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Understanding individuals' preferences for coastal walking trails: an Irish case study

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Understanding individuals' preferences for coastal walking trails: an Irish case study

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Abstract

The paper examines individuals' attitudes towards the development of formalised coastal walking routes such as way marked ways. The provision of walking trails can facilitate individuals in meeting health related guidelines for physical activity. Moreover, formally developed coastal walking routes can have substantial benefits for individuals as a recreational resource and can be a tool for promoting economic development in marginal rural areas. Just over half (53%) of the individuals surveyed favoured the development of these formal walking routes. Respondents in the survey and focus groups also reported that the 'certainty of access', increased safety and potential for increased use and subsequent tourism benefits were the major benefits behind the development of way marked ways. The results of a logit model also suggest that individuals cannot be considered a homogeneous group with regard to their preferences for the development of formalised walking trails.

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Introduction

Society utilises the countryside for a variety of recreational purposes such as for walking, mountaineering, cycling, swimming and surfing (Mountaineering Council of Ireland, 2005; Hynes and Hanley, 2006; Irish Sports Council, 2006). In recent times, factors such as greater affluence, urbanization and changing values have all operated to increase the demand for recreational amenities. Moreover, it is now widely recognized that rural based recreational activities provided through amenities such as walking trails have the potential to deliver significant economic benefits to rural areas through tourism based revenue and as such can be an important tool for rural and regional development (Moore and Barthlow, 1998; Lane, 1999; Vaughan et al., 2000; Failte-Ireland, 2005).

In addition to its benefits as a land based recreational resource, there have been numerous reported positive health related outcomes associated with walking activities (Gebel et al., 2007). A growing proportion of the population in western societies is not physically active leading to the increased prevalence of sedentariness and obesity. Recent research has determined that environmental changes such as the provision of walking trails, cycle paths, public outdoor recreational settings or even building and street design can increase the likelihood of more active behavioural choices (Sallis et al., 1998: 2002; Bauman et al., 2002). Walking is the physical activity that perhaps offers the most scope for public health benefits as it is the most commonly reported physical activity of adults and, in addition, the public health literature has long established walking as the physical activity indicator that is most open to influence (Owen et al., 2004).

Walking activity is viewed by many people as natural and a healthy antidote for the stresses and strains of modern life (Roberson and Babic, 2009). It is especially promising as a means of improving the health related outcomes for individuals with a low prevalence of physical activity because of its relative accessibility for all population subgroups. It has been shown that access to walking trails can have a positive impact on trail use (Brownson et al., 2000; Troped et al., 2001). In effect, the provision of walking trails or other measures aimed at facilitating walking activities could potentially become a cost effective public health initiative that can be used to help people meet physical activity recommendations (Librett et al., 2006).

Despite its numerous reported benefits, the provision of walking trails has been problematic in the Republic of Ireland as in a number of instances landowners have prevented recreationalists from accessing their land. As a potential solution to problems relating to public access to the countryside policymakers in the Republic of Ireland have sought to create a number of formal walking routes along specific trail paths with relevant trail facilities (called way marked ways). On these formalised walking routes the general public will be granted a general right of access and the relevant local authority will be responsible for its maintenance and will provide relevant trail infrastructure and facilities. Using an informal but established short distance coastal walk in Galway in the West of Ireland, the overall aim of this paper is to examine respondents' preferences towards the development of these walking trails.

Policymakers in the Republic of Ireland recognise that there is an under-supply of public access to the Irish countryside (O'Cuiv, 2004). In 2004, the responsible Ministry (Community, Rural and Gaeltacht Affairs) set up a countryside recreational

council 'Comhairle Na Tuaithe' to examine the issue of access to the Irish countryside, develop a countryside code and develop a countryside recreation strategy. The council noted how countryside recreation can improve our health and well-being and assist the development of sustainable rural communities. Significant progress has been made on the latter two objectives (Comhairle na Tuaithe, 2006), but the problematic issue of access and the policy instrument used in its delivery remains (O'Reilly 2006).

Problems in relation to public access is not a situation unique to the Republic of Ireland as issues relating to public access to land for outdoor recreation are a contemporary preoccupation amongst government's worldwide (Millward, 1993: Curry, 2001; 2004). In England there is no public right of access to the countryside and landowners have often prevented individuals from walking across their land. Virtually all of the land in England is under private ownership and access to the countryside has historically been possible through an extensive network of rights of way (Mulder et al., 2006). However in recent years, two major pieces of legislation have given the public rights to access a much greater share of the countryside. The first was the Countryside Rights of Way Act 2000 (CROW). While this did not grant the right to walk anywhere it did permit access on foot to 936,000 hectares of mapped, open, uncultivated countryside. The second development, a new Marine Bill announced in April 2008, relates to coastal access. The intention of this Bill is to give rights to the general public to access beaches, dunes and headlands along a coastal strip.

In France, and similarly to England and the Republic of Ireland, rights to privacy and the private ownership of land take precedence in the countryside. Traditional rights of access are largely restricted to pre-existing public rights of way. Private ownership rights are also dominant in the Dutch countryside as access rights relate primarily to public rights of way such as public roads, cycle-ways and footpaths and public access to seashores. Outside Europe, all states in the USA (with the exception of Maine) have a legal situation where landowners control the right of access (Acheson, 2006). Likewise, in New Zealand, access is not freely available to privately managed lands except where well established routes are in place (Fitzpatrick, 2005). New Zealand does, however, have a relatively large share of its land mass in the form of national parks where the general public are allowed access for recreational activities.

There are many countries where access works well in that the general public has the right to walk (with some exceptions) wherever they want. For example, the Scandinavian countries, Germany and Switzerland have traditional rights of access (Scott, 1991; 1998). In Norway, access to private land by the public exists through the concept of Allemannsretten ("Everyman's Right" or "The Right of Common Access"). This allows the public to travel across, enjoy start stays and the right to pick natural products such as berries, flowers and mushrooms in the countryside. A law formalizing the principle of public access was passed in 1957 through the Outdoor Recreation Act. Sweden enjoys similar rights of access to that of Norway albeit without the same level of legislative protection. In Denmark the 1968 Conservation of Nature Act permits walking in state forests and other public lands, on beaches; rural roads and paths; roads and consolidated paths in forests and on uncultivated and unfenced land. The traditional right of public access (Betretungsrecht) has been given

a modern statutory basis in Germany. The basic principle is that of a public right of access to forests, unenclosed land and foreshores, and along footpaths and roads. Public access is seen in these countries as part of their cultural heritage and in addition there is a strong emphasis on not disturbing or destroying any part of the owners' property while accessing their land.

In a study by Buckley et al. (2009b) a variety of issues such as nuisance impacts (interference with agricultural activities), insurance liability and potential invasion of privacy were reported as the main reasons why landowners may be unwilling to allow public access to their farm land for walking activities. One potential solution to facilitating access to private land for walking and other recreational activities are what have been termed way-marked ways. A way-marked way represents an informal permissive agreement between the landowner, the local authority and the Irish Sports Council. They are operated on a non statutory basis where they are managed and maintained by local authorities and landowners are not compensated for access. In 1978 the National Way-marked Ways Association of the Irish Sports Council was set up to establish way-marked ways throughout the Republic of Ireland. On these walking trails, landowners have agreed to allow public access to specific parts of their land for recreational activities. The relevant local authority is responsible for the maintenance of the walking route and generally provide a range of relevant trail infrastructure such as stiles/footbridges and signage.

This scheme has, however, had limited impact on the provision of walking trails as landowners are not compensated for public access provision and as such often restrict individuals from accessing their land. More recently, a pilot Walkways Management

Scheme was launched in 2007 by the national government where a limited number of landowners are compensated for the development and maintenance of pre-existing walking trails. Under this scheme, landowners receive payments for the development, maintenance and enhancement of approved, way-marked ways, and looped walking routes that pass through their land. Some €4 million has been provided for the scheme in 2008 and four existing trails have been selected for this pilot project. A similar measure called the Woodland Welcome scheme has been piloted by the Forestry Commission in the South East of England. Similarly to the "walkways management scheme" piloted in the Republic of Ireland, farmers in this scheme have been offered remuneration for their services in developing and maintaining the walking trail.

Given this policy background this paper is structured as follows. Firstly, using survey responses and focus group data, individuals' attitudes towards the development of a formalised walking route such as a way-marked way are examined. This is followed with an analysis of the importance individuals place on various walking related features on their enjoyment of walking in the countryside. Next, a binary logit model is formulated to explore individuals' preferences towards the provision of trail infrastructure such as car parking, information points and a defined trail on walking routes. Analysis of individuals' attitudes towards walking related attributes can provide information from which policymakers can ascertain if policy measures in relation to the provision of walking trails and public access to the countryside are in line with citizens' views and needs. Finally, this paper concludes with a discussion of its major findings and their implications for public access provision.

Methodology

The standard theoretical framework used to examine site recreational choice (in a setting such as ours, this is characterized by the individual's choice between several walking sites with varying perceived attributes) is utility theory. An individual chooses from a number of alternatives (e.g. walking sites) and selects the one that yields the highest expected utility level on any given choice occasion. Assume that an individual, *n*, has *J* possible multi-attribute walking sites from which to choose. The total utility perceived by individual *n* from visiting a candidate site *i* is assumed to be given by:

$$U_{in} = V(X_{in}, y_n - p_{in} \mid \boldsymbol{\theta}_n, z_n) + \varepsilon_{in} = V_{in} + \varepsilon_{in}$$

Here, V_{in} is the indirect utility function from visiting walking site *i*, $\boldsymbol{\theta}_n$ is a vector of individual specific parameters, z_n are individual-specific covariates, ε_{in} is the stochastic element of utility, X_{in} is a vector of perceived site attributes, y_n is income and p_{in} is travel cost. Whenever the utility from walking visiting site *i* is greater than the utility from visiting all other sites $j \in J$, site *i* will be chosen. Within this framework, the individual will chose the walking location (based on her perception of the characteristics of that area) that yields her the highest level of satisfaction or utility. The attitudes towards walking related attributes are what drive the decision making process of the individual and it is theses attitudes that we examine in the following sections.

Case study site and survey design

The case study site is Omey Island which is a tidal island of approximately 1 sq mile located six miles North West of the town of Clifden in the Connemara region of County Galway. Tourism has long been promoted as the main strategy for regional

development in this area as its combination of lakes, mountain ranges, bogs and coastline make it an ideal location for outdoor activity, particularly walking. To access Omey Island one has to cross almost 1 km of tidal sands which is impassable for two hours either side of high tide. The trail itself is a low lying looped walk of approximately 5.5 km in length, along small roads, open track ways and beaches. In terms of facilities, the route has limited direct (signage, stiles, information point etc.) and indirect backup (car-parking) infrastructure.

Omey Island is predominantly commonage land and as such has many shareholder owners and communal grazing of livestock. Commonage refers to land on which two or more farmers have grazing rights (Lafferty et al., 1999). Under common law, land held in commonage is seen as a tenancy in common. Each tenant holds an undivided share in the property and has a distinct and separate interest in the property (Pearce and Mee, 2000). Similar to access on to private land in single ownership, access to commonage land is not a de-facto right in Ireland but dependant on the goodwill of landowners.

To examine opinions on the development of walking trails a survey of visitors was conducted during the months of July – September 2005. A pilot phase was undertaken prior to the main survey. Interviews were conducted on site and in person and lasted approximately 30 minutes. A total of 240 valid responses were secured. To advise on the survey design a panel of experts with relevant experience was established. The panel consisted of an archaeologist, a walking tour operator based in Connemara, an ecologist and an academic with extensive experience in the field of tourism economics. In consultation with this panel of experts and using the tourism

and walking literature (Kay and Moxham, 1996; Curtis and Williams, 2004; Visit-Scotland, 2004) a number of walking-related attributes were selected for examination in the on-site survey. It is important to point out that the sample of individuals surveyed were those already engaged in walking activities and as such may not be representative of the entire population. That said, it is felt that this serves as a useful case study in examining preferences towards the development of formal walking trails.

Focus groups

To provide a qualitative dimension to the study two focus groups were organised consisting of 8 participants in each. Focus groups were used to further probe prominent issues raised in the questionnaire survey, providing a more intensive method to gain additional depth and understanding of key issues. As Asbury (1995) suggests focus groups can give greater insights as to why certain opinions and beliefs are held by respondents. This insight is difficult to achieve with other quantitative research methods. The first focus group consisted of mature students organised through a student association in a University in Galway who were all familiar with walking trails in the Galway region. The second focus group consisted of members from a mountaineering club in Galway. The focus groups were designed to acquire a more detailed understanding of issues raised through the analysis of responses to the survey.

Attribute analysis

A principal component factor analysis was performed on respondents' importance ratings of various walking attributes. Factor analysis has widespread applications because of its potential to condense the information contained in a number of original

variables into a smaller set of dimensions (factors) with a minimum loss of information. In particular, factor analysis seeks to establish if a large number of variables can be mostly explained by a much smaller number of variables often called factors. Factor analysis is carried out by analyzing the pattern of correlations (or covariances) among a number of variables and transforming a set of correlated variables to a smaller number of uncorrelated variables.

The smaller number of resulting uncorrelated variables helps the researcher to better understand the data and can be more useful in subsequent analysis where one can operate with a smaller number of variables. In other words, as Chatfield and Collins (1980) describe, one of the main uses of factor analysis lies in reducing the dimensionality of the data in order to simplify later analysis. In this paper, factor analysis is employed to reduce the data pertaining to respondents' importance ratings of a number of walking related features into a smaller set of variables for use in further multivariate analysis.

Model specification

A binary logit model was formulated to examine the effect of personal characteristics, familiarity with way marked ways and intensity of walking activities on individuals' preferences for the provision of various trail facilities (see Greene, 1997 and Long and Freese, 2006 for a more detailed description of this type of estimation). Binary logistic models of this type have been used extensively in the health sciences as they are particularly apt for models where, for example, disease state (diseased/healthy) and decision making (yes/no) is the dependent variable (see Bagley et al. 2001 for examples). In more recent times, however,

they have been employed across a much broader range of disciplines in the social sciences including that of environmental policy (see for example Parkes et al., 2002 and Howley et al., 2009) because of their ability to model dichotomous outcomes.

Results

Preferences for walking trails

Respondents were asked to give their opinion on a scenario currently being proposed where an informal but established short distance coastal walk at Omey Island (off the coast of Galway in the West of Ireland) would be formally developed and maintained as a recreational walking resource for the general public. Under this scenario, access would be agreed with landowners through a 5 year access agreement. Survey respondents were told that:

> Although this route has been used by walkers for many years and is fairly well documented it is not covered by an official access agreement and the trail is not maintained. Access to the route is informal and dependent on the goodwill of the landowners. This could be withdrawn at any time thereby legally preventing walkers from using the route. We are investigating the feasibility of formally developing this route as an official way marked way. As a way marked way this walking route would be covered by an official access agreement made between the Irish Sports Council, the local authority and the landowners concerned. This agreement would provide public access to this walk for a period of 5 years. The agreement would also ensure that the walk is maintained and that sign posts, stiles and map boards would be provided.

Respondents were then given the following two options and asked which one they prefer:

Option 1: Maintain the status quo with informal access and no trail maintenance on the walking route.

Option 2: Develop the walking route as an official way marked way with trail maintenance for 5 years.

A total of 240 valid surveys were conducted on site in respect of the proposed hypothetical walking scenario. In all 126 respondents (53%) preferred the proposed way-marked way scenario while 114 (47%) had a preference for the status quo situation to remain. When asked why they preferred the status quo, 82% of respondents stated they preferred a more natural or undeveloped environment. A further 9% stated it would become overcrowded or too commercialised, while 9% gave other reasons. Those favouring the way-marked way scenario indicated guaranteed access (43%), ability to walk while protecting the environment (27%), promotion of tourism (16%) and improved ease and safety while walking (16%) as the main rationale for their preference.

Two focus groups were organised to provide a deeper understanding of respondents' preferences in relation to the provision of formal walking routes with trail facilities. The main advantage reported by focus group participants for developing a walking trail such as the one described above related to what one respondent described as *"certainty of access"*. Participants reported that they often felt nervous about using walking trails as they were unsure whether landowners wanted them accessing their land. As one respondent commentated in describing the potential advantages of a way-marked way: *"I have felt quite nervous before coming across people in places*

which is quite stressful and I would rather have a relaxed walk knowing I have the right to be there".

Participants also reported that once people know that they have certainty of access then this will encourage use of the walking trail. This, in turn, will, as one participant described "*help tourism which will be a big help for the local community"*. One further advantage reported by respondents was the potential for improved safety on walking routes resulting from the provision of relevant trail infrastructure. Finally, many focus group participants felt that a formal trail structure could help to minimize erosion and damage to the natural environment.

Participants reported that the biggest disadvantage associated with the development of a formal trail structure was that the addition of trail facilities can "*take way from the natural beauty of the place"*. As one participant stated: "*Ireland's natural environment is what draws visitors to the countryside in the first instance and the walk should be kept as natural as possible*". Some respondents also felt that formalising walking trails could lead to overcrowding thus diminishing their own enjoyment of walking trails. One final issue raised by the focus group participants from the mountaineering club was that the presence of various trail facilities can lessen the challenge of undertaking these walking trails. As one participant commentated *"most of us prefer the challenge of navigating and finding our own way"*.

The importance of walking related attributes on individuals' enjoyment of walking in the countryside

Respondents were given 17 statements describing various walking related features and asked to indicate by circling the appropriate number on a scale of 1 (unimportant) to 5 (most important) how important or unimportant was the presence of these walking related features in their enjoyment of a walk in the countryside. The descriptors offered were: unimportant, neither important/unimportant, somewhat important, very important and most important. Attributes were examined under 3 main headings: landscape features, biodiversity, and trail facilities. Attributes tested in relation to landscape features included a mountain, flat area or valley, forest and a lake or coast. In relation to biodiversity, the features examined included the presence of wild animals, birds, livestock and wild flowers. Finally a variety of attributes in relation to trail facilities such as: an information point, a map or guide, a defined trail, route signs, a car park and a guaranteed access agreement with landowners were included for analysis. Table 1 list all the various walking related attributes and the mean scores of each for all respondents.

The attribute that attracted the highest mean score from respondents related to having a lake or a coast on the walk. This is consistent with many landscape preference studies in which water related features is often reported as the most desirable landscape feature for individuals (Steinitz, 1990; Dramstad et al., 2006). However, it must be noted that the sample of individuals surveyed were all in a coastal area and as such would be expected to have a strong preference for lake and coastal environments. This was closely followed by the need for a clearly agreed access agreement with landowners. This highlights individuals' awareness of current problems in relation to access to the countryside for recreational purposes. The lowest mean scores were for trail facilities such as a route map, an information point and signposting. That said,

while these attributes attracted the lowest mean scores they were still held as important by respondents with a median score of 3 (somewhat important).

Insert table 1 here

To simplify the study, factor analysis was used to identify underlying factors that would assist in understanding the observed response patterns. In the case of environmental preferences it has been previously used to disentangle consumers' attitudes to various features of the environmental landscape (see Kline and Wichelns, 1996; 1998; Karp, 1996; Kaiser et al., 1999; Nunes, 2002). As the walking related attributes could be classified under three headings, namely landscape features, biodiversity and trail facilities a factor analysis (principal component with varimax rotation) was employed to extract three factors. As can be seen from Table 2 the three factors extracted all had an eigenvalue greater than one and explained 55 percent of the variance in total.

Factor 1 has high factor loadings (or cross correlation coefficients) on various trail facilities such as an information point, route map, defined trail, signposting, stiles/footbridges, car park and an access agreement with landowners and accounts for 28 percent of the variance in importance ratings of walking attributes. This factor has therefore been termed 'trail facilities'. Factor 2 has a high factor loading on various scenic features of the countryside such as mountains, flat area or a valley, a forest and finally a lake or a coast and explains just under 17 per cent of the variance in importance ratings. This factor has therefore been characterized as 'landscape features'. Finally factor 3 has high factor loadings on the presence of birds, wild flowers and wild animals and explains almost 10 per cent of variance in importance ratings. This factor has therefore been termed 'biodiversity'. The variable

representing the presence of livestock on a walking trail has a high factor loading for both factor 2 and 3 and it is held as representing both as it logically fits both factors.

Insert table 2 here

In addition to factor loadings, individual factor scores were produced which were the scores of an individual on a particular factor. The scores measure the degree to which individuals' attitudes regarding various walking attributes deviate, either positively or negatively, from the sample mean score for each factor. In the following section, the individual factor scores for factor 1 (trail facilities) were used as a dependent variable in a binary logit model designed to determine if there were any variables that distinguished respondents who felt the provision of trail facilities on walking trails were important from respondents who felt they were not important. The dependent variable (factor 1) was split into two categories, those with a factor score greater than 1 and those with a factor score less than 1. This split ensured an equal number of respondents in both groups. Respondents with a factor score greater than 1 were classified as rating the provision of trail facilities and infrastructure as important while those with a factor score less than 1 were classified as viewing it as not important.

The factor scores have the advantage in that large numbers of highly correlated variables (in this instance respondents' opinions on a variety of walking attributes) can be reduced to a smaller more manageable number of uncorrelated variables thus eliminating any potential multicollinearity problems. Each of the respondents factor scores are relative to the sample mean, which corrects for any potential bias accruing from respondents giving positive responses "yea-saying" which could potentially

inflate support for certain walking attributes (Boyle et al., 1998; Johnston et al., 2003).

Insert table 3 here

Model results: Examining individuals' preferences for the provision of trail facilities

A binary logit model was developed to examine the effect of personal characteristics (age, gender, education, income, presence of children), familiarity with way marked ways and intensity of walking activities in predicting the importance respondents placed on the provision of trail infrastructure and facilities (as captured by factor 1). The regression results from the binary logit model are presented in Table 4. The log likelihood χ^2 statistic shows that, taken jointly, the coefficients in the binary logit model are significant at the 1% level.

In relation to the socio-economic variables examined, age, gender and the presence of children were all found to have a significant influence. More specifically, individuals who were 50 years of age or older were much more likely to feel that the provision of trail facilities are important. Additionally, respondents who had children and/or were female were also much more likely to rate the provision of trail facilities as important. It could be hypothesised that for these individuals the increased convenience and safety provided by the provision of trail facilities are more relevant. Respondents who used a way-marked way in the past were also more likely to feel the provision of trail facilities were important rather than those who never used a way-marked way. This would suggest that experience with way marked ways which are characterized by formal trail facilities has a positive impact on respondents. However, it must be noted

that individuals who already have a positive predisposition for walking trails with a high level of trail facilities may be more likely to have used way-marked ways.

Respondents were also asked how often they undertake a walk of the following duration: a walk of six hours or greater, a walk of between 3-6 hours, a walk of between 2-3 hours and finally a walk of less than or about 1 hour. In total, 36% of respondents reported that they at least occasionally undertake a walk of six hours or greater. Interestingly respondents who undertake relatively more difficult walks (classified here as respondents who have undertaken walks of six hours or greater) are less likely to feel the provision of trail facilities are important. For these walkers their primary motivation may be to experience a challenge and they may prefer to walk in a more natural undeveloped environment. This would be consistent with the results from the focus groups where a number of participants from the mountaineering club commentated that providing trail facilities can take way from the challenge of undertaking walking based recreational activities.

Insert table 4 here

Discussion and Conclusion

The provision of walking trails can facilitate individuals in meeting health related guidelines for physical activity. Moreover, formally developed coastal walking routes can have substantial benefits for individuals as a recreational resource and can be a tool for promoting economic development in marginal rural areas. Despite the potential benefits accruing from use of the rural landscape, public access to private farm land is a contentious issue with many landowners restricting public access. Concerns surrounding potential negative impacts on production activities are often

cited as potential reasons why landowners may be unwilling to allow access to their land for recreational activities (see Buckley et al., 2009b).

One potential solution to facilitating access to private land for walking and other recreational activities is the development of way-marked ways. A way-marked way represents an informal permissive agreement between the landowner, the local authority and the Irish Sports Council whereby specific walking routes are developed and maintained by local authorities. On these walking trails, landowners agree to allow unrestricted public access on specific walking trails through their land and the relevant local authority is responsible for their maintenance and provide relevant trail infrastructure such as signage, stiles and information points etc.

Within this context, this paper examined individuals' attitudes towards the development of formalised walking routes such as way marked ways. Just over half (53%) of the individuals surveyed favoured the development of these formal walking routes. Respondents in the survey and focus groups also reported that the 'certainty of access', increased safety and potential for increased use and subsequent tourism benefits were the major benefits behind the development of way marked ways. That said, it is important to note that the formal development and maintenance of walking trails is not favoured by a large proportion of individuals as almost half (47%) of respondents in the sample preferred the status quo, namely informal access with no trail maintenance. This cohort generally prefer to walk in what they perceive as a more natural environment and fear the addition of various trail facilities will have an adverse effect on the scenery on walking trails.

In reporting on the importance of a variety of walking related attributes, the attribute that attracted the highest mean score from individuals related to having a lake or a coast on the walk. This would be consistent with a variety of landscape preference surveys in which water related features is often the attribute that individuals find most desirable. In relation to access to the countryside, respondents appear to be highly aware of problems regarding public access to the countryside as the need for a clearly agreed access agreement with landowners was the attribute that attracted the second highest mean score.

The results also suggest that individuals cannot be considered a homogeneous group with regard to their preferences for the development of formalised walking trails. More specifically, results from a binary logit model suggest that certain cohorts of the population are more likely to prefer trail maintenance and the provision of various trail facilities. In particular, individuals who are relatively older, female and/or have children are much more likely to rate the provision of various trail facilities (such as an information point, route map, defined trail, signposting, stiles/footbridges, car parking and an access agreement with landowners) as important. It could be hypothesised that the provision of trail facilities to improve safety and ease of use is relatively more important for these individuals. On the other hand, individuals who engage in relatively longer and more challenging walks are less likely to feel the provision of trail facilities and infrastructure is important. It could be that these individuals feel the addition of trail facilities will lessen the challenge and the associated overall sense of satisfaction with completing these walking trails.

This split between those who prefer 'certainty of access' and trail facilities and those who prefer to walk in a more natural undeveloped setting suggests that there is unlikely to be one policy approach to address the needs of consumers. Certainly the present situation in relation to public access to the countryside is a constraint on tourism development and moreover any measures to increase public access to the countryside for walking activities can also have significant health benefits. As such, any efforts towards the development of formalized walking trails with associated trail infrastructure and guaranteeing the right to public access will bring significant benefits to rural regions. That said, such measures will not meet the needs of all individuals. Policymakers must be careful not to destroy the experience of public access to the countryside for walking activities for one group of individuals in order to cater for the needs of others. Any long term solution will need to cater to both the needs of those who value the provision of trail facilities and related infrastructure and those who prefer to walk in a more natural and undeveloped setting. This suggests the need for a nuanced policy response, one that is capable of meeting the needs of a diverse group of individuals.

Collaborative forums may help policymakers to weigh and balance the competing viewpoints when it comes to the provision of formal walking routes, and to learn more about the issues at hand. The establishment of local forums could provide a means of galvanising support for a possible future walking scheme. Such forums should not only promote the involvement of the general public but also the involvement of landowners in the design and development of any future access schemes. This could empower individuals with a view to making use of local knowledge in the management of future 'access areas'.

Arguably, the provision of public access to the rural landscape represents a multifunctional role agriculture can play in the utilisation and development of managed landscapes in marginal rural areas (Buckley et al., 2009a). The results presented in this paper could be used by the providers of public goods in the countryside, such as local government authorities or rural development agencies, to design walking trails that are targeted towards the needs of individuals. Any measures aimed at facilitating public access to the countryside for recreational activities can only improve society's health and well-being as well as bring significant economic benefits to rural communities through increases in tourism revenue.

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List of tables

Table 1: Opinions on the importance of walking attributes

	Mean	Median	Std. Dev.
That a walk includes a lake or a coast	3.86	4	0.94048
That a walk has access clearly agreed with landowners	3.604	4	0.94498
That a walk has wild flowers	3.326	3	0.98759
That a walk includes a flat area or valley	3.185	3	1.01046
That a walk has stiles and footbridges if required	3.119	3	1.03311
That a walk has car parking	3.107	3	1.03378
That a walk includes a forest	3.104	3	1.04978
That a walk has birds	3.058	3	1.09552
That a walk includes a mountain or hill	3.012	3	1.1051
That a walk has wild animals	2.819	3	1.11168
That a walk has an established clearly defined trail	2.759	3	1.11447
That a walk has livestock (cattle/sheep/horses)	2.701	3	1.11723
That a walk has signposting	2.7	3	1.12258
That a walk includes an information point with a route description	2.623	3	1.1403
That a walk includes a route map/guide or leafleat provided	2.527	3	1.2014

Table 2: factor analysis, extraction of three factors with an eigenvalue > 1

	Initial eigenvalues			Rotation sums of squared loadings		
Factor	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.21	28.065	28.065	3.188	21.255	21.255
2	2.506	16.707	44.771	2.521	16.81	38.065
3	1.475	9.831	54.603	2.481	16.537	54.603

Table 3: Rotated factor matrix showing factor loadings for each answer item (values > 0.4 are in bold

	Factor 1: Trail infrastructure	**Factor 2: Biodiversity**	**Factor 3: landscape features**
Information Point	**0.642**	0.058	0.42
Map / Guide	**0.688**	0.145	0.276
Signs	**0.797**	-0.002	0.072
Defined trail	**0.76**	-0.073	0.095
Stiles / Footbridges	**0.678**	0.131	-0.124
Car Park	**0.453**	0.283	-0.123
Access agreed with landowners	**0.53**	0.224	-0.183
Wild Animals	0.131	**0.795**	0.184
Birds	0.106	**0.85**	0.188
Livestock	0.138	**0.533**	**0.479**
Wild Flowers	0.107	**0.762**	0.114
Mountain or hill	-0.193	0.268	**0.567**
Flat area or valleys	0.198	0.022	**0.609**
Forests	0.053	0.101	**0.782**
Lake or a coast	-0.066	0.207	**0.731**
Extraction Method: Principal Component Analysis.			
Rotation Method: Varimax with Kaiser Normalization.			

Table 4: Logit model of individuals' importance ratings for the provision of facilities (factor 1)

Independent variables	**Coefficient**	**Std. Err.**	**P>z**
Aged over 49	0.66*	0.35	0.06
Female	0.72*	0.31	0.02
Have Children	0.93**	0.31	0.00
Third level education	-0.06	0.34	0.86
Income	0.04	0.07	0.63
Familiarity with way-marked ways	0.84*	0.36	0.02
Walked six hours or greater	-0.78*	0.34	0.02
Constant	-.056	.42	.18
Pseudo R^2	0.11		
Log likelihood	-132		
Likelihood ratio $\chi^2(7)$ test	31.2		

**significant at the1% level, *significant at the 5% level


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