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Improving Health Through Nutrition Research: An Overview of the U.S. Nutrition Research System

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What Is the Issue?

A 2013 survey of consumers found that 45 percent were “very interested” and another 42 percent were “somewhat interested” in learning more about foods that have health benefits. Private companies are responding by redirecting their research and development efforts toward creating nutritionally enriched conventional foods and new food products that go beyond basic nutrition. Governmental organizations use programs and policies to address a variety of public health challenges such as malnutrition and obesity. The United States has a diverse and multi-disciplinary nutrition research system with numerous sponsoring organizations and thousands of active researchers. The body of knowledge this system produces serves as the foundation for progress toward better health. However, maintaining this foundation is not guaranteed; it depends on the resources provided by sponsoring organizations and on how research topics are selected and funded. This report explores the structure and function of the U.S. nutrition research system, with a particular emphasis on changes in Federal support.

What Did the Study Find?

Public data on the levels and trends in research investments are limited, particularly for private research organizations. However, data are available on federally supported nutrition research from the Human Nutrition Research Information Management (HNRIM) database maintained by the National Institutes of Health. Analysis of the HNRIM database for the 25 years from 1985 through 2009 (the latest year of available USDA data) revealed that Federal investments in nutrition research more than doubled in real terms, but the portfolio of research changed. The share of Federal support by the U.S. Department of Health and Human Services (DHHS) increased while that by the U.S. Department of Agriculture (USDA) decreased. This shift changed how research topics were selected and funded within the Federal portfolio. As a result, more research is funded through competitive grants than through intramural or formula funding, and a broader set of academic institutions now participates in nutrition research.

To analyze the nutrition research areas receiving Federal support, we construct a portfolio that shows the shares (percent of all nutrition research projects) across 6 major research areas spanning 37 topics. The analysis finds:

- The *Disease, Injury, and Conditions* research area grew most in its share of Federal support, climbing from 40 percent in 1985 to 49 percent by 2009. This area covers a wide

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range of diseases (e.g., cardiovascular, diabetes, and cancer) and conditions (e.g., obesity, anorexia, and high cholesterol).

- Within the Disease, Injury, and Conditions research area, the *Obesity/Anorexia/Appetite Control* topic grew fastest, rising from 3.6 percent of the Federal portfolio in 1985 to 13.1 percent in 2009. This topic area grew fastest within the portfolios of both DHHS and USDA.
- The *Metabolism and Metabolic Mechanisms* research area experienced the largest decline in Federal portfolio share, from 28 percent in 1985 to 20 percent in 2009. This area investigates how the human body gets or makes energy from food and its constituents such as carbohydrates and proteins.
- Seven out of the nine topic areas that make up the *Metabolism and Metabolic Mechanisms* research area experienced declining Federal shares between 1985 and 2009. The topics leading this decline were *Vitamins, Minerals, and Proteins*.
- The USDA provides most of the Federal support for nutrition research in the *Food Sciences* area, which includes food processing, preservation, and other food-related technologies. From 1985 to 2009, USDA supported 80 percent of the active projects (on average).
- The Federal portfolio share allocated to *Food Sciences* decreased from 10 to 4 percent in the period analyzed. While the Federal shares for each of the four topic areas within the *Food Sciences* fell, the topics leading the decline were *Food Composition* and *Effects of Technology on Foods and Diets*.

The portfolio of federally supported organizations that perform nutrition research also shifted from 1985 to 2009:

- The share of Federal nutrition research projects performed by *Government researchers* fell from 12 percent in 1985 to 6 percent in 2009.
- The share of research projects performed by *land-grant universities and colleges* fell from 34 percent in 1985 to 22 percent in 2009.
- The share of research performed by *non-land grant universities and colleges* grew from 30 percent in 1985 to 41 percent of total nutrition projects in 2009.
- The *Other* category of institutions—*medical schools, hospitals, and research institutes*—also saw its share of research support grow, from 22 percent to 29 percent of all federally supported nutrition projects.
- *Private companies* performed just 1-2 percent of federally supported nutrition research projects.

Our review of the academic and policy literatures found no published studies that analyzed the impacts of these trends on the volume of research performed or the productivity of the U.S. nutrition research system. Future studies could analyze available indicators of research outputs, such as published articles or patents, and could relate those to inputs, such as project effort or financial investments.

How Was the Study Conducted?

This report synthesizes the existing literature analyzing the U.S. nutrition research system and analyzes data on Federal support from the Human Nutrition Research Information Management (HNRIM) database. This database is maintained by the National Institutes of Health (NIH) under the auspices of the Interagency Committee on Human Nutrition Research. Each participating Federal agency reports to HNRIM its own data on active nutrition projects each year. To document the nature and trends in Federal nutrition research, this report relies on the number and distribution of active project counts contained in HNRIM for fiscal years 1985 through 2009. Based on an analysis of available data on project award amounts, we concluded that project counts accurately characterize trends in Federal support for nutrition research.