



Institute for  
Fiscal Studies

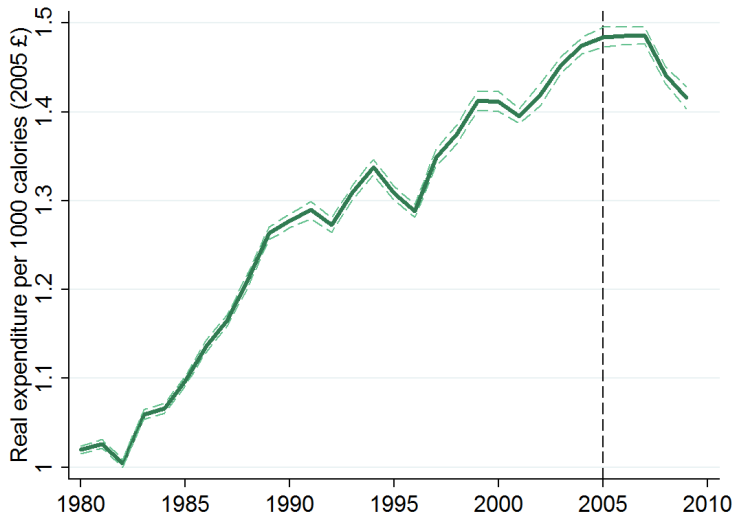
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## Food expenditure and nutritional quality over the Great Recession

Rachel Griffith, Martin O'Connell and Kate Smith

November 2013

# Long run and recent changes



# Background

- Recession led to fall in incomes:

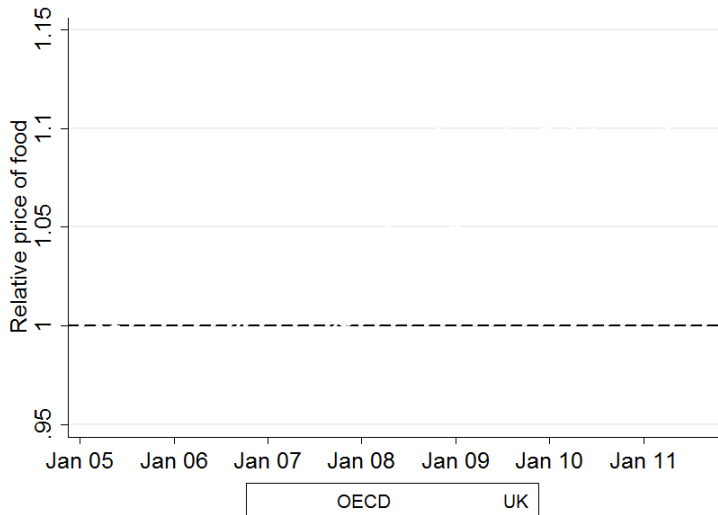
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Change in median real net income 2007-11	
Households with dependent children	-7.5%
Households without dependent children	0.8%
Pensioner households	3.7%

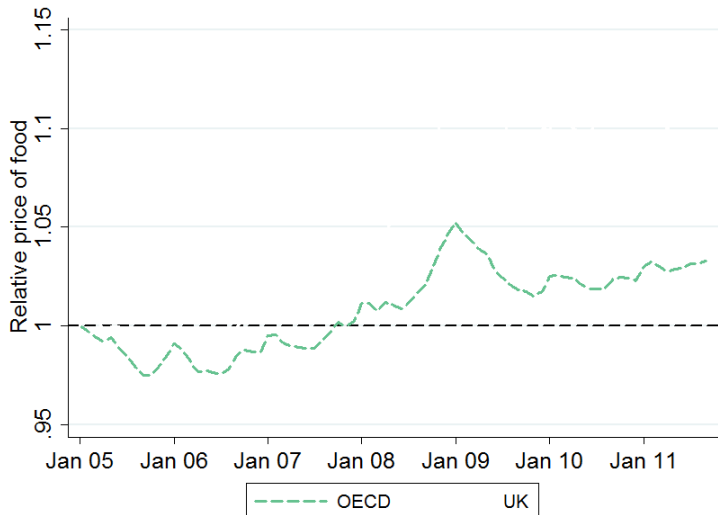
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- Rise in the price of food relative to other goods

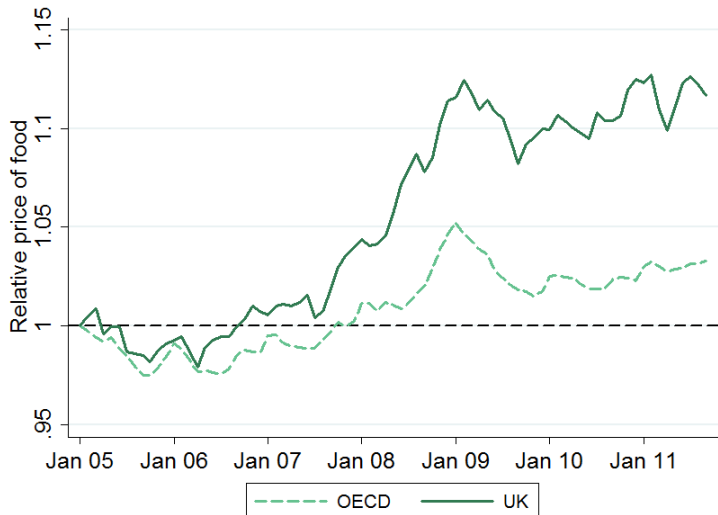
# UK food prices rise



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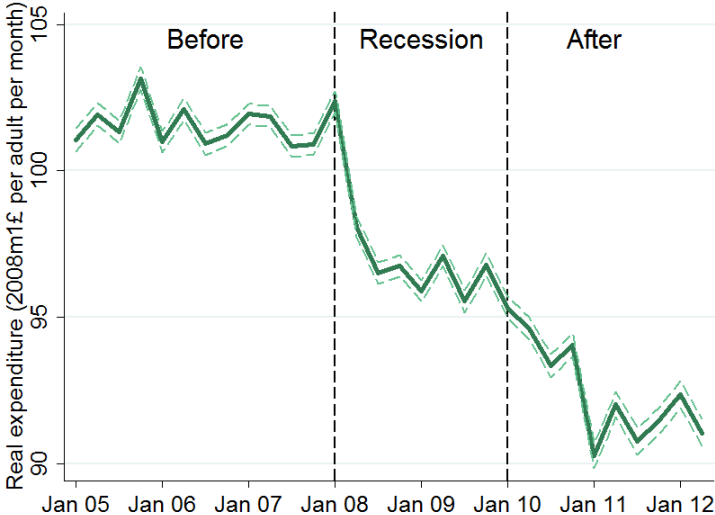
# UK food prices rise



# What we do

- Focus on food purchases brought into the home: accounts for over 86% of total calories purchased in 2005-7
- Use detailed data on the food purchases of a representative panel of 15,850 British households
- These data allow us to follow the same households over time

# Real food expenditure falls

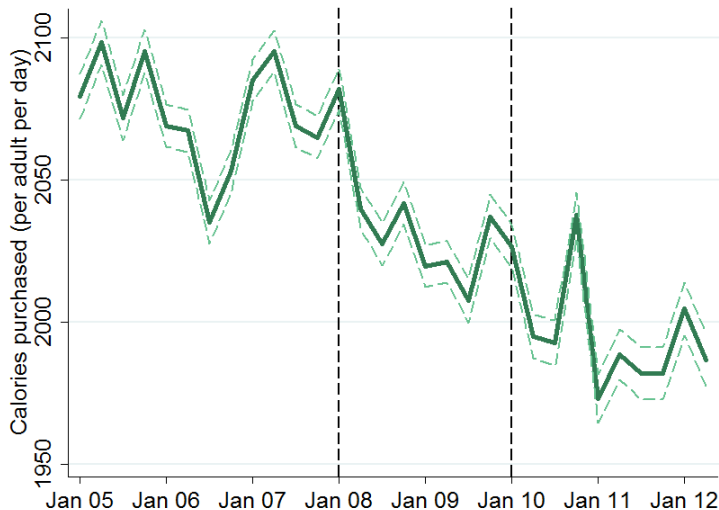




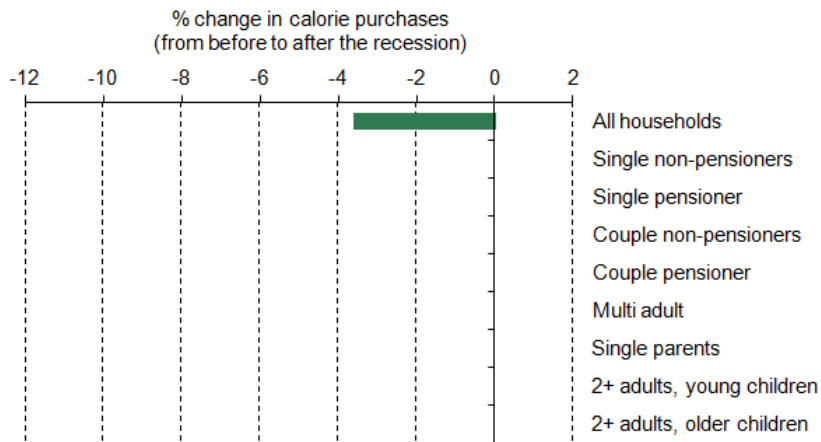
# What we show

- Real food expenditure falls
- Changes in:
  - number of calories purchased
  - the cost of calories
  - the nutritional quality of calories

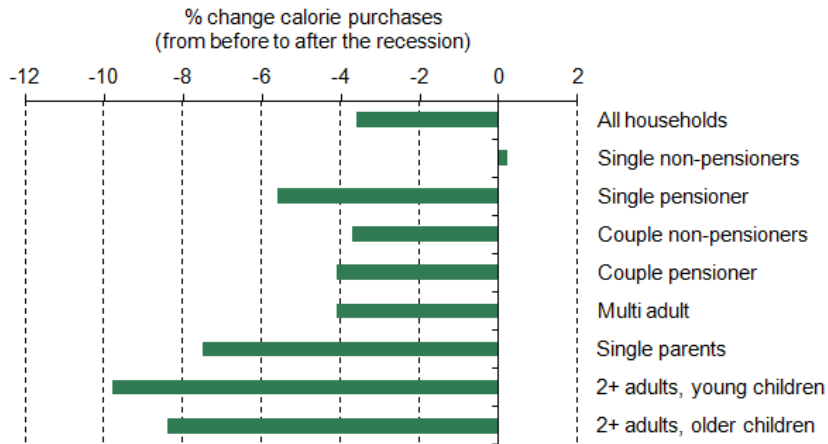
# Calorie purchases decline



# Biggest declines in calorie purchases for households with children



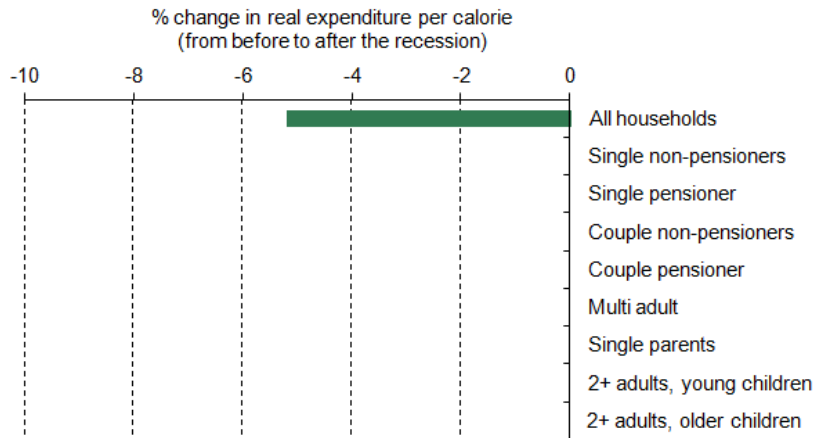
# Biggest declines in calorie purchases for households with children



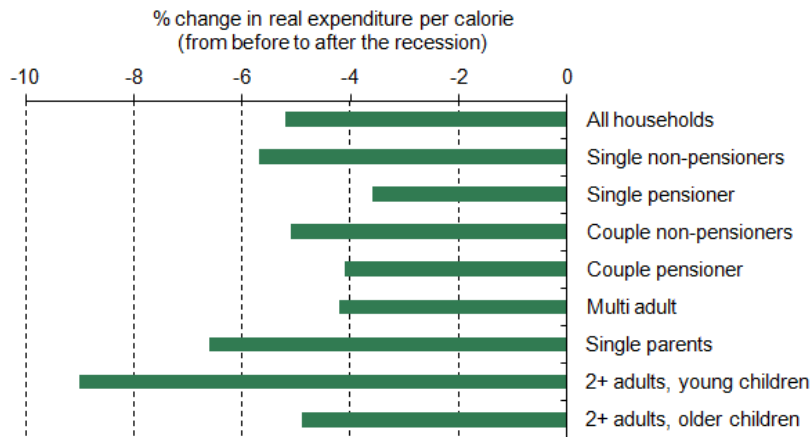
# What we show

- Fall in number of calories households buy
- Reduction in calories *less than* the reduction in real expenditure:
  - **households have switched to cheaper calories**

# Change in cost of calories varies by household type



# Change in cost of calories varies by household type



# Calorie density of food bought increases

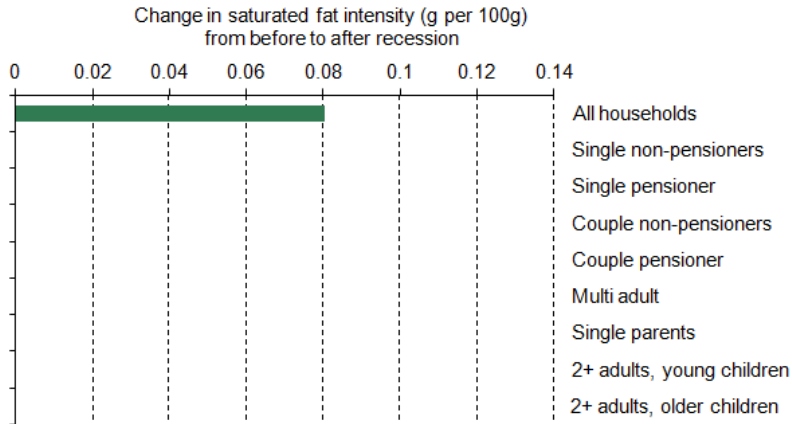
- Calorie density (kcal per 100g) of food purchased has increased
  - most of the increase in calorie density can be attributed to households changing the types of food they were purchasing (e.g. from fruit and vegetables to processed food),
  - rather than changing the products they bought within each food type



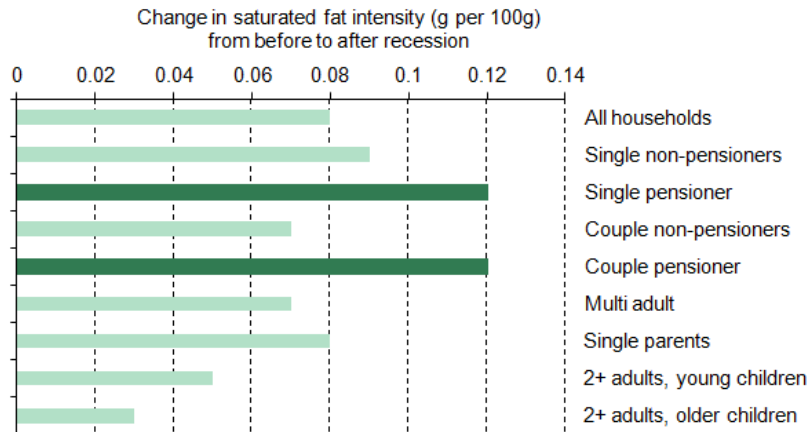
# Changes in nutritional quality

- The nutritional quality of diet is hard to measure
- We use a variety of measures:
  - changes in nutrient intensity (sugar, saturated fat)
  - change in the calorie share of fruit and vegetables
  - two one-dimensional measures of nutritional quality (Healthy Eating Index and Nutrient Profiling Model)
- Consider whether the changes were due to households switching between food groups, or to different products within food groups

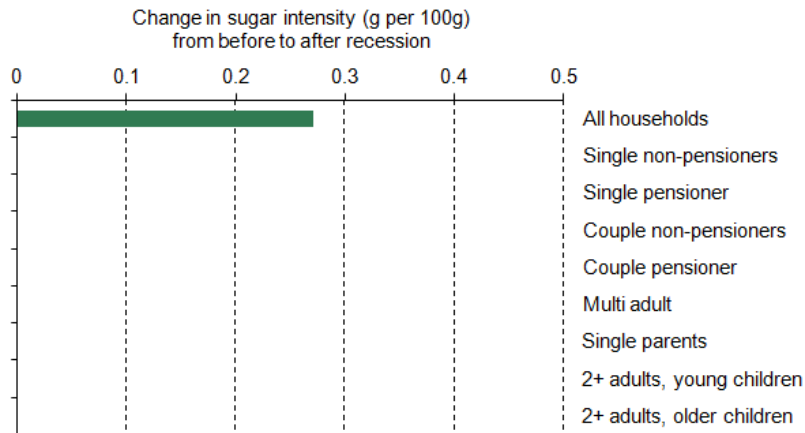
# Saturated fat (g per 100g) increases



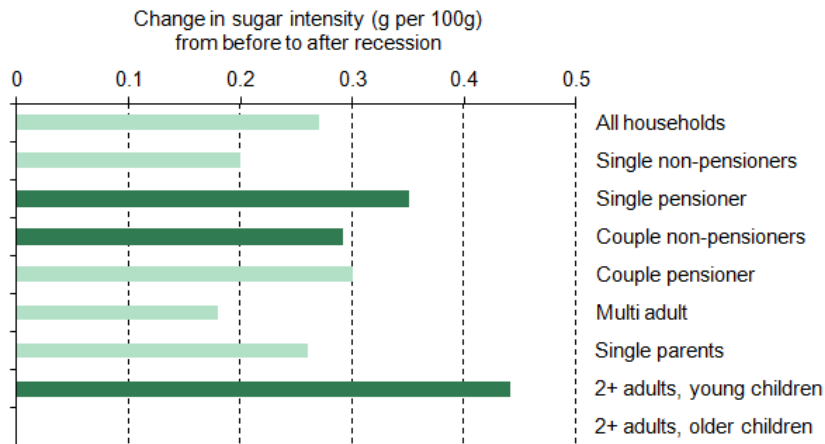
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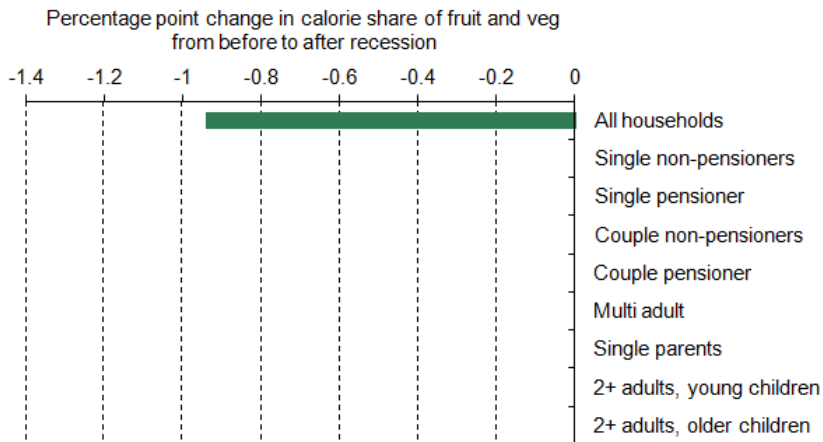
# Sugar (g per 100g) increases



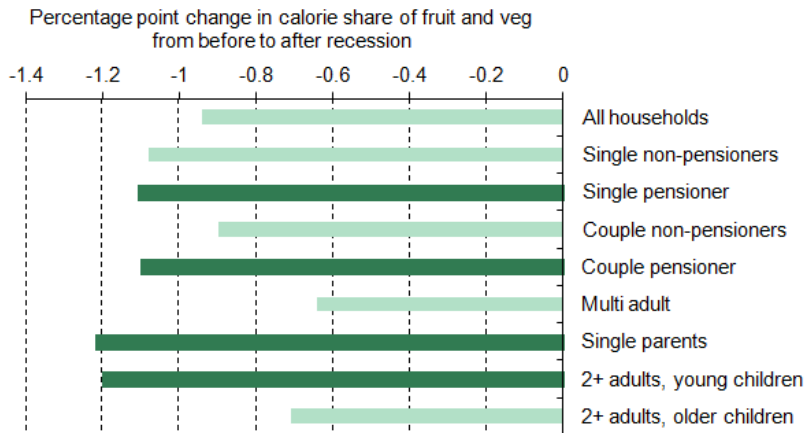
# Sugar (g per 100g) increases



# Shifts away from fruit and vegetables



# Shifts away from fruit and vegetables



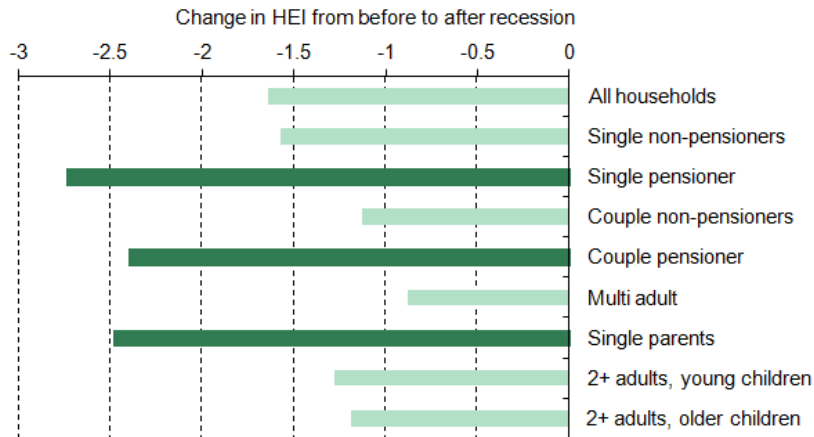
# Healthy Eating Index

## 1. Healthy Eating Index (HEI) - see Guenther et al (2005):

- used by the US Department of Agriculture to measure compliance with the US government's recommendations for healthy diet
- constructed based on the quantity of different food types (e.g. fruit, vegetables, meat etc.) and nutrients (e.g. salt, saturated fat) purchased per 1000 kcals [▶ HEI](#)



# Biggest declines in nutritional quality for pensioners and single parents

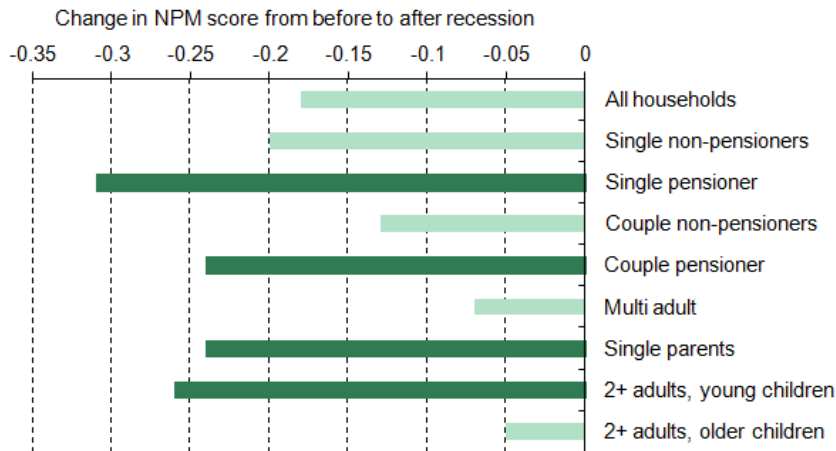


# Nutrient profiling model

## 2. Nutrient profiling model (NPM) - see Rayner et al (2009):

- used by the UK government to assess the healthiness of food products
- depends on a product's energy density, saturated fat, sodium, sugar, protein, fibre and fruit and vegetable content ▶ NPM
- we construct an average for each household in each month across all products purchased

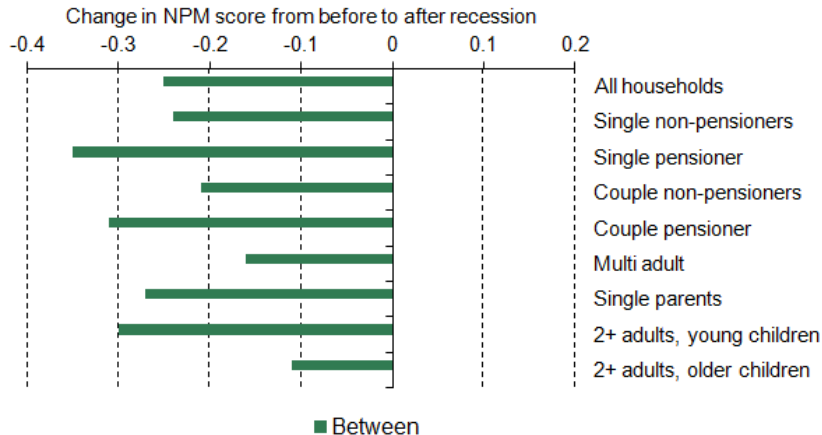
# Biggest declines for pensioners, single parents and households with young children



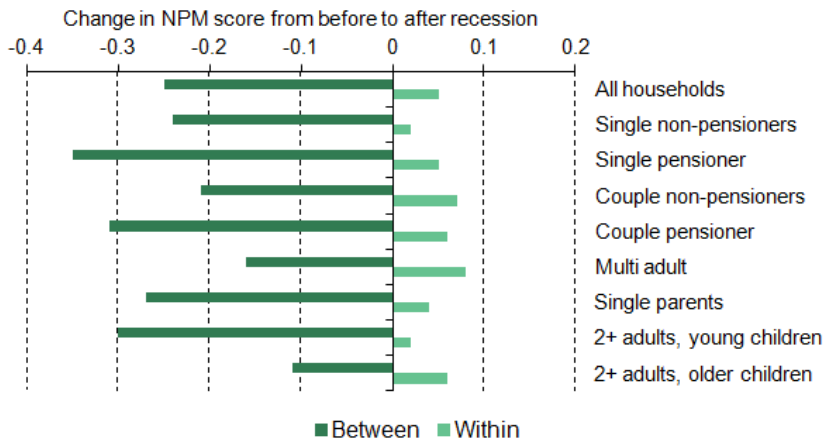
# Changes in nutritional quality

- Nutritional quality declined across a range of measures:
  - was it mainly due to switching across food types i.e. from fruit and vegetables to processed food?
  - or to substitution to less nutritious food products within food types i.e. to ready meals that are higher in saturated fat?
- Food groups (used by the USDA): ▶ Food groups
  - fruit; vegetables; grains; dairy and fats; red meat; poultry and fish; milk; soft drinks; processed sweet; processed savoury; alcohol
- Look at the change in the average NPM score that is due to households switching between food groups, and the change that is due to households substituting within food groups

# Households switched to less healthy food groups



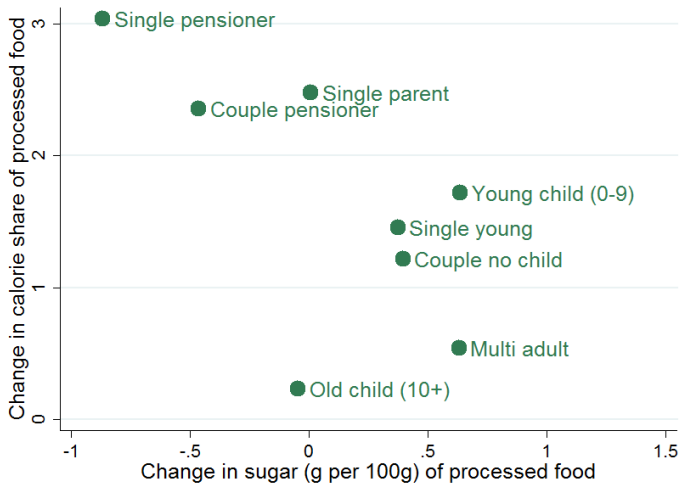
# Households switched to healthier products within food groups



# Changes in purchases of processed food

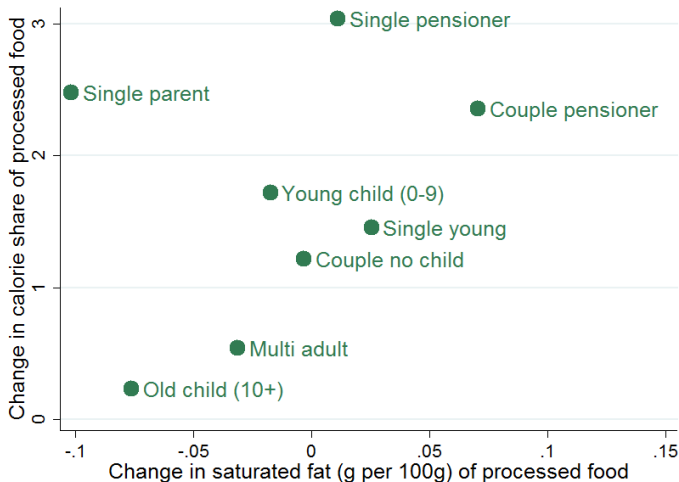
- A large part of the switching across food groups was towards processed food
- Did households that switched more towards processed food buy more or less healthy food products within that group?
- Look at the change in the calorie share of processed food and the change in the saturated fat and sugar content *of processed food*

# Biggest increases in share of processed food for pensioners and single parents





# Single parents reduced saturated fat intensity of processed food, pensioners increased it



# Summary

- From 2005-12 households' food spending patterns changed substantially, countering long-run trends:
  - households substituted towards cheaper calories
  - households increased the calorie density of the food they purchased
- Nutritional quality of foods changed:
  - the saturated fat and sugar intensity of food increased
  - households substituted towards processed food and away from fruit and vegetables
  - these changes were largest for pensioner households, single parents and households with young children

# Healthy Eating Index

Component	Max score.	Lower limit (per 1000 kcals unless stated)	Upper limit
Total fruit	5	0	120g
Whole fruit	5	0	60g
Total vegetable	5	0	165g
Dark green/orange veg	5	0	60g
Total grains	5	0	75g
Whole grains	5	0	32.5g
Milk	10	0	260g
Meat	10	0	70g
Oils	10	0	12g
Saturated fat	10	>15% energy	<7% energy
Sodium	10	>2g	<0.7g
Calories from SoFAAS	20	>50% energy	<20% energy
Total	100		

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# Nutrient Profiling Model

Points	Negative scores				Positive scores		
	Energy (kJ)	Saturated fat (g)	Total sugar (g)	Sodium (mg)	Fruit, veg nuts (%)	NSP fibre (g)	Protein (g)
0	≤ 335	≤ 1	≤ 4.5	≤ 90	≤ 40	≤ 0.7	≤ 1.6
1	> 335	> 1	> 4.5	> 90	> 40	> 0.7	> 1.6
2	> 670	> 2	> 9.0	> 180	> 60	> 1.4	> 3.2
3	> 1005	> 3	> 13.5	> 270	–	> 2.1	> 4.8
4	> 1340	> 4	> 18.0	> 360	–	> 2.8	> 6.4
5	> 1675	> 5	> 22.5	> 450	> 80	> 3.5	> 8.0
6	> 2010	> 6	> 27.0	> 540	–	–	–
7	> 2345	> 7	> 31.0	> 630	–	–	–
8	> 2680	> 8	> 36.0	> 720	–	–	–
9	> 3015	> 9	> 40.0	> 810	–	–	–
10	> 3350	> 10	> 45.0	> 900	–	–	–

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# Food groups

Food type and main items	Calorie share
<b>Fruit:</b> fruit, including fruit juices	5.9%
<b>Vegetables:</b> fresh, canned or frozen vegetables	6.8%
<b>Grains:</b> flour, cereals, pasta, rice, breads	16.8%
<b>Dairy, cheese and fats:</b> cream, cheese, oils, butter, margarine	13.6%
<b>Red meat:</b> beef, lamb, pork, nuts, eggs	8.5%
<b>Poultry and fish:</b> poultry, seafood	3.9%
<b>Milk:</b> milk, yogurt	7.95%
<b>Drinks:</b> fizzy drinks, tea, coffee, water	2.0%
<b>Prepared (sweet):</b> ice cream, cakes, cookies etc.	18.7%
<b>Prepared (savoury):</b> ready meals, soups, snacks	14.6%
<b>Alcohol:</b> wine, beer, spirits	5.2%

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