

1077-H5-2455

**Michael Ian Friedrich** (mifriedr@unca.edu), Asheville, NC 28804, and **Halcyon Annette Garrett\*** (hagarret@unca.edu), Asheville, NC 28804. *What's for Dinner: Linear Analysis of Nutritional Data and an Application to Community Health.*

One misconception regarding food in America is that eating well is more expensive than eating highly-processed foods of relatively low nutritional quality. However, this mistaken belief can be disproved by analyzing dietary requirements mathematically.

George J. Stigler was the first to use linear algebraic techniques to analyze the nutritional content of various foods. In 1945, he published “The Cost of Subsistence” in which he determined the most nutrient-rich diet possible with a limited number of foodstuffs and a pre-established budget. Since that time, similar studies have analyzed foods available in developing countries in order to provide optimal nutrition to populations living beneath the poverty line. This method is extremely useful as it can be applied to any demographic with a set of food items, given nutritional and budgetary constraints.

In our study we generate a list of foods that are inexpensive, nutrient-dense, and widely-available through local supermarkets. We then present several diets which meet the recommended daily allowances (RDAs) of key nutrients as established by the FDA. These meal plans can be integrated into a local program which promotes health awareness and financial literacy within the Buncombe County community in North Carolina. (Received September 22, 2011)