Public Health
England

# Sugar Reduction: The evidence for action Annexe 4: An analysis of the role of price promotions on the household purchases of food and drinks high in sugar 

A research project for Public Health England conducted by Kantar Worldpanel UK

## About Public Health England

Public Health England exists to protect and improve the nation's health and wellbeing, and reduce health inequalities. It does this through world-class science, knowledge and intelligence, advocacy, partnerships and the delivery of specialist public health services. PHE is an operationally autonomous executive agency of the Department of Health.

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# An analysis of the role of price promotions on the household purchases of food and drinks high in sugar ${ }^{1}$ 

## A research project for Public Health England conducted by Kantar Worldpanel UK

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## Executive summary

Public Health England commissioned Kantar Worldpanel to explore the role that price promotions might play in stimulating changes in purchasing levels of high sugar food and drinks among shoppers. Sugar in the context of this report is taken to be the total sugars contained within food and drink items.

Kantar Worldpanel is a global market research company, which runs and analyses a continuously reporting panel of 30,000 British shoppers. These panellists are asked to record the details of all take home food and drink purchases made, including the volumes bought and prices paid. The collected information is further enhanced by Kantar Worldpanel through processes that flag price promotions and assign nutritional values to all products. The nutritional information available for these products is collected from product packaging which lists total sugars, not free and added sugars separately.

The resulting dataset allows for extensive and objective analysis of shopper behaviour.

PHE asked Kantar Worldpanel to analyse its datasets to provide answers to the following research questions:

1. What is the scale and nature of promoting in the UK and how has this changed in recent years?
2. Who responds to promotions and how do promotions generally work?
3. How incremental are promotions to food and drink categories? Do promotions on one category simply come at the expense of competitor foods in other categories?
4. Are promotions on high sugar products more extensive and do shoppers react differently to these compared to non-high sugar products?

All work was restricted to Great Britain and covered the purchasing of take home food and drink only.

The headline findings of the work were as follows:

- promotions in Britain have reached record but stable levels and are the highest in Europe. Promotions now account for $40 \%$ of food and drink take home expenditure. A typical household would now have to spend $16 \%$ more (or an extra £630 in a year) if they wanted to buy their annual selection of promoted items at full price
- while promotions make products cheaper they also tend to encourage people to buy more. Promotions in food and drink categories drive various short term behavioural changes, such as getting shoppers to choose a different brand to normal. Promotions appeal to people from all demographic groups and frequently lead people to buy more of the promoted category than expected. On average about one fifth (22\%) of promoted food and drink volumes bought, can be considered to be incremental to expected category purchasing levels
- promotions not only get people to buy more of a category than normal, the evidence shows this effect also increases overall take home food and drink volumes. When people buy higher sugar categories, there is little evidence that increased purchasing of one category leads buyers to make a compensatory reduction in other higher sugar categories. This means promotions increase the overall level of take home food and drink being purchased
- higher sugar food and drink items are both more likely to be promoted and more deeply promoted. Despite this, shoppers react to high sugar promotions in a similar way to other promotions. As several of the higher sugar food and drink categories represent more discretionary products, promotions in these areas will more easily get shoppers to buy more than normal. This means promotions in some higher sugar categories can more readily drive up take home food and drink volume
- promotions are more common on products where sugar is added, (particularly discretionary products, carbonated drinks, biscuits cakes etc), than on table sugar and products where sugar is naturally present such as milk and fruit and vegetables, with the exception of fruit juice
- it is estimated that $8.7 \%$ of all take home sugar is an incremental consequence of promotions with about 6\% coming from the higher sugar categories. In other words, a $6.1 \%$ saving in sugar volumes might be achieved if the level of promotions in higher sugar categories was reduced to zero. This equates to about 7.4 g of sugar per individual per day


## Abbreviations and glossary

Category - A group of food and drink products that have common features and are grouped together to form a food and drink market

Discount - The reduction from full price offered by a promotion usually expressed as a percentage

FMCG - Fast moving consumer goods
Higher sugar category - A selected list of food and drink categories containing $>8 \%$ average sugar by volume. Some categories with $>8 \%$ sugar such as ingredient (home baking) sugar and fruit are excluded. See the appendices for a full list of included categories.

Sugar - In this report, this refers to the total sugars contained in food or drink items. Packets of sugar (ie the product used for sweetening hot drinks or as a home baking ingredient) are referred to as table sugar.

TPR - Temporary Price Reduction (eg a product with a full price of $£ 1.50$ being promoted to £1)

Uplift - The increase in purchasing a promotion generates above full price sales levels.

MB - Multibuy (a promotion requiring the purchase of more than one pack, eg " 2 for £2" or "Buy One Get One Free")

PHE - Public Health England

PL - Private label (also known as retailer own brand)

## Introduction

In June 2014, PHE published 'Sugar reduction: responding to the challenge'1. This set out the steps being taken to help people reduce sugar consumption and highlighted a number of areas for potential future action. Among these areas, price promoting was identified for further study.

Price promotions are a significant feature of the British grocery landscape and are employed to encourage shoppers to make certain buying choices. PHE required evidence to better understand the role of price promotions in influencing shoppers and specifically wanted to understand whether such events can lead to increased purchasing of high sugar foods and drinks. The best means to address this question is provided by the analysis of large datasets of shopper transactions. Such data is expensive to collect and is generally only accessible to market research companies. These companies use their datasets to provide confidential commercial insights to grocery manufacturers and retailers. As a consequence of this situation, much of the past work in this area remains in the private domain and the extent of relevant academic literature is limited.

To this end, Kantar Worldpanel was commissioned to undertake analysis of its proprietary data to bring a better understanding of the role that price promotions play in the purchasing of food and drink and, therefore, in the purchasing of sugar as an integral component.

Kantar Worldpanel is an international company dealing in consumer knowledge and insights based on consumer panel research. In the UK, Kantar Worldpanel runs and analyses purchasing data collected by a continuously reporting panel of 30,000 demographically representative British households. These panellists are asked to record the details of all take home food and drink purchases made, including the volumes bought and prices paid. The collected information is further enhanced by Kantar Worldpanel through processes that flag price promotions and assign nutritional values to all products.

The resulting dataset allows for extensive and objective analysis of shopper behaviour. Specifically for this project, the dataset provided a means of understanding the extent to which established shopping behaviour can be affected by promotional participation.

PHE asked four study areas to be addressed:

1. What is the scale and nature of promoting in the UK and how has this changed in recent years?
2. Who responds to promotions and how do promotions generally work?
3. How incremental are promotions to food and drink categories? Do promotions on one category simply come at the expense of competitor foods in other categories?
4. Are promotions on high sugar products more extensive and do shoppers react differently to these compared to non-high sugar products?

All work was restricted to Great Britain and covered purchasing of take home food and drink groceries only, ie excluding food and drink purchased and consumed out of the home.

## An introduction to price promotions

The work detailed in this report is intended to analyse how shoppers react to promotions and specifically how these reactions might change when people are faced with promotions on items with high sugar content. To do this, the first element of the analytical work was to identify and classify a large dataset of promotional events which could then be examined in more detail.

Promotions in the context of this study basically mean special offers available in supermarkets which are specifically characterised by there being a discount on the usual selling price. These promotions are typically planned and agreed through negotiations between individual supermarket chains and the manufacturers of the products involved.

Typically a promotion event will be restricted to one brand and often to a particular pack format or sub-brand (ie cola "brand $X$ " six pack cans). It is common to see within the same supermarket chain, similar promotions being run at the same time on different brands or even for different brands owned by the same or different manufacturers to be bundled up and promoted together. Common examples of this can be seen in alcohol categories where different beer brands are often linked to the same multibuy promotion (buy any two cases for $£ 18$ etc).

For the purposes of this study, promotional "events" were identified at a level that was based on combinations of sub-brand (ie diet cola "brand X") and pack size (ie $6 \times 330 \mathrm{ml}$ ). Hence a deal offering a 50p reduction on any $6 x 330 \mathrm{ml}$ packs diet and regular cola would be itemised as two events.

There are three major forms (or "mechanics") of promotion that are commonly seen in British supermarkets and these are referred to at various points in the study. Each of these types of promotion will be captured by the study dataset.

1. Temporary price reductions (TPR): These are short term reductions in the price of food and drink products. Most retailers will run such offers on specific items for a typical duration of 2-4 weeks before reverting back to the full price
2. Multibuy: These types of promotion require the shopper to buy one or more items to benefit from the discounted price. These include well known mechanics such as "buy one get one free" as well as types that state a fixed price or saving (ie " 3 for $£ 10$ " or "Buy 6 and save $25 \%$ "). While many multi-buy mechanics are short term, lasting only 2-4 weeks, there are also notable instances where promotions are longer term. Many chilled or fresh food items for example, such as fruit juice, ready meals and meat, have seen ongoing multibuy offers that can continue for many months. For example there might be an ongoing multibuy on stickered meat items that allows shoppers to buy 3 for $£ 10$. These types of promotion tend to become an established feature in certain categories for extended periods of time.
3. Extra Free: These promotions occur when an enlarged pack size is created by the manufacturer and where the pack label states that a proportion of the product is free. For example an extra-large packet stating $50 \%$ extra free. These types of promotions are now far less common than TPR and multibuy.

Other forms of in-store promotions do exist; for example deals that offer extra loyalty card points or free gifts and coupons in the pack. These tend to either be infrequent or difficult to measure accurately through a consumer panel approach and so are not included in the consideration of this study.

## Methodology


#### Abstract

Data for the study is entirely derived from Kantar Worldpanel's representative sample of 30,000 British households. Purchases recorded by the panel are classified into category (ie market) definitions and price promotions are identified through various methodologies. Total sugar content, (along with other nutritional components), is collected by examining product packaging. The underlying data collection methodologies are provided in the appendices at the end of this report. Appendix 1 describes the purchase data collection method. Appendix 2 describes the process by which nutrition attributes are assigned to grocery products.

Following the production of the underlying data, a variety of analytical techniques can be used to help further interrogate the data. Two of the main approaches used in this study are outlined below.


## Source of volume analysis

A key methodological component underpinning this report is the use of Kantar Worldpanel's "source of volume" methodology. This technique breaks down the volume that forms a promotional uplift (the increase in sales generated), into a series of classifications. The classifications seek to explain and quantify how the promotion generated volume and considers various scenarios that could be responsible. This approach had a key application for PHE because it revealed the degree to which promotions drive greater food and drink category volumes versus the extent to which volumes are shifted between competing products within a food and drink category.

A "source of volume" dataset was produced that covered a period of two years to 1 February 2015, from which around 47,200 food and drink promotions were identified and analysed. The source of volume technique was used to break down each individual promotional event, but these results were averaged to enable broad comparisons to be made between categories and between various types of promotion. The approximately 47,200 promotions were not an exhaustive list of all promotions but represented those that could be robustly analysed over the two year period. To help ensure robust sample sizes, the promotions were restricted to those running in the four main food and drink retailers: Tesco, Asda, Sainsbury and Morrisons. Promotions where there was good reason to be uncertain about the exact mechanic (type of promotion) or discount being applied were excluded.

To produce the source of volume analysis, the transaction history of individual households was monitored over two years to observe how shoppers reacted to the promotions they participated in:

- first, levels of food and drink category participation over time were examined to see how the presence of promotions changed the trend. A regression model was employed to calculate the impact that removing a promotion would have on the total number of category shopping trips being made. This indicated the degree to which promotions in a category might drive extra trips as a form of increased purchasing volume
- then for each household, the interval between purchases was measured to see how this rate changed when a product was bought on promotion. This provided a perspective on whether deals increased purchase rates from category trips that were expected to occur. The intention was to understand the net impact of instances when households bought more than usual amounts (prompted by the promotion)
- by observing the history of store and brand purchase choices that each panellist had made over time, the expected levels of buying for different products and retailers were set for each household. From this, remaining (non-incremental) volumes could be assigned to the appropriate mix of products sold in the category. This process allowed those shopper behaviours to be quantified that are referred to as; cannibalised, stolen and subsidised. Each of these describes different types of switching between products sold in the same food and drink category. The full explanation and interpretation of these is provided in the results and discussion section of this document
- volume profiles were converted to expenditure profiles by applying the relevant mix of prices paid for the promoted products and competitor products and by comparing observed spend levels to levels that would have been expected if the promotion had not occurred. The contributions from individual promotions were then aggregated into overall category profiles - ie sugar sweetened soft drinks

Category correlation analysis

The other key analytical method used in this study was a correlational analysis to work out if an increase in purchasing in one category led to a reduction in the purchasing of another. To achieve this, the following method was used:

- for each household within each category, a two year purchase history was isolated
- a sequence of 24 rolling (ie overlapping), 12 week volumes purchased were recorded across the two year time frame and were expressed as an index
against the average 12 week purchase volume to give a volume index, the average being calculated for that household in that category
- to account for market seasonality, every household's volume index was compared to overall levels of category buying among the whole population. A new, corrected volume index was created to reveal whether each household was buying more or less than normal irrespective of wider seasonal explanations such as Christmas. A further adjustment was then made to account for each household's level of total purchasing. This was to prevent situations where unusually low purchasing of a particular food type could just be explained by a panellist being on holiday and so be buying very little of anything at that time. This adjustment was achieved by weighting each 12 week index by the number of unique products the house purchased in that period
- the outcome was that every household had a series of final indices calculated. These were for each category they bought for each of the rolling periods covered by the analysis (these indices are referred to in the next paragraphs as household $x$ period indices)
- for each category in turn, the final household $x$ period indices were grouped into integer percentage bands. For example, all indices in chilled juice that represented a $1 \%$ increase beyond normal purchasing levels (ie 101) were grouped together and all indices representing a $2 \%$ increase (102) were grouped and so forth. In turn these bands were employed to determine the average final index for all other categories. So for household $x$ period indices in the 101 chilled juice group, the average index scores for corresponding household $x$ period data points in ambient juice were compared
- to remove extreme behaviour, only indices in the 50-200 range were included. This was verified to ensure that the majority of the data was captured in this range
- finally for each combination of categories Pearson's correlation coefficient was calculated to understand the relationship and scatter plots were generated to verify that a straight line fit was appropriate to describe these relationships

Any relationship with an absolute Pearson's correlation value of above 0.6 was reported as being significant enough to investigate further.

## Results and discussion

This section will consider in turn each of the four major research areas framed by the questions from PHE.

1. What is the scale and nature of promoting in the UK and how has this changed in recent years?

Levels of price promotions on take home food and drink rose steadily in the years prior to 2010. Since then trends have stabilised at record high levels as shown in Figure 1 below. In the 12 weeks ending 1 February 2015, 41\% of shopper expenditure was recorded on some form of price promotion. For the same period, the average discount had reached just below $33 \%$, equivalent to a third off the full price.

Figure 1: Promotional breadth and depth over time (Take Home Food and Drink)


These levels are probably among the highest in the world and certainly outstrip the levels seen in any major European economy. Promotional levels for groceries in countries such as Germany, France and Spain are in the order of $20 \%$ of shopper expenditure, so approximately half that seen in the UK. ${ }^{2}$

[^1]Promotions at this level do of course play a role in helping shoppers reduce the cost of the items that they choose to buy. Based on the breadth and depth of promotions we can calculate a "giveaway" figure which equates to a $16 \%$ or approximately $£ 634$ reduction on a typical household’s annual, take home food and drink bill. In other words if people bought the same quantity of food and drink with no promotions they would need to spend an additional £634 for the same items. However, this is in the context of promotions encouraging additional expenditure overall which is discussed in more detail later in the report.

There is also evidence that during the high inflationary period of 2008-2010, promotions were a useful coping strategy for shoppers to manage the worst effects of food and drink inflation. During this period as food and drink became relatively more expensive, behavioural data shows that many shoppers increasingly selected items offered on promotion to help them save money.

However, there is clear evidence that promotions do actually encourage shoppers to increase the quantity they might otherwise purchase which means that notional savings for shoppers may not be quite all they seem. This issue will form a significant part of the discussion in subsequent sections of this report.

The prevalence of promotions in the UK means that the largest grocery retailers have drifted to a position where they now all promote to broadly similar levels, with only the hard discounters (Aldi and Lidl) adopting a significantly different strategy of low everyday prices. There has also been a convergence in the type of promotions (mechanics) being preferred within the industry, with the majority of promoted spend now going through as single unit, TPRs rather than forms of multibuy. These price cuts have been increasingly favoured as they are seen to help reduce overall basket spend and hence increase the perception of price competitiveness for retailers. Such deals are also more accessible to all shoppers as there tends to be a lower price and quantity threshold to participation versus multibuys. This in turn increases the potential reach of these events, maximising the numbers of people that a retailer can reward to hopefully help maintain their continued loyalty. Price cuts now account for $25 \%$ of annual food and drink spend, with the remaining $15 \%$ of promoted spend being largely accounted for by forms of multi-buy mechanic eg buy three for $£ 10$.

Against a backdrop of high product promotion levels in nearly all major supermarket chains there remains significant variation in the extent of promotion between different food and drink categories (see Figure 2). Some categories such as flavoured water have very high promotional levels (76\% of total volume bought) while many basic staples such as table salt are barely promoted at all ( $6 \%$ of volume bought). Following this broad pattern, promotions on bagged sugar account for only $15 \%$ of volume bought.

Levels of average discounts also fluctuate significantly ranging from $45 \%$ for cereal and fruit bars to much more modest levels among diet drink mixers (17\%). In the later stages of this document we consider the extent to which this variation has tended to favour higher sugar containing categories with higher depth and breadth of promoting.

Figure 2: A distribution of promotional levels and discounts by category

2. Who responds to promotions and how do promotions generally work?

It has been shown above that price promotions are now a common feature of grocery shopping and are available in all major retailers and all major categories. This promotional ubiquity means that all shoppers whatever their circumstance are regularly exposed to promotions on products they want to buy. As a consequence, the affluence and life-stage bias of shoppers participating in food and drink promotions is slight. In other words, everyone takes advantage of price promotions, not just low-income consumers.

Figure 3 plots the demographic bias in buying of food and drink on promotion compared to total buying. The promotional buying index used for this chart was calculated by averaging the biases seen in individual categories. The share of promoted spend that each demographic group accounted for in each category, was compared to that group's overall share of total category spend to create a category index. These indices were then combined as a weighted average by multiplying
each index by its respective category importance to the overall food and drink spend for that demographic group. This weighting was undertaken to remove variation caused by different market choices being made by different demographics. An index of 104 means that spend on promotions is $4 \%$ higher than expected, taking account of the categories being purchased.

Figure 3: Demographic biases towards promotional purchasing for total food and drink and for higher sugar categories


The result is that we tend to see a slight bias in favour of promotions among families and a slight rejection of promotions among older, post family households. Within these groups the difference between more affluent (ABC1) and less affluent (C2DE) occupational grades are very slight. The same pattern of promotional preference also tends to hold true within the higher sugar categories.

Overall, promotional buying is certainly not the exclusive preserve of less affluent or family households. All buyers participate, albeit with families showing a slight preference for promoted items. Families require greater volumes of food and drink and tend to shop more in the largest multiple grocery retailers. Their exposure to promotions and the absolute level of savings that promotions can deliver to them is therefore likely to be slighter greater than average.

Broad demographic comparisons, however, mask the fact that not all shoppers choose to participate equally in price promotions. It is possible to identify a range of common strategies adopted by shoppers when it comes to grocery purchasing.

Furthermore, the same household might adopt very different buying strategies for one category to another. People tend to have certain items, for which they might have higher brand loyalty, while for other items they may be more motivated by price. In order to quantify and explain these strategies, Kantar Worldpanel examined a group of panellists who had served on the panel for two years up to 1 February 2015 (ie considered to have extensive shopping histories). Among this group, shoppers were segmented based on their known and observed product and promotional buying preferences within each category. Figure 4 is a schematic showing the behavioural requirements used to pick out different strategies. Here, "private label" refers to supermarkets' own brands while "brand" refers to manufacturers' brands.

Figure 4: Defining shopping strategies

Category Buyers (defined over 2 years)
*PL = Private Label
Typical behaviour:


Seven groups were created, which represent the major ways in which shoppers might choose to participate in a category:

- "light buyers" are those people who buy within the category too infrequently in the major multiple grocery retailers to be sensibly classified. They tend to account for a very small proportion of expenditure
- four groups were then identified with above average loyalties to buying brands ("brand loyalists") or private label ranges ("private label fans") with the remaining two groups also exhibiting promotional buying propensity; "give away buyers" and "PL deal switchers"
- "deal hunters" formed a group of buyers with low brand loyalties but high propensity to buy on promotion
- a final residual group of more average looking shoppers forming a "selective buyer" group. These people have no dominant strategy and instead are flexible in their habits

Such a segmentation is useful to explain how shoppers react to promotions and therefore to illustrate the short term nature of these events. Figure 5 shows two years of expenditure for the two-litre bottle variant of a popular branded carbonated drink in one of the major multiple grocery retailers. Each promoted sales spike stimulates participation from the most promotionally sensitive groups; "deal hunters" and "give away buyers" and to a lesser degree tempting "PL deal switchers" to participate. In the periods when there are no promotions (between the sales spikes) we see almost no full price purchasing among these groups. Instead the underlying base sales in these periods are largely made up of purchases from "Brand Loyalists".

Figure 5: Sales trend for a 2L bottled carbonated drink brand in a major retailer; decomposed by shopping strategy segments


This example illustrates some common principles that are seen consistently in all grocery categories. Promotions generate short term uplifts in sales by encouraging promotionally motivated shoppers to participate. In effect, promotions are a means of buying market share among promotionally sensitive shoppers. These effects are always short term, in the sense that the sales uplift falls away as soon as the promotion ends to invariably leave a brand selling at the same levels seen prior to
the promotion. In the fast moving consumer goods (FMCG) marketing environment this fact is not always well understood and plenty of myths abound about the desired role of promotions in convincing shoppers to switch brands permanently after a discounted trial. Numerous promotional studies undertaken by Kantar Worldpanel in a wide range of categories have provided no reliable evidence to support this view.

The inherent short term impact of price promotions mean that it becomes necessary to focus attention on where the volume contributing to the short term uplift in sales comes from. For retailers and manufacturers, decisions on what constitutes a positive or negative promotional outcome should then be made on the basis of the short term impact and not on wishful long term impacts.

Analysts at Kantar Worldpanel are able to follow the transaction history of continuously reporting panellists to understand the behavioural reaction to promotions. As part of this study the shopper reactions to around 47,200 food and drink promotions that occurred within the last two years, were analysed. The resultant analysis of behaviour allowed the uplift of each of these promotions to be separated out. In turn, these profiles were aggregated into robust averages to allow the typical underlying shopper behaviours to be explained and quantified.

Figure 6 below, shows how a typical sales spike produced by a food or drink promotion in a single retailer can be broken down into several different sources of volume.

Figure 6: A breakdown of the typical food and drink promotion
(NB: Shopper behaviour classifications are explained in the text following the chart).
> 1. Volume sold over time for one promotion event on a food or drink item:
2. Breakdown showing how different shopper behaviours drive volume:
3. Quantification of shopper behaviours by their contribution to total promoted volume


Extra Trips
Expansion

- Stolen

■ Cannibalised
■ Displaced
■ Subsidised

- Volume bought at full price

The underlying analysis considers the shifts in buying choices that shoppers make within sets of closely competing products that are relevant for each individual promotion event. The actual proportions and numbers quoted in the chart represent the overall average profile of approximately 47,200 food and drink promotion events. The constituent classifications are explained as follows:

- "subsidised" volume represents volume of the promoted product that shoppers would have been expected to buy at the time of the promotion, in the same store, irrespective of whether or not there was a promotion
- "displaced" is the volume of the promoted product that would have been expected to have been bought in subsequent weeks in the same store. This can be alternatively described as brought forward, full price purchasing
- "cannibalised" volume is that which would have come from sister products within the promoting manufacturers' portfolio eg swapping between different flavours within the same brand
- "stolen" represents volume that is taken from competitor products eg cola brand $x$ stealing volume from cola brand $y$
- "expansion" and "extra trips" represent real growth in the overall category volume as a direct result of the promotion. "extra trips" are those unexpected purchases that appear to have been motivated by the promotion alone, while "expansion" represents growth from faster than expected return times to the category after a shopper participates in a promotion. This expansion effect is caused by shoppers purchasing above average quantities of the category which is then not fully offset by delayed repurchase. For example, consider a shopper who normally buys one pack of a certain product every week with seven days between each purchase. One week they see a buy one get one free deal which causes them to take two packs (double their normal quantity). We might expect that shopper to take twice as long as usual and to return to the category two weeks later to buy again. Instead shoppers often return to the category more quickly than expected (say after twelve days). This means they have delayed their return time slightly, but not by quite enough to account for all the extra volume purchased. As discussed later in this report, some types of product categories seem to have inherently higher potential for expansion and these will be referred to as more expandable categories

The resulting volume break down shows that a majority of the volume under the sales spike is a result of shoppers shifting purchasing from competing products whether owned by the promoting manufacturer or otherwise. $59 \%$ of the volume is accounted for by these switches in product selection. A further $18 \%$ of volume is accounted for by subsidised or brought forward purchasing of the promoting product.

In the context of understanding the role that promotions might play in encouraging consumers to purchase more food and drink (and potentially sugar), the key result is that we typically see $22 \%$ of the average promotional volume being net growth in the purchase volumes of the parent category. By this we mean volume that would not have been purchased if not for the promotion and this takes into account the fact that some shoppers might delay their repurchase of the category to use up extra volume bought on a promotion. The volume growing effect occurs through a combination of expansion and extra trips and reveals that promotions add to the overall category volumes being purchased. As new promotions are continuously replacing old ones, these volume building impacts will be occurring over time in nearly all categories. With levels of promoting now reasonably stable, these impacts don't lead to endless accelerated performance for categories but instead are more likely to be producing an additional layer of category volume that is continually being generated and renewed as promotions come and go from one brand to the next.

It is important to point out that the "source of volume" technique is unable to directly establish if this incremental volume is actually being consumed but it
seems likely that a significant proportion of this will be. Increased amounts of product kept in stock in the home and higher food wastage (especially on short shelf life items) are also further explanations to consider.
3. How incremental are promotions to food and drink categories? Do promotions on one category simply come at the expense of competitor foods in other categories?

Following the finding that on average over a fifth (22\%) of promoted volume bought by shoppers is incremental to a food and drink category, the next stage of the work was to test whether this increment actually inflates food or drink volumes at an overall level. It might be expected that following increased purchasing in one food and drink category that shoppers would reduce their purchasing in competitive categories to compensate.

To test this, two years' worth of household level purchasing data was once again examined among continuously reporting panellists (two years to 1 February 2015). The volumes bought by each household across blocks of 12 weeks were isolated for each food and drink category. Each block was then compared to the average for that household in that category to establish whether purchasing was high or low. Then the purchasing levels in competing categories were examined between matching time periods to establish whether above average purchasing in one category correlated with adjusted purchasing in another. The method employed some controlling indices to take account of category seasonality and natural variation in total levels of household shopping (for example when panellists go on holiday). The data was represented as a scatter plot of deviation from average purchase volumes.

The results confirmed some expected relationships as demonstrated by Figure 7. Periods where households double their usual purchase quantities of fresh pizza are represented as an index of 200 (meaning a $100 \%$ increase above normal levels). In the chart we see these periods are associated with a corresponding decline in frozen pizza volume of approximately $15 \%$ (index=85). These two categories can be considered as directly substitutable so this negative relationship is unsurprising.

Figure 7: Relationship between fresh and frozen pizza volumes


Positive relationships were also observed as shown in Figure 8. Pasta and rice are widely considered to be complimentary to ambient cooking sauces and as such it was seen that a doubling of average cooking sauce volumes (index=200) was linked to an 18\% increase in pasta and rice volumes (index=118).

Figure 8: Relationship between ambient cooking sauce and rice/pasta volumes


Interestingly it was observed that between pairs of higher sugar categories there were few negative relationships. Instead higher than average volumes for one category was often associated with higher than average volumes in other higher sugar categories. Figure 9 shows one such example, to illustrate the positive relationship between everyday chocolate (ie chocolate that excludes seasonal and gift oriented items) with sugar confectionery (sweets). The relationship is positive, with a doubling of chocolate volumes (index=200) being associated with an 11\% increase in sugar confectionery (index=111).

Figure 9: Relationship between everyday chocolate and sugar confectionery volumes


Further analysis of these higher sugar categories revealed that where negative correlations did exist they were actually likely to be with foods with healthy associations such as fruit and salads. The only two notable instances where increased purchasing of a higher sugar category did result in some degree of competition with another higher sugar category were chilled juices (competing with ambient juice) and yoghurt (competing with chilled desserts, everyday chocolate, frozen desserts, cakes and sugar confectionery). Table 1 below shows the significant relationships (based on a Pearson's correlation coefficient of $-0.6 \%$ or stronger) for the higher sugar categories. In all cases where a negative volume relationship exists, the adjustment is small. The gradient reveals that a doubling of the parent category volume leads to only a minor reduction in the competitor market in the range of $4-10 \%$.

Table 1: A summary of negative volume relationships for higher sugar categories

| High Sugar Category | Negative Relationships | Gradient | Correlation (r) |
| :--- | :--- | :---: | :---: |
| Cakes | Salad | $4 \%$ | -0.7 |
| Chilled Juice | Ambient Juice | $9 \%$ | -0.6 |
| Everyday Chocolate | Salad | $6 \%$ | -0.7 |
| Sugar Confectionery | Salad | $5 \%$ | -0.6 |
| Sweet Biscuits | Fresh Fish | $8 \%$ | -0.6 |
|  | Eggs | $4 \%$ | -0.6 |
|  | Vegetables | $8 \%$ | -0.7 |
|  | Salad | $7 \%$ | -0.8 |
| Yoghurts | Chilled Desserts | $7 \%$ | -0.6 |
|  | Table Sugar - Home baking | $7 \%$ | -0.6 |
|  | Everyday Chocolate | $5 \%$ | -0.6 |
|  | Frozen Desserts | $10 \%$ | -0.6 |
|  | Crisps, Snacks \& Nut | $4 \%$ | -0.7 |
|  | Cream | $9 \%$ | -0.7 |
|  | Sugar Confectionery | $8 \%$ | -0.7 |
|  | Cakes | $6 \%$ | -0.7 |

Gradient $=($ What $\%$ reduction do we see of the competitor category if a household doubles volume on the high sugar category)

These correlations should not be confused with causality; however, they do show that over purchasing in one higher sugar category does not typically lead shoppers to reduce purchasing of direct higher sugar alternatives. Instead, the research has shown that higher than average purchasing of a higher sugar category is more commonly associated with a decline in items with a healthy perception. These findings might suggest that households are inclined to go through healthy or unhealthy phases, when either a range of foods with a less healthy, treat oriented, perception are being purchased compared to phases when people are striving for a more healthy diet.

The key finding from this element of the research is that it appears highly unlikely that the extra consumption being generated by promotions in one higher sugar category will be compensated by reductions in alternative higher sugar competitive products. For the most part, any such relationships are not significantly detectable in the purchasing histories of households. In the rare cases where negative relationships are observed to a degree of significance, the proportion of offset volume is small.

Following the work on the competitive relationships between food and drink categories, it has been shown that a large proportion of the incremental purchase volumes generated by promotions on any one category are also likely to be
additive to the total food and drink volumes being bought. This is particularly so when considered from a higher sugar category perspective because there are very few negative relationships between the core categories contained in this group. In other words, additional purchase volumes driven by promotions on higher sugar categories are very unlikely to be offset by reductions in similar high sugar foods. This means it is of particular importance in higher sugar categories to understand the circumstances under which promotions generate the highest incremental purchase volumes (category growth) as we would expect almost all of this to be representing net increases to household sugar intake.

Within food and drink, promotions run as multibuys or promotions with higher discounts tend to be the events that generate the greatest incremental category volumes (through a mix of extra trips and expanded volumes). This is illustrated by the "source of volume" profiles shown in Figure 10.

Figure 10: Promotional volume \% decomposition by mechanic and discount bands


The mix of promotions being run (type of mechanic and depth of discount) and the nature of the product type being promoted will also mean that profiles of promotions in different categories or food and drink sectors will exhibit variation.
Figure 11 shows how incremental volumes among higher sugar categories tend to be proportionally greatest where products are more discretionary or more treat and special occasion oriented. Notable instances are pre-prepared desserts, confectionery, soft drinks and cake making ingredients.

Figure 11: Category incremental proportions for promotions on higher sugar categories


Such categories tend to have run promotions that have been more incremental as drivers of extra volume. Sectors with a promotional history that exhibit less incremental volume tend towards those that have a less discretionary and more every day basis such as condiments, preserves, breakfast cereals, fruit squash and morning goods. There are of course exceptions, but on the whole more impulsive and discretionary categories appear to hold more potential for shopper's to increase typical take home volumes and use up this volume faster.

While the focus during this research has been on the volumetric effects of promoting it is also worth noting that promotions have significant financial impacts on manufacturers, retailers and the category. From the shopper expenditure perspective, promotions tend to generate additional sales value for manufacturers and retailers in the vast majority of cases. The category incremental volume (driven by extra trips or expansion) is a pure win for manufacturers and retailers in that category. Similarly, stolen volume is also a clear win as it generates expenditure at the expense of competitors. On the whole (but not always), these impacts outweigh the potential expenditure reductions associated with cannibalised trading down and the instances when expected full price purchases are discounted.

However, if we look at this equation from a broader category perspective (encompassing all retailers and manufacturers operating in that food or drink market place), the benefit that any one manufacturer enjoys by stealing from
competitor brands is unlikely to hold much benefit. Movements from one brand to another (ie from full priced to discounted alternatives) will tend to generate reductions in total category expenditure unless these gains are offset by increased volume sales. Therefore not all promotions will actually grow their particular food or drink category in cash terms. High discounts on cheaper products and in categories that show less potential for expansion, are far more likely to cause a contraction in spend overall.

Promoting retailers tend to fall somewhere between the two extremes of manufacturer and category. While they will rarely see much benefit from switching between brands (especially if this trades shoppers down to cheaper priced items), retailers do benefit from some transferred spending from their competitors. Most shoppers now shop in a repertoire of different stores, so being tempted to spend on a promotion tends to preclude a degree of purchasing in competitor outlets.

Figure 12 reveals that as discounts increase to deep levels (particularly above $45 \%$ ), the typical expenditure return from promotions actually dips into a reduction for the wider category. These are of course average results and don't mean that all deep discount promotions are value negative. Neither are all lower discount deals value additive to their categories. From the analysis of the 47,200 promotional events in the study dataset we find that approximately four out of every 10 promotions reduce category value with the remainder helping to grow value.

Figure 12: Average impacts on shopper expenditure by discount


## 4. Are promotions on high sugar products more extensive and do shoppers react differently compared to non-high sugar products?

As was reported earlier, the degree of promoting that occurs by food and drink category is highly variable. Figure 13 shows how the contribution to overall take home sugar relates to the distribution of promotional prevalence by category.

Figure 13: A distribution of promotional levels and contribution to take home sugar volume by category (two years to 1 February 2015)


There are several clusters of categories that make a high contribution to sugar purchasing revealed by this chart. First there is a collection of highly promoted categories such as chocolate, soft drinks, juices and yoghurts. This is followed by a more averagely promoted group (biscuits, breakfast cereals and cakes etc.). Finally, some high contributing categories that are seen as containing natural sugar (milk and fruit) as well as table (baking) sugar itself, appear as categories with lower promotional levels. Overall this variation reveals that higher sugar categories (excluding those natural and raw sugar categories), do tend to be promoted more extensively than the food and drink average.

When considered as an aggregate statistic over the two years to 1 February 2015, the defined group of higher sugar categories exhibit a greater proportion of spend going through on promotion; $43 \%$ vs. $39 \%$ for food and drink as a whole.

Furthermore, the average promotional discount is $34 \%$ for total food and drink, but a marginally more generous $35 \%$ for higher sugar categories. Higher sugar categories are therefore more broadly promoted and with very slightly deeper discounts.

Interestingly we also see higher sugar content being associated with higher promotion intensity even within the same category. Among higher sugar categories, all products falling into the dataset of 47,200 promotional events were isolated. This filtered out products that had not been promoted in the two year time period or lacked enough purchasing to be robustly measured. Looking at sugar content by volume within this data set, the top third of products in each category were flagged as a group of highest sugar products. It was found that for this top third of products that $51 \%$ of expenditure went through on promotion vs. $45 \%$ for the remaining two thirds. Furthermore, the average discount for the top third was seen to be $37 \%$ vs $34 \%$ for the remaining two thirds.

One explanation for this promotional preference for the highest sugar products is that these products are also the more expensive items in their respective categories. Typically the top third of products by sugar content are $25 \%$ more expensive (per unit volume) when sold off promotion, than their respective category average. Promotions bring this price premium down to only $15 \%$. Although promotions are more intense in higher sugar categories, the data provides no firm evidence that shoppers react in a fundamentally differently way to deals in these categories as a consequence of higher sugar levels. We have shown that promotions in a number of impulsive categories tend to produce a high proportion of sales as incremental volume but this is true for other impulsive foods, eg crisps. In addition, other savoury categories such as cooking sauces and ready meals which lie outside the higher sugar category list have high incremental volume levels. It seems factors beyond sugar content dictate this response. The discretionary nature of the category and the levels of competition that may drive the intensity of promoting are probable factors. At an overall level the proportion of incremental volume that promotions generate in higher sugar categories looks very similar to the average for the wider total food and drink marketplace.

This similarity in shopper response is further illustrated by considering what drives the levels of sales uplift observed in promotional events. In Figure 14 below, the relationship between percentage discounts offered by promotions and their relative volume uplifts are considered. The relative uplift index is calculated in two steps. Firstly the percentage volume increase above typical non-promoted sales levels is calculated for each promotion event. Secondly, this uplift figure is compared to the average for the category in which the product lies and converted into an index. This means that an event with an uplift index of 150 has a $50 \%$ larger uplift than the average for other promotions in that category. The left hand plot in Figure 14
shows that for promotional events there is a strong positive relationship between discount and uplift, with generous promotions producing more sales volume.The right hand plot shows that for promotional events there is no clear relationship between sugar content of the product and uplift. In other words, whether a promoted product happens to be high or low in sugar appears to have no clear bearing on the scale of the shopper reaction it generates.

Figure 14: Relative promotional uplift vs discount and vs relative sugar content



No evidence has been found to suggest that shoppers respond more readily to promotions on products with higher sugar levels as a consequence of the higher sugar content. Instead evidence is found that shoppers react to the depth and visibility of the offer and to the wider nature of the overall category irrespective of sugar level. However, it remains the case that many higher sugar categories do fullfil these conditions, having extensive dealing on readily expandable items.

## Implications and summary of findings

Promotions account for a significant proportion of all food and drink purchases. This means they also account for a significant quantity of all constituent sugar volume purchased in Britain ( $35 \%$ of the total).

It has been shown that promotions generate incremental volume to their categories. Furthermore, for many higher sugar categories this extra volume is also seen to be largely incremental to wider food and drink volumes. This in turn means that promotions will generate incremental take home sugar volume as a consequence of driving unexpected trips and by accelerating purchasing rates. Based on the observed shopping behaviour in response to 47,200 price promotions over the last two years, data from the panel reveals that $8.7 \%$ of all take home sugar volumes are an incremental consequence of promoted purchases. The large majority of this $8.7 \%$ is accounted for by the higher sugar categories ( $6.1 \%$ of total take home sugar), almost three quarters of the total incremental amount.
$6.1 \%$ can be considered the notional saving in overall sugar volume if promotions in these higher sugar categories had not occurred. This number also represents an estimate of the maximum opportunity if future promotions were to cease.

Figure 15: Proportions of take home sugar accounted for by promotions


Among the higher sugar categories, different individual categories will contribute differing amounts to this total incremental of $6.1 \%$ and hence will provide different degrees of opportunity for any policies aimed at curtailing sugar bought as a consequence of promotion. The degree to which promotions in these categories generate incremental behaviour, the sizes of the categories and the levels of sugar found in the products in these categories will all play a role.

To summarise these impacts, Figure 16 shows the category contributions of how a notional $6.1 \%$ saving in sugar volumes might be achieved through cessation of promotions.

Figure 16: Volume and expenditure implications by higher sugar categories of no promoting

Based on data covering two years to 1 February 2015


In addition to the sugar volume saving, the expected impact on category expenditure is also provided. For example if there had been no promotions on regular carbonated soft drinks, take home sugar volumes would have fallen by 0.7 percentage points (a contraction to $99.3 \%$ of the total). However, the category would also have been expected to contract by £98m over two years due to the loss of associated shopper expenditure.

The potential expenditure impacts of promoting are important to understand. Any policy seeking to reduce take home sugar by limiting the volumetric impacts of promotions would have a knock on effect on industry sales values and therefore business profitability. How profitable price promotions really are is a source of much industry discussion and is something that cannot be objectively examined without analysis of sensitive margin data. This lies outside the scope of this study.

The key findings from the four research areas can be summarised as follows:

- promotions in Britain have reached record but stable levels and are the highest in Europe. Promotions now account for $40 \%$ of food and drink take home expenditure. A typical household would now have to spend $16 \%$ more (or an extra $£ 630$ in a year) if they wanted to buy their annual selection of promoted items at full price
- while promotions make products cheaper they also tend to encourage people to buy more. Promotions in food and drink categories drive various short term behavioural changes, such as getting shoppers to choose a different brand to normal. Promotions appeal to people from all demographic groups and frequently lead people to buy more of the promoted category than expected. On average about one fifth (22\%) of promoted food and drink volumes bought, can be considered to be incremental to expected category purchasing levels
- promotions not only get people to buy more of a category than normal, the evidence shows this effect also increases overall take home food and drink volumes. When people buy higher sugar categories, there is little evidence that increased purchasing of one category leads buyers to make a compensatory reduction in other higher sugar categories. This means promotions increase the overall level of take home food and drink being purchased
- higher sugar food and drink items are both more likely to be promoted and more deeply promoted. Despite this, shoppers react to high sugar promotions in a similar way to other promotions. As several of the higher sugar food and drink categories represent more discretionary products, promotions in these areas will more easily get shoppers to buy more than normal. This means promotions in some higher sugar categories can more readily drive up take home food and drink volume
- promotions are more common on products where sugar is added, (particularly discretionary products, carbonated drinks, biscuits cakes etc), than on table sugar and products where sugar is naturally present such as milk and fruit and vegetables, with the exception of fruit juice
- it is estimated that $8.7 \%$ of all take home sugar is an incremental consequence of promotions with about $6 \%$ coming from the higher sugar categories. In other words, a $6.1 \%$ saving in sugar volumes might be achieved if the level of promotions in higher sugar categories was reduced to zero. This equates to about 7.4 g of sugar per individual per day


## References

${ }^{1}$ Public Health England (2014). Sugar Reduction: Responding to the Challenge. Available from https://www.gov.uk/government/uploads/system/uploads/attachment data/file/324043/sugar_Reduction Responding to the Challenge 26 June.pdf
${ }^{2}$ Food Standards Agency (2002) McCance and Widdowson's The Composition of Foods, Sixth summary edition. Cambridge: Royal Society of Chemistry.

## Appendices

## Appendix 1: Kantar Worldpanel GB purchasing data methodology

## Sample structure and recruitment:

- 30,000 households chosen to reflect all GB Households by region and demographics
- population targets are obtained from the results of the Broadcasters Audience Research Board (BARB) Establishment Survey and the Office for National Statistics (ONS)
- key sample controls include BARB region, household size, presence of children and age of housewife. Social class is not included in the sample targets but is part of the weightings applied to represent GB
- recruitment to the panel occurs through postal and email communication
- incentives are used to reward participation, typically as vouchers for high street retailers. However many panellists additionally have a genuine interest in taking part
- there is a high level of panel continuity; $70 \%$ of the panel have been involved for three or more years and a few hundred for 20 years


## Data coverage:

- the methodology is set up with the aim of collecting all food and drink purchases brought back into the home regardless of place of purchase eg corner shop, supermarket, or department store
- products purchased and consumed out of the home are not included
- once shopping is brought into the home, barcodes are scanned, prices are collected and till receipts are sent by the panellist
- show cards with internal barcodes are used to collect data on non-barcoded products like loose fruit and vegetables and in store bakery items

Panel monitoring and validation:

- household purchasing patterns are tracked over time and investigated if significant changes occur
- eligibility for household purchasing to be included in the final data is assessed every four weeks. Panellist data will not be used if there are reasons to suspect poor compliance. For example, there are minimal spend and volume limits with assessment across peer groups to understand typical purchasing levels. Approximately 10-15\% of the 30,000 GB household panel will not meet the eligibility criteria in a typical four-weekly period
- there is a mechanism to enable regular communication with panellists about their scanning if changes are seen
- trends are constantly validated by food and drink manufacturers and retailers. These organisations buy access to the aggregated data and will typically compare this to third party, retailer sourced data sets to monitor accuracy

Weighting:

- data from the sample households will be weighted up to reflect all GB households with correct demographic representation
- further weighting corrections are made to the data to account for known issues such as panellists being more likely to forget to scan small baskets

Identifying promotions:

- the study seeks to collect any promotional mechanic associated with any purchase instance on any specific item
- panellists are asked to scan whether there was a multi-buy or price promotion attached to the purchase as part of the scanning task as an initial flag for promotional activity
- detail of the multi-buy is then established from the till receipts sent in by panellists, with further verification by an in house specialised coding team who engage in store visits, direct contact with retailers and manufacturers and website trawls
- temporary price reductions (TPRs) are identified by an automated process looking for changes in prices paid over time


## Appendix 2: Kantar Worldpanel nutrition service methodology.

Kantar Worldpanel has been collecting and coding nutrition information from food and drink packaging since early 2005. The big eight nutrients are captured: calories, carbohydrates, total sugar, total fat, saturated fat, fibre, protein and sodium. All information is taken from product packaging and no laboratory analysis is undertaken. The nutrient values are combined with the purchasing information to provide nutrient volumes by product, food category and for the total take home food and drink marketplace.

Data sources for nutrition content:

- nutrition information is taken directly from product packaging in all cases where available
- where applicable, known values are used for the same product sold in different pack sizes or formats (eg a fizzy drink brand sold in varying can and bottle sizes)
- for some fresh and non-barcoded products, nutrition information from McCance \& Widdowson's - The Composition of Foods ${ }^{2}$ is used
- where none of the above sources can be found, average nutritional values corresponding to the appropriate market sector will be applied to any remaining products

Coding maintenance:

- the nutrition information ascribed to each product within the database is updated on a six monthly basis by Kantar fieldworkers
- fieldworkers visit a sample of multiple stores (Asda, Tesco, Sainsbury, Morrison's, Waitrose, Co-op, Iceland, Farm Foods and M\&S) and capture the barcode and on pack nutrition panel via a handheld device. This will be done for all products on the shelf in the target category
- this data collection is supplemented by product image data, available to Kantar Worldpanel as part of a commercial agreement with Brandbank. Brandbank collect product images and data from retailers and manufacturers for use on retailer websites including Asda, Sainsbury, Waitrose and Tesco. This enables Kantar Worldpanel to update product information between field collection in the event new nutrient values lead to a new Brandbank image. Images of all new products are collected (either from Brandbank images or via Kantar Worldpanel's own fieldwork) once the panel have purchased the product at least twenty times. This means that nutrient data is collected on all new products as and when they are launched

Appendix 3: List of food categories analysed in the study

| Group | Itemisation |
| :---: | :---: |
| Higher sugar categories: | Ambient Desserts (ie jelly and custard) |
|  | Ambient Juice |
|  | Ambient Slimming Products |
|  | Cakes |
|  | Canned Fruit |
|  | Cereal and Fruit Bars |
|  | Cereals (ie Breakfast Cereals) |
|  | Chilled Desserts |
|  | Chilled Juices |
|  | Chocolate Everyday and Block |
|  | Chocolate Seasonal and Gift |
|  | Flavoured Milk |
|  | Frozen Desserts and Frozen Fruit |
|  | Home baking Ingredients (dried fruit etc.) |
|  | Hot Chocolate |
|  | Ice Cream |
|  | Milkshake Mixes (ie powder to add to milk) |
|  | Morning Goods |
|  | Pickle and Table Sauce and Condiments |
|  | Popcorn |
|  | Preserves |
|  | Regular Carbonated Soft Drinks |
|  | Regular Fruit Squash |
|  | Regular Sugar Confectionery |
|  | Sweet Biscuits |
|  | Yoghurt Drinks |
|  | Yoghurts |
| Higher raw or natural sugar: | Ambient Milk and Cream (ie UHT products) |
|  | Artificial Sweeteners |
|  | Coffee |
|  | Fruit |
|  | Milk |
|  | Table/Bagged Sugar (home baking/ingredient) |
| Other food and drink: | Ambient Cooking Ingredients |
|  | Ambient Cooking Sauces |
|  | Ambient Dips and Olives (includes salsa etc.) |
|  | Ambient Pizza Bases |
|  | Baked Bean |
|  | Beer and Cider |

Bread<br>Canned and Packet Soup<br>Canned Fish and Meat<br>Canned Goods<br>Cheese<br>Chilled Cooking Sauces<br>Chilled Deli Foods<br>Chilled Pies to Cook<br>Chilled Ready Meals<br>Chilled Soup<br>Cooked Meat<br>Cooking Oils<br>Cream<br>CSN (Crisps, Snacks \& Nuts)<br>Diet Carbonated Soft Drinks<br>Diet Mixers (ie Diet Tonic Water)<br>Eggs<br>FABs (Flavoured Alcoholic Beverages)<br>Fish<br>Flavoured Water<br>Flour<br>Fresh Meat<br>Fresh Pasta<br>Fresh Pizza and Chilled Bread<br>Fresh Sausages<br>Frozen Fish<br>Frozen Meat<br>Frozen Pizza\& Frozen Bread<br>Frozen Potato Chips/Products<br>Frozen Poultry<br>Frozen Ready Meals<br>Frozen Savoury Bakery<br>Frozen Stuffing<br>Frozen Vegetables<br>Frozen Vegetarian<br>Healthy Sugar Confectionery<br>Instant Hot Snacks (ie Pot Noodles)<br>NAS Fruit Squash (No Added Sugar)<br>Pasta and Rice<br>Poultry<br>Regular Mixers (ie Tonic Water)<br>Salt<br>Savoury Biscuits

## Spirits

## Tea

Vegetables
Vinegar
Water
White and Yellow Fats (Margarine and Lard) Wine


[^0]:    ${ }^{1}$ Note this analysis was conducted for total sugar

[^1]:    ${ }^{2}$ Non UK data is sourced from Europanel \& IRI.

