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Martha J. Shott* (mashott@davidson.edu). *Super Size Me: An Optimization Problem.*

In 2003, documentary film-maker Morgan Spurlock set out to expose the fast food industry's role in America's obesity epidemic by producing the film "Super Size Me." For thirty days, he ate nothing but McDonald's food, and super sized his meal whenever asked by an employee. At the end of his month-long experiment, he had gained twenty-five pounds and had suffered from a wide range of health problems. An integer programming model, designed in Microsoft Excel and executed with the Solver tool, can be used to mimic this experiment so as to minimize caloric intake while also satisfying specific nutritional constraints. Incorporation of Monte Carlo simulation also accounts for the probability of Spurlock being asked to super size his meal. Such a model is employed to determine an optimal McDonald's menu for Spurlock, and the results are analyzed to emphasize both the strengths and weaknesses of the integer programming approach to this problem. (Received September 27, 2005)