



# Kent Academic Repository

**Revoredo-Giha, Cesar, Kupiec-Teahan, Beata, Leat, Philip, Fearne, Andrew and Cacciolatti, Luca (2009) *An Exploration of the Use of a Dataset of Supermarket Purchases for the Analysis of Red Meat Purchases in Scotland*. Project report. SAC**

## Downloaded from

<https://kar.kent.ac.uk/29349/> The University of Kent's Academic Repository KAR

## The version of record is available from

<http://www.sac.ac.uk/ruralpolicycentre/publs/foodmatters/redmeatprices/>

## This document version

UNSPECIFIED

## DOI for this version

## Licence for this version

UNSPECIFIED

## Additional information

## Versions of research works

### Versions of Record

If this version is the version of record, it is the same as the published version available on the publisher's web site. Cite as the published version.

### Author Accepted Manuscripts

If this document is identified as the Author Accepted Manuscript it is the version after peer review but before type setting, copy editing or publisher branding. Cite as Surname, Initial. (Year) 'Title of article'. To be published in *Title of Journal*, Volume and issue numbers [peer-reviewed accepted version]. Available at: DOI or URL (Accessed: date).

## Enquiries

If you have questions about this document contact [ResearchSupport@kent.ac.uk](mailto:ResearchSupport@kent.ac.uk). Please include the URL of the record in KAR. If you believe that your, or a third party's rights have been compromised through this document please see our [Take Down policy](https://www.kent.ac.uk/guides/kar-the-kent-academic-repository#policies) (available from <https://www.kent.ac.uk/guides/kar-the-kent-academic-repository#policies>).

## An Exploration of the Use of a Dataset of Supermarket Purchases for the Analysis of Red Meat Purchases in Scotland

Cesar Revoredo-Giha<sup>1</sup>, Beata Kupiec-Teahan<sup>1</sup>, Philip Leat<sup>1</sup>, Andrew Fearne<sup>2</sup> and Luca Cacciolatti<sup>1,2</sup>.

### Introduction

Given that a great deal of public policy and funding is directed at improving health, it is important to track changes in the diet of the population so that advice and interventions can be appropriately targeted. This tracking, which informs Food Standards Agency Scotland (FSAS) and Scottish Government policy in relation to food purchases/intakes in Scotland, is conventionally conducted using dietary surveys, but our research has explored the possibility of using supermarket purchases data to complement the existing dietary survey information.

FSAS identified a policy need for information on red meat purchase and consumption, following the publication of a report by the World Cancer Research Fund (WCRF 2007) which recommended a limit on red and processed meat consumption. Therefore, this briefing reports recent research to explore whether a dataset of representative supermarket purchases could be used to provide information on patterns of red meat purchases in Scotland.

### Methods

#### *Development of the database*

Data based on a panel of 1.3 million UK loyalty card holders from one of the 'big four' supermarkets was used. The majority of the analyses were based on transactions corresponding to 91,000 loyalty card holders in Scotland. The dataset consisted of the most recent 2 years (December 2006 to December 2008) of weekly aggregated data of red meat purchases detailed at the level of individual products. Data on individual meat products were aggregated into red and processed red meat categories based on FSA criteria<sup>3</sup>. Eight categories were used in the analysis, each of which contributed to at least 2.5 per cent of red meat sales. The red meat categories were: beef (raw), burgers and meatballs, lamb (raw), pork (raw) and meat pies. The processed red meat categories were: bacon and gammon (raw), ham and sausages. For the analysis of expenditure on sausages, the database was expanded by adding their nutritional composition per 100g to the database.

#### *Analysis*

The data were used to identify differences in the purchasing of red meat products in Scotland according to geographical location and socio-economic status using CAMEO<sup>4</sup> and lifestyle<sup>5</sup> criteria. Also, the data were analysed to investigate the proportion of meat purchases that were of Scottish origin (i.e., 'Scotch Beef' and 'Scotch Lamb' which is protected by EU quality certification or labelled as other 'Scottish' origin). Finally a case study on the purchases of sausages was developed in relation to nutritional criteria due to the fact that they are an important component of red meat purchases in Scotland and variable in terms of their fat and sodium content.

### Main Findings

#### *Purchasing behaviour of red meat buying customers*

- As shown in Figure 1, much lower percentage of loyalty card customers bought red meat from this particular supermarket chain in Scotland compared to the rest of the UK (18 per cent versus 32 per cent for unprocessed red meat and 23 per cent versus 38 per cent for processed red meat).

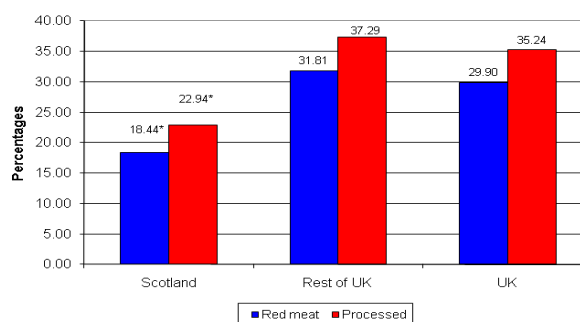


Figure 1

<sup>1</sup>Scottish Agricultural College, West Mains Road, Edinburgh, EH9 3JG. T: 0131 535 4344. E: [Cesar.Revoredo@sac.ac.uk](mailto:Cesar.Revoredo@sac.ac.uk).

<sup>2</sup>Centre for Value Chain Research, Kent Business School, University of Kent, Canterbury, Kent CT2 7PE.

<sup>3</sup>Red meat not containing preservatives and red meat containing preservatives. Draft SACN Report on Iron and Health, June 2009, [http://www.sacn.gov.uk/pdfs/draft\\_iron\\_and\\_health\\_report\\_complete\\_june\\_2009\\_consultation.pdf](http://www.sacn.gov.uk/pdfs/draft_iron_and_health_report_complete_june_2009_consultation.pdf).

<sup>4</sup>[http://www.callcreditmarketing.com/docs/CAMEO\\_UK\\_Table.pdf](http://www.callcreditmarketing.com/docs/CAMEO_UK_Table.pdf).

<sup>5</sup> Provided by the Centre for Value Chain Research (VCR2), Kent Business School.

- Figure 2 shows that there was little difference between Scotland and the rest of the UK in the weekly number of packs bought by red meat buying customers (1.2 packs).
- There was little difference between Scotland and the rest of the UK and within the socio-economic and lifestage groups in Scotland, in the proportion customers spent on the different red meat categories.
- In Scotland the largest share was for beef (27 per cent), followed by bacon and gammon (16 per cent), ham (16 per cent), sausages (11 per cent), pork (6 per cent), lamb (5 per cent), meat-pies (5 per cent), burgers and meatballs (3 per cent).
- 50 per cent of the expenditure on red meat (including processed red meat) was labelled 'Scottish', 7.5 per cent of the red meat (beef and lamb) was labelled 'Scotch'.

*Analysis of sausage purchase in relation to price and nutritional criteria in Scotland*

- The affluent groups were more likely to buy more expensive sausages (based on price per 100g). The less affluent groups were more likely to buy cheaper sausages.
- There was little difference within the socio-economic and lifestage groups in the proportion of expenditure on sausages in relation to the saturated fat content (per 100g and as percentage energy) and sodium content (per 100g) of the sausages.
- Further analysis of the top 10 products (which represented approximately 36 per cent of the total expenditure on sausages) suggested that it was possible to purchase a lower saturated fat or a lower sodium sausage for the same price as a higher saturated fat or sodium sausage. However it would cost more (per 100g) to achieve **both** a lower saturated fat and a lower sodium sausage.

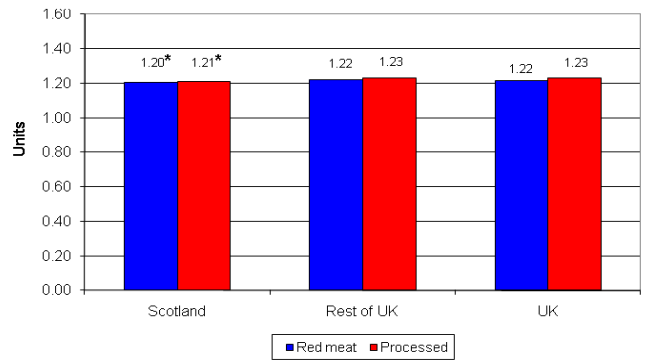


Figure 2

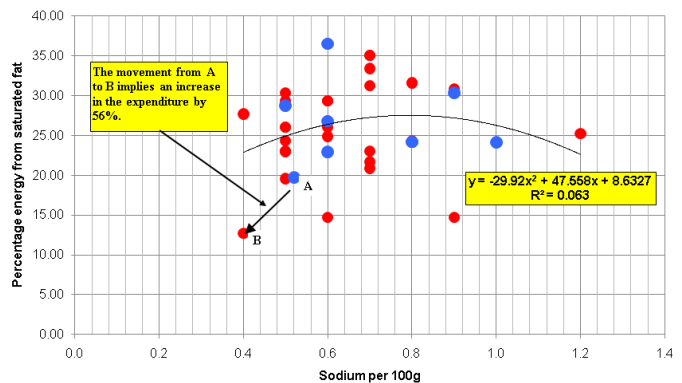


Figure 3

## Conclusions

There are obvious limitations in the use of this dataset of representative supermarket purchases for nutritional surveillance purposes, in particular because not all red meat purchase is captured (in fact, a smaller proportion of loyalty card customers of this supermarket chain in Scotland bought red meat products compared to the rest of the UK). However, this dataset provided some useful information on patterns of red meat purchases in Scotland and was especially valuable for the detailed case study of sausages opening possibilities for future research.

The purchasing patterns of red and processed red meat buying customers at this supermarket chain in Scotland were very similar indeed to the rest of the UK in relation to the expenditure share on different product categories and in the number of packs bought. Overall, the data also indicated that the purchasing patterns of red and processed red meat product categories did not vary widely amongst either socio-economic or lifestage groups, in Scotland.

The proportion of expenditure on sausages was very similar across the socio-economic and lifestage groups and there was some evidence that the more affluent chose to buy more expensive sausages, however these sausages were not necessarily healthier. The analysis of the distribution of expenditure on sausages, suggested that the proportion of expenditure on 'healthier' or 'less healthy' sausages within all the socio-economic and lifestage groups was similar. The analysis of the top 10 sausages in terms of expenditure share for Scotland, indicated that there is room to move the purchases of sausages towards a more healthy (less sodium or less saturated fat) product without necessarily incurring an increase in customer expenditure, but to achieve both together may be more challenging.

Overall the results indicate that targeting particular consumer groups may not be the most efficient way to improve the nutritional intakes of the population. Instead, it may be potentially more efficient and effective to engage with producers, suppliers and retailers directly to improve the nutritional composition of specific products (e.g., products with poor nutritional composition which enjoy a high level of sales). It would also be beneficial from a health perspective to continue to encourage the provision of clear and accessible nutritional information on individual products, and make it as easy as possible for customers to make an informed choice between similar products.