

Reducing inequalities in health and diet: the impact of a food retail development: A pilot study.

Project ref: 121/7492

Final Report to DH

October 2004

Project team:

Dr. Steven Cummins

Dr. Mark Petticrew

Cassie Higgins

MRC Social and Public Health Sciences Unit

University of Glasgow

Glasgow G12 8RZ

Professor Leigh Sparks

Anne Findlay

Institute for Retail Studies

University of Stirling

Stirling FK9 4LA

[Word length: c14,000 words]

Summary

It has been suggested that inadequate retail provision of food for those with a low income or who live in poor neighbourhoods may contribute to diet-related inequalities in health. This pilot project, funded through the DH Reducing Health Inequalities Research Initiative (Phase 2), investigated these issues by evaluating the health impacts of a large-scale food retail development within a deprived area of Glasgow (Springburn). It used a prospective design which compared change in diet, and self reported health in an area where a new hypermarket was built (the intervention area), with a similarly-deprived comparison area in Glasgow city (Shettleston). A postal survey was undertaken both before and 1 year after the hypermarket was built, in order to assess changes in diet, self-reported health, and perceptions of the neighbourhood. Changes in the retail structure in both areas were assessed through a before and (repeated) after shop count survey. Qualitative data on diet, the neighbourhood and the impact of the store were collected by means of focus groups.

The study found little evidence that the opening of a major new hypermarket had a major effect on fruit and vegetable consumption; there were changes in the intervention area but these were similar to those in the comparison area (emphasising the need for control groups in evaluative research such as this). Over the year of the study the new store also had little effect on the retail structure in Springburn (the intervention area) compared to Shettleston (the comparison area), although the vacancy rate fell in Springburn.

The main impact on the community is probably the provision of new jobs. Excluding the employment impacts, the net effect of the new Tesco Extra has been neither positive nor negative. The diet and health impacts on new store employees is an avenue for future research. In conclusion, the main public health impacts of such private sector investment in poorer areas are likely to be achieved via increases in employment opportunities, which impact upon general and psychological health, rather than directly, through changes in diet.

Executive Summary

Background

It has been suggested that there exist poorer areas where communities have little access to an affordable and healthy diet (sometimes referred to as “food-deserts”), and that implementing strategies to improve food access in low-income areas could improve the opportunities of residents to make healthy food choices, reduce social exclusion, and improve general health. Among the strategies which has been proposed is the improvement of retail opportunities and facilities.. Certainly large stores such as superstores and hypermarkets operated by ‘multiple’ retailers may be able to offer a wide range of healthy food, normally at

prices similar to, or cheaper than smaller independent retail outlets. This report presents the results of a pilot study which investigated the effects of a new hypermarket in a deprived area of Glasgow (Springburn). The study was funded as part of the Department of Health's Reducing Inequalities in Health Research Initiative (Phase 2).

The original project objectives were:

- To pilot methods of evaluating a non-healthcare intervention
- To compare self-reported health, psychological wellbeing, diet, food access and the retail base in an area where a new hypermarket was built, with a similarly-deprived comparison neighbourhood
- To evaluate whether self-reported changes in physical and mental health, food consumption patterns, and food access occur following the opening of a large food superstore
- To investigate the impact on residents' perceptions of their neighbourhood; and
- To examine the impact of the superstore on retail provision in the intervention area.

Methods

The study used three methods in order to meet these objectives:

- A quantitative postal survey before, and one year after the store was opened, conducted in both Springburn (the intervention area) and Shettleston (the comparison area);
- Qualitative research, using focus groups, carried out in the intervention area after the store had opened; and
- A retail shop count survey, carried out 6-monthly in both areas before and after the store opened.

Results

(i) The quantitative survey

Approximately 2000 questionnaires were mailed in each of the intervention and comparison areas, with an overall response rate of 15% at baseline and 68% at follow-up. There was little evidence for an intervention effect for either mean vegetable consumption (-0.09, $p=0.597$, 95% CI -0.42-0.24) or mean fruit and vegetable consumption (-0.98, $p=0.692$, 95% CI -0.59-0.39), after adjusting for potential confounders. Although there was some small improvement in diet in the intervention area, there was a similar improvement in the comparison area. Self-reported health worsened, and GHQ score improved in the intervention area, though these changes were not statistically significant. Among the one-third of the intervention group who switched their main food shopping to the new store ('switchers') there was some

improvement in diet of up to 0.35 portions of fruit or vegetables per day (n.s.). There was an improvement in general health measures for these 'switchers', though this was only statistically significant with respect to change in the prevalence of GHQ caseness.

(ii) The qualitative interviews

Nine focus groups were undertaken in the intervention area, 6-7 months after the opening of the new hypermarket. Local residents discussed health, community life, and shopping, as well as issues related to social cohesion, and social inclusion. No major positive or negative impacts of the hypermarket on diet, or on community life were raised by respondents. They reported that the new hypermarket provided access to a wider range of food than was previously available, but did not always appear 'accessible' in terms of cost, physical location, or transport of purchases. There was some evidence of negative comparisons with other areas, but without any strong evidence that the new store had redressed the balance. The only real, tangible benefits to the community were perceived to come through the store's interactions with the community, and through the creation of several hundred local jobs. Though the qualitative data did not identify any major impacts of the store, they are interesting in other ways for example issues associated with life in deprived areas. However this is not relevant for this evaluation but will be explored further at a later date.

(iii) The retail shop count survey

An initial mapping of the retail structure in both areas took place in October 2001, prior to the opening of the intervention store in Springburn. The survey was then repeated every May and October. The data collected were the location, name and line of business, along with some other historical or situational data, with the main aim of assessing overall retail structure change. The direction of change over the survey period was the same in both areas, with the exception of comparison goods retailers (that is, non-food products), where there has been a decline in Shettleston (comparison area) and an increase in Springburn (intervention area). The intervention area had a declining shop vacancy rate, unlike than the comparison area. Overall the opening of Tesco in Springburn did not appear to have impacted negatively on its retail structure, and may have had some positive effects on vacancy rates.

Several methodological issues were raised by the project, one of which may be the need for appropriate control groups in evaluative research like this. While appropriate comparisons in evaluations of area-based interventions are difficult to obtain, without them it is difficult to disentangle the effects of the intervention

from other influences, and changes in the intervention area may well be misattributed to the intervention. Though the project findings did indicate that this might be important it is difficult to be definitive due to the the project's low response rates.

Conclusions

We found little evidence that the opening of a major new hypermarket had a major effect on fruit and vegetable consumption; there were changes in the intervention area but these were similar to those in the comparison area. The diet of shoppers who did change to the new store (the "switchers") changed little, though there has been some evidence of improvement in terms of general and psychological health in switchers which may be due to the respondents direct engagement with visible large-scale inward investment into the local area. However statistical inference of causality from the quantitative analyses must be subject to caution, primarily because of the methodological limitations imposed by the disappointing response to the postal survey questionnaire. Findings must therefore be taken as provisional at this stage, Further corroboration of this view of limited impacts is offered by the retail survey. Over the year of the study the store had little effect on the number or type of shops in Springburn compared to Shettleston.

The main impact on the community has probably been the provision of new jobs. The retail survey implies that few, if any, retail jobs were lost in the area after the opening of the new store, but about 450 new jobs were created. Excluding the employment impacts, the net effect of the new Tesco Extra has been neither positive nor negative, and it has not been detrimental to the community, at least in terms of the outcomes we have measured. The new hypermarket remains just one of the many influences on health within the community, and probably not the most important one. In conclusion, the main public health impacts of such private sector investment in poorer areas are likely to be achieved via increases in employment opportunities, which impact upon general and psychological health, rather than directly through changes in diet.

1. Background

1.1 Food availability and food deserts

Combatting social exclusion and building healthy communities are central tenets of the Government's 'joined-up' strategy to improve public health and reduce health inequalities.¹⁷ Achieving these aims partly involves ensuring communities have good access to affordable food. However daily fruit and fruit product intake is twice as high in high income households compared with their lower income counterparts.¹³ Foods regarded as integral to a healthy diet vary regionally, with a greater variety and cheaper prices found amongst the less healthy options. It has been suggested for example that the cheaper foods that are likely to be found in deprived areas tend to be high fat and/or high sugar options. The term food-deserts has been coined to describe poorer areas where communities have little access to an affordable and healthy diet, although there is little definitional agreement about any measurable characteristics of such areas.¹

Change in the retail sector over decades has dramatically altered both the number and type of food retailing outlets. From a situation where most fresh food was purchased on an often daily basis from numerous local small stores, food purchasing in the UK is now characterised by less frequent trips to larger supermarkets and superstores. There is more retail floorspace devoted to food, but in fewer, larger stores. These changes raise issues of physical and economic availability of suitable food. They are overlain by changes in the local availability of processed and other 'fast' food.

Implementing strategies to improve food access in low-income areas could in theory improve the opportunities of residents of poor neighbourhoods to make healthy food choices, reduce social exclusion, and improve general health. Yvette Cooper, former Minister of Public Health, noted this in her foreword to the Department of Health's Shops Discussion Paper:

'Improvements in the local food retail economy can provide employment for local residents, a pathway in to new skills and training opportunities, reduce crime and improve health by providing a range of quality goods at affordable prices....we have to tackle social exclusion and make it easier for people living in poor neighbourhoods to make healthy lifestyle choices'

(Policy Action Team 13: Shops Discussion Paper, 1999).¹⁴

Reducing inequalities in diet and nutrition were also given priority status in The NHS Plan: A Plan for Investment, A Plan for Reform,¹² but access was acknowledged as a barrier:

'Information is important, but the food choices people can make are shaped by the availability and affordability of food locally'

(Department of Health, 2000)¹²

An obvious and plausible intervention to improve the availability of suitable food choices would involve encouraging the improvement of retail opportunities in poorer areas. Residents of poor communities themselves have blamed their inability to eat more healthily on the lack of supermarkets. Certainly large "multiple" stores (such as superstores and hypermarkets) may be able to offer a wide range of healthy food similar in price to, or cheaper than smaller retail outlets.¹ There are also other potential interventions, including community and local store developments.

1.2 Mechanisms for change: can a food retail development improve health and wellbeing?

With an area-based intervention such as a superstore or hypermarket, impacts other than health should be considered; major investment in an area (such as that resulting from new stores) may affect outcomes such as social inclusion and employment, which may affect health. These impacts, and their relationship with health outcomes are discussed below.

The potential mechanisms for health improvement could be conceptualised to operate in two ways. Firstly, a new superstore may affect health behaviours by increasing access (physical and economic) to a range of relatively healthy produce and by increasing opportunities to improve food selection and consumption patterns. Secondly (and much more indirectly), there may be some enhancement of community self-esteem, due to highly visible large-scale commercial investment in a previously marginalised area, and a local sense of reduced differentials with other areas.

The potential for health gain through the first of these mechanisms - improving diet - is considerable. Poor diet is a risk factor for a variety of health problems including incidence of heart disease, stroke, cancers in adults and premature and low birthweight babies, and there is scope for health gain if a diet rich in fruit and vegetables, unrefined cereals, fish and small quantities of vegetable oils could be made more accessible to the poor.³ This issue has in fact been explored in a recent study which evaluates the opening of a large new store in Leeds as part of a regeneration partnership with the local authority.^{9, 11} This prospective study

found a positive but modest impact of the new store, with mean daily consumption of fruit and vegetables increasing by about 0.44 portions. Local shop provision in this area was extremely poor prior to the development of the superstore. However the absence of a control group in this study leaves the question unanswered as to whether this change is due to the new store, is due to other local initiatives, or more simply to secular trends in diet in the area in question.

Outcomes other than dietary change are also important, as these allow us to examine the possible mechanisms by which social interventions (such as retail interventions) may affect health by changing people's lives. These changes will certainly not be immediately reflected in changes in morbidity or mortality rates, but there may be effects on (for example) people's levels of participation in social networks, leading to changes in indicators of social inclusion, changes in self-esteem, changes in mental health and perhaps (eventually) changes in use of health services. The causal pathways are clearly complex, and plausible intermediate outcomes (for example, measure of social integration) need to be assessed, and both benefits and adverse effects of the intervention monitored.

1.3 Retail interventions: need for evaluation

Implementing strategies to improve food access in low-income areas where 'food deserts' are believed to exist could substantially improve the ability of residents of poor neighbourhoods to make healthy food choices, reduce social exclusion, and improve general health. However the data on food deserts may have previously been over-interpreted, and the issue of how best to deal with food-deserts remains unresolved.¹ In particular it is unclear whether improving food retail access would in fact improve diet. This pilot study, an evaluation of the effects of a new Tesco hypermarket in Springburn in Glasgow, offered the opportunity to address this question directly.¹

¹ **Hypermarket:** typically, a large food and non-food store of over 5,000 sq.m. (or 50,000 sq.ft) sales floorspace, normally on one level, in a stand-alone location and with associated car parking.

A further rationale for this study was provided by the increasing awareness among policymakers and researchers of the lack of evidence of the effects of non-health sector interventions (such as government policies).^{6, 4, 18} The HDA report “Public Health Intervention Research: The Evidence” demonstrated the problem clearly; not more than 0.4% of academic and research output involves evaluation of public health interventions.¹⁹ Acheson’s “crucial recommendation” that all policies should be evaluated in terms of their impacts on inequalities is clearly a long way from being met.

There are many reasons (including historical, methodological, epistemological, and organisational reasons) for this paucity of public health intervention research. Among these is the difficulty of carrying out studies where the researcher has control over the allocation of the intervention. This applies to many of the main social determinants of health, and health inequalities – in particular government policies. In addressing this problem health inequalities researchers have recently recommended that more use should be made of “natural” experiments (for example, changes in employment opportunities, housing provision, or cigarette pricing).^{5, 6} This call is echoed in Wanless’ final report:

“Given the limited evidence base for public health, every opportunity to generate evidence from current policy and practice needs to be realised”

For Wanless, natural experiments offer precisely those opportunities (see Wanless’ final report, page 114, 119).²⁰ The current study is an evaluation of just such a natural experiment.

We obtained funding from DH to examine these issues, by assessing the impact of a new hypermarket on diet, on perceptions of neighbourhood, and on the existing retail structure in a deprived area of Glasgow. The study used a repeated quantitative survey of residents, along with qualitative research, and a repeated retail shop count survey of an intervention and a comparison area. The methods and initial results of these components of the project are described in this report.

2. Brief history of the project, and description of methods

This section represents a brief history of the project, and a summary of the research questions and methods used in the study as a whole. More detailed methods and the study findings are reported in each of the 3 separate findings sections (Sections 3, 4, and 5 below, corresponding to each of the study components).

2.1 Brief history of the project

The principal investigators had a long-standing research interest in both public health interventions and retailing, and had been discussing possible collaborative work for some time. In 2001 we were presented with an opportunity to evaluate a natural experiment: the proposed opening of a major new food hypermarket in one of the most deprived constituencies in the UK, Shettleston. This £10m store on a derelict site was heralded as having the potential to have a major impact in a blighted area. The research team started by identifying a similar area, Springburn, to use as a comparison area in a prospective, quasi-experimental study. It was felt to be crucial in research terms to obtain a suitable comparison area, and the presence of these two highly and similarly deprived areas in Glasgow provided such an opportunity.

The main difference of course between a “natural” experiment and a “true” experiment is that the researchers usually do not control the intervention. So it proved with our study. Local shopkeepers in Shettleston campaigned vigorously against the opening of the new store, and local councillors refused the planning application; we appeared to have “lost” our intervention. However Tesco were almost concurrently successful in a planning application to build a new £20m store in our comparison area; in effect our intervention and comparison areas were swapped. The project was able to progress with funding from DH. This allowed a research assistant to be employed full-time from early 2002 (Cassandra Higgins). However the timing of the opening of the new hypermarket was however brought forward several months to October 2001, which meant that we were obliged to carry out the baseline data collection without a dedicated researcher in post. The timing constraints brought about by this development meant that we had to be pragmatic about the scale and scope of the data we wish to collect. It had been originally intended to conduct a thorough review of potential survey instruments, however we were unable to do this to the same degree as originally intended. Thus the methods used to elicit the survey data were the most appropriate considering that the delivery time of the intervention was outside of the teams control.

The main researcher then started work in January 2002, but unfortunately became seriously ill in early 2003, and for the final 8 months was either on sick leave or working part-time. This set-back, during a period

Project: *REDUCING INEQUALITIES IN HEALTH & DIET: THE IMPACT OF A FOOD RETAIL DEVELOPMENT - A PILOT STUDY*

which we had timetabled for data analysis and writing up, necessitated a 3 month extension to the project and has severely delayed the analysis of data (particularly the analysis of qualitative data). The researcher happily recovered enough to return part-time to the project for another month in 2004. This was paid for with non-DH funds.

This report presents the main findings of the study in relation to the main research questions. Other analyses are planned.

2.2 Research questions and study methods

The study was funded as a pilot study. The original project objectives were:

- To pilot methods of evaluating a non-healthcare intervention
- To describe and compare self-reported health, psychological wellbeing, food consumption patterns, food access and the retail base in Shettleston, Glasgow with a similarly deprived comparison neighbourhood within the city.
- To evaluate whether self-reported changes in physical and mental health, food consumption patterns, and food access occur following the opening of a large food superstore
- To investigate residents' perceptions of their neighbourhood and other neighbourhoods after the intervention and explore impacts on sub-groups; and
- To examine the impact of the superstore on retail provision in Springburn

As noted above, the intervention and comparison areas were reversed due to force of natural circumstance, thus affecting the second and fifth objectives above (Springburn became the intervention area and Shettleston the comparison area). Additionally, the store built in Springburn was a Tesco Extra, which due to this format's considerable non-food goods space provision is best described as a hypermarket, rather than as a superstore. This format still maintains an extensive food range.

The study used three main methods to meet these objectives:

Project: *REDUCING INEQUALITIES IN HEALTH & DIET: THE IMPACT OF A FOOD RETAIL DEVELOPMENT - A PILOT STUDY*

- A quantitative postal survey before, and one year after the store was opened in both Springburn (the intervention area) and Shettleston (the comparison area);
- Qualitative research, using focus groups, carried out in the intervention area after the store had opened; and
- A repeated retail shop count survey, carried out 6-monthly in both areas before and after the store was opened.

Ethical approval for the project was obtained from Glasgow University Research Ethics Committee.

Papers on each of these three surveys and on other aspects of the research (e.g., methodological reflections, project findings overview, retail history and aspects of shopping behaviour) are in various stages of completion or preparation for journal submission. In the interests of space here, the findings from the three surveys are summarised below and then overall conclusions matched against the objectives above. As journal papers become available they will be forwarded to DH. The methods and initial findings of the study have also been presented at the following conferences or meetings:

- Association of American Geographers Conference, Philadelphia, March 2004
- Staff Research Seminar, University of Stirling, October 2003
- UK & Ireland Health Impact Assessment Conference: Informing decisions for Health and Wellbeing. Birmingham, 6th Feb 2003.
- Assembling evidence to support evidence-based policy. WHO workshop on Public Health Evidence, Copenhagen, 2-3 December 2002.
- Knowledge Utilisation and Transfer conference, Oxford, July 2002.
- Policy Forum, Scottish Executive Department of Health, April 2002.
- Regenerating Health seminar, Swinburne Institute for Social Research, Melbourne, March 2002.

3. The quantitative survey: a quasi-experimental study of the opening of the new Tesco Hypermarket in Springburn

3.1 Introduction

This section reports on the findings of a prospective controlled study, carried out to assess the effects of the new hypermarket by comparing self-reported changes in diet in the intervention area (Springburn) with a comparable Glasgow neighbourhood (Shettleston). The hypermarket itself was built on the site of an old BR engineering works. As well as being the largest Tesco store in the Glasgow area, this project was widely seen as having the potential to make a significant contribution to urban area regeneration by providing long-term training and job security for local people. It was anticipated that about 450 jobs would be provided, and Tesco promised to train local unemployed people in basic and retail skills with the promise of a job at the end of their training. This reflected Tesco's wider objective of forming regeneration partnerships with the public sector. In the case of Springburn this involved links with Glasgow Chamber of Commerce, a local training college, and regeneration companies (among others).¹⁵ This section of the report describes the methods of the quantitative element of the evaluation, and reports the main findings relating to fruit and vegetable consumption.

3.2 Methods

3.2.1 Sample selection

A 'before and after' postal survey of a representative sample of residents in two areas (intervention and comparison areas) using a quasi-experimental design was undertaken in the east of Glasgow (Figure 1). Intervention and comparison areas were matched by level of deprivation (Carstairs-Morris DEPCAT), with each area having a DEPCAT of 7 (a score of 1 represents the most affluent and 7 represents the most deprived). Recently released data from NHSHealth Scotland confirm that these two areas are among the most deprived in Scotland, with high levels of smoking (about 50% in both areas), an average income of about a third below the Scottish average, low levels of fruit and vegetable consumption (about a third eat fruit daily), and high levels of ill-health (about 30% with limiting long-standing illness).

A random sample of households, stratified by area, was drawn from the postcode address file supplied by CACI Ltd. A total of 3975 postal questionnaires were administered pre-intervention during October 2001 and respondents were followed-up after a 12 month interval. It was requested that the questionnaire was filled in by the main household food shopper. At the baseline survey, non-respondents to the first questionnaire were first sent a postal reminder at two weeks, followed by a second reminder two weeks later accompanied by another copy of the questionnaire. In the follow-up survey (post-intervention) a £10 shopping voucher was offered to each respondent as an incentive to return the questionnaire.

3.2.2 Data measurement

Data for each respondent was elicited through the use of a postal questionnaire (see Appendix 2 for full questionnaires).

Health outcomes

Data on five main health outcomes collected are discussed below in two main categories: dietary outcomes and health outcomes.

1. *Diet-related outcome variables* were operationalised as fruit consumption in portions per day, vegetable consumption in portions per day, and fruit and vegetable consumption in portions per day (obtained through the simple addition of fruit and vegetable indicators).

2. *General health outcomes* were operationalised as respondent self-rated health (poor, fair, good, excellent), and psychological wellbeing as measured by GHQ-12. Self-rated health was dichotomised into excellent/good and fair/poor. GHQ score was dichotomised into 0-3 and 4+ (a GHQ score of 4+ indicating poor psychological health). Demographic data on sex (male/female), age (in agegroups: 16-24, 25-34, 35-44, 45-54, 55-64, 65+), educational attainment (school, further/work-based, higher) and economic activity (economically active/inactive) were also collected.

Socio-demographic data

A range of socio-demographic data were also collected as part of the questionnaire. These included age, sex, education, whether employed, unemployed (or economically inactive) and occupation (see Appendix 2). Item non-response to some questions (for example current occupation) necessitated excluding these as confounding variables from the analysis. However as the two communities were matched on deprivation, we concluded that confounding by occupational social class (on which the deprivation score was partly based) was likely to have been limited by the matching of communities.

3.2.3 Data Analysis

(i) Analysis of dietary outcomes

Simple bivariate analyses were undertaken using paired sample T-tests in order to investigate change within the intervention and comparison areas. Multivariate analyses were undertaken using analysis of co-variance (ANCOVA). ANCOVA models allow for dependency in repeated observations of a continuous outcome variable and thus increase the precision of the standard errors compared to simple linear regression. The models tested whether the post-intervention mean in the comparison area was equal to the post-intervention mean in the intervention area, having adjusted for the pre-intervention observed mean difference between the two areas. Explanatory variables (age, sex, economic activity and education) were forward fitted to this basic model sequentially. We also investigated the effects on those who changed to the hypermarket as their main food shop (switchers) compared to those who did not, employing the same analytic strategy as outlined above.

(ii) Analysis of general health outcomes

Simple bivariate analyses were undertaken using McNemar Chi². Categorical outcome data was analysed using logistic regression, and testing for interactions between confounders and general health outcomes. It was hypothesised that the intervention would have larger effects on women (women are the main food shoppers in this sample), the economically active (who may be able to act on increased local availability) the elderly (ditto, if availability improves within a reasonable travel distance) and those with lower levels of education (who tend to have lower levels of consumption of fruit and vegetables). Where interactions were indicated stratum specific results are presented.

3.3 Results

3.3.1 Response Rates

The response rates for the postal questionnaire survey (n=3975) by comparison (n=2000) and intervention area (n=1975) are outlined below.

	Overall	Comparison	Intervention
Baseline	603 (15.16%)	310 (15.5%)	293 (14.84%)
Follow-up	413 (68.40%)	221 (71.29%)	191 (65.18%)

Response rates at baseline for the postal survey were disappointing. Both areas are categorised as having a high level of material deprivation, areas that traditionally suffer from particular problems of non-response in postal surveys, and it has been suggested that response rates are particularly in decline in poorer areas of the UK.⁸ There are many possible reasons for this, including over-investigation (“research fatigue”), disempowerment and decreasing social engagement among deprived communities, rapid flux in the population, as well as a general mistrust of scientific research. This decline may not be a universal phenomenon but does suggest a bias to which natural experiments may be particularly susceptible, and which may particularly affect community-based inequalities research. There may also have been additional local factors that affected response rates. There was an influx of a large, highly transient migrant population whose first language was not English at the time the study was conducted. As households were selected, not individuals, response rates may have been affected by the unintentional inclusion of this migrant population. Other factors that may have affected response rates included the sudden demolition of high-density housing in the study sites where some of our selected households were located. It was also discovered that some housing provision was not included at the time the baseline sample was drawn, as these new households had yet to be assigned a postcode and were thus not included in the sampling frame. Response rates in the comparison and intervention areas were comparable (15.5% vs 14.84%). Response rates for follow-up of baseline survey were good (68.40% overall) and comparable between comparison and intervention areas (71.29% vs 65.18%).

3.3.2 Characteristics of the sample

Table 1 summarises the characteristics of the respondents for which data at baseline and follow-up were available (n=412). Females account for 61.9% of the overall sample (64.4% in the comparison area and 58.9% in the intervention area). The sample is relatively old with 41.4% aged 55 years or over. Only 1.9% of respondents are aged 16-24. This is unsurprising as the survey instructed that the person mainly responsible for household food purchase should fill in the questionnaire. The intervention area has a younger demographic profile compared to the comparison area, with 23.4% vs 6% of respondents at baseline aged 16-34. In the sample as a whole 60.9% of respondents were economically inactive (that is, retired, a student, unemployed or not undertaking paid work). The majority of survey respondents (72.8%) had either standard grade or higher grade/work based training or education. Educational profile was similar in comparison and intervention areas. None of the between-area differences are statistically significant.

Comparisons with the recently published Constituency Health and Well-Being Profiles (NHS Health Scotland, 2004) suggest that the baseline daily fruit and vegetable consumption may be lower in our sample (approximate daily fruit consumption approximately=52% based on NHSHealth Scotland data, as opposed to approximately 38% for daily fruit *and* vegetable consumption in our sample). The sample is also in worse health than the general population in these two areas (Poor self-assessed health=18%, NHSHealth Scotland data; 39% in our sample).

3.3.3 *Impact of the new hypermarket: Dietary outcomes*

Table 2 shows the magnitude of mean change within the intervention and comparison areas. For all three measures of daily fruit and vegetable consumption there is weak evidence for a positive increase in mean consumption over the follow-up period in the intervention area. The magnitude of mean change ranges from an increase of about 0.1 portions per day for fruit consumption ($p=0.35$) to 0.29 portions per day for fruit and vegetables combined ($p=0.07$). However a similar change was observed in the comparison area – for example, the mean consumption of fruit and vegetables combined increased by 0.44 portions per day ($p=0.003$).

Table 3 shows mean differences in dietary outcomes between the comparison and intervention areas at baseline and at follow-up. There is no evidence for a difference in mean consumption between comparison and intervention areas for all measures, except for a marginal difference in mean fruit and vegetable consumption at follow-up, where consumption is slightly higher in the comparison area (mean difference=0.43 portions/day; $p=0.047$).

However these results are not adjusted for baseline differences in consumption between the two areas. Table 4 shows estimates for the intervention effect of the hypermarket on dietary outcomes after adjustment. There is no statistically significant effect of the intervention on mean fruit consumption (-0.10, $p=0.376$, 95% CI -0.32-0.12), mean vegetable consumption (-0.16, $p=0.230$, 95% CI -0.42-0.10) or fruit and vegetables combined (-0.28, $p=0.157$, 95% CI -0.67-0.11). Controlling for additional potential confounding variables (for baseline difference in dietary outcomes plus age, sex, education and economic activity) confirmed this finding (Table 5).

We also tested for linearity in the ANCOVA model by introducing a quadratic term and then testing whether this model is an improvement on the original ANCOVA model (which assumes a linear relationship between

pre- and post- dietary outcome). There is evidence for an improvement in the model for mean vegetable consumption ($p=0.048$) and fruit and vegetables combined ($p=0.012$). Table 6 shows estimates (with p -values and 95% confidence intervals) of the intervention effect of the hypermarket with a quadratic term, adjusting for confounding variables. There was little evidence for an intervention effect for either mean vegetable consumption (-0.09 , $p=0.597$, 95% CI -0.42 - 0.24) or mean fruit and vegetable consumption (-0.98 , $p=0.692$, 95% CI -0.59 - 0.39). This model should be taken as the final model for consumption of vegetables, and fruit and vegetable consumption combined.

3.3.4 *Impact of the new hypermarket: General health outcomes*

Table 7 shows unadjusted odds ratios (OR) and 95% confidence intervals (CI) for change in poor self-rated health and GHQ caseness. For self-rated health, the odds of reporting fair or poor health increased in the intervention area (unadjusted OR 1.64, 95% CI 0.81-3.45) and decreased in the comparison area, (unadjusted OR 0.77, 95% CI 0.39-1.53), though non-significantly in both cases. Conversely the odds of being a GHQ case increased non-significantly in the comparison neighbourhood (unadjusted OR 1.16 95% CI 0.60-2.26), but reduced in the intervention area (unadjusted OR 0.52 95% CI 0.27-0.95). This finding is also supported by Table 8 which shows that respondents in the intervention area were significantly more likely to be a GHQ case at baseline, but this difference had disappeared at follow-up. This may be due to a sense among respondents of either real or perceived improvement in the intervention area over the year.

Two further models are shown in Table 9. These adjust firstly for initial health status (self-reported health, or GHQ caseness), and then health status plus age, sex, education and educational status. In neither case did the adjusted intervention effect reach significance. We also investigated potential interactions between potential confounding variables and outcome variables (Table 10). For poor self-rated health there was a borderline statistically significant interaction with education ($p=0.057$) and for GHQ case a borderline statistically significant interaction with age ($p=0.052$). There was little evidence for an interaction with educational status in the model for poor self-rated health ($p=0.145$ for highers/fe/work based training and $p=0.688$ for standard grade education). Similarly, age did not interact significantly in the model for GHQ case (p -values ranged from $p=0.260$ to $p=0.982$).

3.3.5 *Switchers*

We also carried out a subgroup analysis, exploring the effects on diets among those respondents in the intervention area who reported “switching” their main food purchase to the hypermarket during the study.

The numbers available for analysis are low (n=66). Approximately half of the switchers changed from alternative superstores to the new hypermarket. Among the intervention group, 31% switched their main food shopping to the hypermarket.

Table 12 shows the number of people who switched to the intervention hypermarket as their main food shop between baseline and follow-up. In total 66 people in the sample switched, most of whom resided in the intervention area (91%). There were similar increases in fruit and vegetable consumption in switchers and non-switchers (Table 13). Non-switchers increased their mean daily consumption of vegetables (increase=0.22 portions/day; p=0.009), and fruits and vegetables (0.37 p=0.002). For switchers there was no statistically significant change. Overall there is no statistically significant difference between switchers and non-switchers in either the unadjusted data (Table 14), or when this is adjusted for age, sex, education and economic activity (Table 15).

We tested for parallel regression lines in the ANCOVA model between switchers and non-switchers. For our model there is no evidence against the parallel line assumption for fruit consumption (p=0.08), vegetable consumption (p=0.075) and fruit and vegetable consumption combined (p=0.180). Testing for linearity in the model there was evidence for improvement in the model through introducing a quadratic term for mean vegetable consumption (p=0.042) and mean fruit and vegetable consumption combined (p=0.012) but not for mean fruit consumption (p=0.323). For the latter two consumption measures this represents the final model (Table 16). We can see that for switchers there is a trend towards an improvement in mean fruit and vegetable consumption of 0.31 portions per day, though this is not statistically significant (p=0.335).

3.5.1 Sub-group analysis – ‘switchers’ and general health outcomes

Table 17 shows unadjusted odds ratios and 95% confidence intervals for poor self-rated health and GHQ case for switchers and non-switchers post-intervention compared to baseline. An odds ratio of 1.14 (95% CI 0.67-1.94) for poor self-rated health suggests a slight increase in the odds of non-switchers reporting poor self-rated health, though this is not significant. The odds for switchers suggest no change (OR=1). An odds ratio of 1.09 (95% CI 0.66-1.80) for GHQ caseness in non-switchers suggested a slight but non-significant increase in GHQ caseness in this group. For switchers there was a significant reduction in GHQ caseness (OR=0.16; 95% CI: 0.03-0.54).

Table 18 shows unadjusted odds ratios and 95% confidence intervals for poor self-rated health and GHQ caseness, comparing non-switchers and switchers at baseline and follow-up. At baseline, switchers had lower odds of poor self-rated health (OR=0.68 95% CI 0.37-1.22; n.s.) and switchers had higher odds of being a GHQ case (OR=2.21 95% 1.25-3.88). At follow-up, the odds ratio for poor self-rated health for switchers versus non-switchers was similar (OR 0.68 95% CI 0.37-1.22). This was also found for GHQ caseness (switchers vs non-switchers, OR=0.73; 95% CI: 0.37-1.42).

As there were differences between switchers and non-switchers at baseline (even though for poor self-rated health they were not statistically significant) a further analysis controlling for baseline health status was indicated. Table 19 shows the unadjusted and adjusted odds ratios and associated 95% confidence intervals for poor self-rated health and GHQ caseness. After adjustment the intervention effect for poor self-rated health improved to 0.70 (95% CI 0.35-1.41, n.s.). Further adjustment for sex, age, education and economic activity reduced the odds further to 0.58, though this was no longer statistically significant (95% CI: 0.23-1.44). Adjustment for baseline GHQ reduced the odds ratio for GHQ caseness for switchers (OR 0.38 95% CI 0.1-0.82). Further adjustment reduced the odds ratio further to 0.21 (95% CI: 0.07-0.57).

We then checked for interactions between the two general health outcomes and potential effect modifiers (Table 20). There was no evidence of an interaction with potential confounders for self-rated health. For GHQ case there was some evidence for an age interaction ($p=0.030$). Adding this as an interaction term to our logistic regression model did not give a significant result ($p=0.509$), and was thus discarded from the final model (Table 19).

In summary, there is a good indication that the health of “switchers” (as assessed by GHQ score) is improved compared to non-switchers, and that this difference persists after controlling for possible confounders. The direction of causality is however unclear.

3.4 Summary and conclusions: quantitative findings

The analysis of the survey data suggests that there has been no statistically significant impact of the new hypermarket on dietary outcomes, after adjusting for other explanations (such as sociodemographic differences between the intervention and comparison groups). Self-reported health worsened, and GHQ score improved in the intervention area (though these changes were not statistically significant) and are

difficult to attribute to the new store; rather these may simply document changes in health status and well-being in both groups over time. Among those respondents who we know were affected by the new store - the switchers – there was some indication of improvement in diet of up to 0.35 portions of fruit or vegetables per day; this was not statistically significant (though the analysis had limited power to detect such a subgroup effect). Although the number of switchers was low, about a third of the intervention group did switch to the new store for their main shopping. This suggests that the intervention did have an effect on the shopping patterns of a significant minority. For general health measures there was a substantial improvement in switchers, though this was only statistically significant with respect to change in the prevalence of GHQ caseness in the sample.

Nonetheless there appeared to be some improvement in diet in the intervention area, comparing the data from the baseline and final surveys. An uncontrolled “before-and-after” study would probably have attributed this change at least in part to the new hypermarket. However similar changes were also evident in the comparison area, suggesting that this difference may simply reflect some wider change in diet over the year, unrelated to the store. One explanation may be that wider regeneration activities in the two areas may have affected the accessibility and availability of healthy food. Another candidate explanation is that fruit and vegetable consumption has been increasing in Scotland anyway (by 23% since 1998, according to data from NHS Health Scotland). The changes detected by our survey may simply reflect dietary change over time. The third obvious explanation is that these changes are due to another “overlapping” intervention, such as “Healthy Eating” campaigns, one of which was launched in 2001 and included distribution of free fruit to Glasgow schools during the survey period.

Response rates: implications for quantitative findings

As mentioned in section 3.3.1 response rates for the postal questionnaire survey were disappointing. The intended sample size of 500 respondents per neighbourhood was not achieved. These have a number of implications for the results of the statistical analyses that need to be taken into account when interpreting the findings from this research. The main implication of low response in this study is the reduced power of the study to detect true differences between the control and intervention communities. The possibility of Type II error (i.e., a failure to reject an invalid null hypothesis) should be borne in mind for the undertaken analyses. Response bias may also be present as there was missing data from some respondents to the postal questionnaire and these may differ systematically between the two communities under investigation. Response bias may affect the prevalence of individual risk factors (such as age, sex etc) within the control

and intervention communities. Systematic differences between the two may not allow the two communities to be directly comparable.

4. The qualitative interviews

4.1 Introduction

The aim of the qualitative research was to identify and describe – through pre-determined theories of change – the range of possible health and social impacts of the new hypermarket on local residents. The theories of change involved outlining mechanisms through which we expected general wellbeing may be affected. It was hypothesised that the hypermarket may increase access to an adequate food supply, change food consumption patterns, and change indicators of social inclusion; for example, the new store may offer opportunities for participation in social networks, may change how residents perceive the local area, and these may in turn lead to changes in residents see themselves as a community (for example, we anticipated discussion of aspects of local pride and self-esteem). In particular we were aware that the hypermarket was a symbolic intervention, as well as a retail intervention; we theorised that there may be for example a reduction in negative social comparisons with other neighbourhoods, due to this highly visible large-scale commercial investment in a previously marginalised area. Part of the purpose of the qualitative research was also to permit some triangulation with the results of the quantitative analysis, and with the retail shop count survey – that is, it would allow us to explore in more detail how residents' perceptions of food access had changed post-intervention.

This section of the report therefore explores the impact of the Tesco Extra hypermarket on the community of Springburn whilst addressing the following broad themes: access to food retail outlets and to an adequate food supply; food consumption patterns; and social inclusion.

4.2 Methods

Nine mixed-sex focus groups were undertaken in the intervention area, 6-7 months after the opening of the new hypermarket. Purposive sampling (identifying participants with a wide range of characteristics, to represent as many sections of the community as possible) was employed to select participants from those who had previously responded to the postal survey, and had agreed to be contacted again. Potential

participants were contacted by post and asked if they would be willing to participate. Insufficient respondents from this approach resulted in additional participants being recruited via existing community groups, and through posters displayed in the local area.

Participants were selected to provide as wide a range of responses as possible, to ensure that there was some distribution in terms of age, sex, access to own transport, employment status, number of people in household, and whether there were children in the household or not. Photographs of the area were used to initiate discussion about people's experiences of living in the area. A semi-structured schedule was designed to address issues surrounding predetermined theories of change, as listed above. Local residents were given the chance to discuss freely the topics of health, community and shopping and the new hypermarket. The schedule also addressed issues such as participation in social networks, social cohesion, social inclusion, self-esteem, and general wellbeing. Focus groups lasted between 1-1½ hours, and participants were given £10 as a token of thanks for their participation. Paper and prepaid envelopes were given to each participant for further private comments that they may have wished to make.

Focus group discussions were audio-recorded and transcribed verbatim, before data analysis was undertaken using NVivo© software. Data were initially coded according to the predetermined theories of change, including the role of the new hypermarket within the community, and were examined for emergent themes using principles of grounded theory. Ten per cent of this coding was double-checked by the same researcher.

4.3 Results

Nine focus groups were organised, with twenty four people participating (an average of about 3 per group). Recruitment proved very difficult and so the number of participants per group was lower than expected; participants often arranged to attend a particular focus group but generally failed to turn up on the day. For example, 17 focus group sessions were arranged where participants had agreed to attend – either by letter or telephone – but failed to turn up on the day; hence considerable work was required to achieve the final sample.

4.3.1 Physical access

Residents reported retail outlet decline over the past several decades, and in particular since the advent of the small local shopping centre located in the centre of Springburn (which opened in October 1981). There

was confusion as to why Tesco Extra was built where it was, comparatively close to the existing shopping centre. Respondents disagreed about the need for the new store; some participants reported that it fulfilled a need, whilst others feel that it presented excessive and unnecessary competition to existing retailers.

Issues of physical access were raised in relation to Tesco, but not in relation to local stores. Some respondents suggested that pedestrian access was difficult (via a busy road) and that it was better suited to a clientele with their own transport, as it was perceived to be situated on a relatively “edge-of-town” location. Many participants reported having no transport of their own, and that they travelled to and from Tesco on foot, by taxi or by bus.

Some participants highlighted, however, that Tesco Extra is the only 24-hour alternative to the unfriendly approach adopted by filling stations:

“After eleven o’clock you cannae buy anything...’Cos they don’t even let you into the petrol station.”

(66 year-old single man, retired, no children)

The crèche facilities offered by the store were seen as an important means of improving access; shopping with children was reported to be attention-consuming, and greater provision of reliable crèche facilities would allow parents to use the store.

Some participants however raised the issue of boundaries and ownership. Although the hypermarket is located in the electoral ward of Springburn, local lay definitions of Springburn sometimes situated the store outwith those boundaries – that is, Springburn was sometimes defined with much narrower boundaries than those of the electoral ward. This may have implications for perceptions of accessibility and use of the new store.

4.3.1 Availability

In general the new Tesco was perceived to have increased the range of foods available locally. Participants reported a limited range in existing stores, and a wide range in Tesco, which some felt would encourage the

purchase of novel items. Not all participants, however, were happy with this, reporting that they would be encouraged to shop beyond their means. Nor did they perceive the store as being particularly cheap:

It's no' cheap, know what I mean? It's... it's the size of it ...by the time you've got round it, you've spent about three hundred quid for your messages.

(30 year-old woman, unemployed, no children)

Perceptions of an increase in range were not shared by all. One respondent suggested that the focus was on luxury items, to the detriment of other products.

"For some things you can get what you would class as luxury items, do you know what I mean you'll get a tin of mackerel fillets at £1.98 because it's, what is it pink peppercorns sauce on it or something like that ... but they didn't have tomato soup or chicken bloody soup, you know what I mean?"

(66 year-old single man, retired, no children)

Quality was not raised except in relation to local stores. Inhabitants felt that the local shops let them down over quality of produce. Shoppers felt that they did not wish to purchase fresh items in stores of questionable hygiene (i.e. the local stores).

"I'll guarantee sixty percent of his stuff is oot o' date" (in reference to the local shop).

(62 year-old married man, no children)

I mean I don't buy anything from the local stores here. I don't buy any fresh fruit off them 'cos I don't like the look of it... it doesnae look clean, you know what I mean?

(47 year-old unemployed single man, no children)

Many participants perceived Tesco to be relatively expensive, compared with local stores, and some people choose to shop in other stores because of this. Others were happy to pay extra in order to ensure quality of produce.

4.3.2 Influences on diet

General issues of diet and health were raised spontaneously in some focus groups, and prompted by the facilitator in others, though the issue of the new hypermarket was not raised spontaneously by any of the participants. Some participants felt that unhealthy, high fat diets were, to a certain extent, generation-specific, with middle-aged people having eaten more high-fat foods in their youth as compared with young people:

My husband had his first heart attack when he was 39 ... he died two years ago; he was 53 when he died ... when he was brought up, he always said that, you know, in these days it was a' fried things ... aye, big fried breakfast, but he was a heavy smoker and a heavy drinker so he might have ended up so ill because of that. [50 years, female, employed, not alone, children.]

Although most participants felt that they ate healthily, perceptions of *other* people's diets was that they were poor. (*"Springburn is less, definitely less healthy than it used to be"* (62 year-old single man, retired, no children)). One participant speculated that the reason for this change was the increasing number of take-away retail outlets and the availability of convenience foods in stores.

Particular mention was made of children's eating habits. (*"Every time you see them they're eating"* (33 year-old female parent)). One respondent reported that her son would only eat reconstituted potatoes, but not the real thing. Poor diet in children was attributed to peer and family pressures, and school influences. Other reasons suggested by way of explanation focused on available time and energy, on family demands upon parents, and on access. Participants speculated that poor diets are also due, in part at least, to a lack of general understanding of the relationship between diet and health.

Participants did not report any change in diet as a result of Tesco's offering a wider range of foods than was available prior to its opening. They did, however, report a degree of enthusiasm for tasting new food in taster sessions carried out in the aisles of the new store. They reported, however, that it was unlikely that they would purchase items that they had tasted because the items used in taster sessions were perceived by respondents to be highly specialised lines, or were seen as relatively expensive items.

"The last time I was down, is was, em, blueberries! I mean how many people are going to go out and buy blueberries or things, know what I mean?! But that's what it was, it was blueberries they were trying to sell."

[30 year-old female, employed, no children]

4.3.3 Social inclusion and employment

Participants reported that employment rates are poor in the area, and that the new Tesco provided a much-needed boost in Springburn, with the generation of approximately 450 local jobs. Local residents also felt that Tesco was generous to the local community, unlike other stores which appeared to serve only themselves. For example, participants described Tesco's involvement in children's events, and in events to assist asylum seekers to integrate into Springburn:

"Well I have to say they[Tesco]'re quite good wi' our community like, we've asked them for donations for raffle prizes for the kids' Christmas party, things like that and they have never ever turned us down, they've always been really generous, you know, wi' us."

[32 years, female, housewife, with children.]

Shops can also be used as social spaces and community meeting places, and so there is potential for the new store to act as a social venue. A few respondents reported using the Tesco cafeteria as a social venue, but most report not using it (as a result of poor quality) or using it in a pragmatic way in conjunction with shopping trips.

4.4 Summary and conclusions

The issue of the hypermarket was not raised spontaneously in focus groups, suggesting that there were no major positive or negative impacts on community life. Nor was the new store reported as having any direct impact on diet, though participants did comment when questioned on the wide range of produce available, the high produce quality, and high hygiene standards, as compared with other local stores. This may reflect the fact that respondents did not perceive any direct links between diet and health, and shopping facilities. This in turn may suggest that there may be attitudinal barriers to access to healthy food. An alternative explanation is that the focus group method may have inhibited some respondents from discussing these

issues; participants may simply have not felt that the subject of the new store was relevant to a focus group discussion, which may have appeared (to them) to be concerned mainly with “health”.

The principal determinant of food selection was the range of foods on display, but produce quality, shop hygiene and cost were also highlighted as important influences. Respondents reported that Tesco Extra now provides access to a wider range of food than was previously available within the community (although not everyone agreed that this was advantageous to local residents). It did not, however, always appear ‘accessible’ in terms of cost, physical location, or transport of purchases.

There was some evidence of negative comparisons with other areas, but without any strong sense from the interviews that the new store had redressed the balance. The only real, tangible benefits to the community seemed to come through mechanisms related to social inclusion: in particular the store’s interactions with the community, and the creation of several hundred local jobs were the most more relevant and obvious outcomes of the new store.

Perhaps this is not surprising. Influences on diet are complex and are unlikely to be revolutionised by the inception of a large-scale retail outlet. There was no suggestion from respondents that the new store had had detrimental effects –no reports, for example, of participants consuming larger quantities of relatively unhealthy foods compared to prior to its opening – and the store remains just one of the many indirect influences on health within the wider community. However the focus groups do suggest that it has, at least, a potential to shape food selection behaviours, and that it has real, direct impacts on employment.

5. The Retail Shop Count Survey

5.1 Introduction

This section of the report is concerned with change in the retail structures of the intervention area (Springburn) and the comparison area (Shettleston) over the duration of the project. As one component of the study, a retail shop count survey was undertaken before the intervention store opened and subsequently repeated on a 6-monthly basis, making 5 observations from October 2001 to October 2003. The aim of this survey was to provide a retail structure baseline for both areas in order to monitor change in the structure per se and comparatively between the intervention and the comparison areas. The following sections report on the methodology and the results of these retail surveys.

5.1.1 The retail context

The retail structures of the control and intervention areas have many similarities, but also some differences. Both areas were traditionally tenement streets with shops on the ground floor of the properties. Shettleston remains very much that type of shopping street, retaining the original fabric and shop type. By contrast, although Springburn Road originally displayed the same structure, during the early 1980s a large part of the traditional street was demolished to make way for a new dual carriageway and at the same time a new covered shopping centre was built.⁷ The Springburn Shopping Centre has a small Safeway supermarket and associated units. There are also a number of other small convenience product (i.e., primarily food) stores spread across the area. To the east of the immediate area, Asda has a superstore at Robroyston. In Shettleston there is a Co-op supermarket in the main shopping area and Asda has a store nearby, at the Parkhead Forge to the west.

The 1992 review of shopping policy in Glasgow identified both areas as 'deficit areas' in terms of convenience shopping provision. Shettleston had an estimated £8 million convenience retail deficit and Springburn £17.7million. In both cases specific sites were identified for development. In Springburn the area adjacent to the Springburn Shopping Centre was given permission for a foodstore as part of Phase 2 of the Centre, but this has not been developed. Instead, the St Rollox site (a former railway works), now the Tesco hypermarket, originally earmarked for non-food development, was permitted to have both food and non-food retailing. The hypermarket is thus somewhat less geographically central to Springburn than was originally envisaged by the land-use planners (Figure 2). In Shettleston a former glassworks site was scheduled for a foodstore and this is the site developed by Tesco. This site is central to the main shopping street.

Shettleston thus has a more traditional form of retail development and street pattern, and one that has not been disrupted by development. Springburn by contrast was redeveloped in the early 1980s and thus the land-use patterns are somewhat different. Springburn as a consequence has fewer shop units than Shettleston, despite having a larger population. The line of business make up of the shops however is similar in both areas (e.g., in terms of the percentage of convenience stores, and in access to larger food stores).

5.2 Methods

Whilst the two areas under investigation were selected on the basis of their comparative deprivation and the presence of the intervention store, little detail was known about their retail structure at the time of selection. They were believed to be of broadly similar populations, and the fact that Tesco was interested in sites for new Extra hypermarkets stores in both areas suggested some degree of catchment similarity. The methodology for this part of the project involved three steps:

- Delineation of the boundaries of the areas;
- Survey work to 'map' the retail structure;
- Repeat surveys on 6-monthly intervals to assess change.

The boundaries of the survey area are mapped in Figures 2 and 3, which also show the retail outlet locations in each area.

Both areas were surveyed in October 2001. This took the form of driving and walking all streets in the survey areas and plotting the stores. The data collected were essentially the location, name and line of business, although some other historical or situational data were also identified where possible. Existing sources (e.g. local authority surveys and trade bodies) were helpful, but the 'street-walking' identified errors, omissions and changes from these sources. This initial mapping took place in both areas in October 2001, just prior to the opening of the intervention store in Springburn. The survey has been repeated every May and October, thus covering the opening in August 2003 of another (smaller) Tesco superstore in Shettleston. At the outset it was decided simply to obtain location and line of business data and not to attempt to discern comparative performance or operational characteristics (e.g. sales, employment, product quality etc). Such data would not be comprehensive in such areas and the difficulties of collection and interpretation outweighed the benefits. As the aim was to assess retail structure change, a simple description of the retail structure was the most appropriate.

5.3 Results: Comparative Analysis of the Retail Structure of Springburn and Shettleston

5.3.1 Retail Structure

Overall Shettleston (the comparison area) has more retail units than Springburn (the intervention area) with 293 retail units compared with 186 in Springburn. While it is a deprived area, it is unlikely that Springburn is

a "food desert" as food shops do exist in the area. These are mainly small independent operators but the Springburn shopping centre includes a small Safeway store. Outside the immediate area, there are supermarkets and superstores. Based on Scottish Census Results (2001), the population of Springburn (32323) is higher than Shettleston (28779), but the number of retail units almost a third less. Despite this difference in provision however, the line of business analysis (Figure 4) shows that the broad distribution of outlets is similar.

In Springburn the central area has 32.0% of Springburn's retail stock whilst in Shettleston the central area has 46.8% of the retail stock. The differences reflect the major redevelopment of Springburn from the 1970s with a new road and the accompanying demolition of a large part of the central area and the consequent loss of a large number of shops. Shettleston still retains the original ground floor tenement shops for the length of its main street. There is a concentration of comparison retailing in the centre of Springburn, which contrasts with that of Shettleston which has the dual locations of Tollcross Road and Shettleston Road. The most significant aspect is the much lower proportion of vacant units in the centre of Springburn in comparison with that of Shettleston. The low proportion of vacant units in the centre of Springburn is perhaps evidence of the fact that the retail property market in Springburn is constrained. Vacancy rates are generally seen as a good indicator of the retail viability and vitality of an area.

5.3.2 Retail change over the course of the study

Table 11 provides details of the change in the two areas over the survey period. By 2003, the broad structure is similar in proportional terms in both areas (Figure 4). The table shows that the direction of change over the survey period has also been the same in both areas, with the exception of comparison goods retailers (that is, non-food products), where there has been a decline in Shettleston (comparison area) and an increase in Springburn (intervention area). The outcome as noted above is a higher proportion of vacant units in Shettleston and a lower proportion of convenience units (i.e., food retailers). Whilst the direction of change may have been the same in three cases, the magnitude is different. Service trades (i.e., hairdressers, tanning salons) have expanded more rapidly in Springburn and the proportion of vacant units has fallen faster there as well.

The absolute number of vacant units at October 2001 was higher in Shettleston, but in proportionate terms, the positions in Shettleston and Springburn were identical. The proportions diverged quite strongly in

subsequent surveys (Figure 4). Initially, there was a decline in both areas, but this was not maintained in Shettleston and the rate there has fluctuated considerably. In Springburn, the rate has declined substantially and then stabilised at a level lower than in Shettleston. The intervention area has produced a better performance in vacancy terms than the comparison area - perhaps due to the regeneration effects of the new Tesco in Springburn, or to the initial reactions to the proposed Tesco in Shettleston, and a resultant realignment of the retail structure.

5.4 Summary and conclusions

Based on a controlled prospective comparison conducted over a two-year period, beginning immediately before the opening of the intervention store, it may be concluded that the opening of Tesco in Springburn has not impacted negatively on its retail structure, and may have had some positive effects on vacancy rates.

However, whilst the intervention and comparison areas may be similarly economically and socially deprived, they are in very different stages of retail development. Despite a higher population, the intervention area has a lower number of shops, reflecting the development of the retail system over a period of decades, as redevelopment and concentration has occurred.

There is an issue of timing. The initial survey occurred in Springburn immediately prior to the opening of the intervention store. Some outlets may have closed in anticipation of the opening (though its micro-location makes this less likely than elsewhere) and this would not have been recorded in the initial survey work. The effects of a store opening may be felt both before and after the actual date on which trading commences. No evidence of a wave of closures either before or after the opening could be isolated in Springburn however, suggesting limited impact. In the comparison area, the set of surveys captured the announcement of the future opening of another, (but smaller) Tesco store. In this case, the surveys bracketed the store opening more completely. Some anticipatory effects of the proposed opening are identified.

Overall, the retail surveys suggest that the intervention store has not had a negative impact on the intervention area's retail structure; rather, the store has provided modern facilities for elements of the population. We are unable to comment on the enhanced or otherwise availability of fresh food and produce in the new store and thus in the area itself, though the take-up of the new store by consumers was addressed in earlier sections of this report. It would seem however that with so little change in the retail

structure in Springburn, particularly in the convenience section, availability has increased in absolute terms, although whether residents are able to, or do utilise this availability (either physically or economically) is discussed elsewhere (see particularly Sections 3 and 4).

6. Overall discussion

This concluding section of the report discusses the original objectives of the project, before moving on to discuss the limitations of the study, the implications of its findings, and finally recommendations for policy and research.

6.1 Objectives revisited

Objective 1: To pilot methods of evaluating a non-healthcare intervention

There are two key findings arising from this pilot project under this objective. First, the results suggest unambiguously that it is essential that studies of this type have a control or comparison group. The absence of such a group runs the real risks of ascribing causality to the intervention, when in fact general trends are in operation across areas. Without such a comparison, study findings should be considered as no more than suggestive; it has been proposed elsewhere that uncontrolled studies should not be considered as “hypothesis-testing”, but as “hypothesis generating”. More particularly, the presence of a control or comparison group allows more sophisticated statistical testing which can more clearly attempt to isolate effects of the intervention.

Secondly, the pilot has shown the considerable difficulties in undertaking such research in deprived areas. Such areas tend both to be targeted with a range of initiatives which may affect health, and also tend to be subject to more rapid flux in populations, both of which may work to reduce response rates in postal surveys. The use of a monetary reward may help increase response rates² but the risk of response bias remains. These response rate issues affected both the survey and the focus group and are limitations of this study, but we believe are a consequence of working in such deprived areas.

Objective 2: To describe and compare self-reported health, psychological wellbeing, food consumption patterns, food access and the retail base in Shettleston, Glasgow with a similarly deprived control neighbourhood within the city, and

Objective 3: To evaluate whether self-reported changes in physical and mental health, food consumption patterns, and food access occur following the opening of a large food superstore

Baseline descriptions for the control and intervention areas were obtained and compared with results from the follow-up surveys in the two areas. The two areas were broadly comparable at baseline, and individual differences in potential confounding factors were adjusted for. The data provided some evidence of an increase in fruit and vegetable consumption after the hypermarket was built, but the increase was greater in the comparison area than in the intervention area, suggesting that wider factors than the new store are at work. There would therefore seem to be no statistically significant impact of the new hypermarket on diet. There is some evidence that self-reported health worsened in the intervention area (relative to the comparison area),. However the prevalence of GHQ caseness did reduce substantially, an important finding, but it is difficult to attribute either of these effects causally to the new store.

Objective 4: To investigate residents' perceptions of their neighbourhood and other neighbourhoods after the intervention and explore impacts on sub-groups

The issue of the hypermarket did not arise spontaneously in focus group discussions about the local area, which suggests that there was no major positive or negative impact to the development in terms of perceptions of the area. The store was perceived as having a better range and quality of fresh food than other stores in the local area and it was seen as having introduced more modern retailing facilities. The only real tangible benefits to the community at this stage appeared to be related to aspects of social inclusion. The store's interactions with the community in terms of community support and the employment generated at the store (much of which was taken by local residents) were the most relevant and obvious outcomes of the new store. Overall the focus group work provided much good material but did not suggest direct impacts of the superstore; however the time available for the qualitative analysis was limited by the research workers sickness and the qualitative data will be analysed further. The analyses conducted so far did not identify any major direct impacts, though they are interesting on other ways. Our report here focuses specifically on what the qualitative data tell us about the impacts of the intervention. There are of course many other more general issues relating to life in deprived areas that we could use the qualitative data to explore. These issues will be drawn out in through further analyses of the impact of the store on residents' perceptions of their neighbourhoods.

Objective 5: To examine the impact of the superstore on retail provision in Springburn

The overall retail provision in the intervention area was different to the control area in that the intervention area had seen considerable redevelopment in the early 1980s and thus contained a small enclosed shopping centre, which housed a number of shops and a small supermarket. The retail shop count surveys show that the intervention store has had virtually no impact on the retail structure of the area. Indeed the vacancy rate, which is normally taken as a measure of vitality, has reduced over the survey period and is below that in the comparison area, despite an identical starting rate. Whilst we cannot assume that the two areas are directly equivalent due to the different physical nature of the retail structures, the lack of redevelopment in the comparison area and the opening of a Tesco superstore late on in the survey period, it would seem that there have not been any negative effects of the intervention. Changes that have been identified would appear to relate to wider consumer and structural changes (e.g., development of fast food and hairdresser outlets).

6.2 *Summary and conclusions*

It has been suggested that the changing structure of food retailing, particularly over the past two decades has left many British urban areas with what began to be termed 'food-deserts'.¹⁶ The labelling and identification of 'food deserts' is however a contentious issue,¹ though previous research undertaken in such areas suggests that deprived neighbourhoods have a lack of fairly-priced healthy food supplies.

The intervention and comparison areas in our study were typical of such areas in socio-demographic terms. They are among the most deprived electoral wards in the UK, with high levels of smoking (about 50% in both areas), an average income about a third below the Scottish average, low levels of fruit and vegetable consumption (about a third eat fruit daily), high levels of ill-health (about 30% with limiting long-standing illness), and average house prices about 40% below the Scottish average. The opening of a new Tesco hypermarket therefore provided an unusual opportunity to evaluate the impact of a large new food store in a deprived area. The identification of significant positive or negative impacts would have provided important evidence for those advocating that new food retail outlets in poorer areas may importantly affect public health, and reduce health inequalities. The common assumption is probably that such interventions may increase access and availability of healthy foods; but it might equally be argued that the opening of a new store may result in the closure of many other smaller shops in the area, with the net effect of *reducing* both access and diversity.

Our findings do not support either view. We have little evidence that the opening of a major new hypermarket has had a major effect on fruit and vegetable consumption; there were changes in the intervention area but these were similar in scale to those in the comparison area. The qualitative findings bear this out; on prompting, residents often pointed to impacts of the store on the community which were unrelated to retail activity; impacts such as supporting the community, and providing employment. The diet of shoppers who did change to the new store (the “switchers”) changed little, though there has been some evidence of improvement in terms of general and psychological health in switchers (as measured by the prevalence of GHQ caseness), though this must be interpreted with caution. It may be that ‘switchers’ may be engaging directly with the new development and thus may be much more likely to appreciate that substantial inward-investment is flowing into the local area. The perception that the ‘area is getting better,’ may in turn affect their perceptions of their own general health. This is potentially an important finding but a tentative one at this stage.

Further corroboration of this view of limited impacts is offered by the retail survey. Over the 12 months of the study the store had little effect on the number or type of shops in Springburn compared to Shettleston. There is little evidence that the new store resulted in any restrictions in access to a healthy diet. The only potentially negative finding in this regard is the closure of the fish shop in Springburn, though this is in effect was replaced by the addition of a fresh fish counter within the Tesco store. It is difficult to know whether this shop closure is directly attributable to the new store, or whether it is likely to have an impact on the diet of local people.

This is not to say that the new store has had *no* impact. The qualitative arm of the study pointed to perceptions that Tesco was offering support to the community, and that this support was valued. This, and the impact of general visible investment in a deprived neighbourhood may result in improvements in local residents’ perceptions of the Springburn area. This is the subject of further analyses. The other impact signalled in the qualitative data is the provision of new jobs. The retail survey implies that few, if any, retail jobs were lost in the area after the opening of the new store. However about 450 new jobs were created, and more than 100 people on the New Deal programme secured work at the store; according to data from Tesco, this included 61 lone parents, 13 young people, 21 aged 50 or over, and 21 who had been out of work for two years or more. In all, 65% of store staff were previously dependent on benefits. We have no independent corroboration of this detailed data, or on the impact of these new jobs on the workers’ health and wellbeing. This would be an interesting area for future research.

We feel that (excluding the employment impacts) the net effect of the new Tesco Extra on health has been neither positive nor negative, and it has not been detrimental to the community, at least in terms of the outcomes we have measured. The new hypermarket remains just one of the many influences on health within the community, and probably not the most important one.

6.2.1 Limitations of the study

Some of the limitations of the study have been discussed in earlier sections. The most important of these is that the response rate is low and this limits the study's generalisability; the respondents may be a particularly unrepresentative sample of the local populations, and the data may not be representative of other UK communities. In social surveys respondents are generally healthier than non-respondents, but we do not suspect that this is the case in the current study (a very high proportion of the sample in both areas reported poor health, which reflects the high rates of poor health in both communities). We also targetted the main food shopper in our survey (on the grounds that this person is responsible for buying food for the household), but there may be impacts on other family members that we were not able to detect.

Given the design of the study (with the intervention and comparison areas physically close) we could not exclude the possibility of contamination (for example, respondents in the comparison area could not, of course, be prevented from shopping in the new store). However this does not seem have been a problem as relatively few people switched to Tesco from the comparison area. A more legitimate concern is the low power of some of the subgroup analyses. This means that some analyses of the impact of the store on diet cannot exclude the possibility of a small positive effect - or indeed a negative one. This particularly affects the "switchers" analyses.

A further difficulty with such a non-randomised study is that it is difficult to disentangle the effect of the intervention from other known or unknown interventions. In this case we could not control for other ongoing general health and non-health regeneration or other initiatives in the two areas. The main one we knew about – the distribution of free fruit to schoolchildren, which began in 2001 - may well have indirectly contributed to the small increases in consumption in fruit and vegetables in both areas. Any real impact of the new store may therefore be indistinguishable from the effects of this, or other any other health promotion campaigns. On the positive side, we have corroborative data from the three arms of the study, and we

believe that this triangulation between three very different data sources strengthens our overall conclusion of no significant positive or negative impact on diet or health.

6.2.2 *Methods*

Perhaps the most important finding from this study is that there was a similar degree of dietary change in both areas. As explained above, this is important because this study is unique in using a “control group”; without this, we would not have been able to determine whether the change was directly attributable to the new Tesco Extra. This is an important point because the previously published research reported similar positive effect sizes to those we found with respect to fruit and vegetable consumption.,⁹⁻¹¹ It found for example, an increase in mean consumption of fruit and vegetables of about 0.4 portions /day

However our study points to the need to be cautious in interpreting the results of studies that employ, in isolation, a before/after study design. . A constellation of evidence, using a range of study designs, is required before we can unequivocally make statements about the efficacy of such interventions.

Differences however between the communities in the Glasgow study, and the Leeds study may affect interpretation. Access to food in Springburn may have been better than in Seacroft. Whilst a very deprived area, Springburn residents actually do have access to food, and this may explain the lack of any dramatic effect of the new store. In contrast, in an area where new store replaces existing stores directly (on the same site) or where there is no real access to supermarkets or superstores, we might expect a greater effect. Springburn is not a 'food desert' as commonly conceived.

The final Wanless report recently reiterated the need for public health researchers to take up opportunities to evaluate the health effects of natural experiments, to fill some of the gaps in the public health evidence base.²⁰ Despite problems with contamination and other biases, natural experiments can provide some of the missing evidence. These studies over time can be aggregated to inform policy and practice; some Cochrane reviews do already synthesise the results of natural experiments to evaluate the effects of policies. However the comparison of the findings from our controlled study with the findings from studies that employ a before/after approach suggest that natural experiments require careful handling. They require the use of

appropriate control or comparison groups to reduce the risk of confusing the results of the intervention with either general change, or regression to the mean.

Within the evidence-based health movement for interventions delivered at the community level the prospective cluster randomised controlled trial is seen as the 'gold-standard' for evaluating the effectiveness of interventions. However evaluating naturally occurring experiments in community setting is problematic. The very fact that such interventions are 'naturally occurring' indicates the lack of control over the intervention itself by researchers. Thus methodologies for evaluating the impact of 'naturally occurring' interventions within community settings are, at best, quasi-experimental. Improving the quality of methodologies/approaches for this kind of study may improve the quality of evidence on the impact of such interventions. Based on the experiences of this study team there are several methodological issues that would need to be considered further to help improve the availability and quality of this type of evidence ; these include issues relating to non-response in poor communities, collection of wider data on risk factors in both control and intervention populations, and range of study designs used to answer similar hypotheses in similar settings.

Firstly, poor response in low-income communities is becoming an increasing problem in survey research. Non-response can lead to sampling bias (and thus Type II error) within studies. Utilising a community postal questionnaire, even when it is incentivised will increase response, but does not appear to be the best approach to maximise recruitment. For example, based on the systematic review by Edwards et al²¹., the odds of response to postal survey will be significantly increased with a monetary incentive; but their data also show that for a baseline response rate of 20% this will only increase to approximately 33%. Incentives may therefore have little impact on response rates when the baseline rate is low. However further research on the impact of incentives on response rates in poorer areas is certainly required. Any such research should consider the ethical issues, as in our experience this is one barrier to their use (for example, ethical objections can be raised by funders and ethical committees). Problems partially arose with the method of delivery of the questionnaires themselves (batches were returned by the Royal Mail without ever having reached their destination) and the appearance of the delivered package itself (brown envelopes) which may not have been opened in the first place may have had an impact

. One method that may improve overall response (though responses may still be subject to biases these would be reduced) would be to hand-deliver and then collect questionnaires and engage directly with the potential respondents in an effort to persuade individuals to respond. Quota sampling – as an extension of

this may be used. Pre-determined numbers of respondents stratified by key socio-demographic variables of interest could be recruited by simply continually recruiting until the required number has been obtained, however caveats associated with the non-random nature of sample selection (as with all panel data) would have to be borne in mind (for example selection bias, and response bias).

Secondly, in order to have greater confidence in the attribution of causality, a wider range of data on other potential risk factors and confounders, at both the individual and community level, would have been useful. Changes in the control and intervention communities may be due to differences in the prevalence of risk factors between the two populations at baseline. Similarly ongoing community-level policies and interventions not directly related to the intervention of interest may have had an indirect effect on health in either or both of the two communities (for example, initiatives to reduce unemployment or a free fruit in schools programme). Quasi-experimental studies of community interventions need to collect data on all potential risk factors, at a variety of levels, that are associated with the health outcome or behaviour itself in order to help isolate the effect of the intervention itself. Resources and time did not permit this in this pilot study.

Thirdly, as Kirkwood et al²² points out evidence for the effectiveness of interventions, particularly in complex community settings, should not be restricted to single study designs (for example the randomised controlled trial) but there should be the innovative, pragmatic and judicious mixing and matching of a variety of designs relevant to the local context. Where possible studies should also be repeated using differing methodologies in the similar settings and then comparing the estimates of effect. Similar results utilising a variety of designs would give us more confidence in the efficacy of the intervention itself. In the present study, the use of qualitative and quantitative data collection methods along with a systematic repeated retail survey went somewhat toward meeting this recommendation, and certainly there was concordance between the findings of the three study arms.

A final methodological point relates to the measurement of appropriate outcomes. We prioritised investigating the impact on dietary outcomes. As this was a pilot study we were unable to explore the impacts on other outcomes, though we theorised that they would be important. In the event, the most important outcomes appear to be non-dietary outcomes which themselves indirectly affect health, such as employment, and perhaps perceptions of the area (though the latter is speculative and the data require further analysis). This reinforces the importance, when evaluating social interventions, of defining health

widely enough to detect impacts on the wider determinants of health, not just on health or health behaviours. These wider impacts may be the ones which matter, which are causally attributable to the intervention, and which are detectable.

Such evaluations also need to be both multi-method, and multidisciplinary. In our study the retail shop count survey allowed us to map and document retail change over time, and so explore another domain where there were likely to be impacts on the community. This work added significantly to our understanding of what changed, or did not change in the area as a whole (as opposed to exploring how individual behaviours changed, as in the postal survey). The qualitative data was in accord with the survey data in detecting little effect on diet, but it additionally suggested that impacts on employment may be the most important outcomes of the new store. It also suggested that impacts on perceptions of the area are worth further exploration. The consistent findings from the three study arms, using very different methods and different perspectives, also increased our confidence in our overall conclusions. The main methodological lesson from this study is that evaluations of complex social interventions require complex, multidimensional evaluations.

6.2.3 *Statements for policy and research*

We conclude this report with recommendations for policy and for research, based on our findings.

Provisional policy statements:

- It has not been conclusively shown that major retail interventions have a significant direct effect on diet, at least not in the short term.
- Possible direct health impacts may be small, and may be potentially outweighed or indistinguishable from other influences (including other policy interventions).
- The main public health impacts of such private sector investment in poorer areas are likely to be achieved via increases in employment opportunities, which impact upon general and psychological health, rather than through changes in diet (though this was not specifically examined here and remains a subject for future research).
- The impacts on health inequalities are unknown, but positive effects may be enhanced if new employment is differentially offered to local people, supported by suitable training and support, and where necessary, improvements in provision of child care.

Research recommendations

- There remains a need for further evaluations of retail interventions which capitalise on naturally occurring experiments (as recommended by the final Wanless report)²⁰
- Any future evaluations of the impact of retail provision on food access and availability should be prospective and controlled; uncontrolled studies should be considered as hypothesis-generating, rather than as definitive
- Such studies should employ, where resources permit, face to face interviews, to maximise recruitment in order to adequately power studies
- Further research is indicated on the reasons for “switching” (or not) to new stores. This could explore for example why non-switchers do not change, what would make them change, and whether this purchasing behaviour can be influenced (for example, future research could explore the effectiveness of healthy eating interventions in poorer areas, delivered concurrently with the opening of new stores)
- Finally, future research needs to examine the effects of the provision of new employment on the employee, and on the family. This should explore the effects of different types of employment on health and wellbeing (including work/life balance). It should also seek to investigate whether any hypothesised direct effects of retail investment in deprived areas are due to employment, to engaging with agents of change in a community setting, or both.

6.2.4 Papers and presentations arising from the project

The methods of the project have been presented to policy and practitioner audience in the UK and internationally, and we intend to present the findings at forthcoming meetings such as the International Geographical Union. . We have one paper in press (accepted subject to minor amendments) which describes the study methods, and outlines a rationale for evaluations of natural experiments. A series of further papers are in an advanced stage of preparation, covering the main quantitative, qualitative and retail findings, and an overarching paper drawing these together has been drafted. These will be sent to DH when completed.

We have also used the study to develop an innovative health impact assessment (HIA) teaching tool (“HIA: A thought Experiment”), which has been piloted in separate workshops with Public Health MSc students in the Universities of York, and Glasgow.

Papers (in press or in preparation)

Project: *REDUCING INEQUALITIES IN HEALTH & DIET: THE IMPACT OF A FOOD RETAIL DEVELOPMENT - A PILOT STUDY*

Cummins S, Findlay A, Petticrew M and L Sparks (in prep) Regeneration? The Impact of a Hypermarket on the Retail Structure of Springburn, Glasgow *Urban Studies*

Cummins S, Findlay A, Higgins C, Petticrew M and L Sparks (in prep) Can large-scale food retail interventions combat food deserts? Interpreting reported effects on food access, diet and population health *British Medical Journal*

Cummins S, Findlay A, Higgins C, Petticrew M and L Sparks (in prep) Large-scale food retailing as health intervention: quasi-experimental evaluation of a natural experiment. *Journal of Epidemiology & Community Health*

Petticrew M, **Cummins S**, Thomson H, Higgins C, Sparks L (in press) Natural experiments and public health: an underused evidence base for reducing health inequalities *Public Health*

Presentations

Cummins S, Findlay A, Higgins C, Petticrew M and L Sparks (2004), Reducing geographical inequalities in diet: does watering the 'food desert' work? *Association of American Geographers Annual Meeting*, March, Philadelphia, USA

Petticrew M. Evaluation: what's in a word? Professional Policy Making: The role of evaluation. Scottish Executive, Edinburgh 16th Feb 2004.

Petticrew M. Housing, regeneration and health. Auckland District Health Board, Auckland, 10th February 2004.

Petticrew M. Evaluating regeneration. Neighbourhoods and health. One day conference, sponsored by ESRC and DETR, Glasgow, November 2003.

Petticrew M. Evaluating the health impacts of social interventions. Policy Forum, Scottish Executive Department of Health, October 2003.

Petticrew M. Evidence based policy. Institute for Retail Studies, University of Stirling, October 2003.

Petticrew M. Evidence and HIA. UK & Ireland HIA Conference: Informing decisions for Health and Wellbeing. Birmingham, 6th Feb 2003.

Petticrew M. Regenerating Health. Seminar, Swinburne Institute for Social Research, Melbourne, March 2002.

Project: *REDUCING INEQUALITIES IN HEALTH & DIET: THE IMPACT OF A FOOD RETAIL DEVELOPMENT - A PILOT STUDY*

Teaching:

We have used the Superstore study as a teaching aid:

Petticrew M. HIA and regeneration: a thought experiment. MSc in Public Health, University of Glasgow.

Petticrew M. HIA and regeneration: a thought experiment. Inequalities in health module, MSc in Population Health, University of York.

Appendix 1: Tables referred to in main report

Table 1 Description of the 412 respondents at baseline for whom follow-up data were available

Variables	All N (%)	Comparison area* N (%)	Intervention area* N (%)
<i>Sex</i>			
Male	118 (28.64)	57 (25.90)	61 (31.77)
Female	255 (61.89)	142 (64.55)	113 (58.85)
Missing	39 (9.47)	21 (9.55)	18 (9.38)
Age			
16-24	6 (1.45)	2 (0.91)	4 (2.08)
25-34	62 (15.05)	21 (5.10)	41 (21.35)
35-44	57 (13.83)	28 (6.80)	29 (7.04)
45-54	63 (15.29)	35 (8.49)	28 (6.80)
55-64	58 (14.08)	36 (8.74)	22 (11.46)
65+	75 (18.20)	45 (10.92)	30 (15.63)
Missing	91 (22.09)	53 (12.86)	38 (19.80)
<i>Economic Activity</i>			
Active	123 (29.85)	71 (32.27)	52 (27.08)
Inactive	251 (60.92)	128 (58.18)	123 (64.06)
Missing	38 (9.22)	21 (5.10)	17 (8.85)
<i>Education</i>			
Standard Grade	162 (39.32)	92 (41.82)	70 (36.46)
Highers/work based further training	138 (33.50)	71 (32.27)	67 (34.90)
Higher Education	32 (7.77)	20 (9.09)	12 (6.25)
Missing	80 (19.42)	37 (16.82)	43 (22.40)
Fruit & Veg (5+)	152 (37.53)	86 (39.09)	66 (35.68)
GHQ-12 (4+)	119 (32.16)	53 (26.63)	66 (38.60)
Poor self-rated health (excludes missing values)	141 (39.17)	78 (40.41)	63 (37.72)

*Z-tests to compare these proportions suggest that none of the differences between the areas are statistically significant ($p=0.05$)

Table 2 Magnitude of change in dietary outcomes in comparison and intervention areas (p-values)

Outcome	Comparison area			Intervention area		
	Baseline	Follow-up	Change	Baseline	Follow-up	Change
Fruits	2.11	2.23	0.12 (p=0.19)	1.97	2.06	0.09 (p=0.35)
Vegetables	2.16	2.41	0.25 (p=0.01)	2.06	2.21	0.15 (p=0.14)
Fruits & Vegetables	4.16	4.60	0.44 (p=0.003)	3.92	4.21	0.29 (p=0.07)

Table 3 T-test comparison of dietary outcomes between comparison and intervention areas at baseline and follow-up (p-values)

	Comparison area	Intervention area	p-value
<i>Baseline</i>			
Fruits	2.10	1.94	p=0.209
Vegetables	2.16	2.04	p=0.321
Fruits and vegetables	4.15	3.90	p=0.208
<i>Follow-up</i>			
Fruits	2.22	2.03	p=0.122
Vegetables	2.40	2.18	p=0.127
Fruits and vegetables	4.60	4.17	p=0.047

Table 4 Intervention effect of the hypermarket on dietary outcomes using ANCOVA (adjusting for baseline outcome)

	Intervention Effect	Std Error	T	p-value	95% CI
Fruits	-0.10	0.113	-0.89	0.376	-0.32 – 0.12
Vegetables	-0.16	0.136	-1.20	0.230	-0.42 – 0.10
Fruits and vegetables	-0.28	0.199	-1.42	0.157	-0.67 – 0.11

Table 5 Intervention effect of hypermarket on dietary outcomes using ANCOVA, additionally adjusting for age, sex, education and economic activity

	Intervention Effect	Std Error	T	p-value	95% CI
Fruits	0.03	0.140	0.19	0.846	-0.25 – 0.30
Vegetables	-0.11	0.169	-0.66	0.513	-0.44 – 0.22
Fruits and vegetables	-0.10	0.252	-0.38	0.705	-0.59 – 0.40

Table 6 Intervention effect of hypermarket on for dietary outcomes using ANCOVA with a quadratic term adjusting for baseline outcome, age, sex, education, economic activity

	Intervention Effect	Std Error	T	p-value	95% CI
Fruits	-	-	-	-	-
Vegetables	-0.09	0.168	-0.53	0.597	-0.42 – 0.24
Fruits and Vegetables	-0.10	0.249	-0.40	0.692	-0.59 – 0.39

Table 7 Unadjusted odds ratios and 95% confidence intervals for poor self-rated health and GHQ case-ness in comparison and intervention areas post-intervention compared to baseline (McNemar Chi²)

Outcome	Comparison area			Intervention area		
	OR	p-value	95% CI	OR	p-value	95% CI
Poor self-rated health	0.77	0.522	0.39-1.53	1.64	0.188	0.81-3.45
GHQ case	1.16	0.755	0.60-2.26	0.52	0.03	0.27-0.95

Table 8 Unadjusted odds ratios and 95% confidence intervals for poor self-rated health and GHQ case-ness between comparison and intervention areas at baseline and follow-up

Outcome	OR	p-value	95% CI
<i>Baseline</i>			
Poor self-rated health	0.89	0.60	0.58-1.36
GHQ case	1.73	0.014	1.11-2.70
<i>Follow-up</i>			
Poor self-rated health	1.29	0.227	0.86-1.93
GHQ case	1.04	0.883	0.65-1.66

Table 9 Unadjusted and adjusted intervention effect odds ratios and 95% confidence intervals for poor self-rated health and GHQ case, controlling for baseline outcome, controlling for baseline outcome plus sex, age, education, economic activity

Outcome	Unadjusted OR (95% CI)	OR (95% CI) adjusting for baseline outcome	OR (95% CI) Adjusting for baseline outcome, sex, age, education, econ act
Poor self-rated health	1.29 (0.86-1.93)	1.55 (0.93-2.62)	1.52 (0.77-2.99)
GHQ case	1.04 (0.65-1.66)	0.81 (0.48-1.38)	0.57 (0.29-1.11)

Table 10 Estimation of effect modification for self-rated health and GHQ case

OR (95% CI) for intervention	Adjusted for	p-value for interaction
Poor self-rated health		
1.29 (0.86-1.93)	Crude	-
1.56 (0.92-2.63)	Baseline outcome	0.759
1.98 (1.21-3.25)	Age	0.166
1.39 (0.9-2.13)	Sex	0.787
1.37 (0.88-2.15)	Economic activity	0.482
1.21 (0.77-1.90)	Education	0.057*
GHQ case		
1.04 (0.65-1.66)	Crude	-
0.81 (0.48-1.38)	Baseline outcome	0.197
0.80 (0.46-1.38)	Age	0.052*
1.02 (0.62-1.65)	Sex	0.772
1.02 (0.63-1.66)	Economic activity	0.916
1.11 (0.67-1.85)	Education	0.589

Table 11: Retail Change in Springburn and Shettleston, 2001-2003 (number of shops)

	Spring-burn October 2001	Spring-burn October 2003	Percentage Change 2001-2003	Shettleston October 2001	Shettleston October 2003	Percentage Change 2001-2003
Convenience	67	65	-3.0	94	90	-4.3
Comparison	29	30	3.4	52	49	-5.8
Service	58	70	20.7	100	110	10.0
Vacant	32	21	-34.4	52	44	-15.4
Total	186	186	0	298	293	-1.7

Table 12 Number (%) of people who switched to the new store as their main shop by control and intervention area

	Control	Intervention
Tesco as main shop at follow-up	6 (2.73)	60 (31.25)
P<0.001		

Table 13 T-test comparison of diet outcomes at baseline and follow-up for switchers and non-switchers

Outcome	Non-switchers			Switchers		
	Baseline	Follow-up	Change	Baseline	Follow-up	Change
Fruits	2.04	2.13	0.16 (p=0.158)	2.11	2.26	0.15 (p=0.458)
Vegetables	2.10	2.32	0.22 (p=0.009)	2.15	2.34	0.19 (p=0.223)
Fruits & Vegetables	4.02	4.38	0.37 (p=0.002)	4.23	4.64	0.41 (p=0.171)

Table 14 Intervention effect of the superstore for those who switched to using the store as their main shop using ANCOVA (adjusting for baseline outcome)

	Intervention Effect	Std Error	T	p-value	95% CI
Fruits	0.09	0.151	0.62	0.53	-0.20-0.39
Vegetables	0.00	0.176	0.00	0.99	-0.35-0.35
Fruits and vegetables	0.15	0.268	0.57	0.572	-0.37-0.68

Table 15 Intervention effect of the hypermarket for those who switched to using the store as their main shop using ANCOVA additionally adjusting for age, sex, education and economic activity

	Intervention Effect	Std Error	T	p-value	95% CI
Fruits	0.21	0.181	1.18	0.241	-0.14-0.57
Vegetables	0.07	0.219	0.34	0.738	-0.36-0.50
Fruits and vegetables	0.328	0.33	0.98	0.329	-0.32-0.96

Table 16 Intervention effect of the hypermarket for those who switched to using the store as their main shop using ANCOVA with a quadratic term additionally adjusting for age, sex, education and economic activity

	Intervention Effect	Std Error	T	p-value	95% CI
Fruits	-	-	-	-	-
Vegetables	0.10	0.218	0.46	0.646	-0.33-0.53
Fruits and vegetables	0.31	0.324	0.97	0.335	-0.33-0.95

Table 17 Unadjusted odds ratios and 95% confidence intervals for poor self-rated health and GHQ caseness in switchers and non-switchers post-intervention compared to baseline (McNemar Chi²)

Outcome	Non-switchers			Switchers		
	OR	p-value	95% CI	OR	p-value	95% CI
Poor self-rated health	1.14	0.703	0.67-1.94	1.00	-	-
GHQ case	1.09	0.810	0.66-1.80	0.16	<0.001	0.03-0.54

Table 18 Unadjusted odds ratios and 95% confidence intervals for poor self-rated health and GHQ caseness between non-switchers and switchers at baseline and follow-up

Outcome	OR	p-value	95% CI
<i>Baseline</i>			
Poor self-rated health	0.68	0.192	0.37-1.22
GHQ case	2.21	0.005	1.25-3.88
<i>Follow-up</i>			
Poor self-rated health	0.63	0.111	0.36-1.18
GHQ case	0.73	0.350	0.37-1.42

Table 19 Unadjusted and adjusted intervention effect odds ratios and 95% confidence intervals for poor self-rated health and GHQ case, controlling for baseline outcome, controlling for baseline outcome plus sex, age, education, economic activity

Outcome	Unadjusted OR (95% CI)	OR (95% CI) adjusting for baseline outcome	OR (95% CI) Adjusting for baseline outcome, sex, age, education, econ act
Poor self-rated health	0.63 (0.36-1.18)	0.70 (0.35-1.41)	0.58 (0.23-1.44)
GHQ case	0.73 (0.37-1.42)	0.38 (0.17-0.82)	0.21 (0.07-0.57)

Table 20 Estimation of effect modification for self-rated health and GHQ case in switchers versus non-switchers

OR (95% CI) for switcher	Adjusted for	p-value for interaction
Poor self-rated health		
0.63 (0.36-1.12)	Crude	-
0.71 (0.36-1.39)	Baseline outcome	0.562
0.71 (0.36-1.40)	Age	0.675
0.63 (0.35-1.15)	Sex	0.250
0.71 (0.39-1.32)	Economic activity	0.695
0.62 (0.33-1.15)	Education	0.112
GHQ case		
0.73 (0.37-1.41)	Crude	-
0.39 (0.18-0.84)	Baseline outcome	0.547
0.53 (0.26-1.07)	Age	0.312
0.71 (0.36-1.41)	Sex	0.030*
0.73 (0.38-1.42)	Economic activity	0.104
0.63 (0.31-1.28)	Education	0.126

Figure 1: Map showing location of the intervention area (Springburn) and comparison area (Shettleston)



Figure 2: Boundary of survey area: Springburn (Intervention area)

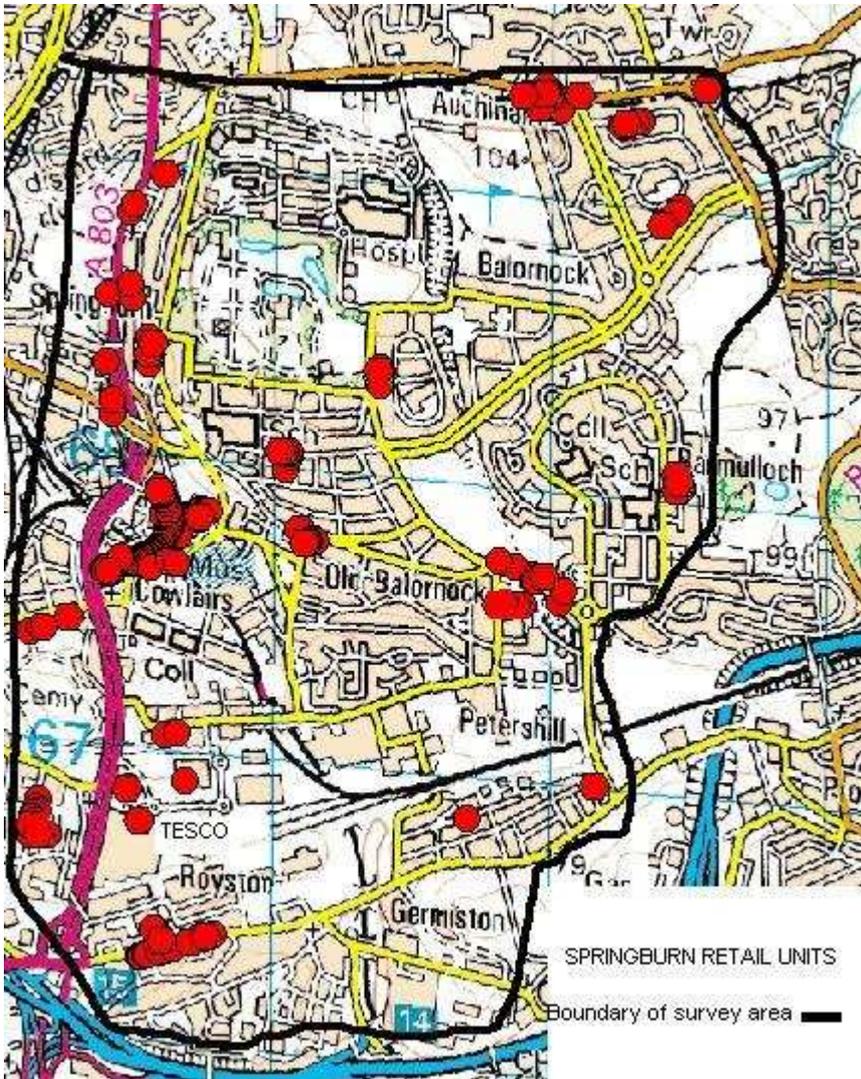


Figure 3: Boundary of survey area: Shettleston (comparison area)

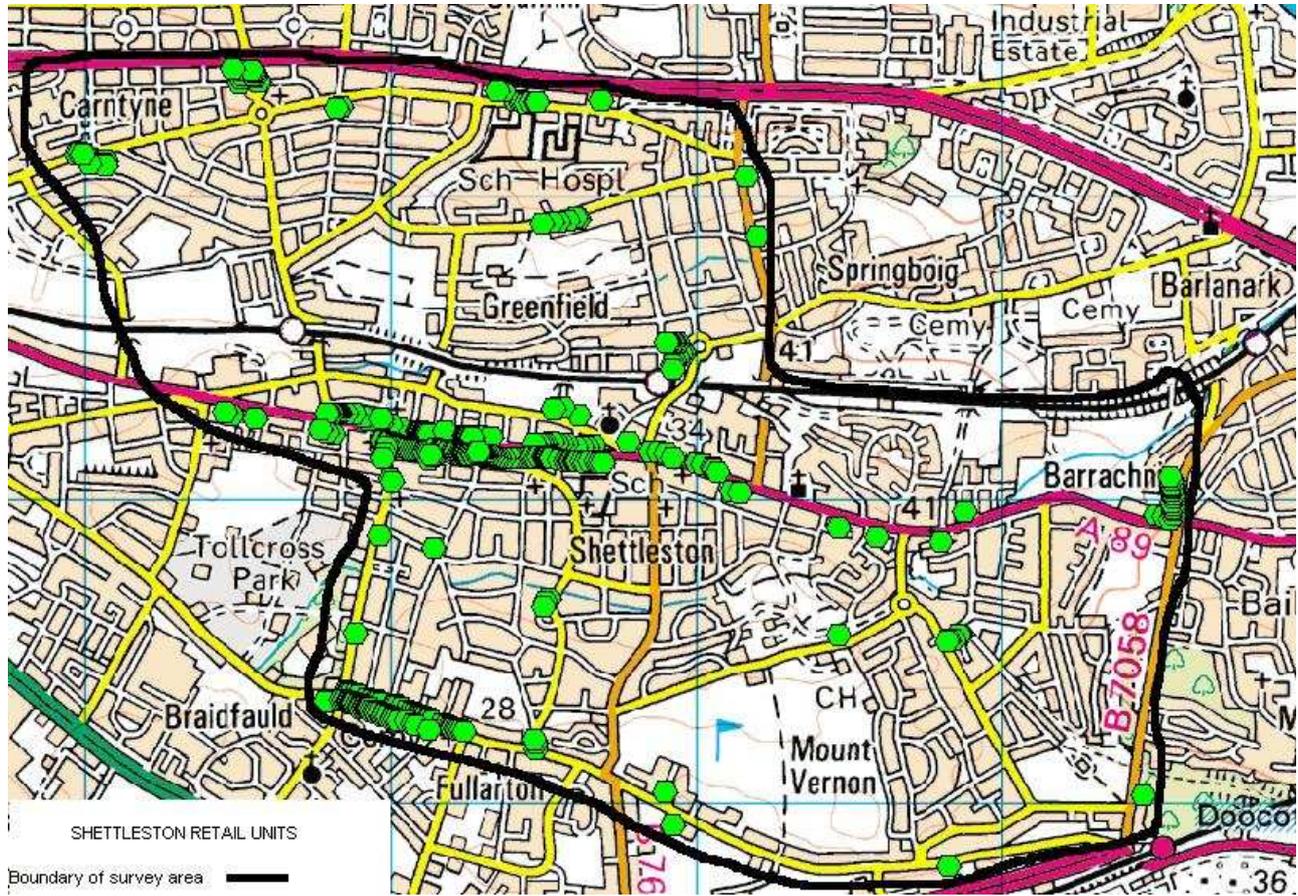


Figure 4: Retail Structures of Springburn and Shettleston, 2003

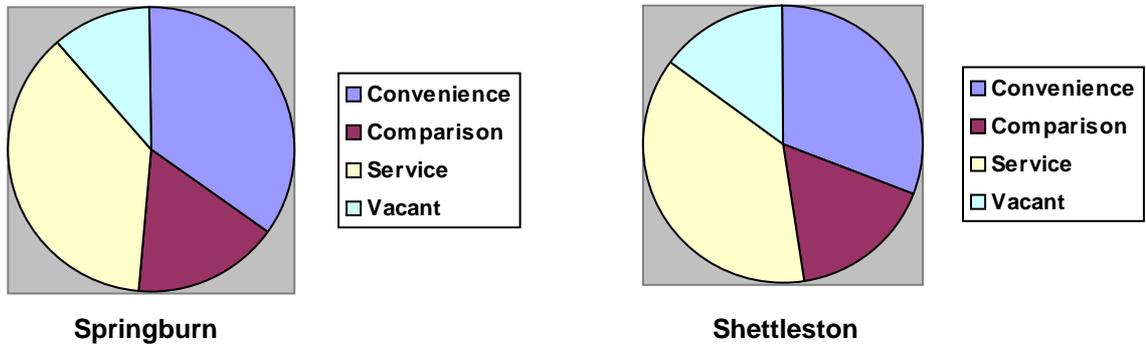
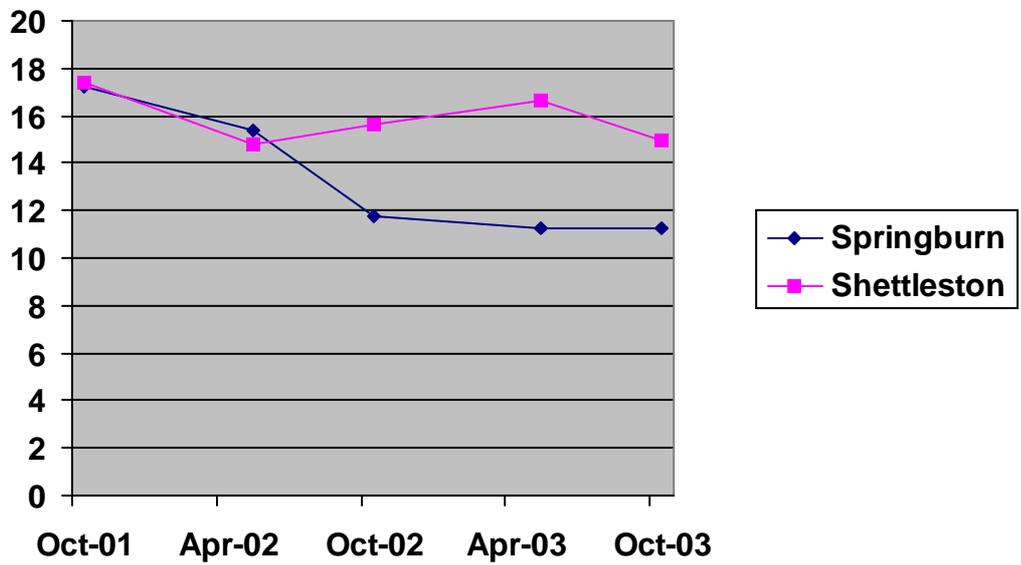


Figure 5: Vacancy Rates in Springburn and Shettleston, 2001-3



Appendix 2: Baseline postal questionnaire

Food, Health and Shopping in

Glasgow



This questionnaire is about food shopping habits and health in Glasgow. It is funded by the Department of Health and is being carried out by independent researchers at the Universities of Glasgow and Stirling. We would be very grateful if you could take the time to fill in this short questionnaire.

THE QUESTIONNAIRE SHOULD BE COMPLETED BY THE MAIN FOOD SHOPPER IN THE HOUSEHOLD. IF THIS IS NOT YOU THEN PLEASE GIVE IT TO THE MAIN FOOD SHOPPER TO FILL IN.

When you have finished please seal the booklet in the pre-paid envelope provided and post it back to us as soon as possible.

You **DO NOT** need to put a stamp on the envelope.

Thank you for your time.

Please read the instructions on the inside cover before answering the questions.

If you have any queries please phone Steven Cummins on (0141) 357 3949 and he will call you right back.

How to complete this questionnaire

Please use a blue or black pen

Most questions can be answered simply by ticking the box that applies to you

Example

1. Do you live in a house or flat?

1. Flat
2. House

Don't worry if you make a mistake, just cross it out and put a tick in the correct box.

Some questions ask you to circle the answer or answers that best apply to you.

Example

2. For the following statement circle the opinion which applies to you.

My area is very noisy	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
------------------------------	----------------	-------	---------	----------	-------------------

Example

3. Which of the following food products have you bought in the last week. Circle those you have bought.

Yoghurt

Cornflakes

Vegetable oil

Tinned tomatoes

Bananas

You and Your Household

A1. What is the postcode of your house?

--	--	--	--	--	--	--

A2. Please tell us about all the people living in your household, that is those who share your home even if they are not related to you.

A household is one person or a group of people (children AND adults) who have the accommodation as their only or main residence and who either share at least one meal a day or share the living accommodation, that is a living room or sitting room.

Please tell us about yourself first

Please tell us what relationship they are to you (for example, your husband, son or friend), whether they are male or female, their age, how you would rate their health (excellent, good, fair, or poor) and whether they are working at the moment, are unemployed, or retired or in full-time education.

All information you provide is completely confidential to the staff working on the study.

	Relationship to you <i>e.g. son, husband, partner, mother, stepfather, friend, flatmate</i>	What sex are they? M F	How old are they?	How would you rate their health? <i>Please circle the appropriate number:</i> Excellent ↓ Good Fair Poor ↓ ↓ ↓ ↓	What are they doing? <i>Please circle the appropriate number:</i> Employed ↓ Unemployed Retired Housewife Student ↓ ↓ ↓ ↓ ↓
Example	Son	(M) F	13	1 (2) 3 4	1 (2) 3 4 5
You		M F		1 2 3 4	1 2 3 4 5
Person 2		M F		1 2 3 4	1 2 3 4 5
Person 3		M F		1 2 3 4	1 2 3 4 5
Person 4		M F		1 2 3 4	1 2 3 4 5
Person 5		M F		1 2 3 4	1 2 3 4 5
Person 6		M F		1 2 3 4	1 2 3 4 5
Person 7		M F		1 2 3 4	1 2 3 4 5
Person 8		M F		1 2 3 4	1 2 3 4 5

(continued)

	What is their occupation?	What is their job title?	Do they work full-time or part-time?	Where do they work? Please write in the name and street address of the place where they work.
You				
Person 2				
Person 3				
Person 4				
Person 5				
Person 6				
Person 7				
Person 8				

Education

A4 In which of the following educational establishments or places has each individual in your household studied. *Please tick.*

	Secondary School	College of Further Education	University	Other College	Work based award	Still at School/ College/ University
You						
Person 2						
Person 3						
Person 4						
Person 5						
Person 6						
Person 7						
Person 8						

Food and Eating

B1. Who in the household prepares/cooks the food?

- 1. You
- 2. Your partner
- 3. Cook individually
- 4. All take turns to cook
- 5. Daughter/Son
- 6. We don't cook at home
- 7. Other, please write in.....

B2. FRUIT

a) On how many days per week eat FRUIT?

Please circle one number

- Every day 7
- 6 days per week 6
- 5 days per week 5
- 4 days per week 4
- 3 days per week 3
- 2 days per week 2
- One day per week 1
- Less than once per week 0
- Never eat fruit* 9

b) How many portions of FRUIT do you usually eat per day?

Please circle one number

- 7 portions or more 7
- 6 portions 6
- 5 portions 5
- 4 portions 4
- 3 portions 3
- 2 portions 2
- 1 portion 1
- 0 portions 0

B3. VEGETABLES?

a) On how many days per week

b) How many portions of

do you eat VEGETABLES? VEGETABLES do you usually eat per day?

Please circle one number

Please circle one number

Every day	7	7 portions or more	7
6 days per week	6	6 portions	6
5 days per week	5	5 portions	5
4 days per week	4	4 portions	4
3 days per week	3	3 portions	3
2 days per week	2	2 portions	2
One day per week	1	1 portion	1
Less than once per week	0	0 portions	0
<i>Never eat vegetables</i>	9		

B4. Which of the following fruit and vegetables have you bought in the last week? (Please tick all that apply)

Fruit	Vegetables	Salads
Bananas	Carrots	Lettuce
Oranges	Potatoes	Tomatoes
Apples	Baking Potatoes	Coleslaw
Grapes	Cabbage	Radishes
Strawberries	Turnips	Spring Onions
Melons	Broccoli	Prepared Salads
Plums	Cauliflower	
Kiwi Fruit	Leeks	
Raspberries	Mushrooms	
Other (write in)	Other (write in)	Other (write in)

B5. Do any of the following stop you from eating more healthily?

Tick as many as apply

- 1. Cost of healthy foods
- 2. Dislike healthy foods
- 3. Unsure what to eat
- 4. Difficult to get healthy foods
- 5. Lack of choice of healthy foods
- 6. Healthy foods take too much preparation
- 7. Inconvenience
- 8. Family preferences

B6. Do you grow your own fruit or vegetables?

- 1. Yes
- 2. No

Where Do You Go Food Shopping?

C1. Where do you do your main food shopping?

Name of store.....

Place.....

C2. Why do you choose this store?

.....

C3. Where do you buy your fruit and vegetables?

Name of store.....

Place.....

C4. Why do you choose this store?

.....

C5. How much do you spend on food shopping per week (excluding alcohol) ?

£.....

C6. Do you travel to do your food shopping from 1. Home 2. Work 3. Other

C7. How do you travel to do your main food shopping?

Go to shop by:

Go home from shop by:

- 1. Walking
- 2. Bus
- 3. Car belonging to household
- 4. Friend/ relative's car
- 5. Taxi
- 6. Other, please specify.....

- 1. Walking
- 2. Bus
- 3. Car belonging to household
- 4. Friend/ relative's car
- 5. Taxi
- 6. Other, please specify.....

C8. Who normally does the main food shopping in the household?

- 1. You
- 2. You and the children
- 3. Your partner
- 4. Whole household
- 5. Daughter/son
- 6. You and other relative
- 7. You and friends

C9. Who do you do your food shopping for?

- 1. Household
- 2. Yourself
- 3. Your household and a relative
- 4. Your household and a neighbour or friend

C10. How often do you go food shopping?

- 1. Daily
- 2. One main food shop per week
- 3. Two or three times per week

C11. How often do you buy fruit and vegetables?

- 1. Daily
- 2. Two or three times per week
- 3. Just on main food shopping trip
- 4. Never

C12. When do you normally do your main food shopping?

	Morning	Afternoon	Evening
Monday			
Tuesday			
Wednesday			
Thursday			
Friday			
Saturday			
Sunday			

C13. Do you agree/disagree with the following statements. Circle the answer which best expresses your feelings

The quality of fruit and vegetables in discount stores such as Lidl or Kwik Save is good	strongly agree	agree	neutral	disagree	strongly disagree
Fruit and vegetables in discount stores such as Lidl or Kwik Save are expensive	strongly agree	agree	neutral	disagree	strongly disagree
The choice of fruit and vegetables in discount stores such as Lidl or Kwik Save is poor	strongly agree	agree	neutral	disagree	strongly disagree
The fruit and vegetables in supermarkets such as Asda or Tesco are good quality	strongly agree	agree	neutral	disagree	strongly disagree
The choice of fruit and vegetables in supermarkets such as Asda or Tesco is too big	strongly agree	agree	neutral	disagree	strongly disagree
Fruit and vegetables in supermarkets such as Asda or Tesco are cheap	strongly agree	agree	neutral	disagree	strongly disagree
Small shops such as greengrocers offer fruit and vegetables at low prices	strongly agree	agree	neutral	disagree	strongly disagree
Small shops such as greengrocers have good quality fruit and vegetables	strongly agree	agree	neutral	disagree	strongly disagree

Small shops such as greengrocers have an adequate choice of fruit and vegetables	strongly agree	agree	neutral	disagree	strongly disagree
Food from supermarkets such as Asda or Tesco is safer than food from small shops such as greengrocers	strongly agree	agree	neutral	disagree	strongly disagree
Buying foods in small shops such as the greengrocer is a friendly experience	strongly agree	agree	neutral	disagree	strongly disagree

Your Home

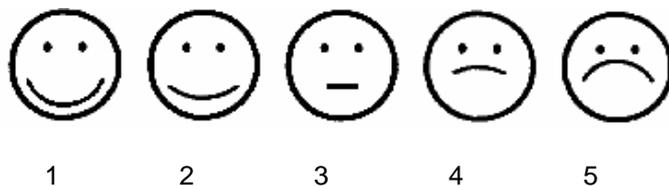
D1. Which of the following do you have in your home?

- 1. Oven/hob
- 2. Microwave
- 3. Fridge
- 4. Freezer

D2. Does your household own a car or a van? 1. Yes 2. No

D3. Does your household have the use of a car or van? 1. Yes 2. No

D4. Looking at the faces scale below, which face shows best how you feel about how adequate your total household income is? Please circle one number



D5. Could you tell us what your total household income is per month? Please give amount per week if that is easier for you. By this we mean the amount you (and your husband/wife/partner and other household members) normally have after deductions like tax, and including any benefits, pensions and so on.

£ per month £ per week.....

D6. What proportion of your household’s income would you say comes from state benefits?
Please circle one number

None	About a quarter	About a half	About three quarters	All
1	2	3	4	5

The Area Where You Live

E1. How do you feel about your local area?

By your local area we mean everywhere within a 20 minute walk (about a mile) of your home.

	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
People in this area have no community spirit	1	2	3	4	5
I feel part of this area	1	2	3	4	5
Most people in this area can be trusted	1	2	3	4	5
This area is badly placed for shops and services	1	2	3	4	5
This area has a better reputation than most	1	2	3	4	5
This neighbourhood is quiet	1	2	3	4	5
This neighbourhood has lots of speeding traffic	1	2	3	4	5
This area is kept very clean	1	2	3	4	5
This neighbourhood has lots of smells and fumes	1	2	3	4	5
In this area there are some people who belong and some who don't	1	2	3	4	5
Employers find this area a good place to locate	1	2	3	4	5
My local area is not as good as areas nearby.	1	2	3	4	5
The council takes little interest in my area	1	2	3	4	5
This is a good area to bring up children in	1	2	3	4	5
Vandalism/graffiti are a problem in this area	1	2	3	4	5

Recent Health

We would like to know how your health has been in general OVER THE PAST FEW WEEKS. We want to know about present and recent complaints, not those you had in the past. Please answer ALL THE QUESTIONS in this section by circling the answer that most applies to you.

F1. Have you recently?

Been able to concentrate on whatever you're doing?	Better than usual	Same as usual	Less than usual	Much less than usual
Lost much sleep over worry?	Not at all	No more than usual	Rather more than usual	Much more than usual
Felt you were playing a useful part in things?	More so than usual	Same as usual	Less useful than usual	Much less than usual
Felt capable about making decisions about things?	More so than usual	Same as usual	Less useful than usual	Much less than usual
Felt constantly under strain?	Not at all	No more than usual	Rather more than usual	Much more than usual
Felt you couldn't overcome your difficulties?	Not at all	No more than usual	Rather more than usual	Much more than usual
Been able to enjoy your normal day-to-day activities?	More so than usual	Same as usual	Less useful than usual	Much less than usual
Been able to face up to your problems?	More so than usual	Same as usual	Less useful than usual	Much less than usual
Been unhappy or depressed?	Not at all	No more than usual	Rather more than usual	Much more than usual
Been losing confidence in yourself?	Not at all	No more than usual	Rather more than usual	Much more than usual
Been thinking of yourself as a worthless person?	Not at all	No more than usual	Rather more than usual	Much more than usual
Been feeling reasonable happy all things considered?	More so than usual	About the same as usual	Less useful than usual	Much less than usual

General Health

G1. Please tell us about the general health of all the people (children and adults) living in your household.

Please make sure that each person referred to in this question is the SAME as the person referred to in question A2.

For example: Person 2 here is the same as Person 2 in question A2.

	Are they registered disabled?		If so what is the disability?	How tall are they?	How much do they weigh?	Do they have any long-standing illness, infirmity or disability?		If yes please give details	Does it limit daily activity in any way?	
	Yes	No				Yes	No		Yes	No
Example	Yes	(No)		<i>5ft 10</i>	<i>10st 5</i>	(Yes)	No		(Yes)	No
You	Yes	No				Yes	No		Yes	No
Person 2	Yes	No				Yes	No		Yes	No
Person 3	Yes	No				Yes	No		Yes	No
Person 4	Yes	No				Yes	No		Yes	No
Person 5	Yes	No				Yes	No		Yes	No
Person 6	Yes	No				Yes	No		Yes	No
Person 7	Yes	No				Yes	No		Yes	No
Person 8	Yes	No				Yes	No		Yes	No

Would you be prepared to be contacted by the research team at a later stage to give a confidential interview?

- Yes
 No

Thank you very much for completing this questionnaire. We could not do this study without your help.

Please could you just check that you haven't missed any questions by mistake or turned two pages at once. Please return the questionnaire even if you felt you could not answer all the questions.

Please place and seal in the envelope provided and post to us, no stamp is needed. Thank you.

References

1. Cummins S, Macintyre S. "Food deserts": evidence and assumption in health policy making. *BMJ* 2002; 325: 436-438.
2. Edwards P, Roberts I, Clarke M, DiGiuseppi C, Prapat S, Wentz R, et al. Increasing response rates to postal questionnaires: systematic review. *BMJ* 2002; 324: 1183-5.
3. James WPT, Nelson M, Ralph A, Leather S. Socioeconomic determinants of health: the contribution of nutrition to inequalities in health. *BMJ* 1997; 314: 1545-53.
4. Macintyre S. Evidence based policy making. *BMJ* 2003; 326: 5-6.
5. Macintyre S, Chalmers I, Horton R, Smith R. Using evidence to inform health policy: case study. *BMJ* 2001; 322: 222-225.
6. Mackenbach J. Tackling inequalities in health: the need for building a systematic evidence base. *J Epidemiol Community Health* 2003; 57: 162.
7. Pacione M. Retail development in the inner city: a case study of Springburn, Glasgow. *Scottish Geographical Magazine* 1982; 98: 166-177.
8. Parry O, Bancroft A, Gnich W, Amos A.. Nobody home? Issues of respondent recruitment in areas of deprivation. *Critical Public Health* 2001; 11: 305-317.
9. Wrigley N, Warm D, Margetts B. Deprivation, diet, and food-retail access: findings from the Leeds 'food deserts' study. *Environment and Planning A* 2003; 35: 151-188.
10. Wrigley N, Warm D, Margetts B, Lowe M. The Leeds "food deserts" intervention study: what the focus groups reveal. (in press).
11. Wrigley N, Warm D, Margetts B, Whelan A. Assessing the impact of improved retail access on diet in a "food desert": a preliminary report. *Urban Studies* 2002; 39: 2061-2082.
12. The NHS Plan: A Plan for Investment. A Plan for Reform. Department of Health, London, 2000.
13. National Food Survey. London: The Stationery Office, 1999.
14. Report of Policy Action Team 13: Improving Shopping Access for People Living in Deprived Neighbourhoods, London, Department of Health, 1999.
15. Tesco Stores Ltd (2002) Tesco Regeneration Partnerships Evaluation report 07:99-06:02 - the story so far. Tesco Stores Ltd, Cheshunt
16. Beaumont J, Lang T, Leather S, Mucklow C. Report from the policy sub-group to the Nutrition Task Force Low Income Project Team of the Department of Health. Radlett, Hertfordshire:Institute of Grocery Distribution, 1995.
17. Reducing health inequalities: an action report. Department of Health, London, 1999.
18. Macintyre S. Evaluating the evidence on measures to reduce inequalities in health. Heath Equity Network, London, July 2002.
19. Millward L, Kelly M, Nutbeam D. Public Health Intervention Research: the evidence. Health Development Agency, London. of work. 2001.
20. Wanless D. Securing good health for the whole population: Final report. HM Treasury, London. of work. 2004.
- 21 **Edwards P**, Roberts I, Clarke M, *et al.* Increasing response rates to postal questionnaires: systematic review. *BMJ* 2002;**324**:1183–5.

Project: *REDUCING INEQUALITIES IN HEALTH & DIET: THE IMPACT OF A FOOD RETAIL DEVELOPMENT - A PILOT STUDY*

22. Kirkwood BR, Cousens S, Victora CG, Zoysa I. Issues in the design and interpretation of studies to evaluate the impact of community-based interventions. *Tropical Medicine and International Health* 2(11) 1022-1029