

**Accessing Healthy Food: A Sentinel Mapping Study of
Healthy Food Retailing in Scotland
(Appendices)**

Research Project S04005
Food Standards Agency (Scotland)

Prof. John Dawson^{1,3}, Prof. David Marshall¹, Mr Matt Taylor¹,
Dr Steven Cummins², Prof. Leigh Sparks³, Prof. Annie Anderson⁴

¹University of Edinburgh, ²Queen Mary University, London, ³University of Stirling,
⁴University of Dundee

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1. Research team

a. University of Edinburgh

John Dawson, Professor of Marketing.

Expertise in marketing and retailing with research into consumer choice, retail marketing and retail strategy. Studies have been undertaken for private and public sector sponsors. John Dawson is also Professor of Retailing at Stirling University

David Marshall, Professor of Marketing and Consumer Behaviour

Expertise in marketing and consumer behaviour with research into consumer food choice behaviour, lifecycle change and consumption in an institutional context.

Matt Taylor, Research Fellow

Specialist in Geographical Information Systems (GIS), retail promotions and data analysis. Current research and consultancy includes micro-scale retail location and impact of shopping-centre development.

Tina Parkin, Research Administrator

b. Queen Mary University, London

Steven Cummins, Medical Research Council Fellow

Expertise in social, spatial and health consequences of retail restructuring; the production and existence of food deserts; social and spatial geography of health inequality; design and evaluation of social interventions for public health and evidence in health policy making.

c. University of Stirling

Leigh Sparks, Professor of Retail Studies

Expertise in spatial-structural change in retailing, including the effects of such changes on consumers and retailers.

d. University of Dundee

Annie Anderson, Professor of Food Choice and Director of the Centre for Public Nutrition Research

Research interests focus on factors that influence food choice, dietary assessment methodology and the impact of dietary selection on human health. Diet and health inequalities has been a major theme of recent work and current research involves assessing the impact of dietary interventions in studies of free living individuals.

2. Retail data sources

Three main sources of data were used:

- industry body;
- commercial;
- public sector.

The industry sourced data and commercial data were used to build a consistent national picture. There were known inconsistencies in the public sector (local authority) data so these were not used to build the national view. The local authority data were useful on a per sentinel basis to build the initial surveyor's view of potential survey candidates.

Centre for the Study of Retailing in Scotland data were used to assess accuracy.

a. Industry data sources

Data were obtained from Institute For Grocery Distribution (IGD) in the summer 2004. This contained 974 records of multiple food retailer units in Scotland. Entry on this database by IGD was made on the basis of company size and sales volumes.

Data on 152 names and addresses of current members of the Scottish Grocers Federation (SGF) were supplied and merged and deduped with the national database.

The Scottish Association of Farmers Markets (SAFM) had an information rich website (<http://www.scottishfarmersmarkets.co.uk>). However the data held there were not available in a single database. SAFM was restructuring and the data may be available in the future. The SAFM information was used to create surveyor lists for the census of shops and 1 farmers' market was surveyed in sentinel RA1.

b. Commercial data sources

Marketscan (MS) are a commercial supplier of lists for the direct mail industry. 6581 records relating to food retailing in Scotland were purchased from them reporting. MS data do not contain information on discounters such as Aldi or Lidl. The data also do not contain information on department store food operations.

Convenience stores at Petrol Filling Stations (PFS) were handled initially through the use of a specialist supplier of data for the petrol retailing industry called Catalist. 851 records of open PFS with shops or convenience stores attached were purchased. MS had only 541 PFS records. These were compared with the 851 records that Catalist supplied. On checking the Catalist records it was found that most MS records appear to be in Catalist although in a few cases MS appeared to be the more accurate of the two databases.

MS records that did not appear in Catalist do not seem to appear on Yell.com either and are therefore considered deletable. It was assumed that these records were PFS without a shop and were deleted. Thorough checking on the postcode sorted MS file has also revealed a number of duplicates within their data. Therefore the decision was taken to

use Catalist data alone for shops and convenience stores attached to PFS. There are 662 of these shops that sell “groceries”.

c. Public sector data sources

Data were obtained for the 32 Scottish Local Authorities from their environmental health officers. These data were kept on the registries of food handling premises.

307 names and addresses of community food projects were supplied by Scottish Community Diet Project. 34 records required postcode addition or correction.

Data from the Office of National Statistics (ONS) are of a general nature and are not reported as site specific. Data on food shops are available aggregated for Scotland and at a more general retail level for Local Authorities. The most recent year available at the time of the project was 2002. These data were used to inform the project but were not incorporated into analyses because of their aggregate and non current nature.

d. Comparison with CSRS data

A brief comparison of the overall data collection against the CSRS data for Edinburgh was conducted. Of the current 4160 stores plottable in the 2005 national database, 295 lay within the bounds of the CSRS Edinburgh survey area.

The CSRS survey of summer 2004 identified 543 shops selling food, 248 more than the figure of 295 from the national database. This field survey found 84% more shops than the figure estimated from the national database.

Local studies on one low deprivation area and one high deprivation area revealed that the missing units were predominantly independents both specialist and small general, i.e. convenience stores.

3. Geographic and geodemographic data sources

a. Postal geography

The Royal Mail maintains a nationwide system of postcodes to identify postal delivery areas. The postcode system is familiar and well-known by the general population. This facilitates its use by organisations such as the ONS as one of their main geographic references when collecting data. This reference can be related to any geographic unit used for statistical production, such as a district or electoral ward.

Postcodes are alphanumeric references comprising an outward code of 2-4 characters and an inward code of 3 characters. For example:

PO16 7DZ
outward code inward code

The postcode is structured hierarchically, supporting 4 levels of geographic unit:

Example	Geographic unit	Number in UK (September 2004)
PO	Postcode area	124
PO16	Postcode district	2934
PO16 7	Postcode sector	9903
PO16 7DZ	Unit postcode	1.76 million approx.

These 1.76 million postcodes cover over 27.5 million delivery points and comprise 1.55 million small user and 0.21 million large user postcodes (see below).

Scottish figures are approximately one tenth of the UK figures. There are approximately 150,000 residential postcode units in Scotland.

Unit postcodes are the base unit of postal geography and fall into two types:

1. Large user postcodes: allocated to single addresses receiving at least 500 mail items per day (e.g. business addresses).
2. Small user postcodes: collections of (usually) adjacent addresses. A single small user postcode may contain up to 100 addresses, but 15 is a more typical number.

It is possible for large buildings with many separate delivery points (e.g. a tower block) to have more than one unit postcode within the building.

The Code-Point product from Ordnance Survey provides a precise geographical location for each postcode unit in Great Britain using National Grid co-ordinates. Code-Point also provides digital postcode unit boundaries for use in a GIS. It can be accessed through the Edina Digimap service. The data were last amended 16 June 2004. Code-Point also provides information on the number of domestic and residential delivery points. A domestic delivery point (DDP) can be used to approximately count households.

Code-Point data consists of two separate elements, Code-Point itself and Code-Point polygons:

Code Point provides a National Grid reference for each unit postcode in Great Britain. Multiple postcodes in a single block of flats or offices will share one National Grid reference. With each co-ordinated point there is information about the postal delivery points within the postcode unit and codes for a number of administrative boundaries, which coincide with the postcode unit. It is Code-Point that is used in Digimap when a postcode search is entered to locate a map.

Code-Point polygons represent postcode unit boundaries in Great Britain. The boundaries are derived from ADDRESS-POINT®, an Ordnance Survey product which provides a National Grid co-ordinate for each postal delivery address in Great Britain. Each postcode unit boundary is created to surround all addresses with the same postcode. Where appropriate, the boundaries follow major roads, railways, rivers and Royal Mail postcode sector boundaries. Often, tower blocks or similar buildings will be assigned with more than one postcode. Such buildings are called **vertical streets** and are represented in the polygon dataset as small squares. A separate look-up table links postcodes to vertical streets using a unique vertical street reference code. Some postcode units are omitted from the dataset, due to issues of accuracy or because they are PO boxes (i.e. non-geographic postcodes). These are listed in separate tables, included with the Code-Point polygons.

Code-Point is recreated quarterly using updates from Ordnance Survey field surveys and Gridlink® (a consortium made up of Royal Mail® (RM), Ordnance Survey, the Office of National Statistics (ONS), Ordnance Survey of Northern Ireland (OSNI) and the General Register Office for Scotland (GROS)), via ADDRESS-POINT® and Boundary-Line™.

Updates are supplied annually – depending upon the terms of your contract – and are also available on request. Updates are provided as a complete resupply, but do not include deleted postcodes.

The Codepoint data being used by the project was last updated on 16th June 2004.

b. Code-Point Location Co-ordinate (CPLC)

Code-Point provides a National Grid reference, to a resolution of 1 metre, for each unit postcode in Great Britain and Northern Ireland, and is known as the CPLC. A CPLC is normally allocated to a point that falls within the extent of the unit postcode.

The point is given the ADDRESS-POINT coordinates of the nearest delivery point to the calculated mean position of the delivery points in the unit. A lower positional quality CPLC will be allocated to unit postcodes awaiting a surveyed position, or which relate to addresses that will not have a surveyed position on Land-Line data.

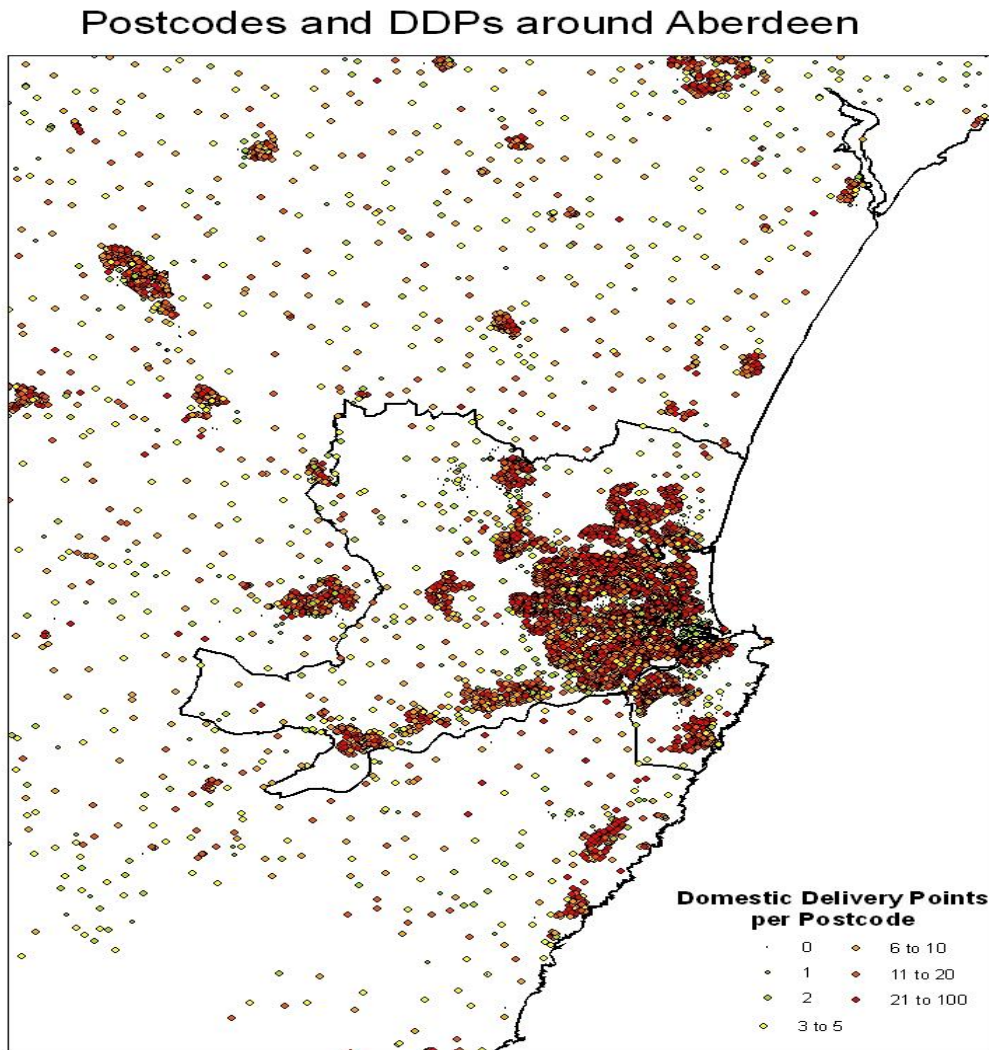
Where several unit postcodes apply to one surveyed position, for example, a block of flats or offices, there is an identical CPLC for each. There may be occurrences where the position of the CPLC is distorted by the erroneous allocation by Royal Mail of a postcode to an address outside the contiguous geographical extent of that postcode.

These distortions may also affect the allocation of NHS and administrative area codes, and/or the size or extent of a postcode polygon. Such occurrences, when discovered or

notified to Ordnance Survey by customers, will be referred to Royal Mail for possible improvement.

Code-Point has been used to plot the map below. This shows the city of Aberdeen and the surrounding region with each dot representing a postcode. Different colours represent the number of DDPs therein.

Figure 1: Postcodes and DDPs around Aberdeen



c. Postcode Geographic Limitations

As indicated, postcodes form compact geographic references that are familiar to the general public and business. However linking postal geographies to other geographic units is far from straightforward for these reasons:

- i) Postcode boundaries are not usually contiguous with other geographic boundaries. If a unit postcode straddles a ward (or higher level) boundary, a decision has to be taken to decide which ward to allocate the data. The Office for

National Statistics Geography's postcode directories take the grid reference of the postcode centroid and match this up to digital administrative boundaries. However, some addresses (and therefore data) will still inevitably be allocated to the wrong area. This problem will be reduced in future with the move towards using address-based rather than postcode-based grid references.

- ii) Postcode boundaries are subject to continuous change due to:
 - a. new addresses,
 - b. single addresses acquiring large user postcodes as mail volume increases,
 - c. and the need to restrict the number of addresses per unit to less than 100.
 Areas can also be recoded and codes can be re-used in a different place after just two years. Continuous monitoring is therefore required to avoid data misallocation.

d. Urban-Rural Classification

The Scottish Executive urban rural classification 2003-2004 has been designed to be simple to understand and apply. It is based on settlement population sizes and drive times. It distinguishes between urban, rural and remote areas within Scotland and includes the following categories:

Table 1: Scottish Executive 6-fold Urban Rural Classification

1 Large Urban Areas	Settlements of over 125,000 people.
2 Other Urban Areas	Settlements of 10,000 to 125,000 people.
3 Accessible Small Towns	Settlements of between 3,000 and 10,000 people and within 30 minutes drive of a settlement of 10,000 or more.
4 Remote Small Towns	Settlements of between 3,000 and 10,000 people and with a drive time of over 30 minutes to a settlement of 10,000 or more.
5 Accessible Rural	Settlements of less than 3,000 people and within 30 minutes drive of a settlement of 10,000 or more.
6 Remote Rural	Settlements of less than 3,000 people and with a drive time of over 30 minutes to a settlement of 10,000 or more.

The Scottish Executive's core definition of rurality classifies settlements of 3,000 or less people to be rural. The Scottish Executive Urban Rural Classification can be collapsed to the core definition of rurality. Categories 5 and 6 are rural and categories 1 to 4 are urban.

Urban = Large Urban Areas, Other Urban Areas, Accessible Small Towns, Remote Small Towns

Rural = Accessible Rural, Remote Rural

The classification can be used to distinguish between accessible and remote, irrespective of rurality. Settlements containing less than 10,000 people and with a drive time of over 30 minutes to a settlement of 10,000 or more are defined to be remote areas. These are categories 4 and 6 in the classification.

Accessible = Large Urban Areas, Other Urban Areas, Accessible Small Towns, Accessible Rural

Remote = Remote Small Towns, Remote Rural

The classification was previously called the Scottish Household Survey (SHS) Urban Rural Classification. Its original name reflected the fact that it was developed within the context of the SHS. To reflect its wider use beyond SHS, its name has been changed to the Scottish Executive Urban Rural Classification. Two main criteria have been used to produce the Scottish Executive 6-fold urban rural classification: *settlement size* as defined by the General Register Office for Scotland (GROS) and *accessibility based on drive time* analysis to differentiate between accessible and remote areas in Scotland. The settlements and accessibility data are then combined to create a Scotland wide classification. Within the 2003-2004 Urban Rural Classification the settlement size is determined by mapping the 2001 Census output areas (which contain on average 50 households).

At the heart of the classification is the postcode. The Scottish Executive provide postcode, census output area and data zone look-up tables which assign each of these areas to the classification. Each data zone has been assigned to the category of the classification for which the majority of its census output areas lie.

The urban rural classification 2003-2004 has been obtained from the Scottish Executive for use in this project and the data zones have been assigned to the 6-fold classification.

e. Islands

Inhabited islands are defined by the General Register Office for Scotland. There is some debate over the status of islands once they are connected to the mainland by bridges, e.g. Skye or Seil, or tunnels as may be the case for Orkney in the future. Skye no longer qualifies for economic relief, as an island, from the Scottish Executive but is still considered an island by the General Register Office for Scotland.

In the six-fold urban-rural classification all parts of all islands are classified as Remote – either Remote Small Towns or Remote Rural, other than Great Cumbrae, in the Firth of Clyde, which is Accessible Rural.

f. Local Authorities

The key administrative geography in Scotland is that of the 32 local authorities. These comprise a single administrative tier of unitary authorities carrying out functions associated with county and district councils in England and Wales.

This structure for local government was introduced in 31 March 1996 by the Local Government (Scotland) Act (1994). The Act created 29 new unitary (all-purpose) councils alongside the existing three unitary islands councils. The boundaries are defined by the Local Government Boundary Commission for Scotland.

The Scottish Neighbourhood Statistics (SNS) service has defined the 32 Local Authorities in terms of data zones. Data zones were designed to nest within local authority boundaries as at the time of the 2001 Census. There is a very close fit between data zones and Local Authorities. The Local Authority boundaries displayed within SNS have been produced by aggregating data zone boundaries and are therefore not completely precise. The

Ordnance Survey is responsible for producing map products which locate exact local authority boundaries.

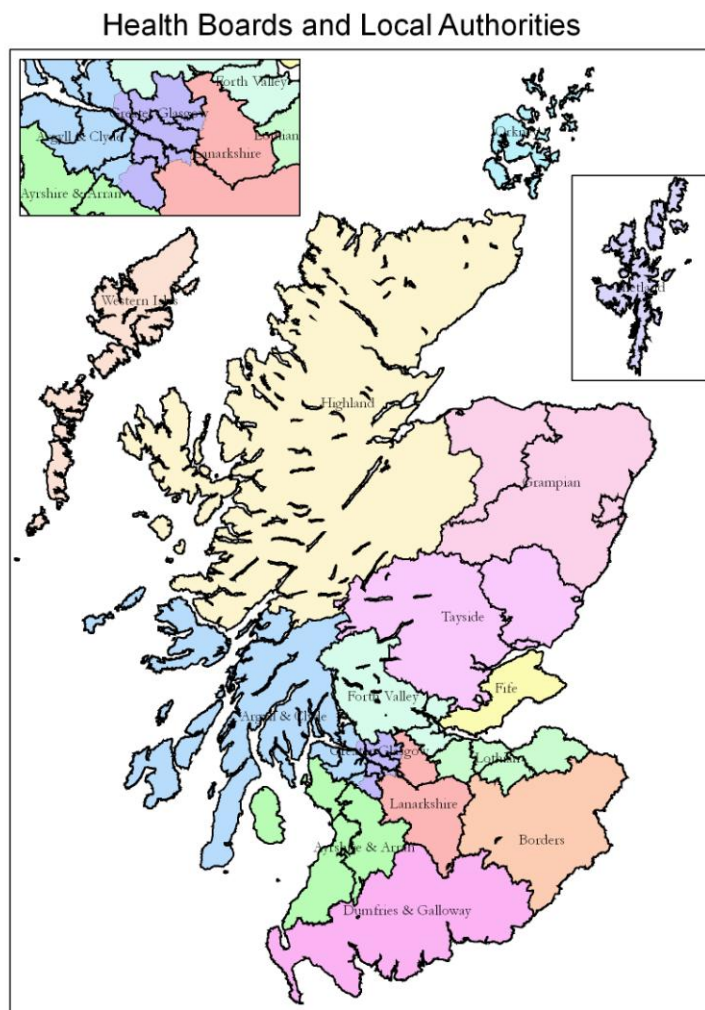
The local authority boundaries used by the project have been obtained from the UKBORDERS service.

g. Health Boards

When the project commenced there were fifteen health boards across Scotland. The health board boundaries used by the project were obtained from UKBORDERS and have been derived from 2001 Census digital boundary data.

The map below illustrates Health Board and Local Authority geography. The thick black borders delineate Local Authorities and the Health Boards are colour coded. Health Boards can be considered to be groupings of Local Authorities, although around Glasgow a number of Local Authorities are split between Health Boards. Each Health Board is in the process of establishing one or more Community Health Partnerships (CHP) as vehicles for ensuring effective local co-operation of agencies such as local authorities.

Figure 2: Health board and local authority boundaries



h. Community Health Partnerships (CHP)

Local Healthcare Co-operatives (LHCCs) are being developed into CHPs. Under the National Health Service Reform (Scotland) Act 2004 every Health Board is placed under a duty to establish either a CHP for the area of the Health Board or two or more CHPs for districts which, taken together, include the whole area of the Health Board.

It is intended that CHPs will create better results for the communities they serve by aligning with Local Authority counterparts and by playing an effective role in planning and delivering local services. CHP boundaries are determined by each individual health board. A central collection of these boundaries was not discovered during the dimension definition stage of the project – it was not clear if the process had been completed and a stable geography defined. Examples of some defined CHPs defined are given below.

Table 2: Community health partnerships

Health Board - CHP	CHP Count	CHP Notes
NHS Glasgow		
- Glasgow City	5	Western; Northern; Eastern; South West; South East
- East Dunbartonshire	1	Co-terminous with the local authority
- West Dunbartonshire	1	Co-terminous with the local authority - crosses into NHS Argyll & Clyde
- East Renfrewshire	1	Co-terminous with the local authority - crosses into NHS Lanarkshire and NHS Argyll & Clyde
NHS Fife	3	Glenrothes/NE Fife; Kirkcaldy/Levenmouth; Dunfermline/West Fife
NHS Highland	3	North Highland; Mid Highland; South East Highland

The Scottish Executive Health Department has indicated that the exact geographical make up of CHPs has yet to be finally established and that it may take some months to do so.

i. Community Health and Well-Being Profiles

Sixty-six communities across Scotland have been defined for the purpose of producing community health and well-being profiles. These profiles cover the whole of Scotland and provide indicators for a range of health outcomes (e.g. life expectancy, mortality, hospitalisation) and health determinants (e.g. smoking levels, breastfeeding, income, employment, access to services, etc.). This information is intended to inform service providers, planners, policy makers and the public about health issues at a local and national level.

Each community profile contains a compilation of health and well-being indicators for the community as a whole and for postcode sectors within the community. In each case the community has been defined on the basis of either an existing Local Healthcare Co-operative (LHCC) boundary or one of the emerging CHP areas.

Within each community, indicators are also presented at a postcode sector level. The population of a postcode sector averages around 5,000 people, although this number does vary considerably, especially in rural areas where populations may only be in the hundreds; in cases where the populations are particularly small, sectors have been aggregated to produce areas with a larger population for which statistics could be presented.

In order to make each of these “merged sectors” more recognisable each area has been given its own name. The naming process has been carried out largely without detailed local knowledge of areas and the choice of names has been intrinsically subjective. For some areas the choice of name was straightforward (e.g. one large town dominates a sector), while in other areas the selection of an appropriate name was problematic. In some rural areas a number of village names have been used to indicate the extent of an area which has no large town. Equally, in the absence of local knowledge, the naming of neighbourhoods in the centre of cities has been similarly problematic.

As the community areas had to be defined by August 2003, they do not necessarily reflect the emerging primary care organisational boundaries. The use of postal sectors for definition is also problematic. As described above postal geography is not a stable system and this can cause a high degree of complexity in comparing statistics over time.

4. Key indicators

a. Deprivation - Scottish Index of Multiple Deprivation (SIMD)

The SIMD is the Scottish Executive's official tool for identifying small area concentrations of multiple deprivation across all of Scotland and is relevant to policies aimed at tackling the causes and effects of multiple deprivation. The SIMD provides a relative ranking of 6,505 small areas (data zones) across Scotland from the most deprived (ranked one) to the least deprived in Scotland (ranked 6,505).

The methodological approach used to construct the SIMD 2006 is based on the widely accepted methodology developed by Oxford University in their calculation of the *Scottish Indices of Deprivation 2003*. Following an evaluation by Glasgow University in 2005 of the methodology used to create the SIMD 2004, improvements were made to the construction of the SIMD 2006 index.

The SIMD is based on the small area statistical geography of data zones, which for the SIMD 2006 have a median population size of 769 people. The data zone boundaries have remained stable since their creation in 2004 but the population size of a data zone may have changed.

The SIMD is made up of a series of different 'domains'. Each domain represents a different subject area, such as education and consists of a number of indicators which are chosen to efficiently capture deprivation for that domain area.

The SIMD 2006 contains the same domains as the SIMD 2004 (Current Income, Employment, Health, Education, Geographic Access to Services and Housing), with the addition of a new public transport sub-domain in the Geographic Access to Services domain and a new Crime domain, which is a collection of selected recorded crimes linked to deprivation, at a small area level. The SIMD 2006 is based on 37 indicators in seven domains. Updates to the indicators have used the most recent data that was available at the time of construction. In most cases the time lag is less than in the SIMD 2004 and indicators in SIMD 2006 are based mainly on data from 2004 or 2005 with their relevant denominators.

See *Scottish Index of Multiple Deprivation 2006: General Report* (<http://www.scotland.gov.uk/Publications/2006/10/13142739/0>), for further information.

b. Deprivation - Carstairs-Morris DEPCAT

DEPCAT was developed as an indicator of deprivation in the early 1990s [3]. It is based on statistics derived from the census and can be calculated down to quite small population sizes and geographies.

However the work involved in SIMD is regarded as having superseded DEPCAT and data zones are becoming the standard format for reporting small area statistics.

c. Deprivation – SIP/ CPP

The former Social Inclusion Partnership (SIP) Fund was merged with the Better Neighbourhood Services Fund in April 2005 to become the Community Regeneration Fund (CRF). The CRF was allocated to all 32 Community Planning Partnerships (CPP) across the Local Authorities, principally on the basis of the Scottish Index of Multiple Deprivation 2004. The CRF focused on the 15% most deprived data zones in Scotland. This meant that there were four Local Authorities with no apportioned allocation as they had none of the 15% most deprived data zones. These authorities received a floor allocation.

Reporting and analysis of food provision in relation to these 15% most deprived (by SIMD) data zones will therefore be sufficient.

5. Sentinel profiles

a. IS1 - Island mixed/deprived

Table 3: IS1 - Eilean Siar profile

Data zone count	SIMD decile											
SEUR type	1st	2nd	3rd	4th	5th	6th	7th	8th	9 th	10th	Total	Percent
Urban											0	
Other Urban											0	
Accessible s.town											0	
Remote s.town					4	5	1				10	28%
Accessible rural											0	
Remote rural					1	6	13	6			26	72%
Total	0	0	0	0	5	11	14	6	0	0	36	
Percent	0%	0%	0%	0%	14%	31%	39%	17%	0%	0%	100%	

Population (2001 census) = 26,502

Area (sq km) = 2999

Sentinel population density = 9 persons per sq km.

b. IS2 – Island mixed/affluent

Table 4: IS2 - Orkney profile

Data zone count	SIMD decile											
SEUR type	1st	2nd	3rd	4th	5th	6th	7 th	8th	9th	10th	Total	Percent
Urban											0	
Other Urban											0	
Accessible s.town											0	
Remote s.town		1	2	1	4						8	30%
Accessible rural											0	
Remote rural	1	2	1	7	4	2	2				19	70%
Total	1	3	3	8	8	2	2	0	0	0	27	
Percent	4%	11%	11%	30%	30%	7%	7%	0%	0%	0%	100%	

Population (2001 census) = 19,245

Area (sq km) = 989

Sentinel population density = 19 persons per sq km.

c. RA1 – Rural affluent

Table 5: RA1 - Haddington profile

Data zone count	SIMD decile											
SEUR type	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	Total	Percent
Urban											0	
Other Urban											0	
Accessible s.town	2	1		1	2	4	1				11	24%
Remote s.town	2	4	1	1	1						9	20%
Accessible rural	2		6	3	2	1					14	30%
Remote rural	2	1	4	5							12	26%
Total	8	6	11	10	5	5	1	0	0	0	46	
Percent	17%	13%	24%	22%	11%	11%	2%	0%	0%	0%	100%	

Population (2001 census) = 35,582
 Area (sq km) = 557
 Sentinel population density = 64 persons per sq km.

d. RD1 - Rural deprived

Table 6: RD1 - Dornoch profile

Data zone count	SIMD decile											
SEUR type	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	Total	Percent
Urban											0	
Other Urban											0	
Accessible s.town											0	
Remote s.town											0	
Accessible rural											0	
Remote rural				2	4	2	4	1			13	100%
Total	0	0	0	2	4	2	4	1	0	0	13	
Percent	0%	0%	0%	15%	31%	15%	31%	8%	0%	0%	100%	

Population (2001 census) = 7,988
 Area (sq km) = 2,004
 Sentinel population density = 4 persons per sq km.

e. ST1 - Small town deprived

Sentinel ST1 is comprised of four small towns: Kilbirnie, Beith, Dalry and Lochwinnoch. They are located closely together in North Ayrshire and Renfrewshire

Table 7: ST1 - Kilbirnie profile

Data zone count	SIMD decile											
SEUR type	1st	2nd	3rd	4th	5th	6 th	7th	8th	9th	10th	Total	Percent
Urban											0	
Other Urban											0	
Accessible s.town		4		2	1	3	3	5	7		25	86%
Remote s.town											0	
Accessible rural			1		1	1	1				4	14%
Remote rural											0	
Total	0	4	1	2	2	4	4	5	7	0	29	
Percent	0%	14%	3%	7%	7%	14%	14%	17%	24%	0%	100%	

Total sentinel profile

Data zone count	SIMD decile											
SEUR type	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	Total	Percent
Urban											0	
Other Urban											0	
Accessible s.town											0	
Remote s.town		1	2	1	4						8	30%
Accessible rural											0	
Remote rural	1	2	1	7	4	2	2				19	70%
Total	1	3	3	8	8	2	2	0	0	0	27	
Percent	4%	11%	11%	30%	30%	7%	7%	0%	0%	0%	100%	

Population (2001 census) = 21,763
 Area (sq km) = 8.6
 Sentinel population density = 2,531 persons per sq km.

f. ST2 - Small town affluent

Sentinel ST2 is comprised of two geographically separate areas: the towns of Ellon in Aberdeenshire and the town of Cupar in Fife.

Table 8: ST2 - Ellon/Cupar profile

Data zone count	SIMD decile											
SEUR type	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	Total	Percent
Urban											0	
Other Urban											0	
Accessible s.town	10	6	2	2		1		1			22	100%
Remote s.town											0	
Accessible rural											0	
Remote rural											0	
Total	10	6	2	2	0	1	0	1	0	0	22	
Percent	45%	27%	9%	9%	0%	5%	0%	5%	0%	0%	100%	

Population (2001 census) = 17,260

Area (sq km) = 7.1

Sentinel population density = 2,431 persons per sq km.

g. UR1 - Urban affluent

Table 9: UR1 - Broughty Ferry profile

Data zone count	SIMD decile											
SEUR type	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	Total	Percent
Urban	10	14	5	4	1		3		4	1	42	100%
Other Urban											0	
Accessible s.town											0	
Remote s.town											0	
Accessible rural											0	
Remote rural											0	
Total	10	14	5	4	1	0	3	0	4	1	42	
Percent	24%	33%	12%	10%	2%	0%	7%	0%	10%	2%	100%	

Population (2001 census) = 32,734

Area (sq km) = 15

Sentinel population density = 2,242 persons per sq km.

h. UR2 - Urban deprived

Table 10: UR2 - Scotstoun profile

Data zone count	SIMD decile											
SEUR type	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	Total	Percent
Urban	3	4	5			2	10	11	20	42	97	100%
Other Urban											0	
Accessible s.town											0	
Remote s.town											0	
Accessible rural											0	
Remote rural											0	
Total	3	4	5	0	0	2	10	11	20	42	97	
Percent	3%	4%	5%	0%	0%	2%	10%	11%	21%	43%	100%	

Population (2001 census) = 79,368

Area (sq km) = 19

Sentinel population density = 4,091 persons per sq km.

i. UR3 – Urban mixed

Table 11: UR3 - Inverness profile

Data zone count	SIMD decile											
SEUR type	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	Total	Percent
Urban											0	
Other Urban	5	6	12	6	2	4	9	6	2	4	56	97%
Accessible s.town											0	
Remote s.town											0	
Accessible rural		1		1							2	3%
Remote rural											0	
Total	5	7	12	7	2	4	9	6	2	4	58	
Percent	9%	12%	21%	12%	3%	7%	16%	10%	3%	7%	100%	

Population (2001 census) = 44,218

Area (sq km) = 46

Sentinel population density = 972 persons per sq km.

6. Survey methodology

The following provide examples of information given in tabular and map form to the surveyors. Also provided are details of the surveyor recruitment material. The letters and background documents provided to retailers are reproduced. The survey forms used are reproduced. The briefing materials used in the training of surveyors is reproduced. This group of documents represent the

a. Store census

Figure 3: Sample surveyor's store list

SRVYID	STATUS	COMPANY	STORE_TYPE	ADD1	ADD2	TOWN	POSTCODE	MDS
82		Torvean Stores	General store	98 Torvean Avenue		INVERNESS	IV35SW	MS, CSRS
83		Thornbush Stores	Convenience store	45 Thornbush Road		INVERNESS	IV38AB	MS, Yell
84		GB Rodgers	Convenience store	18 Grant Street		INVERNESS	IV38BL	CSRS
85		Harry Gow	Baker	52a Grant Street		INVERNESS	IV38BS	MS
86		MacDonald Stores	Convenience store	44 Grant Street		INVERNESS	IV38BS	CSRS
87		Inverness Mini-Mart	General store	118 Benula Road		INVERNESS	IV38EL	MS
88		Londis (Keith O'Rourke)	Convenience store	Merkinch Stores	1-3 Lochalsh Rd	INVERNESS	IV38HU	MS, CSRS
89		Lochalsh Stores	Convenience store	75 Lochalsh Road		INVERNESS	IV38HW	MS, CSRS
90		Esso Blackpark	Convenience store	CLACHNAHARRY ROAD		INVERNESS	IV38QH	Catalist, CSF
91		Mace Kimmylies General Store	Grocer	2 Charleston Court		INVERNESS	IV38YB	MS, CSRS

STATUS

? = not found

N = New Addition

M = Name Changed

O = Open

C = Shop closed but thought to be still operating.

S = Surveyed

R = Refused permission for survey.

L = come back Later. I.e. permission required from Head Office or to come back when owner or manager present.

X = shop closed down

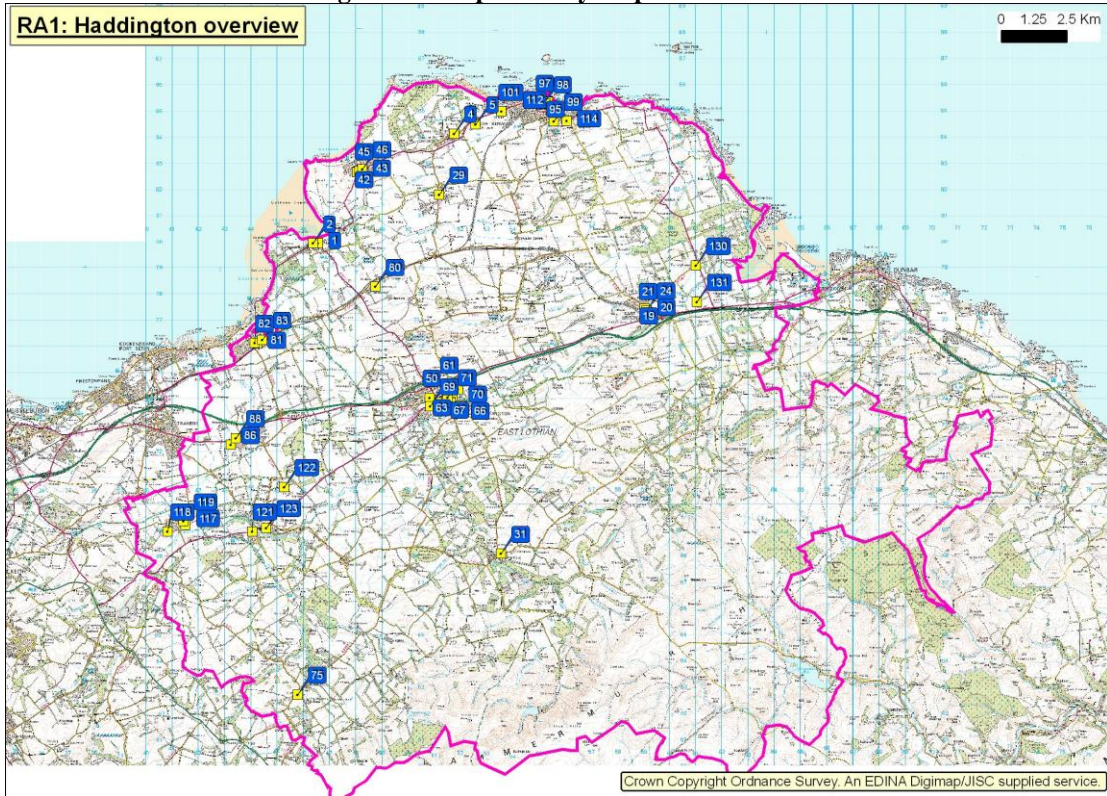
U = shop changed use

Z = Not a food shop. I.e. does not sell any of the food items in the HISB.

More than one status code can be used as appropriate. E.g. NOL means this was a new food shop that was open but wanted the surveyor to come back another time.

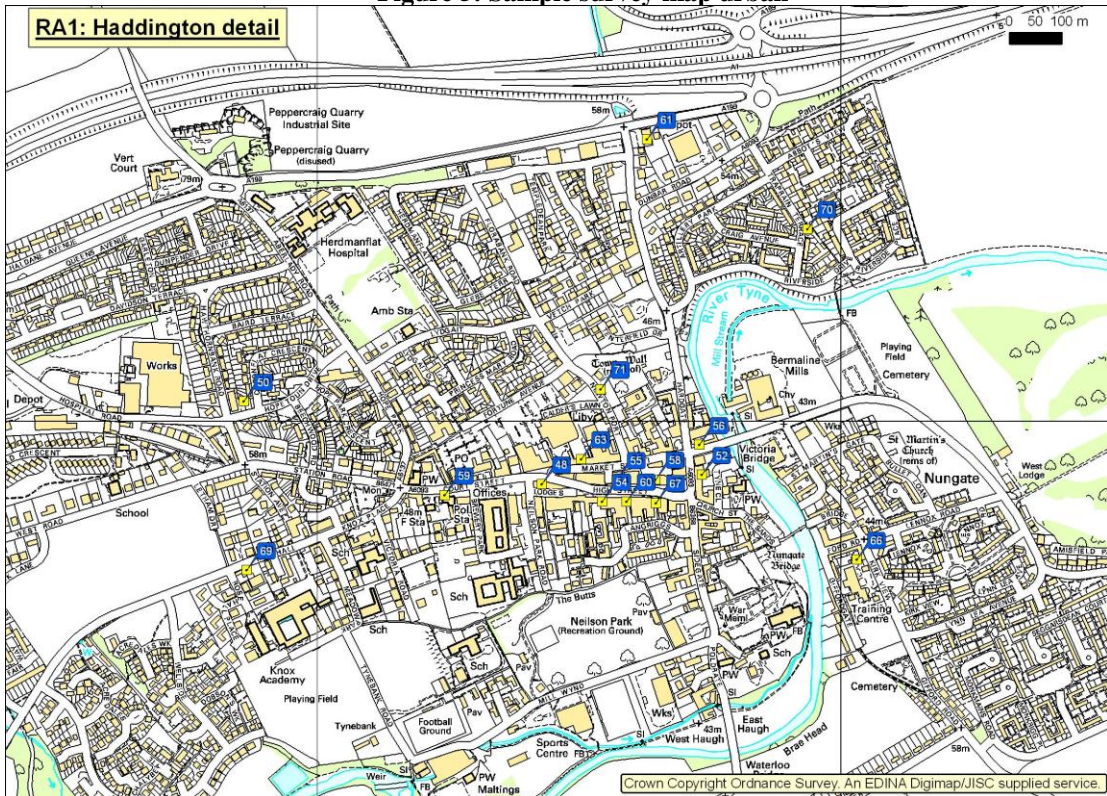
There is a bit of "greyness" between these codes so don't spend more than 1 minute deciding what code something should be – but all shops should have at least one code.

Figure 4: Sample survey map sentinel overview



[The base map tiles are Crown Copyright Ordnance Survey and have been obtained through the EDINA Digimap/JISC service for academic research purposes.]

Figure 5: Sample survey map urban



[The base map tiles are Crown Copyright Ordnance Survey and have been obtained through the EDINA Digimap/JISC service for academic research purposes.]

b. Surveyor documents

Figure 6: Temporary retail surveyor job description.

Temporary Retail Surveyor (TRS)

The TRS is responsible for undertaking primary data collection through visiting shops and carrying out a form-based survey of range-stocking and product-pricing questions. All the relevant food retail outlets within an area will be identified, mapped and surveyed in terms of their type, stocking, pricing and range of healthy food items.

The system will be predominantly paper-based and operating a large-scale map (e.g. 1:5,000 or larger) has been found to provide sufficient accuracy enabling location of retail units to the nearest five metres. Staff will receive induction and data collection methodology training and training in situ through accompanied surveys. Data quality will be maintained through random monitoring (spot-checking) and additional training if required.

Responsibilities:

- * visiting all sites identified on maps and accompanying store lists;
- * identifying, locating and describing sites that are within survey areas but not listed;
- * verifying sites as a suitable survey candidate;
- * liaison with storekeepers to acquire consent for survey;
- * surveying shops through the completion of the data collection form.
- * data entry onto computer spreadsheets
- * such other activity as is required to successfully undertake retail survey work

Abilities:

- * map reading.
- * interpersonal skills for liaison with storekeepers.
- * moderate physical fitness. Surveyors engage in active work, standing for some periods of time and walking some distances in urban areas. They also can be exposed to all types of weather. Travelling is part of the job and surveyors may either commute long distances or may need to stay away from home overnight.
- * keyboard skills and basic spreadsheet skills
- * must have a reliable vehicle.

Surveyors are paid an hourly rate of £8 per hour for less experienced surveyors or £10 per hour for more experience workers. Mileage is reimbursed at 40 p per mile.

Surveyors are responsible for their own food but help is given in arranging lodging. Surveyors usually work an 8-hour day, 5 days a week, and may spend a lot of time outdoors. Sometimes they work longer hours during the summer, when weather and light conditions are most suitable for fieldwork. There is some flexibility therefore in working hours

Figure 7: Retail manager letter (English version)



MANAGEMENT SCHOOL
University of Edinburgh
William Robertson Building
50 George Square
Edinburgh EH8 9JY



FOOD
STANDARDS
AGENCY
SCOTLAND
Buidheann
Inbhe-Bidhe
an Alba

Accessing Healthy Food in Scotland

Dear Retail Manager

The University of Edinburgh is carrying out an important survey of food shopping in Scotland supported by the Food Standards Agency Scotland. Your area has been selected for detailed study with all food shops in the area being surveyed. Today we would like to survey your shop. In total we are surveying approximately 500 different shops across the whole of Scotland - from small corner stores to large supermarkets.

Any data we record from surveying in your shop will be kept confidential and your shop will not be identified in the research produced.

The surveyor has a list of 35 healthier food products that we wish to evaluate for availability and price, using a simple form. They will take great care to avoid any disruption to your customers or staff.

If you have any questions please do not hesitate to ask the surveyor. If they are unable to answer your questions, please contact one of the project researchers whose details are provided on the summary sheet.

We would appreciate your participation in this survey and thank-you in advance for taking part.

Yours faithfully

Handwritten signature of Prof John Dawson in black ink.

Prof John Dawson
Professor of Marketing
University of Edinburgh

Handwritten signature of Dr Anna Whyte in black ink.

Dr Anna Whyte
Head of Science
Food Standards Agency Scotland

Figure 8: Retail manager letter (Gaelic version)



MANAGEMENT SCHOOL
University of Edinburgh
William Robertson Building
50 George Square
Edinburgh EH8 9JY



A' Ruigsinn Air Biadh Fallain ann an Alba

A Mhanaidseir Bùtha chòir

Tha Oilthigh Dhùn Èideann a' dèanamh sgrùdadh cudromach air ceannachd bidh ann an Alba, le taic bho Buidheann Inbhe-Bidhe an Alba. Chaidh an sgìre agaibh a thaghadh airson rannsachadh mionaideach anns am bì a h-uile bùth-bhidh air a sgrùdadh. Bu mhath leinn sgrùdadh a dhèanamh air a' bhùth agaibhse an-diugh. Uile gu lèir tha sinn a' dèanamh sgrùdadh air mu 500 buth air feadh na h-Alba – bho bhùitean beaga còrnair gu mòr-bhùitean.

Thèid fiosrachadh sam bith a chlàras sinn ri linn sgrùdadh ur bùtha a chumail diomhair agus cha tèid ur bùth ainmeachadh anns an rannsachadh a bheirear a-mach.

Tha liosta de 35 toraidhean bidh nas fallaine aig an neach-sgrùdaidh agus bu mhath leinn faighinn a-mach a bheil iad rim faighinn agus, ma tha, dè a' phris a tha orra, a' cleachdadh foirm simplidh. Nì e/i an dicheall gus dèanamh cinnteach nach cuir e/i dragh sam bith air an luchd-obrach no air an luchd-cheannachd agaibh.

Ma tha ceistean sam bith agaibh nach cuir sibh air an neach-sgrùdaidh iad. Mura tèid aige/aice air am freagairt, nach cuir sibh fios gu aon den luchd-rannsachaidh a tha air an ainmeachadh air an duilleig gearr-chunntais.

Bhitheamaid fada nur comain nam biodh sibh deònach a dhol an sàs anns an rannsachadh seo agus tha sinn a' toirt taing dhuibh airson pàirt a ghabhail ann.

Le meas

Anna Whyte

Prof John Dawson
Professor of Marketing
University of Edinburgh

Dr Anna Whyte
Head of Science
Food Standards Agency Scotland

Figure 9: Background summary

Accessing Healthy Food - A National Assessment of Food Retailing in Scotland

Introduction

People in Scotland live and shop under a wide range of different circumstances. These can vary from highly populated urban environments in major towns and cities to remote rural and island communities. The provision of food for consumption at home also varies tremendously. Suburban car users living in central Scotland may have several large supermarkets to choose from within a 30 minute drive of their homes, as well as numerous smaller specialist food shops. In comparison shopkeepers serving remote rural residents may face difficulties in attempting to stock a wider range of healthier food. Non-car users living in some more-deprived urban areas may also struggle to access a reasonable range of food items, especially those that can be considered to be healthier food.

The idea that people may have poor access to food, so-called “food deserts” has been of importance to social health researchers since the mid 1990s. However in Scotland there have been only a few studies of food access in particular local urban and rural environments which have produced few firm conclusions. There is very little evidence of systematic differences in food retailing, price and availability at the national level

Nationwide Survey

In 2003 the Food Standards Agency Scotland (FSAS) published its Diet and Nutrition Strategy to highlight its role in implementing the Scottish Diet Action Plan. Of major importance was how FSAS wished to improve food access in Scotland and in particular to increase access to healthier food choices, particularly in low income and rural areas.

To assist in this the Centre for the Study of Retailing in Scotland (CSRS) is conducting a major research project to provide a comprehensive and scientifically valid national assessment of access to healthy food in Scotland. Previous research studies will guide the proposed project but their approach and instruments will need to be adjusted to make them relevant to the Scottish situation, e.g. recognition of urban multi-storey living; wide variation of scales from urban to rural and island; a diverse range of retail providers and transport mechanisms. The research is focused on physical access to healthy food and whilst there are many other influences on a healthy diet, for example culture and cooking skills, these other influences will not be considered directly in this project. Previous research on these topics will inform the current research and will provide useful complementary knowledge.

This project will provide a robust evidence base that will inform policy decision-making and identify the types of area that have particular access problems for targeted intervention. It will provide a national map of food retailing and describe how availability, access and price vary using local case study sites. These sites will be known as sentinels. The sentinels will be chosen to be nationally representative but will be focused on more deprived areas. The project is designed so that, if the need exists, it can be used as the basis for an ongoing surveillance system of food access in Scotland.

Healthy Baskets

To enable a nationwide comparison of healthy food availability and prices a standard set, or basket, of products must be compared. These products will be chosen to represent healthy food across the range of different food groups, e.g. cereals, dairy, fish, fruit, meat, vegetables, etc. The basket will be designed to take account of local tastes and will avoid being overly prescriptive. Using these baskets access to and prices of healthy food will be surveyed.

Surveying Retail Providers and Transport Mechanisms

Within sentinels the wide range of different means of buying food will be surveyed. This will ensure that account is taken of whether people walk, or use a bus or car or other transport to buy food and also what type of food retailer is available. The food retail mechanisms surveyed will be extensive and will include,

but not be limited to, supermarkets, convenience stores, specialist food shops, delivery vans, box schemes, and farmers markets.

Contractors

The work programme will be based in the University of Edinburgh, which is the lead contractor, together with the University of Stirling, Queen Mary – University of London and the University of Dundee. It will be managed and delivered by the Centre for the Study of Retailing in Scotland (CSRS), utilising inputs from leading experts in the fields of public health and nutrition and Geographic Information Systems (GIS) technology. CSRS is an independent, SHEFC funded organisation established in 2002 to provide a resource to support and develop research on retailing in Scotland.

The proposed research is an ambitious programme of work with the aim of providing considerably greater understanding of accessing healthy food across Scotland. The proposed research will also seek to make recommendations for further research avenues of value to FSAS.

Key Contacts

For further information please contact a member of the project team given below:

- Contact names

END.

Figure 10: Sample head office letter

8 November 2005



Corporate Relations
Aldi Stores Ltd
Junction 4/M8
Bathgate
West Lothian
EH48 2EA

Matt Taylor
Management School
University of Edinburgh
William Robertson Building
50 George Square
Edinburgh EH8 9JY

Accessing Healthier Food in Scotland

Dear Sir/Madam,

The University of Edinburgh is carrying out an important survey of food shopping in Scotland supported by the Food Standards Agency Scotland. A number of areas across Scotland have been selected for detailed study with all food shops in the area being surveyed. We would like to include Aldi branches in these surveys if they are present.

For this to happen I understand that your store managers will require authorisation from head office before we may survey in-store. I am therefore writing to you requesting this authorisation.

Surveyors will have a list of 35 indicator healthier food products that we wish to evaluate for availability and price, using a simple form. They will take great care to avoid any disruption to your customers or staff. Any data we record from surveying in Aldi will be kept confidential and any individual branch, or Aldi in general, will not be identified in the research produced.

For more background I have included a summary sheet on the project. If you have any further questions please contact myself or one of the other project researchers whose details are provided on the summary sheet.

We would appreciate your participation in this survey. Please could you confirm this in writing to myself at the address above.

Yours sincerely,

Matt Taylor
Research Fellow
University of Edinburgh

Figure 11: HEISB data collection form

ID No:

Date:

Store Name:

Time:

[Fascia]:

Access:

Store Address:

Product Description	Stock?	Actual weight/unit used	Price per weight/unit used	Quality	Variety !! Detail of Substitute	Promotion?
Note: need to answer "any organic produce?" question at end of section.						
Apples – eating loose						
Bananas - medium loose						
Grapes (white) - bunch						
Oranges - medium loose						
Potatoes - white loose						
Onions - medium brown loose						
Carrots - medium loose						
Broccoli - loose						
Round Lettuce single						
Red Peppers - loose						
Tomatoes - loose medium						
Cucumber – single whole						
Any organic produce?	YES / NO Please delete as appropriate					
All or some fruit and vegetables in chiller unit?	YES / NO Please delete as appropriate					

Product Description	Stock?	Actual weight/unit used	Price per weight/unit used	Brand	Detail of Substitute	Promotion?
Weetabix 24-pack				Weetabix		
Porridge oats 1 kg						
Pure Orange Juice (UHT) 1 l						
Spaghetti (dry) 500g						
Long Grain White Rice 500g						
Brown Rice 500g						
Sweetcorn 198g tin, low salt/sugar						
Baked Beans 415g tin						
Pineapple 227g tin						
Brown rolls 6-pack						
Wholemeal bread 800g						
Frozen Peas 907 g						
Frozen Berries 454g						
Oven chips 907 g						
Birds Eye Lasagne meal				Bird's Eye		
Fresh Chicken breasts, 2-pk						
Fresh Beef mince lean, 500g						
Fresh Salmon fillets, 2-pk						
Fresh Haddock fillets, 2-pk						
Semi-skimmed milk 1 l						
Skimmed milk 1 l						
Fruit Yoghurt low fat 125g						
Low fat Spread 500g						

ID No:

Store Name:

Opening Hours: Please complete the table below for the shop opening hours.

If the shop does not close for lunch please indicate this by putting dashes in columns Close(am) and Open(pm).

If the shop is open 24 hours please simply write 24 hours.

	Open (am)	Close (am)	Open (pm)	Close (pm)
Monday				
Tuesday				
Wednesday				
Thursday				
Friday				
Saturday				
Sunday				

Name of Fieldworker:

Signature of Fieldworker:

Figure 12: Notes on completion of HEISB form

Surveyors Notes for Use with Store Healthy Indicator Basket Survey

ID No - Record ID number from the store list and the map.

Store Name - Must be recorded

Date - Day and month. Must be recorded

Time - Time of day that the survey commenced. Must be recorded

Fascia:

Record eg Spar, Mace, Premier, NISA, Londis, Key Store, etc. also sometimes known as the symbol group.

Access:

We are trying to get an indication of disabled access for a wheelchair user.

N, S or F.

N = None or no provision for wheelchair access: e.g. if a step more than 2 cm height or a closed, opaque door, and no means of requesting assistance. A wheelchair user would find it **impossible** to gain access without assistance.

S = Some provision: e.g. phone or intercom from street for wheelchair user to call for assistance. A wheelchair user would find it **difficult** to gain access without assistance.

F = Full provision for wheelchair access: automatic doors or doors always open, no step from street or specific gently inclined wide-enough ramp. A wheelchair user would find it **straightforward** to gain access without assistance.

Store Address - Only record if different from that on the store list.

Products: All stock recorded should be for the cheapest item available.

Stock? (Stocking situation)

Is the product stocked and available in the store?

Only one code to be used from this choice of four:

I = In stock

O = Out of stock, awaiting delivery – still record details for that product as normal.

S = Substitute recorded – record details for the substitute.

X = Not stocked and no close substitute. Do not record any further data.

These codes are mutually-exclusive – i.e. a product can only ever be in one, and one only, of these four classes. I.e. it can only be I or O or S or X.

Actual Weight/Unit Used

If a specific weight of product is required then this has been given in the product description. If the specific weight of product is not stocked, record information on 1st substitute, and if that is not stocked 2nd substitute. If exactly the right weight or unit has been found then just tick this box otherwise please enter the weight/unit size that you have found a price for.

If fruit and vegetables are loose record the price per kilo (kg). For fruit and vegetables that are packed either in a bag or box please record the pack weight and price.

Price per Weight/Unit Used - Enter price and £ or p clearly.

Note: If a special promotion is on a product record the current (i.e. promotion) price charged but also record in the 'Promotion' section the details of the promotion and the "normal" price. E.g. if beans are 10p off at 39 p. Record 39 p in the Price column and in the Promotions column record "10p off normally 49p"

Brand

Record the brand e.g. Del Monte, Birds Eye, Tesco Value or Co-op if requested.

Variety/Type

Record the variety or type e.g. Golden Delicious, Granny Smith or Late Navel oranges. This is especially important for apples. If no variety given then a relative size is useful.

Quality - See attached notes

Detail of Substitute

If the specific product is not stocked, or out of stock, record information on 1st substitute, and if that is not stocked 2nd substitute.

Promotions

Record if and what promotions are available on an item. These can range from BOGOF, to pack flash prices, to shelf barkers, etc.

Detailed Product Notes

If fresh produce items are priced per item, rather than by weight, please estimate the size – diameter or length as appropriate.

Typically the substitutes work with a different pack size as the first sub and sometimes a slightly different product as the second sub. Any subs must always maintain the healthier aspect of the original product.

Food Item	Description	Preferred Weight or Unit	1 st Sub	2nd Sub
FRESH PRODUCE				
Apples	Fresh loose eating apples – green or red (excluding cooking apples).	Per kg	Pre-packed eating apples	NONE
Bananas	Fresh loose medium size.	Per kg	Small or large size loose.	Pre-packed.
Grapes (white)	Fresh unseeded loose or packaged (“White” grapes are the pale green ones in actual colour)	Per kg	Seeded white grapes	Red or black grapes (seeded or unseeded).
Oranges	Fresh, loose, medium orange.	Per kg	Pre-packed medium oranges.	Other e.g. tangerines, satsumas, clementines, record variety.
Potatoes	White general purpose, loose.	Per kg	Pre-packed general purpose white potatoes.	Red potatoes – loose or packed.
Onions	Medium sized brown onions, loose.	Per kg	Large brown loose onions.	Pre-packed brown onions.
Carrots	General purpose, loose, medium size.	Per kg	Pre-packed general carrots.	Frozen carrots.
Broccoli	Fresh, loose	Per kg	Pre-packed.	Frozen
Lettuce	Fresh single round lettuce	Per lettuce	Iceberg	Other type, record variety
Red Pepper	Fresh loose common red capsicum.	Per kg	Loose green pepper.	Pre-packed peppers.
Tomatoes	Fresh loose medium sized, general tomato.	Per kg	Pre-packed medium	Other fresh tomato – record variety.
Cucumber	Fresh, single cucumber.	Per cucumber	Cucumber portions	NONE
Any organic	Simply answer Yes or No if any varieties of organic produce were for sale.			

produce?				
Fruit and vegetables in chiller unit?	Simply answer Yes or No if any fruit and vegetables are in a chiller unit? [Not counting freezer units.]			
Food Item	Description	Preferred Weight or Unit	1st Sub	2nd Sub
DRY PACKAGED GOODS				
Weetabix	Weetabix wheat cereal only	24 pack	12 or 36 or 48 or 72 pack.	NONE
Porridge oats	Plain dried oats- no additions or flavours	1 kg pack	Other pack size	Loose.
Pure orange Juice (UHT)	UHT (from conc) 100% pure orange juice.	Per litre	Fresh (from concentrate)	NONE
Spaghetti, (dry)	Dry pasta 100% durum wheat	500g pack	Other pack size	Macaroni or other type dry pasta – record type.
Long grain white rice	Normal cook	500g pack	Other pack sizes inc loose.	Basmati rice.
Brown rice	Normal cook	500g pack	Other pack sizes inc. loose.	NONE
Tinned Sweetcorn (low sugar and salt)	Low sugar/low salt	198g tin	Any other size of tin	Other low sugar and low salt canned vegetable – record type.
Tinned Baked Beans	Ordinary baked beans in tomato sauce.	415g tin	Any other size of tinned baked bean.	Other tinned beans (not with meat) – record type.
Tinned Pineapple	Canned in own juice	227g tin	Any other size of tin	Other canned fruit in juice
Food Item	Description	Preferred Weight or Unit	1st Sub	2nd Sub
BAKERY				
Six (6) brown rolls	Made from 100% wholemeal flour		If not 6 packs then individual rolls or price per roll for loose items	Any (brown) granary Rolls
Wholemeal loaf	Made from 100% wholemeal flour	800g loaf	Any other size of wholemeal loaf	Any other brown loaf
Food Item	Description	Preferred Weight or Unit	1st Sub	2nd Sub
FROZEN				
Peas	Frozen bagged peas or petit pois.	907g	Any other pack size	Any other frozen veg
Berries	Frozen raspberries.	454g	Frozen berry mix	
Oven chips	Low fat (less than 5% fat by served/cooked weight).	907g	Any other pack size	Any other oven chips
Birds Eye Frozen Lasagne	Frozen ready meal Record type of ready meal, any weight variation	400g	Birds Eye Roast Beef dinner	NONE
Food Item	Description	Preferred Weight or Unit	1st Sub	2nd Sub

CHILLED MEAT AND FISH				
Chicken 2-pack	Boneless, skinless breast	Per kg	Breast with skin on	Frozen breasts.
• Record weight if available and number of portions if not 2-pack.				
Beef mince (lean) 500g	Beef mince labelled as lean or 7% fat	Per kg	Any other pack size	Frozen lean or 7% fat beef mince
Salmon 2-pack	Fresh salmon fillets	Per kg	Frozen salmon fillets	
• Record weight if available and number of portions if not 2-pack.				
Haddock 2-pack	Fresh unbreaded haddock fillets.	Per kg	Frozen unbreaded haddock fillet	Breaded haddock (fresh or frozen)
• Record weight if available and number of portions if not 2-pack.				
Food Item	Description	Preferred Weight or Unit	1st Sub	2nd Sub
DAIRY				
Semi-skimmed milk	Fresh 1 litre or 2-pints (1.136 litre) – note which.	Per litre	Fresh – another pack size	UHT
Skimmed milk	Fresh 1 litre or 2-pints (1.136 litre) – note which.	Per litre	Fresh – another pack size	UHT
Yoghurt, low fat fruit	Fresh – single pot	125g	Sterilised low fat fruit yoghurt.	Low fat plain yoghurt.
Low fat spread	Made from PUFA maximum fat content 41%	500g	E.g. Flora Light counts, Flora Original doesn't.	

ID and Store Name: Record these details again – in case sheets get detached.

Store Hours - Record the hours as requested.

Name and Sign - Then finished!

Figure 13: Product-specific quality scales

Fresh Fruit and Vegetables - Quality measures

Apples – loose eating

High/Good: good strong intense bright red/green colour, no blemishes, bruises or marks, firm product, tight skin.

Medium/Acceptable: good red/green color for variety, occasional blemish, perhaps a few marks, no bruises, firm product, looks good.

Low/Poor: weak red/green colour, marks, blemishes, bruised, blackened, soft, wrinkled/wilted skin, looks like it should be eaten immediately.

Bananas – medium loose

High/Good: strong green/yellow colour, no black marks or blemishes, bruises, product firm

Medium/Acceptable: predominantly yellow/green stalk, occasional blemish, perhaps a few marks, no bruises, firm product, looks good.

Low/Poor: brown marks on skin, blackening, wizened stalk, other blemishes, products feel soft, looks like it should be eaten immediately, or used for cooking.

Grapes (white) – bunch

High/Good: bright green/white colour, well formed grapes, no deformed or wizened fruit, full stalks, no blemishes, moulds, fruit feels firm, looks succulent.

Medium/Acceptable: green/white colour, full bunch of grapes, one or two deformed/wizened grapes, occasional blemish/would, firm fruit, tight skin.

Low/Poor: dull green/white colour, grapes looking wizened/dried out, blemishes, moulds on some grapes, feel soft, some juice loss, loose grapes off stalk, soft to touch, some blackening .

Oranges – medium loose

High/Good: good strong intense bright orange colour, no blemishes, defects or marks, good shape for variety, smooth skin.

Medium/Acceptable: good orange color for variety, occasional blemish, defects or marks, smooth skin no wrinkling or drying, fruit firm.

Low/Poor: dull orange colour, skin dried and wrinkled, fruit soft, bruising, breaks in skin, juice leakage.

Potatoes – white loose

High/Good: no bruised or marked potatoes, firm product, no broken skin.

Medium/Acceptable: still firm product but not ‘rubbery’ feel, perhaps a few marks, no bruises.

Low/Poor: colour deterioration, produce feels soft, rubbery, dried out, skin wrinkled, evidence of product deterioration, sprouting.

Onions – loose medium brown

High/Good: bright, good colour, no blemishes, bruises or marks, firm product, skin intact.

Medium/Acceptable: occasional blemish, perhaps a few marks, no bruises, firm to touch.

Low/Poor: marks, blemishes/moulds, bruised, brown/black blotches, defects, greening of fleshy scales, leathery skin, soft to touch, product dried out.

Carrots – medium loose

High/Good: good bright orange colour, uniform size, straight products, firm, no split or cracked products.

Medium/Acceptable: good colour, reasonably straight, tolerable size variation, occasional marks, but no browning.

Low/Poor: weak/dull colour, browning on vegetable, product not firm, rubbery feel (bends), wrinkled, hairy skin, drying out, sprouting.

Broccoli – loose

High/Good: good dark green colour, uniform size of head, firm, no mechanical damage, or marks.

Medium/Acceptable: good green colour, fairly consistent size, occasional marks, but product is firm, no colour change in the head (slight purple tinge is acceptable), dried out stalks.

Low/Poor: yellow/black colour, stalk dried out, flaccid product, rubbery feel, evidence of damage or marks..

Round Lettuce – single

High/Good: good bright light green colour, round head, crisp turgid feel/appearance, clean, no blemishes, or browning of leaves.

Medium/Acceptable: light green colour, no browning, occasional blemish, or dirt. Low/Poor: weak colour, product looks ‘flacid’, leaves not firm, water loss, brownig on leaves, soil and mud on product (not clean), evidence of slugs, insect damage, spotting, brown stain.

Red Peppers – loose

High/Good: good strong intense bright red colour, uniform shape and size, firm, free from cracks decay, mould, fungi, clean, no blemishes, bruises or marks, firm crisp product, tight skin.

Medium/Acceptable: good red color, mixed sizes, occasional blemish, no bruises, or soft marks, firm product.

Low/Poor: soft product, brown marks, blemishes, moulds, wrinkled/wilted skin, product drying out.

Tomatoes – loose standard medium

High/Good: bright green/red colour, consistently sized products, no blemishes, bruises or abrasions, firm turgid product, shiny skin, no abrasions.

Medium/Acceptable: shiny red color (90%) for variety, no bruising, slight size variation, firm product, occasional blemish, perhaps a few marks, no bruises.

Low/Poor: dull red colour, marks, blemishes, bruised, product feels soft, skin not turgid, but wrinkled/wilted, .

Cucumber – single whole

High/Good: good dark green colour, uniform size, rigid and straight products, no pitted or wrinkled products i.e. pinched ends, no blemishes or marks.

Medium/Acceptable: dark green colour, fairly straight, tolerable size variation, occasional marks, but no browning, or skin damage/lacerations.

Low/Poor: weak colour, yellowing, water saked areas of flesh from bruising , surface pitting, rubbery feel (bends), wrinkled, drying out, moulding.

Old Form:

Strawberries – box/punnet

High/Good: bright red colour, large firm fruit, no blemishes, bruises, or deformed fruit, no mould or juice in punnet, 2/3 days shelf life (sell by/use by dates – where available)

Medium/Acceptable: good red colour, well shaped fruit, some smaller or occasional mis-shapem fruit, occasional marked fruit, firm fruit, 1/2 days shelf life (sell by/use by dates – where available)

Low/Poor: dark, deep red fruit, blemishes, marks, moulds, bruised fruit in punnet, soft fruit, juice in punnet, no shelf life at or past sell by/use by dates(where available)

Figure 14: Surveyor overview

Healthier Eating Indicator Survey Basket (HEISB) Surveyor's Overview Sheet

1. Overview

Diet and Health is a key health improvement target for Scotland.

Scottish Diet Action Plan (SDAP) introduced 10 yrs ago to improve diet

Food Standards Agency (Scotland) - FSAS - 1 of government agencies responsible for implementing SDAP.

FSAS want to establish a national retailing map of access to healthy food to understand if this is an issue for diet.

[Please see the Background Summary document for more detail]

2. Survey Days

Friday and Saturday may not be good days as shopkeepers are more likely to be busy and tired and not wanting to be hassled.

For the same reasons mornings are much better than afternoons.

Although for bakers mornings can be v.bad.

Sundays are not good in the islands (especially Lewis/Harris) or remote areas.

But Saturdays and Sundays are necessary to catch markets at the weekend.

3. Approach to Shop

Conducting research into food retailing to help develop policy to improve Scotland's diet and health

Anonymous survey of all sorts of different food shop

The project is looking at the whole of Scotland but is doing focused research on 10 key representative areas.

Your area has been chosen as being a representative [choose the correct 1 or 2 island | rural | small town | urban] area within Scotland

All food shops in your area are being surveyed

+ some large ones outside the area

+ market stalls

+ food vans (e.g. fishmongers)

+ community food groups

+ significant online retailers

No shops will be identified individually

No companies will be identified individually

This area will not be named within the research – just reported as a [island | rural | small town | urban] area within Scotland

The sponsors are the Food Standards Agency Scotland (FSAS) but it is independent research by the University of Edinburgh

4. Area Survey

The purpose of surveying on the ground is to both conduct the survey instore but also to verify the list of shops to be surveyed.

The shop list has been built from a number of national and local data sources however it will not be 100 % accurate.

It is expected that there will need to be inclusions and exclusions to the list due to new shops opening or existing shops closing or changing use. [NB The shops highlighted in yellow on the list were taking part in a healthy neighbourhood eating project sponsored by the Scottish Executive Health Department originally known as the Wise Foods Initiative. The two projects are quite separate and the "Wise Food" shops will be surveyed in the same way as other shops.]

The Status of the shop on the list should be indicated in the Status column.

Shop Statuses:

? not found
C shop Closed but thought to be still operating. Inc summer only sales.
D Duplicate (state which it is a dupe of).
L come back Later. I.e. permission required from Head Office or to come back when owner or manager present.
M naMe Changed
N New addition
R Refused permission for survey.
S Surveyed
U shop changed use
X shop closed down
W Wholesaler, warehouse, distribution depot.
Z Not a food shop. Zero food items. I.e. does not sell any of the food items in the HISB. Applies to restaurants, coffee shops, care homes, etc.

More than one status code can be used as appropriate. There is a bit of “greyness” between these codes so don’t spend more than 1 minute deciding what code something should be – but all shops should have at least one code.

5. Locating shops

The approximate location of shops are identified on the maps by the yellow squares.

The location is approximate because the postcode has been used to plot their location. The point used is the centre of the postcode and as a number of actual buildings may share postcodes then the shop could be in any of those buildings.

In urban areas the difference may be none, very little or up to approx 50m

In rural areas it COULD be MUCH larger - e.g. POSSIBLY up to KM !!!!!

NB The shop list data will not be perfect.

Streets typically, but not always, numbered odd on one side and even on other.

Low numbers are typically towards the centre of a settlement.

Sometimes can have different names over different stretches and even on different sides of the street.

E.g. in Glasgow the A814 is called the Dumbarton Road; as soon as the local authority changes to West Dunbartonshire it becomes called the Glasgow Road !

6. Basket survey

+ not all shops will stock all products - therefore some, e.g. bakers, will be very quick - 5 mins, whereas others, e.g. Tesco Extra, may take 45 mins.

Key Emphasis

- lot of detail in surveyors notes!
- NB importance of recording the variety (or relative size) of fresh produce - especially apples !
- MUST be LOW salt/sugar sweetcorn (or other tinned veg).
- CHECK brown bread is 100% wholemeal as the first choice

Potential Problem Questions

Q. “Where is your ID?”

A. Give the letter on headed paper. Point out the numbers on the last page of the background document for people to phone for verification. The University switchboard is 0131-650-1000 if people want to be doubly careful.

Q. “The manager’s not here - we can’t give permission.”

A. Do you have a contact name and number for the manager?

When will the manager be here?

[at this point there may be an opportunity, especially in smaller shops e.g. bakers, to point out that you only want to check the prices on a couple of items and check their opening hours and that will be it]

Q. “We are not interested.”

A. This research will feedback into developing policy with the specific aim of improving the diet, and thereby health, of the whole nation. Everyone should be interested. It will not take any time from you as the shopkeeper.

Q. “We don’t want to take part”

A. Politely try to find out why. Comment that all other shops in area are participating.

[there may be an opportunity to point out that shops will stand out more if they refuse to take part than if they don’t mind... be careful – this is a possibly tricky tactic!]

Another point is that as this research will be feeding back into policy development, anonymous info collected from your shop may help, ultimately, in improving your retail position.

E.g. for larger multiple stores can point out their contribution to overall supply of healthier food will be confirmed which can only help their position with local authorities and central government.

For smaller stores policy resulting could lead to developments to help them stock healthier food thereby helping them compete with larger stores and sell more to customers.

Ultimately for all shops if we don’t collect information from the shop then their role in serving the local community will not be recognised.

7. Contact Details

Name 1

Tel:

Mbl:

Or

Name 2

DL

Mbl

END.

7. Pilot survey

a. Introduction

A pilot survey was established to test the methodology constructed as part of project objective 3. Twenty-five shops [Midlothian – 12; Dundee – 11; Highlands – 2] were surveyed for the pilot covering a full range of sizes and types from small local convenience stores, to travelling vans, frozen food retailers, supermarkets and specialist retailers. The pilot was undertaken in the second and third weeks of August 2005.

This section summarises the main key issues found whilst conducting the survey and ensuing data capture.

b. General introductory letter and background summary

Most shopkeepers accepted the introductory letter and information summary and said they had no problem with a survey being conducted. A few company managers stated that it was company policy for such surveys to be authorised by head office although this did not happen consistently within companies.

In most cases, consent was speedily given by managers or by head offices.

Some specific comments were made by shops which were used to enhance the training and approach material.

c. Store information

All general text notes about a store were captured into free text fields in Access. This data is available for future analysis.

Specific fields were introduced to capture more information on details of stores, e.g. symbol group and disabled access as well.

Data from store opening times was keyed as collected. Derived variables such as “total hours open per week” or “open on a Sunday” were calculated subsequently.

d. Product information

There was some confusion over the use of the stocking codes. The training was enhanced to cover this issue. The notes were adapted to fully explain this also.

Queries over “Ordered to request” were answered by emphasising that the focus of the project was on what products were normally stocked. Therefore in these situations a substitute product was checked, otherwise products were recorded as an X.

Identifying substitution due to packaging, variety or close product was handled at the data-keying stage. Clear guidance on substitutes was available in the supporting documentation and was reiterated in field force training

Size data was recorded and keyed in two fields of quantity and unit.

Products included in the survey which were on promotion required the promotion price to be recorded to record the price paid at the time of the survey. Specific details of the promotion were recorded in the promotion column.

Products sold on a per count basis rather than weight, e.g. 25 p per apple, had price and units recorded as per normal. Size was then estimated to enable the price-per-unit calculations.

The product specific quality guide was found to be quite clear. The use of visual prompts was not felt to be necessary. The use of "uniform size and shape" to distinguish between high and lower quality food was queried since this aspect does not affect nutritional value. Many aspects of quality, however, do not affect nutritional quality but have been included as they affect consumability. The term "uniform size and shape" remained in the description as they are quality issues for some consumers and producers.

Specific product notes are provided in Table 12 below.

Table 12: Specific product notes

Food Item	Description	Preferred Weight or Unit	1st Sub	2nd Sub
Apples	Fresh loose eating apples – green or red (excluding cooking apples)	Per kg	Pre-packed eating apples	NONE
<ul style="list-style-type: none"> Estimate size if priced on a per apple basis. 				
Bananas	Fresh loose medium size	Per kg	Small or large size loose	Pre-packed.
<ul style="list-style-type: none"> Estimate size if priced on a per banana basis. 				
Grapes (white)	Fresh unseeded loose (“White” grapes are the pale green ones in actual colour)	Per kg	Seeded white grapes	Red or black grapes (seeded or unseeded)
Strawberries	Fresh in box or punnet	Per kg	Frozen raspberries or berry mixture	NONE
<ul style="list-style-type: none"> Tinned strawberries removed as a substitute as not healthy. 				
Oranges	Fresh, loose class 1	Per kg	Tangerines	Satsumas, clementines
<ul style="list-style-type: none"> Estimate size if priced on a per orange basis. 				
Potatoes - loose	White general purpose	Per kg	Pre-packed general potatoes	New potatoes
Onions -	Medium sized brown	Per kg	Large	Pre-packed

loose	onions		brown onions	brown onions
Carrots - loose	General purpose	Per kg	Pre-packed carrots	Frozen carrots
Broccoli	Fresh, loose	Per kg	Pre-packed	Frozen
Lettuce	Fresh single round lettuce	Per lettuce	Iceberg	Other type, record variety
Red Pepper	Fresh loose common red capsicum.	Per kg	Green Pepper	Other colour, record type
<ul style="list-style-type: none"> Estimate size if priced on a per pepper basis. 				
Tomatoes	Fresh loose medium sized	Per kg	Cherry	Plum
<ul style="list-style-type: none"> Removed class I stipulation as not relevant to “healthy” requirement. 				
Cucumber	Fresh, single cucumber.	Per cucumber	Cucumber portions	
Weetabix	Weetabix wheat cereal only	24 pack	12 or 48 pack	
<ul style="list-style-type: none"> Is own-label acceptable? Do we mean any brand? How do they compare nutritionally? No other substitutes. Only Weetabix has a known healthy sodium level. 				
Porridge oats	Plain dried oats- no additions or flavours	1 kg pack		
<ul style="list-style-type: none"> Pilot study found 1kg was most common pack size not 500g 				
Pure orange Juice (UHT)	UHT (from concentrate) 100% pure orange juice.	Per litre	Fresh (from concentrate)	
<ul style="list-style-type: none"> Is Tropicana or any other fresh orange juice an acceptable substitute? NO: Tropicana and other fresh orange juices are not cheap healthy alternatives. We are focused on cheap healthy food. 				
Spaghetti, (dry)	Dry pasta durum wheat	500g pack	Macaroni	Other type dry pasta
Long grain white rice	Normal cook	500g pack	Other pack sizes	
<ul style="list-style-type: none"> Are “Basmati” or “easy cook” acceptable substitutes? Basmati is an acceptable substitute as it is still relatively cheap and would not bias against ethnic minorities. Uncle Ben’s is NOT acceptable as it is very expensive and not a cheap healthy food. 				
Brown rice	Normal cook	500g pack	Other pack sizes	
Tinned Sweetcorn	Low sugar/low salt	198g tin	Any other size of tin	Other low sugar and

(low sugar and salt)				low salt canned vegetable.
<ul style="list-style-type: none"> • Non-low sugar/salt corn is not an acceptable substitute. 				
Tinned Baked Beans	Ordinary baked beans in tomato sauce	420g tin	Any other size of tin	Other tinned beans.
<ul style="list-style-type: none"> • Baked beans should be ordinary beans NOT the low sugar salt kind. Ordinary beans still fit within healthy eating guidelines. Therefore the main reason for the ordinary beans being in is for price comparison. 				
Tinned Pineapple	Canned in own juice	220g tin	Any other size of tin	Other canned fruit in own juice
<ul style="list-style-type: none"> • 220g seems more common at this size range. 				
Six (6) brown rolls	Made from 100% wholemeal flour		If not 6 packs then individual rolls or price per roll for loose items	Any (brown) granary Rolls
Wholemeal loaf	Made from 100% wholemeal flour	800g loaf	Any other size of wholemeal loaf	Any other brown loaf
<ul style="list-style-type: none"> • Is a white loaf a valid sub? NO. 				
Peas	Frozen bagged	907kg	Any other pack size	Any other frozen vegetable
<ul style="list-style-type: none"> • Petit pois count as I. • 907 g more common. 				
Oven chips	Low fat (less than 5% fat)	907g	Any other pack size	Any other oven chips
<ul style="list-style-type: none"> • Frozen chips - < 5% fat by cooked weight. • Oven chips were usually 1.81kg and 907g 				
Birds Eye Frozen Lasagne	Frozen ready meal Record type of ready meal, any weight variation	400g	Birds Eye Roast Beef dinner	NONE.
Chicken 2-pack	Fresh boneless, skinless breast	Per kg	Breast with skin on	Frozen breasts
<ul style="list-style-type: none"> • Record weight if available and number of portions if not two-pack. 				
Beef mince lean 500g	Fresh beef mince labelled as lean (ideally < 7% fat)	Per kg	Any other pack size	Frozen lean/7% fat beef mince
<ul style="list-style-type: none"> • What if says "Lean Mince" but more than 7% fat? This is quite common – 				

check with FSAS.				
<ul style="list-style-type: none"> Is > 7% fat an acceptable substitute? 				
Salmon 2-pack	Fresh salmon fillets	Per kg	Frozen salmon fillets	
<ul style="list-style-type: none"> Smoked salmon an S? NO. Record weight if available. 				
Haddock 2-pack	Fresh unbreaded haddock fillets	Per kg	Frozen haddock fillet	Breaded haddock (fresh or frozen)
<ul style="list-style-type: none"> Record weight if available and number if not two-pack. 				
Semi-skimmed milk	Fresh 1 litre	Per litre	Fresh – another pack size	UHT
<ul style="list-style-type: none"> The milk varies between 1.136 L (2 pints) and 1 L. This size closeness will be recorded as an I. 				
Skimmed milk	Fresh 1 litre	Per litre	Fresh – another pack size	UHT
<ul style="list-style-type: none"> The milk varies between 1.136 L (2 pints) and 1 L. This size closeness will be recorded as an I. 				
Yoghurt, low fat fruit	Fresh – single pot	125g	Sterilised	
<ul style="list-style-type: none"> Is full-fat yoghurt a valid sub? NO 				
Low fat spread	Made from PUFA maximum fat content 41%	500g		
<ul style="list-style-type: none"> Is Flora Original an S? NO Flora Light is OK. 				

e. Conclusion

In general the survey and procedures held up well under field conditions. Surveyor training was required to obtain consistency and it was important to stress the need to provide comments on the survey form. The pilot helped refine the survey method and gave useful input into data capture and analysis issues.

8. Buffer store selection

The sentinels defined in the project occupy a distinct geographic extent. It was apparent that some of these offered such a size and scope that they could be treated as a distinct self-contained retail environment to study. However it was felt that the data in the remaining sentinels could be usefully enhanced for comparative analysis by sampling a selection of stores around and outwith the sentinel. These were termed buffer stores.

a. **IS1 – Eilean Siar – Island mixed**

This sentinel was considered a self-contained shopping environment. No buffer stores were sought for it.

b. **IS2 – Orkney – Island mixed**

This sentinel was considered a self-contained shopping environment. No buffer stores were sought for it.

c. **RA1 – Haddington - Rural affluent**

This sentinel occupies most of rural East Lothian. It is roughly circular centred on the market town of Haddington with a radius of approximately 10km. To the north is the outer Firth of Forth and the North Sea and to the south the Lammermuir Hills. Just beyond the eastern boundary is the town of Dunbar; beyond the western boundary lies Tranent, Prestonpans, Musselburgh, Dalkeith and outer Edinburgh.

Sixty-four surveys were carried out within the sentinel. Fifteen buffer stores were surveyed:

- 2 supermarkets in Dunbar 2 km to the east;
- 4 discounters to the west;
- 4 freezer centres to the west;
- 4 supermarkets to the west;
- 1 hypermarket to the west.

The buffer store furthest west of the sentinel is the hypermarket at 8 km.

d. **RD1 – Dornoch – Rural deprived**

This sentinel is situated in Sutherland in the Highlands. It is bounded to the south by the Dornoch Firth, to the east by the North Sea, to the west by Loch Shin and to the north by Loch Choire, the Flow Country and the Langwell Forest.

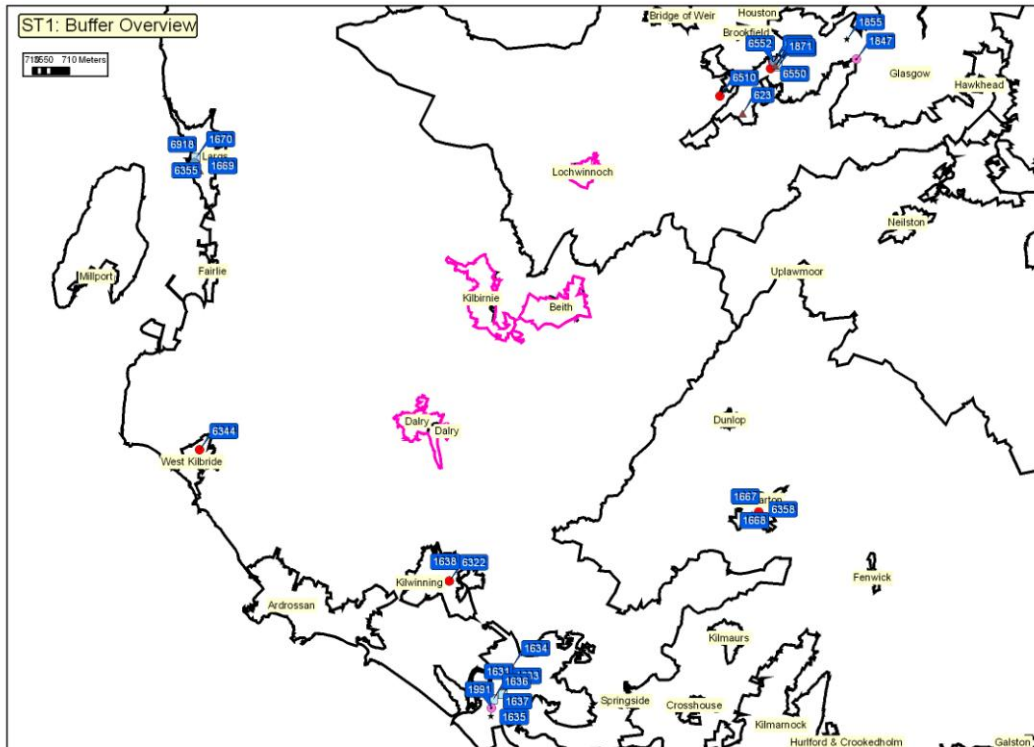
Twenty surveys were carried out within the sentinel. Thirteen buffer stores were surveyed:

- 1 farm shop 8 km to the west;
- 3 supermarkets, 2 convenience stores, 1 baker, 1 butcher, 1 greengrocer and 1 CTN all in Tain 8 km to the south;
- 2 supermarkets and 1 hypermarket in Inverness 65 km to the south.

e. ST1 – Kilbirnie – Small town deprived

This sentinel consists of the small towns of Kilbirnie, Beith, Dalry in North Ayrshire and Lochwinnoch in Renfrewshire. Thirty-two stores were surveyed in these towns. The surrounding area provided food shopping options in a number of different directions as shown in figure 15.

Figure 15: ST1 buffer stores



Twenty-five buffer stores were surveyed in total:

- 11 shops were surveyed between 5 and 10 km to the north-east: 4 butchers, 3 supermarket, 1 fishmonger, 2 freezer centres, 1 hypermarket;
- 3 shops were surveyed 10 km to the south-east in Stewarton: a butcher and 2 supermarkets;
- 7 shops were surveyed 10 km to the south: 1 discounter, 1 freezer centre, 1 hypermarket and 4 supermarkets;
- 1 shop was surveyed 7.5 km to the west in West Kilbride: a butcher ;
- 3 shops were surveyed 10 km to the north-west in Largs a butcher, a fishmonger and a supermarket.

f. ST2c – Cupar – Small town affluent

A single affluent small town was felt to provide too few sentinel survey shops. Two geographically separate affluent small towns were therefore surveyed.

Cupar is situated in the middle of Fife and provided 15 sentinel survey stores. The surrounding area provided food shopping options in a number of different directions. In total 14 stores were surveyed around Cupar:

- 2 shops were surveyed 10 km to the east in St Andrews: 2 supermarkets;

- 1 shop was surveyed 3 km south-east: 1 butcher;
- 3 shops were surveyed 11 km to the south in Leven: 1 freezer centre, 2 supermarkets and 1 convenience store (NS)¹;
- 4 shops were surveyed 15 km to the south-west in Glenrothes: 1 butcher, 2 discounters, 1 greengrocer;
- 1 shop was surveyed 12 km to the west: 1 convenience store (NS);
- 1 shop was surveyed 7 km to the south-west: 1 farm shop;
- 1 shop was surveyed 13 km west south-west: 1 farm shop.

g. ST2e – Ellon – Small town affluent

Ellon is situated in Aberdeenshire, 25 km north of Aberdeen city. The sentinel itself provided only 9 survey stores. Nine buffer stores were surveyed:

- 1 shop was surveyed 8 km to the east: 1 farm shop;
- 8 shops were surveyed in Aberdeen: 1 discounter, 2 freezer centres, 3 fishmongers, 1 supermarket and 1 hypermarket.

h. UR1 – Broughty Ferry – Urban Affluent

This sentinel is situated in the eastern part of Dundee and stretches eastwards to include the urban area of Monifieth in Angus. It is bounded to the south by the Firth of Tay and to the north by rural Angus. Given the presence of Dundee city centre to the immediate west most of the buffers stores chosen were located there (IDs 200 to 220 inclusive). Three buffer stores were chosen to the east in Carnoustie (IDs 221, 222, 223). Store IDs 180, 181 lay just outside the geographic boundary of the sentinel but were included as sentinel stores given their immediate proximity.

i. UR2 – Scotstoun/Drumchapel – Urban Deprived

This sentinel is situated in the north-western section of Glasgow City and stretches along the Clyde into Clydebank. It is bounded to the south by the river Clyde and to the north north-west by Garscadden Wood and low hills. Milngavie, Bearsden, Kelvindale, Broomhill and Partick run from north to south around the eastern half and the western boundary runs through Clydebank.

In total 115 stores were surveyed within the geographic extent of the UR2 sentinel. This was felt to be a large number of shop surveys compared with other urban areas, e.g. UR1 39 sentinel surveys and UR3 70 sentinel surveys. It was decided that it was not necessary to survey further in this area.

Three of the supermarkets surveyed within UR2 could have been considered buffer stores. Two are at the extreme periphery of the sentinel and could be considered as targeting residents of Kelvindale and Bearsden as much as they were targeting sentinel residents. The third is located in a retail park on the main dual carriageway through the sentinel and also targets non-sentinel residents.

¹ NS = a shop participating in the Scottish Executive's Neighbourhood Shops initiative.

j. UR3 – Inverness – Urban Mixed

This sentinel was considered a self-contained shopping environment. No buffer stores were sought for it.

k. Analysis using buffer stores

A clear variable was created indicating whether or not a store should be treated as a buffer store or a sentinel store to allow inclusion or exclusion in the various analyses required.

Store surveys RD1103, RD1135, and RD1159 are Buffers of RD1. They are the duplicates of surveys UR303, UR335, and UR359. Therefore they are not independent cases for multi-variate analysis.

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11. Analytical data preparation

The following reproduce the forms used for data entry

Figure 16: Store data entry form

Sentinel ID: Store ID:
 Date of survey (dd/mm/yy)
 Time survey started (e.g. 14:10)
 Disabled access:

NAME:
 Fascia: Store Type:
 Address1:
 Address2:
 TOWN:
 Postcode:

Any organic fruit/veg?
 Any fruit/veg in chiller cabinets?

Other notes on store?
 Also own Paul's Fish Shop, Haddington. Do not attend markets.
 Wednesday = in shop promotion (not van) - 10% off for OAP's.

And more notes on store?:
 Tuesday - Friday travelling fish van. All stock available. Same prices as in shop. Deliver to: East Linton, Gullane, Aberlady, Tranent, Athelstane Ford, Longniddry, West Fenton, Kingston, Dirlton, Drem

	Close (pm)	Open (pm)	Close (pm)
Monday	<input type="text"/>	<input type="text"/>	<input type="text"/>
Tuesday	<input type="text" value="17:00"/>	<input type="text"/>	<input type="text" value="17:00"/>
Wednesday	<input type="text" value="17:00"/>	<input type="text"/>	<input type="text" value="17:00"/>
Thursday	<input type="text" value="17:00"/>	<input type="text"/>	<input type="text" value="17:00"/>
Friday	<input type="text" value="17:00"/>	<input type="text"/>	<input type="text" value="17:00"/>
Saturday	<input type="text" value="13:30"/>	<input type="text"/>	<input type="text" value="13:30"/>
Sunday	<input type="text"/>	<input type="text"/>	<input type="text"/>

Surveyor:

Figure 17: Product data entry form

1	18VL	lettuce	sub type sub produ X		each grams kilo		Good Medium Poor				
1	19VR	red peppers	sub type sub produ X		each grams kilo		Good Medium Poor				
1	20VT	tomatoes	sub type sub produ X		each grams kilo		Good Medium Poor				
1	21VU	cucumber	sub type sub produ X		each grams kilo		Good Medium Poor				
1	22CX	weetabix	sub pack sub type sub produ X	36	pack print pound	159	Good Medium Poor	Weetabix		24 pack with 50% extra free	
1	23CO	oats	sub type sub produ X	1	kilo litre ml	99	Good Medium Poor	Hamlyn's		750g pack with 33 extra free	
1	24FJ	orange juice	sub type sub produ X	1	litre ml oz	75	Good Medium Poor	Just Juice			
1	25CG	spaghetti	sub type sub produ X		each grams kilo		Good Medium Poor				

a. Data processing stage I

Product line data stored in Access with a non X stock code was transferred to an Excel file ($n=9256$).

Sorting data using the the *Promo* field enabled a binary flag – *Onpromo* – to be inserted. Products not on promotion were labelled with the code 0; whereas those on promotion were labelled with the code 1.

Another column *PPU* (price per unit) was inserted for subsequent use.

The file was then sorted on *ProdID* (product), *sentinelID*, and *storeID*.

Each set of product records, for each different product, were then copied to a separate file.

At this point it was discovered that 9 records had been incorrectly keyed into Access with an x Stock code. It was also discovered that one store had been keyed with the wrong store ID. These errors were corrected in Access and all intermediate stages.

b. Data processing stage II

Each of the 35 product files were sorted by Units and Size and VarBra. This enabled each set of product circumstances to be managed separately. The unique circumstances of each product are recorded below by product.

The general process was:

- Sizes” by MAFF and retailer typical portion weights were used. Using the MAFF source was problematic in that it provided information on the weight of food as the weight of the cooked portion. Weights for uncooked food not purchased as a whole item (e.g. lettuce and cucumber) or uncooked food eaten without the skin (e.g. oranges and bananas) were also different from item purchase weights.
- Secondly the weight of food was converted to the standard unit required for that product.

For example data for apples has been recorded as either price per 1 apple, price per bag of apples (of varying pack sizes), price per kilo of apples, or price per pound of apples. Such data has been recorded for a number of different varieties of apples. Grams were chosen as the uniform unit size, thus all records were converted to price per number of grams. The PPU then equals the price recorded * required unit size/actual units recorded. With apples the PPU is per kilo. therefore $PPU = \text{price} * 1000/\text{number of grams recorded}$.

The following conversion constants were used.

One pound = 454 grams.

Two pounds = 907 grams.

1 pint = 0.568 litres.

2 pints = 1.137 litres.

Two decimal places on the PPU have been used to avoid possible subsequent rounding errors.

c. Data processing stage III

Throughout the data processing stage it became apparent that a few records had missing price and/or pack size information. This lack of data rendered it impossible to calculate the PPU. These were individually checked back with data capture forms to maximise usable data.

Processing the data on a per product basis has allowed a very thorough secondary examination of the data entered to be made. High data quality has been maintained through querying missing data and converting obvious miskeys.

d. Fruit products price standardisation

10FA apples

PPU = per kilo.

Used a median weight of 160g per apple to convert.

Tesco variety estimates are:

160g - Braeburn, Gala, Granny Smith, Cox, Golden Delicious

170g - Pink Lady

190g - Red Delicious

MAFF typical apple sizes for apples with core were medium (112g) and large (170g) apples.

11FB bananas

PPU = per kilo.

Tesco guide = 180g

MAFF large without skin = 120g

Sains organic = 107g

Use 160g as a median.

12FG grapes

PPU = kilo

MAFF small bunch = 100g

Tesco punnet = 400g

Sains punnet = 400

Sains organic punnet = 350g

Use 400g for 1 pack

13FO Oranges

PPU = per kilo.

MAFF weights were all without skin. An estimate of 107.5% was used to create a weight with skin.

Table 13: Orange substitutes weight adjustment

	Small	Medium	skin	large	skin
Clementine	40	60	65	80	
Satsuma	See tangerine				
Tangerine	50	70	75	90	
Mandarin	60	100	108	140	
Orange	120	160	172	210	226

Add 7.5% for skin (rounded). The medium weight was used unless more information was available, ie an average orange weighs 172g when purchased.

Jaffa = medium

Navel/Valencia = large

24FJ juice

PPU = per litre

30FP pineapple

PPU = 227 g tin.

34FS berries

PPU = 454 g

e. Vegetable products price standardisation

15VO onions

PPU = per kg

Tesco loose onion guide weight = 210g

MAFF 60, 150, 240

Use MAFF if guide on size otherwise use medium.

16VC carrots

PPU = per kg

Tesco loose carrot guide weight = 100g

MAFF boiled 30, 80, 140

Use 100g as conversion figure.

17VB broccoli

PPU = per kg

Tesco loose broccoli guide weight = 380g

Sainsbury's pre-packed broccoli = 300g

ASDA organic broccoli = 330g

MAFF deals with cooked portions.

Use 330g as conversion rate.

18VL lettuce

PPU = per round lettuce

MAFF only deals with portions but portion round = 30g and portion iceberg = 80g.

ASDA no weight info. Ice = 64, round = 39

Sainsbury's no weight info. Ice = 64, round = 42.

Tesco no weight info. Ice = 64, round = 42.

Use a ratio of 64/42 to convert to PPU per round lettuce.

19VR pepper

PPU = per kilo

MAFF – grn or red medium = 160g.

Tesco – no weight info.

Sainsbury's – no weight info.

Use 160g.

20VT tomatoes

PPU = per kilo

MAFF = 65, 85, 150g

Tesco – no weight info.

21VU cucumber

PPU = per single cucumber (medium).

MAFF no info for whole cucumber, 1" = 60g.

Tesco half-portions = 300g
2 stuck together make a big cucumber.

Using small = 300g, med = 450g, large = 600g.

28VN corn

PPU = 198g tin

29VK beans

PPU = 415g tin

33VE peas

PPU = 907g

f. Starchy food (carbs) products price standardisation

14CP potatoes

PPU 1 kilo

Tesco baking potato = 300g

22CX weetabix

PPU 24-pack

1 strange price = 3

A number of miskeyed pack numbers and promo numbers and stock codes.

Eg a 12 pack with 100% xtra free should be Stock I with Size 24

A 24 pack with 50% xtra free should be Stock I, Size 36.

Always state the **actual** figures of what was for sale in terms of price and size. In promo column state the details of the promo, eg 30p off was £1.59 etc.

23CO oats

PPU = per kilo.

25CG spaghetti

PPU = per 500g.

26CW white rice

PPU = per 500g.

2 bads (boil in bag varieties)

27CB brown rice

PPU = per 500g.

31CR whml rolls

PPU for a 6-pack

32CD whml bread

1 each => 800 g

35CH chips

Lot of uncertainty over low fat nature of items.
Converted all kilos to grams

g. Protein products price standardisation

36PG lasagne

PPU = per frozen dinner.

No weight conversions were applied as this was not thought appropriate.

37PC chicken

PPU = 2-pack breast fillets (260g).

1. use notes to make weights as accurate as possible extrapolating by brand and price per kilo if noted
2. otherwise use 260g = 2-fillets.
3. PPU = price for 260g
4. 1 whole chicken = estimated to be the equiv 4 breast fillets = 520g

Tesco 125-160g per breast fillet.

Sainsbury's 130g per fillet.

38PM mince

PPU = 500g

39PS salmon

PPU = price per 2-fillets (280g).

Tesco 2-fillets = 260g or 300g

Sainsbury's 2-fillets = 300g

2-steaks = 350g

MAFF = cooked.

1. use notes to make weights as accurate as possible extrapolating by brand and price per kilo if noted
2. otherwise use 280g = 2-fillets.
3. PPU = price for 280g

40PH haddock

Tesco boneless skinless – 2 fillets in a pack, 5.26/kg,

- ⇒ 2.09 per pack.
- ⇒ 1.05 per fillet,
- ⇒ 199 g uncooked fillet

Tesco breaded haddock fillet, 2 pack weighs 284g

Sainsbury's boneless skinless 7.19/kg, picture looks like 2 fillets

- ⇒ 2.19/pack,
- ⇒ 1 pack = 305g,
- ⇒ 1 fillet = 152g.

Sainsbury's breaded haddock fillet, 2 pack weighs 284g (57% haddock)

MAFF portion sizes are **cooked**. Grilled fillet: – small 50g, medium 120g, large 170g.

2 rejects (bads) as not acceptable substitutes as they were battered or smoked.

1. Distinguished between breaded and unbreaded based on notes and brand.
2. Convert to a 2-pack price – ie 2-pack or 284 g if breaded = $J2 * 284 / H2$
3. or 352g if not.

Not distinguishing frozen vs fresh.

h. Dairy and fatty products price standardisation

41DS semi

PPU = per litre.

42DK skim

PPU = per litre.

43DY yoghurt

PPU = 125g pot.

- 1 - litre convert to grams
- 2 - OOS with insufficient info
- 6 - filled in pack info from common brand info
- 5 - Cool Country 125 g recoded to 4 pack.

Where no pack details given assume 4x125g [6 cases]

44DP spread

PPU = 500g tub.

Convert to price per 500 grams:

- 250 g x 2
- 500 g

Removed 1 record as Original Flora.

12. Supplementary analysis

Additional tables to those in main text. The same conventions are used as in main text

Table 14: Proportion of stores in which food items are available by quintile of income deprivation

Food items	1 (low)	2	3	4	5 (high)	Chi squared	p value
N	67	87	124	95	93		
FRUIT							
White Grapes	38.81	44.83	36.29	21.05	29.03	13.69	0.008
Oranges	52.24	62.07	50.81	44.21	38.71	11.18	0.025
Orange juice	61.19	66.67	59.68	65.26	75.27	6.39	0.172
Frozen berries	17.91	17.24	16.94	10.53	9.68	4.73	0.316
Apples	58.21	60.92	51.61	48.42	48.39	4.61	0.33
Bananas	47.76	60.92	51.61	50.53	49.46	3.58	0.465
Pineapple	55.22	58.62	56.45	58.95	60.22	0.57	0.966
VEGETABLES							
Broccoli	37.31	47.13	38.71	23.16	17.2	25.02	<0.001
Red pepper	35.82	44.83	38.71	24.21	18.28	20.12	<0.001
Cucumber	41.79	49.43	39.52	22.11	30.11	17.74	0.001
Round lettuce	34.33	50.57	37.1	25.26	27.96	15.52	0.004
Sweetcorn	25.37	29.89	16.13	16.84	13.98	10.47	0.033
Carrots	56.72	60.92	54.03	44.21	40.86	10.34	0.035
Tomatoes	55.22	63.22	52.42	44.21	48.39	7.45	0.114
Onions	59.7	67.82	58.87	51.58	58.06	5.01	0.287
Baked beans	70.15	72.41	65.32	72.63	78.49	4.71	0.319
Frozen peas	52.24	50.57	49.19	42.11	43.01	2.92	0.571
CARBOHYDRATES							
Brown rolls	53.73	56.32	45.16	37.89	30.11	16.73	0.002
Brown rice	13.43	20.69	19.35	10.53	6.45	11.25	0.024
Wholemeal bread	62.69	68.97	59.68	49.47	56.99	7.69	0.103
Weetabix	62.69	64.37	52.42	60	66.67	5.56	0.235
Potatoes	50.75	63.22	57.26	49.47	60.22	4.96	0.292
Long grain white rice	52.24	60.92	59.68	51.58	56.99	2.64	0.62
Spaghetti	61.19	63.22	63.71	61.05	68.82	1.53	0.821
Oats	61.19	63.22	58.87	60	62.37	0.53	0.971
Oven chips	47.76	51.72	50.81	48.42	49.46	0.37	0.985
MEALS							
Birds eye lasagne	35.82	35.63	33.87	34.74	34.41	0.11	0.999
PROTEIN							
Lean beef mince	37.31	43.68	33.06	23.16	20.43	15.59	0.004
Haddock fillets	25.37	29.89	32.26	23.16	10.75	14.94	0.005
Chicken breasts	28.36	41.38	39.52	24.21	21.51	14.57	0.006
Salmon fillets	19.4	13.79	19.35	13.68	9.68	5.07	0.28
DAIRY							
Skimmed milk	34.33	40.23	34.68	25.26	18.28	13.16	0.011
Low fat spread	34.33	37.93	39.52	23.16	39.78	8.22	0.084
Semi-skimmed milk	74.63	78.16	70.16	72.63	82.8	5.34	0.255
Low fat yoghurt	53.73	57.47	46.77	45.26	49.46	3.7	0.449

Table 15: Proportion of stores in which food items are available by quintile of employment deprivation

Food items	1 (low)	2	3	4	5 (high)	Chi squared	p value
N	72	86	121	71	116		
FRUIT							
Oranges	52.78	50	62.81	49.3	32.76	21.9	<0.001
Frozen berries	12.5	18.6	22.31	2.82	11.21	16.3	0.003
White Grapes	43.06	34.88	41.32	23.94	25	12.98	0.011
Apples	56.94	51.16	63.64	52.11	41.38	12.37	0.015
Bananas	50	47.67	63.64	56.34	42.24	12.28	0.015
Pineapple	55.56	53.49	61.98	64.79	54.31	3.67	0.452
Orange juice	61.11	61.63	65.29	69.01	68.97	2.19	0.701
VEGETABLES							
Broccoli	41.67	37.21	45.45	19.72	18.1	29.07	<0.001
Carrots	59.72	50	62.81	50.7	34.48	21.65	<0.001
Red pepper	37.5	36.05	43.8	25.35	18.97	19.73	0.001
Cucumber	45.83	40.7	42.98	22.54	28.45	14.8	0.005
Onions	59.72	55.81	71.07	60.56	47.41	14.18	0.007
Round lettuce	38.89	40.7	42.98	26.76	25	12.31	0.015
Tomatoes	56.94	52.33	58.68	57.75	39.66	10.87	0.028
Frozen peas	51.39	45.35	56.2	46.48	37.07	9.35	0.053
Sweetcorn	29.17	22.09	19.83	14.08	15.52	7.08	0.132
Baked beans	70.83	65.12	71.9	78.87	71.55	3.64	0.458
CARBOHYDRATES							
Brown rolls	54.17	47.67	52.89	36.62	30.17	17.95	0.001
Brown rice	13.89	18.6	20.66	7.04	9.48	10.5	0.033
Oven chips	47.22	43.02	61.16	52.11	43.1	10.25	0.036
Potatoes	55.56	52.33	66.94	57.75	48.28	9.24	0.055
Long grain white rice	52.78	52.33	66.94	59.15	50	8.58	0.072
Wholemeal bread	62.5	61.63	64.46	49.3	56.03	5.29	0.259
Spaghetti	59.72	60.47	67.77	71.83	59.48	4.67	0.323
Oats	61.11	58.14	65.29	66.2	55.17	3.69	0.449
Weetabix	62.5	56.98	60.33	67.61	57.76	2.43	0.657
MEALS							
Birds eye lasagne	34.72	31.4	40.5	33.8	31.9	2.63	0.621
PROTEIN							
Lean beef mince	40.28	41.86	33.88	18.31	22.41	17.42	0.002
Chicken breasts	31.94	39.53	41.32	18.31	23.28	17.34	0.002
Haddock fillets	25	36.05	30.58	16.9	14.66	16.83	0.002
Salmon fillets	18.06	13.95	19.01	11.27	12.93	3.23	0.52
DAIRY							
Skimmed milk	36.11	34.88	39.67	18.31	21.55	16.02	0.003
Low fat spread	37.5	31.4	42.15	26.76	34.48	5.52	0.238
Low fat yoghurt	51.39	50	52.07	52.11	45.69	1.25	0.87
Semi-skimmed milk	72.22	74.42	77.69	77.46	74.14	1.04	0.904

Table 16: Proportion of stores in which food items are available by quintile of health

Food items	1 (good)	2	3	4	5 (poor)	Chi squared	p value
N	62	97	119	74	114		
FRUIT							
Oranges	54.84	67.01	39.5	56.76	36.84	26.23	<0.001
Apples	61.29	65.98	42.02	62.16	42.98	21.12	<0.001
Bananas	53.23	62.89	43.7	66.22	42.11	18.39	0.001
Pineapple	62.9	62.89	46.22	70.27	55.26	13.26	0.01
Orange juice	67.74	69.07	53.78	74.32	67.54	10.67	0.031
White Grapes	41.94	43.3	28.57	32.43	27.19	9.5	0.05
Frozen berries	17.74	16.49	12.61	14.86	12.28	1.65	0.8
VEGETABLES							
Carrots	61.29	65.98	43.7	59.46	35.09	27.55	<0.001
Red pepper	40.32	46.39	27.73	39.19	16.67	26.07	<0.001
Broccoli	38.71	50.52	31.93	25.68	19.3	26.03	<0.001
Frozen peas	61.29	52.58	36.97	59.46	37.72	19.63	0.001
Tomatoes	61.29	64.95	44.54	59.46	40.35	19.15	0.001
Onions	64.52	70.1	49.58	70.27	49.12	18.57	0.001
Round lettuce	38.71	51.55	29.41	33.78	25.44	18.32	0.001
Cucumber	46.77	50.52	30.25	32.43	27.19	17.88	0.001
Baked beans	79.03	71.13	59.66	81.08	73.68	13.5	0.009
Sweetcorn	27.42	21.65	17.65	21.62	14.91	4.7	0.319
CARBOHYDRATES							
Oven chips	54.84	54.64	38.66	66.22	43.86	17.04	0.002
Oats	69.35	68.04	48.74	71.62	56.14	15.99	0.003
Weetabix	70.97	62.89	49.58	72.97	56.14	14.74	0.005
Brown rolls	58.06	50.52	45.38	39.19	32.46	13.6	0.009
Potatoes	58.06	61.86	48.74	70.27	50	11.77	0.019
Spaghetti	69.35	68.04	52.1	72.97	63.16	11.34	0.023
Long grain white rice	58.06	63.92	47.9	64.86	53.51	8.34	0.08
Wholemeal bread	67.74	61.86	56.3	60.81	54.39	3.74	0.442
Brown rice	14.52	17.53	15.13	16.22	9.65	3.11	0.54
MEALS							
Birds eye lasagne	38.71	38.14	26.05	44.59	32.46	8.32	0.081
PROTEIN							
Salmon fillets	20.97	8.25	21.85	12.16	13.16	10.2	0.037
Haddock fillets	27.42	31.96	26.05	21.62	17.54	6.63	0.157
Lean beef mince	40.32	35.05	30.25	29.73	24.56	5.55	0.236
Chicken breasts	32.26	38.14	32.77	32.43	23.68	5.34	0.254
DAIRY							
Skimmed milk	43.55	32.99	29.41	35.14	19.3	12.83	0.012
Low fat yoghurt	58.06	55.67	40.34	59.46	44.74	11.22	0.024
Semi-skimmed milk	83.87	74.23	68.07	81.08	75.44	7.19	0.126
Low fat spread	38.71	37.11	30.25	41.89	32.46	3.6	0.463

Table 17: Proportion of stores in which food items are available by quintile of education, training and skills

Food items	1 (high)	2	3	4	5 (low)	Chi squared	p value
FRUIT							
Orange juice	52.44	64.08	57.85	76.67	81.43	22.23	<0.001
Pineapple	45.12	56.31	55.37	66.67	68.57	12.03	0.017
Frozen berries	13.41	20.39	15.7	12.22	7.14	6.57	0.16
White Grapes	41.46	37.86	33.06	25.56	30	6.14	0.189
Bananas	45.12	54.37	51.24	56.67	52.86	2.62	0.624
Oranges	50	53.4	50.41	47.78	42.86	2.01	0.733
Apples	53.66	55.34	51.24	53.33	51.43	0.46	0.977
VEGETABLES							
Baked beans	60.98	68.93	65.29	80	87.14	18.66	0.001
Broccoli	37.8	41.75	36.36	24.44	17.14	16.05	0.003
Red pepper	36.59	41.75	33.88	26.67	18.57	12.35	0.015
Cucumber	41.46	44.66	36.36	27.78	28.57	8.7	0.069
Round lettuce	40.24	40.78	35.54	27.78	28.57	5.85	0.21
Sweetcorn	21.95	24.27	15.7	21.11	15.71	3.66	0.455
Frozen peas	45.12	51.46	43.8	52.22	42.86	2.89	0.576
Onions	58.54	57.28	55.37	60	67.14	2.75	0.601
Carrots	54.88	54.37	48.76	51.11	45.71	1.99	0.738
Tomatoes	54.88	52.43	49.59	52.22	54.29	0.69	0.953
CARBOHYDRATES							
Weetabix	52.44	56.31	52.89	73.33	72.86	16.59	0.002
Brown rolls	53.66	44.66	49.59	38.89	28.57	12.37	0.015
Brown rice	15.85	20.39	17.36	11.11	2.86	12.37	0.015
Spaghetti	56.1	62.14	59.5	67.78	77.14	9.2	0.056
Potatoes	50	54.37	53.72	58.89	68.57	6.34	0.175
Oats	53.66	61.17	57.02	65.56	70	5.83	0.212
Long grain white rice	46.34	59.22	56.2	57.78	64.29	5.54	0.236
Oven chips	40.24	49.51	48.76	55.56	55.71	5.22	0.265
Wholemeal bread	59.76	62.14	59.5	57.78	55.71	0.81	0.937
MEALS							
Birds eye lasagne	35.37	30.1	32.23	43.33	34.29	4.27	0.371
PROTEIN							
Haddock fillets	21.95	31.07	33.06	22.22	7.14	19.03	0.001
Chicken breasts	26.83	39.81	36.36	27.78	21.43	9.31	0.054
Lean beef mince	32.93	39.81	30.58	27.78	21.43	7.3	0.121
Salmon fillets	18.29	14.56	19.01	15.56	5.71	6.88	0.142
DAIRY							
Semi-skimmed milk	65.85	72.82	71.9	82.22	87.14	12.63	0.013
Skimmed milk	36.59	33.01	33.06	25.56	21.43	5.87	0.209
Low fat spread	31.71	33.98	35.54	35.56	40	1.22	0.874
Low fat yoghurt	47.56	51.46	47.93	50	54.29	1	0.909

Table 18: Proportion of stores in which food items are available by quintile of housing deprivation

Food items	1 (low)	2	3	4	5 (high)	Chi squared	p value
N	58	96	80	120	112		
FRUIT							
Orange juice	74.14	53.13	67.5	66.67	68.75	9.15	0.057
Bananas	55.17	45.83	65	50.83	48.21	7.82	0.098
Apples	60.34	53.13	62.5	49.17	46.43	6.8	0.147
White Grapes	41.38	30.21	36.25	38.33	25.89	6.5	0.165
Oranges	51.72	52.08	58.75	47.5	41.07	6.48	0.166
Pineapple	65.52	52.08	63.75	55.83	57.14	4.07	0.396
Frozen berries	18.97	17.71	12.5	15	9.82	4.01	0.404
VEGETABLES							
Carrots	62.07	55.21	60	51.67	34.82	17.87	0.001
Broccoli	37.93	39.58	33.75	37.5	17.86	15.32	0.004
Red pepper	37.93	35.42	40	34.17	19.64	11.81	0.019
Baked beans	82.76	60.42	73.75	70.83	74.11	9.98	0.041
Cucumber	48.28	32.29	37.5	40	28.57	7.92	0.095
Sweetcorn	24.14	18.75	28.75	18.33	13.39	7.86	0.097
Tomatoes	58.62	47.92	61.25	54.17	44.64	7.04	0.134
Frozen peas	60.34	43.75	50	48.33	40.18	7.01	0.135
Onions	63.79	55.21	68.75	58.33	53.57	5.65	0.227
Round lettuce	41.38	32.29	40	37.5	27.68	5.2	0.268
CARBOHYDRATES							
Brown rolls	56.9	43.75	53.75	42.5	32.14	13.5	0.009
Wholemeal bread	70.69	48.96	68.75	59.17	55.36	11.05	0.026
Weetabix	75.86	51.04	63.75	57.5	61.61	10.19	0.037
Oats	68.97	55.21	68.75	59.17	58.04	5.5	0.24
Spaghetti	68.97	55.21	70	65	62.5	5.22	0.265
Long grain white rice	56.9	52.08	66.25	55	55.36	4.03	0.402
Potatoes	55.17	51.04	63.75	56.67	56.25	2.92	0.572
Oven chips	55.17	44.79	50	53.33	47.32	2.51	0.643
Brown rice	18.97	13.54	17.5	12.5	12.5	2.34	0.673
MEALS							
Birds eye lasagne	44.83	26.04	37.5	39.17	30.36	8.06	0.089
PROTEIN							
Lean beef mince	41.38	29.17	38.75	33.33	19.64	12.35	0.015
Chicken breasts	36.21	34.38	31.25	38.33	19.64	10.85	0.028
Haddock fillets	29.31	25	25	31.67	14.29	10.34	0.035
Salmon fillets	27.59	13.54	11.25	16.67	11.61	9.38	0.052
DAIRY							
Skimmed milk	46.55	28.13	28.75	35	20.54	13.82	0.008
Low fat yoghurt	63.79	41.67	52.5	48.33	50	7.41	0.116
Semi-skimmed milk	82.76	67.71	78.75	75	75.89	5.25	0.262
Low fat spread	39.66	29.17	33.75	37.5	36.61	2.49	0.647

Table 19: Proportion of stores in which food items are available by quintile of geographic access

Food items	1 (high)	2	3	4	5 (low)	Chi squared	p value
N	156	90	67	73	80		
FRUIT							
Oranges	34.62	38.89	50.75	61.64	77.5	47.32	<0.001
Apples	39.1	45.56	52.24	65.75	77.5	38.16	<0.001
Pineapple	39.1	70	64.18	63.01	71.25	35.74	<0.001
Bananas	39.1	46.67	52.24	64.38	72.5	29.38	<0.001
Orange juice	50	71.11	68.66	75.34	77.5	26.34	<0.001
Frozen berries	10.26	14.44	2.99	16.44	30	25.33	<0.001
White Grapes	26.28	25.56	29.85	39.73	55	24.39	<0.001
VEGETABLES							
Carrots	33.33	44.44	55.22	60.27	81.25	53.32	<0.001
Red pepper	19.87	27.78	28.36	36.99	61.25	43.66	<0.001
Broccoli	21.79	28.89	22.39	38.36	61.25	43.01	<0.001
Onions	41.67	54.44	65.67	71.23	81.25	42.27	<0.001
Frozen peas	30.13	42.22	52.24	61.64	68.75	40.84	<0.001
Tomatoes	34.62	50	59.7	71.25	52.36	38.03	<0.001
Round lettuce	24.36	28.89	34.33	42.47	56.25	26.93	<0.001
Cucumber	25.64	32.22	35.82	41.1	57.5	24.6	<0.001
Baked beans	58.33	78.89	74.63	80.82	77.5	20.51	<0.001
Sweetcorn	12.18	22.22	16.42	24.66	30	12.87	0.012
CARBOHYDRATES							
Oats	41.03	66.67	67.16	71.23	78.75	42.23	<0.001
Potatoes	41.67	52.22	56.72	67.12	80	35.95	<0.001
Long grain white rice	39.74	56.67	62.69	65.75	76.25	34.13	<0.001
Weetabix	42.31	66.67	73.13	68.49	71.25	33.34	<0.001
Oven chips	33.33	50	55.22	61.64	66.25	30.47	<0.001
Spaghetti	48.72	66.67	74.63	68.49	76.25	25.13	<0.001
Brown rice	12.18	13.33	7.46	13.7	26.25	12.48	0.014
Wholemeal bread	49.36	58.89	62.69	71.23	65	12.09	0.017
Brown rolls	36.54	41.11	41.79	57.53	51.25	11.1	0.026
MEALS							
Birds eye lasagne	21.15	34.44	46.27	43.84	43.75	22.15	<0.001
PROTEIN							
Haddock fillets	19.23	17.78	11.94	23.29	55	50.29	<0.001
Lean beef mince	25	33.33	22.39	31.51	47.5	15.33	0.004
Salmon fillets	17.31	21.11	7.46	16.44	10	7.84	0.098
Chicken breasts	25.64	34.44	28.36	32.88	41.25	6.73	0.151
DAIRY							
Low fat yoghurt	39.1	50	50.75	60.27	61.25	14.56	0.006
Semi-skimmed milk	66.03	82.22	82.09	80.82	75	12.4	0.015
Low fat spread	26.92	37.78	46.27	36.99	37.5	8.83	0.065
Skimmed milk	23.72	30	35.82	31.51	38.75	6.9	0.141

Table 20: Proportion of stores in which food items are available by quintile of crime

Food items	1 (low)	2	3	4	5 (high)	Chi squared	p value
N	71	69	88	61	143		
FRUIT							
Oranges	69.01	55.07	43.18	47.54	35.66	23.46	<0.001
Bananas	71.83	50.72	43.18	52.46	43.36	17.82	0.001
Apples	69.01	55.07	44.32	55.74	42.66	15.78	0.003
Pineapple	61.97	57.97	60.23	67.21	45.45	11.34	0.023
White Grapes	42.25	40.58	26.14	27.87	27.27	9.13	0.058
Orange juice	71.83	63.77	64.77	70.49	55.94	7.01	0.136
Frozen berries	19.72	15.94	11.36	4.92	13.99	6.95	0.138
VEGETABLES							
Carrots	69.01	59.42	45.45	52.46	34.97	26.38	<0.001
Onions	74.65	65.22	52.27	62.3	45.45	20.22	<0.001
Tomatoes	66.2	57.97	48.86	54.1	37.76	18.22	0.001
Broccoli	49.3	34.78	28.41	26.23	22.38	17.57	0.001
Frozen peas	59.15	53.62	48.86	42.62	32.87	16.98	0.002
Red pepper	46.48	33.33	26.14	29.51	21.68	14.97	0.005
Baked beans	76.06	72.46	70.45	80.33	61.54	9.44	0.051
Cucumber	45.07	39.13	32.95	31.15	27.27	7.85	0.097
Round lettuce	43.66	37.68	30.68	31.15	26.57	7.33	0.119
Sweetcorn	21.13	21.74	25	16.39	13.99	5.21	0.266
CARBOHYDRATES							
Potatoes	71.83	60.87	51.14	62.3	44.76	16.98	0.002
Oats	70.42	62.32	59.09	68.85	46.85	15.28	0.004
Spaghetti	69.01	65.22	63.64	73.77	51.05	12.76	0.013
Long grain white rice	64.79	59.42	56.82	60.66	43.36	11.99	0.017
Oven chips	56.34	57.97	46.59	54.1	38.46	10.89	0.028
Weetabix	66.2	59.42	61.36	67.21	49.65	8.58	0.073
Brown rolls	43.66	43.48	52.27	31.15	38.46	7.64	0.106
Brown rice	12.68	17.39	14.77	6.56	13.29	3.62	0.46
Wholemeal bread	61.97	55.07	62.5	49.18	57.34	3.38	0.497
MEALS							
Birds eye lasagne	43.66	39.13	28.41	39.34	28.67	7.53	0.11
PROTEIN							
Haddock fillets	36.62	26.09	21.59	9.84	21.68	13.95	0.007
Lean beef mince	39.44	34.78	34.09	14.75	25.87	12.43	0.014
Chicken breasts	35.21	31.88	36.36	19.67	26.57	6.64	0.156
Salmon fillets	9.86	11.59	18.18	9.84	18.88	5.81	0.214
DAIRY							
Skimmed milk	32.39	42.03	31.82	21.31	23.08	10.57	0.032
Low fat spread	43.66	33.33	34.09	42.62	29.37	5.99	0.2
Semi-skimmed milk	74.65	78.26	79.55	77.05	67.83	5.21	0.266
Low fat yoghurt	57.75	47.83	48.86	49.18	41.96	4.85	0.303

Table 21: Median cost of food items in HEISB by quintile of income deprivation

Food items	1 (low)	2	3	4	5 (high)	KW Chi Squared	p value
FRUIT							
Oranges	25	29.37	24	29	25	8.11	0.0875
Pineapple	43.34	52	49	50.44	53.83	5.84	0.2114
Frozen berries	175.3	251.04	247.03	244.08	186.64	5.68	0.2243
Bananas	126	139	143	149	127	4.52	0.3402
Orange juice	72	77	85	85	89	3.87	0.4244
Apples	125	125	125	156.25	127.6	3.85	0.4267
White Grapes	300	295	299	225	297.5	3.02	0.5548
VEGETABLES							
Sweetcorn	44.26	49.79	34.42	52	57	11.5	0.0214
Cucumber	72.5	69	80.5	79	79.5	11.05	0.026
Onions	71.5	66	79	79.65	77	10.73	0.0297
Frozen peas	177.8	158.41	187.79	148.41	129	10.46	0.0334
Baked beans	44.46	49	49	49	49	9.86	0.0429
Red pepper	331.25	340.13	402.63	418.75	368.75	9.65	0.0467
Round lettuce	51.84	54.47	53.81	49.22	45.28	5.63	0.2285
Broccoli	178.79	183.94	209.09	170.38	168.89	3.1	0.541
Tomatoes	165.6	175	155	165.2	160	1.88	0.7576
Carrots	79	85	83.7	79.15	82.5	0.91	0.9238
CARBOHYDRATES							
Brown rolls	101.25	130.5	120	129	97.5	18.84	0.0008
Potatoes	50	58	49.75	55.33	44.5	14.27	0.0065
Long grain white rice	67	65	74	79	79	11.14	0.0251
Oats	120	139	158	138	169	9.5	0.0497
Spaghetti	45	75	68	69	69	8.24	0.083
Oven chips	129	129	129	129	129	8.13	0.087
Weetabix	159	164	163	159	179	5.95	0.2032
Wholemeal bread	88.5	99	96	95	97.5	3.65	0.4557
Brown rice	95	80	95	95	90	1.11	0.893
MEALS							
Birds eye lasagne	199	172.5	199	199	179	3.4	0.4928
PROTEIN							
Chicken breasts	183.56	181.48	181.35	204.88	170.03	11.99	0.0174
Lean beef mince	269	257.25	269	269	200	5.87	0.2087
Haddock fillets	270.77	284	263.56	220	225.94	5.6	0.231
Salmon fillets	279.72	268.33	279.07	277.53	243.6	2.01	0.7335
DAIRY							
Skimmed milk	64	74	70.21	65	58.1	11.14	0.025
Low fat yoghurt	27.5	30	29.93	30.63	29	7.36	0.1182
Low fat spread	109	124	112.5	109	118	3.2	0.5245
Semi-skimmed milk	73.5	79	70.42	75	70	2.87	0.5798
HEISB TOTAL	4414.44	4609.21	4734.76	4627.9	4371.66		

Shaded areas indicated statistically significant differences at p=0.05 or less

Table 22: Median cost of food items in HEISB by quintile of employment deprivation

Food items	1 (low)	2	3	4	5 (high)	KW Chi Squared	p value
FRUIT							
Bananas	127	143.44	149.5	149	121	10.5	0.0327
Frozen berries	167.98	247.03	247.03	248.19	186.64	8.76	0.0674
Oranges	25	27.4	25	29	25	7.82	0.0984
Pineapple	43.34	51.5	52	50.44	52.02	5.18	0.2698
Orange juice	72	76.83	88	85	79	5.12	0.2756
Apples	125	129.5	125	135	125	1.73	0.7855
White Grapes	298.5	299	299	249	272.5	1.33	0.8569
VEGETABLES							
Frozen peas	159.23	159.11	179.15	168.52	117	20.2	0.0005
Cucumber	69.5	79	79	74.25	79	7.25	0.1231
Onions	65	68	79	72	75	6.56	0.1611
Round lettuce	51.84	55.78	51.84	49.22	45.28	6.3	0.1781
Baked beans	49	49	49	49	48.42	5.45	0.244
Red pepper	331.25	375	399	431.25	406.79	5.35	0.2531
Sweetcorn	47	49.5	42.81	52	53.5	4.62	0.3288
Tomatoes	162	180	153.6	159.5	166.5	3.14	0.5345
Carrots	81	85	82.35	81.5	79.5	2.55	0.6354
Broccoli	190.03	196.97	209.09	165.38	159	2.47	0.6503
CARBOHYDRATES							
Brown rolls	108	126	127.5	102	99	11.71	0.0196
Potatoes	52	56.25	54.75	49.5	47	10.13	0.0383
Long grain white rice	67	65	75	75	79	9.75	0.0449
Oats	121.25	129.5	150	179	164	7.34	0.119
Weetabix	159	159	169	164	179	4.96	0.2915
Spaghetti	52	68	69	69	69	4.55	0.3369
Wholemeal bread	89	99	95	99	93.5	3.25	0.5177
Oven chips	129	129	129	129	129	2.6	0.6275
Brown rice	102.5	79.5	92	95	85	2.28	0.6853
MEALS							
Birds eye lasagne	199	196.5	199	189	185	0.819	0.9358
PROTEIN							
Chicken breasts	181.48	181.48	188.37	179.5	185.25	4.56	0.3354
Lean beef mince	269	269	269	269	244.5	3.6	0.4625
Haddock fillets	269.8	283.72	260.13	210.87	231.87	3.58	0.4661
Salmon fillets	271.32	279.07	279.07	279.07	243.6	0.744	0.9459
DAIRY							
Skimmed milk	69	70.42	70.42	61.62	59	8.15	0.0861
Semi-skimmed milk	73.5	76.23	75	72	69	4.69	0.3207
Low fat yoghurt	29	30.63	30	30	28.39	4.38	0.3574
Low fat spread	109	124	115	109	115	1.52	0.8226
HEISB TOTAL	4415.52	4694.36	4757.61	4609.81	4397.26		

Shaded areas indicated statistically significant differences at p=0.05 or less

Table 23: Median cost of food items in HEISB by quintile of health

Food items	1 (good)	2	3	4	5 (bad)	KW Chi Squared	p value
FRUIT							
Bananas	127	150	132	149	125	11.79	0.019
Oranges	25	29.34	24	29	25	7.41	0.1157
Pineapple	43.34	53	49	52.05	51.96	5.74	0.2191
Frozen berries	181.6	249.7	241.12	252.37	213.63	5.18	0.2691
Orange juice	69	80	85	85	87	4.82	0.3061
Apples	129	125	125	147.06	125	4.18	0.382
White Grapes	298	322.5	249	297.36	272.5	3.28	0.5123
VEGETABLES							
Frozen peas	167.82	180.49	139	157.83	122.36	21.45	0.0003
Red pepper	352	337.5	399	431.25	399	11.97	0.0176
Cucumber	70	75	74	86	79	11.02	0.0263
Baked beans	47	49	49	49	49	9.33	0.0533
Onions	69	69	67.5	80	70	8.38	0.0786
Sweetcorn	39	49.5	42.81	55	55	6.32	0.1762
Round lettuce	50.53	54.47	47.91	55.78	45.28	5.68	0.224
Carrots	80	85	85	80	70	3.6	0.4629
Tomatoes	166	175	157.5	167.6	155.49	2.85	0.5832
Broccoli	187.88	209.09	167.83	209.09	160.93	2.63	0.6212
CARBOHYDRATES							
Brown rolls	105.75	132	120	129	97.5	15.94	0.0031
Potatoes	54.25	50	50	57.2	44.5	12.86	0.012
Long grain white rice	65	69	75	72	79	9.16	0.0572
Weetabix	159	172	145	166	179	8.7	0.0691
Oats	125	129	158.5	169	166	5.64	0.228
Spaghetti	47	70.5	69	59	69	5.56	0.2348
Brown rice	95	96	80	95	85	4.51	0.3411
Wholemeal bread	89	99	91	97.5	95	3.29	0.5101
Oven chips	129	129	126.38	129	129	2.52	0.6409
MEALS							
Birds eye lasagne	199	179	199	189	189	4.36	0.36
PROTEIN							
Haddock fillets	277.87	236.54	316.45	261.14	247.5	7.06	0.1327
Chicken breasts	179.5	185.32	197.34	181.03	179.5	4.86	0.302
Lean beef mince	269	269	267	269	220	4.69	0.3206
Salmon fillets	279.07	250.97	279.07	277.53	279.07	0.888	0.9263
DAIRY							
Skimmed milk	64	78	64	63.75	58.7	10.81	0.0288
Low fat spread	109	124	112	115	109	8.06	0.0896
Low fat yoghurt	27.5	30.63	29	29.81	29	5.01	0.2866
Semi-skimmed milk	73.5	72.5	74.5	75	70	2.24	0.6922
HEISB TOTAL	4449.61	4666.05	4587.91	4818.35	4431.92		

Shaded areas indicated statistically significant differences at p=0.05 or less

Table 24: Median cost of food items in HEISB by quintile of education, training and skills

Food items	1 (high)	2	3	4	5 (low)	KW Chi Squared	p value
FRUIT							
White Grapes	300	300	298.11	225	328	10.97	0.0269
Frozen berries	186.64	212.72	252.37	241.12	186.64	7.22	0.1245
Pineapple	45	50.75	52.02	50.44	51.99	4.48	0.3444
Bananas	134.08	139	149	149	127	4.11	0.3918
Orange juice	79	78	82.5	89	79	3.54	0.4721
Oranges	25	26	25	25	26.5	1.43	0.8384
Apples	125	125	125	149	130.21	0.94	0.9187
VEGETABLES							
Onions	65	67	74	88	69	11.45	0.022
Red pepper	329	367.5	387	425	431.25	7.74	0.1017
Cucumber	70	71	79	79	79.5	6.3	0.1778
Baked beans	49	49	49	49	49	5.16	0.2708
Frozen peas	189.79	159.23	153.83	137.85	137.85	5.11	0.2766
Round lettuce	55.78	54.14	49.22	49.22	45.28	4.69	0.3204
Sweetcorn	45.63	47	49.5	55	52	2.1	0.7181
Broccoli	180	196.97	181.82	195.45	173.68	1.24	0.872
Tomatoes	170.5	165.2	167.5	166.6	155.99	0.86	0.93
Carrots	85	83	80	82.5	85	0.81	0.9372
CARBOHYDRATES							
Oats	118.5	145	159	155	169	13.03	0.0112
Brown rolls	126	108	120	99	95.5	11.19	0.0246
Potatoes	50	54.17	54.5	51.75	44.5	8.61	0.0717
Long grain white rice	67	67	69	79	79	7.24	0.1239
Brown rice	104	95	81	90.58	175	5.77	0.2171
Oven chips	129	129	126.9	129	129	5.63	0.2282
Weetabix	166	159	169	171	178	4.18	0.3818
Spaghetti	55.5	68.5	69	59	69	2.01	0.7348
Wholemeal bread	99	93	96	90.5	98	1.18	0.8814
MEALS							
Birds eye lasagne	199	199	199	189	189	0.51	0.9729
PROTEIN							
Haddock fillets	254	297.79	289.36	220.36	220	8.21	0.0842
Chicken breasts	180.49	181.42	192.27	185.38	179.5	6.59	0.1593
Lean beef mince	269	260.91	269	269	269	2.67	0.6148
Salmon fillets	303.5	259	279.07	279.07	233.22	2.5	0.6447
DAIRY							
Skimmed milk	69.71	72	69	62.5	59	5.32	0.256
Semi-skimmed milk	76.73	75.7	70	75	70	4.07	0.3964
Low fat yoghurt	29	30	29	30.63	29	1.72	0.7863
Low fat spread	109	111	115	118.5	111	0.49	0.975
HEISB TOTAL	4539.85	4597	4710.97	4610.45	4604.61		

Shaded areas indicated statistically significant differences at p=0.05 or less

Table 25: Median cost of food items in HEISB by quintile of housing deprivation

Food items	1 (low)	2	3	4	5 (high)	KW Chi squared	p value
FRUIT							
Frozen berries	181.6	252.37	247.03	251.51	158.9	14.04	0.0072
Oranges	25	29.07	29.5	25	24.88	9.65	0.0467
Pineapple	46.77	54.5	49	51	54	8.43	0.077
White Grapes	299	254	322.5	299	272.5	7.36	0.1179
Apples	133	125	137.5	127.34	125	3.28	0.5116
Bananas	130.5	140	144	134	131.08	1.88	0.7573
Orange juice	82	87	77	85	80	0.98	0.9124
VEGETABLES							
Broccoli	165.83	180.91	225	209.09	151.52	9.63	0.0471
Frozen peas	137.85	159.23	177.8	137.85	149	7.14	0.1288
Sweetcorn	41.63	50.75	48.13	49.54	55.32	6.65	0.1555
Round lettuce	51.84	49	55.78	54.14	45.28	6.05	0.1957
Carrots	89	79.15	84.35	85	76.5	5.83	0.2126
Baked beans	48	49	49	49	49	5.07	0.2807
Red pepper	403.13	387	375	410.42	315	4.26	0.3719
Cucumber	70	79	80	79	76.5	4	0.4063
Onions	69	69	82.5	69.5	68	3.05	0.5493
Tomatoes	165.2	163.6	174.5	176	153.5	1.64	0.8023
CARBOHYDRATES							
Potatoes	56.25	59.6	50	50	44.5	26.64	0.0001
Wholemeal bread	89	96	99	89	99	13.36	0.0096
Spaghetti	45	69	68.5	62.5	69	9.77	0.0444
Oven chips	129	129	129	127.58	129	8.04	0.0901
Oats	125	139	129	150	169	6.66	0.1547
Long grain white rice	67	69.5	72	72	79	4.94	0.2934
Brown rice	79.5	95	95	85	95	2.58	0.6309
Brown rolls	101.25	123	108	102	102	2.16	0.7067
Weetabix	167.5	163	162	169	178	0.51	0.973
MEALS							
Birds eye lasagne	215	195	198	198.5	179	9.33	0.0534
PROTEIN							
Lean beef mince	269	269	269	269	225	5.43	0.2462
Salmon fillets	289.03	261.8	279.07	279.07	237	3.41	0.4922
Chicken breasts	179.5	185.38	185.34	185.25	185.38	3.12	0.5388
Haddock fillets	266	298.34	289.88	263.12	234.54	2.09	0.7191
DAIRY							
Semi-skimmed milk	70.42	69	79	70	73.33	7.44	0.1144
Low fat spread	109	104	114	109	123	5.81	0.2136
Low fat yoghurt	29	29.81	29	30	29.93	3.56	0.4694
Skimmed milk	64	63.75	71.21	62.5	66	3.16	0.5313
TOTAL	4489.8	4627.76	4785.59	4665.91	4303.66		

Shaded areas indicated statistically significant differences at p=0.05 or less

Table 26: Median cost of food items in HEISB by quintile of geographic access

Food items	1 (high)	2	3	4	5 (low)	KW Chi Squared	p value
FRUIT							
Oranges	22.83	25	29.68	29	28	16.05	0.003
Bananas	130	123	137.48	146	150	10.54	0.0322
White Grapes	249	249	299	322.5	310	8.16	0.0858
Pineapple	49	54.69	50.44	48.87	52	4.9	0.2975
Frozen berries	240.87	241.12	174.34	206.37	258.78	4.74	0.3147
Orange juice	79	79	89	85	80	2.73	0.6047
Apples	125	125	125	137.5	127.34	2.21	0.6975
VEGETABLES							
Round lettuce	45.28	45	50.53	51.84	62.34	25.97	0.0001
Frozen peas	117	129	167.82	157.83	220	25.17	0.0001
Cucumber	72.5	75	83	70	85	15.88	0.0032
Broccoli	160.93	171.21	212.12	165.83	212	12.45	0.0143
Baked beans	49	48.42	49	49	49	11.4	0.0224
Sweetcorn	52	52	34.12	50.75	53.5	10.64	0.0309
Carrots	72	79.15	85	85	88.11	10.36	0.0348
Tomatoes	151.98	152.5	200	170.83	166	9.76	0.0447
Onions	67.33	69	81.17	79	69	4.91	0.2963
Red pepper	399	406.25	399	375	343.75	3.54	0.4721
CARBOHYDRATES							
Brown rolls	102	90	99	119.25	132	17.26	0.0017
Oats	149.5	149.5	189	125	130.67	13.04	0.0111
Spaghetti	69	59	66	69	79	10.22	0.0368
Wholemeal bread	91.5	89	99	94	99	7.37	0.1174
Potatoes	44.5	49.5	49.5	54.65	54.75	7.01	0.1356
Weetabix	165.5	164	178	166.5	163	5.05	0.2824
Brown rice	95	95	89	77	95.5	3.88	0.4223
Oven chips	129	119.72	129	129	129	3.56	0.4688
Long grain white rice	69	72	75	69	70	3.47	0.4826
MEALS							
Birds eye lasagne	187	199	192	199	179	7.16	0.1275
PROTEIN							
Haddock fillets	256.17	289.78	348.3	169.8	252.56	6.89	0.1418
Salmon fillets	261.8	289.03	249.2	274.43	279.07	5.05	0.2824
Lean beef mince	269	269	269	269	240	4.37	0.3581
Chicken breasts	187.46	185.25	179.5	192.66	181.42	1.89	0.7564
DAIRY							
Semi-skimmed milk	75	69	69	71	80	15.91	0.0031
Low fat yoghurt	29	28.39	29.5	29.5	30.73	10.88	0.028
Skimmed milk	64	61.62	69	59.86	76.5	8.7	0.0691
Low fat spread	109	109	118	109	124	8.22	0.0838
HEISB TOTAL	4436.15	4512.13	4763.7	4507.97	4751.02		

Shaded areas indicated statistically significant differences at p=0.05 or less

Table 27: Median cost of food items in HEISB by quintile of crime

Food items	1 (low)	2	3	4	5 (high)	missing	KW Chi Squared	p value
FRUIT								
Frozen berries	249.7	265	181.6	239.97	213.63	249.7	11.12	0.0252
Bananas	143	139	140	144	113.5	160	6.42	0.1699
Oranges	25	28.5	24.5	25.5	25	30	4.97	0.29
Apples	132	147	125	125	119	127.5	4.74	0.3154
Orange juice	81.5	85	85	79	75	79.5	2.36	0.6706
Pineapple	50.48	52.01	51	49	49	53	2.16	0.7064
White Grapes	338	299.5	274	258	237	305	7.97	0.926
VEGETABLES								
Frozen peas	179.15	177.8	157.83	168.52	106	177.8	26.49	0.0001
Round lettuce	61	51.84	49	51.84	42.66	57.39	20.33	0.0004
Carrots	85	85.5	84	85	64.5	89	12.81	0.0122
Baked beans	49	49	49	49	44.73	49	9.85	0.0431
Cucumber	85	79	63	79	79	72	8.95	0.0624
Onions	86	68	69	79.15	66.67	66	5.1	0.2772
Tomatoes	189	171.5	162.1	159	132	160	4.16	0.384
Red pepper	375	375	406.25	321.25	425	331.25	3.11	0.5401
Broccoli	209.09	189.39	181.82	197.3	159	198.24	2.51	0.6421
Sweetcorn	52	44.31	52	50.18	48	42.22	0.97	0.915
CARBOHYDRATES								
Potatoes	50	58	49.5	49.5	49	60	8.88	0.0642
Spaghetti	49	69	69	69	65	59	5.71	0.2221
Brown rice	95	72.5	95	65	95	112	4.98	0.2895
Brown rolls	113.25	129	102	111	99	136.5	4.95	0.2924
Weetabix	179	166	164	172	162	157	4.3	0.3672
Long grain white rice	74.5	71.5	69	75	67	69	2.46	0.6521
Wholemeal bread	99	96	92	99	91	99	2.28	0.6853
Oven chips	129	129	129	129	129	119.72	2.07	0.7233
Oats	129	145	144	164	150	169	1.75	0.7812
MEALS								
Birds eye lasagne	199	199	194	189	199	172.5	1.72	0.7876
PROTEIN								
Lean beef mince	269	274.5	269	299	257.5	269	8.12	0.0875
Haddock fillets	263.12	284	307.12	270.86	255.86	236.54	3.98	0.4092
Chicken breasts	185.38	179.5	189.54	199.6	182.98	186	3.34	0.5032
Salmon fillets	299	265.53	279.07	285.13	261.8	279.07	2.61	0.6248
DAIRY								
Skimmed milk	69	69.5	66.5	73.94	58.41	70.42	8.75	0.0676
Low fat spread	120	109	116.5	119	99	119	5.54	0.236
Semi-skimmed milk	75	75	73.97	73.17	69	75	5.49	0.2409
Low fat yoghurt	30.63	30.63	29	29.43	28.69	31	5.21	0.2662
HEISB TOTAL	4817.8	4730.01	4593.3	4633.34	4318.93			

Shaded areas indicated statistically significant differences at p=0.05 or less

13. Sentinel maps

The following maps are provided for each sentinel in sequence:

- Population and food retail location
- Percentage of HISB stocked
- Percentage fruit stocked
- Percentage vegetable stocked
- Percentage carbohydrate stocked
- Percentage protein stocked
- Percentage dairy stocked

A CD containing these maps together with maps for each sentinel on the following, is available on request

- Mean distance to high HEISB store
- Percent HEISB stocked
- Price range for apples
- Price range for onions
- Price range for brown rice
- Price range for sweetcorn
- Price range for berries
- Price range for lasagne
- Price range for semi-skim milk

14. Academic papers from project

Anderson AS, Dewar J, Marshall D, Cummins S, Taylor M, Dawson J, Sparks L “The development of a healthy eating indicator shopping basket tool (HEISB) to assess food access – concepts and practicalities” submitted Public Health Nutrition 2007.

15. Other coverage from project

Taylor, March 2005, Scottish Retail Review

BBC, Sunday 11th December 2005, Landward

16. Presentations associated with project

Taylor, 3 November 2005, "On Track" Scottish Community Diet Project conference, Glasgow.

Taylor, Marshall, Dawson, 17 March 2006, NHS boards and diet projects audience, Perth

Taylor, Dawson, 30 June 2006, NHS Public Health Nutrition Group, Edinburgh