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The non-market benefits of rural service provision

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Abstract

The provision of services in rural areas is constrained by a number of issues arising from the remoteness of such areas and the relative sparsity of rural populations. These factors combine to increase the cost of supply and reduce the demand for services, which consequently threatens the viability of service provision whether by the public or private sectors. A possible to solution to these issues lies in the co-location of rural services, which in general means that two or more distinct services are located within the same premises thus reducing the delivery costs associated with one or more of these services. Beyond the simple economics of service provision lies the existence of non-market elements of services in terms of benefits to local communities of service provision that might arise from the social elements of local provided services such as community cohesion. This paper applies non-market valuation to quantify these benefits in three case studies across Scotland. The results indicate that relative degree of these benefits can be related to the remoteness of rural communities in that more remote communities particularly value the community aspects of services whereas less remote communities are more resistant to increased distances to access services. More generally, the results provide evidence on the inherent trade-offs between factors such as opening hours, levels of service and distance that can be used in determining the optimal configuration of service provision.

Introduction

Service provision in rural areas has been associated with poor levels of provision and threats of closure or service withdrawal. The use of services in rural areas is often affected by the difficulties or expense of getting to them. a problem that is further exacerbated by low population density (Gilder *et al*., 2004) meaning that private and public services are less likely to be used, which can in some cases lead to pressure for closure. A consequent lack of rural services can in turn inflict social costs on communities that need to be taken into account. These social costs can be considered in economic terms as an example of market failure as they do not directly influence the financial decisions of service providers. Furthermore, this market failure may arise due to the public good nature of some elements of service provision in that providers do not charge for social attributes of services, nor could they be easily incorporated into service prices. The economic challenges faced in providing rural services are common to both private and public suppliers. Yet, the adoption of social inclusion objectives, and the presence of basic market failure, has tended to shift the onus for service delivery onto local and national government. Private involvement will in many instances only be viable if public leverage is available. We contend that by fully accounting for the non-market nature of rural service provision in

terms of social costs and benefits, then policy intervention in service provision can be justified in a broader economic sense.

A possible solution to the problem of rural service provision is the co-location of services. The term co-location has a specific meaning in this paper and for clarity it is often equated with the term 'shared' location or premises to denote the fact that the services will typically be housed in one facility. This definition is similar to the notion of a one-stop shop, which also suggests the notion of a single multi-purpose outlet of services. The Countryside Agency (2003) defines one-stop-shop (OSS) as facilities that are:

"Staffed, accessible premises that provide a range of public, statutory, private and voluntary sector services to the local community"

There are clearly many combinations of services that could feasibly be delivered in this way, but the overall policy interest lies in whether this form of service delivery represents an efficient use of limited public resources that can be directed towards rural services. This question can only be considered with reference to the cost and benefits of delivery and access.

In this paper we present the results of three stated preference studies undertaken in three areas of Scotland that considered different attributes of rural service delivery, with a specific emphasis on providing services locally compared to services provided at a distance. The three areas differed in terms of their rurality as defined by the Scottish Executive Urban Rural Classification (2006) and their remoteness. The rest of the paper is laid out as follows. Firstly we discuss the framework for our economic analysis of rural service provision and define the economic concepts involved. This is followed by a summary of previous applications of stated preference techniques to issues of rural service provision. Next we provide an overview of our study areas before discussing our methodology, namely choice experiments. We then present the results of the choice experiments and integrate these into a cost benefit analysis of rural service provision in our case study areas before making concluding remarks.

Cost benefit analysis

By focusing on the social benefits of service provision on an economic basis, we can adopt cost-benefit analysis (CBA) as a framework for analysis. CBA offers a number of advantages. First, it is an acceptable format for considering the economic feasibility or efficiency of government spending on economic, social and environmental programmes and projects. Second, CBA enables us to adopt different perspectives on the feasibility of this form of service provision. A financial perspective would simply consider whether one or more specific service arrangements was beneficial in terms of the financial costs being covered by the financial returns or revenues. Any private entrepreneur - who uses his or her own resources (property, labour etc) as a basis for delivering services - would adopt this perspective. In contrast an economic perspective would be more inclusive in terms of how it defines costs and benefits. Specifically economic analysis goes beyond financial considerations to consider other non-market costs and benefits – e.g. time savings, social cohesion benefits, social equity and justice. This is typically the perspective adopted by governments when deciding where to allocate resources. An economic analysis is therefore wider than a financial analysis. More typically, rather than focussing on a specific service arrangement, an economic analysis would consider whether a program of specific arrangements delivers an economic (and social) net benefit.

A final point to make about CBA (or extended social CBA) is that it requires benefits and costs to be placed on a commensurate basis so that costs and benefits of options can be directly compared. Although this approach allows quantification of wide of economic and social benefits, this aspect is challenging when dealing with intangibles and social impacts.

In setting this rationale for the paper we can in the first instance abstract from any actual service arrangement. Essentially the question being addressed here has a considerable hypothetical dimension. It can be restated as follows. Suppose we could replace the current configuration of service provision, itself associated with a range of costs and benefits to suppliers and users, with an alternative configuration that combines different social attributes that might be associated with that service. What would be the likely increase in net benefits (economic benefits minus costs) between the current (counterfactual) situation and the hypothetical scenario? If the difference in net benefit is significant, this suggests a potential improvement can be achieved by moving in this direction.

The benefits of service provision: Access, quality and value

We now need to define what attributes of rural services can provide social benefits. The literature identifies numerous benefits deriving from access to and availability of services in rural areas. For example, Bryden *et al.* (2004) identify the following:

- Making life easier for customers/clients
- Enabling services to continue to be provided locally
- Enabling services to be tailored to local needs
- Providing public services more efficiently
- Reducing costs, including joint provision of services, either through the shared use of staff, buildings or vehicles
- Ensuring social inclusion and equity of access
- Providing professional support;
- Creating synergy and sharing of good practice between the different professionals offering support
- A platform for more 'joined-up' and co-ordinated service provision
- Flexible in the way services are offered
- Offering physical convenience and social contact – especially valuable to the more vulnerable members of society
- Providing economies of scale
- Taking advantage of new funding sources, especially those linked with the National Lottery.

These benefits can be realised through a combination of quantity and quality improvements. While part of the rationale for this paper is based on the supply (i.e. quantity) of basic services in some remote areas, we have to be mindful that there are basic quality criteria that should be part of any trade-off that users might consider in their decision to access services. There is an extensive literature on the definition of quality in public services, much of it focussed on health services, with emphasis on the need to distinguish between the provider and customer perspectives on what constitutes quality. Overall, the definitions appear to relate to three themes:

1. *Technical definitions*: Here quality is seen as being to do with 'conformance to specification' or 'fitness for purpose', and there is some implication that the objective measurement of quality is possible.

2. *User definitions*: A number of writers (for example, Campbell et al., 2000) have stressed the importance of taking into account user or customer-based quality criteria, especially when delivering services. There is considerable agreement on what constitute the key dimensions of quality in public services. This includes accessibility, effectiveness, acceptability, equity, responsiveness, reliability and openness (Donabedian, 1988). Hope et al. (2000) adopted a definition of service quality as being 'a level and standard of service which meets the needs, expectations or aspirations of service users'.
3. *Value definitions*: Quality is also defined in relation to value. In the public sector cheapness for a given standard is sometimes taken as an indicator of quality (as in 'value for money'), while conversely in business transactions quality can be associated with expense (e.g. a 'Rolls Royce' service).

The definition of quality thus needs to be related to the type of public activity being undertaken. Technical and value definitions will tend to be more important in infrastructure projects, while user definitions will have primacy in face-to-face services. Much of this debate has in fact influenced the Customer First initiative developed by The Scottish Executive (2005), and which aims to specify which user-related definitions are the best indicators of service quality. A key concept here is the definition of 'benefits realisation'. That is, a quality service is one which actually delivers the benefit sought by the user.

Economic characteristics of services

The services literature has been less clear in defining the public good characteristics of services and by extension rationalising the extent to which government is obliged to fulfil service obligations that cannot be privately supplied. In essence, many services can only be provided collectively. Once a provision level is reached they can be consumed collectively without feasible exclusion. It is this characteristic that can mitigate against wholesale private provision and involvement. Even if, private providers can supply exclusively private consumable goods (e.g., a grocery shop), the benefits of the presence of such a supplier[1] confers public good benefits that are largely unremunerated. Some people may value the mere existence of an outlet irrespective of use. Others may value the option to use it at some future date, or the fact that others will have an option.

Benefits may be categorised as direct, indirect and external benefits. Direct benefits are those that accrue to the user. Thus health services provide direct health benefits to individuals or households. Similarly information points and post offices serve community members directly. The user benefits at point of access, and these benefits are a mix of tangible and intangible. Indirect benefits are those benefits that can be attributed to the presence of a service at a specific location. In economic terms these benefits are best described as multipliers or knock-on impacts that arise because other services and activities locate in the vicinity of the service in question. The service serves as a honey pot, around which other economic or social activities may congregate. The overall impact is a level of activity that is higher than would otherwise prevail in the absence of the service. The final category of external benefits are essentially intangible including social cohesion, sense of community and vibrancy and security. Benefit categories are summarised in Table 1.

[1] Who may, nevertheless, be struggling to operate as a supplier of private goods.

Approaches to Measuring benefits

A range of approaches can be adopted to quantify benefits of service provision. In terms of *direct user benefits*, a fairly good lower bound estimate can be determined from the number of transactions that are made over a period of time. Defra (2002) provides a range of methods and basic calculations for estimating these benefits as part of locating or closing rural services. It is also possible to qualify these with information on the value of each transaction. The volume of successful transactions (or benefits realised) is a standard performance indicator as part of the Scottish Executive's Customer First program (Scottish Executive, 2005) for public service delivery. But calculation of the direct benefits is a lower bound because it understates the wider external benefits that users derive.

Indirect benefits can be counted in terms of related job creation and a range of economic and social multipliers that derive from the presence of the service. While many statutory services are in the first instance of a social function, their strategic location could also be a factor in bringing about economic activity and growth in specific areas. There appears to be no research that has explicitly quantified the different multiplier effects of service interventions. But one can infer from the multipliers used in other studies on business location to estimate job creation, income and supply impacts. The analysis could go as far as to consider the quality (longevity) of jobs created. While indirect benefits are undeniably important, care must be taken to avoid over estimation of the net effects of any intervention. Specifically, issues of deadweight and displacement are important in that these jobs or impacts may have occurred anyway, and/or they may simply be displacing growth and employment from somewhere else in the economy, i.e. they are not additional (ODPM, 2004). Above all, it is important to try to separate this outcome (as an objective) from the primary function of services provision, which is more about overcoming social exclusion and providing equity of access.

The valuation of the *intangible benefits* (or costs) of service provision (or deprivation) is more complex. The challenging element to the measurement of these benefits is that they are non-market in nature. In other words, we do not routinely see how people transact or behave to attain these benefits. In consequence we have to find alternative methods to value them.

Existing guidance (i.e. Defra, 2003) does implicitly consider intangible costs and benefits associated with service location as a means for assessing cost savings from preventing closures. The guidance provides a checklist of calculations to determine the additional travel costs for users. The existence of rural services also provides both option and existence values to rural communities. These values are not readily identified in individual actions. One way to derive estimates is to use stated preference methods that have been widely developed to value non-market and other public goods, particularly in the fields of environmental and health economics.

In the context of rural services the same methods could be adapted to ask users in the community their willingness to pay (WTP) to have or maintain services, or to have different combinations of services co-located in their community. This can be undertaken using a contingent valuation or a choice experiment approach. Both approaches are survey-based methods that ask users about their preference (WTP or demand) for different scenarios of provision or service availability.

In this paper we present an application of choice experiments to investigate trade-offs in the quality and quantity of rural services. An alternative approach would have been to use contingent valuation to assess the benefits of co-location, however that

approach would not be able to disaggregate the resulting values between the different attributes of co-located services and thus explore the trade-offs that are made between them. The format of the actual choice experiments involves a range of participatory stages to determine key elements of the exercise, namely service options, co-location feasibility and a short list of real options.

Measuring costs

Compared to benefits assessment, the measurement of costs is relatively unambiguous in terms of financial accounting convention for determining and recording capital and recurrent operating expenditures. Costs will also vary according to the scale of an outlet and this raises the issue of how efficiency of delivery should in fact measured; i.e. in terms of cost per contact or in terms of a comparison between measured costs and benefits derived from the service.

There are few applications of stated preferences to rural services beyond the demand for agricultural extension. However, research conducted for the Post Office regulator has recently attempted to use stated preference methods (National Economic Research Associates, 2003) to consider the impacts of rural post office closures. Elsewhere, different procedural and technological advances for service delivery in health care have provoked interest in robust evaluation methodologies including non-market valuation (Capalbo and Heggem, 1998; Olsen and Donaldson, 1998). Several studies have considered the choices or trade-offs that patients will make in the case of travelling distance to undergo elective surgery (Finlayson *et al*., 1999). Other studies consider the role of remote service delivery through tele-video facilities, which are also emerging as a viable co-location prospect for health delivery in remote areas of Scotland. In terms of determining optimal coverage of patient care and access to treatments, there is a clear parallel to the objectives of the current paper. The Highland's Community Planning partnership - the Well-being Alliance - undertook similar work (Highland Community Planning and Resources Project, 2005), targeting a mail survey at 1000 residents of Ross and Cromarty. The choice experiment considered general service provision by the Alliance members but specifically arts and sports services, elderly and mental health services.

Co-location as a model of rural service provision

In order to inform feasible models of co-location we examined the issue of prioritisation of services for rural areas. A range of reports have detailed what services are considered to be most important for rural areas. This section summarises findings from the relevant literature. The information in this section provides the basis for the subsequent stages of research.

Service prioritisation: Key rural services

In England and Wales the Countryside Agency (2003) names ten services viewed as being key for rural areas. These are:

- Banks and building societies
- Cashpoints
- Post offices
- Supermarkets
- Petrol stations

- Primary schools
- Secondary schools
- GP surgeries
- Job centres
- Libraries

This list represents the 10 services that the Agency has been monitoring since 2000. This is similar to a list provided by Edwards (2005):

- Primary schools
- GPs
- Post offices
- Bank / building society
- Petrol stations
- General stores
- Supermarkets
- Higher and further education
- Hospitals
- Job centres

There may, however, be less than 10 services that could be considered to be key to vibrant rural communities. In a list derived from a survey of 2000 rural residents living in 50 localities across Scotland, Hope *et al.* (2000) suggest only four:

- Shop
- Primary school
- GP
- Community Hall

During the 1990s, the (then) Rural Development Commission used a list of eight key services and a further 10 important services. As with the Countryside Agency list above, these were derived by policy makers for the purpose of monitoring rural areas:

- *Key*: Permanent shop of any kind, general store, post office, village hall, public house, bus service, primary school, school for any age.
- *Important*: Petrol station, bank, nursery, day care for the elderly, GP, dentist, pharmacy, library, community mini-bus, police station.

As well as establishing priority services, the literature also provides some guidance on services appropriate for co-location (Harrop and Palmer, 2000; Berry, 2004). For example, the process of identifying services suitable for co-location can be informed by a consideration of the functions performed by a service. Berry suggests that there are four possible functions that a service can perform: information function, expert function, social function and physical function. By considering what functions are performed it is possible to identify services that may need a local, physical presence, based on both the physical and social functions of a service. Services that are defined by their expert and information functions may not require a local, physical presence if they can be delivered remotely using ICT, and hence may not be a priority for co-location projects. Using this analysis of function it can be argued that only the physical and some social functions of services need a local presence. Thus,

any process of identifying services suitable for co-location will need to establish how important the social functions of services are to users and providers. Based on examples given by Berry, **Error! Reference source not found.** Table 2 details the four functions of a range of services.

Case study selection

The purpose of case study selection was to identify three rural areas in Scotland where the costs and benefits of co-location service provision models could be investigated. Selection of these areas was based on a number of factors. Specifically, the aim was to have a mix of remote rural and accessible rural areas, and areas with different combinations of existing services. In addition it was considered to be important to have at least one case study area not on the mainland, and at least one in the south of Scotland. Consideration was also given to population levels and whether or not the area featured an example of co-located services that was included in the recently completed One-Stop-Shop research. It was felt that having at least one area that met this latter criterion would provide a degree of continuity through the research that the Scottish Executive has commissioned on this issue. Consideration of the nature of existing co-located service projects was another important criterion. The three areas chosen all include existing co-location initiatives. However, these have developed via contrasting processes, involving different stakeholders and agencies. In addition, they have been in existence for varying amounts of time. Other important distinctions between the co-location projects in the chosen case study areas are the scale of the project and the 'hub' around which other services are located. We believe that the choice of areas serves to provide as varied a combination of case studies as is feasible with three cases. The three chosen case studies were Stornoway (Isle of Lewis), Applecross (Wester Ross) and Eastriggs (Dumfries and Galloway). The characteristics of the three co-location case studies are summarised in Table 3.

Methods

Choice experiments are a form of stated preference methodology commonly used in environmental and transport economics to explore preferences for complex policy situation (e.g. environmental policies or transport planning where multiple transport modes are available). Unlike alternative methods such as contingent valuation where the policy or "good" being valued is presented as a whole, choice experiments are based in the Lancastrian theory of consumer behaviour (Lancaster, 1966), which recognises that goods, services and policies are commonly composed of several distinct attributes. In the current context we can consider the different attributes of rural services, such as location, opening hours, service level etc.

It is further recognised that these attributes may be absent or present in varying quantities or qualities across alternative goods, services or policies. Choice experiments explicitly allow for these variations in provision, and indeed specifically model such variations as a means of isolating preferences for each of the attributes. Typically, survey respondents are presented with between four and eight choice cards. Each of these offers the respondent a choice between two policy options (or service provision scenarios in this case) with some form of price attached (usually an increase in household taxation). Respondents are then asked to indicate which of these options they prefer; they may also indicate that they prefer neither of options presented. The use of a price attribute performs two roles, firstly it reminds respondents that they face budget constraints and thus tempers their choice.

Secondly, the resulting negative preference for price can be interacted with their preferences for policy of service attributes to indicate the value of those attributes, which can be used in subsequent economic analysis.

It is common in the design of choice experiment studies to undertake a number of preparatory stages to fully define the attributes of interest and levels that these will take. Once the study areas had been defined, with examples of co-located service provision, workshops were held involving local residents. These helped to identify important service attributes and later workshops were used to evaluate early drafts of the choice experiment survey instrument. The final choice experiment consisted of four local service attributes relating to the location, quality and accessibility of services, two of which had three levels and two levels, these levels were chosen to provide a contrast across the range of service provision within each attribute. The price attribute had six levels (see Table 4).

Although the workshop discussions raised the issue that it would be easier if choices were based around specific services it was necessary to maintain a degree of abstraction in the choice experiment. It was found in the Applecross workshop there may have been a tendency to anchor on services that already exist rather than expressing any preferences for new service provision levels. We were also interested in exploring preferences for the common attributes of services rather specific services to provide a comparison across study areas.

In the service type and location attribute the co-location level was expressed in terms of services being co-located “in your nearest village”. This potentially creates problems in that some respondents will live within villages where services are available, whilst other will live outside villages and have some distance to travel. This in turn will affect the relative distances of the other levels within this attribute. Two approaches to analysis were used to alleviate this problem. Firstly, preferences for co-located services locally were analysed offering a more general assessment of preferences for local co-located services relative to single services at a distance. Secondly, respondents were also asked how far they lived from their local village, these values were entered into the first level of the attribute and analysed against services being either 10 or 20 miles away to estimate the preferences for marginal changes in distance to services, in effect giving an estimate of the disutility for each additional mile travelled to access services.

The remaining service attributes relate to the quantity and quality of services, in terms of opening hours; who staffed the service; and the level of service. Staffing was raised as an important issue in the Stornoway workshops where participants considered it very important that they were familiar with the staff. Opening hours and level of service reflect the possible trade-off between limited local services and fuller services provided at a distance.

The price attribute was presented in terms of an increase in annual household council tax payments. This was considered to be a realistic payment mechanism for the delivery of local services, one which respondents could easily relate to, and consequently would encourage respondents to carefully consider their choices. Respondents were asked to complete six pairwise choices between different combinations of service attributes, an example of which is illustrated in Figure 1.

The choice experiment survey was piloted with samples of 30 respondents in each of the three areas. The results of the pilot survey indicated that respondents were making choices based on the attributes and that the price attribute adequately

covered the range of willingness to pay. Consequently the choice experiment was not amended for the main survey, although minor changes were made to other aspects of the questionnaire concerning attitudinal and socio-economic questions. The main survey was administered to 170 respondents in both the Eastriggs area and on Lewis, and 176 respondents in the Applecross area. Figure 2 shows the locations of each of the case study areas, with the markers indicating the location of

Before presenting the results of the choice experiment models, we will first discuss the responses to the attitudinal questions asked as part of the survey. Respondents were given a number of statements regarding rural services and asked to state the extent to which they either agreed or disagreed using a five point Likert scale. We then used a bootstrapping routine to resample from the responses in each case study area to estimate the mean response and the associated 95% confidence intervals. The results of this exercise are presented in Figure 3. As might be expected there was strong agreement across the samples that a full range of services should be provided locally. There was also agreement that services should be provided face-to-face rather than by remote means such as telephone or internet, this feeling was strongest in the Lewis sample and significantly different from the Eastriggs response. There was indifference in the Eastriggs and Applecross samples that locally provided services often had inconvenient opening hours, compared to a slight agreement with this statement in Lewis. A similar pattern was observed with respect to privacy issues, where Lewis respondents agreed that some services should be provided elsewhere to ensure privacy. The reason for this may arise from the result that local services were seen as providing an opportunity to meet friends to a greater extent in Lewis than in Eastriggs or Applecross.

This social aspect of local service provision is further illustrated by responses regarding the role of services in providing a focal point and maintaining local communities. There was agreement with these roles across all three samples, however, this was strongest in Applecross and Lewis and significantly different from the mean response in Eastriggs. Finally, respondents in Eastriggs disagreed that they would not mind travelling a long distance to access certain services, whereas there was slight agreement in Applecross and Lewis. This may reflect the greater remoteness of these areas, and a consequent familiarity with travelling further to access services.

Results

The choice experiment responses from the main survey were combined with those from the pilot survey, as there had been no changes in the design between the two surveys. This yielded total samples of 200 for both Eastriggs and Lewis and 206 for Applecross. With six choice pairs per respondent, which are treated as independent observations, this would yield 1200 choice sets from Eastriggs and Lewis, and 1236 from Applecross. However, a number of respondents were unable or unwilling to make a choice between options A, B or neither, their responses being recorded as “don’t know”. These respondents were subsequently removed from further analysis.

The non-price attributes are treated as qualitative variables and enter the model as dummy variables in which the “worst” level for each attribute takes the value zero and is treated as a reference level. These ‘worst-case’ levels for each of the attributes are:

Service type and location	-	Single services up to 20 miles away
Opening hours	-	Limited hours (morning or afternoon only)

Staffing	-	People you do not know
Service level	-	Limited range of information and/or services

Implicit prices represent the willingness to pay to move from the reference level of an attribute to an improved level and are calculated as:

$$P_i = -1 \times \frac{\beta_i}{\beta_P},$$

where β_i is the estimated coefficient for a change between levels of attribute *i* representing the utility of that change, and β_P is the estimated coefficient of the price attribute, representing the marginal utility of income. This ratio is multiplied by -1 due to the expected negative sign of the estimate price coefficient.

Table 5 presents the results for multinomial logit models estimated for each of the three samples and a combined model of all three samples. The estimated coefficients therefore represent preferences for changing from the reference level to each of the other levels in each attribute. For the Applecross, Lewis and combined models all of the estimated coefficients are significant at the 5% level and have the expected signs (i.e. positive preference to move away from the "worst" level and negative preferences for higher council tax), with the exception "all day opening (9 to 5)" versus "all day opening and some evenings". This suggests that respondents are indifferent between having all day opening and having evening opening. The issue of opening hours did not arise as a major discussion point at any of the workshops. In the Eastriggs model the coefficients for the opening hours and staffing attributes are insignificant indicating that respondents in this sample were indifferent to these attributes. All other coefficients in the Eastriggs model are significant and have the expected sign.

Likelihood ratio tests of model equivalence between the different samples indicated that although no significant differences exist between particular attribute levels, particularly in the case of Applecross and Lewis, none of the overall models were found to be equivalent. However, the degree to which the test of equivalence between models was rejected was much smaller when comparing Applecross and Lewis, than when comparing either of these to Eastriggs. This result means that direct applications of the models to other areas would not be defensible.

A possible reason for the differences in preferences is the different degrees of accessibility of the sample areas as indicated by their Scottish Executive Urban-Rural classification. Eastriggs is classified as being an accessible rural settlement, whilst nearby Annan (approximately 3.5 miles away) is classified as an accessible small town. Applecross is classified as a very remote rural settlement, as is the Island of Lewis outside Stornoway, which itself is classed as a very remote small town. The degree of remoteness and consequent expectations of service availability may be reflected in the lower preferences (and values, see below) for closer services for the Applecross and Lewis respondents relative to those for Eastriggs. In other words as remoteness increases, the expectation of service availability decreases. However, this does not mean that locally available services are not important in more remote areas.

Relative preference orderings

The different sizes of the coefficients reveal the relative preference orderings amongst the attributes and levels of the three areas. Figure 4 presents the estimated coefficients in graphical form with the 95% confidence intervals for the estimated coefficients. This allows visual comparisons to be made both across the attributes within each sample and across the samples. Overlapping confidence intervals indicate that there are no statistically significant differences between the coefficient estimates.

It can be seen from Figure 4 that for the attribute levels for which the estimated coefficients were significant, the preferences expressed by respondents in Eastriggs were higher and significantly different from the preferences of both the Applecross and Lewis samples. The large overlaps in the confidence intervals for the Applecross and Lewis coefficients (with the exception of "all day versus limited opening") indicates that there are no significant differences between preferences for these attributes in these two areas.

Co-located services rather than single services up to 20 miles away were the most preferred level in both the Eastriggs and Applecross samples, and the second (out of eight) most preferred in the Lewis sample.

All day opening was the most preferred attribute level in Lewis when compared to limited opening. This was the sixth most preferred attribute level in Applecross, but was insignificant in Eastriggs.

Having single services up to 10 miles away compared to up to 20 miles away was the second and third most preferred option in Eastriggs and Applecross respectively. This was sixth most preferred in Lewis.

Having co-located services rather than single services up to 10 miles away was second most preferred in Eastriggs, and fourth and fifth most preferred in Applecross and Lewis. This may reflect the lesser degree of remoteness in Eastriggs, where services are generally closer.

Services that were open all day and some evenings compared to limited opening was the second and third most preferred level in Applecross and Lewis respectively, but again this was insignificant in Eastriggs. There were no significant preferences for having services open all day and some evenings compared to having services open all day.

The different preference orderings between service location and opening hours indicates that respondents on Lewis are more willing to travel to access services, and instead prefer more convenient opening hours. This may reflect a better quality of roads on Lewis compared to Applecross, with resulting lower journey times. Other factors such as place of employment relative to home may also be important as this may allow more convenient access to services at a distance. However, we did not directly observe these factors.

The preference for having staff who know you rather than staff you do not know was insignificant in Eastriggs, but was the second and third most preferred level in Applecross and Lewis respectively. This may reflect the fact that community cohesion is of greater importance to residents in these areas, and that the sense of community is still strong. This difference was demonstrated by comments made at the workshop in Eastriggs where many of the (more elderly) participants expressed

concern about the loss of sense of community.

The preference for having a full range of information or services rather than a limited range was significant, although the least important attribute, in each sample. The significance of this attribute confirms comments made in the Applecross workshop, where some people had to travel to Kyle of Lochalsh (41 miles) or Inverness (80 miles) to use Post Office services that were not available locally. Similarly, some Applecross residents travel to Dingwall (69 miles) for some council services.

The price coefficient (marginal disutility of price) is twice as large in Eastriggs (-0.0323) than in Applecross (-0.0157) or Lewis (-0.0123) indicating greater resistance to increases in council tax in Eastriggs.

Implicit prices

Table 6 presents the implicit prices for the three areas. These should be interpreted as willingness to pay additional council tax per household per year. Because the estimated models were specified as a linear function of the attributes the implicit prices are additive. Consequently, comparison between levels not explicitly estimated (for example, co-located services versus single services up to 10 miles away) can be made by calculating the difference between the estimated implicit prices.

The estimated implicit prices reiterate the results of the choice experiment models in terms of the relative preferences within each of the samples for the attribute levels. However, the differences in price sensitivity, indicated by the sizes of the price attribute coefficients, slightly alter the relative preferences between samples as we are dividing the estimated coefficients by slightly different price coefficient. Where price sensitivity is higher, as indicated by a higher price coefficient, the resulting willingness to pay will be lower. The price coefficient for Eastriggs was more than twice as large as those for both Applecross and Lewis, indicating a greater disutility from council tax increases. Consequently, the larger preferences for attribute levels in Eastriggs illustrated in Figure 4 are reduced by approximately a half in relative terms as shown in Figure 5.

Marginal value of increasing distance to access services

The attributes used in the choice experiment were primarily qualitative and as such the estimated coefficients and implicit prices reveal preferences and values for moving from one state of the world to another. They cannot therefore be used to estimate the value of incremental changes between levels. However, it is possible to interpret the service location attribute as being quantitative if we make the assumption that there is no particular difference between local co-located services and single services at a distance. By entering the distance that respondents stated they lived from their nearest village where services can be accessed (see Annex 24) in place of the level “Co-located services” we can directly compare this to the other levels of this attribute, 10 miles and 20 miles. This will allow us to estimate the loss of utility for each additional mile travelled to access services.

The multinomial logit models were re-estimated for each sample to estimate the marginal value of each mile travelled to access services. The resulting implicit prices can be interpreted as the annual value of the loss in welfare per household for each additional mile travelled to access services. These were £4.05 for Eastriggs, £3.40 for Applecross and £2.97 for Lewis, indicating that the loss in welfare for having

services at a distance is lower for the two more remote areas. Care must be taken in the interpretation of these figures: they do not indicate the loss in welfare for each mile travelled on each occasion a service is accessed. Rather, if a household in Applecross had to travel 15 miles to access a typical range of services the annual loss in welfare would be 15*£3.40 = £51.

Table 7 presents these welfare losses for each sample area over a range of distances. Note that the estimates differ slightly from the implicit prices for the co-located services versus single services up to either 10 or 20 miles away presented in table 8, this is because we have explicitly considered the distance to be travelled to the nearest village in the marginal cost estimates. These welfare losses are over and above direct costs such as transport and the opportunity cost of time.

Cost benefit analysis of co-located services

We now use the results of the choice experiments to undertake a cost benefit analysis of the three case study examples of co-located rural services to compare the non-market benefits with the costs of provision. Cost information for Eastriggs was provided directly from council sources[2]. For Lewis data were drawn from the Annual report of Voluntary Action Lewis[3]. Applecross estimates were derived from the report by Harrop and Palmer (2000). For the latter, the cost estimate is derived from a reasonable approximation between the outlet types detailed in that report and the service provision that is currently being provided at Applecross. While these were not an exact match, this approximation provides a reasonable estimate for comparison with benefit estimates. These basic estimates are summarised in Table 8.

Non-market benefit scenarios

Eastriggs scenarios: Location of council services

The following services scenarios compare the provision of council services in Eastriggs using an outlet co-located in the Post Office with alternative outlets out with Eastriggs. The baseline locations for services consider either the Dumfries and Galloway Council headquarters in Dumfries or a hypothetical council service outlet in Annan. The results of the choice experiment revealed that service location and service level were the only attributes for which respondents had significant preferences. In each scenario the value of the change in service provision presented both as per household and aggregated over the number of households in Eastriggs.

In Scenario 1 (Table 9) we are comparing co-located provision in Eastriggs with single service provision in Dumfries, this represents a distance saving of 19 miles, which is valued at £4.05 per mile per annum, i.e. this benefit would not be achieved each time the journey was avoided. Scenario 1 further assumes that only a limited range of services would be available in Eastriggs when compared to Dumfries, this reduces welfare by £24.34 per household per annum. The total benefit of a co-location of limited service in Eastriggs is £52.61 per household per annum. Total aggregate benefits over the 715 households in Eastriggs are £37,616 per annum.

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[2] Colin Holmes, Dumfries and Galloway Council,

[3] Voluntary Acton Lewis, Annual Report 2002-2003
http://www.valewis.org.uk/val/about/annreports/files/Annual_Report_03-04.PDF

Scenario 2 (Table 10) compares co-located service provision in Eastriggs with a hypothetical council service outlet in Annan which is 3.5 miles from Eastriggs. The benefits of the reduced distance are therefore much lower then the previous scenarios and amount to £14.18 per household per annum. It is also assumed that the larger catchment available for a service outlet in Annan would justify a full range of services whereas the Eastriggs outlet would only have a limited service. Consequently, there is a loss of welfare with respect to service level; this outweighs the benefit of reduced distance with the result that there is an overall welfare loss of £10.16 per household per annum, or an aggregate loss of £7,264 per annum.

Applecross scenarios: Location of library

The Applecross services scenarios consider alternative locations for library services, with the baseline locations being either stand-alone libraries in Kyle of Lochalsh or Lochcarron compared to the co-located provision in Applecross Primary School. None of the alternative library sites currently offer all day opening with Kyle of Lochalsh open for 10 hours over 2 days, Lochcarron open for 11 hours over 4 days, and Applecross open for 4 hours over 2 days. In each scenario the value of the change in service provision is presented both as per household and aggregated over the number of households in the Applecross area, although distances are measured from Applecross village.

Scenario 1 (Table 11) compares the co-located library in Applecross with the library in Kyle of Lochalsh, a distance of 41 miles. Neither library offers all day opening, however it is assumed that Applecross residents are more likely to know the staff in their local library, and that a full service is available in Kyle of Lochalsh but not in Applecross. The service level attribute was generic in the choice experiment, but in the context of a library full services might include access to the internet and information technology, a wider range of books, and educational facilities such as adult literacy. As might be expected the reduced distance for the co-located library in Applecross provides a substantial benefit of £139.40 per household per annum. Having familiar staff provides a benefit of £33.72 per household per annum, although there is a welfare loss associated with the reduced level of service of £15.28 per household per annum. Overall benefits of scenario 1 are £157.84 per household per annum. Over the 89 households in Applecross parish, these benefits aggregate to £14,048 per annum.

Scenario 2 (Table 12) compares the co-located library in Applecross with the library in Lochcarron. Both libraries have limited opening times and service levels are also assumed to be limited. Staffing differs, with the Lochcarron library being staff with “people you don’t know” compared to “people who know you” in the Applecross library. The travel distance avoided by having the library in Applecross is 17 miles resulting in a benefit of £57.80 per household per annum, and the difference in staffing results in a further benefit of £33.72 per household per annum, so total benefits are £91.52 per household, and £8,145 per annum in aggregate.

Lewis scenarios: Voluntary Resource Centre

This service is located in Stornoway, the most populous settlement and the main administrative and business centre on Lewis. Consequently, scenarios offering comparisons on the basis of distance are unrealistic as service users either live locally or would need to travel to Stornoway to access services in any case. However, benefits based on the remaining attributes can be assessed. In each

scenario the value of the change in service provision presented both as per household and aggregated over the number of households in both Stornoway and Lewis, to reflect the range of possible catchment sizes.

Scenario 1 (Table 13) compares different levels of the staffing and service level attributes, but assumes that opening hours remain the same between the baseline and co-located scenario. The benefits of having a service staffed by “people who know you” rather than “people you don’t know” is £30.80 per household, whilst having a full rather than limited range of services provides a benefit of £16.12 per household. The total benefit is £49.84 per household, which aggregates to £165,111 for the 3519 households in Stornoway and £370,011 when aggregated over the 7886 households on Lewis.

Scenario 2 (Table 14) offers the same changes in staffing and service levels as scenario 1, but assumes that baseline opening hours are limited and that these would increase to all day opening under the new scenario. The annual per household benefits of such an increase in opening hours would be £55.36 which would increase total household benefits to £102.28. Aggregate benefits would increase to £359,923 for Stornoway and £806,580 for Lewis as a whole.

Lewis scenarios: Hypothetical co-located services outside Stornoway

The Voluntary Resource Centre case study, whilst offering an example of a co-located service outlet due to the range of services provided, does not lend itself to a full exploration of the benefits of co-location particularly with reference to reduced travel distances as it is likely that alternatives that were not co-located would be available nearby within Stornoway. The following scenarios consider the non-market benefits of providing co-located services in two remote communities on Lewis: Ness in the north west of the island and Uig in the south west, where the baseline service location is Stornoway. These scenarios are out with the CBA exercise and serve to illustrate further uses of the choice experiment results in planning service delivery. In each scenario the value of the change in service provision is presented both as per household and aggregated over the number of households in either Ness or Uig.

Both scenarios (Table 15 and Table 16) consider a hypothetical co-located service outlet where the alternative outlet would be in Stornoway. It assumed that the co-located service would offer limited opening hours and service levels compared to the baseline in Stornoway, but due to the location within the local community would be staffed by “people who know you”. For these attributes each scenario offers the same welfare changes of losses of £55.36 and £16.12 with respect to opening hours and serviced level and a gain of £30.80 in respect of staffing. The difference in welfare between the scenarios arises due to distance from Stornoway. Ness is 25 miles from Stornoway so the per household benefit of a co-located service locally would be £74.25 per annum, this compares to a benefit of £98.01 per households for Uig residents where service provision would be 33 miles form Stornoway.

The total benefits of co-location would be £33.57 per household per annum in Ness and £57.33 in Uig. The aggregate non-market benefits would be £14,872 in Ness based on 443 households and £38,870 in Uig aggregated over 678 households.

Conclusions

The strength of the choice experiment approach is that it provides a basis for estimating wider non-market service benefits. These include convenience elements such as distance, opening hours and social aspects such as familiarity with staff. The estimated non-market values for different levels of service provision in our experiment can be used to extrapolate to any hypothetical service level combination of the same attributes. The non-market benefits of any combination of service attributes can then be combined with any *market* benefits of service provision in order to derive the total value accruing to that level of service. The service combination benefits can in turn be compared with cost of provision estimates.

In this study the stated preference analysis provides an insight into the net social benefits (i.e. social benefit minus cost) of different delivery options based on real service outlets. Using approximate service costs for the co-located provision in the three survey areas, indicative benefit/cost ratios were found to range from 1.02 to 4.53; however, in some scenarios negative net benefits arose where reduced distance to services did not compensate for other elements of service that are poorer, such as opening hours. The positive benefit/cost ratios suggest that before adding in any market benefits, some combinations of services (based on the baseline provision) are delivering non-market benefits in excess of the costs of provision. We suggest that this information helps to qualify hitherto speculative statements about the benefits that can be attributed to rural services.

This information should be considered in designing service delivery alternatives. It is clear that some service configurations will deliver greater social benefits than others and this factor should be part of any process that seeks to ration the distribution of access in rural Scotland.

At this point this research remains less specific about the apportionment of generated benefits between public and private service providers and the ways in which public funds can be employed to generate the greatest leverage from private initiatives in a co-located form. The social cost-benefit approach effectively abstracts from the public-private distinction in provision; what counts is whether benefits exceed costs. But the calculus underlying this approach can clearly be altered in cases where private supply can be leveraged to give best value to public contributions. We can conclude by suggesting that the nature and extent of this leverage warrants further consideration as part of any co-location agenda.

A number of policy recommendations arise from the results of this research:

- Co-located services deliver the greatest benefit where it reduces distances required to access services. Service providers should also recognise the importance of other service attributes.
- Co-location is not a “one size fits all” solution to service provision. Different communities with varying circumstances will value and prioritise different elements of services. This should be recognised when planning service delivery.
- The existence of social benefits should be considered when assessing options for co-location where commercial considerations might otherwise preclude provision.
- The social and community focus provided by local services, particularly in more remote areas, suggests a role for local communities in providing services through volunteerism and provision of services by local community trusts. Co-location of these services may provide community focus, as people using different services are drawn to the same hub.

- Cost considerations are an important factor in judging service efficiency, but it is often unclear how costs are being shared and what savings can be inferred. More transparent cost accounting would facilitate cost comparisons.

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Table 1: Service benefit categorisation

Benefit category	Definition	Comments
Direct benefits	Benefits delivered and largely consumed at the point of delivery; e.g. health, social and information services.	The principal rationale for provision for both private and public suppliers. Some direct benefits are excludable and therefore there is an incentive for private providers to supply for a financial return.
Indirect benefits	Multiplier benefits that arise locally and regionally as a result of increased business activity leading to demand and supply impacts on incomes and employment	This category of benefit is of most interest in terms of the economic development potential sought by bodies such as Scottish Enterprise and Highlands and Islands Enterprise.
Non-market benefits	Benefits that are less easily measured than the previous categories, typically because they are less easily observed and users are only "consuming" such benefits in a passive or non-use way. Users can have several motives for valuing services in a passive sense, including social cohesion, community security and the mere existence of the option to use a local service (oneself or others)	This category of benefits has hitherto received less attention as a rationale for service provision. Yet the presence of significant intangible non-market benefits provides a compelling reason for government intervention in service provision, even where direct benefits are small. This category can only be measured by revealed and stated preference methods.

Table 2: The information, expert, social and physical functions of services.

		Function			
		Information	Expert	Social	Physical
Service	Library	Library catalogue	Qualified librarian	Social interaction will be important to some users	Books and other materials
	Adult education	Details of courses	Tutors	Peer support, group interaction, social interaction	Workshops, seminars
	Job-seekers service	Jobs available. Courses, training available	Jobs/careers/ training advisor	Social interaction may be important for those not working and may provide additional non-official information.	Not necessarily required but see social function.
	Physical activity and sports	Games, matches, fixtures etc	Coach, trainer, fitness instructor, other competitors	Competition, social matches, mutual support of other athletes	Courts, pitches etc

Table 3: Selected case studies

Criteria	Stornoway	Applecross	Eastriggs D&G
Urban – rural classification	Very remote small town	Very remote rural	Accessible rural
Area of Scotland	Island	Highland mainland	Southern Uplands
Population (of settlement)	8055	240	1683
Existing co-location initiative?	Yes	Yes	Yes
Bottom-up or top-down co-location initiative?	Community / voluntary group led	Local authority led	Local authority led
Co-location initiative established	Opened August 1997	Unknown	Opened July 2005
Services co-located	- Meeting space - Support and training for voluntary organisations - Befriending scheme - Information and support for families / carers with special needs children - Mental health support - Minibus hire - Careers Scotland - Chamber of Commerce - Garden / amenity project to help elderly and disabled maintain gardens - Computer loan scheme	- Primary education - Library - Nursery	- Post office - Council tax enquiries - Street lighting reporting - Pothole reporting - Issuing of bus passes - Enquiries relating to refuse collection - Housing benefit enquiries
Hub	Volunteer resource centre	Primary school	Post office
Other comments			New pilot project

Table 4: Choice experiment attributes and levels

Attributes	Levels					
Service type and location	Co-located services in your nearest village		Single services up to 10 miles away		Single services up to 20 miles away	
Opening hours	Limited hours (morning or afternoon only)		Open all day (from 9 to 5)		Open all day and some evenings	
Staffing	Local people who know you			People you do not know		
Service level	Limited range of information and/or services			Full range of information and/or services		
Council Tax increase (per household per year)	£5	£10	£20	£40	£70	£100

Table 5: Choice experiment results for the three areas (t statistics in brackets).

	Eastriggs	Applecross	Lewis
Constant	1.0013* (5.0337)	1.2519* (7.8095)	1.6009* (9.1152)
Service type and location:			
Co-located services versus single service 20 miles away	2.4274* (15.7387)	0.9488* (9.6688)	0.6565* (6.8838)
Single service 10 miles away versus single service 20 miles away	0.9615* (6.8463)	0.4839* (5.0621)	0.3035* (3.2260)
Co-located services versus single service 10 miles away	1.4659* (11.3060)	0.4649* (5.0140)	0.3530* (3.8080)
Opening hours:			
Open all day (9 to 5) versus limited opening	-0.0010 (-0.0072)	0.3488* (3.6618)	0.6815* (7.1378)
Open all day and some evenings versus limited opening	-0.1417 (-1.0724)	0.3682* (3.8793)	0.5844* (6.1396)
Open all day and some evenings versus open all day (9 to 5)	-0.1407 (-1.0690)	0.0194 (0.2070)	-0.0970 (-1.0570)
Staffing:			
People who know you versus people you do not know	0.0739 (0.7614)	0.5300* (7.6719)	0.3792* (5.6243)
Service level:			
Full service versus limited service	0.7873* (7.7518)	0.2401* (3.5197)	0.1985* (2.9568)
Council tax increase	-0.0323* (-14.1690)	-0.0157* (-10.2030)	-0.0123* (-8.1852)
Pseudo R^2	0.39	0.26	0.28
Log likelihood	-650.04	-980.22	-898.29
Number of choice observations	975	1202	1139

* Significant at the 5% level

Table 6: Implicit prices (£/household/annum).

	Eastriggs	Applecross	Lewis
Service location:			
Co-located services versus single service 20 miles away	£75.04*	£60.37*	£53.34*
Single service 10 miles away versus single service 20 miles away	£29.72*	£30.79*	£24.66*
Co-located services versus single service 10 miles away	£45.32*	£29.58*	£28.68*
Opening hours:			
Open all day (9 to 5) versus limited opening	-£0.03	£22.20*	£55.36*
Open all day and some evenings versus limited opening	-£4.38	£23.43*	£47.48*
Open all day and some evenings versus open all day (9 to 5)	-£4.35	£1.23	-£7.88
Staffing:			
People who know you versus people you do not know	£2.29	£33.72*	£30.80*
Service level:			
Full service versus limited service	£24.34*	£15.28*	£16.12*

* Indicates that the underlying coefficient estimates were significant at the 5% level.

Table 7: Welfare losses of increasing distances to access services

Distance miles	Welfare loss (£/household/annum)		
	Eastriggs	Applecross	Lewis
2.5	10.13	8.50	7.43
5.0	20.25	17.00	14.85
7.5	30.38	25.50	22.28
10.0	40.50	34.00	29.70
12.5	50.63	42.50	37.13
15.0	60.75	51.00	44.55
17.5	70.88	59.50	51.98
20.0	81.00	68.00	59.40

Table 8: Annual costs for co-located services.

Costs	Eastriggs	Applecross	Lewis
Fixed costs			
Rental	£1,500	£1,500	
Capital equipment (e.g. vehicle/ computing)	£498	£500	
Staff	£4,272	£4,000	
Other costs (e.g. utilities, consumables)	£2,040	£2000	
Total	£ 8,310	£8,000	£285,000

Table 9: Scenario 1 - Provision of council service outlet in Eastriggs Post Office compared to Dumfries Council offices with a limited rather than full range of services.

	Service location	Service level	Value over baseline
Baseline 1	Dumfries Council offices	Full range	
Co-located service scenario 1	Eastriggs Post Office	Limited range	
Distance saved	19 miles		
Marginal value	£4.05	-£24.34	
Value/household	£76.95	-£24.34	£52.61
Aggregate (715 households)	£55,019	-£17,403	£37,616
Cost			£8,310
Net benefit			£29,306
Benefit/cost ratio			4.53

Table 10: Scenario 2 - Provision of council service outlet in Eastriggs Post Office compared to a hypothetical outlet in Annan with a limited rather than full range of services.

	Service location	Service level	Value over baseline
Baseline 2	Annan High Street	Full range	
Co-located service scenario 2	Eastriggs Post Office	Limited range	
Distance saved	3.5 miles		
Marginal value	£4.05	-£24.34	
Value/household	£14.18	-£24.34	-£10.16
Aggregate (715 households)	£10,139	-£17,403	-£7264
Cost			£8,310
Net benefit			-£15,574
Benefit/cost ratio			n/a

Table 11: Scenario 1 - Provision of library service in Applecross compared to Kyle of Lochalsh with limited opening, staff "who know you" and a limited range of services.

	Service location	Opening hours	Staffing	Service level	Value over baseline
Baseline 1	Kyle of Lochalsh	Limited	People you don't know	Full	
Co-located service scenario 1	Applecross	Limited	People who know you	Limited	
Distance saved	41				
Marginal value	£3.40	-	£33.72	-£15.28	
Value/household	£139.40	-	£33.72	-£15.28	£157.84
Aggregate (89 households)	£12,407	-	£3,001	-£1,360	£14,048
Cost					£8,000
Net benefit					£6,048
Benefit/cost ratio					1.76

Table 12: Scenario 2 - Provision of library service in Applecross compared to Lochcarron with all day opening, staff "who know you" and a limited range of services.

	Service location	Opening hours	Staffing	Service level	Value over baseline
Baseline 2	Lochcarron	Limited	People you don't know	Limited	
Co-located service scenario 2	Applecross	Limited	People who know you	Limited	
Distance saved	17				
Marginal value	£3.40	-	£33.72	-	
Value/household	£57.80	-	£33.72	-	£91.52
Aggregate (89 households)	£5,144	-	£3,001	-	£8,145
Cost					£8,000
Net benefit					£145
Benefit/cost ratio					1.02

Table 13: Scenario 1 - Voluntary Resource Centre in Stornoway with all day opening, staff "who know you" and a full range of services.

	Opening hours	Staffing	Service level	Value over baseline (Stornoway)	Value over baseline (Lewis)
Baseline 1	All day	People you don't know	Limited		
Co-located service scenario 1	All day	People who know you	Full		
Value/household	-	£30.80	£16.12	£49.84	£49.84
Aggregate, Stornoway (3519 households)	-	£108,385	£56,726	£165,111	
Aggregate, Lewis (7886 households)	-	£242,889	£127,122		£370,011
Cost				£285,000	£285,000
Net benefit				-£119,889	£85,011
Benefit/cost ratio				n/a	1.30

Table 14: Scenario 2 - Voluntary Resource Centre in Stornoway with all day opening, staff "who know you" and a full range of services.

	Opening hours	Staffing	Service level	Value over baseline (Stornoway)	Value over baseline (Lewis)
Baseline 2	Limited	People you don't know	Limited		
Co-located service scenario 2	All day	People who know you	Full		
Value/household	£55.36	£30.80	£16.12	£102.28	£102.28
Aggregate, Stornoway (3519 households)	£194,812	£108,385	£56,726	£359,923	
Aggregate, Lewis (7886 households)	£436,569	£242,889	£127,122		£806,580
Cost				£285,000	£285,000
Net benefit				£74,923	£521,580
Benefit/cost ratio				1.26	2.83

Table 15: Scenario 1 - Service outlet in Ness compared to Stornoway with limited opening, staff "who know you" and a limited range of services.

	Service location	Opening hours	Staffing	Service level	Value over baseline
Baseline 1	Stornoway	All day	People you don't know	Full	
Co-located service scenario 1	Ness	Limited	People who know you	Limited	
Distance saved	25				
Marginal value	£2.97	-£55.36	£30.80	-£16.12	
Value/household	£74.25	-£55.36	£30.80	-£16.12	£33.57
Aggregate (443 households)	£32,893	-£24,524	£13,644	-£7,141	£14,872

Table 16: Scenario 2 - Service outlet in Uig compared to Stornoway with limited opening, staff "who know you" and a limited range of services.

	Service location	Opening hours	Staffing	Service level	Value over baseline
Baseline 2	Stornoway	All day	People you don't know	Full	
Co-located service scenario 2	Uig (Timsgarry)*	Limited	People who know you	Limited	
Distance saved	33				
Marginal value	£2.97	-£55.36	£30.80	-£16.12	
Value/household	£98.01	-£55.36	£30.80	-£16.12	£57.33
Aggregate (678 households)	£66,451	-£37,534	£20,882	-£10,929	£38,870

* Location of existing community-run shop and post office, primary school and community centre

	A	B
Service type and location	Single services up to 10 miles away	Co-located services in your nearest village
Opening hours	Open all day (from 9 to 5)	Open all day and some evenings
Staffing	People you do not know	Local people who know you
Service level	Full range of information and/or services	Limited range of information and/or services
Council Tax increase (per household per year)	£70	£100

Which option do you prefer?

A ☐
B ☐
Neither ☐

If neither which option did you least prefer?

A ☐
B ☐

Figure 1: Example choice set

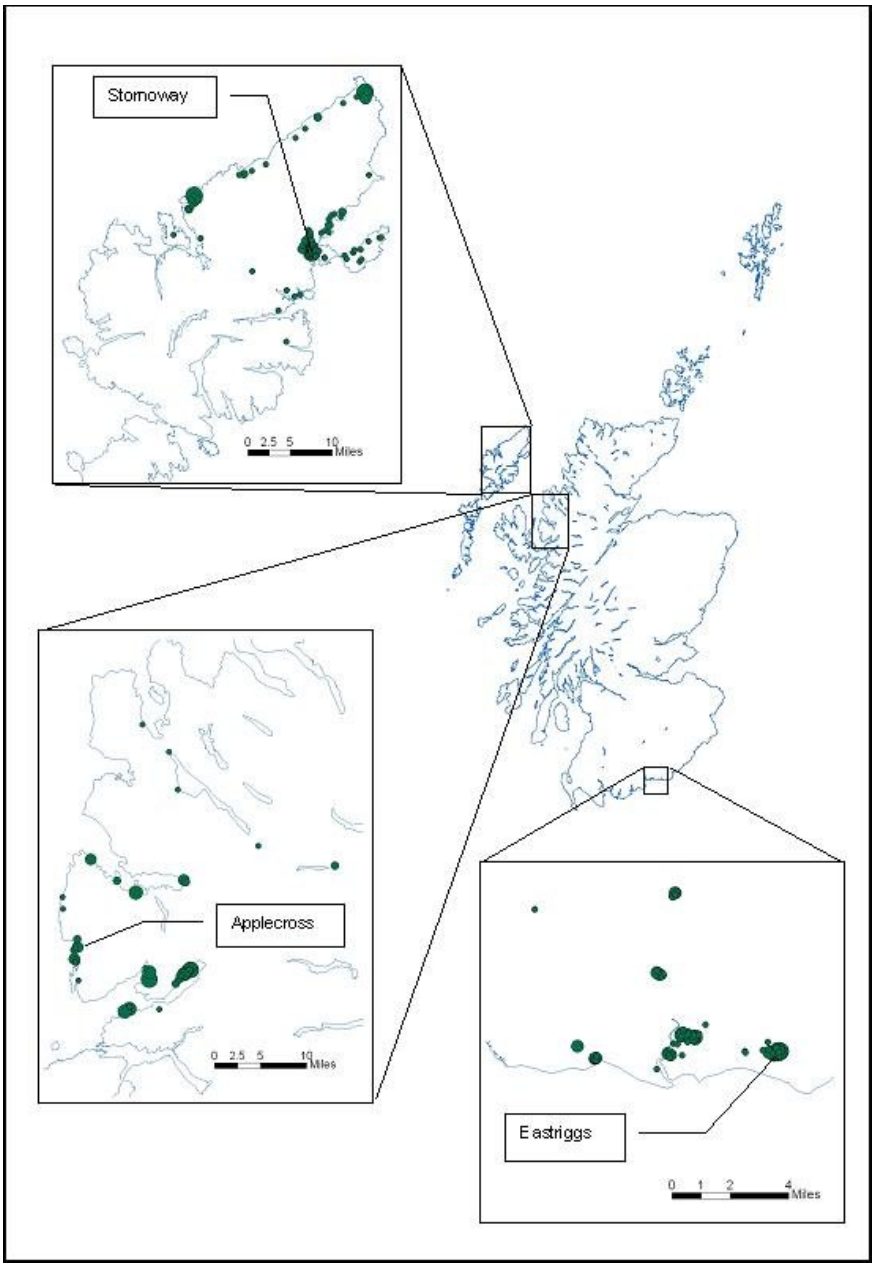

Figure 2: Locations of sample areas and respondents, larger markers indicate multiple respondents with the same postcode. (Map and postcode data © Crown Copyright, Post Office and Ordinance Survey)

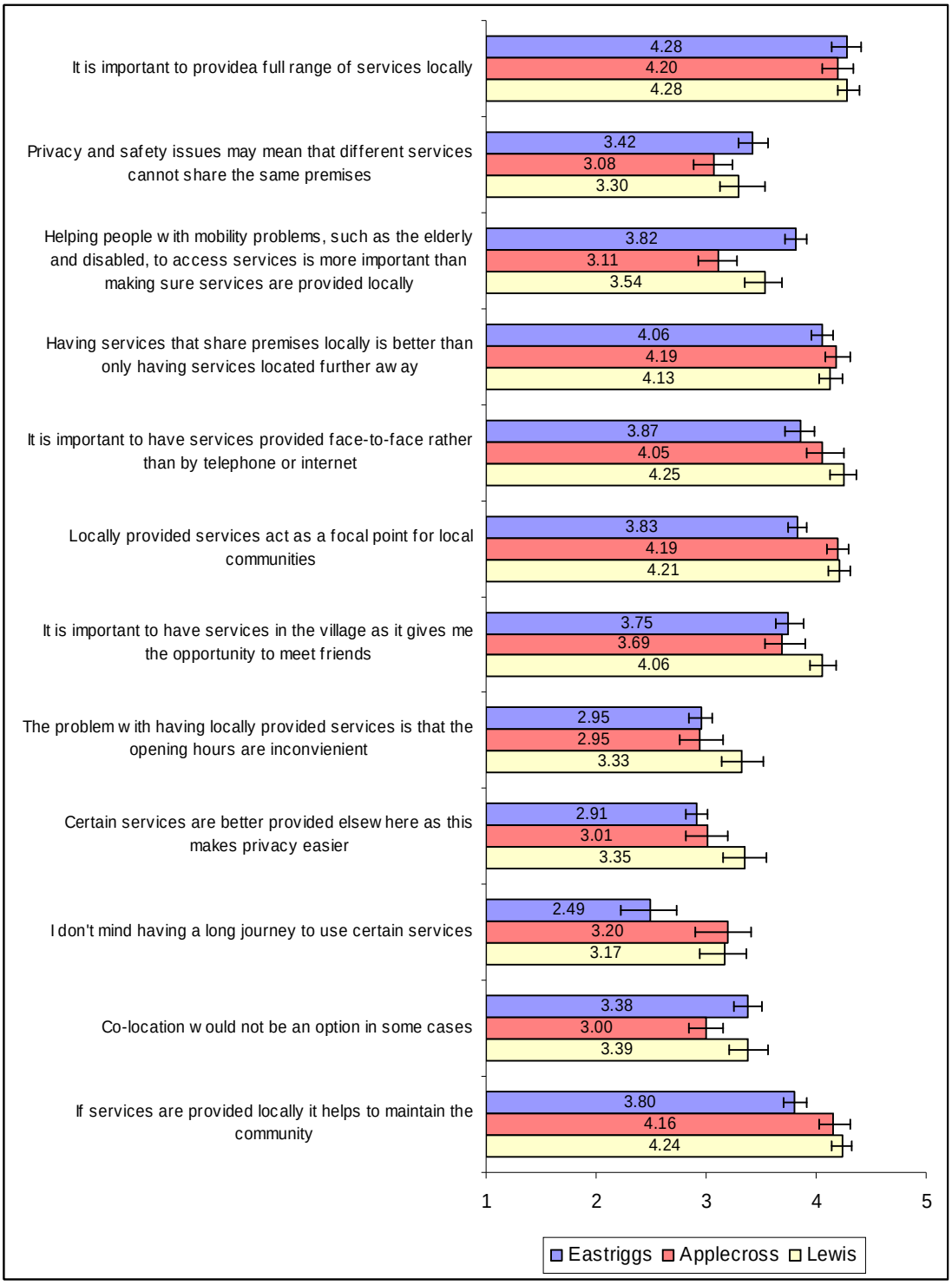

Figure 3: Mean responses to statements relating to rural services, error bars represent 95% confidence intervals. (1 = strongly disagree, 3 = neither agree nor disagree, 5 = strongly agree).

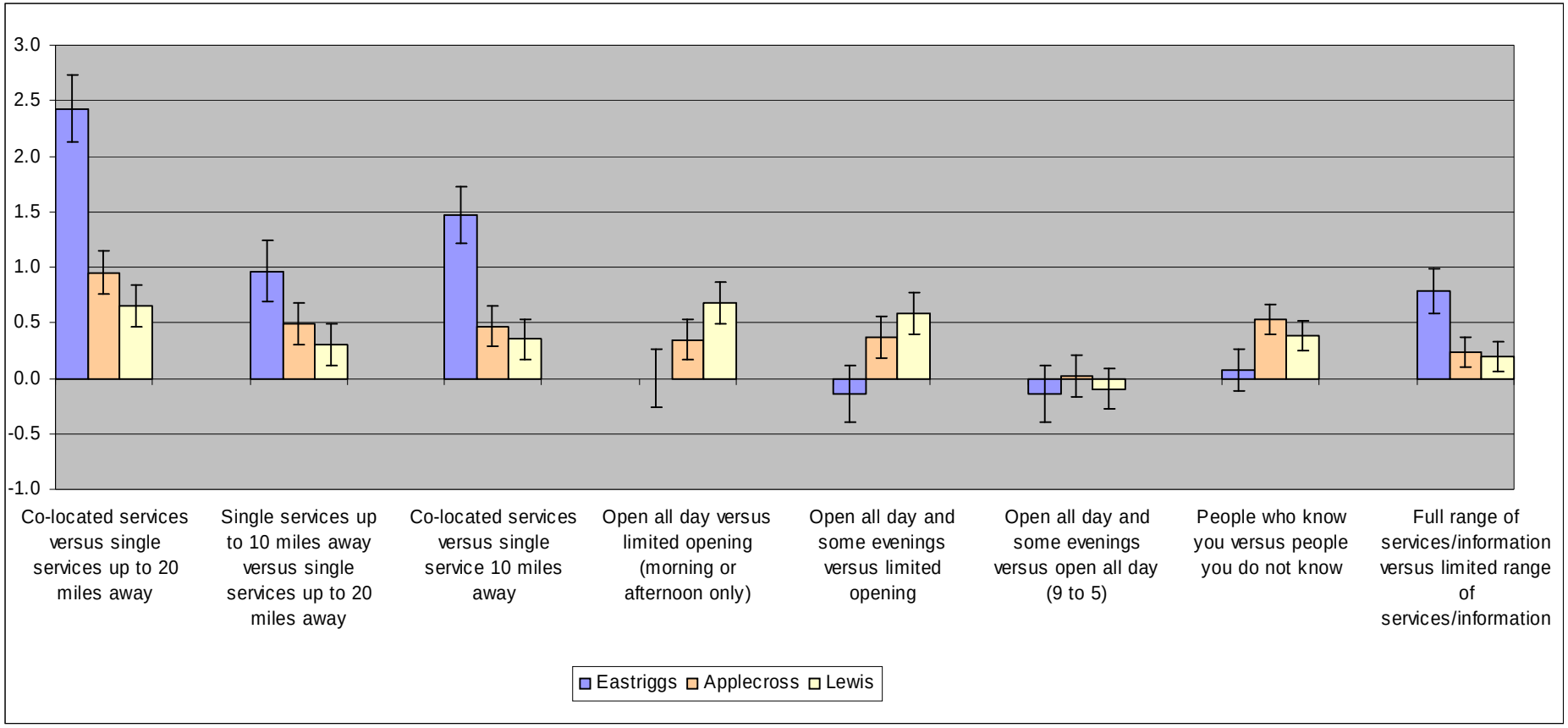

Figure 4: Comparison of estimated coefficients (error bars represent 95% confidence intervals)

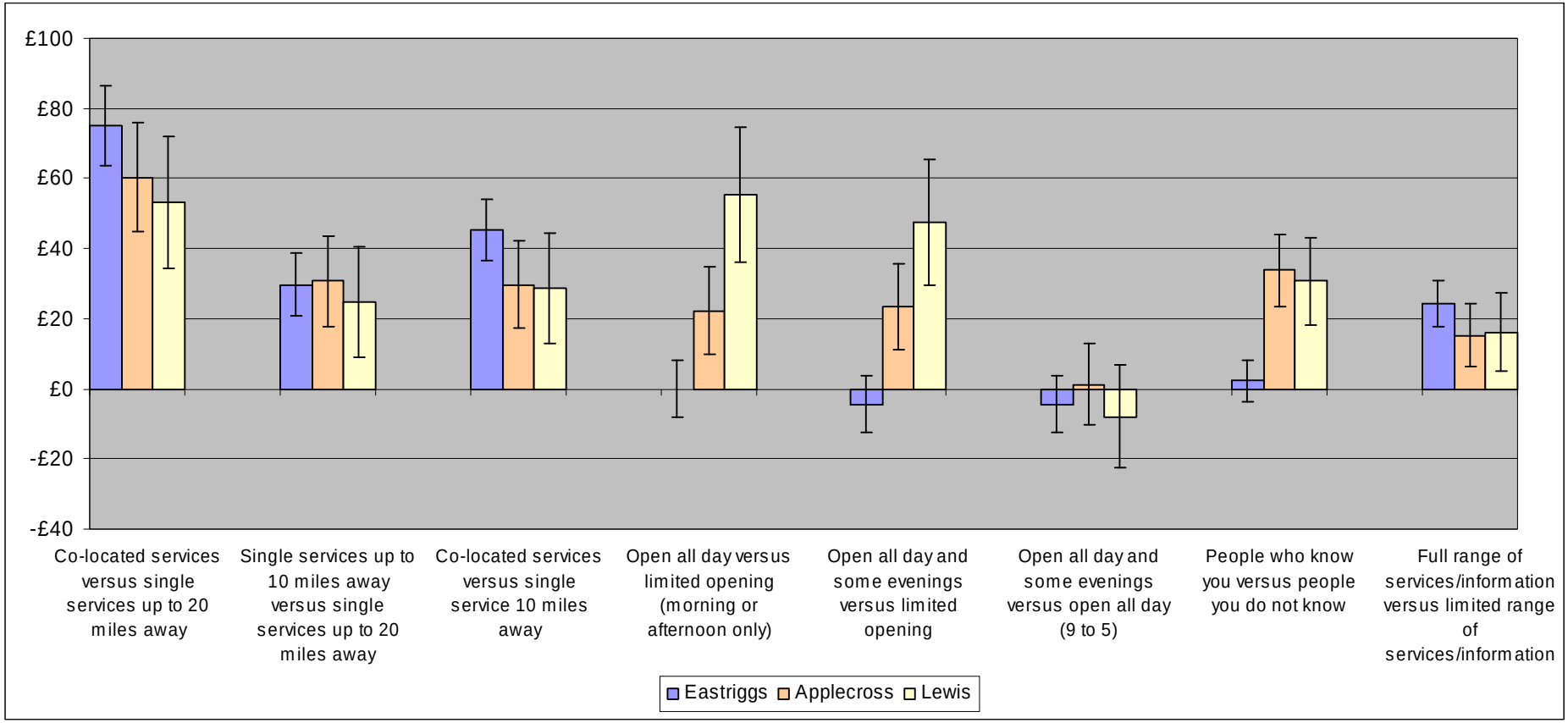

Figure 5: Implicit prices and 95% confidence intervals