



Agricultural Marketing Service
U.S. DEPARTMENT OF AGRICULTURE

**U.S. Department of Agriculture
Report to Congress**

on the

**Dairy Promotion and
Research Program**

and the

**Fluid Milk
Processor Promotion Program**

2024 Activities

Contact Information

Promotion, Research, and Planning Division
USDA, Agricultural Marketing Service, Dairy Program
Stop 0233, Room 2542-South
1400 Independence Avenue SW
Washington, DC 20250-0233
<http://www.ams.usda.gov/dairy>

Oral Capps, Jr., PhD
Executive Professor, Regents Professor and Co-Director of Agribusiness, Food and Consumer Economics Research Center
Department of Agricultural Economics
Texas A&M University
600 John Kimbrough Blvd., Suite 371
2124 TAMU
College Station, TX 77843
(979) 845-5911
Email: afcerc@ag.tamu.edu
<http://AFCERC.tamu.edu>

National Dairy Promotion and Research Board
Dairy Management Inc.
6133 North River Road, Suite 200
Rosemont, IL 60018
(847) 803-2000
<http://www.usdairy.com>

National Fluid Milk Processor Promotion Board
1250 H Street NW, Suite 250
Washington, DC 20005
(202) 737-0153
<http://www.milkpep.org>

In accordance with Federal civil rights law and U.S. Department of Agriculture (USDA) civil rights regulations and policies, the USDA, its Agencies, offices, and employees, and institutions participating in or administering USDA programs are prohibited from discriminating based on race, color, national origin, religion, sex, disability, age, marital status, family/parental status, income derived from a public assistance program, political beliefs, or reprisal or retaliation for prior civil rights activity, in any program or activity conducted or funded by USDA (not all bases apply to all programs). Remedies and complaint filing deadlines vary by program or incident.

Persons with disabilities who require alternative means of communication for program information (e.g., Braille, large print, audiotape, American Sign Language, etc.) should contact the State or local Agency that administers the program or contact USDA through the Telecommunications Relay Service at 711 (voice and TTY). Additionally, program information may be made available in languages other than English.

To file a program discrimination complaint, complete the USDA Program Discrimination Complaint Form, AD-3027, found online at [How to File a Program Discrimination Complaint](#) and at any USDA office or write a letter addressed to USDA and provide in the letter all of the information requested in the form. To request a copy of the complaint form, call (866) 632-9992. Submit your completed form or letter to USDA by: (1) mail: U.S. Department of Agriculture, Office of the Assistant Secretary for Civil Rights, 1400 Independence Avenue, SW, Mail Stop 9410, Washington, D.C. 20250-9410; (2) fax: (202) 690-7442; or (3) email: program.intake@usda.gov.

USDA is an equal opportunity provider, employer, and lender.

Mention of a trade name or brand name does not constitute endorsement or recommendation by USDA over other similar products not named.

Contents

Contact Information	1
Executive Summary	4
Chapter 1: The Dairy and Fluid Milk Processor Promotion Programs	6
Chapter 2: USDA Activities.....	9
Chapter 3: Quantitative Evaluation of the Effectiveness of Promotion Activities by the National Dairy Promotion and Research Program and the National Fluid Milk Processor Promotion Program.....	12
Chapter 4: Qualified State, Regional, or Importer Dairy Product Promotion, Research, or Nutrition Education Programs	42
Additional Information: Approved Contracts and Research Activities.....	46

Executive Summary

The enabling legislation of the dairy producer, dairy importer, and fluid milk processor promotion programs requires the U.S. Department of Agriculture (USDA) to submit an annual report to the House Committee on Agriculture and the Senate Committee on Agriculture, Nutrition, and Forestry. The dairy and fluid milk promotion programs are conducted under the Dairy Production Stabilization Act of 1983 (7 U.S.C. 4501 *et seq.*) (Dairy Act); the Dairy Promotion and Research Order (7 CFR § 1150) (Dairy Order); the Fluid Milk Promotion Act of 1990 (7 U.S.C. 6401 *et seq.*) (Fluid Milk Act); and the Fluid Milk Promotion Order (7 CFR § 1160) (Fluid Milk Order), respectively. This report includes summaries of the activities for the dairy and fluid milk programs, including an accounting of funds collected and spent, USDA activities, and an independent analysis of the effectiveness of the programs. Unless otherwise noted, this report addresses program activities for January 1 through December 31, 2024, of the Dairy Promotion and Research Program and the Fluid Milk Processor Promotion Program.

Dairy Promotion and Research Program

Mandatory assessments collected under the Dairy Act totaled \$343.6 million in 2024. The Dairy Promotion and Research Board (Dairy Board) portion of assessments totaled \$124.0 million and the Qualified Dairy Product Promotion, Research, or Nutrition Education Programs (QPs) totaled \$219.6 million. Expenditures by the Dairy Board and many of the QPs are integrated through a joint process of planning and program implementation to work together on the national, regional, State, and local level. The Dairy Board continued to develop and implement programs to expand the consumption of dairy products by focusing on partnerships and innovation, product positioning with consumers, and innovations for dairy product consumption.

Details of the Dairy Board's activities are presented in Chapter 1. Details of the QPs' activities may be found in Chapter 4.

Fluid Milk Processor Promotion Program

Mandatory assessments collected under the Fluid Milk Act totaled \$78.1 million in 2024. The Fluid Milk Processor Promotion Board (Fluid Milk Board) continued to administer a generic fluid milk promotion and consumer education program funded by America's fluid milk processors. The program is designed to educate Americans about the benefits of fluid milk, increase milk consumption, and maintain and expand markets and uses for fluid milk products in the contiguous 48 States and the District of Columbia.

The Fluid Milk Order requires the Fluid Milk Board to return 80 percent of the funds received from California fluid milk processors to the California Milk Processor Board. Per the Fluid Milk Order requirement, \$6.7 million was returned to the California Milk Processor Board. The activities of the Fluid Milk Processor Promotion Program are presented in the Fluid Milk Board section in Chapter 1.

USDA Activities

USDA has oversight responsibility for the dairy and fluid milk promotion programs. The oversight objectives ensure the boards and QPs properly account for all program funds and administer the programs in accordance with the respective acts, orders, and USDA guidelines and policies. USDA reviewed and approved all board budgets, contracts, and advertising materials. USDA employees attended all board and committee meetings, monitored all board activities, and were responsible for obtaining an independent evaluation of the programs. Additional USDA responsibilities included facilitating the nomination and appointment of board members, amending the orders, conducting referenda, assisting with noncompliance cases, and conducting periodic program management reviews. The boards reimbursed the U.S. Secretary of Agriculture (Secretary), as required by the acts, for all of USDA's costs of program oversight and for the independent analysis discussed in Chapter 3. Chapter 2 details USDA's oversight activities.

Independent Analysis

Chapter 3 describes the results of the independent econometric analysis, conducted by Texas A&M University, on the effectiveness of the programs implemented by the Dairy Board and the Fluid Milk Board. The analysis indicates that the generic fluid milk marketing activities sponsored by the programs have mitigated the decline of fluid milk consumption.

In addition, Chapter 3 presents the combined effects of 2024 promotion activities on the consumption of fluid milk, cheese, butter, all dairy products, and dairy exports, and includes the benefit-cost ratios (BCRs) for dairy producers, importers, and fluid milk processors. For every dollar invested in demand-enhancing activities, the BCRs for producers were as follows: (1) fluid milk - \$4.16; (2) cheese - \$2.67; (3) butter - \$24.85. The BCR for fluid milk processors attributed to fluid milk promotion activities is \$5.14.

Chapter 1

The Dairy and Fluid Milk Promotion Programs

The Dairy Board and the Fluid Milk Board continued to develop and implement programs to expand the human consumption of fluid milk and dairy products. This chapter details the activities of each board.

1. National Dairy Promotion and Research Board

The mission of the Dairy Board is to coordinate a promotion and research program that maintains and expands domestic and foreign markets for fluid milk and dairy products. The Dairy Board is responsible for administering the Dairy Order, developing plans and programs, approving budgets, and monitoring the program results.

The Secretary appoints 37 members to the Dairy Board, 36 of whom are dairy producers, each representing 1 of 12 geographic regions within the United States, and 1 representing dairy importers. The appointments are made from nominations submitted by individual applicants, producer organizations, importer organizations, general farm organizations, and QPs. Dairy Board members must be active dairy producers or dairy importers. Members serve staggered 3-year terms, with no member serving more than two consecutive terms.

Total Dairy Board income and expenses are provided in the annual independent audit report. The audit report can be found at: [https://www.dairycheckoff.com/getmedia/770a73b2-130f-45dd-8f74-d5d3dbde8cd0/NDB-Audited-Financial-Statements-\(2025,-2024\).pdf](https://www.dairycheckoff.com/getmedia/770a73b2-130f-45dd-8f74-d5d3dbde8cd0/NDB-Audited-Financial-Statements-(2025,-2024).pdf). The Dairy Board's administrative budget continued to be within the 5-percent-of-revenue limitation required by the Dairy Order.

The Dairy Board has one standing committee: the Finance Committee, comprised of the Dairy Board officers and appointees named by the Dairy Board Chair. The Dairy Board Treasurer chairs the Finance Committee. The other Dairy Board committees are joint program committees with the United Dairy Industry Association (UDIA).

Dairy Management Inc. (DMI), a management and staffing corporation, is a joint undertaking between the Dairy Board and UDIA. UDIA is a federation of 16 of the 63 QPs under the direction of a board of directors. The mission of DMI is to drive increased sales of and demand for dairy products and ingredients on behalf of dairy producers and dairy importers. DMI works proactively, in partnership with leaders and innovators, to increase and leverage opportunities to expand dairy markets. The DMI Board of Directors comprises all Dairy Board (37) and all UDIA (41) members. Voting is equalized between the Dairy Board and UDIA.

DMI serves the Dairy Board and the UDIA Board and facilitates the integration of promotion funds through a joint process of planning and program implementation so that the programs on the national, regional, State, and local level work together. The Dairy Board and UDIA Board must separately approve the DMI budget and annual plan before implementation. During 2024, DMI continued to utilize a national staffing structure to plan and execute the national programs.

DMI funds one- to three-year research projects supporting marketing efforts. Six Dairy Foods Research Centers and one Nutrition Institute provided much of the research in 2024. The mission of the research centers is to conduct research; educate professionals; transfer knowledge to the industry; and create dairy products and ingredients with improved health, safety, quality, and functionality. Universities and other industry researchers throughout the United States competed for these research contracts. Additional information can be found at <https://www.usdairy.com/research-resources/dairy-foods-research-centers>.

The joint Dairy Board and UDIA Board committee structure provides the framework for DMI program activities. The Dairy Board and UDIA Board Chairs assign their respective board members to the following seven joint program committees: Farmer Relations, Exports, Sustainability, Reputation, Innovation, Fluid Milk, and International Partnerships. Each committee elects a chair and vice-chair. The DMI Board and joint committees set program priorities, plan activities and projects, and evaluate results. During 2024, the Dairy Board and UDIA Board met jointly six times, both in person and virtually.

For more information on the Dairy Board and UDIA Board activities and initiatives implemented in 2024, see the DMI annual report at <https://www.dairycheckoff.com/DairyCheckoff/files/92/921924de-cdb7-467a-9708-1cba1e8be425.pdf>.

II. National Fluid Milk Processor Promotion Board

The Fluid Milk Board, as authorized in the Fluid Milk Act, administers a fluid milk promotion and consumer education program funded by fluid milk processors. The program is designed to educate Americans about the benefits of fluid milk, increase milk consumption, and maintain and expand markets and uses for fluid milk products in the contiguous 48 States and the District of Columbia. The fluid milk marketing programs are research-based and message-focused for the purpose of positively changing the attitudes and purchase behavior of Americans regarding fluid milk.

The Secretary appoints 20 members to the Fluid Milk Board. Fifteen members are fluid milk processors who each represent a separate geographical region, and five are at-large members. Of the five at-large members, at least three must be fluid milk processors and at least one must be from the general public. The members of the Fluid Milk Board serve staggered 3-year terms and are eligible to be appointed to two consecutive terms. The Fluid Milk Order provides that no company shall be represented on the Fluid Milk Board by more than three representatives. Fluid Milk Board members who fill vacancies with a term of 18 months or less may serve two additional 3-year terms. The Milk Processor Education Program (MilkPEP) carries out the activities of the Fluid Milk Board.

The Fluid Milk Board elects four officers: Chair, Vice-Chair, Secretary, and Treasurer. Fluid Milk Board members are assigned by the Chair to the Fluid Milk Board's program committees. The program committees are responsible for setting program priorities, planning activities and projects, and evaluating results. In addition, the Fluid Milk Board has a Finance Committee to review all program authorization requests for funding sufficiency as well as review the Fluid

Milk Board's independent financial audit and the work of the board's accounting firm. The Fluid Milk Board met three times in 2024 to conduct board business.

Total Fluid Milk Board income and expenses are displayed in the annual independent financial audit: <https://s3.us-west-2.amazonaws.com/externalassets-p.milkpep-production.g43labs.net/2024+MilkPEP+Audit+Report.pdf>. The Fluid Milk Board's administrative budget continued to be within the 5-percent-of-revenue limitation required by the Fluid Milk Order. For more information on the Fluid Milk Board activities and initiatives implemented in 2024, see the MilkPEP annual report at <https://s3.us-west-2.amazonaws.com/externalassets-p.milkpep-production.g43labs.net/MilkPEP+2024+Annual+Report.pdf>.

Chapter 2

USDA Activities

The USDA's Agricultural Marketing Service's (AMS) Dairy Program has oversight responsibilities for the Dairy Board and the Fluid Milk Board. AMS Dairy Program's oversight activities include reviewing and approving the Dairy and Fluid Milk Boards' budgets, contracts, investments, and marketing campaigns. Materials are monitored for conformance with provisions of the respective acts and orders and the U.S. Dietary Guidelines for Americans, in addition to other legislation. AMS Dairy Program also uses the "Guidelines for AMS Oversight of Commodity Research and Promotion Programs" to govern oversight and facilitate the application of legislative and regulatory provisions of the Acts and the Orders.

The AMS Dairy Program ensures that the collection, accounting, auditing, and expenditures of promotion funds are consistent with the enabling legislation and orders; certifies Qualified Programs; and provides for the evaluation of the effectiveness of both promotion programs' advertising campaigns. The AMS Dairy Program assists the Boards in their assessment collection, compliance, and enforcement actions.

Other AMS Dairy Program responsibilities include facilitating the nomination and appointment process of board members, amending the orders, conducting referenda, reviewing communications, and conducting periodic management reviews. AMS Dairy Program representatives attend full board and committee meetings and other meetings related to the programs.

Dairy Promotion and Research Program Oversight

Collections

The Dairy Act specifies that each person making payments to a producer for milk produced in the United States and purchased from the producer should, in the manner prescribed by the Order, collect an assessment based on the number of hundredweights of milk for commercial use handled for the account of the producer and remit the assessment to the Dairy Board. The current rate of assessment for dairy producers is 15 cents per hundredweight of milk for commercial use or the equivalent thereof, as determined by the Secretary. In addition, the rate of assessment for imported dairy products prescribed by the Order is 7.5 cents per hundredweight of milk for commercial use or the equivalent thereof, as determined by the Secretary.

Contracts

The Dairy Act and Dairy Order require that contracts expending assessment funds be approved by the Secretary. During 2024, the AMS Dairy Program reviewed and approved 639 Dairy Board and DMI agreements, amendments, and annual plans. During 2024, DMI retained the certified public accounting firm Ernst & Young to audit the records of the following contractors: Associated Milk Producers Inc., AMFI Investments LLC, Circana Inc., Manifest LLC, and Dairy Farmers of Wisconsin. No material exceptions were found.

USDA Foreign Agricultural Service

The Secretary of Agriculture has delegated oversight responsibility for all foreign market development activities outside the United States to the USDA Foreign Agricultural Service (FAS) (7 CFR 2.43(a)(24)). FAS reviews the U.S. Dairy Export Council (USDEC) foreign market development plan and related contracts. The AMS Dairy Program also reviews USDEC contracts to ensure conformance with the Dairy Act, Dairy Order, and established USDA policies. In 2024, the AMS Dairy Program reviewed and approved 104 USDEC agreements, amendments, and annual plans.

Organic Exemption

On December 31, 2015, a final rule was published, with an effective date of February 29, 2016, amending the organic exemption regulations to allow persons that produce, handle, market, process, manufacture, feed, or import “organic” and “100 percent organic” products to be exempt from paying assessments associated with commodity promotion programs administered by AMS, regardless of whether the person requesting the exemption also produces nonorganic products (80 FR 82005, published December 31, 2015). In States having mandatory assessment laws, organic dairy producers are exempt only from the Federal assessment. Organic producers are still responsible for remittance of State assessments. In 2024, exempted assessments totaled \$1,745,356. The Dairy Order requires organic producers to reapply annually to continue to receive the exemption.

USDA Dairy Promotion and Research Program Expenses

Per the Dairy Board’s enabling legislation, the Dairy Board reimburses the AMS Dairy Program for the cost of administrative oversight and compliance audit activities. In 2024, the AMS Dairy Program’s oversight and compliance audit expenses totaled \$1,228,922 for the Dairy Board.

Qualified Programs

Qualified Programs are State, regional, or importer organizations conducting dairy product promotion, research, or nutrition education programs, as authorized by Federal or State law or were active programs prior to the Dairy Act. In 2024, the AMS Dairy Program reviewed applications for continued qualification from 62 Qualified Programs. A list of Qualified Programs is provided in Chapter 4. Consistent with its responsibility for monitoring the Qualified Programs, the AMS Dairy Program obtained and reviewed income and expenditure data from each Qualified Program, and data reported are included in aggregate for 2024 in Chapter 4.

National Fluid Milk Processor Promotion Board Oversight

Program Development

The Fluid Milk Board contracted with Gale Partners, LLC, to develop programs for advertising, promotion, and consumer education in connection with the national fluid milk campaign.

Collections

The Fluid Milk Act specifies that each fluid milk processor shall pay an assessment on each unit of fluid milk product processed and marketed commercially in consumer-type packages. The current rate of assessment is 20 cents per hundredweight of fluid milk products marketed.

Contracts

The Fluid Milk Act and Fluid Milk Order require budgets and contracts expending assessments be approved by the Secretary. During 2024, the AMS Dairy Program approved 355 Fluid Milk Board agreements, amendments, and annual plans. The Fluid Milk Board retained the certified public accounting firm of Snyder Cohn, PC, in 2024 to audit the records of Gale Partners, LLC, New York. No material exceptions were found.

Organic Exemption

On December 31, 2015, a final rule was published, with an effective date of February 29, 2016, amending the organic exemption regulations to allow persons that produce, handle, market, process, manufacture, feed or import “organic” and “100 percent organic” products to be exempt from paying assessments associated with commodity promotion programs administered by AMS, regardless of whether the person requesting the exemption also produces nonorganic products (80 FR 82005, published December 31, 2015). In 2024, the amount of exempted fluid milk assessments was approximately \$3,405,577. The Fluid Order requires organic fluid milk processors to reapply annually to continue to receive the exemption.

USDA Fluid Milk Processor Promotion Program Expenses

Per the Fluid Milk Act, the Fluid Milk Board reimburses the AMS Dairy Program for the cost of administrative oversight and compliance audit activities. In 2024, the AMS Dairy Program’s oversight and compliance audit expenses totaled \$672,952 for the Fluid Milk Board.

Chapter 3

Quantitative Evaluation of the Effectiveness of Promotion Activities by the National Dairy Promotion and Research Program and the National Fluid Milk Processor Promotion Program – 1995 to 2024

Introduction

The Dairy Act and the Fluid Milk Act require an annual independent analysis of the advertising and promotion programs that operate to increase consumer awareness and sales of fluid milk and dairy products. Dr. Oral Capps, Jr., Executive Professor and Regents Professor, Director of the Agribusiness, Food, and Consumer Economics Research Center (AFCERC), and Holder of the Southwest Dairy Farmers Marketing Endowed Chair, Department of Agricultural Economics, Texas A&M University, was awarded a competitive contract to conduct this study. This chapter is a summary of the 2024 quantitative evaluation of the effectiveness of the dairy and fluid milk promotion programs.

Background on the Promotion Programs

The Dairy Research and Promotion Program, also known as the Dairy Checkoff Program, is a coordinated national research and promotion program intended to maintain and expand domestic and foreign markets for fluid milk and dairy products. The program was created and is administered under the Dairy Production Stabilization Act of 1983¹ and the Dairy Promotion and Research Order² (Agricultural Marketing Service, U.S. Department of Agriculture³). To fund the program, U.S. dairy producers pay a 15-cent-per-hundredweight assessment, and importers pay a 7.5-cent-per-hundredweight assessment, or milk-equivalent thereof, on dairy products imported into the United States. Dairy Management Inc. (DMI), a management and staffing corporation, is a joint undertaking between the National Dairy Promotion and Research Board (Dairy Board) and the United Dairy Industry Association (UDIA). The UDIA is a federation of State and regional dairy producer-funded promotion organizations commonly referred to as Qualified Programs⁴ (QPs). The UDIA operates under the direction of a board of directors comprised of dairy farmers elected by the respective boards of their member organizations. DMI's mission is to drive increased sales of and demand for dairy products and ingredients on behalf of dairy producers and dairy importers. DMI works proactively in partnership with leaders and innovators to increase opportunities to expand dairy markets.

The National Fluid Milk Processor Promotion Program, or Milk Processor Education Program (MilkPEP), created and authorized by the Fluid Milk Promotion Act of 1990, develops and

¹ <https://uscode.house.gov/view.xhtml?path=/prelim@title7/chapter76/subchapter1&edition=prelim>

² <https://www.ecfr.gov/current/title-7/subtitle-B/chapter-X/part-1150>

³ <https://www.ams.usda.gov/rules-regulations/research-promotion/dairy>

⁴ Qualified dairy product promotion, research or nutrition education programs (Qualified Programs or QPs) are State, regional, local, or importer promotion programs certified annually by the Secretary of Agriculture to receive a portion of the funds generated under the Dairy Research and Promotion Program.

finances generic advertising programs designed to maintain and expand markets for fluid milk products produced in the United States. The program is administered by the National Fluid Milk Processor Promotion Board (Agricultural Marketing Service, U.S. Department of Agriculture)⁵. Fluid milk processors marketing more than three million pounds of fluid milk per month pay a 20-cent-per-hundredweight assessment on fluid milk processed and marketed in consumer-type packages in the contiguous 48 States and the District of Columbia.

The Dairy Research and Promotion Program, funded by dairy producers and dairy importers, and the Fluid Milk Processor Promotion program, funded by fluid milk processors, are hereinafter referred to jointly as the National Programs. The Dairy Act of 1983 and the Fluid Milk Act of 1990 require annually a third-party independent analysis of the effectiveness of the various advertising and promotion programs that operate to increase consumer awareness and sales of fluid milk specifically and dairy products in general.

Objectives of the Evaluation Study

The National Programs are evaluated with two key questions in mind: (1) Have the demand-enhancing activities conducted by dairy producers, importers, and fluid milk processors increased the demand for fluid milk and manufactured dairy products? (2) Did those who have paid for the promotions conducted benefit from them?

Historically, these questions have been answered through econometric studies of the relationships between the consumption of dairy products and promotion program demand-enhancing expenditures. These demand relationships are estimated econometrically, accounting for a plethora of impacts of key market forces. Economic returns to dairy producers, importers, and fluid milk processors that result from marketing and promotion activities and the associated changes in consumption are calculated using the parameters obtained from the estimated demand models. The summary indicator of economic return on investment is termed the benefit-cost-ratio (BCR).

Put simply, the level of the BCR is a representation of the return-on-investment (ROI) of any checkoff program. In addition, due to diminishing marginal returns, the ratio between the incremental revenue generated and the level of funding, defined as the BCR, declines as the level of funding rises. Importantly, metrics other than the BCR, such as the level of impact on consumption, prices, and exports, are also useful indicators of the impact and effectiveness of any checkoff program. We maintain that these indicators reveal additional information to stakeholders (producers, importers, processors, and policy makers) than just the consideration of the BCR or ROI.

The objectives of this report are to:

1. Statistically (econometrically) measure the combined effects of the promotion activities of the National Programs on the consumption of fluid milk, cheese, butter, all dairy products, and dairy exports;
2. Provide a quantitative analysis of dairy product imports and import assessments; and

⁵ <https://www.ams.usda.gov/rules-regulations/research-promotion/fluid-milk>

3. Update the benefit-cost analysis associated with the National Programs for dairy producers, fluid milk processors, and importers.

This project covers the period of 1995 to 2024 and captures the joint efforts of DMI, MilkPEP, and QPs. On average, the shares of each promotion entity in the total demand-enhancing expenditures over this period are as follows: (1) DMI – 26.1 percent; (2) MilkPEP – 22.2 percent; and (3) QPs – 51.7 percent.

Summary of the Findings

The overall finding of this evaluation is that dairy promotion under the National Programs has effectively increased U.S. demand (domestic and exports) for dairy products. Exports of butter were lower by 26.2 percent, while exports of cheese were up by 6.5 percent over the same period because of the promotion programs. Exports of nonfat dry milk decreased by 0.7 percent over the period 1995 to 2024.

The returns from the programmatic activities of producers and to fluid milk processors are summarized with BCRs. The BCRs are based on the demand-enhancing expenditures only; therefore, they do not account for certain operating expenses such as administrative expenses, overhead, technical support, and industry relations. This procedure has been standard practice in all checkoff evaluations, not just those indigenous to dairy. Demand-enhancing expenditures accounted for roughly 94 percent of total DMI expenditures, almost 99 percent of total MilkPEP expenditures, and about 86 percent of total QP expenditures. Consequently, most of the expenditures associated with the various programmatic activities are accounted for in this analysis.

Over the period from 1995 to 2024, the BCRs (expressed in terms of producer profit or net returns at the farm level) were calculated to be \$4.16 for every dollar invested in demand-enhancing activities for fluid milk; \$2.67 for every dollar invested in demand-enhancing activities for cheese; and \$24.85 for every dollar invested in demand-enhancing activities for butter. For other nonspecific or nondelineated promotion activities, the BCR was calculated to be \$6.70 for every dollar invested. Over the same period, the BCR of export promotion was \$12.82 per dollar invested.

The aggregate all-dairy BCR was 5.93, meaning that, on average, producer profit increased by \$5.93 for each dollar invested in demand-enhancing activities. These BCRs are net of the costs associated with the National Programs. Relative to the past five evaluations, wherein the BCRs were estimated to range from 4.30 to 5.23, the BCR for all dairy products falls outside this interval. The updated ROI or BCR associated with the National Programs exceeds the returns calculated over the past five years.

Of note, the BCRs for fluid milk, cheese, butter, other nonspecific dairy products, and exports were outside the ranges reported in the past five evaluations. To illustrate, the BCR for fluid milk, reported as 4.16, surpassed the upper bound of the range of 1.41 to 3.26 previously reported in the past five evaluations. The BCR for butter, reported as 24.85, also exceeded the upper bound of the range of 19.19 to 24.40 reported in the past five evaluations. Similarly, the BCR for dairy exports, reported as 12.82, surpassed the upper bound of the range of 6.94 to 8.85

reported in the past five evaluations. That said, the BCRs for cheese and other nonspecific dairy products, reported as 2.67 and 6.70, respectively, were smaller than their lower bounds reported in the past five evaluations.

Beginning September 1, 2011, importers of dairy products have paid assessments to the Dairy Research and Promotion Program. Import assessment funds totaled between \$3.44 million and \$5.41 million per year from 2012 to 2024, averaging \$4.20 million. The cumulative import assessment funds totaled \$55.65 million from September 2011 to December 2024. On a monthly basis, funds from the dairy import assessment ranged from \$210,086 to \$654,352, averaging \$347,783 over the period of September 2011 to December 2024. The import assessment averaged about 1 percent of the total dairy checkoff expenditures made by DMI, MilkPEP, and the QPs between 2012 and 2024, ranging from 0.86 percent to 1.15 percent during this period.

Imported cheese levels were higher by 2.52 million pounds over the period 2012-2024 due to promotion funds collected from importers. Unit values of cheese imports amounted to roughly \$3.41 per pound on average over the period between 2012 and 2024. Hence, incremental revenue to importers solely from cheese attributable to the import assessment (on cheese) totaled roughly \$8.61 million. In the previous evaluation based on data from 1995 to 2023, incremental revenue to importers solely from cheese attributed to the import assessment totaled about \$6.56 million.

The BCR associated with DMI spending was calculated to be 5.02, while the BCR associated with MilkPEP spending was calculated at 5.14. In the five previous evaluations of the National Programs, the BCR associated with DMI spending was calculated to be 5.20 based on data from 1995 to 2023, 6.51 based on data from 1995 to 2022, 6.43 based on data from 1995 to 2021, 5.43 based on data from 1995 to 2020, and 5.59 based on data from 1995 to 2019. The BCR associated with MilkPEP spending was calculated to be 1.10 based on data from 1995 to 2023, 2.58 based on data from 1995 to 2022, 1.55 based on data from 1995 to 2021, 1.89 based on data from 1995 to 2020, and 3.28 based on data from 1995 to 2019. The bottom line is that, unlike previous evaluations over the past five years, the updated ROI from DMI spending and the updated ROI from MilkPEP spending were quite similar.

The BCR associated with the promotion of fluid milk at the processor level was estimated to be 4.05 over the period 1995 to 2024. In the previous evaluations of the effectiveness of the National Programs, the net BCR was calculated to be 2.44, 3.24 and 2.54, for periods 1995 to 2021, 1995 to 2022, and 1995 to 2023, respectively. Hence, the updated BCR of fluid milk at the processor level exceeds previously reported measures. The cost of milk was used as a proxy for the cost of production since data concerning the costs of production for fluid milk processors were not available. Initially, we calculated the added total value at the retail level of the marketing channel attributed to MilkPEP promotion. Then we calculated the added total value accruing at the farm level attributed to MilkPEP promotion. The difference then is the added total value captured by market participants beyond the farm gate to the retail level. Over the period 1995 to 2024, this cumulative added value amounted to \$12.62 billion. Over the same period, the cumulative amount of MilkPEP promotion spending totaled close to \$2.50 billion. Hence, the BCR of fluid milk at the processor level was estimated to be 4.05 over this period, net of MilkPEP promotion costs.

Comparisons of results from previous evaluations are included to provide a prospective view of

the effectiveness of the National Programs over time. Caution must be exercised in comparing Reports to Congress across years because the economic phrase/condition *ceteris paribus*, meaning all other factors invariant, does not hold. The underlying endogenous and exogenous variables that come from various government sources have been revised and updated, and now four additional quarters of data are available not only pertaining to these variables but also pertaining to the data associated with the programmatic expenditures of the National Programs.

DMI, MilkPEP, and QP Promotion Program Expenditures

The expenditure data for this analysis were acquired from DMI, QPs, and MilkPEP. The demand-enhancing expenditures from all three entities were aggregated in the quantitative appraisal. The National Programs use advertising as well as other means to influence consumers. Advertising dollars are directed to media outlets including television, radio, outdoor, print, and internet ads. Marketing activities other than advertising are directed at the retail level of the marketing channel or at intermediaries. The nonadvertising marketing expenditures include health and nutrition education programs, public relations, food service and manufacturing programs, sales promotion programs, school milk programs, school marketing activities, retail programs, child nutrition and fitness initiatives, and single-serve milk promotion.

Certain promotion expenditures are not directed at the retail level of the marketing channel. These types of expenditures include crisis management, trade service communications, and strategic research activities. Because their intent is to directly increase or support sales of dairy products, these expenditures are classified as demand-enhancing expenditures. As stated previously in our introduction of the BCRs, overhead, technical support, industry relations, and administrative expenses are excluded from this analysis also because they are not primarily related to demand-enhancing efforts.

Over the years, the DMI Board of Directors changed their marketing strategies to focus more on partnerships within the dairy industry to increase demand for fluid milk, manufactured dairy products, and dairy ingredients. Currently, DMI's strategies include the following: (1) working with and through specific partners to achieve sustainable, category-level sales impacts; (2) attracting partner co-investment to fund demand-enhancing efforts; and (3) maximizing resources and impacts in increasingly competitive markets. These efforts include co-developing marketing information, research, business models, and best practices that can be used by industry stakeholders to increase sales of fluid milk and dairy products.

Specifically, DMI has made investments in four programmatic areas: (1) domestic foodservice partnerships, (2) fluid milk innovation, (3) whole fat science, and (4) dairy exports. The investment in foodservice partnerships involved domestic partnerships with Domino's, McDonald's, Taco Bell, and Pizza Hut—that is, quick-service restaurants designed to increase the volume sold of milk, cheese, or other dairy products. The investment concerning fluid milk innovation dealt with innovations defined as high protein, low sugar, lactose-free, added functional ingredients, etc. The investment dealing with whole-fat science involved enhancing the demand for butter and whole milk. Finally, the investment associated with dairy exports was designed to increase the demand for dairy exports on a milk-fat basis and on a skim-solids basis.

Annual promotion program expenditures made by DMI, MilkPEP, and QPs over the period 1995 to 2024 are depicted in Table 3-1 and are delineated in Figure 3-1. On average, roughly \$380 million in total was spent annually by the respective entities over this period and between \$390 million and \$460 million since 2011. Over the period 1995 to 2024, the shares of each promotion entity concerning checkoff expenditures on average were as follows: (1) DMI – 26.1 percent; (2) MilkPEP – 22.2 percent; and (3) QPs – 51.7 percent. However, in 2024, the shares of each entity concerning checkoff expenditures were: (1) DMI – 24.8 percent; (2) MilkPEP – 16.1 percent; and (3) QPs – 59.1 percent. In other words, in 2024, promotion shares tilted toward QPs and away from DMI and MilkPEP.

The data associated with the demand-enhancing activities initiated by DMI and MilkPEP are available on a quarterly basis. The QP expenditure data, however, are only available on an annual basis. To impute quarterly QPs programmatic expenditures, we mirror the seasonal nature of the DMI and MilkPEP programmatic expenditures. Simply put, we assume the QP programmatic expenditures to follow the same seasonal patterns as the DMI and MilkPEP programmatic expenditures data. Consequently, the seasonal factors associated with DMI and MilkPEP data are obtained and applied to the annual QP data to arrive at quarterly expenditures. The estimation of these data on a quarterly basis is important in allowing not only sufficient observations to conduct the econometric analysis of demand for dairy products but also in capturing the underlying efforts of promotion of DMI, MilkPEP, and QPs.

Nominal, seasonally adjusted demand-enhancing expenditures by DMI, MilkPEP, and QPs for all dairy products (fluid and manufacturing) combined on a quarterly basis from 1995 to 2024 are exhibited in Figure 3-2. These demand-enhancing expenditures varied from \$54.2 million to \$99.4 million per quarter, averaging \$82.8 million over the period of analysis.

Nominal, seasonally adjusted demand-enhancing expenditures for fluid milk from DMI, MilkPEP, and QPs on a quarterly basis from 1995 to 2024 are exhibited in Figure 3-3. Over that period, nominal, seasonally adjusted quarterly promotion program expenditures for fluid milk ranged from roughly \$15.3 million to \$63.3 million per quarter. On average over the same period, nominal, seasonally adjusted demand-enhancing expenditures for fluid milk were \$31.9 million per quarter.

As exhibited in Figure 3-4, over the period 1995 to 2024, nominal, seasonally adjusted demand-enhancing expenditures for cheese averaged \$14.9 million per quarter, ranging from \$8.0 million to \$27.7 million. Nominal, seasonally adjusted demand-enhancing expenditures for cheese ranged from \$12.8 million to \$27.7 million between 1995 and 2004, averaging \$21.8 million per quarter. From 2005 to the third quarter of 2008, promotion expenditures associated with cheese were \$12.0 million during this period. From the fourth quarter of 2008 through the end of 2023, nominal quarterly expenditures on cheese marketing and promotion activities ranged from \$8.0 million to \$17.1 million, averaging \$11.2 million per quarter.

As shown in Figure 3-5, nominal, seasonally adjusted demand-enhancing quarterly expenditures on marketing and promotion of butter ranged from close to \$60,000 to \$6.8 million, averaging slightly more than \$1.4 million per quarter over the period 1995 to 2024. Marketing and promotion expenditures for butter are a fraction of the expenditures for fluid milk and cheese.

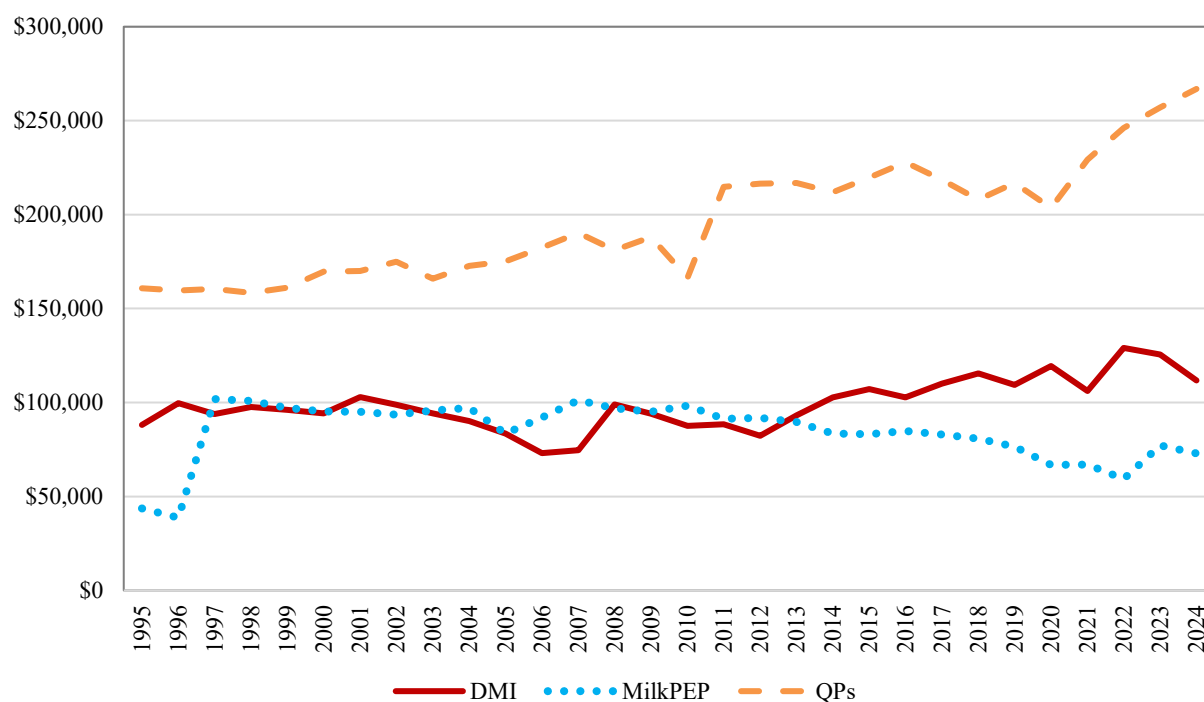
Table 3-1. Annual Dairy Management, Inc. (DMI), Milk Processor Education Program (MilkPEP), and Qualified Program (QP) Promotion Program Expenditures, 1995 to 2024¹

Year	DMI	MilkPEP	QPs	Total
1995	\$88,105	\$43,654	\$160,832	\$292,592
1996	\$99,674	\$38,690	\$159,600	\$297,964
1997	\$93,859	\$101,850	\$160,379	\$356,088
1998	\$97,570	\$100,901	\$158,348	\$356,819
1999	\$96,010	\$97,023	\$161,161	\$354,194
2000	\$94,260	\$95,158	\$169,654	\$359,072
2001	\$102,835	\$95,112	\$169,967	\$367,914
2002	\$98,752	\$93,511	\$174,857	\$367,120
2003	\$94,256	\$95,688	\$165,973	\$355,917
2004	\$90,171	\$97,167	\$172,667	\$360,005
2005	\$83,484	\$83,527	\$175,081	\$342,092
2006	\$73,067	\$92,029	\$182,443	\$347,539
2007	\$74,623	\$101,125	\$190,289	\$366,037
2008	\$99,051	\$97,003	\$181,092	\$377,146
2009	\$94,071	\$95,109	\$187,992	\$377,172
2010	\$87,512	\$98,316	\$166,459	\$352,287
2011	\$88,456	\$91,289	\$214,763	\$394,508
2012	\$82,360	\$91,893	\$216,484	\$390,736
2013	\$93,184	\$89,633	\$216,844	\$399,662
2014	\$102,728	\$83,426	\$211,919	\$398,074
2015	\$107,133	\$83,098	\$219,660	\$409,891
2016	\$102,712	\$84,858	\$227,834	\$415,404
2017	\$110,005	\$82,910	\$218,548	\$411,462
2018	\$115,442	\$80,817	\$207,903	\$404,163
2019	\$109,287	\$76,429	\$216,867	\$402,583
2020	\$119,340	\$66,712	\$203,544	\$389,595
2021	\$106,086	\$66,920	\$229,182	\$402,188
2022	\$129,059	\$59,228	\$246,198	\$434,485
2023	\$125,532	\$77,100	\$257,023	\$459,655
2024	\$111,837	\$72,870	\$266,887	\$451,594
Mean	\$99,015	\$84,435	\$196,348	\$379,799
Median	\$98,161	\$90,461	\$189,141	\$377,159
Std Dev	\$13,175	\$15,860	\$30,595	\$37,254
Min	\$73,067	\$38,690	\$158,348	\$292,592
Max	\$129,059	\$101,850	\$266,887	\$459,655

¹Thousands of dollars.

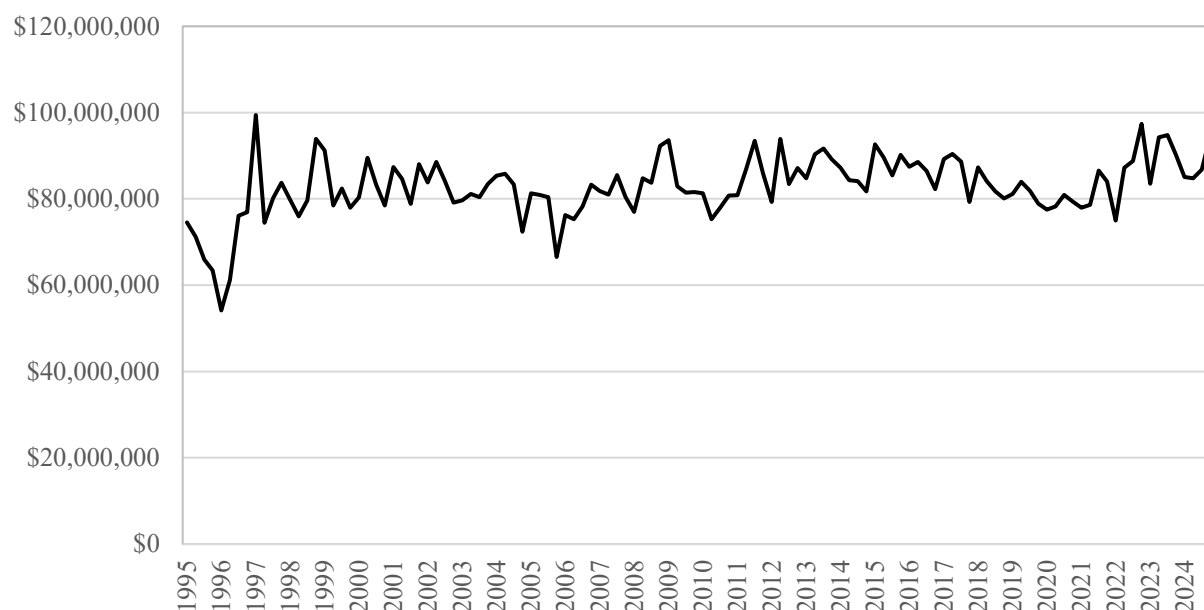
Source: Data from DMI, MilkPEP, and the U.S. Department of Agriculture.

Figure 3-1. Annual Dairy Management, Inc. (DMI), Milk Processor Education Program (MilkPEP), and Qualified Program (QP) Promotion Expenditures, 1995 to 2024, Thousands of Dollars



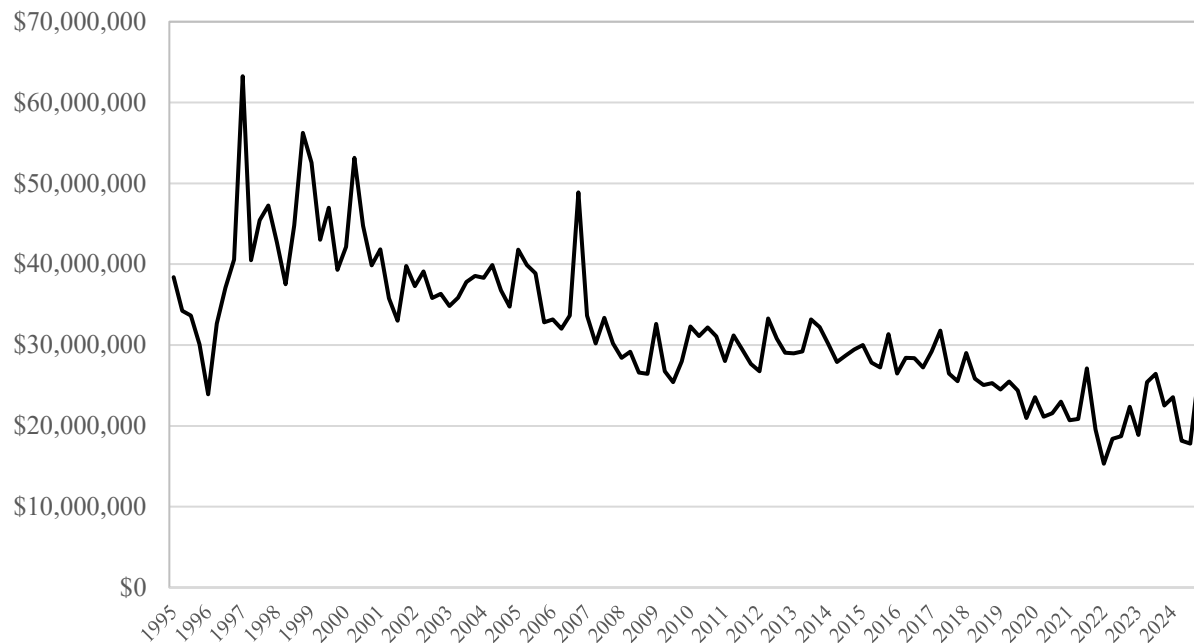
Source: Data from DMI, MilkPEP, and the U.S. Department of Agriculture.

Figure 3-2. Quarterly All Dairy Product Promotion Expenditures (Nominal, Seasonally Adjusted) by Dairy Management, Inc. (DMI), Milk Processor Education Program (MilkPEP), and Qualified Programs (QPs), 1995 to 2024*



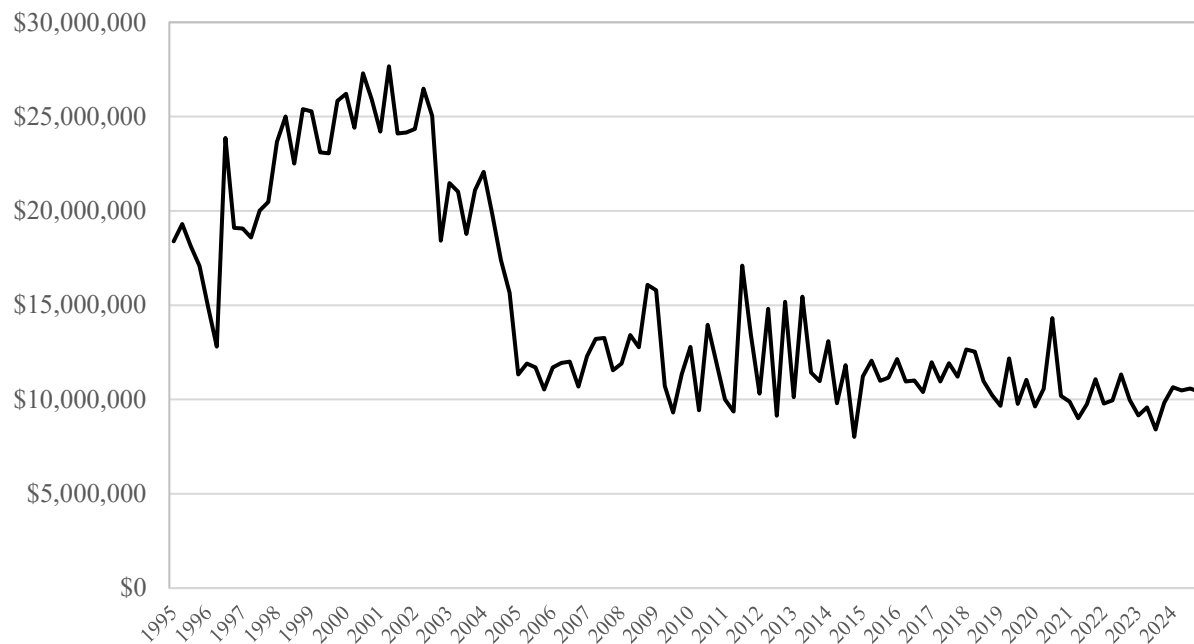
* Includes expenditures for advertising, promotion, dairy foods and nutrition research, nutrition education, and market and economic research.
Source: DMI, MilkPEP, QPs, and calculations by the authors.

Figure 3-3. Quarterly Fluid Milk Promotion Expenditures (Nominal, Seasonally Adjusted) by Dairy Management, Inc. (DMI), Milk Processor Education Program (MilkPEP), and Qualified Programs (QPs), 1995 to 2024



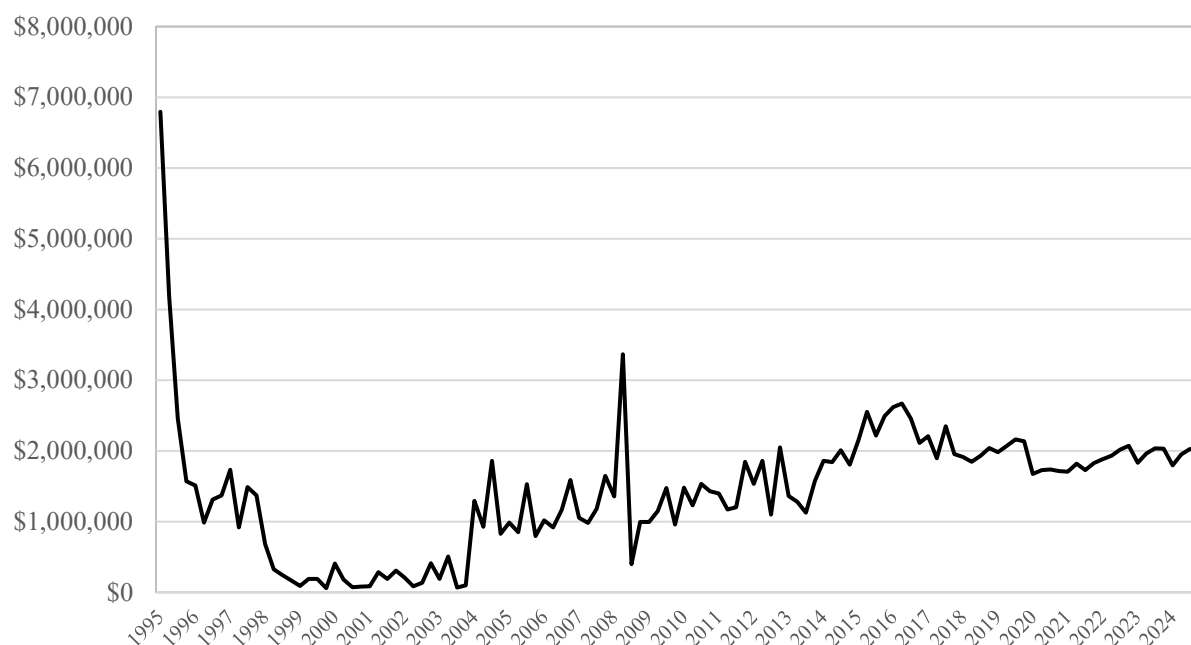
Source: DMI, MilkPEP, QPs, and calculations by the authors.

Figure 3-4. Quarterly Cheese Promotion Expenditures (Nominal, Seasonally Adjusted) by Dairy Management, Inc. (DMI) and Qualified Programs (QPs), 1995 to 2024



Source: DMI, QPs, and calculations by the authors.

Figure 3-5. Quarterly Butter Promotion Expenditures (Nominal, Seasonally Adjusted) by Dairy Management, Inc. (DMI) and Qualified Programs (QPs), 1995 to 2024



Source: DMI, QPs, and calculations by the authors.

Beginning in 2006, DMI transitioned from featuring milk, cheese, and butter in product-specific promotions to broader campaigns that relate to several dairy products. As a result of an increasing number of campaigns affecting multiple products, assessing demand enhancements for the aggregate of dairy products as well as within specific product classes is important. Programmatic expenditures include a pro-rata share of the expenditures for nonspecific promotion efforts.

DMI also invests in dairy export promotion through the U.S. Dairy Export Council (USDEC). Nominal, seasonally adjusted DMI expenditures directed to dairy export promotion on a quarterly basis ranged from just under \$800 to approximately \$8.3 million (Figure 3-6a). DMI expenditures directed to dairy export promotion trended upward from 1995 to 2024, averaging nearly \$3.4 million per quarter over this period. Funding is also awarded through USDA's Foreign Agricultural Service to promote dairy products through the Foreign Market Development (FMD) Program and the Market Access Program (MAP). Under these programs, quarterly contributions to dairy export promotion (nominal, seasonally adjusted) procured from USDEC varied from \$313,749 to about \$2.5 million, averaging slightly more than \$1.2 million per quarter over the period of 1997 to 2024 (Figure 3-6b). The aggregate of DMI and FMD/MAP expenditures (nominal, seasonally adjusted) ranged from \$795 to \$10.8 million per quarter, averaging roughly \$4.6 million on a quarterly basis over the period from 1995 to 2024 (Figure 3-6c).

The assessment that importers of dairy products have paid to the National Dairy Promotion and Research Program effective August 1, 2011, is based on milk content as follows:

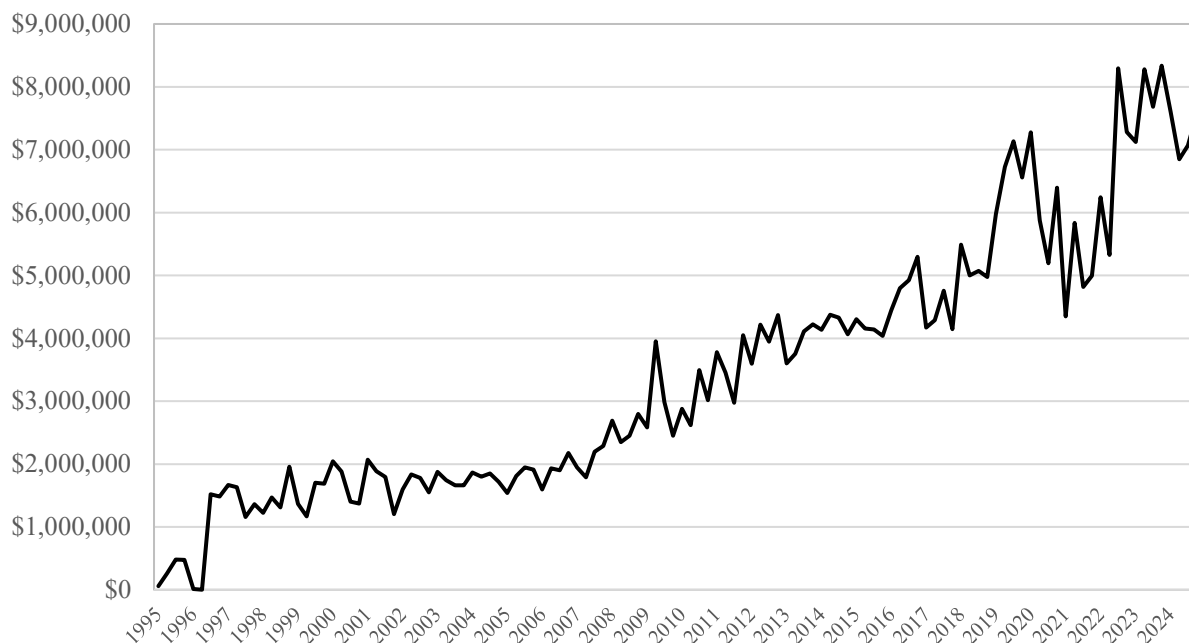
“This rule requires importers to calculate assessments due based upon documentation concerning the cow’s milk solids content of the imported products. Products shall be assessed at the rate of \$0.01327 per kilogram of cow’s milk solids.”

(Agricultural Marketing Service, 2011, “Rules and Regulations,” Federal Register, Volume 76, No. 53, page 14479).

Two-thirds of the import assessment are allocated to the National Dairy Promotion and Research Board. The remaining amount can be designated to be used by one of three QPs to support dairy promotion: (1) The Cheese Importers Association of America (CIAA); (2) The Global Dairy Platform (GDP); and (3) The Wisconsin Milk Marketing Board, Inc. (d/b/a Dairy Farmers of Wisconsin). The CIAA is committed to serving the world dairy community by helping to facilitate the efficient importing of dairy products from around the world into the United States. The CIAA endeavors to support dairy trade within the context of compliance with international trade agreements and all applicable U.S. regulations.⁶

The GDPs membership of dairy companies, associations, scientific bodies, and other partners collaborate to lead and build evidence on dairy’s role in the diet and show the sector’s commitment to responsible food production. Established in 2006, GDP has led the dairy sector’s collaborative efforts to encourage the appropriate intake of nutrient-rich dairy foods and to illustrate the sector’s role in sustainable agriculture. GDP aims to demonstrate dairy’s contribution to global food systems, healthy diets, and sustainable livelihoods.⁷

Figure 3-6a. Quarterly Dairy Product Export Promotion Expenditures (Nominal, Seasonally Adjusted) by DMI, 1995 to 2024

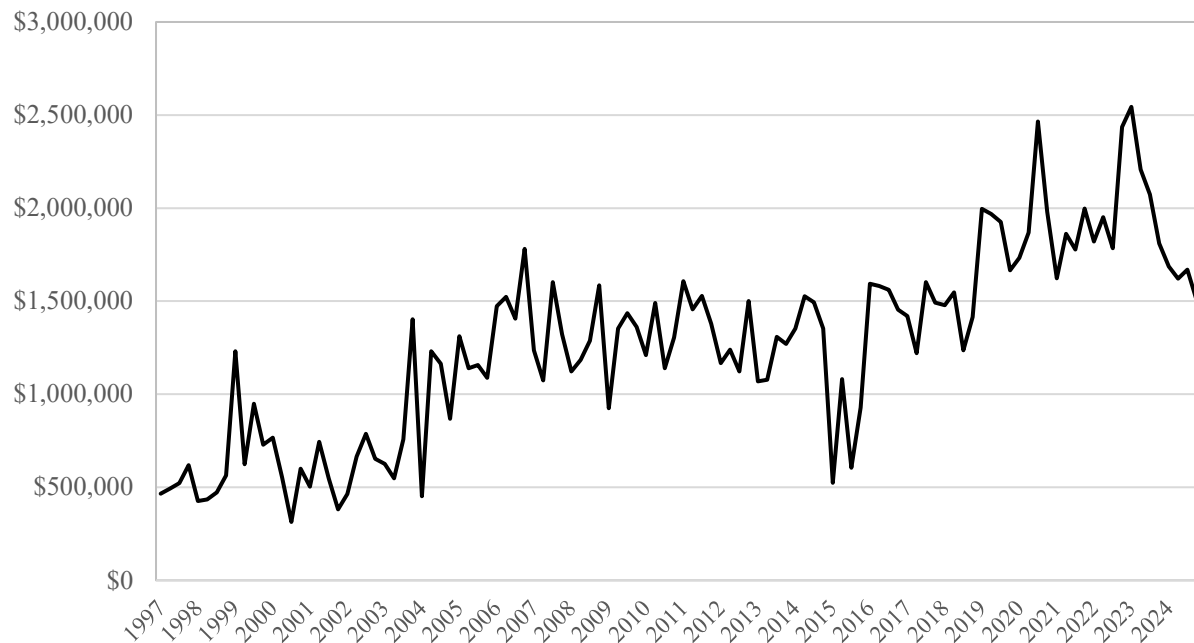


Source: DMI and calculations by the authors.

⁶ <https://theciaa.org/>

⁷ <https://www.globaldairyplatform.com/about-us-lead-dairy>

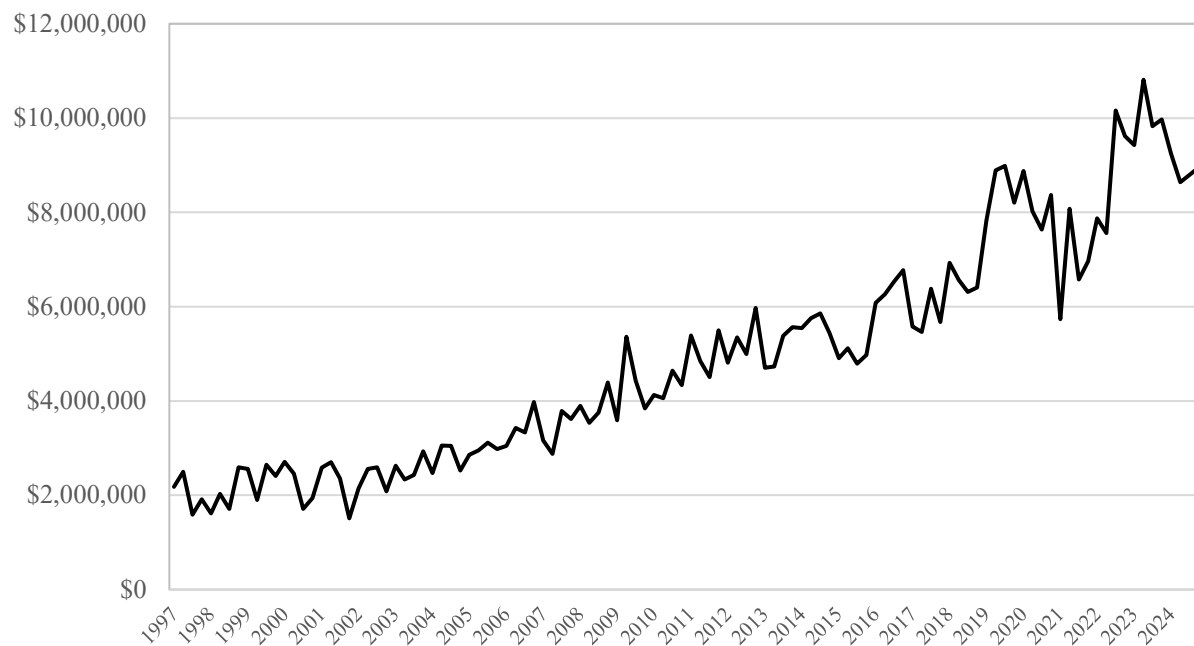
Figure 3-6b. Quarterly Dairy Product Export Promotion Expenditures (Nominal, Seasonally Adjusted) through the Foreign Market Development (FMD)/Market Access Program (MAP) Programs, 1997 to 2024*



*Data were not available prior to 1997. Also, only annual data were available for 1997 and 1998. Quarterly interpolations were made for these years.

Source: U.S. Department of Agriculture, Foreign Agricultural Service, and calculations by the authors.

Figure 3-6c. Quarterly Aggregate Dairy Product Export Promotion Expenditures (Nominal, Seasonally Adjusted) by Dairy Management, Inc. (DMI) and the Foreign Market Development (FMD)/Market Access Program (MAP) Programs, 1997 to 2024

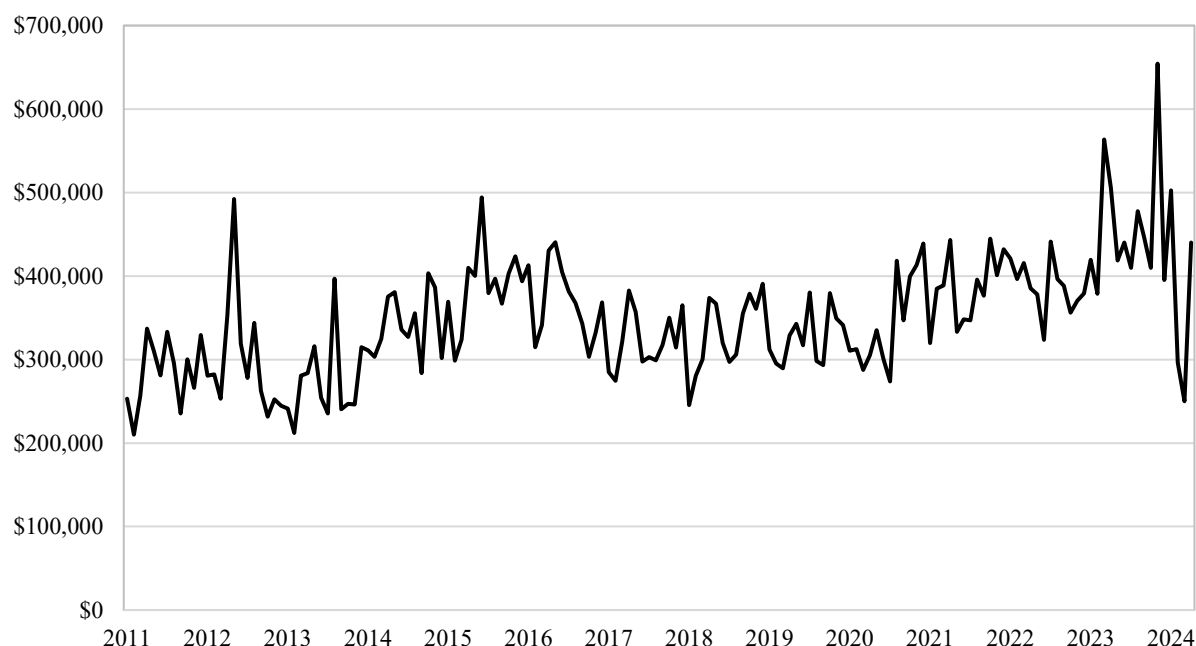


Source: Calculations by authors.

The mission of the Wisconsin Milk Marketing Board, established in 1983, is to help grow demand for Wisconsin milk by providing programs that enhance the competitiveness of the Wisconsin dairy industry.⁸ This organization, headquartered in Madison, Wisconsin, rebranded to Dairy Farmers of Wisconsin to better reflect its mission, though it is still commonly recognized by its original name.

Import assessment funds totaled between \$3.44 million and \$5.41 million per year from 2012 to 2024, averaging \$4.20 million. The cumulative import assessment funds totaled \$55.65 million from September 2011 to December 2024. On a monthly basis, funds from the dairy import assessment ranged from \$210,086 to \$654,352, averaging \$347,783 over the period of September 2011 to December 2024 (Figure 3-7). The import assessment averaged about 1 percent of the total dairy checkoff expenditures made by DMI, MilkPEP, and the QPs between 2012 and 2024, ranging from 0.86 percent to 1.15 percent during this period.

Figure 3-7. Monthly Dairy Import Assessment Funds, September 2011 to December 2024



Source: U.S. Department of Agriculture

Trends in Dairy Use

The International Dairy Foods Association estimated the annual U.S. economic impact of the dairy industry at roughly \$780 billion, roughly 2.5 percent of the current gross domestic product (International Dairy Foods Association, 2025)⁹.

The U.S. dairy industry currently supports over 3 million jobs; \$198 billion in wages to

⁸ <https://datcp.wi.gov/Pages/AgDevelopment/MilkBoard.aspx>

⁹ https://cheesereporter.com/news/research-studies/2025/06/12/us-dairy-industrys-economic-impact-is-almost-780-billion-annually-idfa-reports/#:~:text=According%20to%20the%20International%20Dairy%20Foods%20Association,State%20*%20Congressional%20district%20*%20Industry%20segment

American workers; \$83 billion in federal, state, and local taxes; and \$8.2 billion in total annual exports. Additionally, dairy products play a key role in the American diet as they contain vital nutrients for the health and maintenance of the human body, notably calcium, vitamin D, protein, and potassium.

The number of U.S. dairy farms dropped dramatically from about 111,000 in 1995 to roughly 24,000 in 2025. The trend has been towards fewer but larger dairy farms. However, despite the decrease in the number of farms, milk production has remained relatively stable due to more efficient operations. As of 2025, the top states by dairy production included California, Wisconsin, Idaho, Texas, and New York.

The U.S. dairy market size in 2026 is estimated at \$115.38 billion and is projected to reach \$136.21 billion by 2031. This market is expected to experience a compound annual growth rate of 3.39 percent from 2026 to 2031 (Mordor Intelligence¹⁰). The U.S. dairy market consists of dairy products such as cheese, fluid milk, yogurt, cream, dairy desserts (e.g., ice cream), butter, and sour milk drinks.

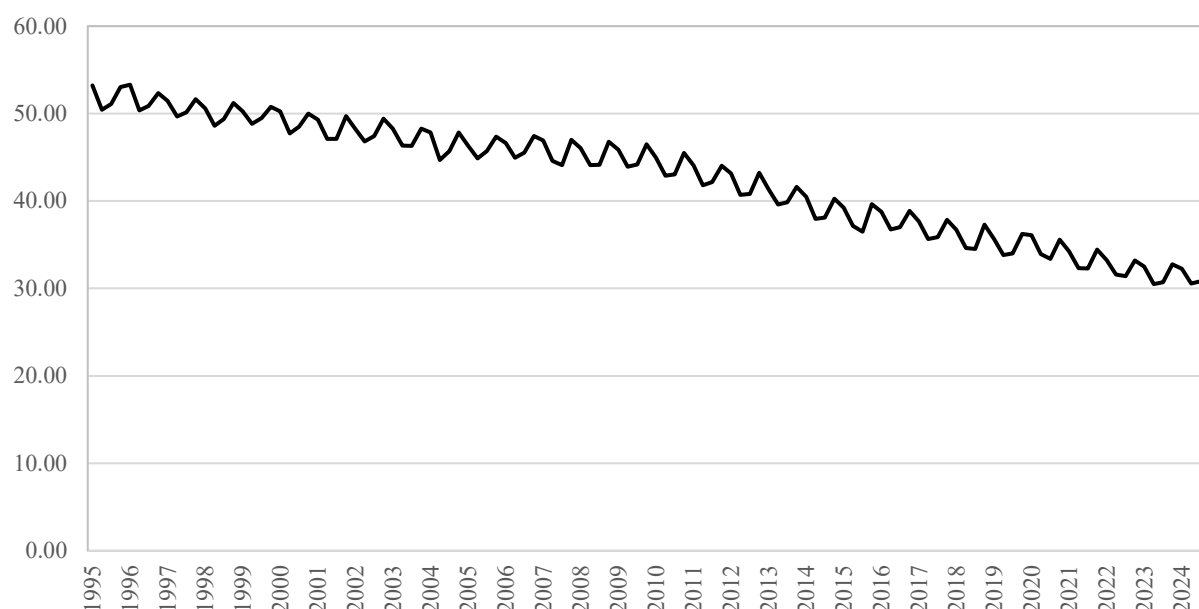
The cheese segment dominates the domestic dairy market, holding approximately 38 percent market share. Product innovations in natural and processed cheese varieties, along with the growing popularity of specialty and artisanal cheeses are evident. The segment's growth is further supported by the expanding quick-service restaurant industry, particularly pizza chains, which are major cheese consumers. Additionally, the rising consumer preference for protein-rich dairy foods and the versatility of cheese in various applications, from direct consumption to ingredient use in prepared foods, continue to reinforce its market leadership.

In this report, we focus attention on per capita consumption of fluid milk, cheese, and butter as well as on the per capita consumption of the aggregate of all dairy products on a fat basis and on a skim solids basis. We account for yogurt (Greek and non-Greek), ice cream (regular and low-fat), and other products through the aggregate category of all dairy products.

Per capita fluid milk consumption trended downward over the period 1995 to 2024 (Figure 3-8). In 2024, quarterly per capita consumption of fluid milk ranged from 30.55 pounds per person to 32.78 pounds per person, down from 50.44 pounds per person to 53.20 pounds per person in 1995. U.S. annual per capita milk consumption has declined roughly 39 percent since 1995 due to changing consumption habits as well as increased competition from other beverages. Seasonality is evident in per capita U.S. consumption of fluid milk.

¹⁰ <https://www.mordorintelligence.com/industry-reports/united-states-dairy-market>.

Figure 3-8. Quarterly Per Capita U.S. Consumption of Fluid Milk, 1995 to 2024



Source: U.S. Department of Agriculture and calculations by the authors.

U.S. per capita fluid milk consumption fell by 7.4 percent in the 1950s, 8.4 percent in the 1960s, 9.9 percent in the 1970s, 5.4 percent in the 1980s, 10.9 percent in the 1990s, 7.9 percent in the 2000s, and 20.2 percent in the 2010s (Stewart & Dong, 2023). A variety of factors have contributed to the persistent downward trend in U.S. per capita fluid milk consumption. Pre-school and pre-adolescent children at present account for a shrinking share of the U.S. population. U.S. consumers purchase more meals and snacks at food service establishments where the menu presence and consumption of fluid milk is less common. Beverages such as bottled water, refrigerated and shelf-stable juices and drinks, sports drinks, and plant-based milk alternatives increasingly compete with fluid milk (Dharmasena & Capps (2012), Okrent & MacEwan (2014), Zhen et al. (2014), Heng et al. (2018), and Capps & Wang (2024)). According to Stewart, Dong, & Carlson (2012) generational differences contributed to the decline in fluid milk consumption. Moreover, U.S. consumers of all ages are drinking less milk and milk drinks (Stewart et al., 2021).

While overall fluid milk consumption has been declining, lactose-free milk sales, like total organic white milk sales, also are growing. Lactose-free milk volume sales have skyrocketed by slightly more than 40 percent from 215.7 million gallons in 2020 to 304.4 million gallons in 2024. By August 2024, 23 percent of U.S. households were purchasing lactose-free milk. The U.S. lactose-free milk market is projected to experience robust growth between 2025 and 2035, with specialized segments like A2 and lactose-free milk growing at a 7.5 percent CAGR and general lactose-free dairy products showing steady, consistent growth at a CAGR of between 4.1 percent and 4.6 percent. Key drivers include rising lactose intolerance awareness and demand for functional, digestive-friendly dairy (International Dairy Foods Association¹¹).

¹¹ www.idfa.org

The U.S. ultra-filtered milk market is experiencing robust growth driven by demand for high-protein, clean-label dairy, with some estimates placing its value around \$8.36 billion in 2024. Sales of ultra-filtered milk are projected to grow at a CAGR of 4.6 percent to over \$11 billion by 2032. This premium segment is rapidly expanding due to its high-protein and reduced sugar profile. This market segment of fluid milk is driven predominantly by health-conscious consumers looking for higher protein, lower sugar, and lactose-free options in dairy.¹²

Moreover, whole milk consumption has ranged from 1,601 million gallons to 1,795 million gallons, a rise of slightly more than 12 percent over the period 2015 to 2025. However, reduced-fat milk (2%), low-fat milk (1%), and fat-free/skim milk consumption have experienced sizeable declines of roughly 30 percent, 41 percent, and 64 percent, respectively over the past 11 years (Estimated Fluid Milk Products Sales Reports, U.S. Department of Agriculture). The bottom line is that, despite the downward trend in per capita fluid milk consumption, opportunities exist to reverse this trend due to growth in the consumption of organic milk, lactose-free milk, ultra-filtered milk, and whole milk.

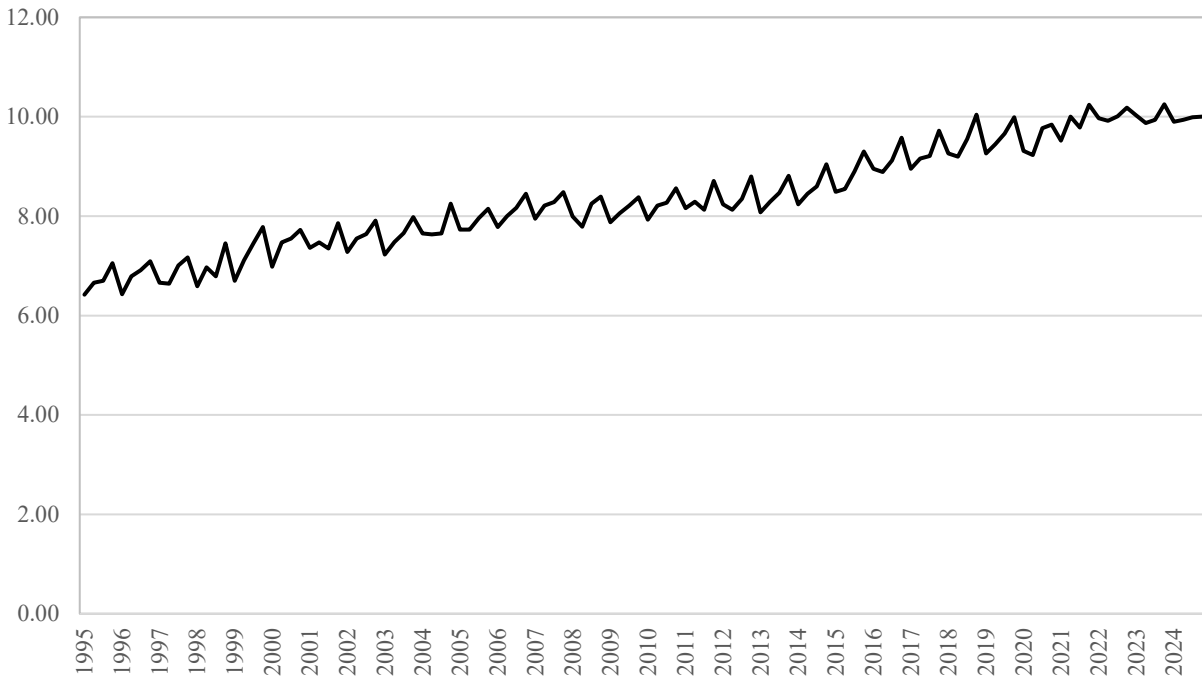
Increasing sales of plant-based milk alternatives contributed to the accelerated rate at which U.S. per capita fluid milk consumption decreased during the 2010s (Stewart et al., 2020). Plant-based milk alternatives are by far the largest plant-based market segment in the United States. Retail sales experienced steady growth from 2020 to 2023, but retail sales declined by 2 percent in 2025 to \$2.7 billion. Retail sales associated with this category are projected to grow at a CAGR of roughly 6.5 percent to 7.5 percent through 2030–2032. While nominal dollar sales have been on the rise until recently, plant-based milk alternatives have experienced a 3 percent to 5 percent decline in unit sales. Almond milk dominates this category with roughly 59 percent of the market share, followed by oat milk. Plant-based milk alternatives hold a 13 percent share of total milk dollar sales in the United States.

Cheese consumption per capita has grown over time and exhibits seasonal patterns (Figure 3-9). From 1995 to 2024, the commercial per capita disappearance of cheese ranged from 6.42 pounds per quarter to 10.25 pounds per quarter, averaging 8.36 pounds. Over the same period, per capita butter consumption grew modestly and exhibited seasonal patterns as well (Figure 3-10). The commercial disappearance of butter on a per capita basis ranged from 0.89 pounds per quarter to 1.97 pounds per quarter, averaging 1.30 pounds.

On average over 1995 to 2024, per capita commercial disappearance of all dairy products on a fat basis averaged 154.00 pounds per quarter, ranging from 136.69 pounds to 173.22 pounds per quarter (Figure 3-11). On a skim-solids basis, the per capita commercial disappearance of all dairy products over that same period averaged 138.06 pounds per quarter, ranging from 130.10 pounds to 148.34 pounds per quarter (Figure 3-12).

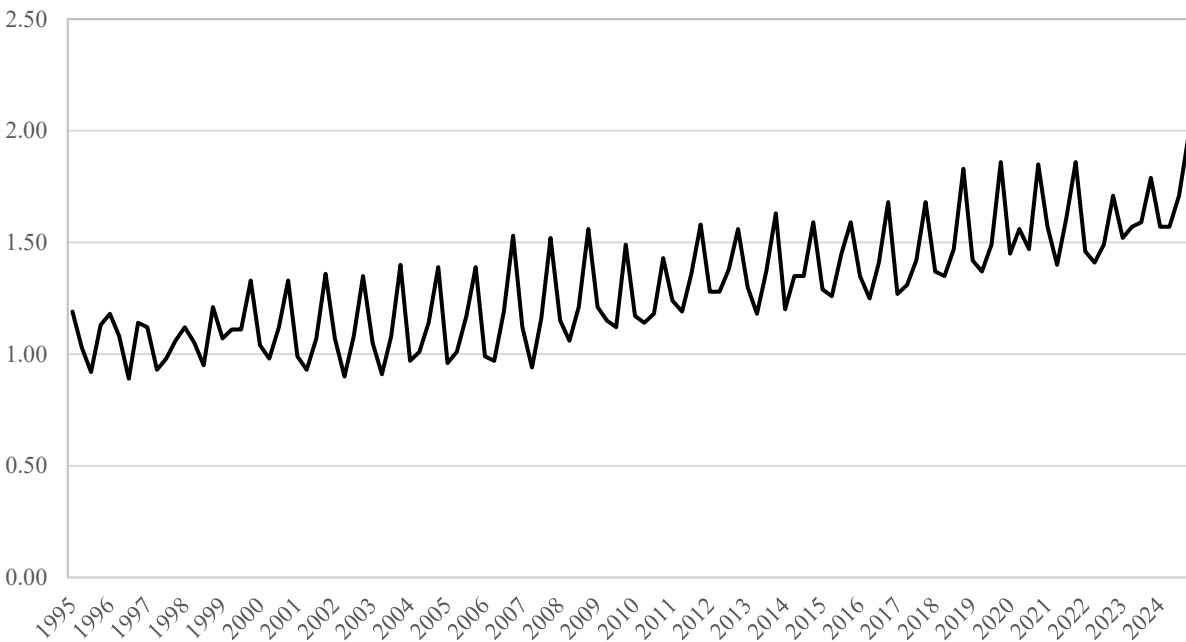
Figure 3-9. Quarterly Per Capita U.S. Consumption of Cheese, 1995 to 2024

¹² www.DairyReporter.com



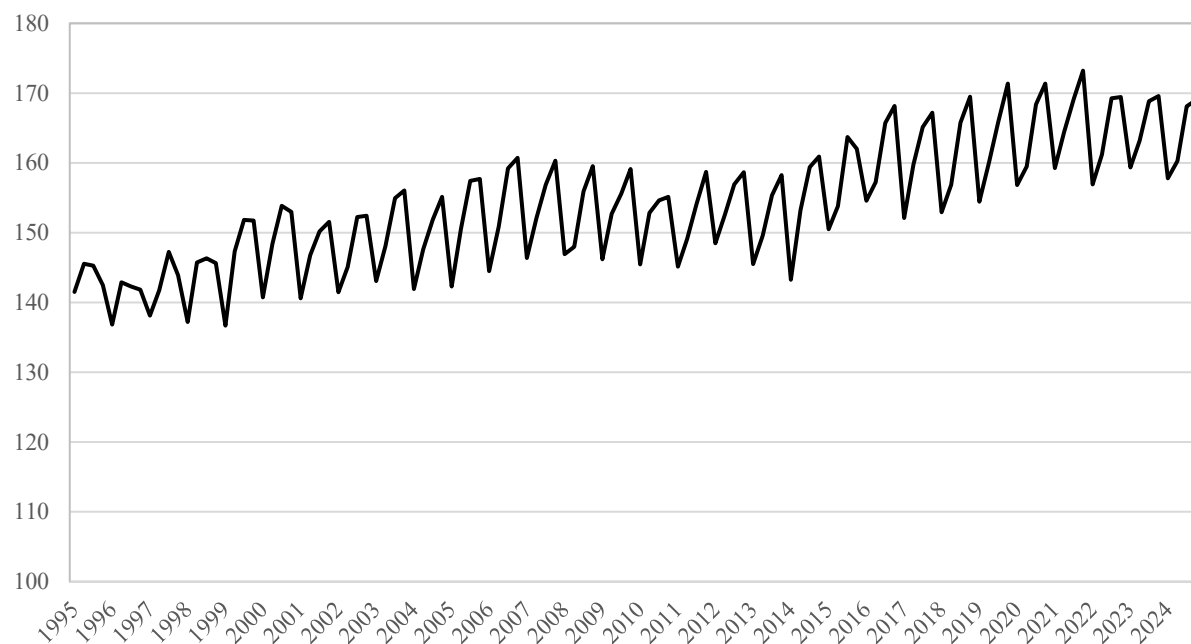
Source: U.S. Department of Agriculture and calculations by the authors.

Figure 3-10. Quarterly Per Capita U.S. Consumption of Butter, 1995 to 2024



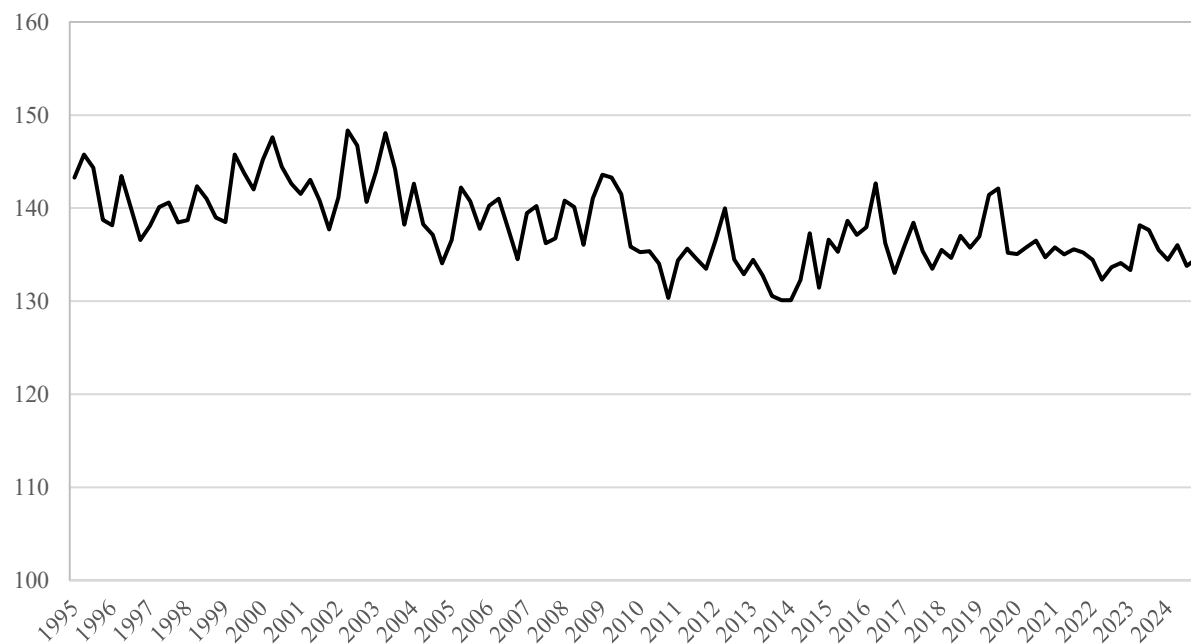
Source: U.S. Department of Agriculture and calculations by the authors.

Figure 3-11. Quarterly Per Capita U.S. Consumption of All Dairy Products on a Milk-Equivalent Fat Basis, 1995 to 2024



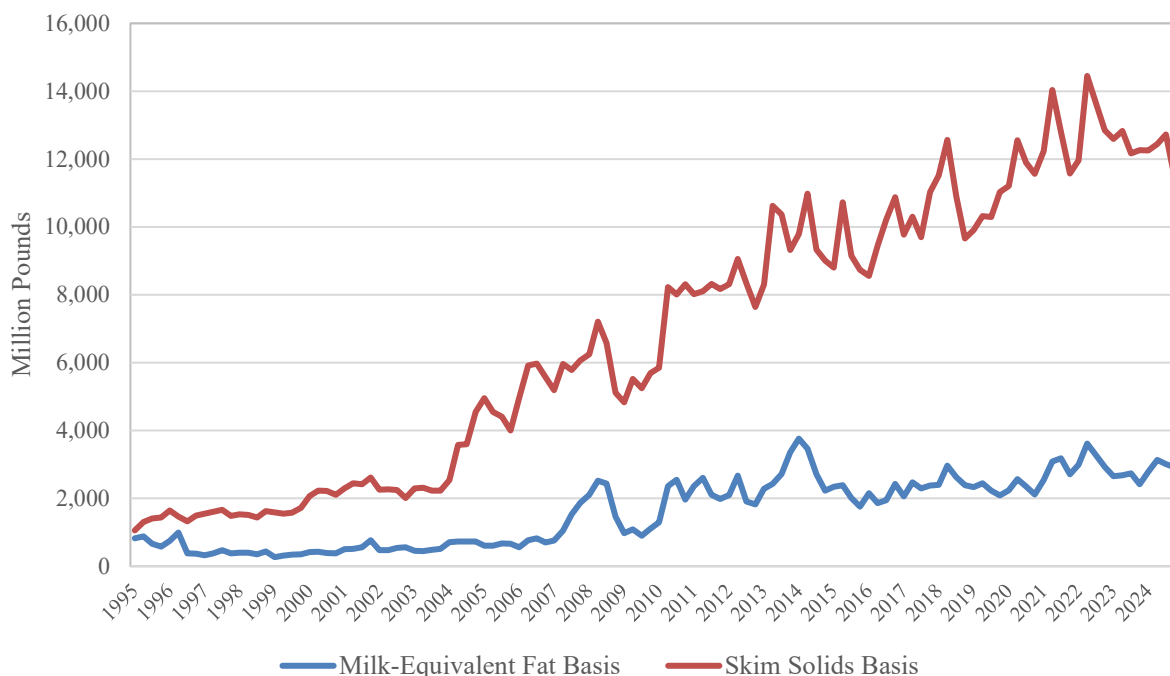
Source: U.S. Department of Agriculture and calculations by the authors.

Figure 3-12. Quarterly Per Capita U.S. Consumption of All Dairy Products on a Skim-Solids Basis, 1995 to 2024



Source: U.S. Department of Agriculture and calculations by the authors.

Figure 3-63. Quarterly U.S. Dairy Commercial Exports on a Milk-Equivalent Fat Basis and Skim-Solids Basis, 1995 to 2024



Source: U.S. Department of Agriculture and calculations by the authors.

On average over 1995 to 2024, the per capita commercial disappearance of all dairy products on a fat basis averaged 154.00 pounds per quarter, ranging from 136.69 pounds to 173.22 pounds per quarter (Figure 3-11). On a skim-solids basis, the per capita commercial disappearance of all dairy products over that same period averaged 138.06 pounds per quarter, ranging from 130.10 pounds to 148.34 pounds per quarter (Figure 3-12).

Over the period 1995 to 2024, quarterly dairy exports averaged 1,671 million pounds on a fat basis and 6,811 million pounds on a skim-solids basis (Figure 3-13). Dairy exports on a skim-solids basis experienced notable growth compared to dairy exports on a fat basis.

The United States imported between \$2.801 billion and \$5.795 billion in dairy products from 2012 to 2024 (Table 3-2). The import assessment per \$1,000 value of all dairy imports ranged from \$0.89 to \$1.55 over the period 2012 to 2024, averaging \$1.18. Cheese products accounted for 31.27 percent to 41.42 percent (by value) of all dairy imports (Figure 3-14). Cheese imports as a percentage of total dairy imports averaged 37.90 percent over the period 2012 to 2024.

Table 3-2. U.S. Dairy Product Imports and Import Assessment Funds, 2012 to 2024¹

	2012	2013	2014	2015	2016	2017	2018
--	------	------	------	------	------	------	------

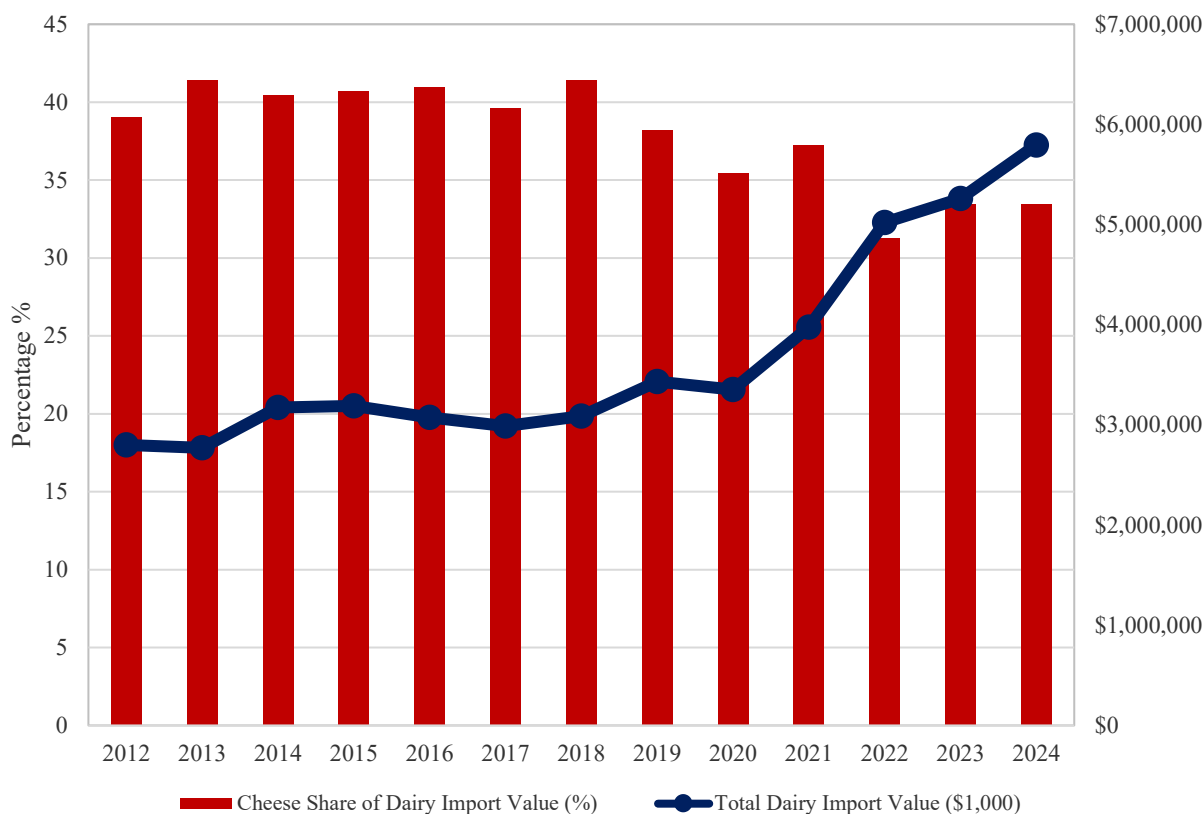
Value of All Dairy Imports (\$1,000)	\$2,801,348	\$2,771,258	\$3,172,368	\$3,190,445	\$3,074,188	\$2,988,656	\$3,086,762
Value of Cheese Imports (\$1,000)	\$1,094,013	\$1,147,824	\$1,282,189	\$1,299,464	\$1,258,932	\$1,183,858	\$1,278,095
Quantity of Cheese Imports, (metric tons)	154,008	147,635	165,416	199,578	204,512	183,270	175,829
Unit Value of Cheese Imports (\$/MT)	\$7,104	\$7,775	\$7,751	\$6,511	\$6,156	\$6,460	\$7,269
Import Assessment Funds (\$)	\$3,521,054	\$3,441,461	\$3,564,781	\$4,175,783	\$4,757,469	\$4,205,885	\$3,803,099
Import Assessment per \$1,000 value of all dairy imports	\$1.26	\$1.24	\$1.12	\$1.31	\$1.55	\$1.41	\$1.23

	2019	2020	2021	2022	2023	2024
Value of All Dairy Imports (\$1,000)	\$3,433,453	\$3,353,204	\$3,976,297	\$5,021,375	\$5,260,221	\$5,794,789
Value of Cheese Imports (\$1,000)	\$1,312,349	\$1,189,781	\$1,481,970	\$1,569,966	\$1,759,265	\$1,940,656
Quantity of Cheese Imports, (metric tons)	180,618	165,265	187,969	188,939	193,289	\$215,126
Unit Value of Cheese Imports (\$/MT)	\$7,266	\$7,199	\$7,884	\$8,309	\$9,102	\$9,021
Import Assessment Funds (\$)	\$4,000,574	\$3,917,344	\$4,462,577	\$4,696,243	\$4,900,468	\$5,141,479
Import Assessment per \$1,000 value of all dairy imports	\$1.17	\$1.17	\$1.12	\$0.94	\$0.93	\$0.89

¹ The import assessment went into effect August 1, 2011. Funds have been collected in each month from September 2011 to present. The table shows funds collected from January 2012 to December 2024.

Sources: Import Assessment data from Agricultural Marketing Service, USDA. Trade data from Foreign Agricultural Service, USDA, <https://apps.fas.usda.gov/gats/ExpressQuery1.aspx>.

Figure 3-14. Value of Total U.S. Dairy Imports and Cheese Share of Dairy Import Value, 2012 to 2024



Source: U.S. Department of Agriculture, Foreign Agricultural Service.

Findings Concerning Impacts of Promotion Expenditures on the Dairy Industry

The primary objective of the analysis is to answer two key questions regarding the National Programs over time: (1) What have been the effects of dairy promotion programs on domestic consumption of fluid milk and dairy products and on exports? and (2) What have been the returns to dairy promotion programs? In answering the first question, the focus is on the effects of the dairy promotion program on U.S. demand and exports of fluid milk and dairy products. Once those market effects have been determined, the benefit-cost analysis of the dairy program at the producer level and at the fluid milk processor level is conducted to answer the question about returns.

Changes in the Demand for Dairy Products and Dairy Exports Due to Promotion Program Expenditures

Like previous evaluations, based on econometric analysis, we find a statistically significant and positive association between dairy promotion program expenditures and the demand for dairy products. This association holds for all dairy products in aggregate as well as for fluid milk, cheese, and butter individually. In addition, this association holds for dairy exports on a skim-solids basis and on a milkfat basis. All econometric models fit the data very well based on R^2 metrics and based on standard error of regression statistics.

The key indicator of the impact of marketing and promotion expenditures is a measure of the relative sensitivity of to demand-enhancing expenditures. This measure, also known as the elasticity of promotion, is defined as the percentage change in consumption (or exports) given a 1 percent change in demand-enhancing marketing and promotion expenditures, while holding all other variables constant.

The estimated dairy demand elasticities associated with promotion, price, and income over the period 1995 to 2024 are summarized in Table 3-3. The promotion elasticities for butter, cheese, and fluid milk over the period 1995 to 2024 were, on average, 0.0447, 0.0119, and 0.0836, respectively. The promotion elasticities for all dairy products on a skim-solids basis and on a fat basis were, on average, 0.0686 and 0.0405, respectively.

Demand-enhancing promotion expenditures affect per capita consumption of cheese for up to three quarters. The effect on per capita consumption of fluid milk persists for up to six quarters, and the effect on per capita consumption of butter persists for up to 11 quarters. For the aggregate of all dairy products, the effect persists for up to six quarters on a skim-solids basis as well as on a milkfat basis. Demand-enhancing promotion expenditures influence the level of dairy exports for up to nine quarters on a skim solids basis and up to six quarters on a milkfat basis.

To measure the effects of DMI export promotion enhancement expenditures on U.S. dairy commercial exports, two U.S. dairy export demand models were specified and estimated using two different data series for dairy exports supplied by USDA: (1) dairy exports on milk-equivalent skim-solids basis (SSB) and (2) dairy exports on a milk-equivalent fat basis (FB). The results indicated that when U.S. dairy prices were low (high) relative to Oceania dairy export prices, the United States exported more (less) dairy products.¹³ The lag length for SSB export promotion expenditures was estimated to be nine quarters. The SSB export promotion expenditure elasticity was estimated to be 0.0659.(Table 3-3). The lag length for the FB export promotion expenditures was estimated to be six quarters. The FB export promotion expenditure elasticity was estimated to be 0.1151 (Table 3-3).

Simulation Analysis of the Market Effects of Dairy Promotion

We use the Agricultural Markets and Policy Group Dairy Model (AMAP Dairy Model), maintained at the University of Missouri, to address the first question previously posed regarding the effects of dairy promotion on U.S. dairy markets and exports. For this analysis, the AMAP structural dairy model was simulated over the 1995 to 2024 period to identify how dairy markets would have functioned in the absence of promotion. The results are decomposed for comparison purposes into four distinct time periods: (1) 1995-2003, (2) 2004-2010, (3) 2011-2017, and (4) 2018-2024. This partitioning was done to ascertain the existence of different effects over the respective time periods.

¹³ Key drivers of dairy demand were found to include the ratio of the Oceania export butter price to the U.S. butter price on a fat basis, the ratio of the Oceania export price for skim milk powder (SMP) to the U.S. nonfat dry milk (NDM) price on a skim-solids basis, real (inflation-adjusted) world income, seasonality, and inertia or stickiness of dairy exports in world markets.

Table 3-3. Estimated Demand Elasticities of Promotion, Own-Price Elasticities, and Income Elasticities for Selected Dairy Products Over the Period 1995 to 2024

	Promotion Elasticities		Own-Price Elasticity	Income Elasticity
	1995 to 2024	2024 only		
Butter	0.0447	0.0464	-0.0664	0.5194
Cheese	0.0119	0.0082	-0.1260	0.4150
Fluid milk	0.0836	0.0561	-0.0610	-0.1580
All dairy				
Skim-solids basis	0.0686	0.0582	-0.0644	0.0909
Fat basis	0.0405	0.0344	-0.0137	0.2435
Exports				
Skim-solids basis	0.0659	0.0659	-0.2168	0.6617
Fat basis	0.1151	0.1151	-0.3136	0.4381

Source: Calculations by the authors.

In this analysis, we account for seasonality, the pandemic, habit persistence (inertia), and other qualitative factors.

All elasticities are significantly different from zero except the own-price elasticity for all dairy products on a fat basis.

The impacts attributed to the promotion activities associated with the National Programs were obtained by removing demand-enhancing expenditures from the model. The model was initially simulated over history to generate a “with promotion” scenario representing the effects of the dairy programs over actual history. A second “no promotion” scenario (the counterfactual scenario) was then generated by setting promotion expenditures to zero. The “no promotion” scenario results represent the per capita consumption of fluid milk, cheese, butter, and nonfat dry milk, and exports of cheese, butter, and nonfat dry milk, that would have existed if the National Programs had not been created and, thus, dairy promotion had not occurred. Hence, the AMAP simulation model quantifies the effects of dairy promotion on U.S. dairy markets, prices, and exports.

The results for selected key variables in the model for the “with promotion” and “no promotion” scenarios are presented in Table 3-4 and Table 3-5. These tables provide a comparison of the “with promotion” levels of each variable (actual historical data) to the “no promotion” levels (simulated levels without promotion) to show the effects across time from dairy promotion spending. These tables capture average annual effects of dairy promotion on U.S. dairy markets considering supply responses. Note that the “with promotion” scenario is actual history. Thus, the columns associated with “promotion” in these respective tables constitute the average observed level of the respective variable during that period. The columns associated with “no promotion” for each variable in each period is the average level of that variable that would have been observed if there had been no dairy promotion expenditures during those periods. The rows marked as “change” are the “promotion” levels minus the “no promotion” levels and represent the amount of change in each variable in each period that can be attributed to the dairy promotion checkoff program. The columns marked “percent change” denote the percentage change from the “no promotion” levels to the “promotion” levels with the “no promotion” level as the base.

Table 3-4. Average Annual Effects of Dairy Promotion on U.S. Dairy Markets Based on Simulation of Supply Response – Per Capita Consumption of Dairy Products, 1995 to 2024

			Fluid Milk Per Capita Consumption (pounds)	Cheese Per Capita Consumption (pounds)	Butter Per Capita Consumption (pounds)	Nonfat Dry Milk Per Capita Consumption (pounds)
Period	2018-2024	With Promotion	153.32	39.31	6.35	2.45
		No Promotion	140.30	37.94	6.03	2.36
		Change	13.02	1.37	0.32	0.09
		Percent Change	9.3%	3.6%	5.3%	3.8%
	2011-2017	With Promotion	178.29	34.91	5.56	3.20
		No Promotion	160.87	33.62	5.29	3.11
		Change	17.42	1.29	0.28	0.08
		Percent Change	10.8%	3.8%	5.2%	2.7%
	2004-2010	With Promotion	197.37	32.28	4.77	3.30
		No Promotion	176.65	31.13	4.59	3.26
		Change	20.72	1.16	0.18	0.04
		Percent Change	11.7%	3.7%	3.9%	1.2%
	1995-2003	With Promotion	206.62	28.76	4.37	3.11
		No Promotion	183.68	27.92	4.26	3.14
		Change	22.94	0.85	0.10	-0.04
		Percent Change	12.5%	3.0%	2.5%	-1.1%
	1995-2024	With Promotion	185.41	33.48	5.20	3.02
		No Promotion	166.60	32.34	4.99	2.98
		Change	18.82	1.14	0.21	0.04
		Percent Change	11.3%	3.5%	4.3%	1.3%

Source: Calculation by the authors.

Various factors are at play, including the level of promotion expenditures in each year and the supply dynamics built into the AMAP structural dairy model. To provide insight into these model dynamics, four sub-periods of results are shown along with the entire period for the selected endogenous variables. The analysis starts in 1995 and, thus, does not include the effects of any dairy promotion that may have occurred prior to that year.

Because no other exogenous variable in the model (e.g., levels of inflation, exchange rates, income levels, government policies, etc.) other than dairy promotion expenditures is allowed to change in either scenario, this analytical process effectively isolates the effects of the National Programs on U.S. dairy markets and exports. That is, the simulated differences between the values of the endogenous variables from the “with promotion” scenario and those from the “no promotion” scenario provide direct measures of the historical effects of dairy promotion expenditures (and only those expenditures) on U.S. dairy markets and exports.

As shown in Table 3-4, per capita consumption of fluid milk, cheese, butter, and nonfat dry milk was higher by 11.3 percent, 3.5 percent, 4.3 percent, and 1.3 percent, respectively, over the period of 1995 to 2024 due to promotion efforts associated with the National Programs, all other exogenous factors held constant. These results indicate that the downward trend of per capita fluid milk consumption between 1995 and 2024 was mitigated to some extent by the promotional efforts of the National Programs. Without the promotion programs, fluid milk consumption would have averaged 166.60 pounds per capita instead of 185.41 pounds per capita over the 1995 to 2024 period that occurred with promotion. Hence, promotion expenditures associated with the National Programs spending on fluid milk reduced the rate of decline in per capita consumption, controlling for all other factors.

The results also indicate that per capita consumption of cheese would have averaged 32.34 pounds without promotion versus the 33.48 pounds that occurred with promotion over 1995 to 2024. For butter, per capita consumption would have averaged 4.99 pounds without promotion versus the 5.20 pounds that occurred with promotion over the same period. Per capita consumption of nonfat dry milk (NFDm) would have been on average 2.98 pounds without promotion versus 3.02 pounds per capita that occurred with promotion over the 1995 to 2024 period.

Exports of butter were lower by 26.2 percent, while exports of cheese were up by 6.5 percent over the same period because of the promotion programs. Exports of nonfat dry milk decreased by 0.7 percent over the period 1995 to 2024. In the previous evaluation based on quarterly data from 1995 to 2023, per capita consumption of fluid milk, cheese, and butter was higher by 6.7 percent, 3.8 percent, and 4.3 percent, respectively. In addition, per capita consumption of nonfat dry milk was higher by 1.6 percent over this period. Exports of butter were lower by 13.3 percent, while exports of cheese were higher by 4.9 percent. Exports of nonfat dry milk increased by 1.2 percent due to dairy promotion over the period 1995 to 2023.

Per capita cheese consumption was higher by 0.024 pounds with the promotion funds collected from importers, a rise of 0.06 percent. No changes in per capita consumption of butter and fluid milk were evident, but nonfat dry milk per capita consumption rose by 0.04 percent. Finally, other cheese consumption rose 7.521 million pounds or 0.10 percent because of the import assessment. Imports of products largely intended for industrial use, including casein, lactose, and whole milk powder, are not explicitly accounted for in this analysis.

What then is the impact of the assessment on imports of dairy products? Given that cheese occupies a notable share of imported dairy products, we focus attention on the incremental amount of imports of cheese attributed to the importer assessment. Over the period 2012 to 2024, cheese consumption in the United States amounted to 158.9868 billion pounds. Because of the assessment from importers, total domestic cheese consumption was higher by roughly 101 million pounds. To arrive at this figure, we multiply 158.9868 billion pounds by the percentage change in cheese consumption because of the importer assessment (0.063468 percent). Further, because cheese imports are roughly 2.5 percent of domestic consumption based on information provided by USDA, due to promotion funds collected from importers, imported cheese levels were higher by 2.52 million pounds. In addition, unit values of cheese imports averaged roughly \$3.41 per pound annually between 2012 to 2024. Hence, incremental revenue to importers solely from cheese attributed to the import assessment totaled \$8.61 million. In the previous evaluation

based on data from 1995 to 2023, incremental revenue to importers solely from cheese attributed to the import assessment totaled about \$6.56 million.

Table 3-5. Average Annual Effects of Dairy Promotion on U.S. Dairy Markets Based on Simulation of Supply Response – Cheese, Butter, and Nonfat Dry Milk Exports, 1995 to 2024

		Cheese Exports (million lb)	Butter Exports (million lb)	Nonfat Dry Milk Exports (million lb)	
Period	2018 – 2024	With Promotion	899.28	70.35	1,728.42
		No Promotion	847.87	80.48	1,564.51
		Change	51.42	-10.13	163.92
		Percent Change	6.1%	-12.6%	10.5%
	2011 – 2017	With Promotion	665.48	91.07	1,177.01
		No Promotion	630.85	112.18	1,121.68
		Change	34.63	-21.11	55.33
		Percent Change	5.5%	-18.8%	4.9%
	2004 – 2010	With Promotion	164.87	41.76	402.54
		No Promotion	145.88	63.54	464.31
		Change	18.99	-21.78	-61.76
		Percent Change	13.0%	-34.3%	-13.3%
	1995 – 2003	With Promotion	86.00	8.52	14.10
		No Promotion	80.22	29.96	174.11
		Change	5.78	-21.43	-160.0
		Percent Change	7.2%	-71.5	-91.2%
	1995 – 2024	With Promotion	442.59	53.84	819.57
		No Promotion	415.57	72.96	825.38
		Change	27.01	-19.12	-5.81
		Percent Change	6.5%	-26.2%	-0.7%

Source: Calculation by the authors.

Dairy Promotion Program Benefit-Cost Analysis

Based on a comparative analysis of the “promotion” and “no-promotion” scenarios as summarized in the previous section and as illustrated in Table 3-3 with estimated promotion elasticities, the answer to the question posed earlier regarding the National Programs, as it relates to the analyzed products, is that these programs unequivocally have effectively shifted the demand of promoted dairy products to the right.

The second key question, the more critical question that must be answered about the U.S. dairy checkoff program, is whether any gains in profit realized by dairy producers, fluid milk

processors, and importers because of the program have been sufficient to more than pay for the cost of the program. That is, has the program run at a loss or a profit over time? Have the market effects induced by the checkoff program been substantial enough to generate sufficient additional profits to dairy producers, processors, and importers over time to more than cover the cost of the checkoff program? If not, then the conclusion would be that the program should be discontinued because the program costs producers, processors, and importers more than the returns accrued. On the other hand, if the profits generated more than covered the costs, the program would be deemed a successful investment strategy for the dairy industry.

This section provides a benefit-cost analysis of the National Programs based on the results of the scenario analyses discussed in the previous section. As calculated, the producer profit BCR is the additional industry profits (additional cash receipts net of additional production costs and promotion assessments) earned by producers because of the promotion expenditures (as measured through the scenario analyses) divided by the cumulative promotion expenditures made to generate those additional profits. The fluid milk processor BCR is calculated similarly to the producer BCR in which the cost of milk is used as a proxy for the cost of production since data pertaining to the cost of production for fluid milk processors are not available.

As exhibited in Table 3-6, over the period from 1995 to 2024, the BCRs expressed in terms of producer profit or net returns at the farm level were calculated to be \$4.16 for every dollar invested in demand-enhancing activities for fluid milk; \$2.67 for every dollar invested in demand-enhancing activities for cheese; and \$24.85 for every dollar invested in demand-enhancing activities for butter. For other nonspecific or non-delineated promotion activities, the BCR was calculated to be \$6.70 for every dollar invested. Over the same period, the BCR of export promotion was \$12.82 per dollar invested.

The aggregate all-dairy BCR was 5.93, meaning that, on average, producer profit increased by \$5.93 for each dollar invested in demand-enhancing activities. These BCRs are net of the costs associated with the National Programs. Relative to the past five evaluations, wherein the BCRs were estimated to range from 4.30 to 5.23, the BCR for all dairy products falls outside this interval. The updated ROI or BCR associated with the National Programs exceeds the returns calculated over the past five years.

Of note, the ROIs for fluid milk, cheese, butter, other nonspecific dairy products, and exports were outside the ranges reported in the past five evaluations. To illustrate, the BCR for fluid milk, reported as 4.16, surpassed the upper bound of the range of 1.41 to 3.26 previously reported in the past five evaluations. The BCR for butter, reported as 24.85, also exceeded the upper bound of the range of 19.19 to 24.40 reported in the past five evaluations. Similarly, the BCR for dairy exports, reported as 12.82, surpassed the upper bound of the range of 6.94 to 8.85 reported in the past five evaluations. That said, the ROIs for cheese and other nonspecific dairy products, reported as 2.67 and 6.70, respectively, were smaller than their lower bounds reported in the past five evaluations.

Table 3-6. Calculated Benefit-Cost Ratio (BCRs) at the Producer Level Attributed to the National Programs, 1995 to 2024

Producer Level						
Product	Benefit-Cost Ratio					
	1995 to 2024	1995 to 2019	1995 to 2020	1995 to 2021	1995 to 2022	1995 to 2023
All Dairy	5.93	4.76	4.30	5.07	5.23	4.58
Fluid Milk	4.16	3.26	1.91	1.63	2.68	1.41
Cheese	2.67	3.62	3.27	3.23	3.87	3.38
Butter	24.85	24.40	24.11	23.10	17.73	19.19
Exports	12.82	6.94	7.43	8.85	8.63	8.52
Other Nonspecific Dairy Products	6.70	6.79	6.93	9.05	8.38	6.96

Source: Calculations by the authors.

Because we are not in position to determine the incremental revenue from all dairy products to importers due to promotion, we cannot calculate a BCR for importers directly.

To address the effectiveness of the investments made by DMI and MilkPEP separately, we simulated “with promotion” and “without promotion” scenarios for each of the two entities following the same methodology as for the aggregate analysis. DMI promotion expenditures have largely focused on promotion programs for fluid milk, cheese, butter, non-delineated products, and exports. In contrast, MilkPEP promotion expenditures have targeted fluid milk exclusively.

The BCR associated with DMI spending was calculated to be 5.02, while the BCR associated with MilkPEP spending was calculated at 5.14. In the five previous evaluations of National Programs, the BCR associated with DMI spending was calculated to be 5.20 based on data from 1995 to 2023, 6.51 based on data from 1995 to 2022, 6.43 based on data from 1995 to 2021, 5.43 based on data from 1995 to 2020, and 5.59 based on data from 1995 to 2019, while the BCR associated with MilkPEP spending was calculated to be 1.10 based on data from 1995 to 2023, 2.58 based on data from 1995 to 2022, 1.55 based on data from 1995 to 2021, 1.89 based on data from 1995 to 2020, and 3.28 based on data from 1995 to 2019. The bottom line is that, unlike previous evaluations over the past five years, the ROI from DMI spending was quite similar to the ROI from MilkPEP spending.

In addition, we calculate the BCR associated with the promotion of fluid milk at the processor level. The cost of milk was used as a proxy for the cost of production since data concerning the costs of production for fluid milk processors were not available. First, we calculated the added total value at the retail level of the marketing channel attributed to MilkPEP promotion. Then we calculated the added total value accruing at the farm level attributed to MilkPEP promotion. The difference is the added total value captured by market participants beyond the farm gate to the retail level. Over the period 1995 to 2024, this cumulative added value amounted to \$12.62

billion. Over the same period, the cumulative amount of MilkPEP promotion expenditures totaled \$2.5 billion. Hence, the net BCR of fluid milk at the processor level was estimated to be 4.05 over this period. In the previous evaluations of the effectiveness of National Programs, the net BCR was calculated to be 2.44, 3.24 and 2.54, respectively. Hence, the BCR of fluid milk at the processor level exceeds previously reported measures.

Importantly, this measure captures the gross return on investment for fluid milk market participants beyond the farm level. Any additional costs incurred by these market participants from handling the larger volume of fluid milk that occurs due to MilkPEP promotion were excluded because we simply do not know the magnitude of these additional costs. Further, others in the marketing channel besides fluid milk processors capture a portion of this incremental total value; however, we have no knowledge of the portion captured by processors versus other milk market participants beyond the farm gate. Due to these caveats, we exercise caution in providing this estimate of the BCR attributed to the promotion of fluid milk at the processor level over the 1995 to 2024 period.

Also, caution must be exercised in making comparisons from various evaluations of the dairy checkoff program across years. The economic phrase *ceteris paribus*, meaning all other factors invariant, does not hold. The underlying endogenous and exogenous variables provided by various government sources have been revised and updated, and four additional quarters of data are now available not only for these variables, but also for the data associated with the programmatic expenditures of the National Programs.

Concluding Remarks¹⁴

This report provides a continued annual independent evaluation of the effectiveness of the National Programs covering the period 1995-2024. The key findings regarding markets for fluid milk and manufactured dairy products over this period include the following:

- The National Programs have effectively increased the demand for promoted dairy products and dairy exports.
- The gains in profit at the producer and fluid milk processor level from promotion were larger than the costs of the National Programs.
- The aggregate BCR (using change in profit net of costs) of the dairy producer promotion program was calculated to be 5.93. That is, for every dollar spent on demand-enhancing activities, dairy producers received an additional \$5.93.
- The BCR for fluid milk promotion was calculated to be \$4.16 for every dollar invested in demand-enhancing activities. The BCR was calculated to be \$2.67 per dollar invested in cheese promotion and \$24.85 for every dollar invested in butter promotion. The BCR for dairy export promotion was calculated to be \$12.82 per dollar invested.
- The National Programs promotion spending over 1995 through 2024 increased annual per capita consumption of dairy products, and cheese exports:

¹⁴ A reference list is available upon request.

Fluid milk consumption per capita	+6.7 percent
Cheese consumption per capita	+3.5 percent
Butter consumption per capita	+4.3 percent
Nonfat dry milk consumption	+1.3 percent
Butter exports	-26.2 percent
Cheese exports	+6.5 percent
Nonfat dry milk exports	-0.7 percent

- Promotion funds collected from importers boosted the annual average level of cheese imports by 2.52 million pounds. Annual unit values of cheese imports averaged \$3.41 per pound over the period from 2012 to 2024. Hence, the incremental revenue to importers solely from cheese attributable to the expenditure of the import assessments for cheese promotion totaled \$8.61 million.
- The BCR associated with fluid milk at the processor level was estimated to be 4.05. For every dollar contributed, U.S. milk processors received \$4.05 in additional receipts, net of incremental costs.

Regarding methodology, the analysis was accomplished by first statistically estimating the relationships between dairy product demands and export demand for dairy products and their respective demand drivers, including prices, income, seasonality, and promotion expenditures. The structural econometric models used for this analysis are statistically valid and consistent with prior studies evaluating generic commodity promotion.

The annual model of the U.S. dairy industry maintained at the University of Missouri, the Agricultural Markets and Policy Group Dairy Model, was modified to include the results of the dairy demand econometric analysis and then aligned with the observed data over the 1995 to 2024 period. The model was simulated over history to generate a “with promotion” scenario representing the effects of the dairy programs over actual history. A second “no promotion” scenario (the counterfactual scenario) was then generated with the model over history in which promotion expenditures in the dairy product demand equations were set to zero. The results of the second scenario represent the levels of per capita consumption and exports that would have existed if the National Programs had not been created and, thus, dairy promotion had not occurred.

Chapter 4

Qualified State, Regional, or Importer Dairy Product Promotion, Research, or Nutrition Education Programs

The Secretary annually certifies Qualified Programs as part of the Dairy Act and Order. To receive certification, the Qualified Program must meet the following (7 CFR § 1150.153):

1. Conduct activities intended to increase human consumption of milk and dairy products generally;
2. Be active and ongoing before passage of the Dairy Act, except for programs operated under the laws of the United States or any State; and except for importer programs;
3. Be primarily financed by producers, either individually or through cooperative associations or dairy importers;
4. Not use a private brand or trade name in its advertising and promotion of dairy products (unless approved by the Dairy Board and USDA);
5. Certify that requests from producers or importers for refunds under the program will be honored by forwarding to either the Dairy Board or a Qualified Program designated by the producer or importer the portion of such refunds equal to the amount which would otherwise be applicable to that program; and
6. Not use program funds for the purpose of influencing governmental policy or action.

The aggregate revenue from assessments directed to the Qualified Programs in 2024 was \$219.6 million (approximately 10 cents of the 15-cent producer assessment and 2.5 cents of the 7.5-cent import assessment). This chapter provides the aggregate income and expenditure data of the Qualified Programs and a list of certified programs in 2024.

2024 Qualified State, Regional or Importer

**Dairy Product Promotion, Research, or Nutrition Education Programs Aggregate Income
and Expenditure Data Reported to USDA**
(Thousands)

Aggregate Income	FY 2024
Carryover from Previous Year ¹	\$115,911
Producer Remittances	219,641
Transfers from Other Qualified Programs	86,697
Transfers to Other Qualified Programs	(82,050)
Other Income	19,986
Total Adjusted Annual Income	<u>\$360,185</u>
Aggregate Expenditures	FY 2024
General and Administrative	\$12,428
Milk Advertising and Promotion	12,335
Cheese Advertising and Promotion	37,498
Butter Advertising and Promotion	7,220
Frozen Dairy Products Advertising and Promotion	4,031
Other Advertising and Promotion ²	7,440
Unified Marketing Plan ³	101,822
Dairy Foods and Nutrition Research	8,577
Public and Industry Communications	33,252
Nutrition Education	23,069
Market and Economic Research	3,035
Other	16,180
Total Annual Expenditures¹⁵	<u>\$266,887</u>
Total Available for Future Year Programs	\$91,299

¹ Differences can occur because of audit adjustments and varying accounting periods.

² "Other" includes "Real Seal," holiday, multi-product, calcium, foodservice, product donations at State fairs, and other promotional activities.

³ Unified Marketing Plan: Reported local spending by participants in the Unified Marketing Plan to fund national implementation programs.

Source: Data reported by Qualified Dairy Product Promotion, Research, and Nutrition Education Programs.

2024 Qualified State, Regional, or Importer

Dairy Product Promotion, Research, or Nutrition Education Programs

State/Region/Importer	Program
Alabama	American Dairy Association of Alabama (Dairy Alliance)
Arizona	Dairy Council of Arizona (Dairy Management West)
California	California Milk Advisory Board Dairy Council of California
Connecticut	Connecticut Milk Promotion Board
Florida	Florida Dairy Farmers, Inc.
Georgia	Georgia Agricultural Commodity Commission for Milk Southeast United Dairy Industry Association (Dairy Alliance) American Dairy Association of Georgia (Dairy Alliance)
Idaho	Idaho Dairy Products Commission Dairy West
Illinois	Illinois Milk Promotion Board
Indiana	American Dairy Association of Indiana Indiana Dairy Industry Development Board
Kansas	Kansas Dairy Commission
Kentucky	American Dairy Association of Kentucky (Dairy Alliance)
Louisiana	Louisiana Dairy Industry Promotion Board
Maine	Maine Dairy and Nutrition Council Maine Dairy Promotion Board
Massachusetts	Massachusetts Dairy Promotion Board New England Dairy and Food Council, Inc. (New England Dairy) New England Dairy Promotion Board (New England Dairy)
Michigan	American Dairy Association of Michigan Dairy Council of Michigan Michigan Dairy Market Program
Minnesota	Midwest Dairy Association (Midwest Dairy) Midwest Dairy Council (Midwest Dairy) Minnesota Dairy Research and Promotion Council (Midwest Dairy)
Mississippi	American Dairy Association of Mississippi, Inc. (Dairy Alliance)
Missouri	Dairy Promotion, Inc. Promotion Services, Inc. St. Louis District Dairy Council
Nebraska	Nebraska Dairy Industry Development Board (Midwest Dairy)
Nevada	Dairy Council of Nevada (Dairy Management West)
New Hampshire	Granite State Dairy Promotion
New Jersey	New Jersey Dairy Industry Advisory Council
New York	American Dairy Association & Dairy Council (American Dairy Association Northeast) Milk for Health on the Niagara Frontier, Inc. New York State Department of Agriculture, Division of Milk Control and Dairy Services Rochester Health Foundation, Inc. (American Dairy Association Northeast)
North Carolina	American Dairy Association of North Carolina (Dairy Alliance)

North Dakota	North Dakota Dairy Promotion Commission (Midwest Dairy)
Ohio	American Dairy Association Mideast
Oregon	Oregon Dairy Products Commission
Pennsylvania	Allied Milk Producers' Cooperative, Inc. Mid-Atlantic Dairy Association (American Dairy Association Northeast) Pennsylvania Dairy Promotion Program (American Dairy Association Northeast)
Puerto Rico, Commonwealth of	Milk Industry Development Fund of Puerto Rico (Fondo Fomento Industria Lechera)
South Carolina	American Dairy Association of South Carolina
South Dakota	American Dairy Association of South Dakota (Midwest Dairy)
Tennessee	American Dairy Association of Tennessee (Dairy Alliance) Tennessee Dairy Promotion Committee (Dairy Alliance)
Texas	Dairy MAX, Inc. Western Dairy Association (Dairy MAX, Inc., Inactive) Southwest Dairy Museum, Inc. (Southwest Dairy Farmers, Southland Dairy Farmers)
Utah	Utah Dairy Commission (Dairy West)
Vermont	Vermont Dairy Promotion Council
Virginia	American Dairy Association of Virginia (Dairy Alliance)
Washington	Washington State Dairy Council (Dairy Farmers of Washington) Washington Dairy Products (Dairy Farmers of Washington)
Wisconsin & Importer	Wisconsin Milk Marketing Board, Inc. (Dairy Farmers of Wisconsin)
Importer	Cheese Importers Association of America
Importer	Global Dairy Platform

Dairy Management, Inc., Dairy Research Institute, and U.S. Dairy Export Council Contracts Approved by USDA, 2024

4Sight Focus LLC	California Milk Producers Advisory Board
Abbaspourrad, Alireza	Camelo Communications
Academy of Nutrition and Dietetics Foundation	Canon USA Inc.
ACER Consulting Ltd.	Center for Food Integrity
Adamchick, Julie	Ceres Dairy Risk Management LLC
ADK Strategy Group	CFE Solutions Inc.
Agribusiness-Connect Asia	Cheese Market News
Agriculture Future of America	Cheese Reporter
AgriLife Co	Cold Sell Coolers
Alamar Foods Company	Costco Wholesale Corporation
Alchemy Brand Labs	Costco Wholesale North Asia
Allen F. Johnson & Associates	Council of Dairy Cow Breeding
American Academy of Pediatrics	CRA, Inc.
American Butter Institute	Culinary Sales Support Inc.
American Dairy Association Indiana Inc.	Cultivating the Future LLC
American Dairy Association Midwest Inc.	Culture Amp
American Dairy Association Northeast Inc.	CustomED
American Eagle.com	Dairy Farmers of America
American Farm Bureau Foundation for Agriculture	Dairy Farmers of Canada
American Society for Nutrition	Dairy Farmers of Washington
American Society of Agronomy Inc.	Dairy Farmers of Wisconsin
Andexler, Rebecca	Dairy Girl Network
Antigravity Films	Dairy Insights LLC
Aon Consulting Inc.	Dairy Management West
Arab Marketing Finance Inc.	Dairy Max
Astrup, Arne	Dairy West
Associated Milk Producers Inc.	Daniel J Edelman
BCS Food Consulting LLC	DARI LLC
Bitonio, Joel	Darigold Inc.
Biofiltro USA Inc.	DellaValle Laboratory
Biofortis Inc.	Dish LLC
Black Swan Data Ltd.	Diversify Dietetics Inc.
Bloomington Writing and Editing LLC	Domino's Pizza Enterprises – Japan
BR Bock Consulting	Domino's Pizza Enterprises – Taiwan
Brenna, Tom	Domino's Pizza LLC
Briggs, Kaitlyn	Dorantes International Trade and Regulatory Law Advisors
CadmiumCD LLC	Eastern Trade Media Pte Ltd.
Cady, Roger	Eat Well Global Inc.
California Dairies Inc.	Ecosystem Services Market Consortium LLC
California Dairy Research Foundation	Edelman Public Relations Worldwide
California Milk Advisory Board	Empist LLC

Emplifi Inc.	IDEAL Research Foundation
EpidStrategies, A Division of ToxStrategies LLC	Ideas on Purpose
Ernst & Young Global Limited	Igloo Inc.
Erasmus	Illustra Inc.
Esser, John	Industrial Economics Inc.
Esty & Associates LLC	Inmar Analytics Inc.
Euromonitor International Inc.	Innova Market Insights
Ever.Ag Insights	InsightFarm Inc.
Everyday Health Media LLC	Institute for the Future
Expo Pass LLC	Institute for Dairy Ingredient Processing
Fair Oaks Farms LLC	Inter-American Institute for Cooperation in Agriculture (IICA)
Farm Journal Foundation	International Dairy Foods Association
Florida Dairy Farmers Inc.	Intertek Health Sciences
Flowers Communication Group Inc.	Ipsos Insights LLC
Food Allergy Research and Education	ISOS Group LLC
FoodMinds, A Division of Padilla Speer Beardsley Inc.	Jiangnan University
Foodsense LLC	Johnson, Rachel
FoodTriton Science	Johnson, Sarah
Food Research and Action Center	K&T Consulting Services LLC
Foundation for Food and Agriculture Research	Kantar Retail d/b/a Kantar Worldpanel
Fuelcomm Inc. d/b/a Stackline	Kantar LLC d/b/a Kantar TNS
Gardner, Emily	Kantar Lightspeed Research LTD
Gartner Inc.	Kantar Singapore PTE Ltd
General Mills Inc.	KCoe Isom LLP
GenYouth Foundation Inc.	Keenan, Judy
Getty Images (US) Inc.	Keller & Heckman LLP
GlobalData Plc (Canadean Consumer)	Kelly Kendall Studios LLC
Global Food IQ	Kennedy, Eileen
GlobeScan Incorporated	Ketchum Inc.
Godfrey & Kahn S.C.	Ketterick, Agata
Goodson, Amy	Kuriwan, Debbie
Good Sport Nutrition LLC	Kraft, Jana
Gravity Marketing LLC	Lane, Tonya
Harry Carry Restaurant Group	LEIF LLC
Hartman Group Inc.	Lincon, Carmen
Harper, Caleb	Lisa Kay Creative Photography
Hill, Sarah	Lovelytics LLC
HillstromPR	Lumanity Clinical and Regulatory Inc.
Holscher, Hannah	Maine Dairy Promotion Board
HotSpex Media Inc.	Manifest LLC
Howard University	Manuel and Alda Lawrence Dairy
Houston Engineering Inc.	Market Makers Inc.
Hruska, Cindy	Markmonitor Group
	MANRRS

Mayo Clinic
 MB Clinical Research and Consulting, LLC
 McKenzie, Isaiah
 Merlin Development
 Messina Group, Inc.
 MEXCAM Mercadotecnia SA DE CV
 Microsoft Corporation
 Midwest Dairy Association
 Midwest Dairy Foods Research Center
 Mischief@NoFixedAddress Inc.
 Mister Berndt Media
 Mistry, Vikram
 MMS Education Inc.
 Monument Advocacy
 Montazar, Aliasghar
 MorganMyers LLC
 Murofushi, Keiy
 Myant Research Centre of Canada Inc.
 National Center for Civic Innovation Inc.
 National Fluid Milk Processor Promotion
 Board
 National Football League Players Inc.
 National Medical Association
 National Milk Producers Federation
 NAVEX Global Inc.
 New England Dairy Promotion Board
 New England Dairy & Food Council Inc.
 Newtrient LLC
 Nguyen, Blake
 Nielsen Consumer Inc.
 Nlumn LLC
 Novak Birch
 Nutrition Impact LLC
 Nutrition Insights LLC
 Ohlhorst, Sarah
 On the Go Marketing Corp.
 Oregon Dairy Farmers
 PA Consulting
 Paradox Nutrition LLC
 Parenti Partners d/b/a Culinary Garage
 Paulsen Marketing Inc.
 Pearl Meyer & Partners
 Peter H. Mattson & Company Inc.
 Phyta BioTech Consulting LLC
 PIPA LLC

Pitney Bowes
 Pizza Hut LLC
 Pizza Hut, Japan Ltd
 Pizzavest Co. Ltd.
 Planet Labs
 PlanIt World Consulting
 PR Consultants Limited
 Premier Nutrition LLC
 Prime Consulting of Florida
 Priyato, Langgeng
 Proano, Gabriela
 PT Sarimelati Kencana (Pizza Hut Indonesia)
 PublicPolicyAsia Advisors Pte. Ltd.
 Quaife, Tom
 Rao, Anita
 Ravindran Associates LLP
 Ready Ink Communications
 Recipe Into Reality
 Reid Miller Creative Group LLC d/b/a 3 MAD
 FISH
 Rep Data Inc.
 Resource Concerns Management Services LLC
 Results Direct
 Rise Interactive Media & Analytics LLC
 River Global LLC
 Robert Hebert Media LLC
 Rogers, Paul
 Rowe, Sylvia
 RTI International
 Ruby Do Inc.
 Sidley Austin LLP
 Significant Outcomes LLC
 Sikand, Vandna
 Soil Health Institute
 Sodexa
 Southeast United Dairy Industry Association d/b/a
 Dairy Alliance
 sparks & honey LLC
 Spilled Milk Catering
 Spins LLC
 Spire Research & Consulting Pte. Ltd.
 SR Strategy LLC
 Strategy Muse
 Steiber, Alison
 Strategic Conservation Solutions LLC

Strategic Partnership LLC
Student National Medical Association Inc.
Sustainable Conservation
Sustainable Environmental Consultants
Sustainability Science LLC
Taco Bell Corporation
Taylor, Tammy
Team Services LLC
Technomic Inc.
Terry Jones with On Inc.
Texas A&M AgriLife Research
The Context Network LLC
The DuPuis Group LLC
The Economist Intelligence Unit, NA Inc.
The Fresh Approach Inc.
The Food Group
The Hartman Group LLC
The Kroger Company
The McCully Group LLC
The Nature Conservancy
The NPD Group Inc.
Think Healthy Group
Toby Amidor Nutrition PC
Tomlinson Consulting LLC
TradeMoves LLC
United Dairy Industry of Michigan

United Dairymen of Arizona
United States Farmers and Ranchers Alliance
USI Insurance Services
Villacorta, Manual
Viral Nation Inc.
Vivayic Inc.
Volp, Lori
Watchmethink Inc.
Watkinson Miller PLLC
Watson Green LLC
Weaver, Connie
Western Dairy Research Center
WestEd
Whey Protein Research Consortium
Whigham, Leah
White, Jim
White, Richard
Wilken, Edith
William Westman & Associates LLC
Williams, Alexandra
Williams, Robert
Wilson, Norrie
Zipper, Sam
Zoetis
ZS Associates Inc.

**National Fluid Milk Processor Promotion Board Contracts
Approved by USDA, 2024**

261 Fearless Inc.
AC Design House LLC
A Crowded Kitchen
Abbate, Emily
AdAdapted Inc.
AgentBlonde Inc.
AlarmingAmber
Aliberti, Adriana
Aldi, Nadia
Ann, Sheryl
Arzola, Andrea
Association of National Advertisers Inc.
Baked By Melissa
Baroncini, Pia
Bastos, Becca
Baumann, Kristy
Baz, Molly
BeauDuke Productions Inc.
Beatrix, Lucie
Bento Box Society LLC
Betches Moms
Black Girls RUN!
Bourgault, Cait
BONBONWHIMS LLC
Bozich, Sara
Brickles, Brittany
Bridge
Brooke, Hailey
Bui, Anh
Cabral, Laura
California Milk Advisory Board
California Milk Processor Board
Campbell Management Solutions LLC
Cannon, Rebekah aka The Peach Cobbler
Capital Bank, N.A.,
Catalano, Hailee
Category Management Association
Carolyn Estephany LLC
Chaparro, Marina
Castaneda, Itzel
Cha Cha Cat LLC
Chef Tinecke LLC
Chiles, Jordan

Circana LLC
Citygirlgonemom LLC
Clayton, Lindsey
Coleman, Kendra
Colony Group LLC
Column Five Media Inc.
Conner, Megan
Cozy Kitchen Lifestyle Inc.
CRA Inc.
Crispin LLC
Chrissy's Cravings LLC
CPGCatNet, Inc.
CYP Together LLC
Dadds, Taylor
Dairy Management Inc.
Daniella Holdings LLC
Davis, Tara
Diary of a Fit Mommy LLC
DiDonato Inc.
Dobransky, Nicole
Doing Things Inc.
Droniak, Lillian
Eason Creations LLC
Echeagaray Productions
EDL Ventures LLC
Ehsani, Roxana
Ebiquity Inc.
Elena, Viancy
Emerald City Media LLC
Eppley, Rachael
EZG Productions Inc.
EvetteXO, Inc.
Evil Hag Enterprises Inc.
Faublas, Stephany
Feret, Emily
First Todd Inc.
Flagship Brands LLC
Flawed Inc.
Fleet Feet Inc.
Fly, Kylie
Flynn, Alysha
Food For Thought Consulting Inc.
Food 52

Food Dolls
 Gale Partners LLC
 Gaither, Kecia
 Gaul, Iridyan
 GDL Foods Inc.
 Gelen Media LLC
 Genflow Inc.
 Gerson, Hannah
 Giadzy Inc.
 Gingered Whisk
 Girls on the Run International
 Girls Scouts of Historic Georgia
 Go Big Red Inc.
 Goblirsch, Amy
 Godwin, Lauren
 Gold Rabbit Sports
 Gomez, Belinda
 Goofball Inc.
 Graves, Sensi
 GU Energy Labs
 Gurk, Lindsey
 Hailey, Arianna
 Harris, Jayuanna
 HappyHappyGal
 Hanlen, Simone
 Hatala, Reese
 Hartford Financial Services Group Inc.
 HAZ Productions LLC
 Hearst Media Inc.
 Heather s Home Bakery
 Hendrix, Sazan
 Henry, Alissa
 Henry, Kyra
 Heali Medical LLC
 Herro, Carley
 Hernandez, Molly
 Hoang, Amanda
 Holliday-Bell, Agnela
 Huff, Candice
 Hutson, Evgenia
 International Dairy Foods Association
 J&A Productions LLC
 James, Tiffany
 Jane Lee LLC
 Jaylabrenae LLC
 Jeter, Kayla

Jilbert Milk Makes It Merrier
 Jiminez, Cynthia
 Jordan Chiles Inc.
 Jones, Jerlyn
 Jones, Monica
 Kaling International Inc.
 Khan, Puja
 Kane, Ceci
 Kansas Run Club
 Katherine Brooking Nutrition
 Communications Inc.
 Kavari, Nazanin
 KCR Entertainment Inc.
 Keogh, Kristen
 Ketnipz LLC
 Kim, Angela
 KMK Media LLC
 Kretnipz LLC
 Krezonoski, Kim
 Kristy Sarah LLC
 Krystianatiana LLC
 Lambert, Noelle
 Lana Rae Enterprises LLC
 Lapalomento, Noel
 Latinas Run LLC
 Lauren Twigge Nutrition
 Lemieux Enterprises LLC
 Lichy, Erin Dana
 Linn Nicole
 LL Entertainment LLC
 Lopez, Maria
 Lorenze, Paige
 Loyden, Naya
 Lucas, Ciara
 MacIntyre, Danielle
 Madison Mealy Marketing LLC
 Mako Girls
 Malardie, Lilly
 Mallory Hudson Media LLC
 Manaker, Lauren
 Marie, Abby
 Mars Advertising Inc.
 Maxi's Kitchen Inc.
 Melke NYC
 Merkle Inc.
 Messer, Casey

MK Global Partners Inc.
 MLA Integrated Marketing Consulting LLC
 MMI Agency LLC
 MomoMilk LLC d/b/a Milk Bar
 Moonrock Agency LLC
 Mortal Ventures LLC
 Motherhood Media LLC
 Natalie
 Navarro-Kim, Stella
 Newell, Ashley
 Ng, Yvonne
 Nicole Laeno Inc.
 Not Impossible LLC
 NSBNF Inc.
 Nutrition by Kylie LLC
 Nuture by NAPS LLC
 O'Connell, Abigail
 Ogeto, Irene
 Ode & Jackson
 One Tree Planted Inc.
 Ormond, Stephanie
 Ortega, Candice
 O'Hara, Tatiana
 O'Shea, Kelsey
 Queen Latifah Inc.
 Outkreate LLC
 Pannozzi, Alyssa
 Paradise Road Inc.
 Pedraza, Deyanira
 Pernod Ricard USA LLC
 Pena, Stephanie
 Peng, Yifei
 Pokimane LLC
 Pondera Advisors LLC
 Ponderosa Advisors LLC
 Poppy Athletic Club
 Practica Group LLC
 Pringle, Isabella
 Prime Consulting of Florida Inc.
 QTCinderella
 Quinn, Christine
 rabbit LLC
 Radius Global Market Research
 Rao, Dana
 Reid, Nathaniel
 Renee Noe LLC

Robinson, Ashlyn
 Rodriguez, Vinney
 Roe Productions LLC
 Roman, Alison
 Romeo, Abbey
 Rubin, Ronald
 Ruiz, Nadia
 Saalt LLC
 Santa Mujeres Run Club
 Schmaderer, Nicky
 Schuller, Saige
 Seidel, Izzy
 Seidel, Molly
 Sigg, Olivia
 Shay, Scheana
 Shore, Mindy
 Silva, Savanna
 Sleymann Nutrition LLC
 Slow Girl Run Club
 Sluss, Hannah Ann
 Smith, Lauren
 Snell, Latoya Shauntay
 SNJ Entertainment LLC
 Snyder Cohn PC
 Spectrum Group Productions Inc.
 Splbelt
 Sophia Roe Inc.
 Southern, Casey
 St. Antoine, Jacquie
 St. Jude Children's Research Hospital
 Stagwell Inc.
 Starrpix LLC
 Stenson, Talia
 Stewart's Shops
 Street Smart Nutrition LLC
 Stomp Out Bulling LLC
 Style Fit Fatty LLC
 Sweet Life Bake
 Technomic Inc.
 The Advantage Group International Inc.
 The Southern Region Advertising Council
 The Chutney Life
 The Colony Group LLC
 The First Todd Inc.
 The Method LLC
 The Sculpt Society LLC

Thomas, Gabby
Thomas, Jayuanna
Tise, Celia
Tokytiffy Consulting Ltd
Tonin, Ciarra
Torabi, Sydney
Tosi, Christina
Traeger, Alix
TrailblazHers Run Co.
Trend Management LLC
Twaydabae Inc.
Uwakwe, Chizoba
Valley Farms
Velez, Paola
Viancy
VidCon LLC
Viacom International
Vondy, Emily
Vox Media LLC
Walczak, Jenn
Ward, Jennifer
Washpoppin Inc.
Watkinson Miller PLLC
Wheeler, Haley
Will, Amy
Williams, Laitiana
Williamson, Da'ana
Wiltz, LaShawn
Winter, Nicole
Winter, Maddi
Wise, Julie
Wishbone Kitchen LLC
Woods, Jes
Xu, Janet
Yerke, Madison
You Should Wear That LTD
Yuen, Kristine
Younger, Katherine

Approved Nutrition Competitive Research Activities, 2024

Principal Investigator, Institution, Project Title and Status

Sean Adams, PhD (University of California-Davis): *Dairy fats as healthy fats: Interactions with the gut microbiota* [commenced 2024].

Oluwakemi Adeola, PhD, RD, LDN (Howard University): *Nourishing features: Bridging health disparities through community engagement, nutrition education and mentorship* [commenced 2024].

Daniela Barile, PhD (University of California-Davis): *Whey phospholipid concentrate as a source of bioactive compounds that improve human health* [ongoing 2024].

Nick Bellissimo, PhD (Ryerson University): *Effect of dairy form on mood and cognitive performance in school-aged children* [ongoing 2024].

Sherman Bigornia, PhD (University of New Hampshire): *Prospective associations of dairy intake with cardiometabolic and brain-related health in the Hispanic Community Health Study/Study of Latinos* [ongoing 2024].

Christopher Blesso, PhD (University of Connecticut): *Evaluation of milk polar lipids on lipoprotein metabolism, inflammation and gut microbiota in dyslipidemic adults with abdominal obesity* [ongoing 2024].

Leigh Breen, PhD (University of Birmingham): *Whey protein dose-response effect on daily glycemic excursions in very old individuals with type 2 diabetes* [ongoing 2024].

Bradley Bolling, PhD (University of Wisconsin-Madison): *Anti-inflammatory activity of yogurt mediated by the intestinal barrier* [ongoing 2024].

Meg Bruening, PhD, MPH (Pennsylvania State University): *The association of milk consumption with fruit and vegetable consumption using objective plate waste measures* [commenced 2024].

Nicholas Burd, PhD (University of Illinois at Urbana - Champaign): *Dairy food consumption and its effects on inflammation and the postprandial regulation of muscle protein synthesis* [ongoing 2024].

Shishir P.S. Chundawat, PhD, MPH (Rutgers, The State University): *Bioconversion of low-value dairy sugars to high-value prebiotics* [commenced 2024].

Sharon Donovan, PhD, RD (University of Illinois at Urbana - Champaign): *STRONG Kids 2: A cells-to-society approach to nutrition in early childhood* [ongoing 2024].

Jean-Philippe Drouin-Chartier, PhD (Université Laval/ Dairy Farmers of Canada): *A large-scale, prospective, multi-omics study on the relationship between dairy product consumption and type 2 diabetes prevention among Canadian adults* [commenced 2024].

Adam Drewnowski, PhD (University of Washington): *The Nutrient Rich Food Index NRF9.3 revises: Toward a category-specific nutrient profiling tool applicable to milk and dairy products* [commenced 2024].

Army Ferrando, PhD (University of Arkansas for Medical Sciences): *Whey protein ingestion and glucose control in pre- and diabetic individuals* [commenced 2024].

Foundation for the National Institutes of Health: *The performance of novel cardiac biomarkers in the general U.S. population* [ongoing 2024].

Darcy Freedman, PhD (Case Western Reserve University): *Nourishing neighborhoods, empowering communities study* [ongoing 2024].

Thom Huppertz, PhD (Wageningen University): *Quantifying differences in bioavailability of different dietary proteins in older adults* [ongoing 2024].

Ruchi S. Gupta, PhD (Food Allergy Research and Education): *The childhood activities nutrition and development oversight study* [ongoing 2024].

Naiman A. Khan, PhD, RD (University of Illinois at Urbana - Champaign): *Cross-sectional and longitudinal predictors of cognitive control and early academic abilities among preschool children* [ongoing 2024].

Ronald Kraus, MD (University of California-San Francisco): *Effects of diets high in dairy fat on circulating branched chain fatty acids in overweight and obese adults* [commenced 2024].

Kelsey M. Mangano, PhD, RD, (University of Massachusetts Lowell): *Longitudinal associations between dairy foods and biomarkers with cardiometabolic outcomes in the Boston Puerto Rican Health Study* [ongoing 2024].

Maria Marco, PhD (University of California-Davis): *Fermented dairy effects on markers of intestinal health: A literature review* [ongoing 2024]; *The yogurt matrix during digestion: benefits of milk composition and structure* [ongoing 2024]; *Improving Intestinal Barrier Function with Fermented Dairy Foods* [commenced 2024].

Sabrina Sales Matrinez, PhD (Florida International University): *Longitudinal associations between total and type of dairy intake and cardiometabolic risk factors in adults from the Hispanic Community Health Study/Study of Latino* [ongoing 2024].

Daniel Moore, MD, PhD (University of Toronto): *Anabolic potential of dairy and dairy products for active children and adolescents* [ongoing 2024].

Lynn L. Moore, DSc, MPH (Boston University School of Medicine): *Yogurt and total dairy intake among women: effects on weight change and fracture risk during critical life stages* [ongoing 2024].

Michael J. Ormsbee, PhD (Florida State University): *The effect of pre-sleep milk-derived protein to support sleep quality and recovery in elite female athletes* [commenced 2024].

Gulustan Ozturk, PhD (University of Wisconsin-Madison): *Exploring heat-induced alterations in milk proteins: A case study on whey protein phospholipid concentrate* [ongoing 2024]; *Whey protein phospholipid concentrate as an effective dietary source of choline in post-menopausal women* [commenced 2024].

Hea Jin Park, PhD (University of Georgia): *Perinatal intake of dairy products and cognitive development of offspring through the manipulation of gut microbiome* [ongoing 2024].

Stuart Phillips, PhD (University of Alabama): *Study lifestyle behaviors in individuals taking GLP-1 based medications for obesity and/or type 2 diabetes* [ongoing 2024].

Jeffery Schwimmer, MD (University of California, San Diego): *Whole dairy foods consumption for children with NAFLD* [ongoing 2024].

Rachel E. Scherr, PhD (Scherr Nutrition Science Consulting, LLC): *Adolescent dairy consumption and mental and physical health in diverse populations: A systematic review* [commenced 2024].

Marie-Pierre St-Onge, PhD (Columbia University): *The role of dairy products on sleep health: A narrative review* [ongoing 2024].

Ameer Taha, PhD (University of California-Davis): *Examining the Role of Dairy Co-Products on Brain Function* [commenced 2024].

Minghua Tang, PhD (University of Colorado): *Influence of a dairy based complementary diet on body composition, bone growth, and food acceptance; a randomized controlled trial* [commenced 2024].

Elena Volpi, MD, PhD (University of Texas Medical Branch at Galveston): *A randomized clinical trial of in-hospital and post-hospital whey protein vs. isonitrogenous collagen protein vs. isocaloric placebo maltodextrin supplementation to improve recovery from hospitalization for an acute medical illness in previously independent community dwelling older adults* [ongoing 2024].

Trudy Voortman, PhD (Erasmus University Medical Center Rotterdam): *The role of dairy foods in inflammation and inflammatory diseases in the general population: Resolving inconsistencies in current evidence* [ongoing 2024].

Connie Weaver, PhD (San Diego State University): *Racial/ethnic differences in calcium metabolism in response to dietary sodium* [ongoing 2024].

Qixin Zhong, PhD (University of Tennessee): *Polystyrene microspheres for recovering all proteins and selective purification of lactoferrin and phospholipids from whey* [ongoing 2024].

Approved Product Competitive Research Projects, 2024

Principal Investigator, Institution, Project Title and Status

Alirez Abbaspourrad, PhD (Cornell University): *Isolation and encapsulation of tryptophan to improve stability and reduce bitterness* [ongoing 2024]; *Isolation and encapsulation of tryptophan to improve stability and reduce bitterness* [ongoing 2024]; *Mitigating the astringency of whey protein through complexation and encapsulation techniques* [ongoing 2024]; *Large-scale production of lactose fatty acid esters-based biosurfactants using whey permeate* [ongoing 2024].

Samuel Alcaine, PhD (Cornell University): *Fermentation - expanding dairy markets* [ongoing 2024].

Jayendra K. Amamcharla, PhD (University of Minnesota): *Tailoring protein interactions to influence functional properties of milk protein concentrate powders* [concluded 2024]; *Development and validation of a simple and rapid water adsorption kinetics-based approach to measure solubility of dairy powders* [ongoing 2024]; *Physical, chemical, and functional assessment of low, medium, and high-heat nonfat dry milks produced in the United States* [commenced 2024].

Dennis D'Amico, PhD (University of Connecticut): *Optimizing the application of hydrogen peroxide to control Listeria Monocytogenes contamination on the surface of high-moisture cheese* [concluded 2024]; *Effective of bioprotective cultures on Listeria monocytogenes in milk and high moisture cheese* [ongoing 2024].

Sanjeev Anand, PhD (South Dakota State University): *Assessing an environmental Listeria strain for its ability to survive and form biofilms in the presence of background microflora isolated from the dairy production environment* [ongoing 2024].

Orla Baxter (Worcester Polytechnic Institute): *Center for Advanced Research in Drying* [concluded 2024].

Rodolphe Barrangou, PhD (North Carolina State University): *Engineering HMO biosynthesis in L. acidophilus for pediatric gastrointestinal health* [commenced 2024].

Da Chen, PhD (Purdue University): *Enhancing heat stability of whey proteins via enzymatic deamidation for beverage application* [commenced 2024].

Jiajia Chen, PhD (University of Tennessee): *Proof-of-concept: A thermoelectric-based multi-pass exchange technology for decarbonizing and electrifying milk pasteurization* [commenced 2024].

Fernanda F G Dias, PhD (South Dakota State University): *Tailoring strategies to retain the intrinsic milk flavor in high protein systems* [commenced 2024].

MaryAnne Drake, PhD (North Carolina State University): *Southeast Dairy Center Application Laboratory Program* [ongoing 2024]; *Protein beverage innovation platform* [ongoing 2024]; *The*

role of pH and mineral salts on heat stability and acid gelation of commercial liquid and dried MPC [ongoing 2024]; Understanding the basic tastes and flavor properties of liquid skim UF retentate [ongoing 2024]; High protein beverages with MCC and WPPC [ongoing 2024]; Consumer acceptance of liquid MF retentates [ongoing 2024]; Reducing butter hardness through butter making process modifications [ongoing 2024]; The role of milk protein fraction, beverage heat treatment and added ingredients on flavor binding in ready-to-drink protein beverages [commenced 2024]; The role of soluble milk components on heat stability of milk protein beverages [commenced 2024].

John English, PhD (University of Arkansas): *Center for Advanced Membrane Separation Technology [concluded 2024].*

Selvarani Govindasamy-Lucey, PhD (University of Wisconsin-Madison): *Innovative approaches to increase the shelf-life of string cheese and fresh cheese curds [ongoing 2024]; Shelf-stable snacks made by extrusion of natural cheeses[ongoing 2024]; Improving the functionality of frozen and super chilled shredded cheese during extended storage[ongoing 2024]; Strategies to control browning/blistering in low-moisture part-skim mozzarella cheese[ongoing 2024]; Reduction of browning in direct-salted Parmesan cheese [commenced 2024].*

Federico Harte, PhD (Pennsylvania State University): *Transforming high pressure jet (HPJ) processing into a commercially viable technology for the dairy industry [ongoing 2024]; Harte-Milk Textiles: Electrospinning of neat casein nanofibers [ongoing 2024]; Determination of milk coagulation and gelation properties by high frequency ultrasound wave speed and amplitude changes [commenced 2024].*

Richard Hartel, PhD (University of Wisconsin-Madison): *Application of select dairy ingredients to enhance shelf life, physical properties and sensory attributes of high protein frozen dairy dessert [ongoing 2024]; Characterizing the functional and practical performance of hydrolyzed lactose syrup in selected foods [ongoing 2024].*

George Huber, PhD (University of Wisconsin-Madison): *Production of sweeteners from Greek yogurt acid whey [commenced 2024].*

Rafael Jimenez-Flores, PhD (The Ohio State University): *Design of a simple process to obtain an ingredient rich in milk fat globule membrane and milk phospholipid [commenced 2024].*

Mark Johnson, PhD (University of Wisconsin-Madison): *Innovative approaches to increase the shelf life of string cheese and fresh cheese curds [concluded 2024]; Manufacture of low-moisture part-skim mozzarella cheese using milks high in casein and novel cheesemaking approach [ongoing 2024]; Developing a dairy-based antifungal ingredient for use in the cheese industry [concluded 2024].*

Jovana Kovacevic, PhD (Oregon State University): *Suppressing the growth of listeria monocytogenes in Hispanic-style cheese – evaluation of different interventions [ongoing 2024].*

Rodrigo Ibanez, PhD (University of Wisconsin-Madison): *Developing a dairy-based antifungal ingredient for use in the cheese industry [ongoing 2024].*

John A. Lucey, PhD (University of Wisconsin-Madison): *Wisconsin Center for Dairy Research Applications Laboratory* [ongoing 2024]; *Novel ceramic nanofiltration to improve coproduct quality and increase utilization* [ongoing 2024]; *Improved quality of block rindless Swiss cheese; A membrane-based purification method for lactic acid produced from the fermentation of dairy coproducts* [ongoing 2024]; *Dairy beverage innovation* [ongoing 2024]; *Processing and ingredient approaches to improve the stability of high protein UHT dairy beverages* [commenced 2024].

Nicole Martin, PhD (Cornell University): *Improving outcomes in domestic and export markets by preparing the U.S. dairy industry to address microbacterium, an emerging bacterial contaminant of concern* [ongoing 2024].

Daniel Noguera, PhD (University of Wisconsin-Madison): *Microbial production of value-added constituents from lactose-rich dairy coproducts* [ongoing 2024]; *Improved recovery of succinic acid and lactic acid as microbially produced value-added chemicals from lactose-rich coproducts* [commenced 2024].

NIZO Food Research B.V. (Netherlands): *Reduction of spore count in milk powder production - development of an improved enumeration method for highly heat-resistant spores* [ongoing 2024].

Miguel Perez, PhD (University of Wisconsin-Madison): *Application of a predictive tool on milk quality and ripening conditions to reduce the incidence of biogenic amines in cheese* [ongoing 2024].

Prafulla Salunke, PhD (South Dakota State University): *Midwest Dairy Foods Applications Laboratories Program* [ongoing 2024]; *Manufacture of ingredients for use in clean label process cheese and recombined cheese in export markets* [ongoing 2024]; *Effect of shred dimensions on functionality and consumer acceptance of low moisture mozzarella cheese* [ongoing 2024]; *Enzymatic approach to tailor functional properties of dairy ingredients* [commenced 2024].

Prateek Sharma, Ph.D. (Utah State University): *Development of predicting models for sliceability of cheddar cheese using wear behavior and mechanical properties* [ongoing 2024].

Abigail Snyder, PhD (Cornell University): *Management of yeasts and molds through strain-level PCR-based typing schemes* [ongoing 2024].

Bongkosh Vardhanabhuti, PhD (University of Missouri): *Mapping and improving functional properties of Procream for clean-label applications* [commenced 2024].

Zifan Wan, PhD (University of Wisconsin-Platteville): *Utilization of the novel atmospheric cold plasma technology for controlling listeria monocytogenes in brine solution and brined cheeses* [commenced 2024].

Toni Wang, PhD (University of Tennessee): *Utilization of dairy protein-based peptides and their derivatives to improve the quality of high moisture cheeses* [ongoing 2024].

Yi-Cheng Wang, PhD (University of Illinois - Urbana-Champaign): *Nanomaterials-based time-temperature indicators for monitoring the quality of aseptic milk products* [ongoing 2024].

Martin Wiedmann, PhD (Cornell University): *Development of a digital dairy platform for dairy innovation* [ongoing 2024]; *Understanding Cronobacter diversity, distribution, and ecology to inform Cronobacter control strategies in the dairy industry* [ongoing 2024].

Daniel Wilbanks, PhD (University of Wisconsin-Madison): *Investigating the causes of astringency and chalkiness in concentrated nonfat yogurts* [commenced 2024].

Johan Ubbink, PhD (South Dakota State University): *Leveraging the U.S. potential to develop and market permeate powders: predictive approaches based on the state diagram* [commenced 2024].

Ruihong Zhang, PhD (University of California-Davis): *Bioplastics and natural carotenoid production from cheese production byproducts* [ongoing 2024].

Haotian Zheng, PhD (North Carolina State University): *Predicting heat stability of nonfat dry milk in the application of reconstituted UHT milk using spectroscopic techniques as a rapid method* [ongoing 2024]; *Scalable and cost-effective liquid shear-driven fabrication of nano fibers of whey protein assemblies* [ongoing 2024]; *Establishing database of interfacial properties for U.S. milk powders: interfacial characteristics as indicator of powder quality and functionality* [ongoing 2024]; *Investigation of plasmin system activities in milk protein fractions: towards application of high protein beverages* [ongoing 2024]; *Rational design of whey protein self-assemblies for Pickering stabilization at oil-water interface* [ongoing 2024]; *Developing technical capability for quantitatively characterizing milk foaminess, milk foam stability and milk protein fractions* [ongoing 2024]; *Application of cold plasma technology in manufacturing milk protein concentrate: an investigation of critical control parameters and ingredient functionalities* [commenced 2024].

Approved Sustainability Competitive Research Activities, 2024

Principal Investigator, Institution, Project Title, and Status

Victor Cabrera, PhD (University of Wisconsin-Madison): *Software engineering support for Ruminant Farm System (RuFaS) Model* [ongoing 2024].

Michael Cope, PhD (University of Wisconsin, Platteville): *U.S. Dairy Net Zero Initiative: Improving dairy on-farm sustainability through improved soil health and manure management* [ongoing 2024].

Geoffrey Dahl, PhD (University of Florida): *Potential for manipulating methane intensity in dairy production* [commenced 2024].

Alison Duff, PhD (USDA Agricultural Research Services): *Evaluation of nitrous oxide emissions, carbon balance, and profitability in traditional and emerging dairy forage cropping systems* [commenced 2024].

Josua Faulkner, PhD (University of Vermont): *U.S. Dairy Net Zero Initiative: Improving dairy on-farm sustainability through improved soil health and manure management* [ongoing 2024].

Gonzalo Ferreira, PhD (Virginia Polytechnic Institute and State University): *Reducing dairy methane emissions through forage quality: Solution or double-edged sword* [commenced 2024].

Foundation for Food and Agriculture Research: *The Greener Cattle Initiative Program* [ongoing 2024].

Masoud Hashemi, PhD (University of Massachusetts Amherst): *Integrating living mulch into New England corn silage production reduces nitrogen application, minimizes nitrogen loss, and improves soil health* [commenced 2024].

Randy Jackson, PhD (University of Wisconsin-Madison): *U.S. Dairy Net Zero Initiative: improving dairy on-farm sustainability through improved soil health and manure management* [ongoing 2024].

Lav R. Khot, PhD (Washington State University): *Smart sensing solutions for dairy farming* [ongoing 2024].

Carolyn Keller, PhD (University of Wisconsin-Platteville): *U.S. Dairy Net Zero Initiative: Improving dairy on-farm sustainability through improved soil health and manure management* [ongoing 2024].

Quirine Ketterings, PhD (Cornell University): *U.S. Dairy Net Zero Initiative: Improving dairy on-farm sustainability through improved soil health and manure management* [ongoing 2024].

April Leytem, PhD, (USDA, ARS, Northwest Irrigation and Soils Research): *U.S. Dairy Net Zero Initiative: Improving dairy on-farm sustainability through improved soil health and manure management* [ongoing 2024].

Deanne Meyer, PhD (University of California, Davis): *U.S. Dairy Net Zero Initiative: Improving dairy on-farm sustainability through improved soil health and manure management* [ongoing 2024].

Cristine Morgan, PhD (Soil Health Institute): *U.S. Dairy Net Zero Initiative: Improving dairy on-farm sustainability through improved soil health and manure management* [ongoing 2024].

Meridth Niles, PhD (University of Vermont): *Assess U.S. dairy producer perceptions surrounding climate change adaption and mitigation strategies* [concluded 2024].

Jason Oliver, PhD (Cornell University): *Analytical support to enhance quantification of GHG emissions from long-term dairy manure storage systems* [ongoing 2024].

Francisco Penagaricano, PhD (University of Wisconsin-Madison): *Breeding strategies to reduce the environmental impact of US dairy cattle* [ongoing 2024].

Kristan Reed, PhD (Cornell University): *Expanding FARM ES capability through integration with the Ruminant Farm Systems (RuFaS) model* [ongoing 2024]; *Software Engineering Support for Ruminant Farm System (RuFaS) Model* [ongoing 2024].

Bruce E. Rittmann, PhD (Arizona State University) and Joshua Boltz, PhD (Arizona State University): *NEWT Non-CORE Project: Maximizing value from dairy cow wastewater by intensifying anaerobic digestion* [ongoing 2024].

Mike Van Amburgh, PhD (Cornell University): *Quantifying nitrogen volatilization in dairy excretion: A case for reducing protein feeding through improved dietary formulation* [ongoing 2024].