



Centre for Diet and Activity Research
A UKCRC Public Health Research Centre of Excellence

Hungry and Obese: The challenge of household food insecurity

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Cambridge Global Food Security Strategic Network | 23 June 2016



Food Security

When all people at all times have access to sufficient, safe, nutritious food to maintain a healthy and active life.



World Health Organization

*When all people, at all times, have **physical, social and economic** access to sufficient, safe and nutritious food that meets their dietary needs and **food preferences** for an active and healthy life.*



Three pillars

- Food availability (supply)
- Food access (physical, social and economic)
- Food utilization (quality, nutrition, safety)

} *Stability*



The State of Food Insecurity in the World



Suite of food security indicators

FOOD SECURITY INDICATORS

availability

Average dietary energy supply adequacy
Average value of food production

Share of dietary energy supply derived from cereals, roots and tubers
Average protein supply
Average supply of protein of animal origin

Percentage of paved roads over total roads
Road density
Rail lines density

access

Gross domestic product (in purchasing power parity)

Domestic food price index

Prevalence of undernourishment
Share of food expenditure of the poor
Depth of the food deficit
Prevalence of food inadequacy

utilization

Access to improved water sources
Access to improved sanitation facilities

Percentage of children under 5 years of age affected by wasting
Percentage of children under 5 years of age who are stunted
Percentage of children under 5 years of age who are underweight
Percentage of adults who are underweight
Prevalence of anaemia among pregnant women
Prevalence of anaemia among children under 5 years of age
Prevalence of vitamin A deficiency in the population
Prevalence of iodine deficiency in the population

Source: FAO.

FAO Hunger Map 2015

Millennium Development Goal 1
and World Food Summit
Hunger Targets

Produced by the FAO Statistics Division

For additional information:
<http://www.fao.org/ceres/15m>



1
About 793 million people in the world still lack sufficient food for conducting an active and healthy life.

2
Yet progress has been made, even in the presence of significant population growth. Approximately 218 million fewer people suffer from undernourishment than 25 years ago and 169 million fewer than a decade ago.

3
The year 2015 marks the end of monitoring period for the Millennium Development Goal targets. Seven of 129 developing countries – more than the countries monitored – have met the MDG 1C hunger target of halving the proportion of the chronically undernourished.

Food security in the UK

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Why food security is not just a problem for the Third World

One of the few issues the British public still takes for granted is food security. The global economic crisis and recent events in the Arab world suggests we shouldn't be so complacent, writes George Grant.

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Ridiculously wrong travel myths
Travel health expert Jan Jones busts the holiday health myths that could ruin your time away

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Celebrity Sightings: 25



The Telegraph

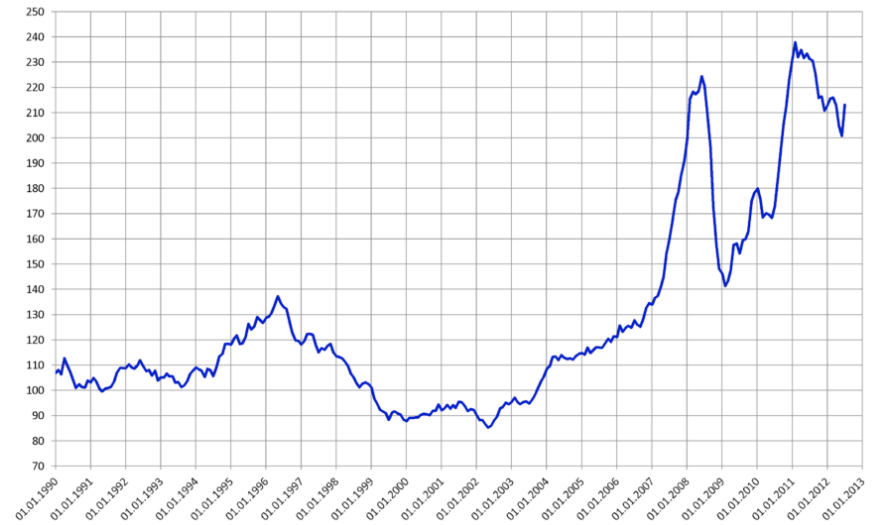
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Food insecurity in the UK

Rising food prices,
rising living costs,
stagnating incomes



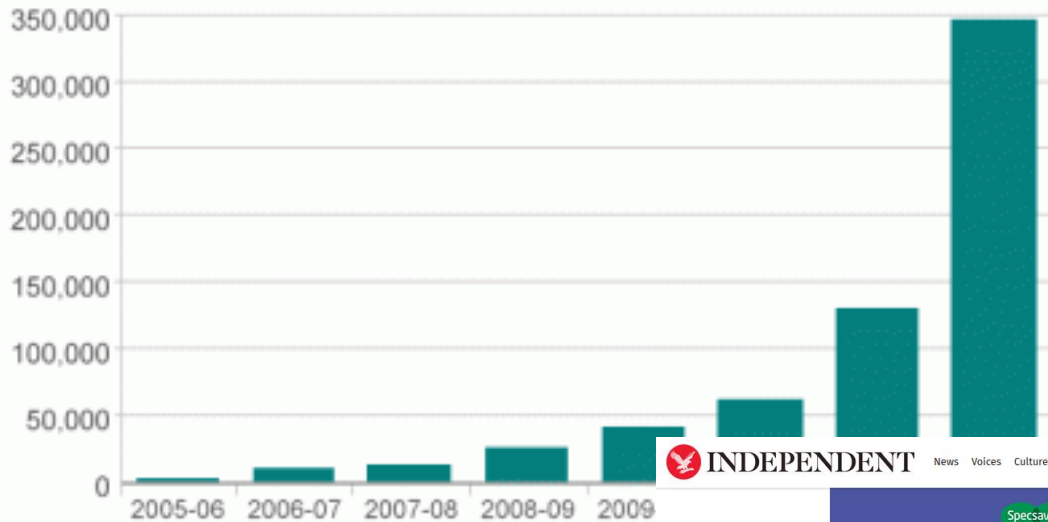
FAO Food Price Index



Food insecurity, food poverty and food banks

Food bank use in the UK

Number of people using Trussell Trust food banks



Source: All-Party Parliamentary Inquiry into Hunger in the U

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Food poverty in UK has reached level of 'public health emergency', warn experts

The Government may be covering up the extent to which austerity and welfare cuts are adding to the problem

Charlie Cooper | @charliecooper8 | Wednesday 4 December 2013 | 0 comments

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Food insecurity, food poverty and food banks



THE UNIVERSITY OF
WARWICK

Household Food Security in the UK: A Review of Food Aid

Final Report

February 2014



Food Banks and Food Poverty

Standard Note: SN06657

Last updated: 9 April 2014

Author: Emma Downing (Science and Environment Ext: 6787)
Steven Kennedy (Social Policy Ext: 3627)
[Mike Fell (Science and Environment – POST Fellow)]

Food banks (sometimes branded as “foodbanks”) provide food aid to people in acute need, often following referral by a health or social care professional, or other agency. In the UK, food banks are run by a range of volunteer-based organisations, redistributing food donated by consumers, retailers and the food industry. The largest network is co-ordinated by [The Trussell Trust](#) which has 400 food bank banks UK-wide. A [Church Action on Poverty report](#) (May 2013) estimated that over 500,000 people in the UK were reliant on food aid.



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Of the Royal Colleges of Physicians of the United Kingdom

Working to improve the public's health

UK Faculty of Public Health response to the All Party Parliamentary Inquiry into Hunger and Food Poverty in Britain

About the Faculty of Public Health

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The Faculty of Public Health is the professional home for more than 3,300 professionals working in public health. Our members come from a diverse range of professional backgrounds (including clinical, academic, policy) and are employed in a variety of settings, usually working at a strategic or specialist level. The Faculty of Public Health is a strategic organisation and, as such, works collaboratively, drawing on the specialist skills, knowledge and experience of our members as well as building relationships with a wide range of external organisations.

Introduction

Food insecurity, food poverty

Household Food Insecurity

A household-level economic and social condition of limited or uncertain access to adequate food.

United States Department of Agriculture

Food Poverty

Food poverty is the inability of individuals and households to obtain an adequate and nutritious diet, often because they cannot afford healthy food or there is a lack of shops in their area that are easy to reach.

FSA Northern Ireland

Does hunger cause obesity?

Both hunger and obesity occur with an increased frequency among poorer populations in the United States. Because obesity connotes excessive energy intake, and hunger reflects an inadequate food supply, the increased prevalence of obesity and hunger in the same population seems paradoxical.

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Does Hunger Cause Obesity?

Both hunger and obesity occur with an increased frequency among poorer populations in the United States.¹⁻⁶ Because obesity connotes excessive energy intake, and hunger reflects an inadequate food supply, the increased prevalence of obesity and hunger in the same population seems paradoxical. Although a variety of environmental, social, behavioral, or physiologic mechanisms could cause both problems independently, an alternative possibility is that hunger and obesity are causally related. The following case report supports this hypothesis.

CASE REPORT

A.B. (not her real initials) was a 7-year-old African American girl first brought to the Weight Control Program of the Boston Floating Hospital in December 1992. At the time of her initial examination, A.B. weighed 80 kg and was 144 cm tall. According to National Center for Health Statistics growth charts, she was 220% of her ideal body weight. Her triceps skin fold was greater than 40 mm, indicating that a substantial portion of her excess weight was fat. Her blood pressure was normal. Acanthosis nigricans was present. Aside from her obesity, the remainder of A.B.'s physical examination was unremarkable. A urinalysis showed no glucosuria.

A.B. lived with her mother, a single parent, who was dependent on Aid for Dependent Children and food stamps for the family's support. Both parents had a history of obesity. Her father's obesity improved after gastric bypass surgery. Her mother's obesity improved after she developed hyperthyroidism. A.B.'s mother, maternal aunt, and maternal grandparents all had non-insulin-dependent diabetes mellitus.

As the clinic's involvement with the family progressed, the mother indicated that household food shortages significantly im-

paired her ability to provide her daughter with the low-calorie-density foods that we recommended for weight reduction. This was a particular problem before the time that the mother received her second welfare check each month. The first check of the month was spent on her rent payments, so that before the second check arrived, the family frequently lacked money to buy food. At these times, the family would rely on high-fat foods, such as pasta seasoned with extra oil, chicken wings, or beans and hot dogs, to prevent hunger. When we identified these times as potential periods that contributed to her daughter's obesity, the mother reduced the fat she was serving but maintained the volume of food. Her daughter independently reduced her consumption of sugared fruit drinks and began to lose weight. At the time of her last visit, A.B. had lost 2.3 kg.

DISCUSSION

At least two possibilities could explain the association of hunger and obesity in the same patient. In this family, the increased fat content of food eaten to prevent hunger at times when the family lacked the money to buy food represents the most likely reason for the association of obesity and hunger. An alternative possibility is that obesity may represent an adaptive response to episodic food insufficiency.

The most analogous animal and human models to examine the latter possibility emerge from recent studies of weight cycling. These studies arose from the suggestion that weight cycling in humans was associated with an increased morbidity and mortality in humans.⁷ Likewise, studies of cyclical food restriction in animals suggested that subsequent weight losses would occur more slowly and weight regain more quickly as cycles of food restriction and refeeding progressed.⁸ Although only limited support for each of these hypotheses has been published,^{9,10} the effect of weight cycling on body fatness has rarely been examined. Rats do not seem to overshoot the weight of control animals when food intake is restored after one or more periods of food restriction.^{9,11,12} In humans, studies of women of normal weight¹³ and those who were obese¹⁴ suggested that cyclic dieters had significantly more body fat and less fat-free mass than women in their respective control groups who did not diet cyclically. The small sample sizes and the possibility that women who are obese or perceive themselves as obese are more likely to diet emphasize the caution with which these observations should be interpreted.

The association of binge eating with dietary restraint among subgroups of adults who are obese^{15,16} may represent another example of a physiologic adaptation to periods of food surfeit and insufficiency. The suggestion that body weights of restrained dieters who binge are greater than those of binge eaters who are not restrained eaters supports this hypothesis,¹⁶ but no studies have linked self-reports of restrained eating directly with actual reductions in food intake. Furthermore, the physiologic response to cyclic dieting or binge eating among restricted eaters may differ from the response to involuntary food restriction.

Despite the limited resources available to the mother and child described here, dietary modifications achieved weight reduction. Our observations

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Reprint requests to (W.H.D.) Tufts University School of Medicine/New England Medical Center, Box 213, 750 Washington St, Boston, MA 02111.
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Research on food insecurity and health USA & Canada 1995-2015

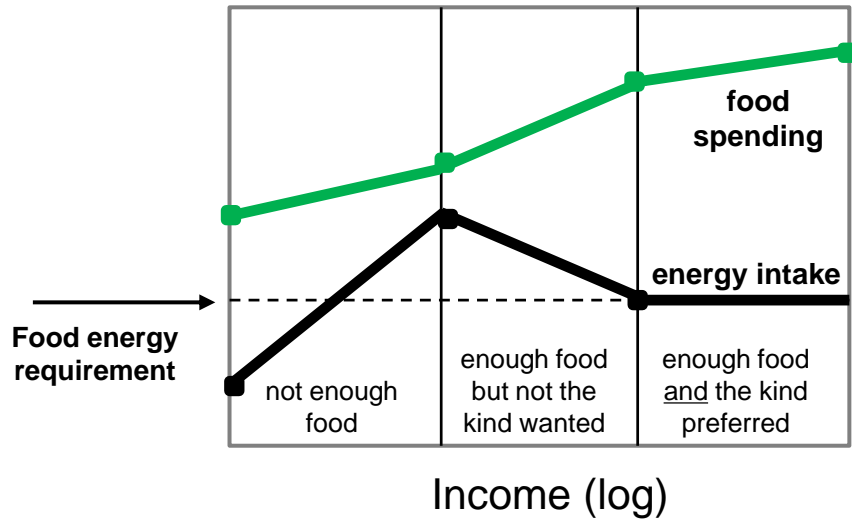
Food insecure adults are more likely to...

- have a higher body mass index
- be obese
- gain more weight over time
- develop type-2 diabetes

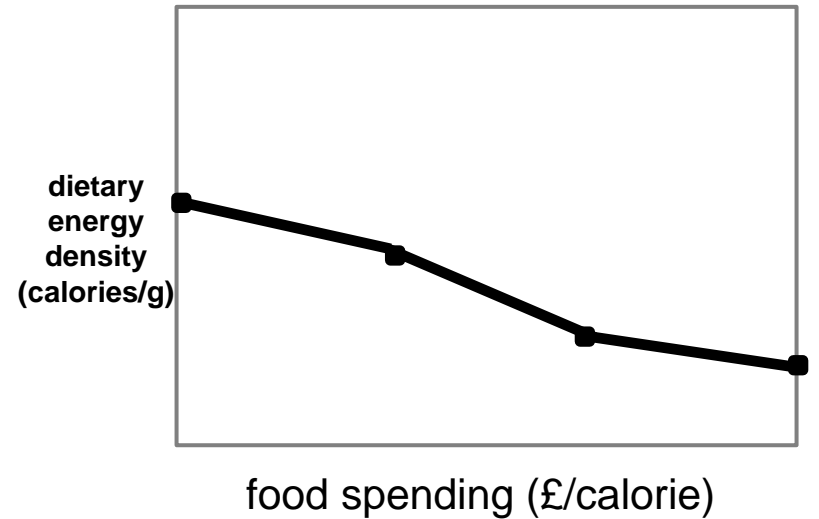
Patterns much more pronounced in women than men

Reducing income, reducing food spending...

... preserving energy intake and palatability



Adapted from Basiotis, 1992



Adapted from Drewnowski, Specter, 2004

Food costs and quality in the UK

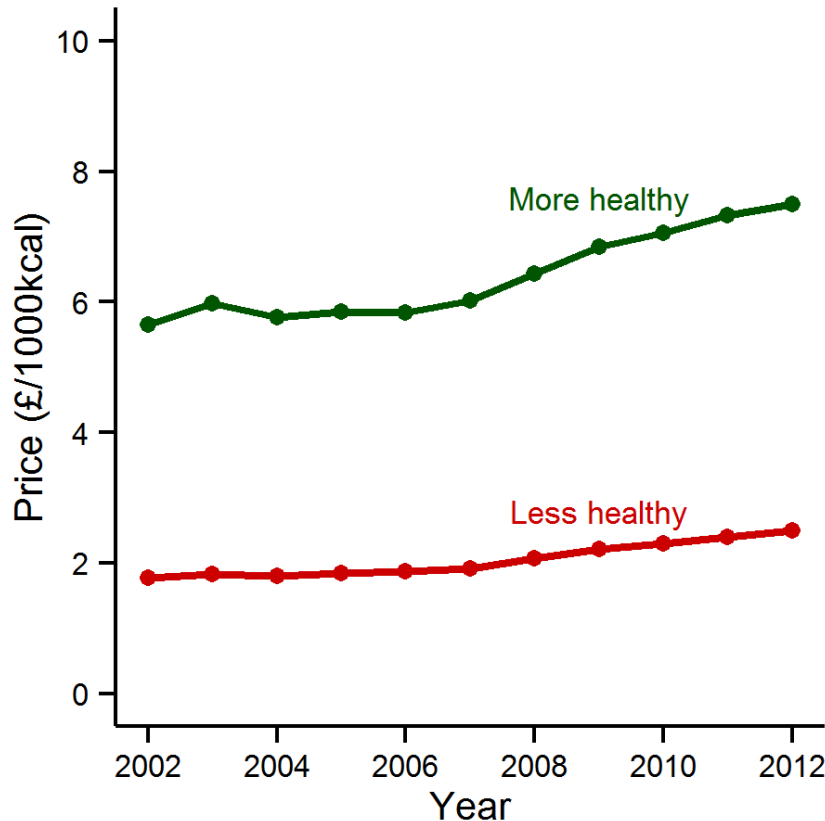
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The Growing Price Gap between More and Less Healthy Foods: Analysis of a Novel Longitudinal UK Dataset

Nicholas R. V. Jones¹, Annalijn I. Conklin¹, Marc Suhrcke^{1,2}, Pablo Monsivais^{1*}

¹UK Clinical Research Collaboration (UKCRC) Centre for Diet and Activity Research, Department of MRC Epidemiology, University of Cambridge School of Clinical Medicine, Addenbrooke's Treatment Centre, Cambridge Biomedical Campus, Cambridge, United Kingdom, ²Faculty of Medicine and Health Sciences, University of East Anglia, Norwich, United Kingdom



...the UK's disease burden (measured in disability-adjusted life years). [5] The burden on the healthcare system is also

...consumers considered a food's healthiness to be the most important factor and only 49% placed it in the top five. [10]

The Telegraph

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Healthy diet costs three times that of junk food

Healthy foods cost three times as much as unhealthy foods, according to a Cambridge University study showing a widening gap in the costs between junk foods and fine fare

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1,000 calories made up from healthy items cost an average of £7.49 in 2012 while the same calorie intake from less healthy items, including doughnuts, could be purchased for an average of £2.50 Photo: Alamy



By Laura Donnelly, Health Editor

7:00PM BST 08 Oct 2014

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Eating healthily costs three times as much as consuming unhealthy food - and the price gap is widening, according to a study by Cambridge University.

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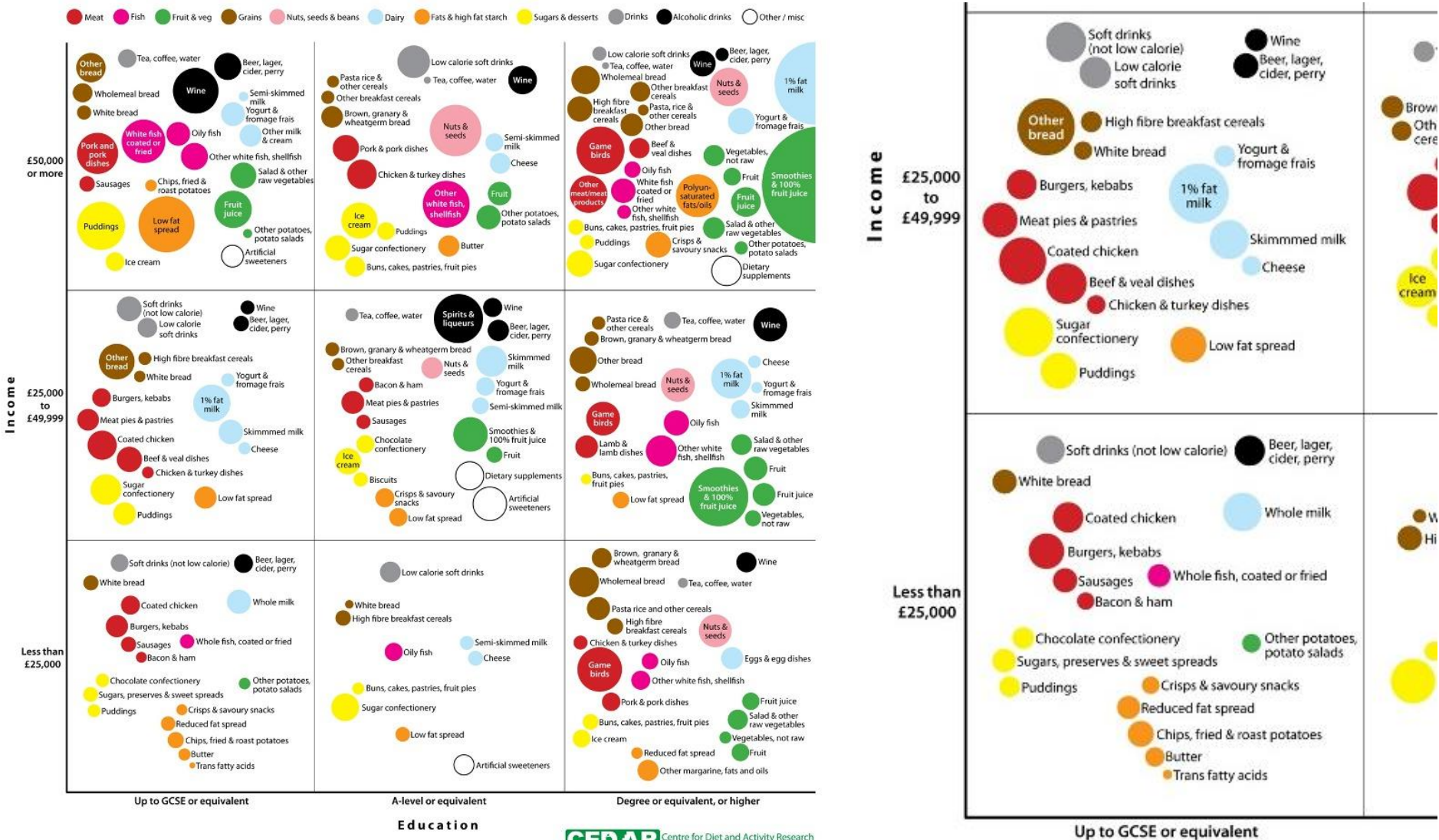


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Socioeconomic differences in diet, UK



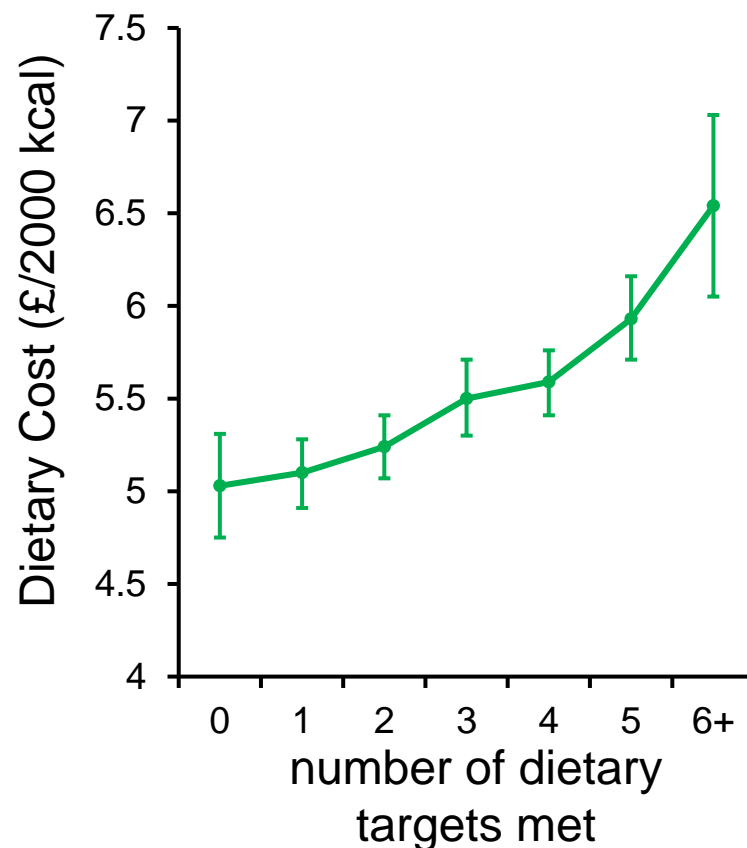
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www.cedar.ljph.cam.ac.uk/resources/evidence

Cost healthy eating in the UK

National Diet and Nutrition Survey

Dietary target		Dietary Cost (£/2000kcal)		
		Mean (95% CI)		
Fruit and Vegetables ²	Meets	6.18	(5.99 - 6.36)	↑
	Fails	5.23	(5.14 - 5.33)	
Oily Fish ³	Meets	6.31	(6.14 - 6.48)	↑
	Fails	5.33	(5.22 - 5.43)	
Red and Processed Meats ⁴	Meets	5.45	(5.31 - 5.58)	↓
	Fails	5.64	(5.53 - 5.76)	
Fibre ⁸	Meets	5.63	(5.40 - 5.87)	=
	Fails	5.51	(5.41 - 5.61)	

² Five 80g portions per day; ³ Two 140g portions of fish per week, one of which is oily fish; ⁴ Less than the population mean (69g per day); ⁸ More than 18g per day; ⁹ Less than 6g salt per day.



Changing diet in hard times, UK

UK food spending over the recession



Food shopping changes in a recession but is it for the better?

CONSUMPTION AND NUTRITION

Recession and diet

Household consumption has changed in the recession with people eating fewer and 'cheaper' calories

SINCE THE BRITISH ECONOMY first went into recession in 2008, the fall in household spending has been deeper and lasted longer than in either of the previous two recessions – in the early 1980s and early 1990s. Cormac O'Dea and Kate Smith of the Institute for Fiscal Studies (IFS) have compared the changes in consumers' purchasing behaviour in the three recessions. They find that in each, there were large falls in the average purchases of luxury items (such as alcohol and eating out) and household durables (such as kitchen appliances). There are good reasons why such items bear the brunt of consumer cutbacks: by definition, people can do without luxuries more easily than necessities; and they can often delay buying durables.

But in the latest recession, food purchases have also fallen dramatically, something not seen in the previous recessions. Food can be thought of as the most necessary of necessities and the most non-durable of non-durables. So the fact that purchases fell illustrates the stress on household budgets. Part of the explanation lies in the large rises in food prices

that accompanied the recession. But how exactly did households manage to reduce food purchases? Did they end up consuming fewer calories or cheaper calories? And did it lead to increased consumption of less healthy food?

Part of the decline in food spending came from people consuming fewer calories. Between 2006 and 2009, there was a decline in average calories consumed (per person per day) of four per cent, continuing a long-running trend of falling-calorie consumption. But people also switched to cheaper calories (eating more grains and vegetables and less meat) as well as buying

KEY FACT

BETWEEN 2006 AND 2009, THERE WAS A DECLINE IN AVERAGE CALORIES CONSUMED (PER PERSON PER DAY) OF 4%

cheaper food products within each food group – so cheaper grains and cheaper vegetables. The result was a fall in the real price per calorie consumed of seven per cent at a time when real food prices increased by eight per cent. This bucked a long-term trend: the real price per calorie consumed had increased significantly from the mid-1970s up until the recession.

DIET VARIATION

Simultaneous price rises and income falls led to changes in the composition of household diets. People reduced the quantity they bought of every type of food. But the average share of the total from grains, cheese and prepared food increased, while the share of calories from fruit, meat and fish fell. The complicated nature of diet means that it is hard to quantify the overall effect on nutrition. The bad news is that calories from fruit and vegetables fell. The good news is that calories from cakes and fizzy drinks also fell and, on average, people cut back on salt and saturated fat.

An important question is whether these trends will reverse once the economy returns to growth. The IFS researchers will be tracking whether the popularity of cheaper calories continues or households return to their pre-recessionary trend of buying ever more expensive calories. ■

www.ifs.org.uk

This research was funded by the ESRC, the European Research Council and the IFS Retirement Savings Consortium

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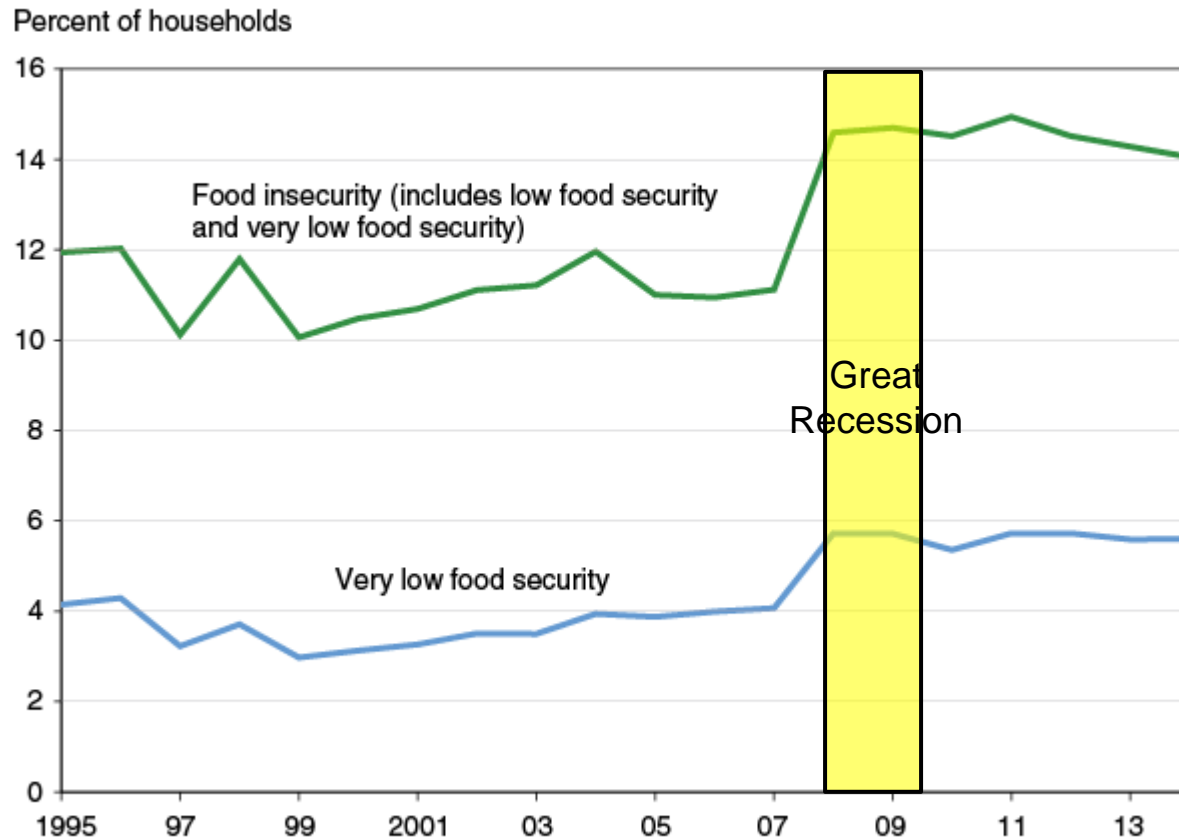
‘Simultaneous price rises and income falls led to changes in the composition of household diets’

‘...people switched to cheaper calories...’

‘... grains, cheese and prepared foods increased while calories from fruit, meat and fish fell.’

Increased food insecurity in hard times, USA

The economic upheaval of the 2007-09 recession was associated with an increase in food insecurity



Source: USDA, Economic Research Service using data from U.S. Department of Commerce, U.S. Census Bureau, Current Population Survey Food Security Supplement.

UK Surveillance of Food Insecurity

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Food poverty

More than 8 million in UK struggle to put food on table, survey says

Food Foundation reveals scale of food insecurity, with 4.7 million thought to be regularly going a day without eating

Patrick Butler Social policy editor
Friday 6 May 2016 18.56 BST

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Conclusions and questions

Parallels between global food security and household food security

Household food Insecurity and food poverty

- Fewer options
- Cheaper food
- Calorie dense, low-nutrient food
- Susceptibility to obesity
- Call for monitoring in the UK

Is there a tension between global food security and household food security agendas?

Thank You
pm491@medschl.cam.ac.uk

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Nick Jones

