Food for Thought: A Novel Modeling Approach to Federal Nutrition Policymaking

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To challenge a history of reliance on qualitative information for public decision-making purposes, this study develops a novel policy modeling approach by projecting the relative health, environmental, and economic trade-offs among the following U.S. school nutrition policies from 2015 to 2030: 1) the strict regulations under the 2010 Healthy, Hunger-Free Kids Act (HHFKA), 2) the flexible guidelines effective Pre-HHFKA, and 3) the 2015 amendments proposed by the School Nutrition Association (SNA). The multi-variable computational model utilizes linear programming to optimize an objective function (which simulates each policy's guidelines) subject to multiple sets of constraints (which emulate each policy's requirements). Implemented with Microsoft Excel Solver and Visual Basic for Applications, the model in the static phase completes a comparative analysis of the trade-offs among the scenarios; in the dynamic phase, it generates iterative projections of their impacts based on past trends. Validated by historical data, the findings show that by 2030, the HHFKA projects the most nutritious meal by several health indicators, rendering it optimal for preventing obesity and other chronic diseases. However, across all policies, environmental and economic impacts are mixed, indicating that no single policy optimizes all the criteria. Nevertheless, the model's versatility permits changes in policy to be quickly and efficiently reflected, and its constraints and objectives to be customized. Its flexibility thus renders it an effective model-based policymaking tool for multiple purposes ranging from health and the environment to the economy and beyond.

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