

Understanding the Loughborough Foodscape

- mapping geographical access to healthy food choices

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I. Introduction

Several studies have shown that eating fruit and vegetables protects against many illnesses and diseases, and that a diet high in salt, sugar or fat can lead to obesity and associated health problems. Although a healthier diet of fresh fruit and vegetables is recommended by dieticians through campaigns such as five-a-day, only 28 per cent of the UK population in 2004 were eating five a day, and Britain tops the league for spending per head on 'ready meals'. The level of obesity in Britain have trebled between 1980 and 2002; causing the premature death of up to 30,000 people in 2002.

One popular reason in explaining why diets are so bad in this country is the lack of easy access to healthy foods due to the decline in small grocery and convenience stores: creating so-called 'food deserts'. Food deserts were defined, by the Low Income Project Team in 1996, as 'areas of relative exclusion where people experience physical and economic barriers to gaining access to healthy food'.

This report is a response to the need highlighted in the Leicestershire Local Area Agreement of increasing our understanding and improving access to healthy food choices. The report uses the methodology and published research of Dr. Hilary Shaw from Harper Adams University, in particular his paper published in 2006 '*Food Deserts: Towards the development of a classification*' to map food access in Loughborough. (Shaw, H.J, 2006: *Geogr. Ann*, 88 B(2): 231-247)

The report begins by calculating how far residents are from a decent grocery shop, and roughly how many people are affected. Data on fruit and vegetable purchases is then used to examine a link between distance and diet. The report then examines three contributory factors that contribute to 'access' problems: ability, assets and attitude. Ability is anything that physically prevents access, assets is the lack of financial resources and attitude includes lack of knowledge or unwillingness.

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2. Methodology

Why map food access?

The factors that affect individual access to a healthy diet are multiple and, “extend well beyond strictly geographical aspects.” Nonetheless the physical distance to shops from where people live is still considered a major cause of availability to healthy food. UK government guidelines estimate that 500 metres is a practical maximum desirable walking distance from homes to local shops. This ‘500 metre’ distance has since been quoted by, and used, by many other research writers. Therefore mapping the retail landscape is a good starting point in understanding which communities are likely to be affected. However there are two main issues that need to be overcome.

What shops to map and how to create food access maps

First, although there are several commercial and local databases that identify the locations of supermarkets and convenience stores, surprising little data exists on what the range of fresh fruit and vegetables food shops actually sell “on the ground”. Databases are always somewhat out-of-date: the Marks and Spencers food store was missing from the PointX database that Leicestershire County Council uses. If anything databases also tend to overestimate local food retail provision by missing shops that have closed or converted to a different use. It is therefore essential then to go out into the study area and actually find and visit all the shops.

In early January 2007 a workshop was held by Dr Hilliary Shaw with representatives from the dieticians service and county council research team to outline the practical and ethical issues when working in the field. On the 23rd January 2007, six people spent a cold but dry day walking and driving around Loughborough visiting every shop to determine their fruit and vegetable stock levels.

Loughborough was chosen as the Leicestershire Nutrition & Dietician Service already undertakes a significant amount of activity in the town, and any findings would hopefully compliment this work. Also with 55,000 people Loughborough has a diverse community, with a large number of university students, a large Bangladeshi community as well as prosperous suburbs, and so many differing food access requirements.

The resulting map created from the fieldwork shows access to grocery shops, and to fruit and vegetable provision within Loughborough. Three types of grocery stores are marked; those with fewer than ten kinds of fruit and vegetables, those with ten or more kinds and the supermarkets. A shop was classified as a non-food shop, and so not marked on the map, if it did not have enough stock to cook at least one meal. Many researchers use ten as the threshold as shops with this number are likely to stock greens, important for health, and will generally have a sufficient range for a healthy diet.

Fast food outlets were not marked, as choice of fresh fruit and vegetables is limited, and this would also have meant a lot of additional field work. Non-food outlets, such as post offices and pay point outlets, are also marked on the maps as they affect the shopping patterns for those on foot. Finally, shops selling to particularly members of the community e.g. Halal butchers, were marked.

The second issue is that when food access mapping is undertaken, maps using traditional administrative or census boundaries such as wards or output areas tend to lead to 'food deserts' in areas that are non-residential areas, such as industrial estates or parks. Therefore food access should be a type of land use map establishing not just where the shops are but also where people actually live, and for that reason grid squares were used as the base geography.

Shops were mapped into 250 metre grid squares, with each square recording the maximum fresh fruit and vegetable provider in the square: not the total number of grocery stores as this would have been too time consuming. Squares were also recorded either residential or non-residential if about 25 per cent of the square had housing.

To create the various population counts used for the grid squares in this report a programme called SurfaceBuilder was used which redistributes output area data sets to the Loughborough 250 metre grid squares used.

(see <http://www.geog.soton.ac.uk/users/martindj/davehome/software.htm> for more details)

3. Fieldwork findings

Grocery access in Loughborough

The food access map for Loughborough as of January 2007 is shown to the right on the next page. The fieldwork showed that in Loughborough food access is dominated by six supermarkets, although there were no neighbourhood supermarkets such as Tesco Express or Sainsbury Local operating. Only eleven other squares had at least one shop selling 10 or more fresh fruit and vegetables, and eighteen squares had at least one shop providing the most basic provision of groceries. The settlement of Hathern had two shops providing basic grocery provision and 180 residential squares in the study area had no provision. In addition Loughborough has a large market in the town centre, marked by a yellow square, on a Thursday and Saturday which has five reasonably sized fruit and vegetables stalls.

The most striking spatial feature of the map is the lack of a shop selling ten or more different kinds of vegetables and fruit to the south and south east of the town centre in the areas of Nanpantan, Shelthorpe South and Woodthorpe. This reflects the location of the large Tesco superstore in this area, which is open twenty four hours, making competition difficult, but also the lack of a suitable location to operate in predominately residential suburbs.

Not surprisingly the ethnic food shops recorded in the field work are to the north east of the city centre within close proximity of

Loughborough's Bangladeshi community. Finally the non-food shops, Post offices and Pay Points, are generally located in a square where there is also some form of grocery provision.

Access, choice and quality: Insights from the fieldwork

The close proximity of a food shop in a residential area does not imply people will use it or that local people *perceive* that they are near useful grocery shops. By actually visiting shops some insight was gained into how local residents might view a shop and grocery provision in an area.

The fieldwork highlighted the importance of access and layout into shops. One local independent store had a steep drop in front of the entrance and then no automatic door making it difficult for pensioners to enter, especially in icy conditions.* The Morrisons supermarket appears on the map to provide access to all the residential squares surrounding it. However to the south of the store foot access is by a small footbridge across a brook. Although there is anecdotal evidence people do use the bridge to shop, it is probably off putting for many by foot.

The layout of some shops made it difficult to use buggies and wheelchairs because of aisles being very narrow and the positioning of shop promotions. The interior of some independent shops was not always appealing.

*This problem was actually witnessed by a fieldworker when surveying the shop

Map I: Map of Loughborough grocery retailing access January 2007

Supermarkets

- TE** Tescos
- MO** Morrisons
- AI** Aldi
- SA** Sainsburys
- SO** Somerfield
- MS** Marks and Spencers

The maximum fresh fruit and vegetable provider in the square

- Supermarket
- More than 10 FFV
- Selling less than 10 FFV
- Residential no food shop
- Non-residential

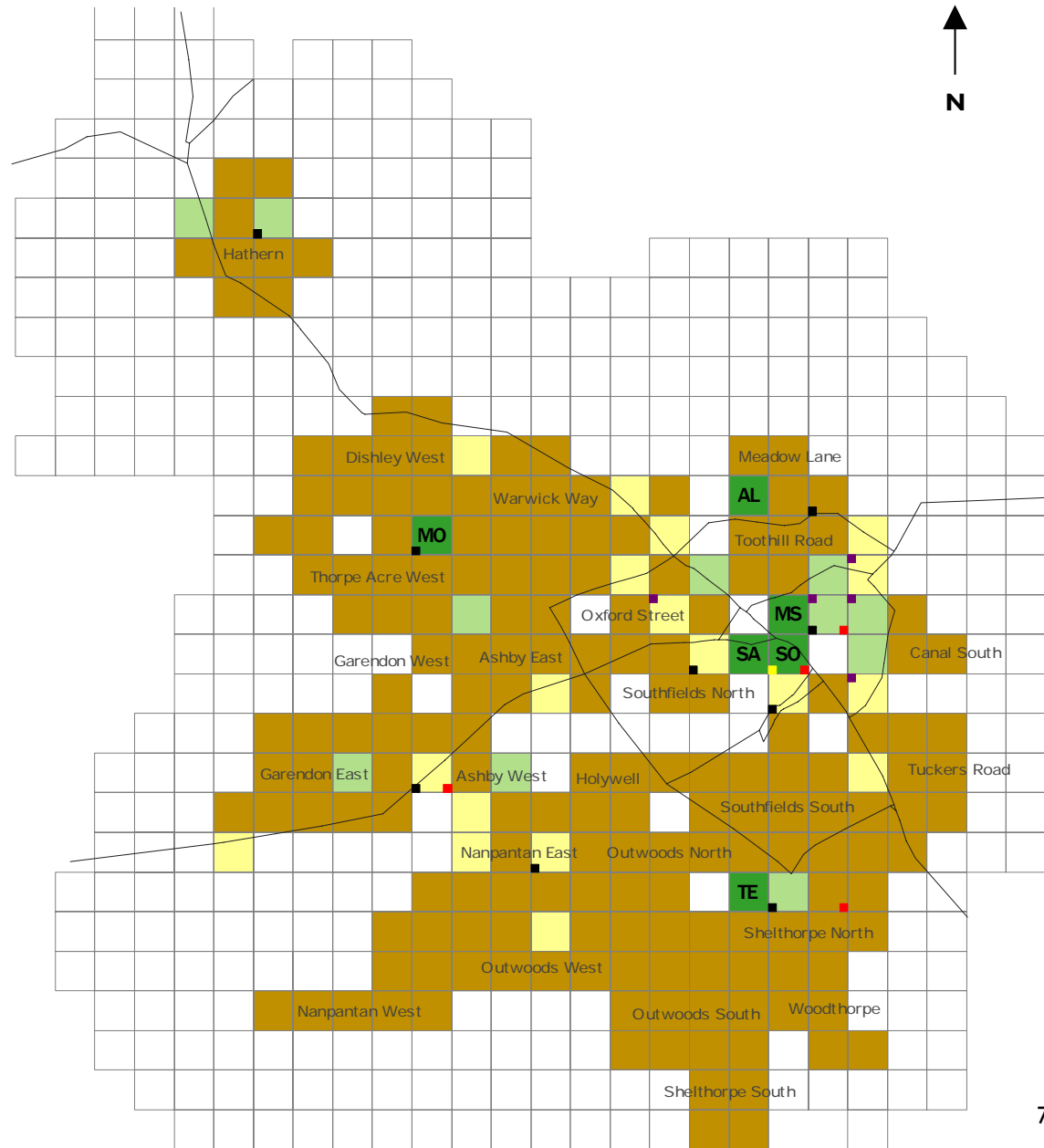
Other shops in the square

- Market
- Ethnic Shop
- Pay Point Shop
- Post office

————— roads



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Local shops survived difficult trading conditions by devoting large amounts of shelf space to alcohol and snacks such as crisps and sweets. Even where fresh food and vegetables were stocked in independent shops the appearance, and so quality, was not considered to be great by the dieticians suggesting that the shop is not regularly restocked. This is important as shoppers are likely to be put off buying, and if they do, the nutritional and vitamin benefit would be much less than fresher fruit and vegetables.

The supply of fruit and vegetables appears to be limited in independent shops visited late in the day with many having empty shelves. Sometime the choice of fresh vegetables included packaged salad which is very expensive and needs to be consumed quickly once the bag has been opened.

Food access: mapping distance to a shop selling 10 or more fresh and vegetables for Loughborough residents

For those who walk to the shops, the distance they are prepared to walk back with shopping varies according to such factors as age, fitness, the alternative transport modes open to them, or the type of terrain they are walking through. Research shows that a fit young person in an urban area with access to a car may typically be prepared to walk 800 metres to shops; for longer distances they will likely take the car, dependent on traffic conditions and availability and cost of parking at the shops. A fit young person in an

urban area without access to a car may walk up to 1,000 metres to shops, using the bus only for shops more distant than this. As already noted government guidelines state a distance of 500 metre to shop to be a reasonable distance to walk.

However what constitutes a 'problem distance' from homes to shops? How far does a group of houses have to be from a shop selling fresh food and vegetables, before the residents begin to experience healthy food/diet access problems? There is no definitive answers for these questions but a rough and ready guide to where food deserts might be in an urban area is to look at squares that are three or more square distances away (or over 660 meters.)


However travelling in a straight line from house to shop is rarely possible, so more realistic distances are calculated in this report so staying in the same square means on average walking 150 metres on the ground. Or walking one 250 metre square probably equates to 360 metres on the ground, and so on. These distances are shown in the table opposite.

Map 2 highlights the distance that needs to be travelled to have a decent grocery choice in Loughborough: measured here by a shop with more than 10 or more fresh fruit and vegetables. The results show 13 per cent of the resident population are approximately

Map 2: Distance to a shop selling 10 or more fresh food and vegetables in Loughborough as of January 2007

Average distance to a shop selling 10 or more Fresh, fruit and vegetables % of total population

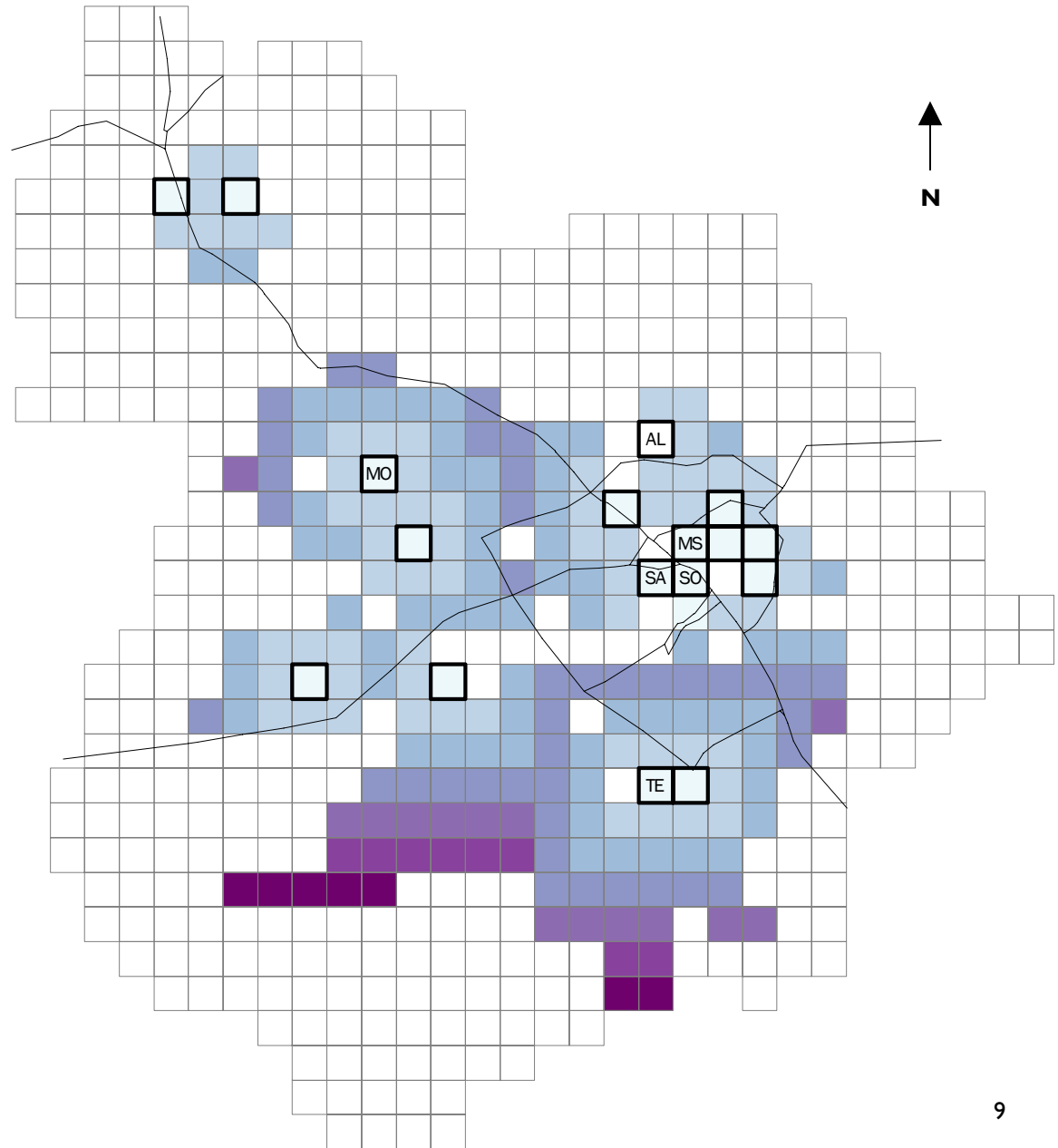
	150 metres	13%
	360 metres	31%
	660 metres	37%
	960 metres	12%
	1,260 metres	4%
	1,600 metres	3%
	1,900 metres	1%

 A shop selling more than 10 fresh fruit and vegetables in the square

- TE** | Tesco
- MO** | Morrisons
- AI** | Aldi
- SA** | Sainsburys
- SO** | Somerfield
- MS** | Marks and Spencers



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within 150 meters (or one square), and 81 per cent with 660 metres (or three squares). So about 19 per cent of Loughborough residents are in what constitutes a ‘problem distance’ from a shop selling 10 or more fresh fruit and vegetables. These are the darker colours areas already noted in the previous map to the south and south east of Loughborough. However mapping the data by distance also throws up areas to the north and north east of the town, the areas around Warwick Way Dishley West, and a square around Tuckers Ways.

Finally, an overall town average can be calculated for the distance to a shop selling more than 10 fresh, fruit and vegetables (FFV): for Loughborough it’s 706 meters.

Food distance by Loughborough communities

So far the location of the fruit and vegetable grocery shops has been established, and the effect these locations have on the distance needed to travel to shop has been mapped. The next stage requires understanding how different communities in Loughborough are affected by the different distances needed to go shopping. As already noted, physical access is important, but it has a greater affect on some people more than others and so different communities may face different barriers to gaining access to healthy food. To understand this it’s important to identify the different communities within Loughborough.

*An output area has approximately 300 people. There are 171 output areas in Loughborough

One way to do this is by using the Office for National Statistics Output Area Classification* which gives a short hand label, for example Blue Collar areas, that sums up the key socio-economic characteristics of the people living there. These key characteristics by area are outlined in table 1 below. The label is not suggesting that everyone in the output area has the same characteristics, but recognising that Leicestershire’s social geography is built on people with the same characteristics living closely together.

Table 1: The national classification of census Output Areas

	The variables with proportions far <u>below</u> the national average	The variables with proportions far <u>above</u> the national average
Blue Collar Communities	<ul style="list-style-type: none"> All Flats HE qualification 	<ul style="list-style-type: none"> Terraced Housing Rent (Public)
City Living	<ul style="list-style-type: none"> Detached Housing Households with non-dependant children Age 5-14 	<ul style="list-style-type: none"> HE Qualification / Single person household (not pensioner) Born Outside the UK / Rent (Private) / All Flats
Countryside	<ul style="list-style-type: none"> Population Density Public Transport to work All Flats 	<ul style="list-style-type: none"> 2+ Car household /Work from home Agriculture/Fishing employment Detached Housing
Prospering Suburbs	<ul style="list-style-type: none"> Rent (Public) Terraced Housing All Flats / No central heating Rent (Private) 	<ul style="list-style-type: none"> 2+ Car household Detached Housing
Constrained by Circumstances	<ul style="list-style-type: none"> Detached Housing 2+ Car household / HE Qualification 	<ul style="list-style-type: none"> All Flats Rent (Public)
Typical Traits	<ul style="list-style-type: none"> Rent (Public) 	<ul style="list-style-type: none"> Terraced Housing
Multicultural	<ul style="list-style-type: none"> Detached Housing 	<ul style="list-style-type: none"> Rent (Private) Public Transport to work Rent (Public) / All Flats Born Outside the UK Indian, Pakistani or Bangladeshi Black African, Black Caribbean or Other Black

The map to the right uses the output area classification to produce a best fit map for the 250 metre squares that are used in this report. The map describes five distinct community areas of Loughborough: Countryside to the south and the north, Prospering Suburbs to the south and west, areas of Typical Traits to the south east and in Hathern, a Multicultural area to the north east and a town centre interspersed with several different communities.

The map then allows the calculation of distances to FFV shop by these communities and that is shown in table 2. Perhaps unsurprisingly, Countryside areas (1,241m) although only 2 per cent of the Loughborough population live there, and Prospering Suburb (841m) areas with over a third of the population, have the furthest distance to a travel to a shop. Both these areas shopping habits are based around visiting a distant supermarket in a car once a week.

The next two areas with the highest distances, Typical Traits (649m), accounting for nearly a quarter of the Loughborough population, and Constrained by Circumstances (579m) just 7% of the population, are areas that are above the government guidelines of 500 metres to a shop. The final three areas, Blue Collar (489m), City Living (429m) and Multicultural (408m), have the smallest distance to travel to a shop as they are close to the town centre or in mature estates that have had historically a small independent shop. Although these distances are below 500 metres these areas

Map 3: The ONS output area classification by 250 metre grid square in Loughborough (calculated for this publication)

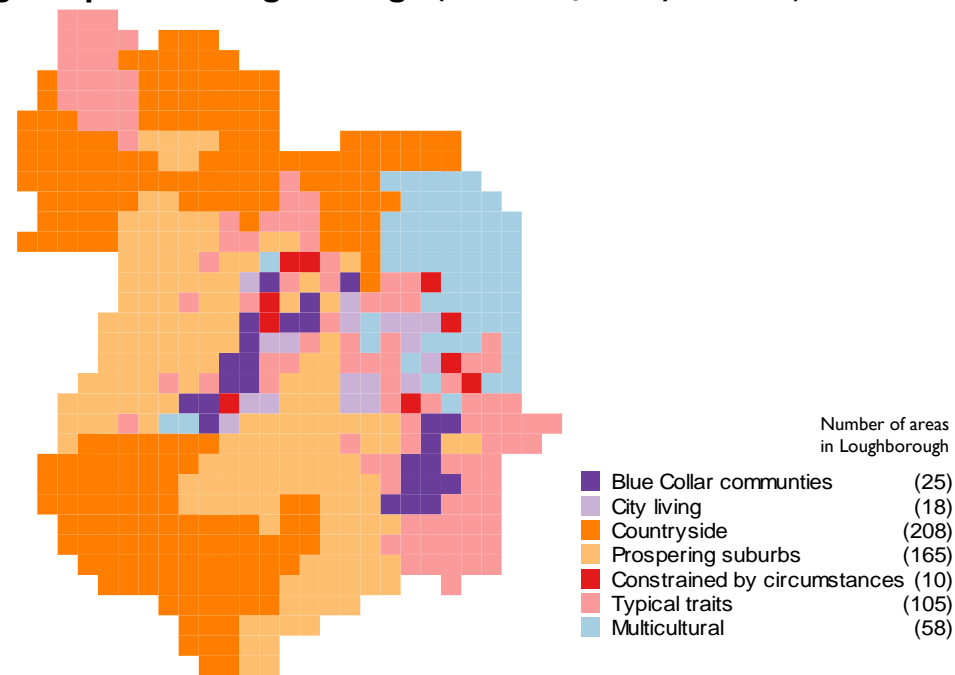


Table 2: Distance to a shop selling more than 10 FFV by community type

ONS areas classification	Average distance (metres)	Total population
Countryside	1,241	2%
Prospering Suburbs	841	36%
Typical Traits	649	24%
Constrained by Circumstances	579	7%
Blue Collar	489	13%
City Living	429	6%
Multicultural	408	12%
Average distance for Loughborough	706	

Map 4: Expenditure per person by 250 metre square on fresh fruit and vegetables

will still contain people unable or unwilling to walk that distance with bags of shopping.

Finally, the value of these ‘average distances’ is not in just their absolute value at any one time, but as a baseline to how access is changing over time, and in how it compares to other towns and cities. So updating this work in Loughborough in the future, to see if local initiatives are having any affect is recommended.

Expenditure on fruit and vegetables in Loughborough

While mapping availability to food stores and understanding local supply is important, it’s just as important to understand what sort of diet people have in Loughborough. In 2004 it was reported that ‘women are now eating 2.3 portions of fruit and vegetables a day and men eat 1.6 portions.’ In the absence of comprehensive local data on individual diets, one way to do this is to establish how much money residents are spending on fruit and vegetables. By doing so it is then possible to examine whether there is any link between distance and geographical access to a shop.

However data on fruit and vegetable expenditure is not available freely, so data for Loughborough was purchased from the data warehouse company CACI. The data was supplied in just two classifications: fruit and vegetables, by resident weekly expenditure at output area, and whether expenditure was in a supermarket or

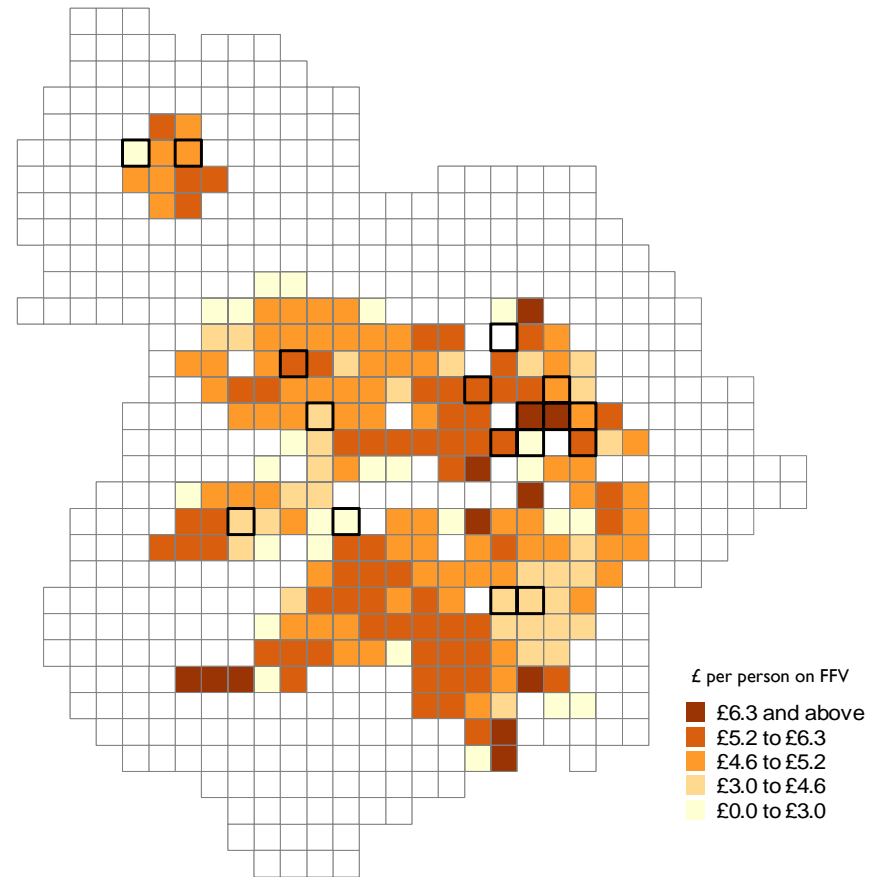


Table 3: Expenditure on fresh, fruit and vegetables by community type

City Living	£	5.55
Countryside	£	5.54
Constrained by Circumstances	£	5.22
Typical Traits	£	5.22
Prospering Suburbs	£	5.18
Multicultural	£	5.05
Blue Collar Communities	£	3.99

independent store. The expenditure on fruit and vegetables could be in retail outlets outside Loughborough.

Expenditure data for 2006 shows that Loughborough residents spent approximately £5.10 per person a week on fresh fruit and vegetables. A greater amount is spent on vegetables: about £3.25 per week compared to £1.85 on fruit, with overall expenditure being four times greater in supermarkets than smaller shops.

Map 4 highlights the distribution of fruit and vegetables expenditure across Loughborough using the 250 metre square data. Although the patterns are not entirely clear, there are some clear geographical clustering of expenditure around the town, in particular lower expenditure in the Shelthorpe and Garendon areas, higher expenditure on the outskirts of the town

Analysing the data by socio-economic area in table three, by using the output area classification, shows similar spending across similar socio-economic areas in Loughborough. The exception being in the Blue Collar Communities. As already noted these are areas that on average have less the 500 metres to a decent food shop.

Finally, the data in the map is summarised by distance in table 4 and shows no clear link between distance and spending. Residents closest to a decent grocery shop are spending slightly more than

the Loughborough average, spending drops slightly but is then very similar for the majority of the population between 360 and 1,260 metres, and then increases for those furthest away for a food shop. However those furthest away represent only 4 per cent of the Loughborough population.

The conclusion is that distance does not appear to be important, but Blue collar communities are spending less even though they have some of the best access to food shops in Loughborough.

The factors debarring access to a healthy diet are multiple and extend well beyond the strictly spatial or geographical aspects and what is a major obstacle for one household is scarcely noticed by another. Research has shown that access can in fact be broken into three contributory factors: ability, assets and attitude. Non-spatial factors although some of them cross over.

Table 4: Expenditure on fresh, fruit and vegetables by distance from a decent food shop

150 metres	£5.4
360 metres	£5.0
660 metres	£5.0
960 metres	£5.2
1,260 metres	£5.0
1,600 metres	£5.8
1,900 metres	£6.5

(i) Ability

Ability problems are anything that, ‘physically prevents access to a food which a consumer otherwise has the financial resources to purchase and the mental desire to buy.’ Issues may include difficulties opening food packaging, the local geography (e.g. road crossings) or the layout of shops. The lack of access to local cash, through withdrawal of bank branches or closure of local Post Offices, impacts adversely on local shops because if shoppers have to travel to a major centre where cash access still exists, they will likely shop there too, by-passing shops in the cash-access-deficient area.

Another factor reducing access to fresh fruit and vegetables for customers even when local shops stock these is that fresh produce decays over time. Shopkeepers will be unwilling to risk precarious profit levels by buying such items in only to see them decay to a point where they are un-sellable. As already noted this was seen in the fieldwork in Loughborough with the lack of stock at the end of the day in many small shops.

Finally, although more and more people are using the internet for grocery shopping research has shown that in practice those using this service tend not to be people whose access to larger supermarkets is limited.

Map 5: The percentage of residents in Loughborough with a limiting long term illness by 250 metre square

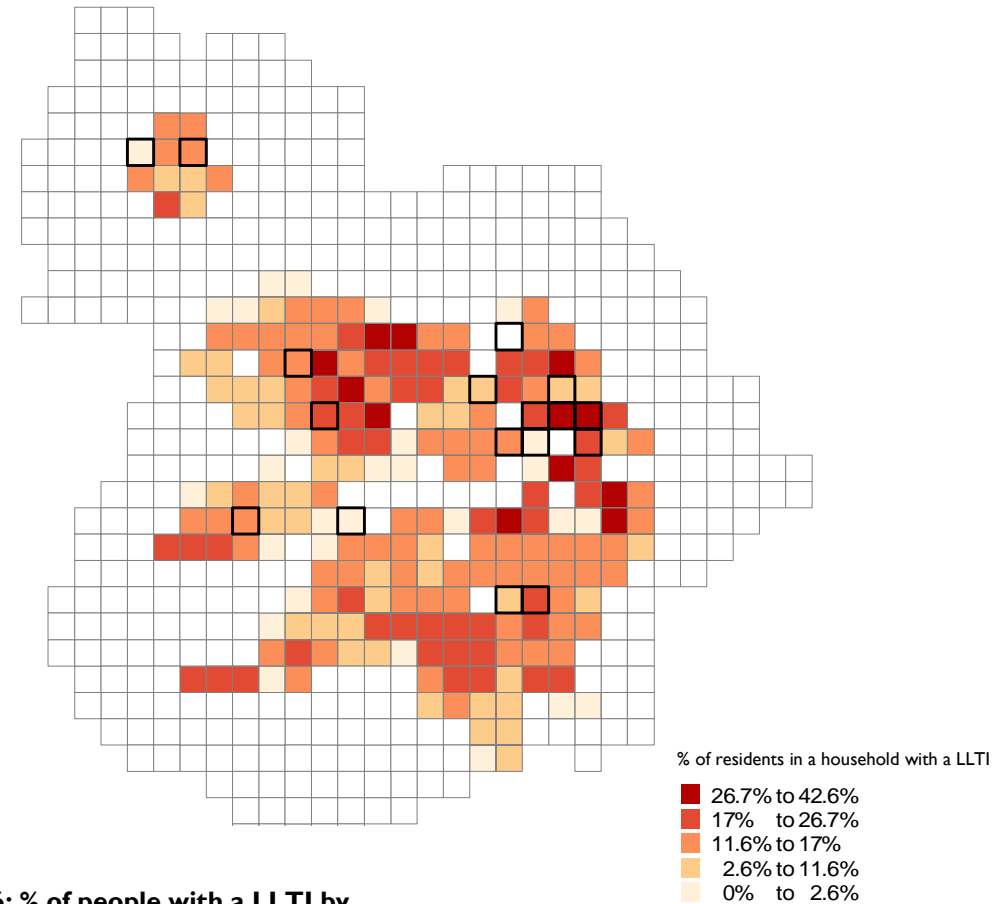


Table 6: % of people with a LLTI by distance from a decent food shop

	% of people with a LLTI
150 metres	15.7%
360 metres	14.9%
660 metres	14.7%
960 metres	17.8%
1,260 metres	10.6%
1,600 metres	10.4%
1,900 metres	17.9%

Two 'ability' issues are examined in more detail in this section; areas where people have high levels of limiting long term illness, so possibly less able to access local shops, and how certain areas in Loughborough can create food deserts for older people.

Limiting long term illness

Although no details were collected on specific illnesses, the 2001 Census gives the most comprehensive guide to the number of residents with the most serious health needs in Leicestershire.

Overall in Loughborough 15 per cent of residents, or 7,800 people, living in households have a limiting long term illness. This increases from 26 per cent for those in the fifties, to nearly 59 per cent for those aged over 75.

Map 5 left displays the distribution of Loughborough residents living in a household with a limiting long term illness, and shows higher rates around the city centre, and near Warwick Way, and lower rates to the south of the town.

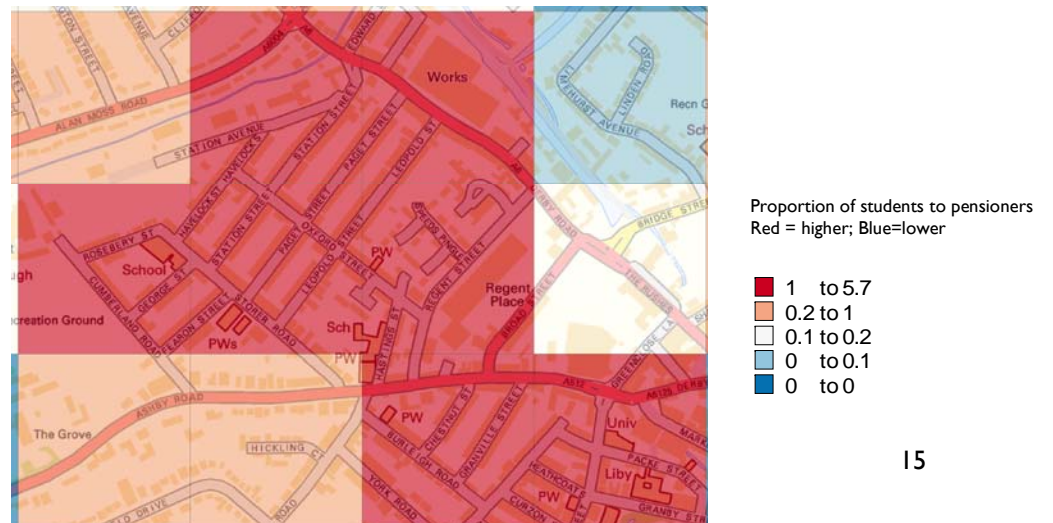
Using the rough and ready guide of measuring a food desert, those people in areas more than three squares away from a healthy food shop and with a limiting long term illness are probably in the greatest need. As table 5 shows, targeting those areas approximately 660 metres away from a healthy shop, areas with the greatest numbers of people with a limiting long-term illness, may provide the greatest benefit from specific policy initiatives.

Older people and food access

Research from areas with large student populations has shown that older people can be affected by 'seasonal' food deserts. Local retailing may be tailored to one large section of the population, and thus leaving other sections relatively unserved. This may be more apparent at times of low population, in the university holidays, and many shops, whilst remaining open, will cut back on their stock of perishable fruit and vegetables.

Loughborough University has 12,000 full time students and inevitably, rising student numbers have resulted in some pressures in the community. How this affects retailing is unclear, but areas with a high ratio of students to pensioner households are highlighted in the map below.

Map 6: Areas around Oxford street and Storer road with a high proportion of students to older people



Pensioners tend to prefer to make smaller more frequent shopping trips at local shops rather than infrequent trips to large supermarkets but as the area is close to the city centre it's not clear if a pensioners retail choice is affected by the large presence of a student community. The area highlighted in the map has a sizable pensioner community and there is a need to speak to local residents in these areas to establish whether any issues.

(ii) Asset

Asset problems are defined as any, 'financial asset that prevents consumption of food the consumer can otherwise physically access and has the desire to consume'. Two important financial issues examined in this section are access to a car, and household poverty.

Car ownership and bus usage

Results from the last two censuses have shown that access to a car has become an increasing essential element in everyday life in Leicestershire. Table 7 shows households who are without a car decreases with distance from a healthy food shop. As map 6 shows this is mainly to the south east of the town. Nonetheless still over a fifth of households in potential food deserts, those 660metres and 960 meters, have no access to a car

Those without access to a car are more likely to be more dependent on local shops, but are in turn more vulnerable if these

Map 6: The percentage of residents in Loughborough with no access to car by 250 metre square

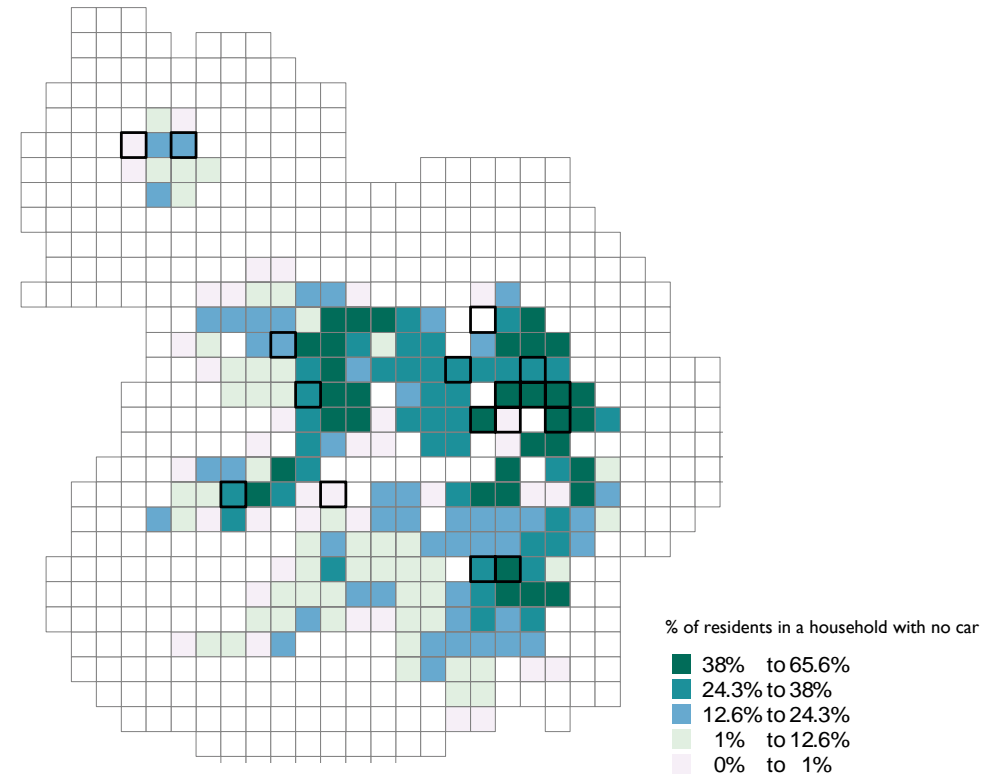
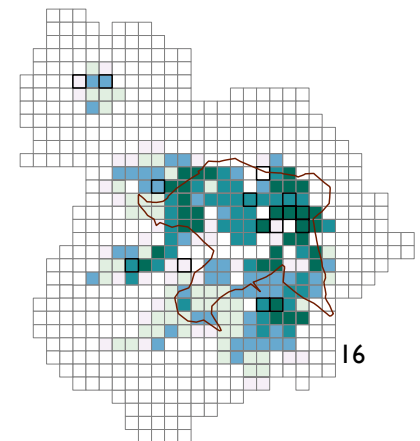


Table 7: % of households with no access to a car by distance to a

150 metres	37.2
360 metres	30.0
660 metres	23.2
960 metres	21.3
1,260 metres	9.8
1,600 metres	6.7
1,900 metres	16.5

Map 7: The line represents bus journeys that take 15 minutes into the city centre.



shops are to close. Even in households with only one car there are still likely to suffer access problems during the day.

For those without a car, local transport plans have accessibility projects to ensure that people have access to healthy food. This includes hourly bus services to market towns. Most of Loughborough has a bus journey time of less than thirty minutes to the town centre, and in fact as map 7 shows, most areas in Loughborough that have a high proportion of households with no cars are within fifteen minutes journey time to Loughborough town centre. However shopping by bus limits the number of bags that can be carried, and where essentials are bought, items such as fresh fruit and vegetables may well be omitted.

Deprivation

Expenditure on food is the most flexible part of the household budget as the amount spent on food is often whatever is left over when all essential bills have been paid. Using data from the 2001 Census it's possible to estimate how many households are suffering relative poverty: that is having a standard of living below what many people believe is below the minimum. The map and table on deprivation shows similar results to those results on car ownership, with household poverty decreasing with distance away from a shop selling healthy food, and a fifth of people who live in potential food deserts, about 660 metres and above, living in

Map 8: Percentage of households in poverty using the Poverty and Social Exclusion index.

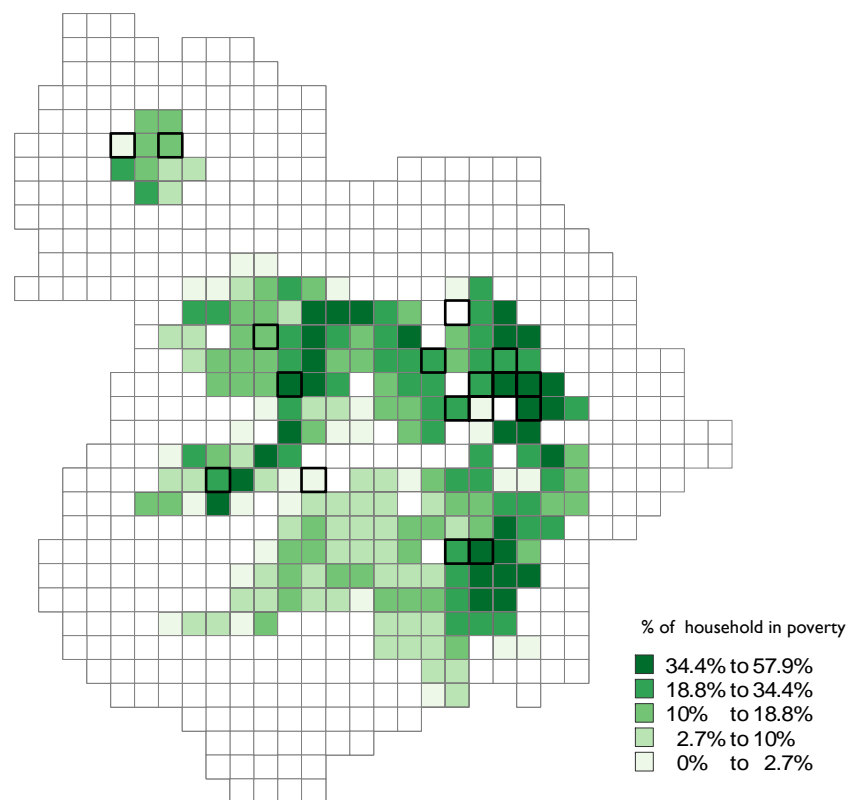


Table 8: % of households in poverty by distance to a decent food shop

150 metres	28.8
360 metres	26.9
660 metres	22.0
960 metres	16.4
1,260 metres	11.0
1,600 metres	5.8
1,900 metres	10.7

poverty. These are also the same areas the data has shown are spending the least on fruit and vegetables (see map 4)

(iii) Attitude

In this section three factors are examined that affect a persons attitude to food. Anything that may be defined as any 'state of mind that prevents the consumer from accessing foods they can otherwise physically bring into their home' is considered a attitude problem.

Research has shown how there's a lack of knowledge on how to prepare and cook some foods in the increasingly time-poor lifestyles. Also the importance of children's attitudes, with The Guardian reporting that 40 per cent of children aged between six and nine choose the meals because parents do not want to fight over food. Obviously these tend not to be food that has a large variety of fresh food and vegetables.

Particularly relevant to Loughborough is research that shows people often maintain the food preferences they had as children, and so today's pensioners may eat a different range of foods to younger white people. This means that in areas with abundant south Asian grocers, white pensioners who have retired 'in situ' (meaning they did not have the funds, on retirement, to move to an affluent retirement areas) perceive themselves as living in a 'food-poor' area

despite the fact that they may be living just a few metres from a grocery store. About 12 per cent of Loughborough's population live in Multicultural areas, and about 9 per cent of that population, about 560 people, are White pensioners. Again there is a need for follow up work in these to establish whether White pensioners in these areas have similar opinions to the published research.

It's crucial to understand how shoppers use or don't use the shopping facilities and so Leicestershire County Council and the Leicester Shire Economic Partnership commissioned BMG in 2006 to conduct a customer satisfaction survey in 17 town and village centres across Leicestershire. The intention of the survey has been to understand any issues or barriers stopping people using the shopping facilities with a view to developing action plans for intervention.

Although the questions were not specifically about food stores, for Loughborough town centre satisfaction was very high amongst respondents with them considering Loughborough a good place to shop and visit. In fact the overall level of satisfaction for Loughborough town centre was higher than the average for the other 16 towns. Respondents had positive views about the environment and facilities available in the centre of Loughborough, but having a greater range of shops, a cleaner town centre and more specialist shops were seen as the areas that needed the most improvement.

4. Discussion

Four initial questions arise from the Loughborough mapping work.

- There is a need to understand the coping strategies employed in the local communities. This requires more qualitative research by talking to residents and service providers in Loughborough.
- Can there be different types of food deserts in different areas of Loughborough? There is a need to understand the relative importance of each of the factors examined here (ability, asset and attitude) and how they differ across Loughborough is important as this may 'facilitate a more efficient use of funds to alleviate the health problems' caused by food deserts.
- Food retailing is very dynamic and the maps of retail grocery facilities in this report will quickly go out of date and so will be the need to complete a mapping exercise again to determine how again the food landscape has changed in Loughborough.
- How big does a 'group of houses' have to be to constitute a population experiencing food access problems? Does one or two houses distant from shops count, or does it have to be 50, or 200 houses before this group begins to constitute a 'food desert'? Does it have to be just whole households but can fractions of households be affected?

Finally, focus groups to understand the local issues and barriers towards healthy eating will be arranged with local communities in Spring 2008.