The Market and Non-Market Value of Water Based Activities in the West of Ireland

Dr. Karyn Morrissey

SEMRU, J.E. Cairnes School of Business and Economics

Email: Karyn.morrissey@nuigalway.ie

Ms. Caroline Moron

Abstract

Trips to recreational sites generate two distinct kinds of economic impacts for the coastal and marine economy; market impacts and non-market impacts. Market impacts refer to the flow of money through an economy and the associated jobs, wages, and taxes associated with these flows. In contrast, non-market impacts refer to the consumer surplus that a resource provides. This paper examines both the market and non-market value of Water Based Activities (WBA) to the West of Ireland, using economic impact assessment and travel cost models. Capturing the market and non-market value (welfare effect) of commercial WBA in Galway and Clare, this paper highlights the high value that recreationalists place on WBA and the impact these activities have on the local economic market.

1. Introduction

Tourism is a major international industry and is the largest global employer, providing 231 million jobs in 2007 (World Travel and Tourism, 2007). Coastal locations are traditional hotspots for tourism and leisure activity (O'Mahany et al., 2009; Hynes and Farrelly, 2010; Jennings, 2004). Indeed, ocean and coastal tourism is widely regarded as one of the fastest growing areas within the contemporary tourism sector (Hall and Page, 2006). Travel and tourism is a rare industry where off-shoring is difficult (Houston, 2008). The tourism experience in Ireland is unique to Ireland; one must visit Ireland to enjoy it. Ireland's island status gives it a comparative international advantage in marine and coastal tourism. The coastal landscape of Ireland is among its best known scenic attributes (Cooper, 2009) and provides a multitude of recreational opportunities including sea-angling, diving, surfing, scenic walkways and wildlife observatories. At the national level, marine based water activities generated €74.3 million in turnover to the Irish economy in 2007 of which €40 million was Gross Value Added. The sector employed 1090 individuals in Full Time Equivalents (Morrissey et al., 2010).

Trips to recreational sites generate two distinct kinds of economic impacts for the coastal and marine economy; market impacts and non-market impacts (Pendleton and Kildow, 2006). Market impacts refer to the flow of money through an economy and the associated jobs, wages, and taxes associated with these flows (Nelsen et al., 2007). In contrast, non-market impacts refer to the consumer surplus that a resource provides. For example, Curtis (2002) points out less obvious than the economic benefits of recreational activity is the importance of leisure for quality of life (Brajsa-Zganec et al., 2011). Aiming to provide a holistic valuation of commercial WBA in a locality, this paper estimates the demand for and value of commercial WBA using both a market valuation technique – economic impact analysis and a non-market valuation technique - a travel cost model in counties Galway and Clare. This is the first attempt to value both the economic and welfare impact of commercial WBA in Ireland. Although it is clear that commercial WBA have a positive market impact on a locality, less clear is the additional non-market impact associated with commercial WBA. Although, TCM are commonly used to provide a commercial value for non-market activities (Devkota et al., 2006), we hypothesis that the consumer surplus which arises from engaging in commercial WBA is much greater than the fee charged by the company. This excess consumer surplus may be due to a number of reasons including (among others);

- Individuals derive utility from engaging in a niche recreational market (Garrod and Wilson, 2004; Cawley and Gillimor, 2008),
- The sense of identity participants derive from engaging a recreation (Barnes, 2008)
- The ability to engage in recreational activities within an environmentally sustainable manner (Ferrari, et al., 2010) and;
- The ability to engage with companies with local knowledge (Garrod et al., 2006; Getz and Carlson, 2000) and a passion for the activity (Peter et al., 2009).

The objective of this paper is therefore two-fold. Firstly the market impacts of commercial WBA are estimated using economic impact assessment. This methodology allows one to derive the direct and indirect economic impact of having a commercial WBA company to a locality. Secondly, the non-market value of WBA is estimated a travel cost model. This estimation allows one to derive the additional welfare, or consumer surplus, that individuals derive when engaging in commercial WBA. This paper therefore provides a holistic analysis of the value of commercial WBA to its consumers and locality.

This paper is structured as follows: Section 2 provides an overview of the Counties selected for analysis in this paper, County Clare and County Galway. Section 2 continues by describing the survey

used to collect the data and the data collection process. Section 3 outlines the two methodologies used within the paper – economic impact analysis and a travel cost model. Section 4 provides both the market and non-market impact of commercial WBA in the West of Ireland. Section 5 offers concluding remarks.

2. Data and Site Description

The West coast of Ireland is traditionally seen as a hot-spot for WBA. Its diverse underwater ecology is attractive to divers, while the waves off the coast of Clare, Sligo and Donegal attract both Irish and international surfers alike. This paper focuses on the demand for and value of commercial WBA in two coastal counties in the West of Ireland, County Galway and County Clare. Galway has a coastline of 1,298km in length and in 2010 nine of its beaches were awarded blue flags. The largest beaches are found in Roundstone and Renvyle in Connemara. In terms of marine tourism capacity, a study conducted by the Marine Institute (2007) identified Galway city and county as having significant potential to develop water based tourism utilising its current resource base. The three companies selected for this analysis in County Galway are based in North West Connemara. Connemara is traditionally a strong tourism destination for both domestic and overseas tourists. A proportion of North Connemara, Connemara National Park (2,999 ha) is designated a nature reserve.

Clare has a coastline of 360km in length and eight beaches in Clare were awarded blue flag status in 2010. Clare is renowned for its surf and there are six companies offering surfing activities in the county. The two companies chosen in Clare were located in the sea-side resorts of Lahinch and Kilkee in West Clare. Tourism, particularly domestic tourism has long been one of the mainstays of West Clare. However, the tourism industry in West Clare has been suffering over the last two decade as with many tourism resort areas in the British Isles (Garrod and Wilson, 2004). However, new marine-based tourism, notably marine ecotourism, is being developed in the area, with the Marine Ecotourism: A Marketing Initiative in West Clare (Marine Institute, 2001) highlighting the potential for marine-based ecotourism in the county.

Survey sampling is considered to be the most economically effective method to gather information on visitors to recreational amenities (Devkota, 2006). The data used in the paper was collected via face-to-face user surveys. These surveys were conducted on-site across the five WBA companies participating in the research during July and August 2010. July and August was considered to be the

peak season for each of the five companies. The target population for this study were individuals over the age of 18 years old who had participated in a water-based activity at the particular company site. The survey comprised three sections: Section 1 contained personal information and socioeconomic information, such as age, income level and occupation. Section 2 asked respondents how many trips they had made to engage in WBA in the previous twelve months. Focusing on the current trip, respondents were asked how many of miles travelled and the time taken to get to the company site. Respondents were also asked about their WBA experience (how many years they had engaged in WBA) and the number of free days they had to engage in WBA per annum. Section 3 consisted of travel cost questions. Individuals were asked to report their spending by local (within 25km of the company site) and non-local expenditure. Each question asked in the survey can be considered to be limited. The average response burden for each survey was five to ten minutes. One hundred and nine completed surveys were collected across the five company locations. Three of these surveys were spoiled and were not used. In total one hundred and six surveys were used for this analysis.

3. Methodology

Economic Impact Analysis

Individuals and companies providing tourism products and services generate economic impacts that contribute to the economy via the flow of expenditure associated with their business (Nelsen et al., 2007). These impacts include the jobs, wages, and taxes associated with the business itself and the expenditures by visitors to the companies on food, accommodation and equipment in the locality. Tourism economics refers to the quantification of these economic impacts on a regional or national economy. The magnitude of these economic impacts is governed by a multitude of factors including;

- The level of economic development of the destination area
- The level of economic integration of the destination within the national economy
- The volume and intensity of expenditure in the destination
- The nature (for example free versus fee-based attractions) of the main attraction and its attractiveness to tourists

A number of economic tools may be used to examine the economic impact of tourism. However, by far the most popular is the Keynesian multiplier approach and regional input-output techniques

(Murphy and Bernal, 2008). To measure the total economic impact for a region, the direct, indirect and induced effects of tourism spending must be summed.

- Direct effects refer to the total expenditure by the tourist on goods and services within an area. This represents the initial round of spending induced by the tourism industry.
- Indirect effects are those which occur when the tourism operators in receipt of initial expenditure, in turn purchase additional goods and services to meet demand. This downstream or second round of spending results in further production and employment.
- Induced impacts refer to the additional consumer spending, which takes place when the income generated from the direct and indirect impacts is spent.

A regional multiplier calculated by Maloney (2008) and used by Ginty (2008) to examine the impact of marine water-based operators in the West of Ireland was used. Multipliers capture the secondary effects (indirect and induced) of spending in a region and represent the interdependency between sectors within an economy (Murphy and Bernal, 2008). A regional rather than national multiplier was used as it is assumed that 'leakages' are quite high for the rural areas used in this paper. Leakages refer to the fact that money spent across different sectors (I.e. expenditure in the food and beverage sector) 'leaks out' of the regions economy to pay for goods and services not manufactured in the region. Calculating a separate multiplier for regional economic impact analysis allows one to capture these leakages and provides a more realistic estimate of the direct and indirect impact of expenditure in an area.

Travel Cost Models

To examine the non-market value commercial WBA to an area, this paper uses a travel cost model (TCM). Recreational TCM model demand for an activity as a function of the number of trips to each site per annum, trip price (the travel cost) and participants characteristics. A TCM predicts the number of visits that is undertaken by an individual to a WBA company (du Preez and Hosking, 2011). Implicit in the estimation of a TCM is the assumption of a negative relationship between the costs of trips and the number of trips made to a site (Hynes and Hanley, 2006).

The discrete, non-negative integer nature of the dependent variable means that count data models offer the most robust and consistent estimator of trips (Creel and Loomis, 1990; Grogger and Carson, 1991). The Poisson model has been criticised because it imposes a mean-variance equality restriction on the model estimation which effectively requires the variance to be less than it really is

(Green, 1993). This mean-variance equality has proven problematic in applied recreational work as the variance in trips is often greater than the mean (Morgon et al., 2007). Greater variance implies over-dispersion in the data, which will lead to the under estimation of standard errors in the Poisson model and the over estimation of the degree of precision in the coefficients (Cameron and Trivedi, 1986). A popular alternative that accounts for this over-dispersion is the negative binomial model (du Prerz and Hosking, 2011; Curtis, 2003; Hynes and Hanley, 2006). In a negative binomial model unobserved heterogeneity is captured by the addition of a parameter, α to the conditional mean.

A further issue when applying count data estimators for assessing recreational demand using on-site surveys is that non-users are not sampled – the data is positively truncated (Chakraborty and Keith, 2000; Curtis, 2003). If this truncation is not recognised, inferences drawn about the population of potential benefits of commercial WBA from the resulting parameter estimates will be biased (Hynes et al., 2008; Creel and Loomis, 1990). This bias will also extend to the consumer surplus/welfare estimates derived from these parameters. To avoid this problem, one must modify the negative binomial distribution to reflect the truncation of observed trips, T_i (Hynes et al., 2008). Given the truncated nature of recreational trip data and if, over-dispersion has been identified in the survey data, a zero-truncated negative binomial (ZTNB) model is the most common method used to estimate TCM (du Preez and Hosking, 2011).

A travel cost function for commercial WBA may be specified as;

$$TRIP_i = f(TTC_i, EXPERIENCE_i, DAYS_i, SUBS_i, SE_i, \beta_o, \beta_k, \varepsilon_i) \qquad (1)$$

where $TRIP_i$ is the number of trips to a WBA site in the previous year and TTC_i, is the total travel cost for partaking in the WBA. $EXPERIENCE_i$, is the number of years each respondent has been engaged in WBA, $DAYS_i$, are the number of free days that each respondent has to engage in WBA per annum. $SUBS_i$ is distance to a substitute site and SE_i, are a set of demographic and socio-economic variables for each respondent. The dependent variable, $TRIP_i$, is a function of the total travel cost, personal experience and leisure time and socio-economic characteristics to visit the site.

Recreation is a time-intensive activity and participants maximise utility subject to income and cost constraints (Hesseln et al., 2003). Within a TCM, costs in principle include all the marginal costs of making a visit, comprising 'out-of-pocket' costs (mainly fuel costs) and the cost of time spent travelling (mainly the opportunity cost of time not spent working). By combining actual travel costs

and the value of travel time, research has found that the consumer surplus estimate may help minimise omitted variable bias (Hesseln et al., 2003; Tapsuwan and Asaffa-Adjaye, 2008). The total travel cost TTC_i, of a trip may be defined as;

$$TTC_i = TC_i + TIMECOST_i \qquad (2)$$

Where TC_i, out-of-pocket costs, is the total travelling cost incurred by the respondent to access to the WBA site from their point of origin. In calculating the 'out-of-pocket' costs for this study, the Automobile Association (AA) of Ireland's calculations for the marginal costs of motoring for a car of average size were used (€0.29/mile). The inclusion of time costs in travel cost studies has been the subject of much debate (du Preez and Hosking, 2011), with some studies suggesting that to capture the true travel cost a fraction of the wage rate should be used to estimate the opportunity cost of time in addition to travel time/travel cost (Bateman, 1993; Zawacki and Bowker, 2000). Lacking adequate data on respondents' labour market situations, one may calculate the cost of travelling time *(TIMECOST$_i$)* as;

$$TIMECOST_i = HWAGE_i \ x \ 33\% \ x \ TRAVELTIME_i \qquad (3)$$

Within this paper, the travel cost variable, $TIMECOST_i$ is valued at 33% of the value of hourly wages ($HWAGE_i$), whereby $HWAGE_i$ is calculated as an individuals annual income divided by 2,000 (the number of working hours per year). Total travelling time is an estimate of the time taken to travel from an individual's residence/accommodation to their destination.

Using economic impact analysis and TCM and the survey data described in Section 2, the next section examines the market and non-market value of commercial WBA offered by five companies in counties Galway and Clare. This analysis provides us with the first comprehensive overview of the characteristics of consumers of WBA and the value of commercial WBA in the West of Ireland.

4. Results

WBA consumer Characteristics

Using the data collected via on-site surveying, Table 1 presents a set of summary statistics for the respondents. As outlined in Section 2, the survey included questions on demography, socio-economic status, frequency of participation in WBA and costs incurred. Specifically, respondents

were asked how many WBA trips they had taken in the previous twelve months, the cost associated with the trip, the number of years they had been engaged in WBA and the number of free days they had per annum to engage in WBA. The average number of trips to engage in a WBA by the respondents in the previous year was 8.25. The variance reported was 11.7 trips, indicating that the dependent variable (trips) is over-dispersed. The average travel cost for each respondent was €1,283. The data collected reveals that the participants who visited the five WBA companies were on average 32.5 years old, highly educated (83% have third level education), employed (92%) in professional occupations (34%) and earned between €30,000 and €49,999 per year.

Table 3 Demographic and Socio-Economic Characteristics of WBA Participants

	Average/Majority	Percentage of Respondents
Gender	Male	52%
Age	32.5 years	---
Marital Status	Single	56%
Education	Third level	83%
Employed	Yes	92%
Occupation	Professional	34%
Income	€30,000 to €49,999	38%
County Residence	Dublin	35%
Years taking part in WBA	7 years	---
Trips in last 12 months	7.25 trips	---
Days free to engage in WBA P/A	44 days	---
Specific reason for visit to area	WBA	92%
Transport	Own Vehicle	87%
Travel km	202km	---
Length of journey	3 hours	---
Day Visit	Yes	20%
Stay Overnight	Yes	80%
Nights in Area	2.3 nights	---
Accommodation	Hostel	29%

The data found an equal balance between gender (52% of participates were male). The average number of trips taken by the respondents in the previous year was 7.25. Respondents had an

average 7 years experience in WBA and had on average forty-four free days to engage in WBA. The data also found that across the five site locations 35% of participants were from Dublin. This indicates the high willingness of individuals to travel to WBA sites on the West coast of Ireland. Indeed, the average distance travelled to access the site was 202km and 3 hours travel time. It was also found that the majority of respondents stayed overnight in the area (80%) and the average number of nights for a visit was 2 nights.

The Economic Market Impact of WBA

The survey found that over 90% of the respondents visiting the five site locations were from outside Counties Galway and Clare and that 92% reported that the specific reason for their visit was to engage in the WBA offered by the company; the WBA companies generate an important economic impact on the local economies. The average expenditure for individuals who participated in WBA across the five company sites was €371.55. Based on this average expenditure across the five company sites within the locality and a total of 769 visits (the total visits captured in this survey) we estimate that the annual expenditure of this small subset of WBA participants is worth €250,000 to the local economies. This is the direct economic impact of having the five WBA companies in the two areas. To examine the indirect of the WBA participants captured by our survey, a regional indirect multiplier of 0.30 was applied (Ginty, 2010). The indirect impact of WBA expenditure is estimated to be €75,000. To examine the induced impact a multiplier of 0.18 was applied (Ginty, 2010). It was found that the WBA companies had an induced impact of €45,000 in Galway and Clare. The total economic impact of the WBA participants captured in this study was €370,000 across the respective localities. Although these findings cannot be extrapolated to the general population and only capture a small subset of WBA participants, this study shows that the economic impact of marine tourism on local economies at any visitation level is substantial. Knowing the value of a potential or existing sector can be a powerful tool in developing and maintaining a market within a locality. The results presented in this paper would indicate that the impact of the WBA tourism sector should be considered in any local market, coastal development and tourism development issues.

The Non-Market Economic Impact of WBA

Using a number of variables presented in Table 1 as the explanatory variables for the TCM, Table 2 presents the parameter estimates for the specified model. Four econometric specifications were used to estimate a commercial WBA demand model; including standard and truncated Poisson models and standard and truncated negative binomial models. The positive and significant estimate of the dispersion parameter, α, indicated that the data was over-dispersed. Thus, due to the over-

dispersed and truncated nature of the data the final model chosen to estimate the demand function was a ZTNB. The models estimate of mean WBA trips is 8.55, which is very close to the actual reported mean of 8.25 trips per annum. This gives a strong indication that the model estimates are robust. The estimated coefficient for travel cost is the expected sign and significant at the 95% level of confidence. However, the impact of travel cost changes is relatively small or inelastic (-0.004). This indicates that, although negatively related to trips, travel cost does not have a large effect on commercial WBA trips per annum. Individuals are willing to pay higher costs to access/engage in commercial WBA. Inelastic demand has been found in precious recreational demand models (Chakraborty and Keith, 2000; du Preez and Hosking, 2011). In terms of this study, the activities offered by the five companies examined are active (e.g. diving, surfing and sea-kayaking) and may be deemed somewhat more risky. These factors, combined with the local knowledge offered by the WBA companies may offer an explanation for the inelastic demand reported by this paper.

Table 2 Zero Truncated Negative Binomial Model of WBA Trips per annum

Number of Trips per Annum	Coefficient	Std. Err.
Travel Cost (€)	-0.0004*	0.0002
Age 19-25 (Reference base Age 55+)	0.21	0.58
Age 26-35 (Reference base Age 55+)	-0.14	0.47
Age 36-45 (Reference base Age 55+)	0.12	0.45
Age 46-55 (Reference base Age 55+)	0.81	0.47
Gender (1 – Male, 2 – Female)	-0.20	0.25
Number of Years Engaged in WBA	0.06**	0.02
Income less than €10,000 (Reference base Income €75,000+)	-0.79	0.72
Income €10,001 - €20,000 (Reference base Income €75,000+)	-0.02	0.73
Income €20,001 - €30,000 (Reference base Income €75,000+)	-0.57	0.69
Income €30,001 - €49,999 (Reference base Income €75,000+)	-0.52	0.53
Income €50,000 - €74,999 (Reference base Income €75,000+)	-0.71	0.51
Distance to Substitute School	-0.0003	0.002
Days Engaged in WBA – 2 to 10 Days (Reference base 1 Day)	0.49	0.43
Days Engaged in WBA – 11 to 20 Days (Reference base 1 Day)	0.84	0.46
Days Engaged in WBA – 21 to 30 Days (Reference base 1 Day)	-0.08	0.51
Days Engaged in WBA – 31 to 45 Days (Reference base 1 Day)	1.16	0.76
Days Engaged in WBA – 46+ Days (Reference base 1 Day)	0.99*	0.41
Constant	0.35	0.98
A	0.87	
Number of observations	106	
Likelihood Ratio χ^2	59.95	
Probability > χ^2	0	
Pseudo R^2	0.1957	

The marginal effects of the travel cost variable can be used to estimate the opportunity cost of travel time. The marginal effect of the covariates on mean WBA trips is given by (Curtis, 2003):

$$\frac{\partial E(T \mid X)}{\partial x_i} = (1 + \alpha)\lambda_i \beta_j \qquad (4)$$

Where λ_i is the predicted number of trips (8.55), β are the parameter estimates of interest (for example travel cost) from the observed sample and α is the over-dispersion parameter. For each €50 increase in the travel cost, the number of WBA trips falls by 3%. The low marginal effect of trip cost on the number of trips demanded is again indicative of the high price individuals are willing to pay to engage in WBA offered by commercial companies. As expected, respondents with highest level of discretionary time to engage in WBA (greater than 45 days) are significantly more likely to have a greater number of WBA trips per annum. The insignificance of the income parameter suggests that there is no income effect on the number of trips an individual takes to engage in WBA. Given the expensive nature of WBA, average travel cost for this sample is €1,283, this result may seem implausible. However, previous research on recreational TCM have found insignificant and even negative income effects (Chakraborty and Keith, 2000; Curtis, 2003). The insignificant substitute site variable indicates that the activities offered by each commercial WBA are more important than site location. The other variables in the model, age, gender and distance to a substitute site are all insignificant.

Consumer Surplus and Welfare Analysis

The goal of this section was not merely to estimate the parameters of the TCM, but rather to use these parameters as an input in calculating the economic value of companies offering WBA in counties Clare and Galway. Consumer surplus (CS) was estimated following Hellerstein and Mendelson (1993) methodology for consumer utility maximisation subject to an income constraint and where trips are a nonnegative integer. They show that the expected value of CS, *E(CS)*, derived from count model may be expressed;

$$E(CS) = E(T_i \mid x_i)/\beta_p = \lambda_i/(\beta_p) \qquad (5)$$

where λ is the expected number of trips and β_p is the price (i.e. the travel cost) coefficient. The per-trip E(CS) may be calculated as $1/\beta_p$ (Hynes and Hanley, 2006; Tapsuwan and Asafu-Adjaye, 2008). In the preferred model, the travel cost coefficient was estimated to be -0.0004. This implies that CS per trip is €2,500. However, given the sensitive nature of CS estimates it is important to have an

appreciation of the reliability of any value. They suggest that an indicator of reliability may be obtained from the "standard error and a consequent interval estimate". The population estimate of per-trip CS is estimated at 95% confidence to be between €1,250 and €3,616. The estimated average WBA trips per year in the full 109-person sample were 8.55. Total CS per WBA participant per year is calculated as average annual trips by surplus per trip or 8.55 x €2,500. This gives an annual per person CS of €21,375. This implies that the annual value of the WBA offered by the five companies within this survey or conversely the willingness to pay for these WBA by the sample respondents is €2,265,750 per year. The population estimate of total CS is estimated with 95% confidence to be between €1,132,875 and €2,866,626. These results indicate a high value WBA in the West of Ireland, even when individuals must pay for these activities. It is useful to compare the welfare estimates with those derived in other WBA studies.

As outlined in the introduction, studies recreational demand studies in Ireland tend to focus on non-marine/water based activities. However, Curtis (2003) used a TCM examined four WBA, sea-angling, boating, swimming and beach/island trips. He found that sea-angling had a CS of €8, boating €11.95, swimming €71.69 and other beach activities €18.90. Similar to this analysis, he found that all four activities were very price inelastic at the mean level of day-trip costs. However, he further found that at higher trip costs demand for boating, swimming and other beach/sea trips became inelastic. WBA are very diverse in terms of the product on offer, the level of fitness one requires, the risk associated with the activity, etc. The WBA examined by Curtis (2003) are relatively passive and low risk. In contrast, the activities offered by the five companies examined in this paper are active (e.g. diving, surfing and sea-kayaking) and may be deemed somewhat more risky. These factors, combined with the local knowledge offered by the WBA companies may offer an explanation for the high levels of CS associated with companies that offer WBA in this study. Given these issues, a simple comparison of CS between the two studies is somewhat hard to interpret.

5. Discussion

Tourism is often identified as a vehicle for safeguarding the integrity of rural areas, while enhancing the local economy and maintaining rural ways of life, particularly true in rural and coastal areas (Garrod and Wilson, 2004). Trips to recreational sites generate two distinct kinds of economic impacts for the coastal and marine economy; market impacts and non-market impacts (Pendleton and Kildow, 2006). Market impacts refer to the flow of money through an economy and the associated jobs, wages, and taxes associated with these flows (Nelsen et al., 2007). Included in economic impacts are expenditures by visitors to coastal areas on food, accommodation and

equipment. In contrast, non-market impacts refer to the consumer surplus that a resource provides. For example, Curtis (2002) points out less obvious than the economic benefits of recreational activity is the importance of leisure for quality of life. Leisure opportunities have been consistently found to be important determinant of people's perception of their quality of life (Jefferes & Dobos, 1993; Michalos, 2005; Brajsa-Zganec, 2010). Furthermore, international research has indicated that outdoor enthusiasts demand and value niche recreational markets for non-economic reasons. These reasons range from the desire to engage in niche market (Crouch and McCabe, 2003; Garrod and Wilson, 2004; Cawley and Gillimor, 2008), the sense of identity participants derive from engaging in a particular recreation (Barnes, 2008), the ability to engage in recreational activities within an environmentally sustainable manner (Ferrari, et al., 2010) and the ability to engage with people with companies who have a local knowledge of the environment and a passion for the activity (Garrod et al., 2006; Getz and Carlson, 2000; Peter et al., 2009). Given this background, this paper hypothesised that the value derived by WBA participants from engaging in the activities offered by the five companies of interest would exceed the price paid for such activities. This paper offers the first comprehensive value of WBA in Ireland by examining both the market and non-market impact of commercial WBA.

In terms of economic benefits, international research has indicated that WBA participants and companies have a positive impact on local economies (Murphy and Bernal, 2008; Nelsen et al., 2007). Within Ireland, this paper found using economic impact assessment and based on an average expenditure of €331.57 across the five company sites and a total of 769 visits the direct, indirect and induced effect of the WBA participates was €370,000 to the local economies. In terms of the non-market impacts of commercial WBA in the West of Ireland, using a TCM this paper found that the mean consumer surplus for the average WBA participant who used one of the five companies of interest was €2,500 per trip. This result is conditional on the survey sample but still indicates a high value for companies that offer WBA in the west of Ireland. Average travel cost was €1,283 compared to the CS value of €2,500. Given that CS is 49% of total willingness to pay this would suggest that individuals receive approximately double the benefit from engaging in the WBA offered by the companies in access of their travel costs. This indicates a total CS figure of €2,265,750. Calculating population confidence intervals the total CS is estimated with 95% confidence to be between €1,132,875 and €2,866,626. As hypothesized individuals that engage in WBA place a higher value on the activities that are offered by the five companies within this paper. Thus, the activities offered by WBA companies are worth more than their market price as engaging in commercial WBA represents a large welfare benefit for participants.

In terms of public policy the *Marine Tourism and Leisure Development Strategy 2007-2013* (Marine Institute, 2007) outlines the development of a sustainable marine tourism sector for Ireland. Morrissey et al., (2010) found that the marine tourism sector generated €944 million in turnover and provided €453 million in gross value added to the Irish economy in 2007. Within the wider marine tourism sector, WBA provided €74 million of this turnover (Morrissey, 2010). Capturing the market and non-market value (welfare effect) of commercial WBA in Galway and Clare, this paper highlights the high value that recreationalists place on WBA and the impact these activities have on the local economic market. These findings demonstrate the important economic and social role WBA have to offer coastal areas and thus provide an impetus for future development in this area.

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