# Extended Abstract
## Please do not add your name or affiliation

| Paper/Poster Title | Do healthy food baskets cost more? |
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**Abstract prepared for presentation at the 98th Annual Conference of The Agricultural Economics Society will be held at The University of Edinburgh, UK, 18th - 20th March 2024.**


| **Abstract** | ***200 words max*** |
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This paper uses a large representative British household purchase panel of foods and beverages bought to consume at home in 2017 to explore the association between the healthiness and cost of food baskets. We classify food and drink items purchased that are high in fat, sugar and salt (HFSS) and use the share of calories obtained from HFSS good to measure the healthiness of the diet. Leveraging within-household variations in 4-weekly food baskets over the data period, we assess how the share of HFSS energy is associated with the per person food spending on the baskets. Our findings indicate a concave relationship between the healthiness and cost of food baskets. This implies that buying a basket consisting predominantly of either non-HFSS energy or HFSS energy is likely to be less expensive than a mixed basket. The paper provides evidence on the complexity of food choices and challenges the commonly held view that healthy diets are more expensive than unhealthy diets. We demonstrate that the healthy food baskets can be as affordable as the less healthy ones. Our results also imply that improving healthiness of the basket without greater costs would require substantial changes to products chosen.



| **Keywords** | Food, Diets |
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| **JEL Code** | D12, Q10<br>see: www.aeaweb.org/jel/guide/jel.php?class=Q) |


| **Introduction** | ***100 – 250 words*** |
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Less healthy foods are often reported to be cheaper than healthy foods, leading to concerns over the financial barriers to healthy eating. The question of whether healthier diets cost more is of high policy interest as it provides insight on how fiscal policies could be used to address diet-related disease. Consumption of HFSS food is one of the main risk factors for obesity, cardiovascular diseases, diabetes and some types of cancer. In the UK, unhealthy diets are responsible for 10% of all disability-adjusted life years. The UK National Food Strategy demonstrated that highly processed foods are on average three times cheaper per calorie than healthier foods.

Price per calorie has a few limitations as a measure of cost of healthier/less healthy foods. It does not account for the fact that healthier food tends to contain less fat, sugar and salt and hence fewer calories per equivalent of weight. An alternative measure is price per volume, which is equally not ideal because of the large variations in serving sizes across food groups. Price per serving has also been used to assess the relative cost of healthier food. However, there is no standardised way in defining serving size. The amount of food people eat at a single sitting varies greatly across occasions. Importantly, comparing price across individual food items

does not address the question of whether healthier diets cost more as most people do not only consume one or two food groups but a variety of them.

| **Methodology** | ***100 – 250 words*** |
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This paper assesses the cost of healthier diets using product-level household food expenditure data for at-home consumption form 2017. These data cover over 35million purchases made by a representative sample of over 30,000 British consumers and include information on item prices and its nutritional content. This rich dataset not only provides us with precise cost of food baskets that captures the variety of products purchased by households, but also allows us to evaluate the healthiness of entire food basket. For this, we employ the Nutrient Profiling Model, which has been used by the UK government in food policies, to classify each food item in the basket into food with high sugar, fat and/or salt content (HFSS) and non-HFSS food. We then compute the HFSS energy share of each monthly food basket, which is the proportion of total calories purchased from HFSS food and drinks.

We conduct an empirical analysis to explore how within-household variation in the overall food basket quality drives changes in basket costs. While household and postcode-month fixed effects are used to control for the substantial unobserved heterogeneity, biases can still rise from household specific preference shocks that can have effect on food purchases and thus correlate with the nutritional quality of baskets. Following Dubois et al. (2014), we employ an instrumental variable (IV) approach to address this endogeneity by generating a household-specific measure of the external food environment. The identification assumption is that changes in this measure are exogeneous, conditional of the household and postcode-month fixed effects.

| **Results** | ***100 – 250 words*** |
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Using the measure of HFSS energy share, we first document the large variations in the healthiness of food baskets of similar cost, which suggests that food baskets with lower HFSS energy share are not always more expensive. Next we report our empirical results. Both standard panel and IV estimates indicate that the cost of food baskets increases with the HFSS energy share at a decreasing rate. This implies that whether increasing the energy share of non-HFSS increases the cost of diets depends on the composition of the current food basket. Buying a basket consisting predominantly of either non-HFSS energy or HFSS energy is likely to be less expensive than a mixed basket. This non-linear linkage between the cost of food baskets and the associated HFSS energy share is observed among households across various socioeconomic groups, including high, middle and low social economic classes and households with and without children. Our findings indicate that small substitutions towards non-HFSS energy are likely to increase the cost if the current food basket has a high HFSS energy share, in which case only a substantial change would lead to an equivalent costing healthy basket.

| **Discussion and Conclusion** | ***100 – 250 words*** |
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This paper challenges the commonly held view that healthy diets are more expensive than unhealthy diets and contributes to the literature on the complexity of food choices.

Our findings have two policy implications. First, fiscal measures can help improve population diet and address diet-related disease. For people with poor diets, small substitutions towards non-HFSS energy are likely to increase the cost, financial aid is needed to encourage them to gradually eating healthier, particularly for those with tight budget constraints. Food-specific taxes and subsidies may also be used to lower the incremental increase in diet costs when making gradual dietary improvements. Second, while fiscal measures can motivate dietary changes in small steps, they are not sufficient to motivate drastic improvement in diets as prices of food product do not fully explain the observed difference in the healthiness of food baskets. Our findings show that if the current food basket is relatively unhealthily, a substantial reduction in energy share of HFSS products would lead to an equivalent costing healthy basket. Nevertheless, making big dietary changes is challenging and not in the nature. Food policies that address the underlying food preferences and eating habits are needed in incentivising people in choosing better and healthier food.