

# End of Award Report

L135251002

## Food Deserts in British Cities

### Summary of Research Results

Deprived areas of British cities with poor access to the provision of healthy affordable food became known in the late 1990s as 'food deserts'. It was metaphor which caught the imagination of policy makers. Both *The Independent Inquiry into Inequalities in Health (1998)* and the *National Strategy for Neighbourhood Renewal (1998)* assumed such areas to exist and recommended the implementation of policies to tackle their problems. Ministerial statements accepted the importance of the challenge, defining 'food deserts' as areas lacking appropriate food retail provision within roughly a 500m radius. For many academics, however, the food deserts debate was an example of policy development running significantly ahead of systematic evidence-based research. There was a pressing need to fill critical gaps in that evidence base.

In this project an interdisciplinary team of geographers, public health nutritionists, and city & regional planners from three universities (Southampton, Leeds and Cardiff), supported under the terms of the Government's LINK award scheme by an industrial partner (J. Sainsbury plc), have attempted to do just that. In the context of three cities (Leeds/Bradford and Cardiff) the team has investigated how to identify areas of poor food retail access ('food deserts'), and assessed how such areas have evolved over time (i.e. how retail development trends over the past twenty years have altered access to food in those cities). In addition, the team has designed and conducted within one strategically chosen area of poor food retail access (Seacroft, east Leeds) a major 'before/after' study of the impact of the opening of a large new food store on a group of low income households – specifically investigating the impact amelioration of accessibility problems might have on their food consumption patterns. These studies have been complemented by qualitative focus group investigation of the coping mechanisms residents of such areas must employ to budget for and access food, and by contributions to policy debate on food poverty/food access issues.

Via its large scale study of food retail access and diet in the deprived area of Seacroft, Leeds the project has provided insight into four significant issues.

1. *The nature of food consumption patterns typical of people living in deprived urban areas with poor access to healthy foods – areas which can be termed 'unsupportive' local food environments*

Using the fruit and vegetable consumption of 1009 respondents in Seacroft as a measure of a 'healthy diet' the project has explored the extent to which diets in such areas fall short of Dept of Health recommendations, and has established the characteristics of those with the poorest diets. Conversely, it has explored the characteristics of those respondents in Seacroft who, despite facing the same problems of what has been termed 'the struggle to eat well on a low income' in British cities, are 'diet rich' in the sense of achieving Government-recommended dietary targets.

2. *The impacts on the food consumption of people living in a previously poor food access/unsupportive local food environment which might result from a sudden amelioration of their food access problems*

Using information on the food shopping behaviour and diets of 615 respondents in Seacroft who completed a major food-diary/household questionnaire survey both 'before' and 'after' the opening of a large full-range food store in the centre of the area, the project has offered (for the first time in the UK to our knowledge) important evidence on the impact of a retail provision intervention in such an area. Major impacts on the travel behaviour and food store

choice of respondents were recorded, and those were accompanied by beneficial but modest impacts on diet (provided by fruit and vegetable consumption) for certain sub-groups of respondents. Although these changes in diet are small in absolute terms, and although consumption levels of a majority of residents in the area remain significantly at variance from Government recommended targets, we interpret these findings as suggesting that for some groups in 'unsupportive' local food environments physical access might be an important component within a complex combination of barriers limiting the consumption of 'healthy' foods.

3. *The experience of poor food retail access and the nature of 'the struggle to eat well on a low income' in such areas*

Using focus groups conducted 'before' and 'after' the opening of the new store in Seacroft, the nature of the complex coping mechanisms which residents of poorly served low income areas employ to budget for and access food has been explored. Additionally, reaction of residents of such areas to a major retail provision intervention has been investigated. In this context, benefits to the self esteem of residents and benefits relating to ease/cost of access and convenience, are seen as being countered by worries about temptations to overspend/waste money posed by a full-range food store, and by alienation when such interventions are perceived by residents as being targeted at more affluent 'outsiders'.

4. *The extent of 'food insecurity' typical of residents of such deprived urban areas*

Using a follow-up investigation of the 615 respondents who completed the before/after Seacroft study and survey instruments developed in the USA, supplementary evidence has also been obtained of the scale of the food poverty problem in such areas.

Additionally, via city-wide and local-area based studies of food retail access patterns in Leeds/Bradford and Cardiff, and of changes in retail access in those cities over time, the project has provided insight into three further issues.

5. *How to measure spatial variation in access to food retail provision and identify areas of poor food retail access*

Using a spectrum of techniques ranging from GIS-based local mapping to city-wide spatial-interaction model-based indicators of 'effective delivery', variation in food retail access has been mapped across the three cities and problem areas ('food deserts') identified.

6. *How retail development trends over the past 20 years have altered access to food in the case study cities*

Using unusually rich data bases on retail development in the three cities, unique analysis of the evolution of areas of poor food retail access has been conducted. In the case of Cardiff, the patterns of store openings and closures over a 20 year period provide evidence of poor levels of access becoming concentrated within areas of social deprivation.

7. *Whether the amelioration of the poor food retail access problems of one area via retail provision intervention may, in turn, have adverse consequences for provision in surrounding areas*

The issue of whether 'micro food deserts' might be created as a result of the 'deflection' in trade suffered by food stores in the areas surrounding the site of a retail provision intervention has been explored in the context of east Leeds.

## ESRC LINK Award L135251002: Food Deserts in British Cities

### Full Report of Research Activities and Results

#### Background

During the late 1990s, significant government-led policy debate in the UK on the tackling of social exclusion and the reduction of health inequalities produced a focus on the linkages which might exist between compound social exclusion, poor food-retail access, compromised diets, and poor health in deprived urban neighbourhoods. Areas of poor access to the provision of healthy affordable food where the population is characterized by deprivation and compound social exclusion become known as *'food deserts'* (Beaumont et al, 1995; DoH, 1996; Whitehead, 1998), sometimes *'fresh food deserts'* (although, perhaps rather unfortunately, that longer phrase rapidly fell out of use).

The term *'food deserts'* was a metaphor which caught the imagination of those involved in policy development, not least because it encouraged a shift in focus in health promotion activity (Lang and Caraher, 1998). Both *The Independent Inquiry into Inequalities in Health* (Acheson, 1998) and the *National Strategy for Neighbourhood Renewal* (Cabinet Office, Social Exclusion Unit, 1998) accepted the existence of such areas,

'some areas [of Britain] have become *'food deserts'* exacerbating the problems those on low-incomes face in affording a healthy diet' (Cabinet Office, Social Exclusion Unit, 1998, p.72)

and recommended the implementation of policies to tackle their problems.

'We recommend policies which will increase the availability and accessibility of foodstuffs to supply an adequate and affordable diet ... [and] which will ensure adequate retail provision of food to those who are disadvantaged' (*Independent Inquiry into Inequalities in Health*, Acheson (1998, p.65-66))

The report of Policy Action Team 13 (DoH, 1999, p.2) set up to examine service provision issues in such areas painted a grim picture in which:

'once vibrant local shopping centres or neighbourhood stores that provided a safe place for the local community to meet and access a range of services to meet their everyday needs have mostly disappeared. Boarded up small shops on street corners or in small neighbourhood parades, with only the locals knowing which are open for business and which are not, remain. And only people left with no other choice shop there ...'

and supported a proactive approach to the regeneration of retailing within them which favoured local-community-based and small-scale retail oriented solutions. Ministerial statements (e.g. Minister for Local Government & Regions, Beverley Hughes, in DETR, 2000) accepted the importance of the challenge, defining *'food deserts'* as areas lacking appropriate food retail provision within roughly a 500 metre radius.

It was against this policy background of the late 1990s that this ESRC LINK award was initially developed, proposed/modified, and finally accepted by ERSC with a early 2000 start date. The key motivation for the project was our belief that, despite the consensus of the late 1990s that access to the provision of healthy affordable food for low income households in deprived areas of British cities was an important social exclusion/public health issue, many fundamental questions remained surprisingly unexplored. Indeed, as both the Principal Award Holder (Wrigley, 2002) and Cummins and Macintyre (2002) subsequently argued in academic journals, there was a clear sense in which the *'food deserts'* debate at the end of the 1990s was an example of policy development running significantly ahead of systematic evidence-based research. As a result, there was a pressing need to fill critical gaps in that evidence base.

What was proposed in the original application to ESRC, therefore, was that an interdisciplinary team of specialists in retail development and planning (from Geography and City & Regional Planning) and public health (from the Institute of Human Nutrition), supported under the terms of the LINK award scheme by experts from an industrial partner (J. Sainsbury plc), would provide a multifaceted evaluation of the issue of 'food deserts' in British cities in an attempt to fill some of those gaps in the evidence base. Within the context of three selected British cities (Leeds/Bradford and Cardiff), the team would consider how retail development had altered access to food and what constituted areas of poor food retail access ('food deserts') in those cities. In addition, the team would explore to what extent externally generated improvements in levels of accessibility in such areas, as a result of retail development, might impact on food consumption patterns. In the latter case, it was proposed that the team would draw upon the industrial partner's privileged knowledge of the food retail development pipeline in the UK to design and conduct an innovative 'before/after' study of the impact a large food retail store – scheduled to open in mid/late 2000 – on food retail accessibility and food purchasing/consumption patterns of a group of low income households in an area of previously poor food retail access.

## **Objectives**

Following certain modifications of the original proposal submitted to ESRC in response to queries raised by the LINK Programme Management Committee, the objectives of the project were stated to be.

1. To provide an evaluation of the nature of 'food deserts' in British cities as a contribution to the social exclusion and health inequalities debates in the UK and their policy implications.
2. To investigate within the context of three British cities (Leeds/Bradford and Cardiff) what constitutes and how to identify/measure areas of poor food retail access ('food deserts'), and to assess how such areas have evolved over time (i.e. how retail development trends over the past decade or so have altered access to food in those cities).
3. To design and conduct within one strategically chosen area of poor food retail access in one of those cities a major 'before/after' study of the impact of the opening of a large new food store on a group of low-income households – specifically investigating the impact of significantly altered levels of accessibility to food retail provision on food consumption patterns.
4. To complement these investigations with: (a) qualitative studies of smaller groups of disadvantaged households, and (b) policy-related contextualization and analysis.

In comparison to the proposal originally submitted to ESRC, two small revisions were made during final modification of the project design prior to funding. First, partly in response to the LINK Programme Management Committee's concerns about potential problems of seasonality variation in food consumption, and partly for financial and logistic/timing reasons relating to actual opening date of the new store, the 'before/after' study was restricted to just two waves – with the 'before' and 'after' waves being separated by exactly one year to avoid seasonality variation – rather than the three waves (in which there were to have been two 'after' waves, one month and six months after the opening of the new store). Second, in response to referee comments and requests by the Programme Management Committee, an enhanced focus on policy debates and policy initiatives in the UK concerning nutrition-related health inequalities/social exclusion-urban regeneration issues was designed into the study, and it was accepted that this implied some scaling back of the range of in-depth qualitative surveys originally envisaged under objective 4.

During the course of the project, each of the four objectives outlined above has been addressed. Via extensive public presentation of the findings of our research (see *Activities* section below), via formal publication in academic journals of papers from the project (see *Outputs* section below), and via considerable engagement (in the form of e-mail/letter

correspondence, circulation of pre-publication versions of papers etc) with the wide academic/non-academic research-user audience (both UK/ European and North American based) who have been drawn to our work, we believe that the project has contributed materially to the development of knowledge and policy debate on food poverty/food access issues.

## Methods

Primary responsibility for objective 2 of the project was delegated to the sub-contract holders on the award – Professor Cliff Guy (City & Regional Planning Univ. of Wales, Cardiff) and Dr Graham Clarke (Geography, Univ. of Leeds). The Univ. of Southampton team (based in Geography and Public Health Nutrition) took responsibility for objectives 3 and 4, with all members of the wider research group contributing to objective 1. The Principal Award Holder coordinated the wider group (including links with the industrial partner), and took primary responsibility for dissemination of the findings of the project into academic and public policy debate.

A wide range of methods – both quantitative and qualitative, extensive and intensive – were used to address the objectives of the project.

*Objective 3:* the Seacroft (Leeds)–based ‘before/after’ study, required a major and potentially extremely difficult exercise in social survey research – involving a two-wave food diary/household questionnaire survey focused on the kind of deprived urban area known to pose enormous problems re: response/attrition rates for social survey research. The survey design and its methodology have been outlined in detail for academic audiences in Paper No. 6 in the *Outputs* list below, but in summary it consisted of:

- (a) 2 Waves – pre-intervention, June/July 2000, approximately five months ‘before’ opening of new store in November 2000  
– post-intervention – June/July 2001 – seven/eight months ‘after’ opening of new store.
- (b) Each wave consisting of:
  - A 7-day food consumption diary/check list – respondent completed but interviewer placed and collected.
  - A wide-ranging interviewer-administered household questionnaire exploring issues of: household composition; welfare benefits and income; education and work status; disabilities and long-term health problems; smoking habits; attitudes to healthy eating; food-store choice; mode of travel to store; car ownership and access; perceived constraints on choice of foods bought, etc.
  - With diary and questionnaire completed, as in National Food Survey, by the person primarily responsible for domestic food arrangements of household.
- (c) Fieldwork contracted to and completed by Taylor Nelson Sofres, with the survey being designed by the Southampton research team with technical advice from TNS and specialists at our industrial partner.
- (d) Survey instruments and methods piloted in February 2000 – subsequently modified and refined.
- (e) Targets set of 1000 respondents in Wave 1 and 600 in Wave 2 in an attempt to ensure sufficient statistical power for the assessment of dietary change across the survey waves.
- (f) Intense efforts by research team to minimize sample attrition between waves of survey and hence reduce attrition bias problems in subsequent analysis – monetary incentives (in the form of non-food retail shopping vouchers) structured to maximize recruitment in Wave 1 of

survey, and retention of respondents into Wave 2. Achieved samples: 1009 respondents in Wave 1, 615 in Wave 2.

- (g) Two-wave survey supplemented by a separate 'repeatability study' undertaken during Wave 2 of main survey, involving 140 households and designed to measure extent of random or systematic error in information being reported by respondents within 7-day food consumption diaries.

Analysis of the two-wave survey (outlined in Papers No. 3, 6, 11 and 12 in the *Outputs* lists below) ranged from descriptive qualitative analysis to multivariate statistical modelling. In all cases, a determined attempt was made to contextualize the analysis and findings within on-going policy debates on nutrition-related health inequalities and social exclusion/urban regeneration.

It is the award holders' opinion that this two-wave Seacroft survey was successfully completed to exacting quality standards, and that it provides an important resource which (when accessed via the ESRC Data Archive) is likely to be re-utilized in subsequent studies of public health and social exclusion.

*Objective 4 (a):* Qualitative assessment via focus groups – each session audio-taped with the consent of the participants and lasting approximately 75-90 minutes – was the primary method used to gain insight into the experience of poor food retail access, and the nature of compound exclusion faced by, and complex coping mechanisms employed by, those living in a 'food desert'. Two waves of focus groups were conducted in conjunction with the main (quantitative) social survey research in the Leeds (Seacroft) intervention study, with the design and conduct of the 'post-intervention' focus groups being outlined in detail in Paper No. 8 in the *Outputs* list below.

As in the case of two-wave diary/questionnaire surveys used to address objective 3, focus group recruitment in deprived urban areas (particularly of the most disadvantaged/'at risk' groups) was known to pose significant problems. As a result, as outlined in Paper 8, considerable efforts were made by the research team to overcome those problems – including the use of a highly-experienced locally-based, professional qualitative researcher as focus group moderator, recruitment by experienced fieldworkers working to MRS standards and codes of conduct, and use of monetary incentives to encourage attendance by those recruited to the focus groups.

Analysis of the transcribed focus group sessions followed conventional social science research practice (Hennik and Diamond, 1999), and there was a determined attempt to structure the design of the post-intervention focus groups (see Paper 8) to draw upon, and permit interrogation of, the findings of the two-wave diary/questionnaire survey. Insights from the post-intervention focus groups were used to help the research team understand more fully the subtle shifts in food consumption which had been seen to accompany the opening of the new store (the retail provision intervention) – shifts which were clearly mediated through complex and purposeful coping mechanisms and, additionally, through food consumption cultures, attitudes regarding food preparation and healthy eating, and motivations to consider health, which clearly differed considerably across age groups.

*Objective 2* – In contrast to the primary information (both quantitative and qualitative) obtained to address objectives 3 and 4 (a), objective 2 was tackled via the analysis of secondary data and specifically, the unusually rich city-level retail development, retail demand, and shopping-flow data bases held by the Schools of City & Regional Planning and Geography at the Universities of Cardiff and Leeds, based on painstakingly collected information from local authority, commercial and academic surveys. Indeed, in the case of Cardiff (as demonstrated by Paper No. 7 in the *Outputs* list below) those data bases were rich enough to permit analysis of the changes in access to food retail provision in different parts of the city over a 20-year period, resulting from the patterns of store openings and closures over that period.

Analysis of these data bases (outlined in Papers 2, 7, 9 and 14) has involved a wide spectrum of techniques ranging from: GIS-based local mapping approaches and descriptive quantitative assessment, through to systematic city-wide spatial interaction modelling approaches employing innovative model-based indicators of levels of food retail provision per household to tackle the question of the absolute and relative nature of the underprovided areas.

## Results

Via its large-scale study of food retail access and diet in the deprived area of Seacroft, Leeds, the project has provided insight into four significant issues.

1. *The nature of food consumption patterns typical of people living in deprived urban areas with poor access to healthy foods – areas which have been described as ‘food deserts’ or which might more neutrally be termed ‘unsupportive local food environments’.*

Using the fruit and vegetable consumption of 1009 respondents in Seacroft as a measure of a ‘healthy diet’ the project has explored the extent to which diets in such areas fall short of Department of Health recommended intakes and has established the characteristics of those with the poorest diets. The picture observed in Seacroft is consistent with what might be expected based on the findings of the National Diet and Nutrition Survey but is frequently more extreme. For example, the modal fruit and fruit-juice consumption of the 1009 respondents in Wave 1 (pre-intervention) of the Seacroft survey is shown to be zero – 11% of respondents reporting eating no fruit or drinking no fruit-juice whatsoever during the seven-day monitoring period of Wave 1 of the survey. Paper No. 3 in the *Outputs* list shows poor diet in the area to be associated with young respondents (particularly the 17-24 year old group), who are heavy smokers, live in households characterised by markers of deprivation, and who express negative attitudes to the importance of healthy eating. It also reveals evidence that respondents with the poorest diets are more highly concentrated amongst those who used limited-range or budget stores as their main source of fruit and vegetable purchasing, and that both physical and economic access constraints are important factors in the use of such stores by those respondents.

Conversely, the project has also explored (Paper No. 12 in *Outputs* lists) the important within-area heterogeneity in diets, focusing in particular on the characteristics of those respondents in Seacroft who, despite facing the same problems of what has been termed ‘the struggle to eat well on a low income’ in British cities (Hitchman et al 2002), are ‘diet rich’ in the sense of achieving Government-recommended dietary targets. Additionally it has asked what can be learned from the identification of those groups about the likely effectiveness of particular types of policy initiatives in improving diet.

2. *The impacts on the diets of people living in a previously poor food access/unsupportive local food environment which might result from a sudden amelioration of their food access problems.*

Using a ‘before/after’ study of the food shopping behaviour and diets of the 615 respondents in Seacroft who completed both waves of the survey – i.e. both prior to and following the opening of large full-range food store in the centre of the study area – the project has offered important evidence on the impact of a retail provision intervention on food consumption patterns in a compoundly deprived previously poor-retail-access community. Paper No. 6 in the *Outputs* list shows the retail provision intervention to have had a major impact on travel behaviour and food store choice in the area. 45% (276) of respondents switched their ‘main’ food retail source to the new store – in the process reducing the average distance travelled to their main food store from 2.25km in the pre-intervention period to 0.98km in the post-intervention period, and increasing the incidence of walking as the main mode of travel threefold from 12.3% pre-intervention to 30.8% post-intervention.

Papers No. 6 and 11 also provide evidence of a beneficial but modest impact of the retail intervention on diet – specifically (see Paper 11) amongst: (a) respondents whose access to full-range food retailing was unambiguously improved by the opening of the new store, who

were within walking distance of the new store, and who responded to the intervention by switching their main food source to the new store (a statistically significant increase in fruit and vegetable consumption of a little over one-third of a portion per day or 2.5 portions per week); (b) respondents who in the pre-intervention period used a limited-range/budget store as their main food source and who responded to the intervention by switching to the new store (a statistically significant increase in fruit and vegetable consumption of a little under half a portion per day or 3 portions per week). Although these changes in diet are small in absolute terms, and although consumption levels of a majority of residents in the area remain significantly at variance from current government recommended targets, the shifts in consumption are not dissimilar to changes achieved by interventions aimed at behaviour change through dietary advice. As a result, we interpret these findings as suggestive of the fact that for some groups of residents in highly-deprived, 'unsupportive' local food environments, physical access might indeed be an important barrier limiting the consumption of fruit and vegetables. However, the modest scale of the dietary impact we observe from the Seacroft intervention suggests that physical access issues are likely to be merely one part of a complex combination of critical barriers limiting the consumption of such 'healthy' foods.

### 3. *The experience of poor-food retail access, and the nature of the 'struggle to eat well on a low-income' in such areas*

Two waves of qualitative research based on focus groups were used to explore the nature of the often complex coping mechanisms residents of Seacroft employed to budget for and access food. These investigations complemented other qualitative studies of food poverty and local food environment issues in the UK reported by Hitchman et al (2002), Robinson et al (2001), Clarke et al (2004) and others. Paper No. 4 in the *Outputs* list below explores 'life' in the Seacroft area in the 'pre-intervention' period – i.e. prior to the amelioration of its food access problems by the opening of the new store. It provides insight into the vicious cycles of compound exclusion faced by residents of the area and the complex coping mechanisms those often car-less residents used to access food. Paper 8 then considers in qualitative terms food shopping and food consumption in the 'post-intervention' period and the reactions of Seacroft residents to the retail provision intervention (the new store). Benefits to self-esteem of residents of the area together with benefits relating to ease/cost of access and convenience are noted. However these are countered by significant worries among low-income respondents about the temptations (threat) posed by the new full-range store to overspend/waste money, and by a degree of alienation/feelings of intimidation resulting from the new store drawing significant amounts of its trade from outside the local (low income) area – i.e. from being perceived by residents as being targeted at more affluent 'outsiders'.

#### 1. *The extent of 'food insecurity' typical of residents of such deprived urban areas*

Using a follow-up investigation (achieved sample size 456) of the 615 respondents who completed Wave 2 of the Seacroft survey, and questionnaire instruments developed and tested in the USA, paper 12 provides evidence of considerable household food insecurity in such areas (e.g. 13% of respondents reporting having to miss meals over the previous 12 months because of lack of money, and 21% reporting that the food they bought often did not last but they could not afford to buy more). That is to say, a food poverty problem in British cities of a significant and, to the research team's knowledge, not similarly quantified level.

Second, via city-wide and local-area based studies of contemporary food retail access patterns in Leeds/Bradford and Cardiff, and of changes in retail access in those cities over time, the project has provided insight into three further issues.

#### 5. *How to measure spatial variation in access to food retail provision and to identify areas of poor food retail access ('food deserts')*

A wide spectrum of techniques, ranging from GIS-based local mapping approaches to systematic city-wide spatial interaction approaches, were used to explore these issues and to capture both the absolute and relative nature of the issue of food retail under-provision. In particular, Paper No. 2 in the *Outputs* list below outlines an innovative model-based indicator

of 'effective delivery' (a food retail provision per household measure) and maps food retail access across Leeds/Bradford and Cardiff using that measure. In the case of each city, problematic deprived areas of poor food retail access (most frequently peripheral local-authority housing estates) are identified.

6. *The evolution of areas of poor food retail access – i.e. how retail development trends over the past decade or so have altered access to food in the case study cities*

Using the unusually rich data bases on retail development in the case study cities held by the Schools of City & Regional Planning and Geography at the Universities of Cardiff and Leeds, what we believe to be unique analysis of the evolution of areas of poor retail access in the UK ('food deserts') has been conducted. In this way the project has been able to address the question of the extent to which the perceived development of 'food deserts' can be associated with the polarising effects of out-of-town superstore development and the uneven stripping of food retailing out of parts of the cities via closure of smaller food stores and/or the repositioning of provision downwards in range and quality terms relative to the food choice offerings of the superstores (Thomas and Bromley, 1993; Guy, 1996; Wrigley 1998). Paper No. 7 in the *Outputs* list below considers this issue in the context of the patterns of store openings and closures over a 20 year period in Cardiff. It shows that although access to food retail has increased in general across the city since the 1980s following the development of a ring of ten large food superstores, this has been accompanied by a polarisation effect. Improvements in access and provision have been greater in higher income areas than lower income areas, providing evidence of poor levels of access becoming concentrated within areas of social deprivation.

7. *Whether the amelioration of the poor food retail access problems of one area via retail provision intervention may, in turn, have adverse consequences for provision in surrounding areas.*

Paper No. 14 (also to a lesser extent paper 2) in the *Outputs* list below assesses to what extent a retail-provision induced amelioration of the food access problems of one area of a city might, in turn, create micro 'food deserts' elsewhere in the city as a consequence of the 'deflection' of trade experienced by other food stores in the surrounding area. Again we believe this to be a unique analysis in the context of the wider 'food deserts' debates, reinforcing the need to take a dynamic/evolutionary view of the problem.

## **Activities**

The following presentations to the non-academic research-user community and to academic conferences/workshops have been made. There is every indication that this pattern of dissemination is likely to continue for some time, reflecting growing international interest in and awareness of the project.

1. Wrigley, N, Clarke, GP and Guy, CM - presented a series of papers based on the preliminary stages of the research project at a 'Food Deserts in British Cities' workshop at the University of Leeds, April 2001. (These papers subsequently became a special issue of the journal *Urban Studies*).
2. Warm, DL - gave oral and poster presentations on the research project at the Nutrition Society Conference, July 2001, 17th International Congress of Nutrition, August 2001, and Nutrition Society Conference, July 2002.
2. Wrigley, N, Clarke, GP and Lowe, MS - presented a series of papers in a special session on 'Food Deserts' at the 9th International Conference of the European Institute of Retailing in August 2002.
3. Wrigley, N - presented a lead paper at the CIRM 2002 'Retailing for Communities: Issues of Inclusion and Exclusion' conference. Manchester, September 2002. (Resulted in an

invitation by the Director General of the BRC to present the work at the British Retail Consortium special session at Westminster reported below).

4. Wrigley, N - presented an invited paper outlining the findings of the Leeds (Seacroft) intervention study in a special session on 'Diet and Health' at the British Association for the Advancement of Science Meeting, Leicester, September 2002. [Reported on BBC Radio 4 PM programme and in several newspapers. Also led to a summary piece being published by the leading urban regeneration/planning magazine *Regeneration and Renewal*, Sept 27, 2002, page 12, and to a major feature covering the Leeds study under the title 'Planting the food desert' on the HERO website (the official gateway site to UK universities and research organizations)].
5. Warm, DL - gave presentation on research to Centre for Advanced Spatial Analysis, University College, London, October 2002.
6. Wrigley, N - presented seminar on the 'food deserts' project to staff of J Sainsbury plc, Sainsbury Head Office, London, October 2002.
7. Wrigley, N - spoke at a special seminar organized by the British Retail Consortium to present the findings of the Leeds 'food deserts' study to Government Depts, industry representatives, MPs, etc at Westminster, November 2002. The session was chaired by Janet Anderson MP, introduced by Bill Moyes, Director General of the BRC, and subsequently attracted considerable attention in professional/trade journals. For example, the trade journal *The Grocer* ran an article and a separate editorial on the seminar on December 7th 2002, pages 27 and 22. In addition, a summary of the presentation was subsequently published in the *BRC Yearbook 2003*.
8. Guy, CM - presented a paper on 'neighbourhood retailing and food poverty' at the CIRM 2003 conference, September 2003, summarising findings from the Cardiff component of the 'food deserts' project.
9. Wrigley, N - addressed the All Party Parliamentary Food & Health Forum in the Grand Committee Room, House of Commons, 29 October 2003, summarising for MPs, Peers and NGO/industry representatives results of the 'food deserts' study.
10. Wrigley, N - co-organized (with Prof I. Clarke) a special session on consumption and the local food environment and presented the findings of Leeds intervention study at the Centennial Conference of the Association of American Geographers, Philadelphia, 17 March 2004.
11. Wrigley, N - addressed the World Economic Forum food industry member firm representatives on insights on diet-related health debates from the UK 'food deserts' research at the industry meetings of the World Economic Forum, London, 29 June 2004.
12. Wrigley, N - and Clarke GP - presented papers outlining the findings of the ESRC project at a special session on 'Food Deserts in British Cities' (including researchers from related DoH, FSA projects) at the joint International Geographical Congress/Royal Geographical Society Conference, Glasgow, 17 August 2004.
13. Wrigley, N - contributed to an ESRC workshop on 'Health Behaviours: Eating & Diet', London, 23 August 2004.
14. Wrigley, N - will speak at a conference on 'Tackling Nutrition Related Health Inequalities' in London 23 November 2004 at which Government Ministers, Chair of Food Standards Agency, Director of Food Commission, etc are also scheduled to speak.

In addition, throughout the project there has been on-going and extremely useful engagement with the industrial partner (J. Sainsbury plc) of the LINK project. Formal meetings between

research team members and representatives of J. Sainsbury (with Caroline Gye acting as the primary link to Sainsbury's) have been held on a regular basis throughout the project – with attendance by the 'Eating, Food & Health' LINK Programme Director, Prof. Richard Shepherd on some occasions. These meetings have been supplemented by frequent e-mail and telephone contact, and via a presentation by Prof Wrigley to staff members of J. Sainsbury at the company's, Head Office. Our industrial partner has at all times been highly supportive of the project, and has encouraged us to engage in public presentation of the findings of the study.

## Outputs

The length of the project has usefully allowed the research team to publish (and receive initial reaction to) several of the key components of the research. Those papers are listed below. However, other papers still remain in various positions in the publication process, and it may be some time before the full body of published research originating from the project is completely available.

### *Published Papers – Academic Journals*

1. Wrigley, N (2002) 'Food deserts in British cities: policy context and research priorities', *Urban Studies*, 39, 2029-40.  
[An overview of the research and policy context in which the ESRC project was positioned, an outline of its structure, and assessment of key research questions to be addressed]
2. Clarke, GP, Eyre, H and Guy CM (2002) 'Deriving indicators of access to food retail provision in British cities: studies of Cardiff, Leeds and Bradford', *Urban Studies*, 39, 2041-60.  
[An assessment of a range of indicators which can be used to measure spatial variation in access to food retail provision, and a comparison of contrasting methods of identifying areas of poor food retail access in Leeds/Bradford and Cardiff].
3. Wrigley, N, Warm, DL, Margetts, BM, and Whelan, AM (2002) 'Assessing the impact of improved retail access on diet in a 'food desert': a preliminary report' *Urban Studies*, 39, 2061-82.  
[An initial report on the structure of the Leeds (Seacroft) 'before/after' intervention study with a focus on findings re: poor diet and its determinants amongst the 1009 respondents in the 'before' wave of the study].
4. Whelan, AM, Wrigley, N, Warm, DL and Cannings, E (2002) 'Life in a 'food desert', *Urban Studies*, 39, 2081-2100.  
[Insights into the experience of poor food retail access and the nature of compound exclusion faced by those living in 'food desert' – not least the complex coping mechanisms employed to budget for and access food – based on the first wave of qualitative focus groups conducted 'before' the opening of the new store in Seacroft].
5. Wrigley, N, Guy, CM, and Lowe, MS (2002) 'Urban regeneration, social inclusion and large store development: the Seacroft development in context', *Urban Studies*, 39, 2101-114.  
[A review of policy debates in the UK related to social exclusion, urban regeneration and health inequalities, contextualizing the type of regeneration oriented solution to food access problems studied in the Leeds (Seacroft) intervention study].
6. Wrigley, N, Warm, DL and Margetts, BM (2003) 'Deprivation, diet and food retail access: findings from Leeds 'food deserts' study', *Environment and Planning A*, 35, 151-88.  
[A full account of the design and results of the Seacroft 'before/after' intervention study. This paper has subsequently been awarded the *Ashby Prize 2004* as one of the most outstanding papers published in the leading urban and regional research journal *Environment and Planning A* during 2003].

- Guy, CM, Clarke, GP, and Eyre, H (2004) 'Food retail change and the growth of food deserts: a case study of Cardiff', *International Journal of Retail & Distribution Management*, 32, 72-88.

[An examination of changes in access to food retail provision in one of the case study cities over the past 20 years, detailing how areas of poor food retail access ('food deserts') have evolved, and providing evidence of poor levels of access becoming concentrated within areas of social deprivation].

- Wrigley, N, Warm, DL, Margetts, BM, and Lowe MS (2004) 'The Leeds 'food deserts' intervention study: what the focus groups reveal', *International Journal of Retail & Distribution Management*, 32, 123-36.

[Insights from the second wave of qualitative focus group research conducted in the 'after' (post-intervention) period following the opening of the new store in Seacroft]

- Guy, CM and David, G (2004) 'Measuring physical access to 'healthy foods' in areas of social deprivation: a case study in Cardiff', *International Journal of Consumer Studies*, 28, 222-34.

[A supplementary/detailed investigation of local food access problems in selected low income areas of one of the case study cities].

#### *In Press*

- Guy, CM, (2004) 'Neighbourhood retailing and food poverty' *International Journal of Retail & Distribution Management*, 32 (November issue)

#### *In Revision Process Following Submission and Receipt & Referees' Comments*

- Margetts, BM, Wrigley, N, Warm, DL, and Jackson, AA 'Impact on fruit and vegetable intake of changing physical access in a 'food desert'' *Journal of Epidemiology and Community Health* – highly positive referees comments received, now being revised for resubmission, strong likelihood of acceptance for publication.

[Extends results of paper 6 by providing new and more detailed analysis of sub-group of respondents whose food retail accessibility unambiguously improved by opening of the new store in Seacroft. Draws out the implications for health inequalities/health promotion debates].

- Wrigley, N, Warm, DL, and Margetts, BM, 'Diet rich in a 'food desert': evidence from the Leeds intervention study', *European Journal of Public Health*.

[An examination of the characteristics of those respondents in the Leeds intervention study whose dietary intake of fruit and vegetables meets government targets despite having to deal with the problems of living in an area of poor food retail access].

- Margetts, BM, Warm, DL, Wrigley, N and Jackson AA, 'Hunger and food insecurity in the UK: is there a problem'. Originally submitted to *The Lancet* but rejected. Decision not yet taken as to which journal the paper will be resubmitted.

[A study of indicators of the levels of household food insecurity typical of low-income deprived areas, based on a follow-up questionnaire of 456 respondents drawn from those who had completed Wave 2 of the Leeds intervention study].

#### *In Preparation*

- Clarke, GP and Douglas, L 'Predicting the impact of large-scale retail interventions to solve the problem of urban 'food deserts''

[Assesses the question of whether amelioration of the accessibility problems of a 'food desert' via a retail provision intervention might create, in turn, the problem of micro 'food deserts' in the surrounding areas as a consequence of the 'deflection' of trade experienced by other food retail outlets].

### *Published Papers Professional Journals*

1. Cannings, E (2001) 'Planning out the food deserts', *Town and Country Planning*, November 303-4
2. Guy, CM (2001) 'Arid debates', *Town and Country Planning*, October, 246-7
3. Wrigley, N (2002) 'A shopping oasis in the food desert', *Regeneration and Renewal*, September 27,12
4. Wrigley, N, Warm, DL and Margetts, BM (2002) 'Food retail access and diet: what the Leeds 'food deserts' study reveals', *The Dolphin* (University of Southampton magazine), December, 12-13
5. Wrigley, N, Warm, DL and Margetts, BM (2003) 'Food deserts', *Food Link News*, March, 8 (DEFRA)
6. Wrigley, N, Warm, DL and Margetts, BM (2003) 'Food retail access and diet: what the Leeds 'food deserts' study reveals', *British Retail Consortium Yearbook 2003*, 228-30 (The Stationery Office)

### *Peer Reviewed Conference Abstracts*

1. Warm, DL, Margetts, BM and Wrigley, N (2001) 'Factors affecting and limiting food choice in a 'food desert', *Proceedings of the Nutrition Society 60*, 177A
2. Warm, DL, Margetts, BM and Wrigley, N (2001) ' Consumption of fruit and vegetables in a 'food desert' in the UK', *Annals of Nutrition and Metabolism 45*, S1, S182
3. Warm, DL, Margetts, BM and Wrigley, N (2002) 'Interaction between changes in physical access and other factors influencing consumption of fruit and vegetables in a 'food desert', *Proceedings of the Nutrition Society 61*, 152A

## **Impacts**

Knowledge of the research conducted within the 'Food Deserts in British Cities' project has been spread via the extensive public/academic-conference presentations reported in the *Activities* section above, the formal publication of papers reporting the findings of the project (see *Outputs*), and via engagement with a wide academic/non-academic research-user audience drawn to our work. It is clear that the research results, research design, and also the survey instruments used in parts of the project *are* increasingly being used by both the academic and non-academic research-user communities in the UK and also internationally. In particular, issues of food access and food poverty, in the context of growing public health concerns with nutrition-related ill-health, are rapidly in the process of becoming a major research topic in North America, and it is clear that our research (and indeed the wider UK contributions to these topics) is being used as a reference point as those debates develop.

Academic articles written by other authors which draw on the outputs of our ESRC award are (to the knowledge of the research team) already published, accepted for publication, or in the review process in many journals (including: *American J. of Public Health*, *British Medical Journal*, *American J. of Law & Medicine*, *J. of Epidemiology & Community Health*, *Health & Place*, *Ethnicity & Disease*, *Environment and Planning A*, *Urban Studies*, *Sociologia Ruralis*, *Social & Cultural Geography*, *Journal of Planning Education & Research*, etc) and it is, as yet, relatively early in the likely pattern of citation of our work. Knowledge and use of our work by the non-academic research-user community is harder to quantify. However, we can point to the

interest of bodies such as the All Party Parliamentary Food & Health Forum, British Retail Consortium, World Economic Forum, several NGOs, the food retail industry, and local authorities. It is also clear from internet search engines such as Google that the public presentations of the findings of the research have spread knowledge and discussion of our work widely.

## **Future Research Priorities**

Although we believe that the work conducted in the project on the measurement of spatial variation in access to food retail in our case study cities is innovative, and that the analysis we report (Paper 7) on how retail development trends over the past 20 years have altered access to food in one of those cities is unique and important, we accept that it is almost inevitable that our project will be remembered for its large-scale 'intervention' study of food retail access and diet in Leeds. Indeed, the award of the Ashby Prize 2004 to one of the papers reporting that study (Paper 6), and the evidence of papers in the pipeline in several major public health and urban & regional studies journals which cite our study, suggests that it has clearly made its mark in advancing knowledge and debate on the topics of food access and food poverty.

In this context, it is clear that the Seacroft 'intervention' study - as the first study we are aware of to attempt to address changes in food consumption resulting from significantly altered levels of accessibility to food retail provision in a deprived urban area - was designed to seize an opportunity which had presented itself to study a type of 'natural experiment'. The research team are aware however that, in an ideal world, the design of the Seacroft study should have been 'controlled' rather than 'uncontrolled' - that is to say, dietary change in the 'before' and 'after' period should also have been recorded in a 'control' area elsewhere in Leeds, matched for levels of household deprivation with Seacroft.

Unfortunately, at the outset of the project, the research team had only an approximate idea of the likely scale of costs involved in conducting an intensive two-wave food consumption diary/household questionnaire survey of the size required to offer sufficient statistical power to assess dietary change, particularly in the type of deprived urban area known to pose enormous problems re: response rates for social survey research. That is to say, in the sort of area where the research team firmly believed that cheaper survey methods (particularly postal methods) were simply not feasible, and where expensive fieldworker recruitment of survey participants and interviewer administered questionnaires, interviewer placement/collection of food consumption diaries was regarded as vital to ensure adequate response rates, to minimize sample attrition between waves, and to ensure the collection of high quality information. In the event, we believe that the Seacroft survey was successfully completed to exacting quality standards, and that it produced achieved sample sizes (notably the 276 respondents who switched their main food source to the new/'intervention' store in the post-intervention period) to allow sufficient statistical power to assess dietary change among particular sub-groups of respondents.

Subsequent to execution of the Seacroft study, the Dept. of Health has funded (2002-2004) what is essentially a follow-up to the Seacroft study in Glasgow - conducted jointly by researchers at the MRC Social & Public Health Services Unit of the Univ of Glasgow and the Institute for Retail Studies at the Univ of Stirling. That study (which is now in the process of reporting) was designed to extend the consideration of the impact of a retail provision intervention on diet to an additional assessment of impacts on self-reported health and psychological well-being. It was also designed to be a 'controlled' intervention study with deprivation-status matched 'control' and 'intervention' areas. Unfortunately, budget limitations dictated the use of postal survey methods, and low response rates were achieved as a result of the difficult nature of such deprived areas for social survey research. In our view, whilst those response rates were sufficient to allow definitive answers to be obtained on the impact of the retail provision intervention on self-reported health and psychological well-being, they were insufficient to allow a definitive answer to be obtained on the dietary impacts of the intervention (the sample of respondents switching food source to the intervention store being only 60 in the Glasgow study c/f 276 in the Seacroft study).

In our view both the Seacroft and Glasgow studies have considerable strengths and represent important contributions to knowledge. What is clearly required, however, is a new larger study which *combines* the best features of both the Seacroft and Glasgow studies. That is to say, one which is sufficiently large in sample size to permit sufficient statistical power in the assessment of dietary change, which employs exacting (and inevitably expensive) survey techniques to maximize response rates and minimize response/attrition bias, but which ideally in its design employs a 'control' area matched in deprivation/access terms to the 'intervention' area.

We believe that a major interdisciplinary project (including geographers/planners, public health specialists, social statisticians), perhaps using a comparative UK/North American city design and hence funded jointly by ESRC and its North American counterparts (NSF etc), and employing the best features of both the Seacroft and Glasgow studies, offers considerable potential and might profitably be pursued.

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