THE IMPACT OF CHANGES IN ACCESS TO LOCAL FACILITIES ON THE WELLBEING OF ELDERLY AND DISABLED PEOPLE

Mackett, Roger L, Titheridge, Helena and Achuthan, Kamal
Centre for Transport Studies, University College London
London, WC1E 6BT, United Kingdom
E-mail: r.mackett@ucl.ac.uk

_____

SUMMARY

An important element of wellbeing is the ability to reach the facilities and services needed for a healthy and fulfilling life. Many of the needs of everyday life for elderly and disabled people are met through the provision of local services such as post offices and public libraries. Elderly and disabled people with no car or on low incomes may need such services in order to maintain their health, income and quality of life. In Britain there is a policy of rationalising such services, sometimes in order to save money, and sometimes as part of a modernisation programme. For example, the British Government initiated the Post Office Network Change Programme in order reshape the network in order to reduce the cost of providing such services. Since October 2007, approximately 2500 branches have been closed. Public libraries are being closed to save public expenditure. However, in developing these re-organisation programmes the access and equity issues are rarely considered systematically. One way to address these issues this is to use a computer-based tool, such as AMELIA (A Methodology for Enhancing Life by Improving Accessibility), which was developed in the Centre for Transport Studies at University College London as part of the research programme of the AUNT-SUE consortium (Accessibility and User Needs in Transport in a Sustainable Urban Environment). AMELIA has been designed to test the extent to which transport and other policies influence social inclusion. AMELIA is a user-friendly, policy-oriented interface to a Geographic Information System (GIS). It requires data on the population in the group being considered (elderly people, disabled people and so on), the destinations that they wish to reach (shops, post offices, health facilities and so on) and how they can travel there. AMELIA can then be used to see how many more (or fewer) of this group can reach the opportunities as a result of the policy actions. In the paper AMELIA is applied to examine the implications of reorganisation programmes for post offices and public libraries in Hertfordshire, a relatively wealthy area to the north of London with high car ownership and a mixture of urban and rural areas, and St Albans a city within Hertfordshire. The results are presented in terms of the changes in the access to post offices and public libraries by elderly and disabled people to see the effects of the policies underlying the programmes of change on their wellbeing. The discussion revolves around the importance of access to local facilities for elderly and disabled people and how changes in the pattern of services can have a disproportionate impact on elderly and disabled people.

Key Words: accessibility; post offices; libraries; quality of life; local facilities

PURPOSE OF THE STUDY

Like other members of society, elderly and disabled people need to be able to access a variety of services in order to meet their everyday needs. This requires that the services are available and that they can be reached via the transport system. The provision of services cost money, and where they are not provided on a commercial basis, represents a call on public expenditure. There is often a desire to change the spatial distribution of such facilities, for example to improve their availability or to save money. However, such changes are not always planned in a rational way or take into account the needs of specific groups such as elderly and disabled people.

This focus of this paper is to examine the effects of changes in the provision of two services that are important for elderly and disabled people. One is post offices which elderly and disabled people may need to access in order to collect the money that they receive from the government in the form of pensions or other allowances, which may form a significant part of their income. Whilst many of these benefits can be paid directly into bank accounts, many elderly and disabled people require cash to meet their everyday financial needs. The second type of service being considered is public libraries, which provide the gateway to information, both written and electronic, for many elderly and disabled people as well as being an important centre for social and community events.

METHODOLOGY

One way to examine the impact of changes in the provision of local services is to use GIS (Geographical Information Systems) in order to integrate spatial data on the facilities with that on the population. A software tool AMELIA (A Methodology to Enhance Life by Increasing Accessibility) is used for the analysis in this paper. It is, in effect, a user-friendly policy-oriented interface to GIS. It is being developed in the Centre for Transport Studies at University College London as part of the research programme of the AUNT-SUE consortium (Accessibility and User Needs in Transport in a Sustainable Urban Environment) (see http://www.aunt-sue.info).

The purpose of AMELIA is to show the impact of a policy change on groups within the community. It can be used either to examine the impact of a particular policy action or to allow the user to compare a set of possible policy actions relevant to the policy objective being considered, and then to quantify and map the effects of these policy actions to help the user of the software to assess which is the most effective. The policy objective is normally defined in terms of changes in accessibility for members of a particular group to a set of opportunities, such as shops or medical facilities. Sometimes a mode of travel such as walking is specified. Alternatively, the policy objective might be formulated in terms of overcoming a barrier to movement. AMELIA requires data on the population in the group being considered (elderly people, disabled people and so on), the nature of the facilities that they wish to reach (shops, jobs, health facilities and so on) and how they can travel there. AMELIA can then be used to see how many more or fewer of this group can reach the opportunities as a result of the policy actions. The policy action may be a change to the transport network or to the supply of opportunities at destinations. In order to assess whether a policy action is effective, it is necessary to use benchmarks

representing a 'reasonable' level of access [Titheridge et al, 2009]. AMELIA is used to see how many members of the group meet the benchmark with and without the intervention represented by the policy action. To date, most of the analysis carried out with AMELIA has been at the microscale, examining barriers to walking [Mackett et al, 2008a, b]. The key elements of AMELIA are shown in Figure 1. Having set the general policy objective of increasing accessibility, it can be focused on particular groups in society or modes of travel by selecting the relevant characteristics. These will be used by AMELIA to identify some suitable policy actions. Some of these can take different values, such as the angle on dropped kerbs, so suitable values need to be selected. Guidance is provided on this, drawing on various sources such as the Inclusive Mobility Guidelines [Department for Transport, 2005]. Cost data are also provided for some policy actions, since this may influence the scale of implementation. Another use of AMELIA is to examine changes in the provision of services on specific groups in the community such as elderly people. The data for testing the policy action then have to be set up by making appropriate changes to the GIS representing the study area. Advice is provided on how to do this through a 'help' system built into AMELIA. A suitable benchmark can be selected, on the basis of judgement about a 'reasonable' distance, or level of expenditure of time or money. AMELIA is then run and the results examined, possibly in the light of the cost of implementing the policy action. AMELIA can be run again using different values for the policy action or another policy action. The user of the software can repeat this process until satisfied that a policy action has been identified which is effective in meeting the accessibility needs of the group being considered.
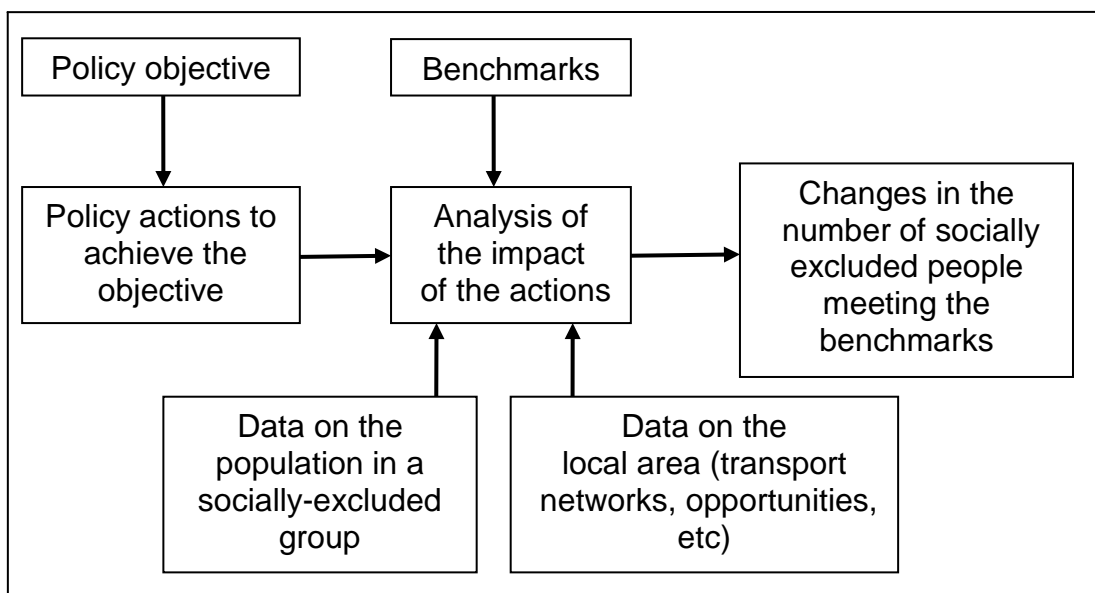

Figure 1 The components of AMELIA.

AMELIA has an information system built into it that identifies suitable policy actions that can be implemented to help achieve the chosen objective. When a policy action is tested with AMELIA, the key output is the increase (or, possibly, decrease) in the number of people in a particular group who can reach the opportunities being considered as a result of the implementation of the policy action.

In this paper AMELIA is used to look at the impacts on elderly and disabled people of changes in the provision of post offices and libraries in Hertfordshire an area of Britain which is relatively wealthy and lies to the north of London with high car ownership and a mixture of urban and rural areas, and for the city of St Albans within Hertfordshire.

THE IMPACT OF CHANGES TO THE POST OFFICE NETWORK

1. The Post Office Network Change Programme

The British Government has initiated the Network Change Programme in order to reshape the Post Office network and so reduce the cost of providing such services, arguing that fewer people are using Post Offices partly because many of the services that they have offered in the past are now available online or directly through banks [Post Office, 2006]. In May 2007, it was announced that about 2,500 out of 14,300 branches would be closed. Minimum access criteria were defined in order to maintain 'the best possible access to Post Office services'. One of was that 99% of the UK population were to be within 3 miles (4.8 km) and 90% of the population were to be within 1 mile (1.6 km) of their nearest Post Office branch.

A GIS database was initially set up for Hertfordshire based on available data such as the Output Area data based on the 2001 Census [Office of National Statistics, 2010], and road centreline network from the MasterMap system set up by Ordnance Survey [2010]. The analysis was carried out for walking as the mode of access to the destinations. Due to the lack of availability of pedestrian network data (a detailed network of footways and crossings), the road centreline network was used for the measurement of distance.

The results are considered in terms of the number of people losing their nearest post office and the change in the numbers living within two distance benchmarks: one mile (1.609 km) because that is the figure used in the Network Change Programme and 600 metres because this is a 10-minute walk at a speed of 1 metre/second. Two groups within the population are used, based upon economic activity status in the Census: elderly people (those defined as 'retired' in the Census) and disabled people (defined as 'sick/disabled' in the Census).

2. The implementation of the policy for Hertfordshire using AMELIA

For Hertfordshire, the locations of the existing Post Offices and the proposed closures were obtained from the Post Office Ltd Network Change Programme Area Plan Proposals for Cambridgeshire, Hertfordshire, Bedfordshire and South Lincolnshire and for South Essex, South Hertfordshire and Buckinghamshire [Post Office Ltd, undated a and b] published as part of Network Change Programme for post offices. There were 194 post offices within the county of which 36 were planned for closure. A 10 km buffer was used to allow for travelling across the boundary to a post office in an adjacent county. Within the whole area, there were 535 post offices, out of which 97 were planned for closure. The locations of post offices are shown in Figure 2.

3. Changes to access to post offices in Hertfordshire

As Table 1 shows, 13.7% of the population of Hertfordshire lost their nearest post office as a result of the closure programme. A greater percentage of disabled people than this lost their nearest post office, but slightly fewer elderly people.
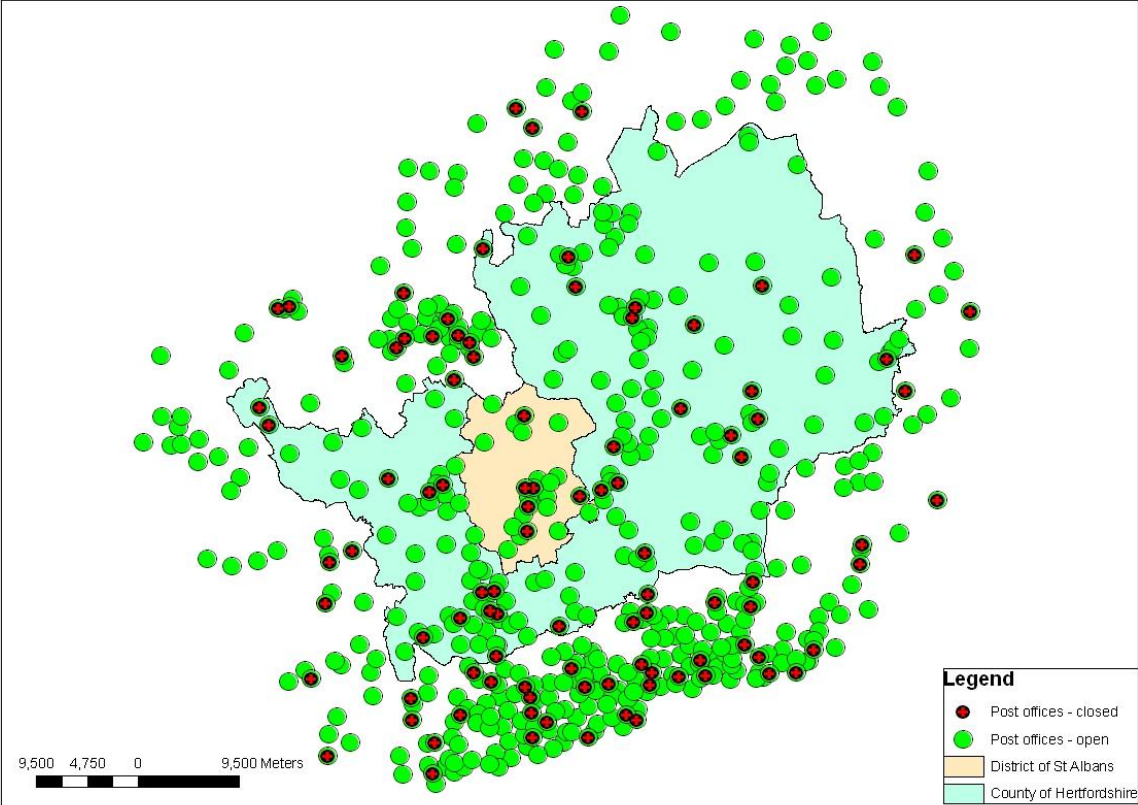

Figure 2 The location of post offices in and adjacent to Hertfordshire after the closure programme.

	Numbers	%
All	141611	13.7
Elderly people	12401	13.1
Disabled people	3233	14.3

Table 1 Number of people in Hertfordshire who lose their nearest post office as a result of the Post Office Closure Programme.

Turning to Table 2, it can be seen that both groups and the overall population did not meet the 90% benchmark for one mile before the closure programme and each group suffered a decrease of about 4% bringing them well below the benchmark. (99% of the overall population and both groups were within three miles of a post office before and after the change). Both elderly and disabled people were above the overall figure for the 10 minute walk benchmark, both before and after but disabled people had a greater than average decrease. Even though both groups appear to be affected slightly less than the overall population, they may have greater need to visit such facilities and be less able to go to alternatives because of their relatively low car ownership levels.

	1 mile (1609 metres)			10 minute walk (600 metres)		
	Before	After	Difference	Before	After	Difference
All	88.1	84.0	4.1	32.3	26.9	5.4
Elderly people	88.6	84.6	4.0	32.6	27.6	5.0
Disabled people	89.4	85.3	4.1	34.3	28.4	5.9

Table 2 Percentages of people in Hertfordshire living within benchmarks of their nearest post office before and after the Post Office Closure Programme.

Turning to St Albans, which is one district within Hertfordshire, Table 3 shows the numbers who lost their nearest post office. It can be seen that just over 20% of the population lost their nearest post office, compared with 13.7% in the whole of Hertfordshire. If these areas are typical of areas in Britain of their type, it suggests that the programme of post office closures may had led to a more even pattern of access for the overall population, with the places with highest access before the closures suffering most, but not necessarily for particular groups such as disabled people.

	Numbers	%
All	26141	20.3
Elderly people	2269	18.7
Disabled people	587	22.4

Table 3 Number of people in St Albans who lose their nearest post office as a result of the Post Office Closure Programme.

The overall population of St Albans was at the one mile (1.6 km) benchmark prior to the closure programme. After it, St Albans was slightly below it at 83.8% compared with 84.0% in the whole of Hertfordshire, as shown in Table 4. Both elderly and disabled people were below the benchmark before the closure programme, and even further below after it, with disabled people having the largest decrease. For the 10 minute walk benchmark, both elderly and disabled people were not affected as much as the overall population.

	1 mile (1609 metres)			10 minute walk (600 metres)		
	Before	After	Difference	Before	After	Difference
All	90.1	83.8	6.3	30.9	24.0	6.9
Elderly people	88.2	82.4	5.7	31.1	25.8	5.3
Disabled people	88.8	80.7	8.1	31.3	25.3	6.0

Table 4 Percentages of people in St Albans living within benchmarks of their nearest post office before and after the Post Office Closure Programme.

THE IMPACT OF CHANGES TO THE LOCATION OF PUBLIC LIBRARIES

1. The programme of changes to libraries in Hertfordshire

Hertfordshire had 51 public libraries. Hertfordshire County Council [2006] has carried out a review of provision of public libraries. The proposals included extending opening hours at a number of libraries, replacing eleven libraries by relocation or rebuilding and closing four at Cranbourne, Cunningham, Fleetville and Jackmans. These four were all small libraries which offered only a limited range of services.

They attracted low numbers of visits. Cranbourne and Jackmans were close to larger, busier libraries. The analysis with AMELIA has examined the implications of the closure of these four libraries. St Albans District had eight libraries of which two (Cunningham and Fleetville) were closed. The locations of libraries in Hertfordshire, including those in St Albans, are shown in Figure 3.
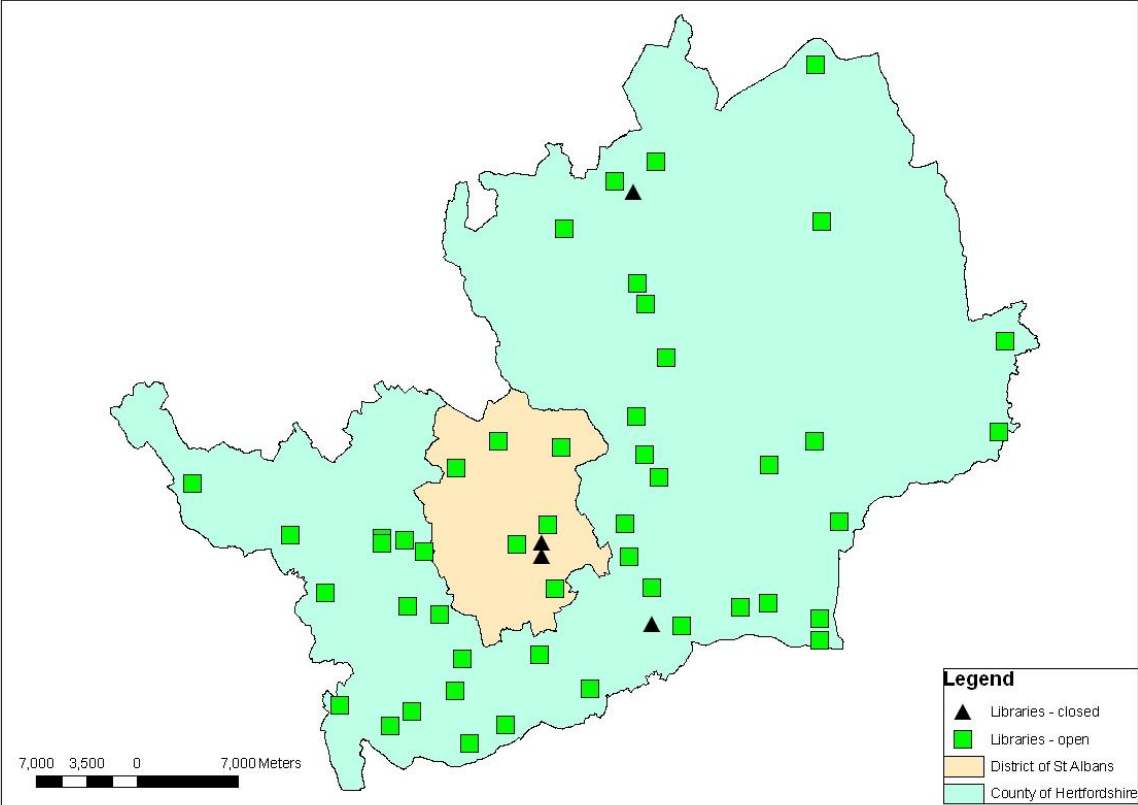

Figure 3 The location of public libraries in Hertfordshire.

2. Changes to access to libraries in Hertfordshire

The changes in Hertfordshire have been closures, so nobody would have better access to a public library. As Table 5 shows, 4.1% of the population lost their nearest public library, with slightly more elderly and disabled people worse off than the general population.

	Numbers	%
All	42439	4.1
Elderly people	3937	4.2
Disabled people	1031	4.6

Table 5 Numbers of people in Hertfordshire who lose their nearest public library as a result of the reorganisation programme.

Table 6 shows, the percentage of people living within one mile (1.6 km) and a ten minute walk of a public library. It can be seen that fewer people live within one mile of a public library than a post office (see Table 2), because of the lower density of libraries, as can be seen by comparison of Figures 2 and 3. The reduction caused by the library closure programme is less than that for post offices because the library

closure programme was not so comprehensive. Disabled people suffered a larger decline for both benchmarks for libraries than the overall population.

	1 mile (1609 metres)			10 minute walk (600 metres)		
	Before	After	Difference	Before	After	Difference
All	47.7	44.9	2.8	8.3	7.4	0.8
Elderly people	48.6	45.8	2.8	8.7	7.8	0.9
Disabled people	47.6	44.2	3.4	8.5	7.4	1.0

Table 6 Percentages of people in Hertfordshire living within benchmarks of their nearest public library before and after the reorganisation programme.

Because two of the libraries that have been closed were in St Albans, more people living in St Albans lost their nearest public library than in Hertfordshire, as Table 7 shows in comparison to Table 5. However, even in St Albans, not as many people lost their nearest library as lost their nearest post office. In both cases disabled people were affected more than the overall population.

	Numbers	%
All	20308	15.7
Elderly people	1669	13.8
Disabled people	516	19.7

Table 7 Number of people in St Albans who lose their nearest public library as a result of the reorganisation programme.

As Table 8 shows, in St Albans the decrease in the numbers living within one mile (1.6 km) of a public library was from 55.0% to 44.7% compared with a decrease from 47.7% to 44.9% in the whole county reflecting the greater impact of the policy in St Albans than elsewhere. Disabled people in St Albans had a larger than average decrease from 55.8% to 41.4%.

	1 mile (1609 metres)			10 minute walk (600 metres)		
	Before	After	Difference	Before	After	Difference
All	55.0	44.7	10.3	10.7	6.3	4.4
Elderly people	50.7	41.8	8.9	11.8	6.9	4.9
Disabled people	55.8	41.4	14.3	12.2	6.0	6.2

Table 8 Percentages of people in St Albans living within benchmarks of their nearest public library before and after the reorganisation programme.

DISCUSSION

In this paper it has been shown how AMELIA can be used to examine the impacts of changes in the location of services on older and disabled people, using post offices and libraries as examples.

According to the analysis in this paper, there are places in Britain that fall below the minimum access criteria defined by the Post Office as a result of its closure programme. In fact, Hertfordshire was below it even before the closure programme. It is not clear what spatial scale was used for the analysis carried out for the Post Office, but Hertfordshire is quite a large area, so this raises some questions about

the analysis underpinning the closure programme. In Hertfordshire there were quite large percentages of the population who lost their nearest public library, particularly in St Albans. More disabled people lost access to nearby libraries than the population as a whole. Disabled people were affected more by the two closure programmes than the overall programme whereas the impact on elderly people was more similar to that for the overall population, partly because they form a larger proportion of the population. Because the differences for the groups reflect only the variation in the spatial distribution of their homes and not differences in income levels or access to various modes of travel, the effects shown here probably underestimate the effects, because elderly and disabled people often have below average incomes and car ownership levels. As a result of the closure programmes they now have further to travel, on average, to the remaining opportunities.

This analysis is interesting and suggests that there are important equity issues in planning access to local facilities, and that a tool like AMELIA offers scope to carry out such analysis. In Britain today there are many programmes to reorganise the location and structure of local services, for example in health. It is important that the public is consulted widely on these issues, and offered the opportunity to suggest alternatives. AMELIA can be used not only to help develop and test alternatives, it can also be used with members of the public as a consultation tool, to see whether the suggestions from the public are better than the official proposal, or to demonstrate that they would not be so effective. Recent work with AMELIA has shown that members of the public are able to understand the concept of AMELIA and make suggestions that can be tested with it. There is scope for much more work in this area as governments seek to obtain best value from public services. AMELIA can help in this process.

ACKNOWLEDGEMENT

REFERENCES

Department for Transport. 2005. *Inclusive mobility*, originally published 2002, updated 2005. Available from http://www.dft.gov.uk/publications/inclusive-mobility (accessed 2 March 2012).

Hertfordshire County Council. 2006. *Implementing the Hertfordshire Vision for Libraries in the 21st Century*. Available from http://www.hertsdirect.org/infobase/docs/pdfstore/L421Cimplement.pdf (accessed 2 March 2012).

Mackett R. L., Achuthan K and Titheridge H. 2008a. "AMELIA: Making streets more accessible for people with mobility difficulties", *Urban Design International*, Volume

13, pp. 80-89.

Mackett R. L., Achuthan K. and Titheridge H. 2008b. "AMELIA: A tool to make transport policies more socially inclusive", *Transport Policy*, Volume 15, pp. 325-412.

Office of National Statistics. 2010. *Census 2001*. Available from http://www.statistics.gov.uk/census2001/census2001.asp (accessed 2 March 2012).

Ordnance Survey. 2010. *MasterMap*. Available from http://www.ordnancesurvey.co.uk/oswebsite/products/osmastermap/ (accessed 2 March 2012).

Post Office. 2006. *Network change programme*, available from http://www.postoffice.co.uk/find-out-more/about-us/our-network/network-change (accessed 2 March 2012).

Post Office Ltd. undated a. *Network Change Programme. Area Plan Proposal - Cambridgeshire, Hertfordshire, Bedfordshire and South Lincolnshire*. Available from ftp://ftp.royalmail.com/Downloads/public/ctf/po/Cambridge_Area_Plan_proposal_booklet.pdf (accessed 2 March 2012).

Post Office Ltd. undated b. *Network Change Programme. Area Plan Proposal - South Essex, South Hertfordshire and Buckinghamshire*. Available from ftp://ftp.royalmail.com/Downloads/public/ctf/po/SouthEssex_SouthHerts_Bucks_%20AreaPlan_proposal_booklet_2.pdf (accessed 2 March 2012).

Titheridge H., Achuthan K., Mackett R. and Solomon J. 2009. Assessing the extent of transport social exclusion among the elderly. *Journal of Transport and Land Use*, Volume 2, pp. 31-48, available from https://www.jtlu.org/index.php/jtlu/article/view/44/56 (accessed 2 March 2012).