Ecotourism demand in North-East Italy

Tempesta T.[1], Visintin F.[2], Marangon F.[3]

[1] Professor, Department of Agricultural, Environmental and Agro-alimentary Economics and Policy, University of Milan, Italy
Email: tiziano.tempesta@unimi.it
[2] PhD Student, Department of Economics, University of Udine, Italy
[3] Professor, Department of Economics, University of Udine, Italy

Abstract: There are three regions in North-East Italy: Friuli Venezia Giulia, Veneto and Trentino-Alto Adige. These regions have highly differentiated environmental and natural features. In fact, in this small area we can find the biomes of the main European temperate zones. The environment is important because there are a large number of National and Regional Natural Parks, as well as small protected areas that many people visit every year.
Since the nineties, the authors have been involved in research to examine and analyse ecotourism in North-East Italy.
The main objectives were to: a) define a methodology that would quantify the recreational flow from the results of phone and in-person interviews, b) analyse ecotourism demand, socio-economic visitor features, tourist facilities and economic flow.
The statistical models study the number of visits through a travel cost method, and willingness to pay by means of contingent valuation methods.
The findings have allowed us to fill the considerable information gap regarding ecotourism and the recreational use of the landscape. From the survey we have collected precise data on the economic and social importance of ecotourism, such as recreational benefit and expense flow.

INTRODUCTION

There is a wide consensus regarding the concept of ecotourism in the sense that we all understand the message that it sends (i.e. nature, local community, economics, conservation, culture and the symbiotic relationship between tourism and nature conservation). However, agreement on a universal definition has not yet been reached. The term, coined by Hector Ceballos-Lascurain[8] in 1983, has been accepted by the World Conservation Union (IUCN): 'Ecotourism is environmentally responsible travel and visitation to relatively undisturbed natural areas, in order to enjoy and appreciate nature (and any accompanying cultural features - both past and present) that promotes conservation, has low negative visitor impact, and provides for beneficially active socio-economic involvement of local populations' (Ceballos-Lascurain, 1996)[9].

In this sense the features of ecotourism are more specific than the broader concept of sustainable tourism[10] (Bottrill & Pearce, 1995; Coccossis & Nijkamp, 1995; CEC, 1999, WCED, 1987).

Moreover ecotourism is a recent theme. Its late arrival on the scene is not, however, related to the recent development of nature-related tourism, but to the fact that tourism and natural resource exploitation have only recently been linked to conservation. In fact, the relationship between tourism and nature has a long tradition. Since 1800 both in Veneto and Friuli Venezia Giulia the mountain areas were visited by mountaineers from all over Europe. Subsequently, trips to the mountains developed into mass tourism[11]. In the same way, other natural areas were transformed into resorts. In recent years, awareness of the need for conservation has increased, and places addressed to different uses (like agricultural land or border areas) have been involved in renaturalisation and wilderness conservation projects. Consequently, there is greater interest in hill and lowland areas, such as wetlands or places where wild animals have been introduced, and visitor flows have risen.

At present there is no qualitative and quantitative information available regarding the size of visitor flow and recreational benefit, even if a

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[8] Member of Commission of Environmental Cooperation, CEC.
[9] The three main characteristics of ecotourism are defined as: nature based; environmentally educated; and sustainably managed (Blamey, 2000).
[10] Definition coined by World Travel and Tourism Council, World Tourism Organization, Earth Council 'Sustainable tourism meets the needs of present tourist and host regions while protecting and enhancing opportunity for the future. It is envisaged as leading to management of all resources in such a

way that economic, social and aesthetic needs can be fulfilled while maintaining cultural integrity, essential ecological processes, biological diversity, and life-support systems'.
[11] In the alpine region 5 million beds are offered; every year 60 million of tourists reach Alps to stay in the resort and as many to visit them daily. The tourist turnover is about 23.000 million of Euro, representing circa 5% of the whole world tourist turnover (CIPRA, 2000).

few research projects are beginning to study the matter[12].

The purpose of this paper is to illustrate the results of this limited research, which was carried out both in the Veneto and Friuli Venezia Giulia regions. The aim is to describe and quantify visitor flow and to determine the socio-economic role of ecotourism[13].

ESTIMATION OF VISITOR FLOWS IN NATURAL AREAS

The main problem in analysing ecotourist demand concerns the estimation of visitor flow. At present in Italy there is no detailed or reliable information on the subject. In fact, the only data available is related to the presence of tourists in hotels. This kind of information is limited because: a) it does not take day-trippers into account; b) many people stay either in second-homes or with friends; c) in general there is very little information about the places visited during the holidays and recreational activities. In order to fill this data gap, many surveys have been carried out in Veneto and Friuli Venezia Giulia using different methods (Mitchell & Carson, 1989; Bishop & Romano, 1998).

The issue of estimating visitor flows in natural areas raises several problems connected with the kind of area studied (Chase et al., 1998). The ways of estimating the visitor numbers are related to: 1) dimension of the area under investigation; 2) the number of access points; 3) payment or not of an entrance fee.

It is widely accepted that these elements are strictly connected because small natural areas have few access points and this allows for both better control/management of flow and the payment of entrance fees. This situation, however, is very infrequent in the zones we studied because in most cases the natural areas are very large and have a lot of access points.

The most frequent situations both in Veneto and Friuli Venezia Giulia are the following:

- highly extensive mountain areas with many access points;
- small natural areas with few access points, where nobody controls visitor numbers and no entrance fee is required;
- small natural areas with an entrance fee.

Only in the last case is information about the number of visitors collected.

In the first two cases, if we want to estimate visitor flow, we need either to set up phone/postal surveys regarding the whole population of potential visitors, or to carry out field surveys. In this latter case the problem regards the number of access points.

Estimation using phone surveys

In 1999 and 2000 two phone surveys were carried out, one in Friuli Venezia Giulia and the other in Veneto (Tempesta & Thiene, 2001; Marangon & Gottardo, 2001). The purpose of the research was to analyse the tourist-recreational behaviour in mountain areas. In particular, the survey aimed to discover the number of daily hiking/trekking visitors in the most important mountain massif and forest districts; the number of days spent in the mountains; type of recreational activities carried out during each trip. Two stratified samples were defined, one composed of 500 and the other of 760 people. They were interviewed in both regions.

The results show that in Veneto 48,1% of the sample had been on day trips, while 12,6% had been on holiday; in Friuli the percentages were lower, so we discovered that 33,8% had been on daily excursions and just 4,8% had been on holiday. Therefore, visiting alpine and prealpine areas is a very common practice in both the regions, especially in regard to daily excursions. While we met difficulties estimating the number of people on holiday, it was easier to define the number of day-trippers, which was estimated to be 6 million either in Friuli or in Veneto. Besides, it resulted that the average number of excursions was higher in Friuli than in Veneto. On the contrary, the number of excursions per hectare was higher in Veneto (21 against 12 excursions per hectare) than in Friuli (see Tables 1 and 2). For a better interpretation of the estimation we should consider in person surveys, which estimated that 25% of mountain visitors had been on holiday. Therefore, visitor flow was equivalent to 26 and 16 units per hectare in a year. These values are similar to those reached in other alpine zones and in this way they are substantially reliable.

At this point we should highlight that it is very difficult to estimate visitor numbers in each natural area. If we consider the average number of excursions done in each massif/district with a confidence interval of 95%, we can observe that in some cases the lower boundary is negative. Therefore, the estimation cannot be reliable (Tables 1 and 2). This problem depends on district dimension, in so much as smaller districts were visited by fewer people and so the estimation was more problematical. In fact, a meaningful sample should be larger than those used in our research. Therefore, phone surveys are only able to collect general information. On the other hand, they can

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[12] The value of the world's ecosystem service and natural capital is a very interesting theme (Costanza et al., 1997; OECD, 1992). This research is going in this direction focusing in on the recreational value.

[13] To study in depth consult: Marangon et al., 2000; Marangon & Gottardo, 2001; Marangon & Tempesta, 1998; Marangon & Tempesta, 1999; Tempesta & Thiene, 2000a; Tempesta & Thiene, 2000b; Tempesta & Thiene, 2001; Visintin, 2000.

Mountain massif	Surface Km²	Trips			95% Confidence Interval	
		mean	total	per ha	Lower Bound	Upper Bound
Vette Feltrine - Monte del Sole	779	0,0639	285.513	3,67	0,0356	0,0922
Piccole Dolomiti - Pasubio	80	0,1995	891.500	111,44	0,1258	0,2732
Cansiglio - Alpago	196	0,0795	355.435	18,13	0,0490	0,1101
Asiago - Monte Grappa	408	0,4876	2.179.223	53,41	0,3694	0,6058
Baldo-Lessini	157	0,1382	617.641	39,34	0,0873	0,1891
Antelao-Marmarole	235	0,0365	163.150	6,94	0,0172	0,0558
Pelmo	21	0,0404	180.631	86,01	0,0190	0,0618
Tofane-Cristallo	198	0,0626	279.686	14,13	0,0404	0,0848
Duranno-Cima Preti	99	0,0143	64.095	6,47	-0,0012	0,0299
Sorapiss-Cadini	80	0,0104	46.614	5,83	0,0032	0,0176
Bosconero	20	0,0117	52.441	26,22	-0,0020	0,0255
Tre Cime-Croda dei Toni-Popera	78	0,0665	297.167	38,10	0,0439	0,0891
Civetta - Moiazza	145	0,0795	355.435	24,51	0,0496	0,1094
Marmolada	77	0,0691	308.820	40,11	0,0255	0,1127
Nuvolau-Averau-Croda da Lago	150	0,0326	145.670	9,71	0,0148	0,0504
Agner- Pale S. Lucano	149	0,0169	75.748	5,08	0,0078	0,0261
Total	2.872	1,4094	6.298.771	21,93	1,23575	1,58302

Table 1: Day trip number estimation in Veneto mountain zones.

District	Surface Km²	Trips			95% Confidence Interval	
		mean	Total	per ha	Lower Bound	Upper Bound
Valcanale	423,28	1,8063	2.140.805	50,58	1,2191	2,3935
Canal del Ferro	313,38	0,1107	131.165	4,19	-0,0218	0,2431
Carnia	1.221,02	0,7154	847.890	6,94	0,4194	1,0114
Dolomiti Friulane	422,27	0,1186	140.534	3,33	-0,0078	0,2449
Prealpi Giulie	317,42	0,3636	430.972	13,58	0,1083	0,6189
Prealpi Carniche e P.C.Merid.	655,11	0,3162	374.758	5,72	0,0433	0,5891
Prealpi Venete	381,05	0,2589	306.833	8,05	0,0728	0,4450
Prealpi Giulie Meridionali	414,50	0,6462	765.912	18,48	0,1943	1,0982
Colline Moreniche	81,30	0,0632	74.952	9,22	-0,0117	0,1382
Collio e Colli Orientali del Friul.	212,46	0,1383	163.957	7,72	-0,0591	0,3358
Carso	321,64	0,6067	719.067	22,36	0,2160	0,9974
Total	4.763,4	5,1443	6.096.843	12,80	4,1175	6,1711

Table 2: Day trip number estimation in Friuli mountain and hill districts. .

give an overall estimate of the number of visitors in areas that are well-defined and extensive.

Estimation using field data

In order to overcome the difficulties connected with phone surveys, a field survey was used. There are no problems in areas with few access points. In this case, we defined a stratified sample that included counting the entries over a number of days in which the areas were visited. In general, counting was carried out in one third/quarter of all visiting days. This method is reliable and not so expensive when there are no more than 3 access points to check. Above that number survey costs increase, especially in mountain and hill zones, because interviewers have difficulties in reaching them.

In the case of multiple access points we suggest using the following method:

- identify the main parking areas;

- define a stratified survey calendar;
- count the number of cars in the parking area, taking care to note the time;
- carry out in-person interviews in order to calculate:

a) average number of people per car;

b) the relationship between the fraction of total arrivals recorded in the parking area (sh) and the times (hours in the day) (h) in which they was counted using the following formula:

sh = f(h)   [1]

By means of formula [1], from the number of cars in the parking area at a given time it is possible to estimate the number of cars present in the parking area during the whole day. In this way, a single interviewer can complete counting in a large number of parking areas. For example, in the case of Natural Park of the Dolomiti Ampezzane, 17

Area	Typology	Geografic area	Province	Surface Km^2
National Park of the Dolomiti Bellunesi	National Park	Mountain	Belluno	32,00
Natural Park of the Dolomiti Ampezzane	Regional Park	Mountain	Belluno	11,20
Property Regole Ampezzane Cortina**	Collective ownership	Mountain	Belluno	13,00
Vincheto Celarda	State nature reserve	Mountain	Belluno	0,80
Waterfall of Molina (Cascate di Molina)	Regional nature reserve	Hill	Verona	0,15
Isonzo delta (Foce dell'Isonzo)	Regional nature reserve	Coast	Gorizia/Udine	23,40
Valle Canal Novo	Regional nature reserve	Coast	Udine	0,36
Quadris nature area (Fagagna)	Bird reserve	Hill	Udine	0,10
Griffin vulture project (Forgaria nel Fr.)	Regional nature reserve	Piedmont zone	Udine	5,10
Caves of Villanova (Lusevera)	Caves	Mountain	Udine	0,02*
Historical garden Villa Varda (Brugnera)	Garden of Palladian Villa	Plain	Pordenone	0,18

Table 3: Environmental and natural features, localisation of studied areas
* Estimated just on the base of length of open to visitors caves
* * The right name is 'Property owned by the Regole Ampezzane south of Cortina'.

parking areas were checked, and through 500 interviews it was possible to estimate the following formula:

$$sh = \frac{1}{1 + e^{13,40 + 1,29 \cdot h}} \qquad r^2 = 0,99$$

In this way we estimated that 540.000 people had visited the area mainly in July and August (more than 65% of presences). This figure is very different from that obtained through the phone survey (Tempesta and Thiene, 2000b).

Applying this method to the land owned by the Regole Ampezzane it was possible to estimate that 340.000 people had visited the area during the Summer of 2000.

VISITOR FLOW IN THE AREAS STUDIED

The surveys on ecotourism both in Veneto and in Friuli Venezia Giulia involved natural areas which were diversified either as regards their dimensions or their geographical-ecological-environmental features (Table 3). In fact, there are National Parks, Regional Parks, Nature Reserves and areas managed by private or non-profit associations. Consequently, land use is extremely variable and allows people to practise recreational activities that are not strictly connected with the environment and nature (Table 3).

Tourist flow, which was estimated using the method described above, is highly variable. Large alpine parks stand out from other natural areas as regards the total number of visits. Every year they are visited by a wide range of people, varying in number from 285.000 to 540.000 units (Table 4).

However, the situation changes if we consider the number of visitors per hectare. In fact we observed that higher flows are connected with single-purpose visits. In this case, it appears as though the areas are treated as an "outdoor museum". This is evident in the natural areas of the Waterfall of Molina (Cascate di Molina), the Caves of Villanova (Grotte di Villanova), the historical garden of Villa Varda (parco storico di Villa Varda) and the Quadris Nature Reserve in Fagagna (Oasi dei Quadris di Fagagna). Considering the extension of the zones examined, tourist flow is very high in both the areas studied near Cortina. In this case, the number of visits is influenced by the presence of the well-known resort of Cortina.

VISITOR CHARACTERISTCS AND RECREATIONAL ACTIVITIES

In order to collect information regarding visitor characteristics and recreational activities about 8.400 people were interviewed in person. The sample of people interviewed in mountain zones is very small and therefore the following data are only indicative (Table 4).

The average age in the sample was aligned with the average age in Italy (39years), as was the average family size, around 3 units. On the contrary, the mean of family income was much higher than the national average at around 16.000 Euro per year. Average income was even higher in the Dolomite resorts. In fact here the figure was above 28.500 Euro (Table 4). These data were in keeping with an above-average educational level. In fact the sample share with a degree or a secondary school qualification was in the worst of the cases more than 52%, often going beyond 70%, while the national average is just 33%. Therefore, the North-East Italian ecotourist is a cultured person who enjoys a well-off lifestyle. The catchment area, which is defined as 'the distance covered by the 90th percentile', could be a significant indicator for the attraction potential of a defined area, and for the value tourists attach to it. The catchment area is broader in most of the mountain areas (exceeding in general 100 km) (Table 5). It is also extensive in many of the single-attraction natural areas studied. The griffin vulture project, the Waterfalls of Molina, the Caves of Villanova and the Valle Canal Novo are able to attract visitors coming from a long way off

Area	Visitors		Interviews	Age	Income (Euro)	Family	Graduates/ diploma*
	Total	per ha	%	mean	mean	mean	%
National Park of the Dolomiti Bellunesi	285.000	89,0	0,07	37	19.600	3,7	52
Natural Park of the Dolomiti Ampezzane	540.000	482,1	0,09	42	28.400	3,3	81
Property Regole Ampezzane Cortina	340.000	261,5	0,15	39	38.200	2,9	80
Vincheto Celarda	8.000	100,0	3,95	37	18.600	3,1	69
Waterfall of Molina (Cascate di Molina)	34.000	2266,7	2,80	37	18.100	3,4	72
Isonzo delta (Foce dell'Isonzo)	31.000	13,2	3,11	40	24.300	3,0	81
Valle Canal Novo	12.850	356,9	9,63	41	22.700	3,0	66
Quadris nature area (Fagagna)	9.000	900,0	11,34	40	18.100	3,1	74
Griffin vulture project (Forgaria nel Fr.)	8.000	15,7	10,63	40	23.800	3,1	71
Caves of Villanova (Lusevera)	6.470	3235,0	13,76	39	24.300	3,3	69
Historical garden Villa Varda (Brugnera)	69.500	3861,1	1,43	35	35	3,6	65

Table 4: Visitor Characteristics
* diploma means high school diploma

Area	Catchment area (km)	Visitor activities (%)				
		Pic nics	Hiking	Natwatc*	Excursions	Other
National Park of the Dolomiti Bellunesi	100	43	17	16	18	6
Natural Park of the Dolomiti Ampezzane	150	8	3	45	58	4
Property Regole Ampezzane Cortina	220	2	38	53	31	6
Vincheto Celarda	75	0	40	60	0	0
Waterfall of Molina (Cascate di Molina)	115	0	71	42	0	0
Isonzo delta (Foce dell'Isonzo)	77	0	54	70	0	7
Valle Canal Novo	120	0	33	70	0	28
Quadris nature area (Fagagna)	73	0	44	48	0	8
Griffin vulture project (Forgaria nel Fr.)	97	0	47	37	0	20
Caves of Villanova (Lusevera)	98	5	0	67	7	22
Historical garden Villa Varda (Brugnera)	35	4	67	27	0	36

Table 5: Dimension of catchment area and visitor activities
*Natwatc means Nature watching

in virtue either of their unique natural heritage or, more likely, because of the information facilities that help the visitor to understand nature. Therefore the catchment capability of a natural area is strictly influenced by developing, enhancing and promoting environmental projects.

As regards the reasons inducing people to visit the site, some conflicting elements emerge (Table 5). In fact, the decision to visit an area is not always founded on a naturalistic reason. Moreover, it is a secondary choice only in the National Park of the Dolomiti Bellunesi (in the Dolomites). The reason for this is connected with the dimension of the zone, as the surface area makes the park ideal for multipurpose visits that are often unrelated to the natural features of the area. In fact, the most environmentally interesting areas inside the park are inaccessible to many people.

On the other hand, the nature-based choice is the main reason for people visiting both other mountain areas and small wetlands. It is very interesting to note that people generally mentioned activities like walking or trekking for almost all the areas examined.

ACCOMODATION, VISITOR EXPENDITURE AND RECREATIONAL BENEFIT

A measure of the economic role of ecotourism is given by travelling expenditure borne by visitors to reach natural areas. As expected, expenses are correlated with both distance and use of tourist facilities. First of all, it is interesting to observe that in most of the cases analysed tourists are day-trippers who do not require any accommodation. The only exceptions are the two Dolomite areas near Cortina, where this kind of visitor is not very common. In this case, expenditure includes almost exclusively travel costs and cost of meals (Table 6). However, sometimes the entrance fee is the main expenditure.

Even if we exclude the two Dolomite areas, the average expense varies greatly throughout the sample, but this could be mainly ascribed to the payment or not of an entrance fee. The ability of natural areas to generate expenditure flows is indicated by the visitor expenditure per hectare figure. We should note that there are several differences among the areas studied. If we ignore the value for the Caves of Villanova, because of

Area	Expenditure per trip (Euro)					Expenditure (Euro)	
	Travel	Ticket*	Food	Accom.	Total	Total	per ha
National Park of the Dolomiti Bellunesi	3,6		7,9	0,3	11,8	4.026.401,3	1.054,6
Natural Park of the Dolomiti Ampezzane	3,5	3,4	9,7	16,1	32,7	17.639.585,4	15.749,9
Property Regole Ampezzane Cortina	19,3	3,1	7,0	14,2	43,5	14.802.687,6	11.386,8
Vincheto Celarda	3,4		0,4		3,8	30.161,1	377,0
Waterfall of Molina (Cascate di Molina)	2,1	2,0	1,9		6,0	203.690,6	13.579,2
Isonzo delta (Foce dell'Isonzo)	1,3	3,6	3,5	0,4	8,9	275.374,8	117,8
Valle Canal Novo	1,3	2,3	6,4		9,9	127.874,7	3.552,2
Quadris nature area (Fagagna)	0,7		1,7		2,4	21.846,1	2.184,6
Griffin vulture project (Forgaria nel Fr.)	1,5		4,8	0,2	6,5	51.852,3	101,7
Caves of Villanova (Lusevera)	1,5	3,7	3,4		8,6	55.467,5	27.734,3
Historical garden Villa Varda (Brugnera)	2,5		0,3		2,8	192.018,7	10.668,5

Table 6: Expenditure flows   * *Entrance fee or cable railway in mountain zones*

Area	Recreational benefit per trip (Euro)				Benefit (Euro)	
	TCZ	TCI	CVM	Mean	Total	per ha
National Park of the Dolomiti Bellunesi		5,5	5,3	5,4	1.843.751,1	482,9
Natural Park of the Dolomiti Ampezzane		3,1	6,8	4,9	2.663.368,2	2.377,8
Property Regole Ampezzane Cortina			4,1	4,1	1.404.762,8	1.080,4
Vincheto Celarda	2,1	4,6	4,1	3,6	28.405,1	357,4
Waterfall of Molina (Cascate di Molina)			4,2	4,2	142.542,1	9.495,1
Isonzo delta (Foce dell'Isonzo)	6,3		3,9	5,1	158.552,3	67,7
Valle Canal Novo	6,2	10,0	7,6	8,0	102.258,5	2.839,0
Quadris nature area (Fagagna)			1,7	1,7	15.493,7	1.533,9
Griffin vulture project (Forgaria nel Fr.)	5,4		3,5	4,5	35.635,5	69,7
Caves of Villanova (Lusevera)			10,9	10,9	70.754,6	35.314,3
Historical garden Villa Varda (Brugnera)		4,8	2,3	3,6	247.899,3	13.759,4

Table 7: Recreational benefit

the difficulty in estimating the extension of the area, the per hectare value varies between a few hundred Euro and over ten thousand Euro. In particular, the expenditure flow is very high in mountain and hill areas. In some cases this is due to high tourist development, in others it is thanks to the exploitation of natural areas by the private sector.

In order to assess the recreational benefits, we used both direct and indirect approaches[14] (Table 7). We should note that, from some points of view, benefits per trip are quite similar because they only vary between 3,5 and 5,5 Euro, which highlights the considerable recreational value of the areas examined.

Obviously, the per hectare total benefit flow is influenced by the number of visitors and this is why it appears to be so variable. In general it is higher than for other alternative economic uses, like forest or agricultural productivity.

CONCLUSION

In the second half of the 1990s several surveys, which were carried out both in Veneto and Friuli Venezia Giulia, collected information regarding the size and features of ecotourism.

By applying appropriate counting methods we were able to quantify visitor flow in many natural areas. Despite a high level of variability, factors capable of increasing visitor flow were substantially related to the extent of tourist development in the area and to the facilities supporting outdoor activities, especially as concerns nature and the environment.

Data collected through interviews highlighted that the choice of visiting areas of great natural beauty does not just depend on an interest in nature. It often depends on an unspecified need for a natural habitat that has not yet been affected by urban and agricultural growth.

What is more, the fact that the ecotourist's level of education is higher than the national average is encouraging. So it is reasonable to assume that ecotourists will have a more careful approach towards nature and the environment. Because of the relationship between educational level and ecotourist flow, we can assume that a steady increase in school attendance will encourage people to visit natural areas.

Finally, we should highlight the expenditure flow generated by ecotourism and the great recreational benefit deriving from it. In conclusion, ecotourism seems to play a significant role in the economic development of the areas studied. In particular it favours the development of marginal areas (such as hill and mountain zones) or guarantees recreational and cultural benefits to the

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[14] Statistical models study the benefit of visits through several methods. We applied an indirect approach, the so called travel cost method (individual travel cost, TCI and zonal travel cost, TCZ), and a direct approach, contingent valuation method (CVM) (Mitchell & Carson, 1989; Bishop & Romano, 1998).

inhabitants of overcrowded areas on the Veneto and Friuli plain.

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