

Abstract

Evaluating Affordability of Healthier Diets in Four African Countries [†]

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Abstract: Between 702 and 828 million people around the world were affected by hunger in 2021. The prevalence of undernourishment relentlessly continues to affect the world, and particularly Sub-Saharan Africa (23.2% in 2021). Exacerbated inequalities across and within countries are undermining the nutritional adequacy and affordability of diets and threatening vulnerable groups including children under five years of age and women of reproductive age. This research presents a diet optimization approach where the objective is to evaluate the nutritional adequacy and affordability of diets across 4 African countries, namely Ethiopia, Kenya, South Africa and Uganda. The targeted population includes dyads of women of reproductive age and their children between 6 and 24 months. The mathematical programming approach allows for the theoretically contrasting of optimal outcomes of the model with data from food consumption surveys in primary and secondary cities of each country. Based on the observed food intake patterns and the nutrient deficiencies, these outcomes propose new diets modifying food intake (organized in food groups) in order to achieve nutritional adequacy while minimizing food intake changes, or, if applicable, the outcomes indicate which nutrient recommendations are unattainable under the current model setup. On average, our results show that nutritional adequacy can be attained by increasing the intake of legumes, vegetables and fruits, while reducing the intake of cereals. We include a discussion on the assessment of diet affordability and show the practical implications of evaluating healthier diets' viability. Conclusions include paths for future research on diet optimization modelling and its implications as a means of support for designing future dietary guidelines.

Keywords: diet optimization; mathematical programming; health and welfare; diet affordability



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