Lind (1990) argues that market interest rates "may tell us nothing about people's rates of time preference"; the same opinion is shared by Arrow et al. (1996), who claim that the rates applied in the discount procedure should be dependent on the temporal horizon of the project, and reflect the intertemporal preferences of the relevant population. A further aim of this study is to analyze the intertemporal preferences eliciting through a choice modelling exercise the substitution rate between different temporal horizons.

2. The case study: the Poetto Seafront in Cagliari, Sardinia

Our interest in this problem stems from the existence of an extensive natural area of major environmental significance, situated within the urban structure of the metropolitan area of Cagliari. This area includes a 10 km stretch of seafront ("Poetto Beach"), an area occupied by saltpans and a lagoon ("Molentargius Marsh"), a major nature conservation area, where pink flamingos nest along with a variety of other bird species.

It is the seafront that largely bears the environmental problems. During the summer season, in particular, tourists and especially locals flock in droves to the beaches, making an estimated 100,000 trips/day, 60% of which are concentrated in the morning period and only in particular spots along the seafront. The most critical spot along the entire seafront is the area nearest the urban centre, which, besides residential housing, also accommodates several commercial and recreational activities. This intensive anthropogenic pressure is one of the factors underlying the environmental degradation that afflicts this stretch of coast: erosion of the sandy shore that in few decades has changed the "face" of the seafront.
A restoration project has been completed in 2002, which included beach sand replenishment, the construction of a new main road and an increase in the number of parking places, but did not produce the results anticipated. On the one hand, the beach replenishment has altered the quality of

[1] See Frederick et al. (2002) for an introductory discussion

the sandy shore, the white and extremely fine sand being submerged by tons of dark sand with very different grain size characteristics. This caused strong reactions among the citizens, who would like to see their beach restored to its former conditions. On the other hand, the road infrastructure project has improved accessibility to Poetto, which contrasts starkly with the objectives to be pursued for environmental regeneration: because of a poor public transport service, 78% of all trips with destination Poetto are made by private vehicles, causing very heavy congestion and also an indiscriminate occupation of the public space especially along the beach.

A technical committee appointed by the Regional Government of Sardinia to analyze the present conditions and evaluate the opportunity of further action, outlined three alternative planning options for the seafront: 1) action aimed at increasing use values (tourist and entertainment facilities), 2) action aimed at keeping a balance of use and non use values, 3) action aimed at increasing non use values (environmental quality). Which choice is best suited to the case at hand is a matter of public preferences over these alternative options: elicitation of such preferences is one aim of the present study. However, we are also interested in seeing how individuals value participating in further steps of the planning activity: not just having a say, or being informed, on which project is selected, but also some control on how the project is implemented. Scope of the present research is to assess the citizens' preferences regarding the modes of project implementation.

The survey was preceded by an intense preparatory study. The first step involved a qualitative analysis (one Metaplan and 2 Focus Groups), which had the purpose to stimulate a debate around the planning options sketched by the Technical Committee, and match them up with proposals and issues raised by lay persons and their attitudes toward environmental problems. The qualitative phase has been fundamental for the design of scenarios and attributes to be presented in the Choice Modelling (CM) task.

The quantitative survey was composed by two parts. The first section was dedicated to collect information on socio-economic characteristics and individual habits, as well as to filter the sample (as the Stated Preference exercise was submitted only to car driver passengers). The questionnaire collected information about travel length, time spent to park the car, characteristics of the visit, frequency of visits in the summer months, other use values attached to the Poetto area. In the second part, instead, two Stated Preference exercises (the Choice Modelling tasks) were submitted to each respondent.

The first CM exercise, named CM-project, was built to elicit preferences over three planning options characterised by an environmental regeneration of the corridor alongside the beach but also a restriction in terms of accessibility by car. The experimental design[2] had 3 attributes, at 3 levels each, defined as differences with respect to the actual situation (status quo). As only the main effects were considered, the final design included 9 choice tasks. Finally, the experimental design was randomly divided in 3 blocks of 3 choice tasks each. This was motivated by the fact that each individual was asked to partecipate in two different CM exercises, one after the other, so we had to reduce the number of tasks in each exercise. Table 1 illustrates the attributes used and their levels.

Table 1. Attributes levels for CM-project

	status quo	Level 1	Level 2	Level 3
Environmental quality Scenario	(damaged)	(urban)	(intermediate)	(natural)
Add time to park car	0 min	0 min	2 min	5 min
Cost	0 €	0.5 €	1 €	2 €

In particular, the environmental quality attributes were defined as follows:

- The Damaged scenario corresponds to the Status Quo option, which did not include any improved service with respect to the present situation.
- At the Urban level the road will be asphalted anew, a tiled sidewalk will be constructed; both private and public transport will be allowed but car parking will be restricted to only one side of the road.
- At the Intermediate level the road and the pedestrian sidewalk will be paved with ecological (non petroleum-based) materials; private motor vehicles would not be allowed, while public transport will still be available along the promenade; bicycles will have a reserved track.
- The Natural scenario entails removal of both private and public traffic, which are displaced to a parallel avenue; a wooden walkway; a dirt road for bikers; more vegetation along the promenade.

All regeneration scenarios alternative to the Status Quo option include a regular maintenance and security service.

To measure the accessibility by car two types of cost were used: the first is measured in time, i.e. it is the additional time required for parking the car; the second is measured in money unit (Euro), and it is the road price that car drivers are required to pay to enter the marine area (which comprises not only the seafront, but also the avenue parallel to the seafront, and the connecting roads where access

[2] For an analysis of alternative experimental designs, see Ferrini and Scarpa (2007).

and parking would still be available under all planning options). These attributes were selected after analysis of several alternatives. For the monetary cost, three forms of payment were considered: (1) local taxes, (2) ticket for access to the seafront and (3) cost of access to the area in the form, for example, of a park fee, or a charge for an environmentally sustainable public transport service. Based on the results of the qualitative survey, we chose to use the direct cost of access to the area in the form of road pricing for two main reasons. We discarded the hypothesis of a local tax, since it would not have allowed to estimate the impact of different levels of use, i.e. the number of visits to the area. Moreover, the average cost of a lump sum payment decreases as the number of car trips increases, and this would have the undesired effect of providing an incentive to use the car more frequently. Between the two direct costs, parking and road pricing, the second was preferred for several reasons: (1) it can be easily associated to the damage produced by the cars on the environment of the entire area; (2) it is more realistic to be made it independent of the duration of the stay and of the specific location of the parking area; (3) it is more difficult to elude; and (4) the road pricing is a form of payment which has recently received great attention, so in the choice experiments people knew how this payment instrument would work.

Since all projects examined in the choice experiments implied some reduction of parking slots along the beach promenade, it was important to take into account that this would have increased the time to find a parking space. Usually users start looking for a parking space as close as possible to the beach, and only if they fail they move away from the promenade. This motivated the inclusion of the attribute “time to park” as an additional cost attached to the realization of a project.

The CM-project exercise was presented as a binary choice between the status quo and one project alternative. In order to improve the comprehension of the projects presented, images created with a rendering technique were used to present the three attributes used to describe the environmental regeneration of the area.

The second CM exercise, named CM-implement, deals with different implementation modes for a given project. This second exercise was reserved to respondents who chose an intervention project in at least one of the first stage stated preference experiments. The individuals were asked to bear in mind the scenario they chose in the first exercise (if more than one, the project associated to the highest cost was selected), which could be developed according to different implementation modes. Respondents could choose between a Base mode or an Improved mode, characterized by the following attributes:

a) Control: a one-shot mode that did not allow any control over the quality of the work –and its correspondence with the approved project, versus a sequential mode that allows such control and possibility to correct a slack development procedure;
b) Wait information: a mode that involves immediate execution of the selected project, versus a mode that delays operation by one year in order to gather further information (either on technical features, or on people's preferences) potentially useful to improve the implementation of the project;
c) Duration: a mode guaranteeing 10 years of maintenance, rather than 15, or 20 years of maintenance.

The Base mode is characterized by no Control, no delay to gain information, 10 years of maintenance.

Finally, the cost (road price) associated to each implementation mode varied between EUR 0.50 (associated only to the Base mode) and EUR 1.00, 1.50 or 2.00 associated to improved implementation modes.

The *CM-implement* attributes and their corresponding levels are shortly described in Table 2.

Table 2. Attributes levels for CM-implement

	Base	Improved		
Control	No	Yes		
Wait information	0	1 year		
Duration	10 yrs	15 yrs	20 yrs	
Cost	0.5 €	1€	1.5€	2€

Again, a fractional factorial design was used and only the main effects were considered. Having 4 attributes, 2 with 3 levels and 2 with 2 levels, a total of 9 choices tasks were obtained and then randomly divided in three groups. Each respondent received three choice sets; in each choice situation the respondent had to compare the base procedure with an alternative option where at least one of the attributes was set at a higher level. An example of choice set is reported in Figure 2.

Both designs were tested in several pilot studies. Each pilot study used a sample of 20-25 visitors in order to verify that the CM questions were understandable and estimable, and to test the description of the attributes and the levels to be employed in the stated preference exercise. The design was further controlled in four pre-test surveys, on samples of about 50 individuals each.

The main survey was administered through in-person interviews at destination (i.e. to people in the beaches) in August 2006. After having filtered only those people who reached the area by car as drivers, a final sample of 500 respondents completed the revealed preferences questionnaire and partecipated in the first CM-project exercise. As one fifth of the respondents never chose any project option, only 400 individuals partecipated in the CM-implement exercise.

The following tables report some descriptive statistics of the sample characteristics, while the results of the CM exercises, as well as the results of the models estimated, will be discussed in section 3.
The main sample (500 individuals) is mainly composed by males (63.5%), heads of the family (67.7%), active (66.6%), mainly as employees (81.7% of the active people). The age of the sample is distributed between 19 and 84 years: 11.9% is younger than 30, 35.8% is between 31 and 45 years old, 40.8% between 46 and 65, and 11.5% older than 65. The education is distributed as follows: 28% has a primary education, the 52% a secondary education and just the 20% a higher education. The sample is mainly composed by people of average income. Excluding the 37% of the interviewees that do not provide any answer, 18.8% say they learn less than 1000 euro, 70.5% between 1000 and 2000 euro, and 10.7% more than 2000 euro). Analogous results were obtained at family level. The percentage of people who do not provide an answer on the family income is 21%. Among those who give a response, less than 10% declare a family income higher than €3,500 (note that on average there are approximately 3 members per household).

As expected, since our sample is composed only by car drivers, 96.2% of the interviewees own a car, which in the 40% of the cases is the only car available in the family, while 50.4% of the families own 2 cars, and just the 9.6% own 3 or more cars.

The majority of individuals live quite close to the beach area (80% of the interviewees travelled by car less than 20 minutes, 15% between 20 and 40 minutes and 5% more than 40 minutes), hence the travelling cost by car for the specific trip to the beach is generally low: 64.8% of the respondents pay less than 1 euro, 21.8% between 1 and 2 euro, and 13.4% more than 2 euro.

Finally, and maybe more interestingly for the present work, we note that 96.4% of the respondents said that they found a parking space very close to the beach so that they had to walk from the parking space to the final destination a "perceived" time of zero minutes[3]. Moreover, for the large majority of respondents (81%) the "perceived" time to find a parking space for their car is approximately zero. So, the present offer parking space seems, at present, more than sufficient even

[3] Note that zero minutes is obviously a "perceived" time that could not correspond to reality. But it means anyway that they walked such a short time that they almost perceive they have not walked at all.

in a situation in which substitution between transport modes is almost absent. In fact 94.8% of the car users declared that they use always their car to go to Poetto. Among the 5% of the sample who sometimes use some other transport modes, a 50% uses a motorbike, a 30% uses the bus and only 15% a bicycle. In line with these results, 92% of the interviewees has never used the bus in the current season to go to Poetto, and more than 85% has never considered the possibility of going to the beach by bus.

The majority of respondents (84%) has a favorite spot along the beach and the main reason for this choice is that it is a meeting point with friends and relatives. The second motivation for a specific location along the beach is the availability of park space (which partly explains what seen before about parking time) and services (restrooms, showers, snack bars etc.). The sample is quite evenly distributed between the two main sections of the beach, with 52.4% of the people interviewed in the first part of the beach; and the remaining 47.6% in the second part of the beach, which is wider and less congested than the first.

About 47% of the interviewed go to the beach every day, 23% just during the week, while a 30% only goes during the weekends. Table 3 reports the frequencies of visits per month in the summer. The 93% of the interviewed can be considered "life visitors" as they go to the Poetto every year since their youngest age. Half of the sample (58%) also visit the Poetto beach off-season:

Table 3. Frequencies of visits

	June	July	August	September
Never	33.6%	15%		24.2%
Less than 10 times	44.4%	37.8%	37%	49.2%
10-25 times	11.8%	27.4%	35.8%	15.6%
All days	10.2%	19.8%	27.2%	11%

3. The econometric models

Following the classical formulation of discrete choice models (Domencich and McFadden, 1975), individuals are assumed to choose among several available options on the basis of an index of preference (called utility) that depends on the specific characteristics of alternative *j* and individual *q*:

$$U_{qj} = U(\underline{X}'_{qj}) \qquad (1)$$

The formation of individual preferences is assumed rely on compensatory rules, so that there is a trade-off among the different characteristics $(\underline{X}'_{qj})$ depending on their relative importance $(\underline{\theta}'_{qj})$. If we consider that modellers are able to observe only a subset $U(\underline{X}_{qj}) \subset U(\underline{X}'_{qj})$ of the vector of real attributes (Manski, 1977; McFadden, 1981), the random utility can be rewritten as[4]:

$$U_{qj} = U_{qj}(\underline{\theta}_{qj}, \underline{X}_{qj}, \varepsilon_{qj}) \tag{2}$$

The traditional way to specify the systematic utility in discrete choice models is to consider it a linear function in the parameters and attributes (mainly *LOS* and *SE*) with an additive error term and constant trade-off among attributes over the population (i.e. $\underline{\theta}_{qj} = \underline{\theta}_j, \forall q$):

$$U_{qj} = ASC(j) + \sum_{l=1}^{L} \theta_{lj} s_{lqj} + \sum_{m=L+1}^{M} \theta_m se_{mq}(j) + \varepsilon_{qj} \tag{3}$$

where:

- s_{qj} are attributes pertinent to each choice alternative, often referred to as *LOS* (level of service) variables;
- $se_q(j)$ [5] are socio-economic characteristics; i.e. characteristics of the individual, which do not vary across choices;
- *ASC*(*j*) are alternative specific constants, i.e. dummy variables used to index each alternative; they may be considered to represent on average the unobserved sources of utility related to the alternative; and
- ε_{qj} is the error term, representing heterogeneity sources which are not explicitly included in the utility function.

As clearly discussed in Cherchi and Ortúzar (2003), when a linear-in-attributes utility is specified the effect of the SE characteristic is to diversify utility for different *SE* groups in the population. This certainly influences the total utility associated to each alternative, as well as differences between paired options, but not the marginal change due to variation in the characteristic of the supplied option. In fact they do not have any effect on the marginal utility of the level-of-service variables and thus on the value of time, which depends only on the value of the estimated *LOS* parameters.

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4 In the most general case even the parameters vary with individuals.

5 The different notation adopted to represent *SE* and *ASC* attributes (with respect to *LOS* attributes) should only help to remind that they are associated to each alternative *j* but do not vary with it. For a detailed discussion on the ASCs see Cherchi and Ortúzar (2006).

In order to model heterogeneous effects on the marginal utility of the attributes, two different approaches have been used in the literature:

- Specifying interactions between *LOS* and *SE* variables:

$$U_{qj} = ASC(j) + \sum_{l=1}^{L} \theta_{lj} s_{lqj} + \sum_{m=L+1}^{M} \theta_m se_{mq} + \sum_{l=1}^{L} \sum_{m=L+1}^{M} \theta_{ml} se_{mq} s_{lqj} + \varepsilon_{qj} \tag{4}$$

- Allow the *LOS* parameter to vary within the population (i.e. specifying a random parameter model[6] where $\theta_{lqj} = \theta_{lj} + \eta_{lqj}$):

$$U_{qj} = ASC'(j) + \sum_{l=1}^{L} \theta'_{lj} s_{lqj} + \sum_{m=L+1}^{M} \theta_m se_{mq} + \sum_{l=1}^{L} \eta_{lqj} s_{lqj} + \varepsilon'_{qj} \tag{5}$$

Both specifications allow to take into account variations over the population in the marginal utility (*MU*) of the *LOS* variables; in fact, from equations (4) and (5) we get, respectively:

$$MUs_{qj} = \theta_{lj} + \theta_{ml} se_{mq} \tag{6}$$

$$MUs_{qj} = \theta'_{lj} + \eta_{lqj} \tag{7}$$

where it is clear that for each *LOS* variable, the parameter of which varies over the population, the effect of the standard deviations estimated in a ML model can be compared with those of the *SE* characteristics introduced in a non-linear systematic function.

Whatever is the form of the utility specification, as long as the random utility can be treated as the sum of a systematic, representative or observable part (V_{qj}), and the random component, discrete choice models can be derived based on some assumption on the distribution of the differences between error terms in pairs. The probability of choosing an alternative *j* can be written as:

$$p_{qj} = prob\left(U_{qj} \geq U_{qi}\right) = prob\left(V_{qj} - V_{qi} \geq \varepsilon_{qi} - \varepsilon_{qj}\right) \qquad \forall\, i \;\middle|\; A_i \in A(q), \quad i \neq j \tag{8}$$

this can be summarised into:

$$p_{qj} = \int_{R_N} f(\underline{\varepsilon}_q) d\underline{\varepsilon}_q \tag{9}$$

where

[6] Note that parameters in equation (5) are indicated with an apex (i.e. different from those in equation 4) because in general different specifications give different estimated parameters. Even the error term is different because it depends on what is left out from the systematic utility specification.

$$R_N = \begin{cases} \varepsilon_{qi} \le \varepsilon_{qj} + V_{qj} - V_{qi} & \forall i \; \left| A_i \in A(q), \quad i \ne j \right. \\ V_{qj} + \varepsilon_{qj} \ge 0 \end{cases} \tag{10}$$

and different discrete choice models will be obtained, depending on the distribution of $\underline{\varepsilon}$: multinomial logit, MNL (Domencich and McFadden, 1975); hierachical logit, NL (Williams, 1977; Daly and Zachary, 1979); multinomial probit, MNP (Daganzo, 1979); mixed logit (Ben-Akiva and Bolduc, 1996; Train, 2003), computationally more complex (see for more details Ortúzar and Willumsen, 2001).

As well known, the underlying hypothesis of the MNL is that the error components are independent and identically distributed (IID) Gumbel with zero mean and variance depending only on α, the scale parameter of the distribution ($\sigma^2 = \frac{\pi^2}{6\alpha^2}$). The simplest model is the Multinomial Logit (MNL), which, due to the assumption of Independence of Irrelevant Alternatives (IIA), may prove unsatisfactorily in a context where more than two options are presented in each choice. In our application each individual is presented with pair-wise choices, hence in principle a third "irrelevant" alternative should not have any effect. However, since each individual makes repeated choices, it is possible that some unobserved effects may induce correlation across observations obtained from the same individual, and a Panel correction to the MNL model may be warranted.

A more general, but also complex, model is the Multinomial Probit model, which is based on the assumption of Normal distributed errors. The complexity of this formulation resides in the fact that the integral distribution of the difference of two normal variables does not have a closed form, so the Probit probability is expressed as an integral and required simulation methods to be solved (see Train, 2003). However, in the case of binary choices (as in our case) the Probit model is easily manageable, because the Normal distribution is closed to addition and subtraction: the difference between two Normal univariate variables $N(0, \sigma_1)$ and $N(0, \sigma_2)$ is a univariate $N(0, \sigma_\varepsilon)$, where:

$$\sigma_\varepsilon^2 = \sigma_1^2 + \sigma_2^2 - 2\rho\sigma_1\sigma_2 \tag{11}$$

Dividing, then, $(\varepsilon_1\text{-}\varepsilon_2)$ by σ_ε, the standard N(0,1) variate is obtained, and the binary Probit model assumes the following form:

$$p_{qj} = \Phi\left[(V_1 - V_2)/\sigma_\varepsilon\right] \tag{12}$$

Where $\Phi(\cdot)$ is the cumulative standard Normal distribution which has tabulated values. It is important to remark that equation (12), although very simple, is completely general for binary choices. In fact it can handle any temporal correlation pattern and unobserved factors that are correlated over time or choices, as required when multiple observations are available per individual. In particular, in the random effect probit model the error component ε_q is specified as a systematic individual effect υ_k and an independent effect ε_{qk} so that:

$$\varepsilon_q = \upsilon_k + \varepsilon_{qk} \tag{13}$$

where ε_{qk} and υ_k are independent normal random variables, with the proportional (ρ) contribution of the panel data component υ_k to the total variance equal to:

$$\rho = \frac{\sigma_k^2}{\sigma_k^2 + \sigma_{qk}^2}\,. \tag{14}$$

The variable $\sigma^2{}_k$ corresponds to the variance of the individual effect υ_k and $\sigma^2{}_{qk}$ corresponds to the variance of the independent effect ε_{qk}. It is important to note that if $\sigma^2{}_k$ is small compared to $\sigma^2{}_{qk}$, ρ goes to zero, indicating that the variance associated with the individual effect is relatively unimportant and therefore there is no significant difference between the random effect and the standard probit model.

An alternative specification for panel data is the mixed logit specification where the error term ε_{ki} is iid Gumbel distributed and υ_k is assumed to have some other distribution (e.g., Normal, Tent, or Lognormal). When the error term υ_k is assumed to be distributed as a N(0, $\sigma^2{}_k$), the mixed logit specification is equivalent to the random effect probit model, with the coefficients scaled by a constant.

All the econometric models described above can be estimated through maximum likelihood (or simulated maximum likelihood) and the estimated coefficients can be used to derive the marginal rates of substitution between attributes (or willingness to pay, *WTP*), which is given by the ratio between the marginal utility of the attribute *s* and the marginal utility of the cost:

$$WTP(s) = \frac{\partial V_{qj} / \partial s_{qj}}{\partial V_{qj} / \partial c_{qj}} \tag{15}$$

It is important to note that the marginal rate of substitution between two attributes is equal to the ratio of the estimated parameters of the attributes only in the case of a linear utility function (as in equation 3). However, if any other specification that account for systematic (equation 5) or random (equation 6) heterogeneity in taste is used, then the marginal utility of the attributes involved in non-linearities are expressed by equations (6) or (7), and the *wtp* is equal to the ratio of these relative marginal utilities and the marginal utility of cost. When the utility function is linear in income, the marginal utility of the cost is equal to minus the marginal utility of income; hence, a change of one attribute from one level to another can be valued in terms of Hicksian income variations, like compensating or equivalent variation. Replacing the unknown coefficients with corresponding estimators we obtain a consistent estimator of individual willingness to pay for the attribute. The confidence intervals of the willingness to pay value can be obtained through the Krinsky and Robb procedure (1986).

4. Estimation results from CM-project

We now examine the first Choice Modelling exercise. Table 4 reports the choice frequencies for each scenario.

Table 4. Frequencies of choices per scenario

		Choice			Total
		S-Quo	Project	Neither	
scenario	Urban	167	212	121	500
	Intermediate	122	308	70	500
	Natural	125	299	76	500
Total		414	819	267	1500

It seems quite clear that the Urban scenario is the least preferred, with more people choosing the Status Quo option with respect to the other scenarios, and especially many more respondents equally (un)satisfied by either option. Frequencies of choices over the other two scenarios are fairly equally distributed, with a slight preference for the Intermediate scenario.

Obviously, the response in choice between Status Quo and Project option was also influenced by the other two attributes of the choice, i.e. the monetary (Road Price) and time (more time spent to search a parking spot) costs. Just looking at the monetary costs (largely the most relevant in the respondents' choice behavior) the distribution of the choices per each scenario are as follows:

Table 5.a Scenario Urban Project

		choice			Total
		S-Quo	Project	Neither	
Cost	0.50€	52	84	31	167
	1.00€	56	66	45	167
	2.00€	59	62	45	166
Total		167	212	121	500

Table 5.b Scenario Intermediate Project

		choice			Total
		S-Quo	Project	Neither	
Cost	0.50€	26	127	13	166
	1.00€	40	102	26	168
	2.00€	56	79	31	166
Total		122	308	70	500

Table 5.c Scenario Natural Project

		choice			Total
		S-Quo	Project	Neither	
Cost	0.50€	34	115	18	167
	1.00€	39	113	15	167
	2.00€	52	71	43	166
Total		125	299	76	500

In general, it can be observed that for all scenarios the acceptance of the Project option decreases as the cost increases, and that also the “Neither” option is selected more often when intervention is associated at higher levels of cost. To understand the reason underneath the “Neither” choice we specify a probit model to analyse the probability that a Choice (rather than a No Choice) response is expressed.

Table 6. Probit Model for No-Choice=0 vs Choice=1 Response

Variable	Coefficients
Constant	2.126*** (0.320)
Male	-0.238*** (0.087)
Education	-0.101** (0.052)
Life visitor	0.479*** (0.134)
Day time	-0.068*** (0.019)
Walk	-0.071*** (0.025)
Intermediate	0.419*** (0.095)
Natural	0.380*** (0.095)
Park time	-0.052*** (0.019)
Cost	-0.310*** (0.063)
Observations	1500
LogL	-656.517

Standard Errors in parenthesis
*** 1% significance; ** 5% significance

Males and more educated people are less willing to select one particular option if they feel unsatisfied by either alternative: this behaviour might be ascribed to a higher propensity of these demographic groups to hold tight on their own ideas when the options presented are considered unsatisfactorily. This may be particularly so when the Urban scenario is presented, as it was hinted in the discussion above and confirmed by the sign and significance of the two variables Intermediate and Natural. People who are visiting the beach later in the day or those who walked a few minutes from the parking spot to the beach, are also more prone to give a No Choice answer, while people who are “Life visitors”, i.e. people who have always spent some time at the Poetto beach since their youngest age, are more willing to express a choice. In fact, that this is the only variable which is statistically significant when a model is fitted to discriminate between people who expressed a choice in at least one exercise, and people who never selected any project, maybe because less interested in the planning issue. Finally, higher costs, both in terms of money and time for parking, have an influence on the probability of not choosing either option.

Next, we show the estimates of four alternative models of the choice between keeping the Status Quo situation and developing a Project. The first model is a Probit (the Probit specification was preferred over a Logit specification based on the Akaike criterion) without covariates, which implicitly assumes that preferences are homogeneous across individuals: the only regressors are the choice attributes, i.e. the type of scenario, the increase in time spent to park, and the road price. An alternative specification (Model 2) has been modelled to take into account heterogeneity of preferences across individuals, as a function of demographic or attitudinal characteristics. It can be observed that a higher frequency affects negatively the probability to choose intervention (presumably because it raises the cost of the respondent's contribution); males are more willing to move from the status quo than females, and older people more than younger people if the project has the Urban scenario characteristics. The variable "number of cars" is taken as a proxy of the income variable, which had too many missing values to be used; its coefficient is positive, as expected, and significant. It was less expected that the category of professionals would be more willing to choose the Status quo option; while the sign of the Habit variable implies that people who usually visit a specific location of the beach (mainly, as seen before, because of social interactions) are less interested in a change from the Status quo situation. The same is found for respondents interviewed in the low season period.

Both Model 1 and Model 2 are "pooled" Probit models, i.e. it is assumed that all observations are independent. Of course, this assumption may be unwarranted, since one individual can generate up to three observations, and unobserved individual effects may occur. The last two specifications, i.e. Model 3 and Model 4, explore this issue: Model 3 is a Random Effect Probit, which explicitely estimates the correlation across choices obtained from each individual; the second model is a Random Parameters or Mixed Logit, which is logically equivalent to the Random Effect Probit but uses a different specification. It can be observed that the two specifications are equivalent, giving exactly the same log-likelihood value and WTP estimates.

Table 7. CM-project Models –1: Attributes only; 2: Covariate specification; 3: Random Effects Probit; 4: Random Parameters Logit

Attributes	Model 1	Model 2	Model 3	Model 4
Urban	0.620*** (0.105)	-0.241 (0.321)	1.339*** (0.207)	2.334*** (0.340)
Intermediate	1.054*** (0.108)	0.779*** (0.277)	2.063*** (0.234)	3.610*** (0.393)
Natural	1.007*** (0.105)	0.733*** (0.275)	1.963*** (0.223)	3.422*** (0.368)
Cost	-0.340*** (0.060)	-0.353*** (0.062)	-0.641*** (0.100)	-1.125*** (0.176)
Time for car park	-0.034* (0.018)	-0.035* (0.019)	-0.055** (0.027)	-0.093** (0.046)
Freq_summer		-0.005*** (0.001)		
Male		0.310*** (0.080)		
Age_Urban		0.216*** (0.072)		
Habit		-0.252** (0.118)		
Professional		-0.295** (0.123)		
N_cars		0.112** (0.053)		
Low_season		0.225** (0.112)		
Rho			0.738*** (0.036)	
St.Dev. par.distr.				2.885*** (0.280)
Observations	1233	1233	1233	1233
LogL	-756.07	-724.59	-642.25	-642.25

Standard errors in parentheses
*** 1% significance; ** 5% significance; * 10% significance

The following table reports results of the WTP estimates obtained from models 1, 3 and 4: as expected, the estimates obtained from the last two models are almost identical, while a significant difference can be observed between the latter models and Model 1, especially for the Scenario attributes WTP. In any case, the Intermediate project is valued most, followed close by the Natural project, while the value attached to the Urban scenario is significantly lower.

Table 8. Willingness to pay for CM-project Attributes (€)

Wtp Project Attributes			
Variable	Model 1	Model 3	Model 4
Urban	1.82*** (1.16;2.51)	2.09*** (1.22;3.00)	2.07*** (1.22;2.98)
Intermediate	3.09*** (2.59;3.68)	3.22*** (2.73;3.85)	3.21*** (2.62;3.99)
Natural	2.96*** (2.50;3.52)	3.06*** (2.57;3.85)	3.04*** (2.52;3.75)
Park time	-0.10* (-0.27;0.041)	-0.09** (-0.17;-0.013)	-0.08** (-0.20;0.019)

*** 1% significance; ** 5% significance; * 10% significance
Krinsky-Robb confidence interval (5%;95%) based on 10.000 simulations

5. Estimation results from CM-implement

If the interviewee in the first exercise selected at least one intervention project, a second exercise was proposed to elicit preferences over different ways to implement the project, as described in Table 2. The individuals' sample size at this stage is 400, since exactly 100 respondents never chose any intervention option. Also in this exercise in some cases individuals did not select any of the two alternatives proposed, being equally unsatisfied by either option: hence, the number of valid observations is 1084. The following tables show the frequencies of responses obtained across choices and attributes.

Table 9.a. Frequencies of choices per attribute: Control

		Choice			Total
		Base	Improved	Neither	
Control	No	190	146	64	400
	Yes	286	462	52	800
Total		476	608	116	1200

Table 9.b. Frequencies of choices per attribute: Wait information

		Choice			Total
		Base	Improved	Neither	
Wait information	0	204	270	51	525
	1 year	272	338	65	675
Total		476	608	116	1200

Table 9.c. Frequencies of choices per attribute: Duration

		Choice			Total
		Base	Improved	Neither	
Duration	10	171	198	38	407
	15	155	219	37	411
	20	150	191	41	382
Total		476	608	116	1200

Just as with the project choice data, we first estimate a simple Probit model with attributes only, and a Probit with covariates in order to analyze the possible relevance of individual characteristics in explaining the pattern of choice.

The covariates in Model 2 give some insights on factors influencing the choice: as it was seen also in the CM-project exercise, a higher frequency of visits determines a lower probability to choose the improved implementation mode, entailing a higher cost for these individuals. Also, the number of cars per family (which, we recall, we take as a proxy for income) is significant, with positive sign. Differently from the previous exercise, the variable age in this context did not produce a monotonic effect: the youngest and the oldest classes seem to feel more than the middle age classes the necessity to choose a more reliable mode of realization (while no significant difference was found across genders). The variable week days distinguishes between people who visit the area only on weekends or holidays and people who visit also on weekdays: the latter are more interested in an improved implementation mode. Conversely, individuals who choose the second section of the beach (which is less crowded and less damaged by a previous regeneration intervention) are more satisfied with just the basic implementation mode. Finally, the Urban scenario was inserted as a covariate in order to see if people who had this particular project as a reference for the CM-implement exercise behave differently from the others, but the coefficient is not significant.

Unfortunately, the available dataset is quite small and, as the high standard errors show, the estimates for the Duration attribute coefficient are inefficient also in the reduced model without covariates. Other models were fitted, with interaction characteristics terms, and based upon different assumptions about the distribution of the error terms, but we could not obtain any significant improvement. The third column in Table 10 reports the estimates of a Random Parameter Logit model, where the Duration parameter is a random variate, distributed as a Normal. The mean coefficient is just about significant at 10%, and the resulting WTP estimate is even less significant; the standard error is quite large and significant, which implies that individual values are quite heterogeneous. Further analysis of the data showed that the variance term of the duration parameter differs across enumerators: one interviewer (*Enumerator 1*) obtained, for this specific attribute, responses that are characterized by a much larger variability with respect to the other interviewers. Hence, we fit a heteroskedastic model, assuming that the error term obtained from the difference of the Random Utility Models is distributed as a Logistic, with mean zero, and variance $[\exp(\gamma' z_{iq})]^2$. This multiplicative heteroskedastic specification allows taking into account the effect of different enumerators on the heterogeneity of responses related to the attribute Duration, as we specify z_{iq}= *Duration*Enumerator 1*, a variable which takes the value corresponding to the level of the duration attribute given in the specific choice exercise if the interview was carried out by Enumerator 1, and zero otherwise.

The estimates obtained from the heteroskedastic Logit are displayed in Table 10 (Model 4). All coefficients are statistically significant (the Duration coefficient at 5% level), as well as the implied WTP for the attributes. We also fitted an alternative heteroskedastic model, using the random parameter specification (Model 5): where we assume that the coefficient γ is distributed as a Normal$(0, \sigma^2)$. The parameter estimates of the two heteroskedastic models are similar.

Table 10. CM-mode Models –1: Probit, Attributes only; 2: Probit, Covariate specification; 3: Random Parameter Logit, RE; 4. Logit, heteroskedastic; 5: Random Parameter Logit, heteroskedastic

Attributes	Model 1	Model 2	Model 3	Model 4	Model 5
Control	0.541*** (0.075)	0.574*** (0.084)	1.175*** (0.159)	1.005*** (0.145)	0.961*** (0.134)
Wait information	0.168** (0.082)	0.171** (0.085)	0.716** (0.241)	0.641*** (0.179)	0.544*** (0.163)
Duration	0.012 (0.009)	0.012 (0.010)	0.066* (0.040)	0.039** (0.018)	0.036** (0.017)
Cost	-0.383*** (0.078)	-0.397*** (0.097)	-0.953*** (0.179)	-0.808*** (0.157)	-0.734*** (0.185)
Reference Urban scenario		0.064 (0.052)			
Freq_summer		-0.006*** (0.001)			
Older 65		0.670*** (0.140)			
Younger 30		0.383*** (0.134)			
N_cars		0.182*** (0.050)			
Week days		0.180** (0.084)			
Beach section		-0.279*** (0.071)			
Disturbance term			0.498*** (0.076)	0.322** (0.179)	0.769*** (0.185)
Observations	1084	1084	1084	1084	1084
LogL	-717.44	-687.10	-665.14	-686.16	-681.73

Standard errors in parentheses
*** 1% significance; ** 5% significance; * 10% significance

The following table reports the WTP estimates for the three attributes of the CM-mode exercise. The estimates differ slightly across models, but it is quite clear that our respondents place a significant value on the two quasi-option variables –especially the Control attribute.

Table 11. Willingness to pay for Implementation Mode Attributes (€)

WTP Implementation Mode Attributes				
Variable	Model 1	Model 3	Model 4	Model 5
Control	1.41*** (1.08;1.74)	1.23*** (0.90;1.56)	1.24*** (0.90;1.57)	1.31*** (0.98;1.65)
Wait information	0.44** (0.07;0.80)	0.75*** (0.37;1.13)	0.79*** (0.43;1.14)	0.74*** (0.36;1.11)
Duration	0.03 (-0.16;0.17)	0.07 (-0.06;0.21)	0.05** (-0.10;0.15)	0.05** (-0.10;0.17)

*** 1% significance; ** 5% significance; * 10% significance
Krinsky-Robb confidence interval (5%;95%) based on 10.000 simulations

The value attached to the attribute Duration is estimated as EUR 0.05 from both Model 4 and Model 5. This means that for each additional year of maintenance, in the range from 10 to 20 years, an individual is just willing to pay 5 cents more on top of the 50 cents required to access the area by car. To calculate the implicit discount rate we follow a procedure adopted in Keller and Strazzera (2002). We should find the r that solves:

$$\sum_{t=1}^{T} \frac{PB_t}{(1+r)^t} = \sum_{t=1}^{T} \frac{PI_t}{(1+r)^t} \qquad (16)$$

where PB is the flow of net benefits –benefits minus costs– under the Base implementation mode, PI is the corresponding flow under the Improved mode, and T is the time span of payments. The consumer's benefits of the maintenance services are measured in terms of WTP related to each implementation mode, and they last 10, 15, or 20 years; while the costs are measured as the price due for the number of years in which the individual is expected to keep visiting the area, since the introduction of the access charge. For example, for T=30, solving this polynomial equation gives us a discount rate delta=0.19 for a period of 15 years of maintenance, and delta=0.24 for 20 years. While these discount rates are higher than the current official interest rate, they seem perfectly compatible with discount rates accepted by individuals in ordinary consumption choices.

6. Conclusions

The aim of the present research was twofold. First, we were interested in analyzing public preferences over alternative planning choices, characterized by different use values and environmental quality. A Choice Modelling approach was taken in order to evaluate the rates of substitution across different attributes (project scenarios, monetary and time costs). The second objective was to analyse the attitude of the public to participate not only in the evaluation of alternative project options, but also in the assessment of the development procedure to be chosen for the selected project. This is an aspect that is often overlooked in discussions on democratic participation in planning decisions, but in our opinion it can be an important tool to help control on the way the planning decisions are realized in practice.

The estimation results have shown that the citizens have a clear preference ranking of the alternative planning options proposed: the preferred scenario, i.e. the Intermediate scenario, which involves some improvement in environmental quality (no private traffic on the promenade) while enhancing some use values (public transport, bike track) is valued about 50% more than the least preferred scenario. Moreover, the results of our survey show that there is indeed a strong interest from the public not limited to selecting a project option, but also in ensuring that more careful and conservative methods should be selected, even though they are more expensive: the stakeholders would, on average, be willing to pay as much as four times (about 2 EUR, summing up the two quasi-option values), of the amount that would be paid for a development procedure that provides a lesser hedge against irreversible effects in a site of high environmental value. Finally, the implicit social discount rate was estimated, at values relatively high if compared to standard discount rates applied to public projects (7%-13%, depending on specific cases, and if in developed or developing countries), but in line with current interest rates on consumption. While not directly useful for application in cost-benefit analysis, yet this result is helpful in signalling that the preferences elicited through our choice modelling exercises are consistent with actual market behaviour.

Our results show that elicitation of social preferences through stated preference methods can be a useful and reliable instrument to increase democratic participation in urban planning, and control over choice of project development strategies.

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Appendix

Table A1. Description of variables

Variable	***Sample percentage***
Male	65.3
Head of family	67.7
Living in Cagliari	78
Travel time:	
Less than 20 minutes	*80*
Between 20 and 40 minutes	*15*
More than 40 minutes	*5*
Age:	
Younger 30	*11.9*
Between 31 and 45	*35.8*
Between 46 and 65	*40.8*
Older 65	*11.5*
Education:	
Primary	*28*
Secondary	*52*
Higher	*20*
Labour Force	66.6
Employees	81.7
Car owners	96.2
Number of cars in family:	
1	*40*
2	*50.4*
3 or more	*9.6*
Personal Income:	
Respond	*63*
Do not respond	*37*
If do respond:	
Less than 1000 euro	*18.8*
Between 1000 and 2000 euro	*70.5*
More than 2000 euro	*10.7*
Family Income:	
Respond	*79*
Do not respond	*21*
If yes:	
Less than 1000 euro	*6.6*
Between 1000 and 3500 euro	*83.5*
More than 3500 euro	*9.9*
Walk from parking space = less than 5 minutes	98
Time to find a parking place = less than 1 minute	77
Travelling Cost:	
Respond	*68.8*
Do not respond	*31.2*
If do respond:	
Less than 1 euro	*64.8*
Between 1 and 2 euro	*21.8*
More than 2 euro	*13.4*
Travel always by car:	
Yes	*94.8*
No	*5.2*
If no:	

Motorbike	*50*
Bus	*30*
Bicycle	*15*
Never used the bus	92
Never thought to use the bus	85
One favorite spot along the beach	84
Reason:	
Easy Parking	*22*
Not congested	*10*
Beautiful area	*10*
Near to the snack bar	*2*
Near to restrooms, showers	*18*
Meeting friends/relatives	*28*
Other	*10*
Frequencies of visits:	
From Monday till Friday	*23*
Weekend only	*30*
Every day	*47*
Life visitors	93
Visits off-season	58
Day time:	
Before 9.30 a.m.	*28*
Between 9.30 a.m. and 11.30 a.m.	*45*
Between 11.30 a.m. and 1.30 p.m.	*11*
Between 1.30 p.m. and 4.00 p.m.	*13*
After 4.00 p.m.	3
Beach section:	
More congested	52.4
Less congested	47.6
Frequencies of visits:	
June	
Never	*33.6*
Less than 10 times	*44.4*
10-25 times	*11.8*
All days	*10.2*
July	
Never	15
Less than 10 times	37.8
10-25 times	27.4
All days	19.8
August	
Never	
Less than 10 times	37
10-25 times	35.8
All days	27.2
September	
Never	24.2
Less than 10 times	49.2
10-25 times	15.6
All days	11

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