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Enriching Stakeholder participation through Environmental Valuation; Eliciting Preferences for a National Park Designation in Northern Ireland

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Abstract

This paper provides the theoretical framework and describes the preliminary steps for combining collaborative planning and non-market valuation techniques to improve the decision making process and stakeholder involvement in land use decisions. Combining components of Collaborative Planning (CP) — a Planning theory seeking to achieve the highest level of consensus possible amongst all stakeholders — with non-market valuation techniques (Travel Cost Method and Contingent Behaviour) - widely used in environmental economics — this study attempts to elicit the preferences of the Northern Ireland population which could be affected by the proposed designation of a National Park. The CP elements of public participation are first used as an aid to design the survey instrument and then explored as a means of the validation of results analysed from the survey. In a Contingent Behaviour survey, key attributes are set at varying levels to assess how respondents' welfare would be affected by hypothetical changes in the management and infrastructures of a recreational area.

Keywords: travel cost; contingent behaviour; revealed preferences; stated preferences; national park designation; collaborative planning; stakeholder involvement;

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1. Introduction and previous studies

In valuing the demand for recreation, the literature has grown from using Revealed Preference (RP) methods (Clawson & Knetsch, 1966; Bhat, 2003; Bhat & Gossen, 2004) that are only able to assess use values of a recreational site to applying Stated Preference (SP) methods, namely contingent valuation (CV) (Bateman et al, 1994) and choice modelling (CM) (Louviere and Timmermans, 1990) that in addition to use values, are able to capture non-use values. Both approaches have been criticized for their respective limitations: RP methods can only assess use values; while SP methods are based on hypothetical scenarios. To overcome the shortcomings of each method, recent attempts have merged the two in order to exploit the strengths of both sources of data (Adamowicz et al, 1994, 1997, 1998; Alberini and Longo 2006; Alberini et al 2007; Cameron, 1992; Cameron et al, 1996; Christie et al 2007; Englin and Cameron 1996; Eom and Larson, 2006; Hanley et al 2003; Huang et al 1997; Whitehead et al 2000, 2005, 2007, 2008 and Bhat 2003). A number of these studies have been summarised and discussed below to give an indication as to how they have been applied to different research topics and scenarios.

Bhat (2003) combines the Travel Cost Method (TCM) and Contingent Behaviour (CB) and applies them to the non-market recreational benefits of reef quality improvements in the Florida Keys. Data was collected using a sample of visitors to the Keys to ascertain their revealed travel preferences to the site, under current conditions, and to give an indication about their future travel preferences. A panel recreational demand model was applied to the collected data for current and expected quality scenarios to allow for an estimation of the benefits related to the quality improvements of the reefs. A Poisson regression model was used to capture the variation in responses across the respondents. The eventual travel cost per person was calculated by multiplying the total round trip distance by a per mile group trip costs. It was estimated that the average person took 6.31 trips to the

Florida Keys over the period of 5 years primarily for the purposes of diving, snorkelling and / or glass bottom boat riding under the current environmental conditions. The use value for these trips was estimated to be a cost of $2924 per person, $463 per person trip, and a daily cost of $122 per person (Bhat 2003). Under future environmental improvements, it was estimated that for the improvements in the attributes, fish abundance (200%), water visibility (100%) and coral quality (100%), an average visitor would make 4.99, 3.88 and 2.70 more trips during the five year period (Bhat 2003).

Eom and Larson (2006) apply information obtained from a study incorporating elements of RP and SP techniques to improving environmental valuations in the Man Kyoung River (MKR) basin in South Korea. Their research provides a framework for estimating use, non use and the total values of changes to environmental quality by combining the TCM as their RP component with CV as their SP component (Eom & Larson 2006). Their results show that most of the explanatory variables impacted on the trip demands and the willingness to pay (WTP) functions, with the correct signs. The travel cost had significant influence on the number of visits to a typical site and affected the likelihood of a respondent being willing to pay a given bid amount. Full income was shown to have a positive effect on demand and WTP. Water quality was also significant in both decisions. Annual total WTP to restore the current level of water quality to a level acceptable for fishing was $26.56 which was made up of $16.35 for the use value and $10.21 for the non use values. These were significantly different to zero at the 95% confidence interval. For water quality to return to a swimmable level, WTP was $47.64 broken into $29.78 for use values and $17.86 for non use values, all of which were again significant (Eom & Larson 2006).

Huang et al (1997) sought to combine RP and SP in order to estimate WTP for quality improvements in North Carolina where two recreational sites were identified (one of which was a component of the other). They wished to identify and show the conditions required in

order to continuously combining RP and SP data to return an improvement in environmental quality. A joint estimation was proposed to provide an estimate of both the variation function model and for the change in the level of recreational demand. A regression model was used with a recreation demand model to determine whether the data obtained from the CB questions matched what was theoretically anticipated. Negative binomial models were used as well as a trip change model. The variation function model was also estimated for both the single and the double bounded CV data (Huang et al 1997).

Results obtained matched their hypothesis; respondents fully considered the difference between the ex-ante trips under the present conditions with the quality improvement rather than the difference between the ex-post and the ex-ante number of trips under improved quality conditions. They highlight that there may be an inconsistency when current recreation demand and dichotomous WTP responses are jointly estimated when it is assumed that the underlying preference structure to be the same (Huang et al 1997).

Whitehead has written much in the way of merging valuation methods (Whitehead et al 2000, 2005, 2007 and 2008) with a number of difference co-authors. Whitehead et al (2000) propose that by merging RP and SP behaviour they can produce an estimation method to measure recreational benefits that could come from a quality improvement. They apply the TCM and CB to a 1995 telephone study of eastern Californian households to test attitudes towards a proposed management plan. A random effects Poisson model was used with dummy variables in order to consider the heterogeneity amongst the individuals within the sample. The RP and SP behaviour models which have the same quality levels were tested to see whether they represent the same underlying behaviour of the respondents. Their results have indicated that both a shift and a change in the elasticities of recreation demand as well as the environmental quality are improved. Whitehead et al (2000) conclude that both RP and SP behaviour data can be combined, once any hypothetical bias has been calibrated within

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the data, implying that they represent the same underlying behaviour of respondents at the current levels the environmental quality (Whitehead et al 2000).

Whitehead (2005) combines CV and TCM and uses it to evaluate the benefits of improved water quality in the Neuse River in North Carolina. Tobit models were utilised for the analysis and for all three models undertaken, the WTP estimate is approximately $75. The demand change result highlights that the more frequent visitors of the Neuse River are willing to pay more, while the WTP estimates of respondents in the Upper river basin are greater than those in the lower river basin. WTP is reduced where respondents perceive the water in the river to be unsafe, which is contradictory to the expected sign. Concluding remarks further suggest that empirical models of WTP should seek to ensure that exogenous measures of the potential use of the resource being measured should be included and that future CV research should explore and identify alternative approaches to merging WTP and behaviour data, which will further validate the CV method (Whitehead 2005).

Whitehead et al (2007) provide an in depth analysis of combining RP and SP data and discuss the number of ways they can be merged, including advantages and disadvantages from combining such data and the models that are employed to analyse the combination of valuation techniques. Conclusions include that by merging RP and SP data, the advantages of both types of data can be fully utilised whilst mitigating again their weaknesses. An increased level of estimation efficiency is also obtained when the two are merged successfully (Whitehead et al 2007).

Whitehead et al (2008) illustrate how combining RP (TCM) and SP (CB) was applied to North Carolina beaches in order to estimate changes in recreational demand. A random effects Poisson model was used to estimate three recreation demand models. Hypothetical bias was found across the three models owing to the number of SP trips far exceeding the number of RP trips specified by respondents under comparable conditions giving them

similar benefits. In conclusion, Whitehead et al (2008) state that they outlined a number of ways by which hypothetical bias from the CB can result in an overestimation of the economic benefits of recreation and those that come about as a result of environmental improvements to the baseline / status quo situation. Through their analysis, it was shown that the hypothetical bias affected the estimates obtained for the number of trips and the regression coefficients (Whitehead et al 2008).

Hanley et al (2003) value the benefits of coastal water quality improvement by applying contingent and real behaviour. They apply a random effects negative binomial panel model with data from real and contingent behaviour and enables them to predict a change in trip numbers should the level of water quality be improved. The Poisson and the negative binomial models were utilised and show that travel costs have a negative influence on the number of trips undertaken to a site by respondents. The coefficient on the level of water quality was negative and significant while the effect of the individual on their willingness to swim is positive and significant. The negative binomial model shows that across the entire sample, an increase of 52 trips is predicted as a consequence of an improvement in the level of water quality within the area. By combining the SP and RP information, it was possible to undertake a panel data approach, and suggested that the hypothetical improvements in water quality showed an increase of 1.3% in the predicted trip frequency to the sites. The use of CB enabled Hanley et al (2003) to investigate the value any improvements to the water quality would result in (Hanley et al 2003).

2. Approach

This survey uses two methodologies, Collaborative Planning (CP) and non-market valuation techniques (Travel Cost Method (TCM) and Contingent Behaviour (CB)) to explore the effectiveness of their combined use to assess the preferences of the population of Northern Ireland's to its first National Park designation. Land use decisions are made as a result of a

myriad of agencies, at national and local levels from schemes in British Columbia (Frame et al 2003, Gunton et al 2006), Portugal (Martins and Borges 2007), Ireland (O'Rourke 2005) to North America (Day et al 2003 and Van Driesche and Lane 2002) and in many cases have been made in conjunction with CP (see also Dougill et al 2006, Bennett and Tranter 1997 and Jamal et al 2002). There are many examples worldwide where decisions have been implemented following public participation and stakeholder analysis (see Jamal and Eyre 2003, Elliott et al 2001, Lee 2003, De Groot 2006). Although CP has been used to help inform the process for land use designations, CP has not played a significant role in the primary designation of a National Park. Elements of CP did however play an important role with the proposals for the designation of the National Parks in Scotland and their management where Scottish Natural Heritage undertook an extensive public consultation process with focus groups and stakeholder meetings (see Rowan 2005, SNH 2001).

Collaborative Planning (CP) is a |Planning theory which seeks to involve the public, either through community groups or individuals with the various stakeholders and decision makers in attempting consensus and achieving a greater level of agreement between opposing factions. Godschalk and Mills in 1966 campaigned for a collaborative approach to planning and stated that "meaningful and effective planning must be based on a two-way communication flow between the public and planning agency" (Godschalk and Mills 1966 in Margerum, 2002 p237). The term was coined by Patsy Healey in the mid-1990s and is still used in many planning decisions today (Healey 1997). CP has been described as a "fundamentally all-inclusive" (Healey 1996 in Kumar & Paddison 2000 p206, Healey 2003) methodology which employs a higher level of collaboration and involvement of the stakeholders than any of the other planning theories. A stakeholder is defined as "any group or individual who can affect or is affected by the achievement of the organization's

objectives" (Freeman 1984, p46). Stakeholders can therefore share costs, benefits, and risks with each other, whilst fighting for their self interests (Abbott 1996).

The principal aim of collaborative planning is to ensure that all stakeholders are involved in the planning processes and an eventual consensus is achieved on policies after all issues have been debated using the conditions of communicative action. CP is seen as most likely to resolve any competing issues amongst stakeholders as other processes within the planning system as it seeks to identify possible solutions that address the interests of all parties (Frame et al, 2004) and enables an interactive and interpretive process to be undertaken among a diverse and a fluid discourse community. It allows individuals from different backgrounds to come together and influence an outcome (Healey 1997). By engaging all stakeholders throughout the collaborative planning process, the attributes to be valued using non-market valuation techniques can be identified and defined. A typical stakeholder process tends to favour the more vocal individuals, and prevents the highest level of good discourse being carried out. Claims are made by stakeholders, and without an adequate level of facts and figures, these claims attempt to authenticate their arguments. However, the legitimacy of these claims can be problematic; how are stakeholders defined, who is entitled to voice their opinion and claims, and who determines that one individual's claim is more legitimate than another? (see Mitchell et al 1997). This is a particularly emotive process whereby some stakeholders feel they have more to lose than others stand to gain. In order to address this, it is necessary to ensure that the data presented within a Collaborative Planning process is relevant, simplified for all to understand it, and presented in a way whereby findings are clear to all involved within the process.

CP has been usefully applied to many land use policy decisions. In this study we investigate whether CP could be improved if combined with a cost-benefit analysis (CBA). This would allow a more complete assessment of land use options by considering their total economic

value. Traditional CBA does not take into consideration non-market values i.e. the value of goods (such as the environment) that are not traded in the market and consequently do not have a market price. As such, it is necessary to use non-market valuation techniques to determine the monetary values for such goods [Eom & Larson 2006]. These non-market values can then be used in a CBA to allow policy makers to ensure that the value of benefits arising from a proposed policy (or policy change) outweigh the costs of implementation. Non-market values can be difficult for policy makers to comprehend. Therefore, by combining elements of CP with non-market valuation techniques we can provide a method to comprehensively assess land use decisions that are understood and accepted by stakeholders and policy makers alike. We start from a single site travel cost survey, where respondents provide us with welfare estimated for the access value to the recreational area. This is the use value of respondents for the recreational area. Following Whitehead et al (2000), we further query respondents with a set of CB questions about their expected number of trips to the site in the next 12 months under the current situation, and under different scenarios. These scenarios are described by the *levels* of the attributes later used in the CE. The final part of the valuation exercises presents a set of CE questions used to assess both use and non use values of the recreational area. Formally, in our CB model we have:

$$TRIPS_{n\,j} = \gamma Z_{nj} + \mu$$

Where $TRIPS_{nj}$ is the number of expected trips that respondent *n* takes under scenario *j* for the CB questions; Z is a vector of explanatory variables including scenarios levels (excluding the cost of that scenario in the CE questions, but including the travel cost); μ is the error term and γ is a vector of parameters to be estimated.

This paper reports results obtained from an analysis of the responses from the TCM and CB components of the survey.

3. The case study and survey instrument

Northern Ireland is the only administrative division within the United Kingdom that does not have a National Park. The idea for a National Park in Northern Ireland was first raised by the Planning Advisory Board in their 1946 report "The Ulster Countryside" (Northern Ireland Planning Advisory Board 1947). It identified the Mourne Mountains in particular and requested its immediate designation. The Mournes area is one of the most striking mountain districts in Ireland. It comprises twelve peaks each rising above 600m (1968.5 feet). Much of the area is included within the Mourne Area of Outstanding Natural Beauty (AONB) in recognition of the quality of its landscape. The area boasts the first National Nature Reserve to be designated in Ireland and has an abundance of pure water reserves within its 9,000-acre catchment area demarcated by the 22-mile long Mourne Wall, which supplies the local Mournes area and much of Belfast (Kirk 2002).

In September 2002, the Minister for the Environment expressed a commitment to progress towards a Mourne National Park provided there was sufficient public support for such a designation. A study in 2002 identified the Mournes area as being the place most suited to a National Park designation and becoming Northern Ireland's first National Park (Europarc 2002). The Mourne National Park Working Party (MNPWP) was established in 2004 by government as an independent body whose role was to commission research on a National Park boundary and to investigate the prospect of National Park designation for the Mournes area (EHS NI 2004).

The MNPWP undertook an extensive public consultation exercise within the Mournes area which ran from August 2006 through until January 2007 (Inform Communications 2007) with their final report highlighting that residents of Northern Ireland deem the following attributes to be important for a Mournes National Park: (i) access to the area, (ii) infrastructure available within the area, (iii) planning restrictions within the area, and (iv) the type of management of the site. Following the results from the extensive public consultation

carried out by the MNPWP, for this survey we use these four key attributes as attributes for the CE and for describing the hypothetical scenarios in the CB questions. Furthermore, testing the questionnaire in a focus group situation enabled the key elements of collaborative planning to be undertaken. Preparations are currently underway to facilitate a final stakeholder meeting to discuss the survey results, and allow for discussion with the policy makers.

We set these attributes at two different levels – high and low (being the status quo too). The attributes therefore are *infrastructure* (toilets, parking facilities, rest spots availability, visitor centre and information provision), *access* (onto public and private lands), *planning* restrictions (controls for design of buildings and materials used), the type of *management* for the area as well as a *cost* attribute. These attributes are represented by symbols and have been clearly set out in the survey instrument. We create the experimental design following Johnson et al (2007) using SAS 9.1. Respondents are presented with four CB questions and 4 CE questions. The four CB questions are built using the same levels used in the second and third CE questions, except for the payment vehicle. Figures 1 present the scenarios used for the first CB questions of the questionnaires.

Figure 1. Example of CB question

1.Would you visit the Mournes area if the following were to be implemented?

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LOW
INFRASTRUCTURE

LOW
MANAGEMENT
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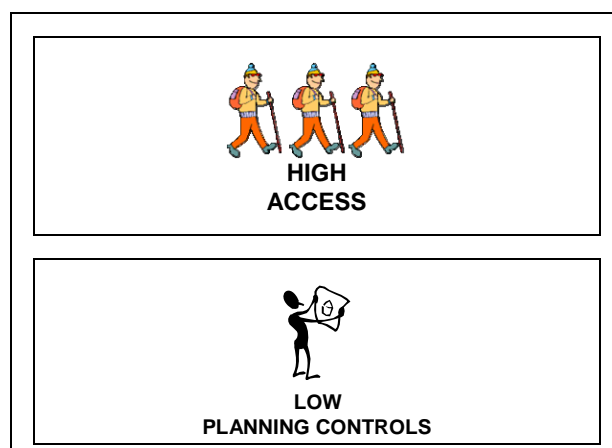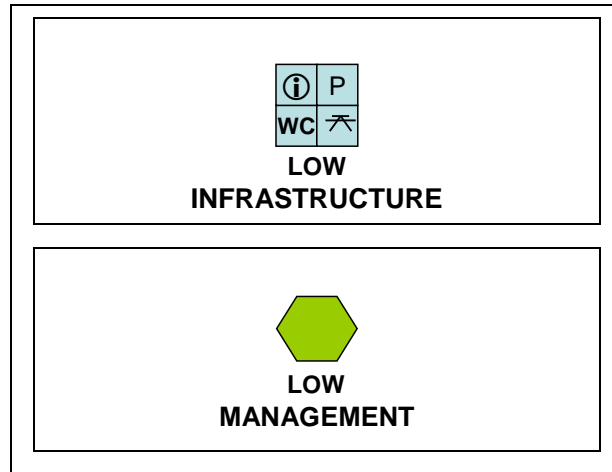
Yes ☐   No ☐   Don't know ☐

If you have answered "Yes", how many days would you visit the Mournes area in a 12 month period?

_____

The survey instrument was administered by mail after the summer of 2008 to a sample of the population of Northern Ireland.

4. Econometric Approach

In a single-site travel cost method (TCM) model, it is assumed that an individual's utility depends on aggregate consumption, X, leisure, L and trips r to the site:

(3) $$U = U(X, L, r).$$

We further assume weak complementarity of trips with quality at the site, q. In other words, $\partial U / \partial q = 0$ when $r = 0$ (when a person does not visit the site, his or her utility is not affected by its quality), and r is increasing in q. The individual chooses X, L and r to maximize utility subject to the budget constraint:

(4) $$y + w \cdot \left[\overline{T} - L - r(t_1 + t_2) \right] = X + (f + P_d \cdot d) \cdot r$$

where y is non-work income, w is the wage rate, $\overline{T}$ is total time, t_1 is travel time to the site, t_2 is time spent at the site, f is the access fee (if any), P_d is the cost per mile, and d is the distance to the site. This yields the demand function for days:

(5) $$r^* = r^*(y, w, p_r, q)$$

where $p_r = w(t_1 + t_2) + f + p_d \cdot d$ is the full price of a trip.

In this study, we assume that the demand function is log linear. Formally,

(6) $$r^* = \exp(\beta_0 + \beta_1 w + \beta_2 p_r + \beta_3 q).$$

In our econometric model below, r^* is the expected number of trips. To estimate the coefficients in equation (4), it is necessary to ask a sample of visitors to report the number of trips they took in a specified period (year or season), cost per trip p_r, plus w, y, and other individual characteristics that might affect the demand for visits to the site.

Since q—the quality of the site—does not change over time, to estimate the coefficient on q, β_3, we devised a set of CB questions that would deliver specific improvements at q, and asked our respondents to tell us how many days they would spend if the program was implemented under alternative assumptions for q. Once the demand function has been estimated, the consumer surplus provides an approximation of the welfare associated with visiting the site. Formally, based on equation (6), the consumer surplus is equal to:

(7) $$CS(p_0, q_0) = -\frac{1}{\beta_2} r_0,$$

Where r_0 is the predicted number of trips from the model.

Given the relatively few annual trips to the site, a count data model is the appropriate model for the number of trips Y. We specify a Poisson model with individual-specific λ_{ij}:

(8) $$\Pr(Y_{ij} = y_{ij}) = \frac{e^{-\lambda_{ij}} \lambda_i^{y_{ij}}}{y_{ij}!},$$

where $\lambda > 0$ is the parameter of the Poisson distribution (which is equal to both the expected value and the variance of Y_{ij}), $\lambda_{ij} = \exp(\mathbf{x}_{ij}\boldsymbol{\beta}_1 + p_{ij}\beta_2 + q_j\beta_3)$, $\mathbf{x}$ is a vector of determinants of visits to the Mournes, p_{ij} is the price per trip faced by the respondent, and

q_j is a vector of four dummies capturing the presence/absence of improvements to access, infrastructure, planning policies, management of the site. **β₁**, β_2 and β_3 are unknown coefficients. The subscripts i and j denote the respondent (i=1, 2, …, n) and the scenario within the respondent, respectively (j=1, 2, 3, 4, 5 where j=1 refers the current conditions, and j=2, 3, 4, 5 refer to the scenarios with the hypothetical CB questions. The vector **x** includes the total cost of the trip to the Mournes and to a substitute site (the Sperrins mountains) as reported by the respondent, including the cost of time, divided by the number of people for whom this cost was incurred.

To capture the panel structure of our dataset when considering the CB answers, we use a random effects Poisson model.

5. Results

Of the 4,507 surveys sent, we received 647 questionnaires back, for a response rate of 14.36%. Respondents were predominantly female (58.95%), married (60.83%), with a mean age of 54 (median age 49). A high proportion of the sample were working full time (43.72%), with 22.10% of the sample classed as retired. Most of the sample (46.62%) was educated to third level, with them having obtained a degree or higher. 88.06% of the sample were born in Northern Ireland. These results have been compared to the 2001 Census of Population for Northern Ireland, and for the most part, this sample appears to be representative of the NI population.

On average respondents had spent 2.49 days to the Mournes mountains in the last 12 months. When asked how many days they would spend in the next 12 months at the current condition, they claimed to be willing to spend 5.07 days. This result is consistent with previous studies that found that respondents may overestimate the number of days they are willing to spend at a recreational site in the future under the status quo situation (Whitehead et al, 2000). Therefore, in the CB model, when we assess how changes in the levels of infrastructures, access, planning controls and management to the area affect the number of expected days compared to the current situation, we use the expected number of days that respondents expect to spend at the Mournes in the next 12 months and not the number of days they spent in the past 12 months.

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Results from the Poisson model from the travel cost model based on the trips spent in the past 12 months is reported in table 1. The estimated coefficients have the expected signs and are statistically significant, with the coefficient for the travel cost to the Mournes being negative and the coefficient to the substitute site being positive. From this basic model we can calculate the welfare associated with visiting the Mournes, which is equal to £34.85 per year.

Table 1. Travel cost model. Poisson model. Dependent variable is number of days at the Mournes in the last 12 months.

	Poisson model (1)	
	Coeff	t-stat
Constant	0.539152	18.297
COST_Mournes	-0.06105	-11.733
COST_Ssperrins	0.062983	12.112
Observations	647	
Log likelihood function	-2472.586	
	WTP (GBP)	s.e.
Annual access value (consumer surplus)	34.85	3.44

In table 2 we report the outcome from two models that augment the travel cost model with the CB questions. Model (2) is a Poisson model, while Model (3) exploits the panel nature of our dataset. Looking at the log likelihood function, Model (3) well greatly outperforms model (2) and well captures the heterogeneity among respondents. The coefficients of model (3) have the expected signs and are statistically significant, with access being the most important aspect, followed by infrastructures, planning and finally management. The bottom of table 2 presents the consumer surplus changes for the improved levels of the four attributes considered in the CB questions, compared to the expected number of trips in the next 12 months under the current situation. The results show that respondents are willing to pay £3, £4.60, £2.17, £1.27 extra pounds per year for an improvement in infrastructure, access, planning policies, and management respectively. If all of the four attributes were improved, our respondents would obtain a welfare change of about £12 per year.

Table 2. Contingent behaviour model. Poisson model and Random effects Poisson model. Dependent variable is number of days at the Mournes in the next 12 months under the current condition, improved infrastructure, access, planning and management.

	Poisson Model (2)		Random Effects Poisson Model (3)	
	Coeff	t-stat	Coeff	t-stat
Constant	1.342782	86.016	1.358822	12.471
COST_Mournes	-0.07044	-44.804	-0.0966	-12.268
COST_Sperrins	0.071944	45.788	0.097894	12.317
INFRASTRUCTURES	0.090474	5.393	0.064641	3.42
ACCESS	0.100579	5.999	0.09759	6.629
PLANNING	0.041032	2.386	0.047225	2.597
MANAGEMENT	0.024638	1.506	0.027929	1.691
Alpha			1.85023	20.416
Observations	3235		3235	
Log likelihood function	-17193.05		-6533.722	
Consumer surplus change for…			WTP (GBP)	s.e.
…Improved infrastructures			3.001006	0.941846
…Improved access			4.606961	0.847451
…Improved planning			2.173256	0.879431
…Improved management			1.272863	0.770923
…Improved infrastructures, access, planning, management			12.04108	1.759921
…Improved infrastructures, access			7.9156	1.421172

6. Conclusions

This paper has shown results obtained from a recent study which merged revealed and stated preference techniques to elicit respondents preferences to a National Park designation in Northern Ireland. Given that no National Parks have yet been designated, it is anticipated that these results will be beneficial to the key stakeholders and will allow for a more thorough, authentic stakeholder process in due course. This seeks to further develop Collaborative Planning by arming stakeholders with better information than was previously available to them, and by involving them at each stage within this research, it is anticipated that a higher level of discourse can be achieved.

By undertaking a non-market valuation e survey, it was possible to test the geographical spread of respondents who have use values for the Mournes, and analyse the costs they incur by coming into the area (using ArcGis). The TCM components returned comprehensive estimates relative to wage rates, timevalue and distances respondents travelled. By combining CB within the survey, it was possibly to gain an insight into possible behavioural changes of respondents, based on the presentation of hypothetical scenarios for the next 12 months. By asking respondents to specify whether they would visit the Mournes should a particular scenario be present allowed for a comparison of past and future behaviour. Estimates suggest that although they are relatively close, most will overestimate the number of days they would go to an area over the number they have previously gone.

This paper has used simple Poisson for two of the attributes tested. Little investigation has been carried out for the heterogeneity among respondents. In future analysis we aim to explore more flexible models, like negative binomial models and to better capture the heterogeneity among respondents.

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