Research School for Operations
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SHARP-BASIC: Scientific knowledge base and data platform for modelling SHARP diets

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Population growth, increased frequency of non-communicable diseases, nutrient deficiencies, obesity/malnutrition and overexploitation of natural resources is the current state of our world, which should be regarded as unwelcome, and should be dealt with. While searching the space of potential solutions, it is logical to prefer those that are eco-effective and eco-efficient (sustainable). We argue that one such solution is to support nutritional planning through a computational/mathematical model, which we have termed a SHARP diet model (Sustainable, Healthy, Affordable, Reliable and Preferable), that can give policymakers valuable insight on how to revise current, or devise new dietary policies. Current diet models try to address some aspects of the problem, with varying degree of success. However, literature review did not reveal the existence of a model that takes into account all SHARP dimensions simultaneously. None of the models take into account a temporal component of a diet, despite its sequential nature (sequence of discrete, conditionally dependent meals). In this project we will try to overcome the shortcomings of current models: redefine diet healthiness benchmarks by using suitable objective functions, quantitatively express the preferability dimension, model a diet as a sequence of probable meals, and apply our model in different scenarios with different values of SHARP dimensions and different optimization goals, in order to quantify their potential relations.