

The Rural Economy Research Centre

Working Paper Series

Working Paper 10-WP-RE-06

Public access to the countryside: An exploration of the costs and benefits of farmland walking trails

**Peter Howley^{1*}, Edel Doherty², Cathal Buckley¹, Stephen Hynes³, Tom van
Rensburg³ and Stuart Green¹**

¹Rural Economy Research Centre, Teagasc, Athenry, Galway, Ireland

² Gibson Institute of Land, Food and the Environment, Queen's University Belfast

³ National University of Ireland, Galway, Ireland



**For More Information on the RERC Working Paper
Series**

Email: Cathal.odonoghue@teagasc.ie,
Web: www.tnet.teagasc.ie/rerc/

RERC

**Public access to the countryside: An exploration of the costs and benefits of
farmland walking trails**

Peter Howley^{1*}, Edel Doherty², Cathal Buckley¹, Stephen Hynes³, Tom van
Rensburg³ and Stuart Green¹

Abstract: Despite the potential benefits accruing from use of the rural landscape access to farmland is a contentious issue with many landowners restricting public access. Within this context, this paper first explores general public preferences and willingness to pay for farmland walking trails in the Irish countryside. Second this paper examines farmers' willingness to participate in a hypothetical walking scheme whereby the general public will be allowed access to specific trails. Results suggest that individuals are not a homogeneous group with regard to their preferences for farmland walking trails as there are significant differences between likely users and non-users. From a supply perspective results suggest that a significant number of landowners are willing to allow public access provided there is no personal cost to them. In addition, this paper identified significant regional variations in farmers' attitudes relating to public access. More generally, the analysis presented here would suggest that there is significant scope for policy intervention to improve public access to the countryside.

Corresponding Author: Dr. Peter Howley

Email: peter.howley@teagasc.ie

Introduction

Despite the potential benefits from walking based recreational activities, public access to the countryside for walking activities in the Republic of Ireland and many other countries is often restricted. This is a serious constraint on tourism development especially in rural areas where it is now widely recognised that rural based recreational activities have the potential to deliver significant economic benefits 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). A variety of issues such as potential interference with agricultural activities, insurance liability and potential invasion of privacy have been reported by landowners as reasons why they may be unwilling to allow public access to their farmland for walking related activities (Mulder et al., 2006; Buckley et al., 2009).

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). In most Western countries, a growing proportion of the population is not physically active, and the increased prevalence of sedentariness and obesity is a growing public health concern. Recent research has determined that environmental and policy initiatives such as the provision of walking trails can increase the likelihood of more active behavioral choices (Owen et al., 2004; Sallis et al., 1998: 2002; Bauman et al., 2002). 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).

All land in the Republic of Ireland is owned either by state bodies or private individuals and potential recreational users do not have a de-facto legal right of entry (Pearce and Mee, 2000). As such, any individual entering privately owned farmland challenges the right to exclusive use, and may be expected by the landowner to leave. This 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).

Recently, market based approaches where farmers are compensated for public access provision has been employed as a solution to restrictions on access to farmland. The principle here is that a statutory agency compensates landowners for both access to their land and the development / maintenance of walking trails. Some examples of such initiatives include the Countryside Stewardship Scheme in England and the Tir Cymen Scheme in Wales. Initiatives under the Countryside Stewardship Scheme in the UK has had a limited impact on the provision of permissive footpaths, access bridleways and open access land as the remuneration in the scheme is based on an 'income foregone' basis rather than an economic rent for the service provided (Mulder et al., 2006). The revenue lost – for instance in the form of animal or crop production - is replaced by the subsidy for increased public access. As such, the landowner is technically no better off in financial terms for allowing increased access which in turn provides little incentive for them to allow public access for recreational activities. The Woodland Welcome scheme, in contrast to the Countryside Stewardship Scheme, offered landowners remuneration based on an economic rent rather than just on the basis of income foregone (Mulder et al., 2006).

In response to growing conflict between landowners and recreationalists in the Republic of Ireland, the Minister for Community, Rural and Gaeltacht Affairs in 2004 set up a countryside recreational council (Comhairle Na Tuaithe). The role of this council was to examine the issue of access to the countryside and to develop a strategy to promote recreational activities in rural areas. A Walkways Management Scheme was set up by this council where a limited number of landowners were 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. The scheme will allow landowners to work an agreed number of hours, on an annual basis, on the section of walkway that passes through their land. They will be paid an hourly rate of €14.50 up to a maximum of €2,900 a year for this work and all materials will be supplied.

Given the potential costs to the taxpayer it is important to determine both the costs and benefits of measures aimed at promoting public access to the countryside for walking based recreational activities. Statutory agencies are increasingly required to show that the expenditure of tax payer funds on public goods is justified by the benefits obtained. In this context, this paper examines both the general public's preferences towards the provision of farmland walking trails and the attitudes of landowners to the issue of public access to the countryside.

To date, estimates of individuals' willingness to pay (WTP) for access to the countryside have typically been on sites of special interest such as developed walking

routes, public rights of way in specific areas, national parks and forests (see Lockwood and Tracy, 1995; Bennett and Tranter, 1997; Crabtree and MacDonald, 1997; Liston-Heyes and Heyes, 1999; Garrod et al., 1998; Bennett et al., 2003; Buckley et al., 2009; Morris et al., 2009). There has been little if any attempt to derive estimates of individuals' WTP for the provision of walking trails in the wider countryside at a national level. The present study aims to build on previous work by examining the demand for particular types of walking trails through a nationally representative survey of the Irish population.

One further advantage of this research is that apart from valuing walking activities in a generic sense this paper investigates what types of investment in facilities associated with walking trails generate the greatest welfare gains. Furthermore, using a nationally representative survey of the farming population this paper examines farmers' willingness to participate in a hypothetical walking scheme whereby the general public will be allowed access to specific trails. First by way of background this paper will discuss the situation in relation to access rights to the countryside across a number of countries. Second this paper will outline the research approach which is followed with a discussion of the empirical results. Finally this paper will conclude with a discussion of the papers main findings and their implications for the provision of public access to the countryside.

Rights to public access

Throughout Europe rights in relation to public access to the countryside differ significantly. In England, for example, virtually all land is under private ownership and access to the countryside has historically been possible through a network of

rights of way (Mulder et al., 2006) or more recently through access areas in the uplands (Keirle, 2002). 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, formally announced as part of 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 similarly to England and the Republic of Ireland, rights to privacy and private ownership of land take precedence in the countryside. Traditional rights of access are largely restricted to 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.

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 short 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. Similarly, 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 farmland.

Methodology

Two direct valuation methods namely Contingent Valuation (CV) and Choice Experiments (CE) were used in this analysis. First, choice experiments (CE) were employed to determine individuals' willingness to pay (WTP) for a variety of walking trails in the countryside. Second the CV method was utilised to derive an estimate of landowners willingness to accept (WTA) for public access provision. The CV and CE methodologies have their own relative advantages and as outlined by Adamowicz et al. (1998) and Hanley et al. (1998) valuations under each method if appropriately designed can result in similar welfare estimates. Hence, the selection of the appropriate technique can be based on other considerations such as how well different methods facilitate communicating specific policy problems to the respondents, or the easiest method for eliciting their preferences (Siikamäki and Layton, 2006).

In this paper the choice of technique was guided by the characteristics of the good being assessed. For landowners the CV method was chosen as this is perhaps more suited than CE for valuing the overall policy package (public access) or

environmental good as a whole (Siikamäki and Layton, 2006). From the consumer perspective the CE method was employed as this enables estimates to be obtained for a variety of different walking trail attributes and is more suited to valuing the individual characteristics or attributes of an environmental resource (Hanley et al., 1998).

Consumer Preferences and WTP

Choice experiments

In CEs attributes are varied in an experimental design and respondents make repeated choices between different bundles of (environmental) goods, which vary in terms of their attributes and the levels that these take. The extent to which particular attributes and their levels can influence respondents' choices (that is, their relative importance) can be ascertained by presenting a respondent with a range of choice sets (Morris et al., 2009). One of the attributes in each choice set is usually a cost variable which allows the derivation of an economic value of each attribute being examined. This approach is based on the idea that varying the levels of the attributes that make up an environmental good can help to determine the trade-offs which an individual is willing to make.

Data collection: individuals' WTP for walking trails

The data source utilised to determine individuals' demand for walking trails was a nationally representative survey of the general population based on age, gender, socio-economic and geographical stratification of respondents. A labelled choice experiment was used to determine individuals' valuations of 4 different types of farmland walking trails. The labels referred to different farmland walking trail types

and included a hill walk, riverside walk, field walk and finally a bog walk. These were the farmland walking trail types most commonly identified by respondents in the focus groups as being particularly important.

In this study a Bayesian efficient design based on the minimisation of the D_b error criterion was used to generate the choice scenarios (for a general overview of efficient experimental design see Scarpa and Rose (2008) and references cited therein). Our design comprised of a panel of twelve choice tasks. For each task the respondents were asked to choose between a combination of the experimentally designed alternatives and a stay at home alternative. All interviews were carried out face to face and took place between August 2008 and February 2009. A total of 601 useable surveys were collected for analysis. The attributes selected for inclusion in the choice tasks were chosen based on consultation with the literature, consultation with policy-experts and focus group discussions. The attributes included in the walking trails were as follows.

Length of walk: Respondents were given one of three choices in relation to the length of the walking trail. These were a trail that would take either 1-2 hours, 2-3 hours or 3-4 hours to complete.

Car parking: This was a two level attribute: the trails either had car parking facilities or not.

Fencing from livestock: Some respondents in the focus groups indicated concern over encountering livestock while using walking trails. Therefore fencing from livestock was included as a two level attribute: trails were either fenced off from livestock or not.

Trail type: This attribute had three levels: a gravel path with signage, signage along the trail but no gravel path and finally a trail with no gravel path and no signage.

Distance from home: the final attribute in each of the choice tasks related to the distance respondents would have to travel to each of the walking trails. The levels for this attribute ranged from a minimum of 5km to a maximum of 160km. These figures were then converted to a travel cost figure by multiplying the round trip distance by the average kilometre cost of travelling by car in Ireland as given by the Irish Automobile Association. Focus group participants indicated that this was a more realistic and acceptable payment mechanism than the traditional cost mechanisms (such as a tax or entrance fee). This approach is similar to that taken by Adamowicz et al., (1994); Hanley et al., (2002) and Christie et al., (2007).

In order to minimize strategic biases respondents were also asked to consider that when making their choice they should assume that the further a walk is from their home, the more costly it is for them. They were then asked to only allocate their next trip to a particular walk if you truly believe you would visit that particular walk in reality.

Model Specification

This type of analysis is based on random utility theory (RUM), which describes discrete choices in a utility maximizing framework (see Train, 2003, for more details). The main idea of the RUM model is that the individual n chooses from a number of alternatives and selects the one that yields the highest expected utility level on any given choice occasion. In this application, utility for individual n for alternative i is made up of an observable component V_{ni} and a random component ε_{ni}

For example, the observable component of utility could represent the attributes of alternative i and the characteristics of respondent n observed by the researcher, Therefore we can write $V_{ni} = \beta' X_{ni}$. In this case β is a vector of taste parameters for the attributes and alternatives and X is a vector of attributes, alternatives and socio-demographic variables. The random component is unobserved by the researcher. Therefore, we can write the total utility U_{ni} for individual n for alternative i as represented by an observable component, V_{ni} , and a random component ε_{ni} ,

$$U_{ni} = \beta' X_{ni} + \varepsilon_{ni}$$

Since there is a random component in the utility function, we can only make probabilistic statements about the choice outcomes. Thus the probability that individual n will choose alternative i over alternative j in a choice task is represented as

$$P_{ni} = \Pr ob(U_{ni} > U_{nj} \quad \forall i \neq j)$$

A particularly policy relevant issue in this study is to examine patterns of substitution between recreational sites. Since access to farmland can be contentious, determining which sites are closer substitutes could provide useful information for policy-makers. A straightforward mechanism to do this is to create correlations between utilities of the farm walk alternatives (hill, bog, field and river walks) using error components (see Brownstone and Train, 1999 and Train, 2003 for further details on error components). In this study, the error components were specified so that their utility functions can be written as follows (note the respondent specific identifiers are omitted).

$$U_{hill} = \beta' X_h + \eta_{hb} + \eta_{hf} + \eta_{fr} + \varepsilon_h$$

$$U_{bog} = \beta' X_b + \eta_{hb} + \eta_{bf} + \eta_{br} + \varepsilon_b$$

$$U_{field} = \beta' X_f + \eta_{hf} + \eta_{bf} + \eta_{fr} + \varepsilon_f$$

$$U_{river} = \beta' X_r + \eta_{hr} + \eta_{br} + \eta_{fr} + \varepsilon_r$$

$$U_{stay\ home} = \beta' X + \varepsilon_{sh}$$

The combination of η 's are error components which induce correlations between the walk alternatives and are all assumed to be normally distributed with zero mean and standard deviation. According to Scarpa et al., (2005) the error components can be either independent across choices or it can be the same for all choices made by the same respondent. After evaluating the log-likelihood under the two specifications, it was found that the specification that captures the correlation among observations drawn from the same respondent produce a much superior model performance than one that assumes independence. Therefore, for the multinomial error components model presented in this paper, the choice probability of observing a sequence of choices $t(n)$ from respondent n is defined as:

$$Pt(n) = \int \prod_{t=1}^{t(n)} \frac{\exp(\beta_n' x_{it} + \eta_{ni})}{\sum_j \exp(\beta_n' x_{jt} + \eta_{nj})} \varphi(\eta | \sigma^2) \delta\eta$$

Where $\varphi(\cdot)$ is the normal density; and the value of η_j when j = stay at home (Campbell et al., 2008). In this paper the probabilities are approximated in estimation by simulating the log-likelihood with 500 Halton draws (see Bhat, 2001) for further details on Halton Draws).

Supplier preferences and WTA

The CV method has to date been the most widely used mechanism for the non-market valuation of environmental resources (Bishop and Romano, 1998; Carson et al., 2001). The idea behind contingent valuation is to create a hypothetical market for the good being examined. Respondents are then asked to state their maximum willingness to pay (WTP) for preserving an environmental resource or their minimum willingness to accept (WTA) for the loss of that asset.

Data collection - Farmers Willingness to accept

The data source utilised to determine landowners WTA for public access to their land for walking activities was a National Farm Survey (NFS) conducted by Teagasc in 2006. The NFS is collected annually as part of the Farm Accountancy Data Network requirements of the European Union (Farm Accountancy Data Network (FADN), 2005). The purpose of FADN and the NFS is to collect and analyse information relating to farm activities, financial returns to agriculture and demographic characteristics of farm families. The sample is weighted to be representative of farming nationally across Ireland. In the 2006 NFS survey, 1,159 farmers were surveyed representing 113,068 farmers nationally.

A questionnaire eliciting landowner attitudes on the provision of public access for walking was conducted in conjunction with the regular NFS data collection schedule in autumn 2007. In carrying out the survey each interviewee was asked to indicate their level of participation in a 5 year walking scheme under certain conditions. The scheme conditions described include a specific route, walkers would be expected to follow a countryside code, no permanent right of way would be established, full

public liability insurance indemnification would be provided and maintenance costs for the walkway would be covered.

Landowners were then given 3 choices indicating that they would either; not participate in such a scheme, participate on a free-of-charge basis or participate only if given financial compensation. Those respondents who indicated that their participation was dependant on financial compensation were then presented with a contingent valuation WTA scenario to establish the minimum amount a landowner would be prepared to accept (€ / per annum) per metre of walkway crossing their land to ensure participation. Using data from a pilot survey WTA bids of 10 cent, 25 cent, 50 cent, €1 and €3 (per metre per annum) were chosen, assigned equally and randomly among landowners seeking compensation (for a more detailed discussion of the WTA analysis the reader is referred to Buckley et al., 2009).

Results

Consumer preferences for walking trails

Respondents were firstly asked if they participated in any recreational walking activity. Just over two thirds of respondents (67%) reported that they did participate in recreational walking activities. Respondents were then asked whether they thought they were enough walking trails in the countryside. Almost half of the respondents (49%) surveyed felt that they were not enough walking trails in the countryside (see table 1). Just over 21 percent of respondents felt that the number of walking trails presently available to walkers was about right with the remainder of respondents reporting that they either did not know or did not care about the number of walking trails. The large percentage of individuals who participate in recreational walking

activities and who also feel that they are not enough walking trails would suggest that there is a significant undersupply of walking trails in the countryside.

Table 1: Opinions on walking trails

	Frequency	Percent
There are not enough walking trails in the countryside	292	48.6
The number of walking trails is about right	129	21.5
There are too many walking trails already	10	1.7
Don't know	135	22.5
Don't care	29	4.8
Other	6	1.0
Total	601	100.0

A multinomial error components logit model was used to analyse the choice data. One level for each attribute and one alternative were excluded from the model to serve as a base reference point for estimation purposes. For example, the longest walk (3-4 hours) is excluded and the other length coefficients are estimated relative to it. In relation to facilities the base coefficients are no car-parking, no fencing and no path or signage. Initially the length and trail attributes were specified with respect to the types of walks but the additional parameters did not improve the estimation. As such, the attributes were specified to be generic, that is, for example, there was no differentiation made between a 2-3 hour walk on a hill walking trail as opposed to a 2-3 hour walk on a field walking trail.

The results from the multinomial error components logit model are presented in table 2. The log likelihood χ^2 statistic shows that, taken jointly, the coefficients in the model are significant at the 1% significance level. In addition the Pseudo R^2 is 0.45 which also indicates a good model fit. It can be seen from table 2 below that all the attribute coefficients are significant. More specifically, the length attributes are

positive with large coefficients which indicate that people in general like the shorter walks much more than the longer one. From a policy perspective this result would suggest that investment should primarily be targeted at developing relatively shorter walking trails. In relation to trail facilities, respondents were more likely to choose a walking trail with ‘car-parking’, ‘fencing’ and a ‘gravel path with signage’. The most important attribute was a ‘gravel path with signage’ which was closely followed by ‘car-parking’ facilities. The least important attribute was ‘fencing’. The results also show sensitivity to scope, for example, the ‘gravel path with signage coefficient’ is larger than the ‘signage’ only coefficient. The large negative sign of the ‘travel cost’ coefficient indicates that as expected the higher the travel cost associated with an option then the less likely it is that it will be chosen.

Twenty one per cent of respondents serially chose the stay at home option and therefore a number of socio-demographic variables were interacted with the stay at home utility function to differentiate between respondents who would participate in one of the farmland walks and those who would not. Individuals with relatively lower incomes were found to be significantly more likely to choose the status quo option. This would be in accordance with our a priori expectations as respondents with lower incomes would have less disposable income to spend on using farmland walking trails. The negative sign for ‘third level education’ means that respondents with a third level education were less likely to pick the status quo option. It could be that respondents with a relatively higher level of education, all things being equal, are more aware of the potential health benefits of walking trails or even perhaps more aware of current problems in getting access to the countryside for walking based recreational activities. Finally the positive sign on the ‘age’ coefficient indicates that

those who are relatively older are more likely to choose the stay at home option. Additional socio-demographic variables such as the employment status of respondents and whether they had children were found to not have a statistically significant impact on the probability of individuals using these walking trails.

By comparing the relative coefficients of the walking trail alternatives a ranking of the walking trails can be ascertained. For instance, the 'river walk' was held as the most preferred by respondents. This is consistent with many landscape preference studies in which water related features is often reported as the most desirable landscape feature for individuals (Arriaza et al., 2004). The next most preferred trail type was the field walk which was closely followed by the hill walk. The bog walk was the least attractive trail type for respondents. Moreover, it can be seen in table 2 that all the error components (a measure of the correlation between the alternatives) are significant. The largest correlation is between the field/river alternative which is closely followed by the hill/bog alternative. This means, for example, that if a river walk was unavailable respondents would be most likely to choose a field walk instead. This is intuitively appealing since the river and field walk alternatives have similarities in terms of the terrain they traverse. The bog and hill walks both involve open and rugged landscape so it is conceivable that they would also be perceived as closer substitutes.

Table 2: Multinomial Error component model for farmland walking trail preferences

Names	Coefficient	Std. error	p-value
Length of walk between 1-2 hours	.962	.047	.000
Length of walk between 2-3 hours	.252	.058	.000
Car parking	.295	.038	.000
Fence	.191	.061	.002
Path + Signage	.691	.048	.000
Signage Only	.230	.059	.000
Travel Cost	-.043	.000	.000
Hill	-2.08	.289	.000
Bog	-2.63	.296	.000
Field	-1.92	.290	.000
River	-1.41	.282	.000
Income	-.180	.052	.000
Age	.158	.031	.000
Third Level Education	-.360	.163	.027
Employment full time	-.193	.164	.238
Married	-.648	.162	.000
Children under 15	-.195	.163	.229
Log Likelihood	-6364.847		
Pseudo R-squared	.449		
EC Hill/Bog	2.47	.166	.000
EC Hill/Field	.828	.109	.000
EC Hill/River	1.16	.090	.000
EC Bog/Field	.453	.136	.000
EC Bog/River	.786	.110	.000
EC Field/River	2.77	.141	.000

Consumers' willingness to pay

Implicit prices for the trail attributes can be derived by comparing the ratio between the coefficients for any one attribute and the coefficient for the monetary attribute, in this instance the travel cost variable. The implicit price represents the marginal WTP for that attribute (e.g. car parking) relative to the base or reference point (e.g. no car parking). From table 3 it can be seen that all implicit prices are greater than zero at the 1 per cent significance level. Using the log-sum formula described by Hanemann (1984) it is possible to estimate respondents' average WTP for each of the four walking trails. Table 4 presents respondents' WTP for each of the 4 walking trails (river, field, hill and bog walk) with associated features. The welfare estimates in

table 4 indicate that individuals are willing to pay between €41.39 and €42.05 for a farmland walk that is 1-2 hours in length, has car parking facilities and a trail path with signage.

Table 3: Implicit WTP (€) per individual per trip for characteristics of farmland walking trails.

Attributes	WTP	S.E	P-Value
Length of walk between 1-2 hours	22.3	1.17	.000
Length of walk between 2-3 hours	5.8	1.34	.000
Car parking	6.7	0.880	.000
Fence	4.4	1.417	.001
Path + Signage	16	1.169	.000
Signage Only	5.5	1.391	.000

Table 4: Compensating surplus for farmland walking trails

	Value per trip across the walks
River Walk	€42.05
Field Walk	€41.68
Hill Walk	€41.58
Bog Walk	€41.39

Landowners WTA for public access provision

The analysis of the CV responses would suggest that certain cohorts of landowners are willing to allow public access to their land for walking activities under certain circumstances. For instance, twenty one per cent of landowners were willing to participate on a free of charge basis (providing there was no personal costs to them) while 29 per cent indicated that they would be willing to participate in a walking scheme if given financial compensation. The mean WTA of these farmers was estimated at 46 cent per metre of walkway. This would suggest an average cost of €460 per kilometre of walkway to ensure these landowners cooperation with the supply of walking trails. The remainder of the sample (50%) reported that they would not participate in this scheme even if given financial compensation.

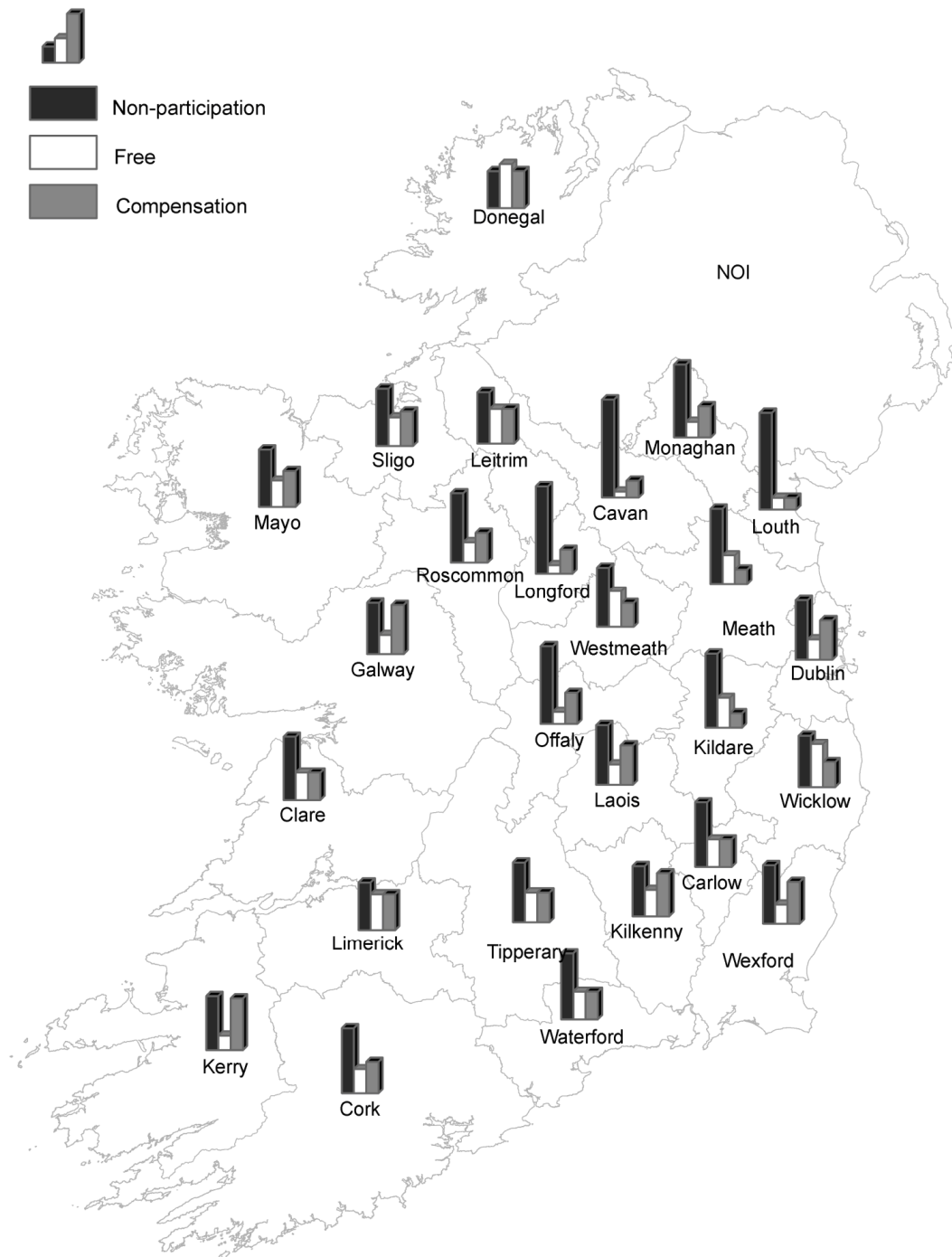
While half of the farmers surveyed were unwilling to participate under any circumstances in the proposed walking scheme, it is important to note that a large proportion (21%) of farmers were willing to allow public access for free once certain conditions were satisfied. These conditions included no permanent right of way being established, full public liability insurance indemnification and finally the maintenance costs for the walkway being covered. This has significant implications for the public provision of walking trails as it would suggest that there is a significant opportunity to provide a large number of walking trails at relatively low cost.

The geographical nature and scale of a potential scheme to enhance access requires cooperation, or at the very least coordination, by multiple landowners. Hence it will be important to identify regions where large numbers of landowners are willing to engage in a walking scheme designed to allow public access for recreational activities. Figure 1 illustrates the spatial distribution of the various categories of farmers (i.e. those willing to participate in the public access scheme for free, require compensation or unwilling to engage in the proposed scheme).

It can be seen in Figure 1 that there is a marked regional variation in relation to participation in the proposed walking scheme. Farmers in the Midlands and Eastern part of the country are much more likely to be unwilling to participate in the hypothetical walking scenario than farmers along the Western seaboard. For instance, with the exception of Clare a majority of farmers surveyed in counties along the coast in the Western part of Ireland such as in Donegal, Sligo, Leitrim, Mayo, Galway, Limerick and Kerry were willing to participate in the hypothetical walking scenario either on a free of charge or compensatory basis.

There is significant regional variation in farm structures and farm output across Ireland (Lafferty et al., 1999; Matthews, 2000 and Hynes et al, 2008) and these differences could potentially explain the regional variations of farmers' opinions relating to public access. The Midlands and Eastern part of the country would have a much higher proportion of larger, more intensive dairy and tillage farm holdings. As such, farmers in this region would be expected to be more concerned with the potential negative impacts on their production activity arising from members of the general public using their land. On the other hand, farms along the Western seaboard are, for the most part, extensive in nature and operate on relatively marginal soils. These farmers generally have lower incomes and lower opportunity costs to agriculture and as such any concerns surrounding potential negative effects on production activity are likely to be less.

Figure 1: Farmers' willingness to participate in hypothetical walking scheme (%)



Conclusion

The provision of walking trails can bring significant economic benefits to rural areas as well as providing a range of social and health benefits for individuals. 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 to their privately owned land. Concerns surrounding potential negative impacts on production activities, invasion of privacy and public liability are often cited by landowners as reasons why they may be unwilling to allow access to their land for recreational activities (see Buckley et al., 2009). In recent times market based approaches have been proposed as a solution to this problem whereby farmers are given financial compensation for public access provision. Given that the tax payer ultimately pays for schemes of this nature their long term success will depend on the identification of clearly defined economic benefits. Within this context, this paper examined both individuals' willingness to pay for particular types of walking trails and farmers' willingness to accept for allowing public access to their land for walking based recreational activities.

From a demand perspective respondents preferred relatively shorter walking trails and had a strong demand for relevant trail infrastructure such as a gravel path with signage, car-parking facilities and fencing. The most important of these attributes was for a gravel path with signage which was followed by car-parking facilities. In relation to trail types, the river walk alternative was the most preferred option for respondents. This was followed by the 'field' and 'hill walk' alternatives. The least desirable trail type for respondents was a 'bog walk'. The analysis also suggests that individuals cannot be considered a homogeneous group with regard to their

preferences for farmland walking trails as there are significant differences between likely users and non-users of walking trails. In particular, individuals who are relatively younger, with a third level education, married, and finally on relatively higher incomes are more likely to pay for the use of walking trails.

From a supply perspective there is a significant cohort (21%) of farmers who are willing to allow public access to their land for walking activities provided there is no personal cost to them. In addition, a further 29 percent of farmers were willing to allow public access to their farmland provided they received some financial remuneration. More precisely, landowners seeking compensation for trail development reported an average WTA of €460 per kilometre of walkway provided. This aggregate figure declined to an average estimate of €260 per kilometre when those willing to provide access for free were included in the estimation.

Moreover, this paper identified some interesting spatial variations in farmers' opinions regarding the proposed walking scheme. Generally farmers along the Western seaboard were more willing to participate in the proposed walking scheme than their counterparts in the more intensive farming regions in the Midlands and Eastern region. These spatial variations in farmers' willingness to allow public access should be taken into consideration when designing any policy initiative aimed at promoting walking based recreational activities. For instance, it may be worthwhile at least in the first instance, to focus efforts aimed at promoting public access on landowners along the Western seaboard. Here farmers are generally more positive to the idea of individuals accessing their land for recreational activities and as such any public access policy initiative will cost less than schemes in other parts of the country.

In effect, this is the area that offers the best chance of obtaining agreement from multiple landowners in a spatially contiguous pattern necessary for trail development.

The analysis presented here indicates that there is significant scope for policy approaches that support improved public access provision and the development of walking trails in the Republic of Ireland. More specifically, the information provided here can be used by the providers of public goods such as local government authorities to design walking trails that are targeted towards the needs of consumers. Public exchequer support linked to the production of public goods is generally seen in a positive light by policy makers as well as the taxpayer when contrasted with payments for production. Arguably, the provision of public access represents a multifunctional role that agriculture can play in the utilisation and development of managed agricultural landscapes in marginal rural areas. Any policy measures aimed at facilitating public access to the countryside can help to attract visitors to rural areas thereby promoting the revitalisation and sustainability of rural economies.

Acknowledgements

This work was funded by the Department of Agriculture, Fisheries and Food under the Stimulus Funding.

References

- Adomowicz, W.L., Louviere, J.J. and Williams, M. (1994) Combining revealed and stated preference methods for valuing environmental amenities. *Journal of Environmental Economics and Management*, 26, 271-292.
- Adamowicz, W., Boxall, P., Williams, M. and Louviere, J. (1998) Stated preference approaches for measuring passive use values: choice experiments and contingent valuation. *American Journal of Agricultural Economics*, 80(1), 64-75.
- Arriaza, M., Canas-Ortega, J.F., Canas-Madueno, J.A. and Ruiz-Aviles, P. (2004) Assessing the visual quality of rural landscapes. *Landscape and Urban Planning*, 69, pp. 115-125.
- Arrow, K.J., Solow, R., Portney, P.R., Leamer, E.E., Rander, R. and Schuman, H. (1993) Report of the NOAA Panel on Contingent Valuation. US Department of Commerce.
- Bennett, R. and Tranter, R. (1997). Assessing the Benefits of Public Access to the Countryside. *Planning Practice & Research*, 12, 213-222.
- Bennett, R.M., Tranter, R.B. and Blaney, R.J.P. (2003) The value of countryside access: A contingent valuation survey of visitors to the Ridgeway National Trail in the United Kingdom. *Journal of Environmental Planning and Management*, 46(5), 659-671.

Bhat, CR. (2001) Quasi-random maximum simulated likelihood estimation of the mixed multinomial logit model. *Transportation Research Part B*, 35 (7), 677-693.

Bishop, R. and Romano, D. (1998) Environmental Resource Valuation: Applications of the Contingent Valuation Method in Italy. Kluwer Academic Publishers, Boston.

Brownstone, D and Train, K.E. (1999) Forecasting new product penetration with flexible substitution patterns. *Journal of Econometrics*, 89(1-2), 109-129.

Buckley, C., Hynes, S. and van Rensburg, T.M (2009) Recreational demand for farm commonage in Ireland: A contingent valuation assessment. *Land Use Policy*, 26(3), 846-854.

Buckley, C., Hynes, S. and van Rensburg, T.M (2009) Walking in the Irish countryside: landowner preferences and attitudes to improved public access provision. *Journal of Environmental Planning and Management*, 52(8), 1053-1070.

Campbell, D, Hutchinson, W.G. and Scarpa, R. (2008) Incorporating discontinuous preferences into the analysis of discrete choice experiments. *Environmental and Resource Economics*, 41, 401-417.

Carson, R.T., Flores, N.E. and Meade, N. (2001) Contingent Valuation: Controversies and Evidence. *Environmental and Resource Economics*, 19, 173-210.

Christie, M., Hanley, N. and Hynes, S. (2007) Valuing enhancements to forest recreation using choice experiments and contingent behaviour methods. *Journal of Forest Economics*, 13, 75-102.

Crabtree, J.R. and MacDonald, D. (1997) The supply of access to the countryside: financial efficiency in government provision of a local public good. In: Proceedings of the 8th European Association of Environmental and Resource Economists Conference, Tilburg, The Netherlands, European Association of Environmental and Resource Economists, Venice

Curry, N. (2001) Rights of access to land for outdoor recreation in New Zealand: dilemmas concerning justice and equity. *Journal of Rural Studies*, 17(4), 409-419.

Failete-Ireland, (2005) Special interest tourism plans 2005. Dublin.

<http://www.failteireland.ie> (accessed 01/06/06).

Garrod, G., Willis, K., Raley, M. and Rudden, M. (1998) Economic evaluation of access provisions in the MAFF agri-environment schemes. Final report to MAFF. University of Newcastle upon Tyne, Newcastle upon Tyne.

Gebel, K., Bauman, A.E. and Petticrew, M. (2007) The physical environment and physical activity. *American Journal of Preventive Medicine*, 32(5), 361-369.

Hanley, N. and Spash, C.L. (1998) Cost-benefit Analysis and the Environment. Edward Elgar, Cheltenham.

Hanley, N., MacMillan, D., Wright, R.E., Bullock, C., Simpson, I., Parsisson, D. and Crabtree, B. (1998) Contingent valuation versus choice experiments: estimating the benefits of environmentally sensitive areas in Scotland. *Journal of Agricultural Economics*, 49(1), 1-15.

Hanley, N., Wright R.E. and Koop G. (2002) Modelling recreational demand using choice experiments: climbing in Scotland. *Environmental and Resource Economics* 22, 449-466.

Hynes, S., Farrelly, N., Murphy, E. and O'Donoghue, C. (2008) Modelling habitat conservation and participation in agri-environmental schemes: A spatial microsimulation approach. *Ecological Economics*, 66(2-3), 258-269

Keirle, I. (2002) Should access to the coastal lands of Wales be developed through a voluntary or statutory approach? A discussion. *Land Use Policy*, 19, 177-185.

Lafferty, S., Commins P., and Walsh, J. (1999) Irish Agriculture in Transition - A Census Atlas of Agriculture in the Republic of Ireland, Teagasc, Dublin.

Lane, B. (1999) Trails and tourism: the missing link. <http://www.americantrails.org/resources/economics/TourismUKecon.html> (accessed 25/01/06).

Langford, I.H., Kontogianni, A., Skourtos, M.S., Georgiou, S. and Bateman, I.J. (1998) Multivariate mixed models for open-ended contingent valuation data:

willingness to pay for conservation of monk seals. *Environmental and Resource Economics*, 12(4), 443-456.

Librett, J.L., Yore, M.M. and Schmid, T.L. (2006) Characteristics of physical activity levels among trail users in a U.S. national sample. *American Journal of Preventive Medicine*, 31(5), 399-405.

Liston-Heyes, C. and Heyes, A., (1999) Recreational benefits from the Dartmoor National Park. *Journal of Environmental Management*, 55(2), 69-80.

Lockwood, M., Tracy, K., (1995) Nonmarket economic valuation of an urban recreation park. *Journal of Leisure Research*, 27,155-164.

Matthews, A. (2000) Farm Incomes: Myths and Reality, Cork University Press, Cork.

Millward, H., (1993) Public access in the West European countryside: a comparative survey. *Journal of Rural Studies*, 9(1), 39-51.

Moore, R. and Barthlow, K., (1998) Uses of long distance trails. Report of Department of Parks. Recreation and Tourism Management. North Carolina State University, Raleigh, NC, USA.

Morris, J., Colombo, S., Angus, A., Stacey, K., Parsons, D., Brawn, M. and Hanley, N. (2009) The value of public rights of way: A choice experiment in Bedfordshire, England. *Landscape and Urban Planning*, 93 (1), 83-91.

Mulder, C., Shibli, S. and Hale, J., (2006) Rights of way improvement plans and increased access to the countryside in England: some key issues concerning supply. *Managing Leisure*, 11(2), 96-115.

Owen, N., Humpel, N., Leslie, E., Bauman, A. and Sallis, J.F. (2004) Understanding environmental influences on walking. *American Journal of Preventive Medicine*, 27(1), 67-76.

Sallis JF, Bauman A, and Pratt M. (1998) Environmental and policy interventions to promote physical activity. *American Journal of Preventive Medicine*, 15, 379-397.

Sallis JF. and Owen N. (2002) Ecological models of health behavior. In: Glanz K, Lewis FM, Rimer BK, eds. *Health behavior and health education: theory, research, and practice*. 3rd ed. San Francisco: Jossey-Bass, pp. 462–84.

Scott, P (1991) *Countryside Access in Europe: A Review of Access Rights, Legislation and Provision in Selected European Countries*. Report for Scottish Natural Heritage, Edinburgh.

Scott, P. (1998) Access to the countryside in selected European countries: a review of access rights, legislation and associated arrangements in Denmark, Germany, Norway and Sweden. Scottish Natural Heritage and the Countryside Commission, Edinburgh.

Siikamäki, J. and Layton, D.F. (2006) Discrete choice survey experiments: A comparison using flexible methods. *Journal of Environmental Economics and Management*, 53(1), 122-139.

R. Scarpa and Rose.J. (2008) Design efficiency for non-market valuation with choice modeling: how to measure it, what to report and why. *Australian Journal of Agricultural Economics*, 52, 253-286.

Train, K.E. (2003) Discrete choice methods with simulation. Cambridge University Press, Cambridge.

Vaughan, D.R., Farr, H. and Slee, R.W. (2000) Economic benefits of visitor spending. *Leisure Studies*, 19(2), 95-118.