

PATHWAYS TO HEALTHY AND SUSTAINABLE DIETS: THE ROLE OF MEAT IN MEAL COMPOSITION

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Key Points

We modelled meals eaten in the UK and revealed the role that meat plays in most meals reported in the National Diet and Nutrition Survey.

Meals including meat are relatively easy to recognise in the data, whereas meals that do not include meat are harder to characterise and in fact less likely to include other home cooked components such as vegetables.

Specific meats are associated with different meal structures, notably the starchy staple food. If meats are reduced, there are likely to be cascading changes in the type of meals consumed.

Foods are not eaten in isolation, and understanding how changes to one component impact others is vital.

The recommendation to reduce meat consumption, e.g., from the Climate Change Committee, does so without reference to the wider diet. The proposed 30% reduction in meat (and dairy) has been described as “low cost, low regret” [1], but that does not appear to account for the cultural acceptability of what amounts to a significant reformulation of the UK diet.

We have analysed National Diet and Nutrition Survey (NDNS) data to look at the structure of evening meals. We analysed data from adults (≥ 16 years old, $n = 9,161$) from each of the 11 years of data.

We focused on home cooked evening meals. These meals were the largest meal for food intake (by energy) for most people. Of these, over half (55.6%) included meat and a further 10% included fish.

However, what was particularly interesting was the way that other components of a meal change around meat, or the

absence of meat.

For example, when beef is eaten, it is more likely than other meats, to be eaten with pasta and, poultry is more likely to be eaten with rice (Table 1). This has implications for the greenhouse gas emissions because rice has higher emissions than pasta or potatoes. Although there would be a net decrease in emission by reducing meat consumption, the reduction could be truncated by the choice of other foods.

Table 1: Proportion of unique adult meals (n = 18,334) by meat and starchy food components

Starch	N	Meat								
		Poultry	Non-meat	Beef	Fish	Pork	Mixed ¹	Lamb	Offal	Snack
Potato	6659	39.5	20.7	36.9	44.6	38.2	43.5	53.5	41.1	0
Bread	5194	26	36.5	26.3	22.2	32.2	25.5	17.6	45.2	0
No starch component	2205	9	16.1	9.6	12.1	10.7	14.6	10.4	8.2	100
Pasta	1883	7.6	12.7	16.5	8.9	9.9	7.3	4.3	1.4	0
Rice	1554	14.1	6.4	7.7	9.3	5.2	4.3	8.4	2.7	0
Cereals	718	3.7	6	2.9	2.5	3.2	4	4.9	1.4	0
Breakfast	121	0.1	1.7	0.2	0.4	0.5	0.9	0.8	0	0

¹ Mixed meats included either more than one meat or an unspecified meat type

Data: Unique adult meals observed in NDNS RP Rounds 1-11 (2008-2011), evening meals (between 17:00 and 21:59).

There is also an implication for the nutritional quality in changing the structure of a meal. For example, if people were not cooking meat at home, they were often not cooking at all and tended to have pre-prepared foods (e.g., pizza and manufactured ready meals) (Figure 1).

Perhaps more striking was the link between vegetables and home-cooked meat. Meals that did not include meat were less likely to include vegetables (Figure 2), and when they did, they had less vegetable content (by weight).

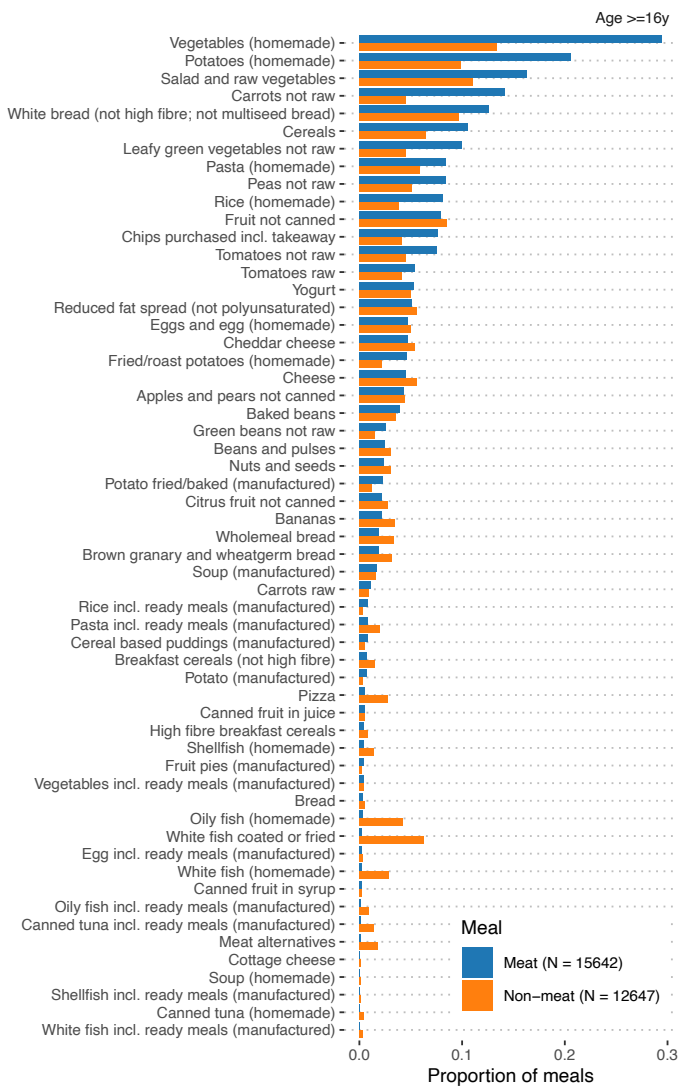


Figure 1 (LEFT) The proportion of meals including different foods for adult ($\geq 16y$) who ate meat at least once ($n = 28,289$) when meat was (blue) or not (orange) included in a meals.

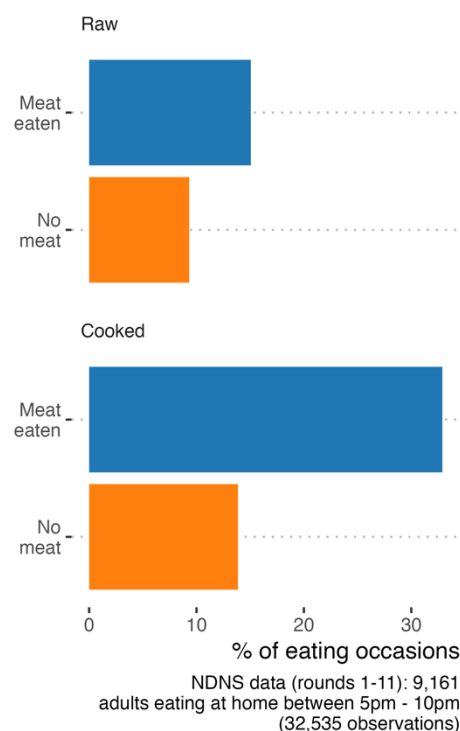


Figure 2 (ABOVE) The proportion of adult ($\geq 16y$) home evening meals that included vegetables.

Conclusions

Meat is a central component of UK main meals and meals are often built around it. As consumers are encouraged to reduce their meat consumption, it is likely that the structure, and perhaps cuisine of meals will also change. We examined existing meals to understand what meals might look like without meat.

The reduction in greenhouse gas emissions from reducing meat may be offset (at least a little) by switching other elements of a meal. For example, switching potatoes and wheat for rice.

There are also health implications of changing meal structures, and these may conflict with any health gains from reducing meat. Meals that did not include meat often did not include as much vegetable matter, especially cooked vegetables. Current popular alternatives to meat meals are not home cooked, e.g., bread based, or for people who did eat meat for least one meal with meat, ready meals.