



**U.S. Department of Agriculture  
Report to Congress  
on the  
Dairy Promotion and  
Research Program  
and the  
Fluid Milk  
Processor Promotion Program  
2021 Activities**

November 2023

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## **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, 2021, 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 \$352.4 million in 2021. The Dairy Board portion of assessments totaled \$124.5 million, and the Qualified Dairy Product Promotion, Research, or Nutrition Education Programs (QPs) totaled \$227.9 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 \$82.5 million in 2021. 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, \$6.9 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 and 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 nominating and appointing 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 2021 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 - \$1.63; (2) cheese - \$3.23; (3) butter - \$23.10. The BCR for fluid milk processors attributed to fluid milk promotion activities is \$2.44.

# 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 2021 audit report can be found at: <https://www.usdairy.com/getmedia/751b1ec0-cb5f-4e9b-ba09-f1d88eccf87b/Dairy-Management-Inc-21-20-FINAL.pdf?ext=.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 two standing committees: the Finance Committee and the Executive Committee. The Finance Committee consists of the Dairy Board officers and appointees named by the Dairy Board Chair. The Dairy Board Treasurer chairs the Finance Committee. The full Dairy Board serves as the Executive Committee. The other Dairy Board committees are joint program committees with the United Dairy Industry Association (UDIA).

Dairy Management Inc. (DMI), the 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 these plans can be implemented. During 2021, DMI continued to implement a national staffing structure to plan and execute the national programs.

DMI funds 1- to 3-year research projects supporting marketing efforts. Six Dairy Foods Research Centers and one Nutrition Institute provided much of the research in 2021. Universities and other industry researchers throughout the United States competed for these research contracts. A description of the research objectives and locations can be found in the Additional Information section of this report.

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 five joint program committees: Position U.S. Dairy in a Global Food System; Accelerate Incremental Sales Growth; Build Trust in Youth and the Conflicted Health Seeker; Farmer and Community Relations; and Exports. 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 2021, 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 2021, see the DMI annual report at <https://www.usdairy.com/getmedia/7da9b191-ab13-4fbf-9093-125c77260254/2021-Annual-Report-FINAL.pdf?ext=.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 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 2021 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/Nat'l+Fluid+Milk+Audit+-+Final+\(1\).pdf](https://s3.us-west-2.amazonaws.com/externalassets-p.milkpep-production.g43labs.net/Nat'l+Fluid+Milk+Audit+-+Final+(1).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 2021, see the MilkPEP annual report at:

<https://s3.us-west-2.amazonaws.com/externalassets-p.milkpep-production.g43labs.net/2021+MilkPEP+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, 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 contracts expending assessment funds be approved by the Secretary. During 2021, the AMS Dairy Program reviewed and approved 533 Dairy Board and DMI agreements, amendments, and annual plans. During 2021, DMI retained the certified public accounting firm of Ernst & Young to audit the records of the following contractors: Agribusiness Connect LTD., Domino's Pizza Inc., Mischief Inc., Team Services LLC, and

University of Illinois. 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 US 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 2021, the AMS Dairy Program reviewed and approved 102 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, to amend 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 2021, exempted assessments totaled \$1,756,807. 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 2021, the AMS Dairy Program’s oversight expenses totaled \$638,358, and the Federal Milk Market Administrators incurred \$334,106 in expenses for verification audits conducted on behalf of the Dairy Board.

### *Qualified Programs*

Qualified Programs are State, regional, or importer organizations conducting dairy product promotion, research, or nutrition education programs, authorized by Federal or State law, or were active programs prior to the Dairy Act. In 2021, the AMS Dairy Program reviewed applications for continued qualification from 63 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 2021 in chapter 4.

## **National Fluid Milk Processor Promotion Board Oversight**

### *Program Development*

The Fluid Milk Board contracted with Gale Partners, LLC; Arc USA Chicago, and CMGRP, Inc., d/b/a Weber Shandwick, 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 2021, the AMS Dairy Program approved 91 Fluid Milk Board agreements, amendments, and annual plans. The Fluid Milk Board retained the certified public accounting firm of Snyder, Cohn, Collyer, Hamilton & Associates, P.C. (Snyder Cohn), in 2021 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 2021, the amount of exempted fluid milk assessments was approximately \$2,884,621. 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 2021, the AMS Dairy Program’s oversight expenses totaled \$402,299 and the Federal Milk Market Administrators incurred \$127,198 in expenses for verification audits conducted on behalf of 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 2021**

### **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, Co-Director of the Agribusiness, Food, and Consumer Economics Research Center (AFCERC), and holder of the Southwest Dairy Farmers Marketing Endowed Chair, Department of Economics, Texas A&M University was awarded a competitive contract to conduct this study. This chapter is a summary of the 2021 quantitative evaluation of the effectiveness of the dairy and fluid milk promotion programs.

### **Background on the Promotion Programs**

The Dairy Promotion and Research Program, also known as the Dairy Checkoff Program, is a coordinated national promotion and research program intended to maintain and expand domestic and foreign markets for fluid milk and dairy products. To fund the program, U.S. dairy producers pay a 15-cent-per-hundredweight assessment on milk marketings, 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 referred to as Qualified Programs<sup>1</sup> (QPs). The UDIA operates under the direction of a board of directors 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 and apply knowledge that leverages opportunities to expand dairy markets.

The Fluid Milk Processor Promotion Program, or Milk Processor Education Program (MilkPEP), develops and finances generic advertising programs designed to maintain and expand markets for fluid milk products produced in the United States. Fluid milk processors marketing more than 3 million pounds of fluid milk per month pay a 20-cent-per-hundredweight assessment on fluid

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<sup>1</sup> Qualified Dairy Product Promotion, Research, or Nutrition Educational 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.

milk processed and marketed in consumer-type packages in the contiguous 48 States and the District of Columbia.

The Dairy Promotion and Research 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.

## **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 benefit from them?

Historically, this question has 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 in a structure that controls for the 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 a benefit-cost-ratio (BCR).

The level of the BCR often is taken as an indication of the impact of a program. In addition, due to diminishing marginal returns, the ratio between the incremental revenue generated and the level of funding (the BCR) declines as funding increases. Consequently, 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 the National Programs.

The objectives of this report are to:

1. Statistically 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.
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 2021 and captures the joint efforts of DMI, MilkPEP, and QPs. The shares of each promotion entity in the total demand-enhancing expenditures over this period are as follows: (1) DMI – 26.0 percent; (2) MilkPEP – 23.1 percent; and (3) QPs – 50.9 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. Per capita consumption of fluid milk, cheese, and butter rose by 8.1 percent, 4.6 percent, and 5.3 percent respectively. The overall downward trend of per capita fluid milk consumption from 1995 and 2021 was mitigated to some extent by the promotional efforts of the National Programs. Exports of butter were lower by 18.4 percent, while exports of cheese were up by 5.2 percent over the same period. Exports of nonfat dry milk were up by 0.5 percent over the period 1995 to 2021.

The returns from the programmatic activities of producers and to fluid milk processors are summarized with benefit-cost ratios (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 indigenous to dairy. Demand-enhancing expenditures accounted for roughly 93 percent of total DMI expenditures, 98 percent of total MilkPEP expenditures, and 85 percent of total QP expenditures. Consequently, most of the expenditures associated with the various programmatic activities are accounted for in conducting this analysis.

Over the period from 1995 to 2021, the BCRs expressed in terms of producer profit at the farm level were calculated to be \$1.63 for every dollar invested in demand-enhancing activities for fluid milk; \$3.23 for every dollar invested in demand-enhancing activities for cheese; and \$23.10 for every dollar invested in demand-enhancing activities for butter. For other nonspecific promotion activities, the BCR was calculated to be \$9.05 for every dollar invested. Over the same period, the BCR of export promotion was \$8.85 per dollar invested. On a fat and skim solids basis, a significant positive relationship was evident between the demand for all dairy products and the advertising and promotion expenditures associated with the National Programs. The aggregate all-dairy BCR was 5.07, meaning that, on average, producer profit increased by \$5.07 for each dollar invested in demand-enhancing activities. These BCRs are net of the costs associated with the programmatic activities of the National Programs.

The returns-on-investment as measured by the BCR for all dairy products, exports, and other non-specific dairy products are larger than what was reported in the previous two evaluations (the 2019 and 2020 reports). However, the BCRs associated with fluid milk have declined steadily from 3.26 to 1.91 to 1.63. Similarly, the BCRs associated with butter and cheese have decreased slightly. For butter, the BCRs declined from 24.40 to 24.11 to 23.10, and for cheese the BCRs declined from 3.62 to 3.27 to 3.23.

Importers of dairy products have paid assessments to the Dairy Promotion and Research Program since August 1, 2011. Import assessment funds totaled between \$3.44 million and \$4.76 million per year from 2012 to 2021, averaging \$3.99 million. The cumulative import assessment funds totaled \$40.91 million from August 2011 to December 2021. On a monthly basis, funds from the dairy import assessment ranged from \$210,086 to \$493,975, averaging \$329,895 over the period of August 2011 to December 2021. The import assessment averaged just under 1 percent of the total demand-enhancing expenditures made by DMI, MilkPEP, and the QPs between 2012 and 2021.

Imported cheese levels were higher by 1.54 million pounds over the period 2012–2021 based on promotion funds collected from importers. Unit values of cheese imports amounted to roughly \$3.24 per pound on average over the period between 2012 and 2021. Hence, incremental revenue to importers solely from cheese attributable to the import assessment (on cheese) totaled roughly \$4.99 million. These results are in alignment with those in the previous Report to Congress.

The BCR associated with DMI spending was estimated to be 6.43, higher than the 5.07 return on investment for all dairy product promotion investments. The BCR for MilkPEP was estimated to be 1.55, very similar to the 1.63 figure previously reported for all fluid milk promotional spending. In the previous Report to Congress, the BCR associated with DMI spending was calculated to be 5.43, while the BCR associated with MilkPEP spending was calculated to be 1.89.

The BCR of fluid milk at the processor level was estimated to be 2.44 over the period 1995 to 2021. 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 are 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 return too. But we have no knowledge of the portion captured by processors versus other milk market participants beyond the farm gate. Because of these caveats, we exercise caution in providing this estimate of the BCR attributed to the promotion of fluid milk at the processor level. In the previous Report to Congress, this BCR was calculated to be 2.84.

Caution must be exercised in making comparisons from various Reports to Congress across years. 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, MilkPEP, and QPs. 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, outdoor, print, radio, and the internet. 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 above



concerning the BCRs, overhead, technical support, industry relations, and administrative expenses are excluded from this analysis because they are not primarily related to demand-enhancing efforts.

Over the years, DMI 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 the industry to increase sales of fluid milk and dairy products.

Annual promotion program expenditures made by DMI, MilkPEP, and QPs over the period 1995 to 2021 are depicted in table 3-1 and in figure 3-1. On average, roughly \$372 million was spent annually by the respective entities over this period, ranging between nearly \$390 million and \$415 million per year since 2011. In 2021, promotion program expenditures amounted to slightly more than \$402 million. Over the period 1995 to 2021, the shares of each promotion entity concerning total demand-enhancing expenditures on average were as follows: (1) DMI – 26.0 percent; (2) MilkPEP – 23.1 percent; and (3) QPs – 50.9 percent.

The data associated with the demand-enhancing activities initiated by DMI and MilkPEP are available on a quarterly basis. QP data, however, are available only on an annual basis. To estimate quarterly data for the QPs, the seasonal nature of DMI and MilkPEP expenditure data is assumed to be like the QP expenditure 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 for sufficient observations to conduct the econometric analysis of demand for dairy products.

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 2021 are exhibited in figure 3-2. These demand-enhancing expenditures varied from \$54.2 million to \$99.4 million per quarter, averaging \$82.3 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 2021 are exhibited in figure 3-3. Over that period, nominal seasonally adjusted quarterly promotion program expenditures for fluid milk ranged from roughly \$17.3 million to \$63.3 million per quarter. On average over the same period, nominal seasonally adjusted demand-enhancing expenditures for fluid milk were \$32.9 million per quarter.

As exhibited in figure 3-4, over the period 1995 to 2021, nominal seasonally adjusted demand-enhancing expenditures for cheese averaged \$15.4 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 much smaller compared to the period of 1995 to 2004. On average, expenditures on cheese marketing

and promotion were \$12.0 million during this period.

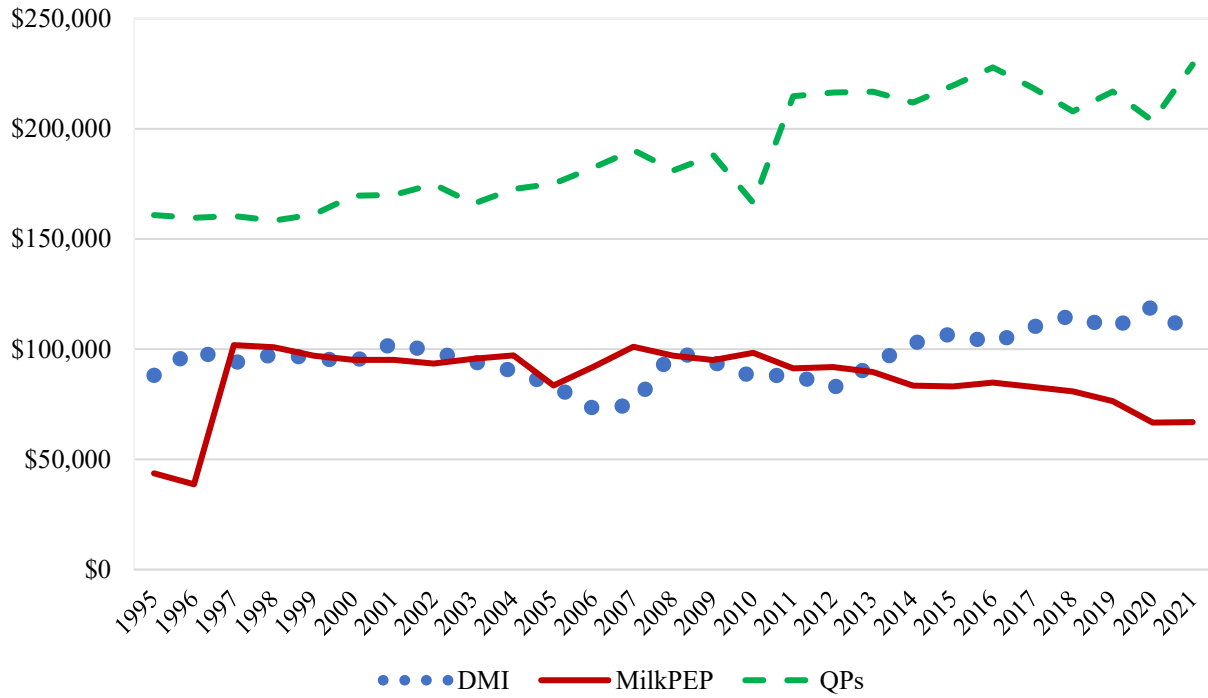
**Table 3-1.** Annual Dairy Management Inc. (DMI), Milk Processor Education Program (MilkPEP), and Qualified Program (QP) Promotion Program Expenditures, 1995 to 2021<sup>1</sup>

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
<b>Mean</b>	\$96,446	\$86,068	\$189,642	\$372,156
<b>Median</b>	\$96,010	\$91,893	\$182,443	\$367,914
<b>Std Dev</b>	\$10,986	\$15,695	\$24,133	\$30,755
<b>Min</b>	\$73,067	\$38,690	\$158,348	\$292,592
<b>Max</b>	\$119,340	\$101,850	\$229,182	\$415,404

<sup>1</sup>Thousands of dollars.

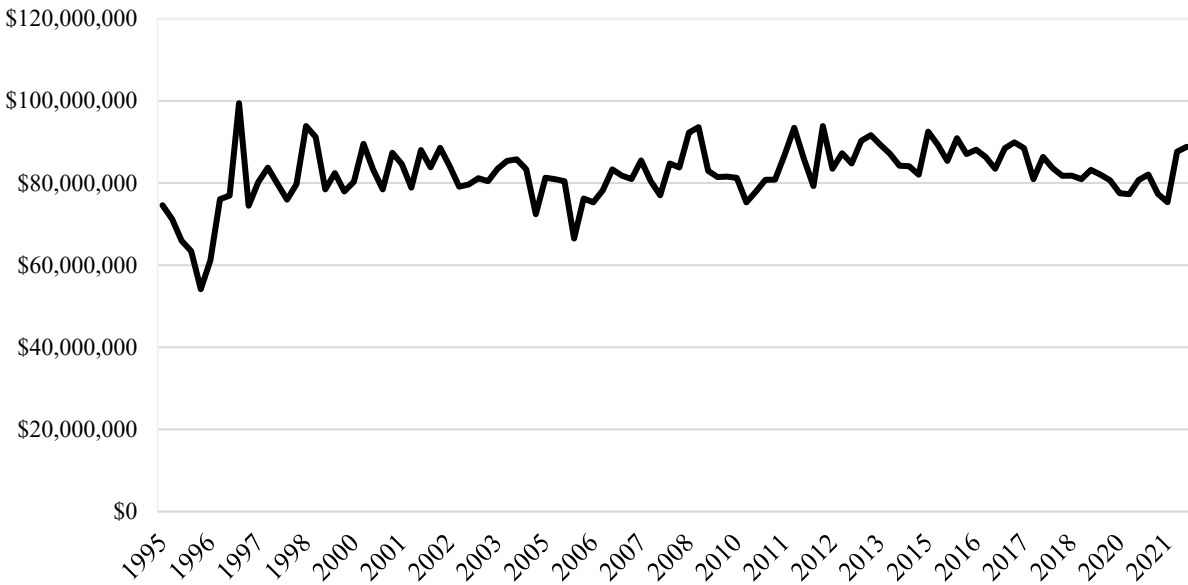
Source: Data from DMI, MilkPEP, and the U.S. Department of Agriculture.

**Figure 3-1.** Annual Dairy Management Inc. (DMI), Milk Processor Education Program (MilkPEP), and Qualified Program (QP) Promotion Expenditures, 1995 to 2021



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

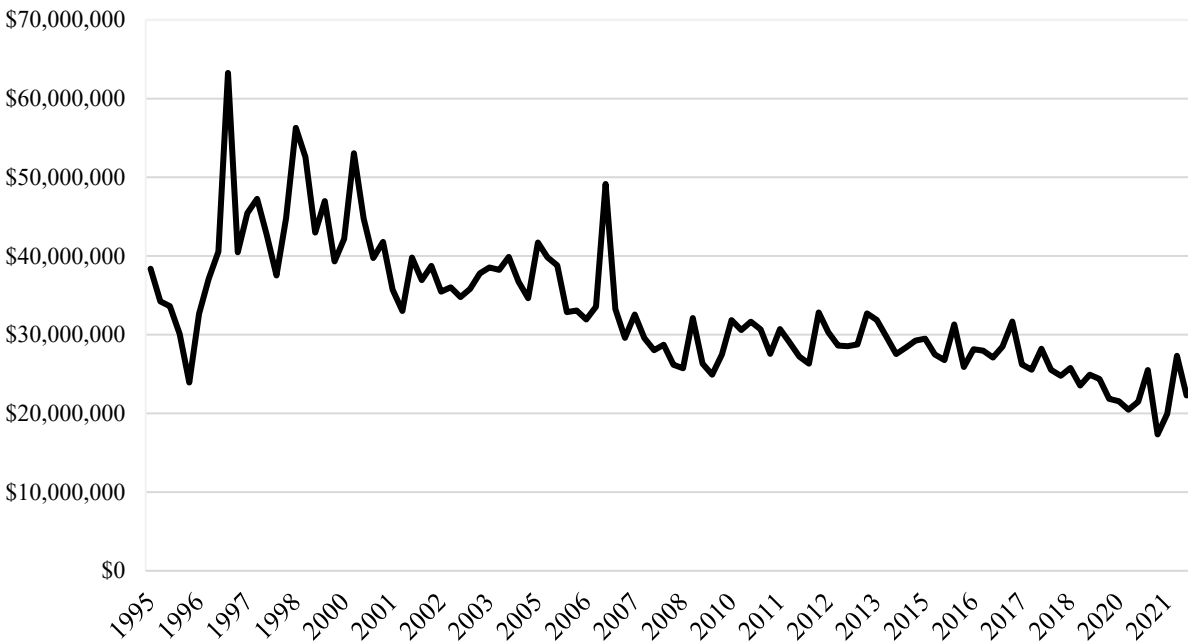
**Figure 3-2.** Quarterly All Dairy Products Promotion Expenditures (Nominal, Seasonally Adjusted) by Dairy Management Inc. (DMI), Milk Processor Education Program (MilkPEP), and Qualified Programs (QPs), 1995 to 2021\*



\*Includes expenditures for advertising, promotion, dairy foods and nutrition research, nutrition education, and market and economic research.

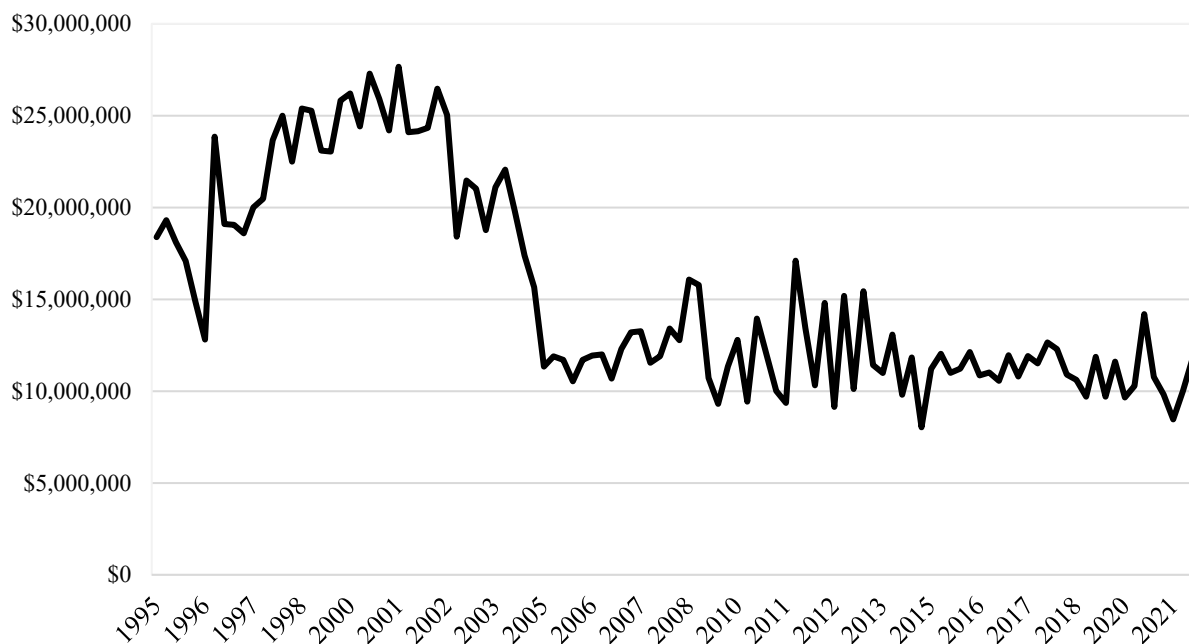
Source: DMI, MilkPEP, QPs. Calculations by the authors.

**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 2021



Source: DMI, MilkPEP, and QPs. 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 2021



Source: DMI and QPs. Calculations by the authors.

From the fourth quarter of 2008 through the end of 2021, nominal quarterly expenditures on cheese marketing and promotion activities ranged from \$8.0 million to \$17.1 million, averaging \$11.5 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 less than \$1.4 million per quarter over the period 1995 to 2021. Marketing and promotion expenditures for butter are a fraction of the expenditures for fluid milk and cheese.

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 \$7.2 million (figure 3-6a). DMI expenditures directed to dairy export promotion trended upward from 1995 to 2021, averaging nearly \$3.0 million per quarter over this period. Funding is awarded through USDA’s Foreign Agricultural Service (FAS) to promote dairy exports 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) varied from just under \$314,000 to about \$2.4 million, averaging nearly \$1.2 million per quarter over the period of 1997 to 2021 (figure 3-6b). The aggregate of DMI and FMD/MAP expenditures (nominal, seasonally

adjusted) ranged from \$881 to \$9.0 million per quarter, averaging slightly more than \$4.0 million on a quarterly basis over the period from 1995 to 2021 (figure 3-6c).

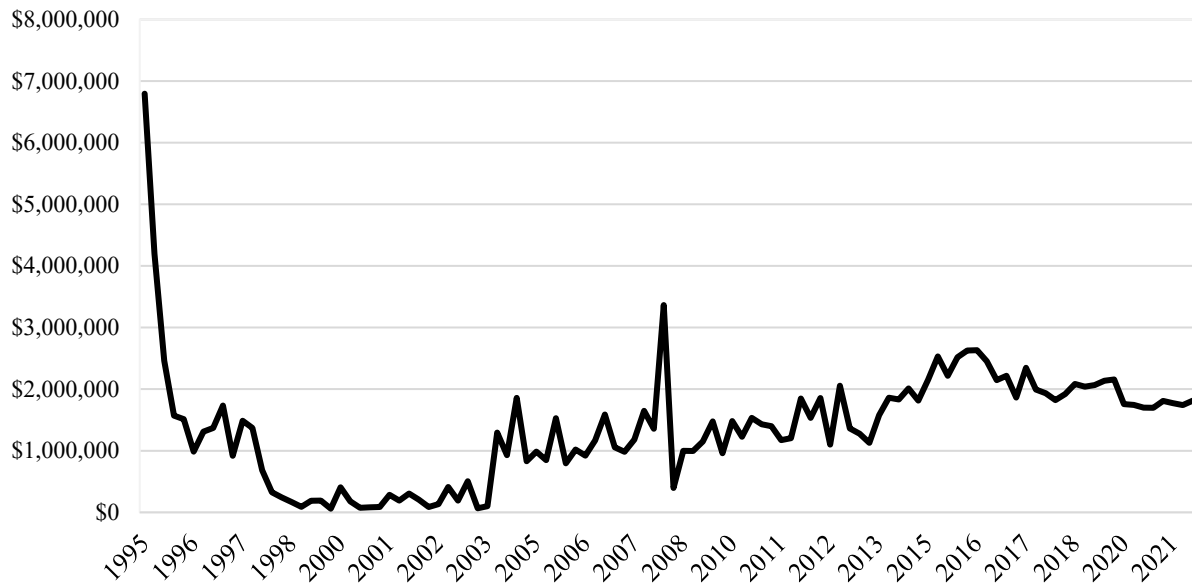
The assessment that importers of dairy products have paid to the National Dairy Promotion and Research Program effective August 1, 2011, is based on milk content as follows:

“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).

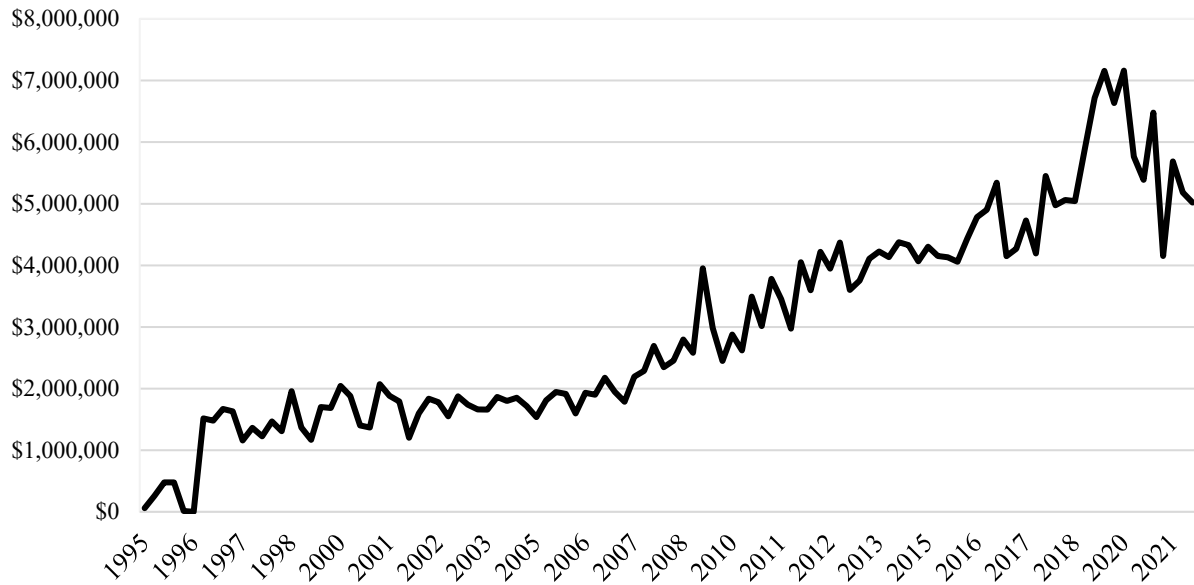
Two-thirds of the import assessments are allocated to the National Dairy Board. The remaining amount can be designated to be used by one of three QPs to support dairy promotion: (1) The Cheese Importers Association of America (CIAA); (2) The Global Dairy Platform (GDP); and (3) The Wisconsin Milk Marketing Board, Inc. (dba Dairy Farmers of Wisconsin).

**Figure 3-5.** Quarterly Butter Promotion Expenditures (Nominal, Seasonally Adjusted) by Dairy Management Inc. (DMI) and Qualified Programs (QPs), 1995 to 2021



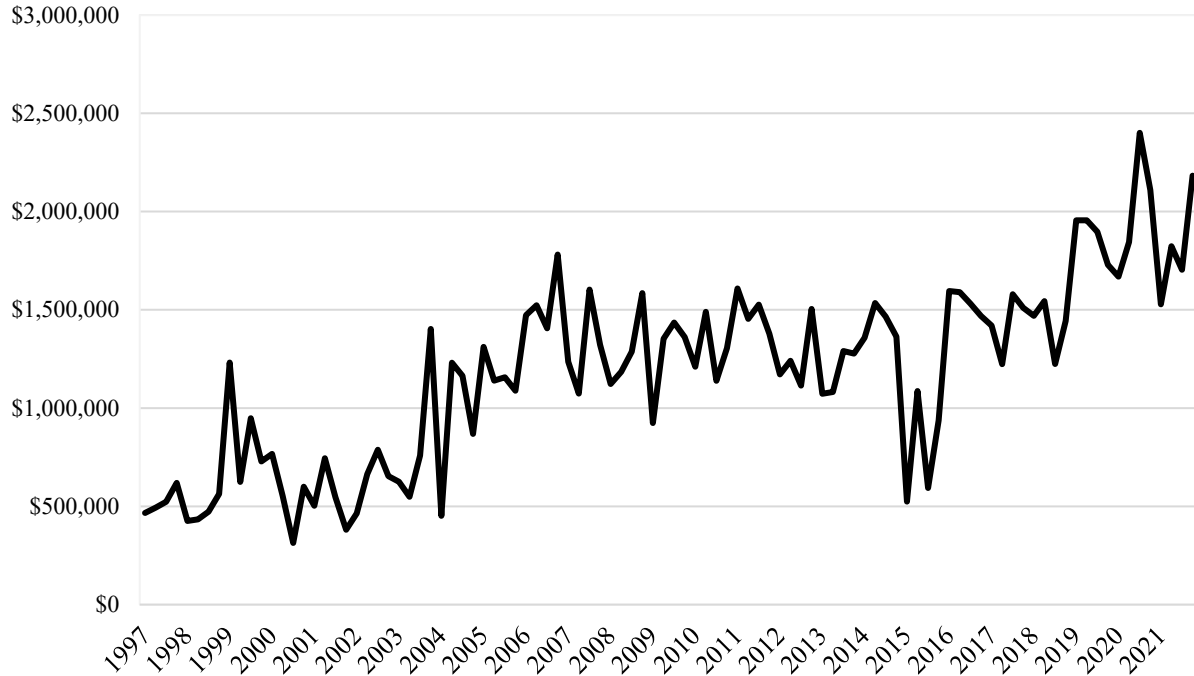
Source: DMI and QPs. Calculations by the authors.

**Figure 3-6a.** Quarterly Dairy Product Export Promotion Expenditures (Nominal, Seasonally Adjusted) by Dairy Management Inc. (DMI), 1995 to 2021



Source: DMI. Calculations by the authors.

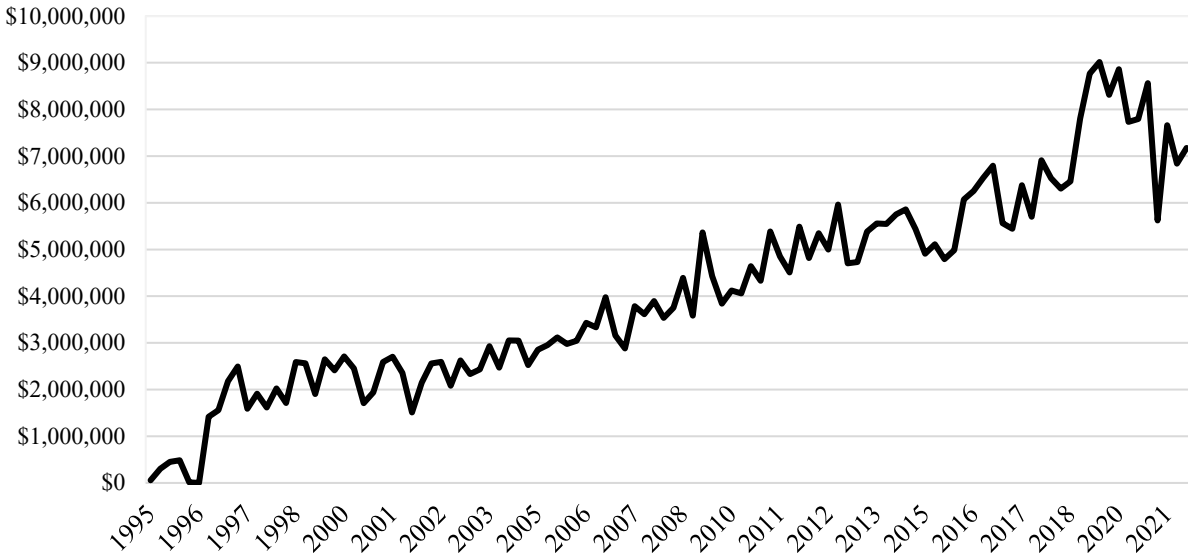
**Figure 3-6b.** Quarterly Dairy Product Export Promotion Expenditures (Nominal, Seasonally Adjusted) through the Foreign Market Development/Market Access Programs, 1997 to 2021\*



\*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. 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/Market Access Programs, 1995 to 2021

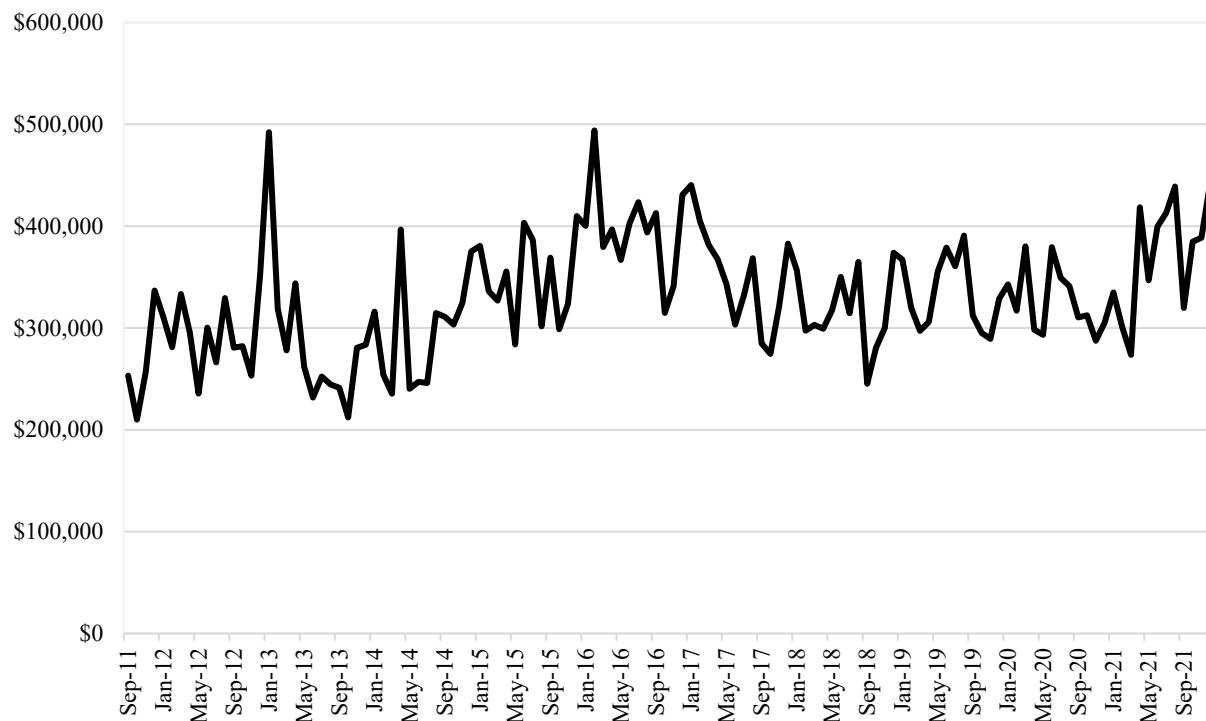


Source: Calculations by authors.

Import assessment funds totaled between \$3.44 million and \$4.76 million per year from 2012 to 2021, averaging \$3.99 million. The cumulative import assessment funds totaled \$40.91 million from September 2011 to December 2021. On a monthly basis, funds from the dairy import assessment ranged from \$210,086 to \$493,975, averaging \$329,895 over the period of September 2011 to December 2021 (figure 3-7). The import assessment averaged just under 1 percent of the total demand-enhancing expenditures made by DMI, MilkPEP, and the QPs between 2012 and 2021.



**Figure 3-7.** Monthly Dairy Import Assessment Funds, September 2011 to December 2021



Source: U.S. Department of Agriculture.

### Trends in Dairy Use

Per capita fluid milk consumption trended downward between 1995 and 2021 (figure 3-8). In 2021, quarterly per capita consumption of fluid milk ranged from 32.31 pounds per person to 34.46 pounds per person, down from 50.44 pounds per person to 53.20 pounds per person in 1995. Seasonality is evident in per capita U.S. consumption of fluid milk.

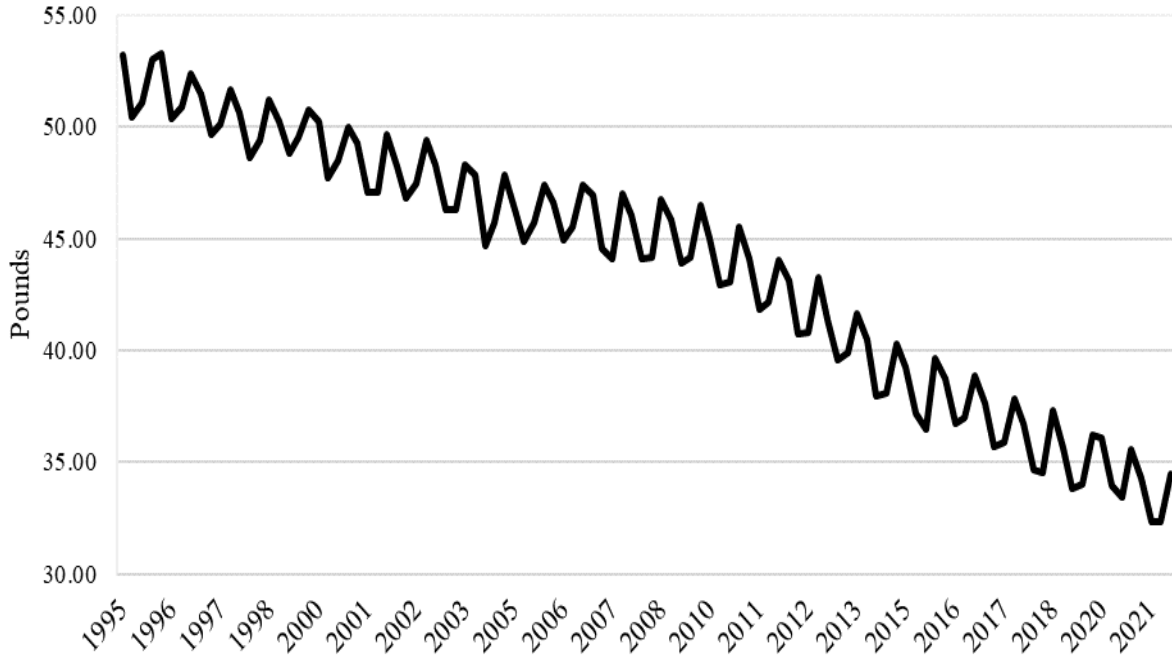
The downward trend likely reflects changes in the frequency of fluid milk intake without changes in portions (Stewart, Dong, and Carlson, 2013) as well as changes in portions of fluid milk intake (Stewart, Kuchler, Dong, and Cessna, 2021). Most Americans born in the 1990s tend to consume fluid milk less often than those born in the 1970s, who in turn consume fluid milk less often than those born in the 1950s. U.S. annual per capita milk consumption has declined roughly 35 percent since 1995 due to changing consumption habits as well as increased competition from other beverages.

Cheese consumption per capita has grown over time and exhibits seasonal patterns (figure 3-9). Between 1995 and 2021, commercial per capita disappearance of cheese ranged from 6.42 pounds per quarter to 10.06 pounds per quarter, averaging 8.17 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 1.88 pounds per quarter, averaging 1.27 pounds.

On average over 1995 to 2021, the per capita commercial disappearance of all dairy products on a fat basis averaged 152.84 pounds per quarter, ranging from 136.69 pounds to 173.38 pounds per quarter (figure 3-11). On a skim-solids basis, the per capita commercial disappearance of all

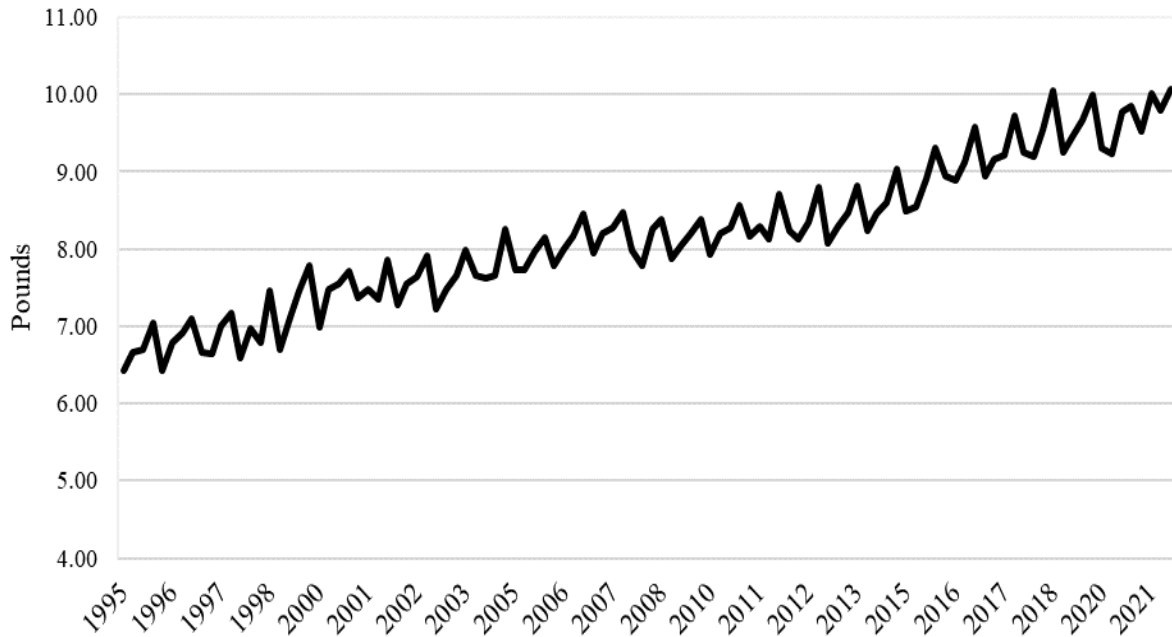
dairy products over that same period averaged 138.42 pounds per quarter, ranging from 130.10 pounds to 148.34 pounds per quarter (figure 3-12).

**Figure 3-8.** Quarterly Per Capita U.S. Consumption of Fluid Milk, 1995 to 2021



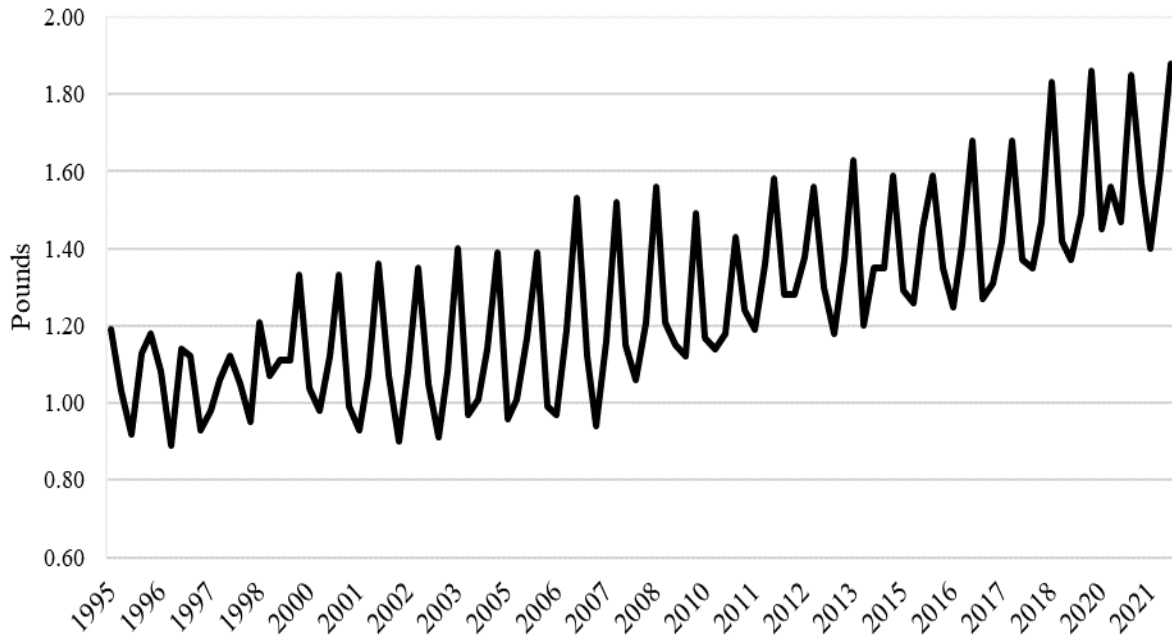
Source: U.S. Department of Agriculture. Calculations by the authors.

**Figure 3-9.** Quarterly Per Capita U.S. Consumption of Cheese, 1995 to 2021



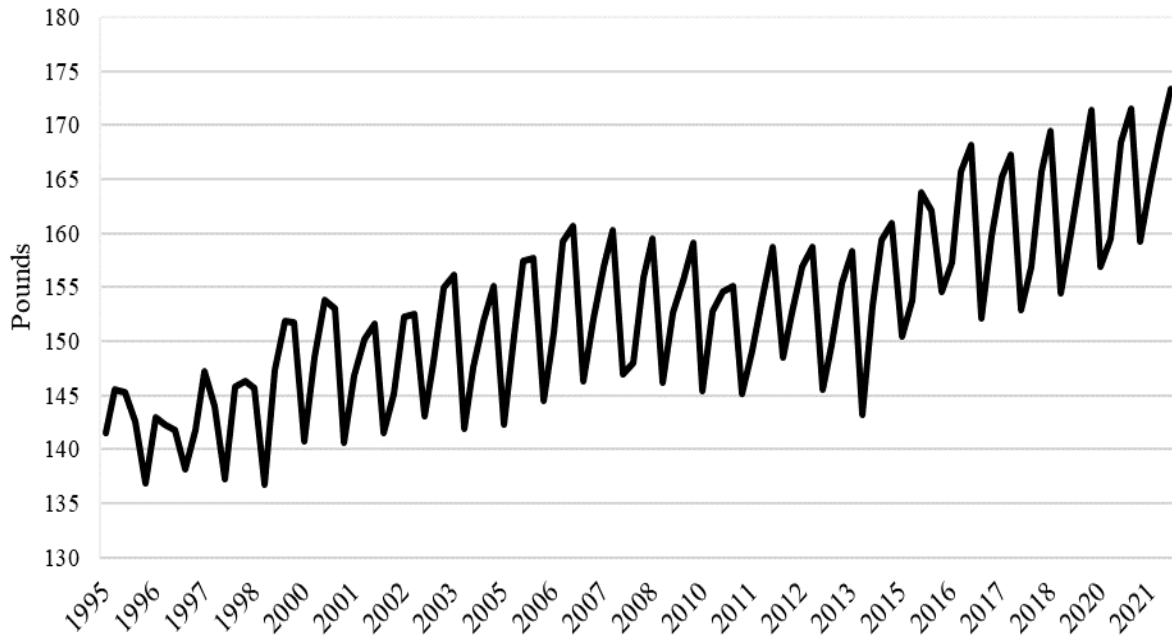
Source: U.S. Department of Agriculture. Calculations by the authors.

**Figure 3-10.** Quarterly Per Capita U.S. Consumption of Butter, 1995 to 2021



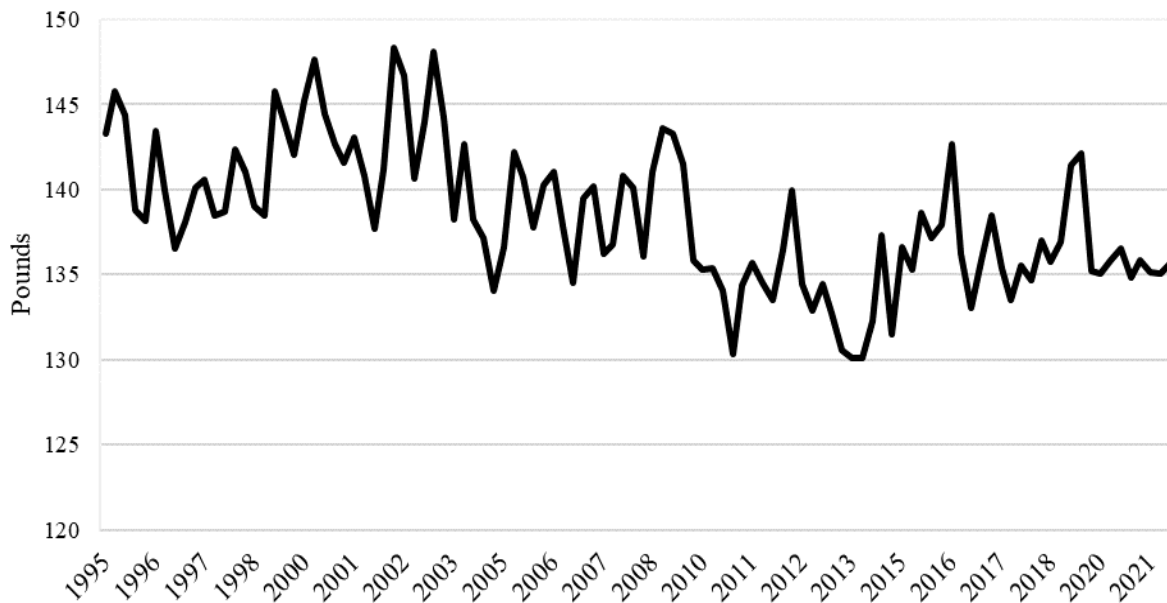
Source: U.S. Department of Agriculture. Calculations by the authors.

**Figure 3-11.** Quarterly Per Capita U.S. Consumption of All Dairy Products on a Milk-Equivalent Fat Basis, 1995 to 2021



Source: U.S. Department of Agriculture. Calculations by the authors.

**Figure 3-12.** Quarterly Per Capita U.S. Consumption of All Dairy Products on a Skim-Solids Basis, 1995 to 2021



Source: U.S. Department of Agriculture. Calculations by the authors.

Between 1995 and 2021, quarterly dairy exports on a fat basis averaged nearly 1,472 pounds and 6,165 pounds on a skim-solids basis (figure 3-13). Over this period, dairy exports on a skim-solids basis experienced notable growth compared to dairy exports on a fat basis.

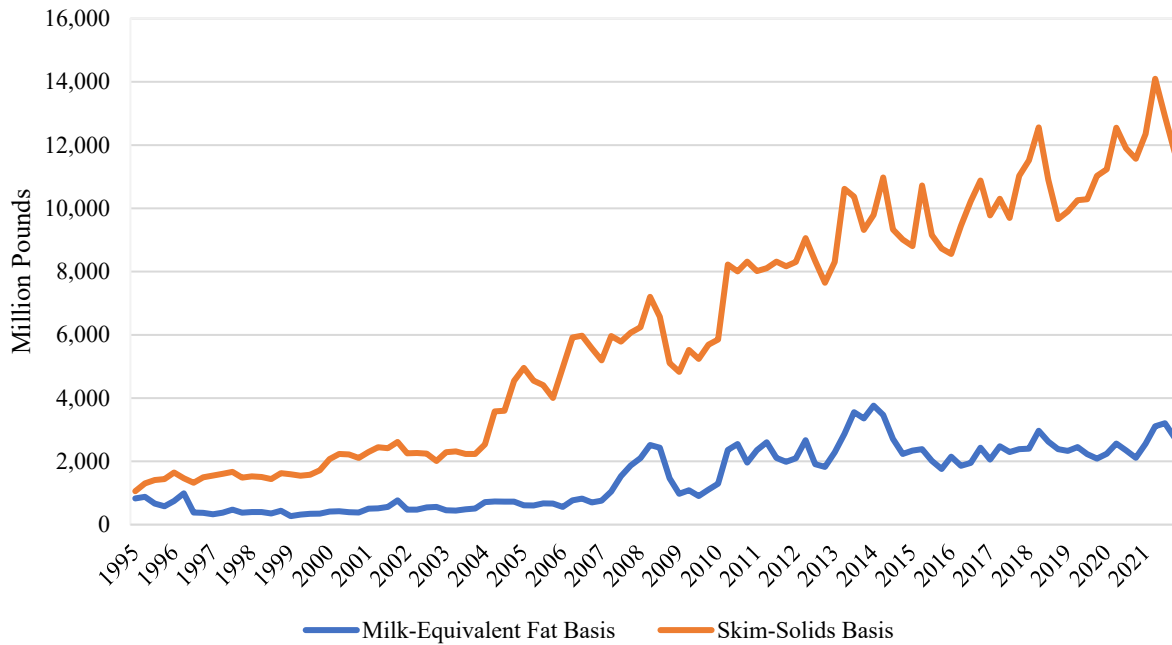
Cheese imports as a percentage of total dairy import value were highest in 2018 at 43.1 percent and lowest in 2012 at 34.2 percent, averaging close to 38 percent over the period 2012 to 2021 (figure 3-14).

The analysis in the next section addresses the response of consumers to dairy promotion expenditures. Structural econometric models were developed to isolate the effects of those expenditures on consumer demand for dairy products from those of other fundamental economic forces such as price and income.

### **Findings Concerning Impacts of Promotion Expenditures on the Dairy Industry**

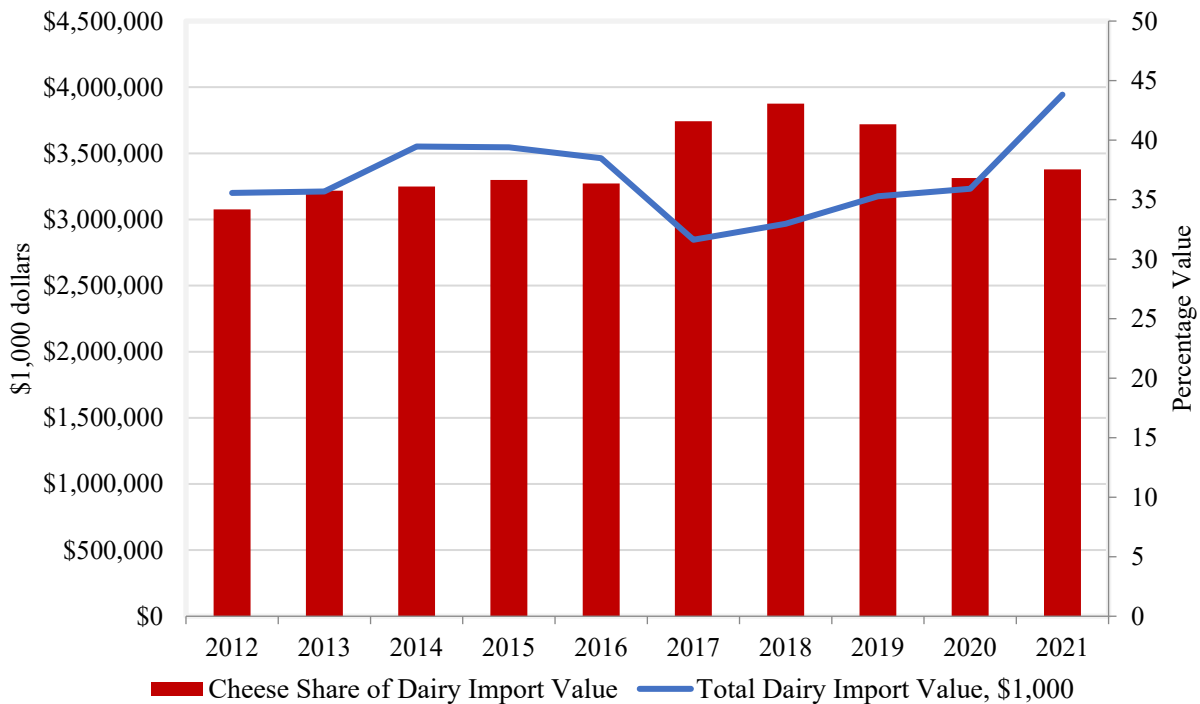
The primary objective of the analysis is to answer two key questions regarding the National Programs over time: (1) What have been the effects of dairy promotion programs on domestic consumption of fluid milk, dairy products, and exports? and (2) What have been the returns to dairy promotion programs? 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 done to answer the question about returns.

**Figure 3-13.** Quarterly U.S. Dairy Commercial Exports on a Milk-Equivalent Fat Basis and Skim-Solids Basis, 1995 to 2021



Source: U.S. Department of Agriculture. Calculations by the authors.

**Figure 3-14.** Value of Total U.S. Dairy Imports and Cheese Share of Dairy Import Value, 2012 to 2021



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

**Table 3-2. U.S. Dairy Product Imports and Import Assessment Funds, 2012 to 2021<sup>1</sup>**

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
<b>Value of All Dairy Imports (\$1,000)</b>	\$3,20 0,708	\$3,21 1,124	\$3,55 1,991	\$3,54 4,941	\$3,46 2,671	\$2,84 6,496	\$2,96 7,727	\$3,17 4,852	\$3,23 1,616	\$3,94 3,685
<b>Value of Cheese Imports (\$1,000)</b>	\$1,09 4,013	\$1,14 7,824	\$1,28 2,189	\$1,29 9,464	\$1,25 8,932	\$1,18 3,858	\$1,27 8,095	\$1,31 2,349	\$1,18 9,781	\$1,48 0,611
<b>Quantity of Cheese Imports, (metric tons)</b>	154,0 08	147,6 35	165,4 16	199,5 78	204,5 12	183,2 70	175,8 29	180,6 18	165,2 65	187,8 04
<b>Unit Value of Cheese Imports (\$/MT)</b>	\$7,10 4	\$7,77 5	\$7,75 1	\$6,51 1	\$6,15 6	\$6,46 0	\$7,26 9	\$7,26 6	\$7,19 9	\$7,88 4
<b>Import Assessment Funds (\$)</b>	\$3,52 1,054	\$3,44 1,461	\$3,56 4,781	\$4,17 5,783	\$4,75 7,469	\$4,20 5,885	\$3,80 3,099	\$4,00 0,574	\$3,91 7,344	\$4,46 2,577
<b>Import Assessment per \$1,000 value of all dairy imports</b>	\$1.10	\$1.07	\$1.00	\$1.18	\$1.37	\$1.48	\$1.28	\$1.26	\$1.21	\$1.13

<sup>1</sup> 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 2021.

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

## **Estimation of Dairy Consumption and Export Changes Due to Promotion Program Expenditures**

This study finds a definitive positive association between dairy promotion program expenditures and the demand for dairy products. This association holds for all dairy products in the aggregate as well as for fluid milk, cheese, and butter individually.

The key indicator of the effect of promotion expenditures on dairy product demand is a measure of the relative sensitivity of demand to such expenditures. This measure, known as the promotion expenditure elasticity, is defined as the percentage change in consumption given a 1-percent change in promotion expenditures, holding all other variables constant.

Demand-enhancing expenditures have a positive impact on domestic commercial disappearance of fluid milk, cheese, butter, and the aggregate of all dairy products. The same is true for the case of dairy exports.

The promotion elasticities for butter, cheese, and fluid milk over the period 1995 to 2021 were on average 0.042, 0.016, and 0.048, respectively. The promotion elasticities for all dairy products on a skim-solids basis and on a fat basis were on average 0.089 and 0.051, respectively. The demand responsiveness to promotion for individual dairy products and for dairy products in the aggregate was allowed to vary over time. Further, the cumulative impact of promotion was also identified. Demand-enhancing expenditures affect the market for cheese for up to two quarters. The effect on fluid milk persisted for up to 3 quarters and on butter for up to 12 quarters. For the aggregate of all dairy products, the effect persisted for six quarters on both a fat and skim-solids 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.<sup>2</sup> The lag length for SSB export promotion expenditures was estimated to be nine quarters. The SSB export promotion expenditure elasticity was estimated to be statistically significant (statistically different from zero) at 0.069 over the sample period (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 statistically significant at 0.108 (table 3-3).

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<sup>2</sup> 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, a measure of real-world income, seasonality, and inertia or stickiness of dairy exports in world markets.

**Table 3-3.** Estimated Dairy Demand Sensitivity to Promotion, Prices, and Income, 1995 to 2021

	Promotion Elasticities 1995 to 2021	Promotion Elasticities 2021 only	Own-Price Elasticity	Income Elasticity
Butter	0.042	0.045	-0.054	0.391
Cheese	0.016	0.012	-0.139	0.497
Fluid milk	0.048	0.034	-0.028	-0.043
All dairy	Promotion Elasticities 1995 to 2021	Promotion Elasticities 2021 only	Own-Price Elasticity	Income Elasticity
Skim-solids basis	0.089	0.077	-0.068	0.105
Fat basis	0.051	0.044	-0.065	0.344
Exports	Promotion Elasticities 1995 to 2021	Promotion Elasticities 2021 only	Own-Price Elasticity	Income Elasticity
Skim-solids basis	0.069	0.069	-0.228	0.702
Fat basis	0.108	0.108	-0.309	0.536

Note: The promotion elasticities estimated for 2020 and 2021 include supply disruptions and behavior attributed to the COVID-19 pandemic. In this analysis, we account for the pandemic as well as the accompanying supply disruptions. All elasticities are significantly different from zero except for the income elasticity associated with fluid milk.

Source: Calculations by the authors.

### Simulation Analysis of the Market Effects of Dairy Promotion

Although the analysis covered the period of 1995 to 2021, for comparison purposes we partitioned the results into four distinct time periods: (1) 1995–2000, (2) 2001–2007, (3) 2008–2014, and (4) 2015–2021. This partitioning was done to ascertain the existence of different effects over the respective time periods. The analysis was accomplished by first aligning the annual model of the U.S. dairy industry maintained at the University of Missouri—the Agricultural Markets and Policy Group Dairy Model (AMAP Dairy Model) as modified to account for dairy promotion—with the observed data over the 1995 to 2021 period. Then 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 been done.

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. There are many factors at play in the year-by-year results, including the level of promotion expenditures each year and the supply dynamics built into the AMAP structural dairy model. To provide some insight into these model dynamics, four sub-periods of results are shown as well as the entire period for 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 variables in the model (e.g., levels of inflation, exchange rates, income levels, government policies, etc.) other than dairy promotion expenditures are 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, average annual per capita consumption of fluid milk, cheese, and butter were higher by 8.1 percent, 4.6 percent, 5.3 percent, and 2.2 percent, respectively, over the period of 1995 to 2021 due to promotion efforts associated with the National Programs, all other exogenous factors held constant.

These results indicate the overall downward trend of per capita fluid milk consumption between 1995 and 2021 was mitigated to some extent by the promotion efforts of the National Programs. Without the National Programs, annual fluid milk consumption would have averaged 175.47 pounds per capita instead of the 189.62 pounds per capita over the 1995 to 2021 period that actually occurred with promotion. Hence, promotion expenditures associated with the National Programs reduced the rate of decline in per capita consumption of fluid milk, controlling for all other factors. The results also indicate that annual per capita consumption of cheese would have averaged 31.27 pounds without promotion versus the 32.72 pounds as actually occurred with promotion over 1995 to 2021. For butter, annual per capita consumption would have averaged 4.80 pounds without promotion versus the 5.06 pounds that occurred with promotion over the same period. Per capita consumption of nonfat dry milk (NFDM) would have been on average 3.04 pounds without promotion versus 3.10 pounds per capita as actually occurred with promotion over the 1995 to 2021 period.

Exports of butter were lower by 18.4 percent, while exports of cheese were up by 5.2 percent over the same period because of the promotion programs. Exports of nonfat dry milk were up by 0.5 percent over the period 1995 to 2021. In the previous evaluation based on quarterly data from 1995 to 2020, dairy promotion increased per capita consumption of fluid milk, cheese, butter, and nonfat dry milk by annual averages of 7.9 percent, 3.9 percent, 5.3 percent, and 1.6 percent, respectively. Exports of butter were smaller by an annual average of 24.3 percent, but exports of cheese were higher by an annual average of 5.0 percent. Exports of nonfat dry milk were virtually unchanged due to dairy promotion.

**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 2021

<b>2015–2021</b>	<b>Fluid Milk Per Capita Consumption (pounds)</b>	<b>Cheese Per Capita Consumption (pounds)</b>	<b>Butter Per Capita Consumption (pounds)</b>	<b>Nonfat Dry Milk Per Capita Consumption (pounds)</b>
With Promotion (lbs)	163.05	37.65	6.00	2.81
No Promotion (lbs)	151.43	35.91	5.62	2.72
Change (lbs)	11.61	1.74	0.38	0.09
Percent Change	7.7%	4.8%	6.7%	3.3%
<b>2008–2014</b>	<b>Fluid Milk Per Capita Consumption (pounds)</b>	<b>Cheese Per Capita Consumption (pounds)</b>	<b>Butter Per Capita Consumption (pounds)</b>	<b>Nonfat Dry Milk Per Capita Consumption (pounds)</b>
With Promotion (lbs)	189.33	33.27	5.25	3.28
No Promotion (lbs)	174.88	31.66	4.96	3.19
Change (lbs)	14.46	1.62	0.29	0.09
Percent Change	8.3%	5.1%	5.8%	3.0%
<b>2001–2007</b>	<b>Fluid Milk Per Capita Consumption (pounds)</b>	<b>Cheese Per Capita Consumption (pounds)</b>	<b>Butter Per Capita Consumption (pounds)</b>	<b>Nonfat Dry Milk Per Capita Consumption (pounds)</b>
With Promotion (lbs)	199.72	31.26	4.53	3.17
No Promotion (lbs)	184.33	29.88	4.35	3.11
Change (lbs)	15.39	1.38	0.18	0.06
Percent Change	8.3%	4.6%	4.0%	1.8%
<b>1995–2000</b>	<b>Fluid Milk Per Capita Consumption (pounds)</b>	<b>Cheese Per Capita Consumption (pounds)</b>	<b>Butter Per Capita Consumption (pounds)</b>	<b>Nonfat Dry Milk Per Capita Consumption (pounds)</b>
With Promotion (lbs)	209.18	28.02	4.35	3.15
No Promotion (lbs)	193.87	27.04	4.19	3.13
Change (lbs)	15.31	0.98	0.16	0.02
Percent Change	7.9%	3.6%	3.8%	0.5%
<b>1995–2021</b>	<b>Fluid Milk Per Capita Consumption (pounds)</b>	<b>Cheese Per Capita Consumption (pounds)</b>	<b>Butter Per Capita Consumption (pounds)</b>	<b>Nonfat Dry Milk Per Capita Consumption (pounds)</b>
With Promotion (lbs)	189.62	32.72	5.06	3.10
No Promotion (lbs)	175.47	31.27	4.80	3.04
Change (lbs)	14.15	1.45	0.25	0.06
Percent Change	8.1%	4.6%	5.3%	2.2%

Source: Calculation by the authors.

Over the period 1995 to 2000, per capita consumption changes for cheese, butter, fluid milk, and nonfat dry milk were positive. From 2001 to 2007, on average per capita consumption changes were positive for all dairy products. Cheese exports were higher, opposite the results for butter and nonfat dry milk. Over the period 2008 to 2014, per capita consumption and product prices during this period remained higher with promotion compared to the absence of promotion. Cheese exports rose by 5.2 percent and nonfat dry milk exports rose by 2.2 percent over the 2008 to 2014 period, but butter exports fell by 8.6 percent.

**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 2021

<b>2015–2021</b>	<b>Cheese Exports (million lb)</b>	<b>Butter Exports (million lb)</b>	<b>Nonfat Dry Milk Exports (million lb)</b>
With Promotion	757.63	51.66	1,531.47
No Promotion	723.49	58.34	1,450.16
Change	34.14	-6.68	81.31
Percent Change	4.7%	-11.5%	5.6%
<b>2008–2014</b>	<b>Cheese Exports (million lb)</b>	<b>Butter Exports (million lb)</b>	<b>Nonfat Dry Milk Exports (million lb)</b>
With Promotion	498.36	116.29	993.65
No Promotion	473.61	127.30	913.87
Change	24.75	-11.01	79.78
Percent Change	5.2%	-8.6%	8.7%
<b>2001–2007</b>	<b>Cheese Exports (million lb)</b>	<b>Butter Exports (million lb)</b>	<b>Nonfat Dry Milk Exports (million lb)</b>
With Promotion	139.22	17.19	289.43
No Promotion	126.69	30.09	315.51
Change	12.53	-12.90	-26.08
Percent Change	9.9%	-42.9%	-8.3%
<b>1995–2000</b>	<b>Cheese Exports (million lb)</b>	<b>Butter Exports (million lb)</b>	<b>Nonfat Dry Milk Exports (million lb)</b>
With Promotion	73.00	11.70	8.32
No Promotion	72.28	27.46	78.73
Change	0.72	-15.76	-70.41
Percent Change	1.0%	-57.4%	-89.4%
<b>1995–2021</b>	<b>Cheese Exports (million lb)</b>	<b>Butter Exports (million lb)</b>	<b>Nonfat Dry Milk Exports (million lb)</b>
With Promotion	377.94	50.60	715.99
No Promotion	359.27	62.03	712.19
Change	18.67	-11.43	3.80
Percent Change	5.2%	-18.4%	0.5%

Source: Calculation by the authors.

Since August 2011, per capita cheese consumption was higher by 0.019 pounds with the promotion funds collected from importers, a percentage change of 0.052 percent. Percentage changes in per capita consumption of butter, nonfat dry milk, and fluid milk were virtually nonexistent. Finally, other cheese consumption rose 5.904 million pounds or 0.08 percent because of the import assessment. Imports of dairy 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 2021, cheese consumption in the United States amounted to 118.46 billion pounds. Because of the assessment from importers, total domestic cheese consumption was higher by roughly 61.60 million pounds, an increase of 0.05 percent. Further, because cheese imports are roughly 2.5 percent of domestic consumption based on information provided by USDA, then due to promotion funds collected from importers, imported cheese levels were higher by 1.54 million pounds. Further, unit values of cheese imports amounted to roughly \$3.24 per pound on average annually between 2012 to 2021. Hence, incremental revenue to importers solely from cheese attributed to the import assessment totaled \$4.99 million. In the previous evaluation based on data from 1995 to 2020, incremental revenue to importers solely from cheese attributed to the import assessment totaled about \$4.43 million.

## **Dairy Promotion Program Benefit-Cost Analysis**

This section then 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.

The level of the BCR often is mistakenly taken as the sole indicator of the level of the market impact of a promotion program. The BCR from a \$1 investment that returns \$4 is the same (4 to 1) as the BCR for a \$1 billion investment that returns \$4 billion. Although the BCRs from these two investments are the same, the levels of their market impacts obviously are not. The more that is spent, the larger the market impact of the commodity program. As spending increases, however, each additional dollar spent has a declining effect, so that the total additional revenue achieved increases at a declining rate. This phenomenon is consistent with the law of diminishing marginal returns in economics. Thus, the ratio between the additional revenue generated by promotion and the additional funds spent on promotion (the BCR) declines as funding increases. Further, a lower (higher) BCR during a particular period relative to another period or for one commodity relative to another does not mean the program is less (more) effective. Other metrics such as impacts on per capita consumption, prices, and exports typically are more revealing and insightful than the BCR as indicators of market impact.

As exhibited in table 3-6, over the period from 1995 to 2021, the Benefit-Cost Ratios (BCRs) expressed in terms of producer profit or net returns at the farm level were calculated to be \$1.63 for every dollar invested in demand-enhancing activities for fluid milk, \$3.23 for every dollar invested in demand-enhancing activities for cheese, and \$23.10 for every dollar invested in demand-enhancing activities for butter. For other nonspecific or nondelineated promotion activities, the BCR was calculated to be 9.05 for every dollar invested. Over the same period, the BCR of export promotion was 8.85 per dollar invested.

**Table 3-6.** Calculated Benefit-Cost Ratio (BCRs) at the Producer Level Attributed to the National Programs, 1995 to 2021

Producers Product	Producers BCR
All Dairy	5.07; (4.30, 4.76)
Fluid Milk	1.63; (1.91, 3.26)
Cheese	3.23; (3.27, 3.62)
Butter	23.10; (24.11, 24.40)
Exports	8.85; (7.43, 6.94)
Other Nonspecific Dairy Products	9.05; (6.93, 6.79)

Source: Calculations by the authors. The first number in parentheses corresponds to the BCRs reported using data from 1995 to 2020, and the second number in parentheses corresponds to the BCRs reported using data from 1995 to 2019.

The aggregate all-dairy BCR was 5.07, meaning that, on average, producer profit increased by \$5.07 for each dollar invested in demand-enhancing activities. These BCRs are net of the costs associated with the National Programs. The returns on investment as measured by the BCR for all dairy products, exports, and other nonspecific dairy products are larger than what was previously reported in the past two evaluations. The BCRs associated with fluid milk have declined steadily from 3.26 to 1.91 to 1.63. Similarly, the BCRs associated with butter and cheese have decreased slightly. For butter, the BCRs declined from 24.40 to 24.11 to 23.10, and for cheese the BCRs declined from 3.62 to 3.27 to 3.23.

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, nondelineated products, and exports. By contrast, MilkPEP promotion expenditures have targeted fluid milk exclusively. The BCR associated with DMI spending was calculated to be 6.43, higher than the 5.07 return on investment for all dairy product promotion investments. The BCR for MilkPEP was calculated at 1.55, nearly identical to the 1.63 return calculated for all fluid milk promotional spending. In the two previous evaluations of National Programs, the BCR associated with DMI spending was calculated to be 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 1.89 based on data from 1995 to 2020 and 3.28 based on data from 1995 to 2019.

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. Over the period 1995 to 2021, this cumulative added value amounted to \$7.90 billion. Over the same period, the cumulative amount of MilkPEP promotion expenditures totaled \$2.30 billion. Hence, the BCR of fluid milk at the processor level was estimated to be 2.44 over this period. In the previous evaluation of the effectiveness of National Programs, this BCR was calculated to be 2.84.

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 too. But we have no knowledge of the portion captured by processors versus other milk market participants beyond the farm gate. As such, we exercise caution due to these caveats in providing this estimate of the BCR attributed to the promotion of fluid milk at the processor level over the 1995 to 2021 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 which 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.

## Concluding Remarks<sup>3</sup>

This report provides a continued annual independent evaluation of the effectiveness of the National Programs covering the period 1995 to 2021. 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, especially cheese and butter, while moderating the decline in per capita fluid milk consumption.
- 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 5.07. That is, for every dollar spent on demand-enhancing activities, dairy producers received an additional \$5.07.
- The BCR for fluid milk promotion was calculated to be \$1.63 for every dollar invested in demand-enhancing activities. For cheese promotion, the BCR was calculated to be \$3.23 per dollar invested in cheese promotion and \$23.10 for every dollar invested in butter promotion. The BCR for dairy export promotion was calculated to be \$8.85 per dollar invested.
- The National Programs promotion spending over 1995 through 2021 increased annual per capita consumption of dairy products, and cheese exports:

Fluid milk consumption per capita	+8.1 percent
Cheese consumption per capita	+4.6 percent
Butter consumption per capita	+5.3 percent
Nonfat dry milk consumption	+2.2 percent
Butter exports	-18.4 percent
Cheese exports	+5.2 percent
Nonfat dry milk exports	+0.5 percent
- Promotion funds collected from importers boosted the annual average level of cheese imports by 1.54 million pounds. Annual unit values of cheese imports amounted to about \$3.24 per pound over the period from 2012 to 2021. Hence, the incremental revenue to importers solely from cheese attributable to the expenditure of the import assessments for cheese promotion totaled roughly \$5 million.
- The BCR associated with fluid milk at the processor level was estimated to be 2.44. For every dollar contributed, U.S. milk processors received \$2.44 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 the respective demand drivers including prices, income, seasonality, and promotion expenditures. The impact of the COVID-19 pandemic was also accounted for in these demand models.

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<sup>3</sup> A reference list is available upon request.

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 (AMAP Dairy Model)—was modified to include the statistical results of the dairy demand.



# 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 criteria (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 that portion of such refunds equal to the amount that 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 the assessment directed to the Qualified Programs in 2021 was \$227.93 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 as well as a list of certified programs in 2021.

**Qualified State, Regional or Importer  
Dairy Product Promotion, Research or Nutrition Education Programs  
Aggregate Income and Expenditure Data Reported to USDA, 2021 (Thousands)**

<b>Aggregate Income</b>	<b>FY 2021</b>
Carryover From Previous Year <sup>1</sup>	\$112,580
Producer Remittances	227,938
Transfers From Other Qualified Programs	85,250
Transfers to Other Qualified Programs	(78,191)
Other Income	6,110
<b>Total Adjusted Annual Income</b>	<b>\$353,687</b>
<b>Aggregate Income</b>	<b>FY 2021</b>
<b>Aggregate Expenditures</b>	<b>FY 2021</b>
General and Administrative	\$11,038
Milk Advertising and Promotion	12,482
Cheese Advertising and Promotion	32,913
Butter Advertising and Promotion	6,564
Frozen Dairy Products Advertising and Promotion	3,671
Other Advertising and Promotion <sup>2</sup>	6,216
Unified Marketing Plan <sup>3</sup>	97,710
Dairy Foods and Nutrition Research	9,840
Public and Industry Communications	25,102
Nutrition Education	13,157
Market and Economic Research	4,666
Other	5,823
<b>Total Annual Expenditures</b>	<b>\$229,181</b>
<b>Total Available for Future Year Programs</b>	<b>\$122,465</b>

<sup>1</sup> Differences can occur because of audit adjustments and varying accounting periods.

<sup>2</sup> "Other" includes "Real Seal," holiday, multiproduct, calcium, foodservice, product donations at State fairs, and other promotional activities.

<sup>3</sup> Unified Marketing Plan: Reported local spending by United Dairy Industry Association units participating in Dairy Management Inc.'s Unified Marketing Plan to fund national implementation programs.

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

## **Qualified State, Regional or Importer Dairy Product Promotion, Research or Nutrition Education Programs, 2021**

### **Alabama:**

- American Dairy Association of Alabama

### **Arizona:**

- Dairy Council of Arizona

### **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 (d/b/a The Dairy Alliance)
- American Dairy Association of Georgia

### **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

### **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
- New England Dairy Promotion Board

**Michigan:**

- American Dairy Association of Michigan
- Dairy Council of Michigan
- Michigan Dairy Market Program

**Minnesota:**

- Midwest Dairy Association
- Midwest Dairy Council
- Minnesota Dairy Research and Promotion Council

**Mississippi:**

- American Dairy Association of Mississippi

**Missouri:**

- Dairy Promotion, Inc.
- Promotion Services, Inc.
- St. Louis District Dairy Council

**Nebraska:**

- Nebraska Dairy Industry Development Board

**Nevada:**

- Dairy Council of Nevada

**New Hampshire:**

- Granite State Dairy Promotion

**New Jersey:**

- New Jersey Dairy Industry Advisory Council

**New York:**

- American Dairy Association & Dairy Council
- Milk for Health on the Niagara Frontier
- New York State Department of Agriculture, Division of Milk Control and Dairy Services
- Rochester Health Foundation, Inc.

**North Carolina:**

- American Dairy Association of North Carolina

**North Dakota:**

- North Dakota Dairy Promotion Commission

**Ohio:**

- American Dairy Association Midwest

**Oregon:**

- Oregon Dairy Products Commission

**Pennsylvania:**

- Allied Milk Producers' Cooperative
- Mid-Atlantic Dairy Association
- Pennsylvania Dairy Promotion Program

**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

**Tennessee:**

- American Dairy Association of Tennessee
- Tennessee Dairy Promotion Committee

**Texas:**

- Dairy MAX, Inc.
- Western Dairy Association
- Southwest Dairy Museum, Inc.

**Utah:**

- Utah Dairy Commission

**Vermont:**

- Vermont Dairy Promotion Council

**Virginia:**

- American Dairy Association of Virginia

**Washington:**

- Washington State Dairy Council
- Washington Dairy Products Commission

**Wisconsin:**

- Wisconsin Milk Marketing Board (d/b/a Dairy Farmers of Wisconsin)

**Importer:**

- Cheese Importers Association of America
- Wisconsin Milk Marketing Board (d/b/a Dairy Farmers of Wisconsin)
- Global Dairy Platform

## Additional Information

### Dairy Management Inc., and U.S. Dairy Export Council Contracts Approved by USDA, 2021

#### Contractor Name [Contract Activities]:

B=Business Development

C=Communications

F=Fluid Milk Revitalization

60=Fuel Up to Play 60

E=Exports

N=Nutrition and Wellness

I=Ingredients

K=Knowledge & Insights

P=Partnerships

S=Sustainability

U=Unified Marketing Plan

84.51, LLC <sup>[P]</sup>

Adventure Follows, LTD <sup>[C]</sup>

Agile City Winston-Salem <sup>[B]</sup>

Agribusiness-Connect Asia <sup>[E]</sup>

Alamar Foods Company <sup>[E]</sup>

Allende and Brea Sociedad Civil <sup>[E]</sup>

Alliance Dairies LLP <sup>[S]</sup>

American Butter Institute <sup>[U]</sup>

American Dairy Association Indiana, Inc. <sup>[U]</sup>

American Eagle.com <sup>[B]</sup>

American Farm Bureau Foundation  
for Agriculture <sup>[K]</sup>

American Society for Nutrition <sup>[N]</sup>

Andexler, Rebecca <sup>[B]</sup>

Arab Marketing Finance, Inc. <sup>[E]</sup>

Associated Milk Producers, Inc. <sup>[P]</sup>

Baird, Spencer <sup>[B]</sup>

Baxter Communications, Inc. <sup>[C]</sup>

Black Swan Data Ltd. <sup>[K]</sup>

Bobo, Jack <sup>[B]</sup>

Brainyak Inc. dba GutCheck <sup>[C]</sup>

Briggs, Kaitlyn <sup>[B]</sup>

BR Bock Consulting <sup>[S]</sup>

CadmiumCD, LLC <sup>[S]</sup>

Cady, Roger <sup>[B]</sup>

Castlewood Strategies, LLC <sup>[N]</sup>

CFE Solutions, Inc. <sup>[B]</sup>

Chase Nutrition Services, LLC <sup>[N]</sup>

College & Professional Sports Dieticians <sup>[N]</sup>

ConferenceDirect, LLC <sup>[B]</sup>

Context Network, LLC <sup>[S]</sup>

Costco Wholesale Corporation <sup>[B, K]</sup>

Cowboy Media Productions, LLC <sup>[C, E]</sup>

CRA Inc. <sup>[C]</sup>

Culinary Sales Support, Inc. <sup>[I]</sup>

CustomED <sup>[C]</sup>

Czymmek, Karl <sup>[B]</sup>

Darigold, Inc. <sup>[P]</sup>

Dairy Farmers of America <sup>[P]</sup>

Dairy Insights, LLC <sup>[B, E]</sup>

Dairy Strong Sustainability Alliance <sup>[S]</sup>

Dairy-Tech Group <sup>[S]</sup>

Dairy West <sup>[U]</sup>

Daniel Esty & Associates <sup>[S]</sup>

Direct Dairy Nutrition Service, LLC <sup>[S]</sup>

Domino's Pizza Enterprises – Japan <sup>[E]</sup>

Domino's Pizza, LLC <sup>[P]</sup>

Dorantes Advisors <sup>[K]</sup>

DuPuis Group <sup>[C, F]</sup>

Dutcher & Associates, LLC <sup>[C]</sup>

EarthShift Global, LLC <sup>[S]</sup>

EAS Consulting Group <sup>[I]</sup>

Edelman Public Relations Worldwide <sup>[C, 60]</sup>

Emerging Ag Inc. <sup>[E]</sup>

Empist, LLC <sup>[B]</sup>

Ernst & Young Global Limited <sup>[B]</sup>

Esser, John <sup>[B]</sup>

Euromonitor International <sup>[E]</sup>

Fair Oaks Dairy Adventure <sup>[P]</sup>

Farmers for Sustainable Food <sup>[S]</sup>

Farm Journal Foundation <sup>[B]</sup>

Fleishman-Hillard, Inc. <sup>[C]</sup>

Florida Dairy Farmers, Inc. <sup>[U]</sup>

Food Allergy Research and Education <sup>[N]</sup>

Food Research and Action Center <sup>[N]</sup>

FoodMinds, A Division of

Padilla Speer Beardsley, Inc. <sup>[E, I]</sup>  
 Foundation for Food and  
 Agriculture Research <sup>[S]</sup>  
 FreshAgenda Pty, Ltd <sup>[I]</sup>  
 Frestedt Incorporation <sup>[N]</sup>  
 Frost & Sullivan Limited <sup>[E]</sup>  
 Futerra Sustainability  
 Communications Limited <sup>[60, N]</sup>  
 Gaalswyk, Dennis <sup>[B]</sup>  
 Gardner, Emily <sup>[E]</sup>  
 General Mills, Inc. <sup>[P]</sup>  
 Global Dairy Platform, Inc. <sup>[C]</sup>  
 GlobalData Plc (Canadean Consumer) <sup>[E, K]</sup>  
 GlobeScan Incorporated <sup>[K]</sup>  
 Godfrey & Kahn S.C. <sup>[K]</sup>  
 Golin Harris International, Inc. <sup>[C]</sup>  
 GoNoodle, Inc. <sup>[C]</sup>  
 Gould, Matt <sup>[K]</sup>  
 Great Valley Publishing Company <sup>[N]</sup>  
 Hartman Group <sup>[K]</sup>  
 Hebrew Rehabilitation Center <sup>[K]</sup>  
 Hruska, Cindy <sup>[B, E]</sup>  
 Hudson Grey Sky Productions, LLC <sup>[C]</sup>  
 Illustra Inc. <sup>[B]</sup>  
 Imperial Marketing Concepts, Inc. <sup>[C]</sup>  
 Information Resources, Inc. <sup>[B]</sup>  
 Inmar Analytics, Inc. <sup>[K]</sup>  
 Innova Market Insights <sup>[K]</sup>  
 Inspire11 LLC <sup>[S]</sup>  
 Institute for the Future <sup>[K]</sup>  
 Ipsos Insights, LLC <sup>[I]</sup>  
 ISOS Group, LLC <sup>[S]</sup>  
 Jiangnan University <sup>[K]</sup>  
 Joslin Diabetes Center, Inc. <sup>[N]</sup>  
 J Wallace Consulting <sup>[B]</sup>  
 Kantar, LLC d/b/a Kantar TNS <sup>[C]</sup>  
 Kantar Retail d/b/a Kantar Worldpanel <sup>[K]</sup>  
 Keenan, Judy <sup>[B]</sup>  
 Kentucky Fried Chicken  
 International Holdings, LLC <sup>[P]</sup>  
 KJ Marketing Consulting <sup>[60]</sup>  
 Krymowski, Jaclyn <sup>[C]</sup>  
 Lester, Susan <sup>[B]</sup>  
 Lindsey, Brianna <sup>[E]</sup>  
 Lux Research, Inc. <sup>[F]</sup>  
 Maine Dairy Promotion Board <sup>[U]</sup>  
 Market Makers, Inc. <sup>[E]</sup>  
 MB Clinical Research and Consulting, LLC  
<sup>[K]</sup>  
 McClelland, Alyssa <sup>[B]</sup>  
 McDonald's USA, LLC <sup>[P]</sup>  
 Messina Group, Inc. <sup>[B]</sup>  
 MEXCAM Mercadotecnia SA DE CV <sup>[E]</sup>  
 Michon Inc. DBA Definition 6 <sup>[C]</sup>  
 Mischief@NoFixedAddress Inc. <sup>[C]</sup>  
 MMS Education, Inc. <sup>[C, N, 60]</sup>  
 Molling Scientific Consulting <sup>[B]</sup>  
 Morris, James <sup>[B]</sup>  
 Moughan, Paul <sup>[N]</sup>  
 National Football League Players, Inc. <sup>[60]</sup>  
 National Football League Properties <sup>[60]</sup>  
 National Milk Producers Federation <sup>[E, K]</sup>  
 National Strength and  
 Conditioning Association <sup>[K]</sup>  
 Natural Marketing Institute <sup>[K]</sup>  
 New England Dairy & Food Council, Inc. <sup>[U]</sup>  
 Novak Birch <sup>[C, E]</sup>  
 NPD Group, Inc. <sup>[K]</sup>  
 Nutrition Impact, LLC <sup>[N]</sup>  
 Nutrition Insights, LLC <sup>[N]</sup>  
 Nygaard Consulting, LLC <sup>[E, K]</sup>  
 On the Go Marketing, Corp. <sup>[F]</sup>  
 Orrani Consulting, Ltd. <sup>[E, K]</sup>  
 Package InSight, LLC <sup>[F]</sup>  
 Paradox Nutrition, LLC <sup>[I]</sup>  
 Parenti Partners dba Culinary Garage <sup>[C]</sup>  
 Pizza Hut, LLC <sup>[P]</sup>  
 PR Consultants Limited <sup>[E]</sup>  
 Prime Consulting of Florida <sup>[F]</sup>  
 Production Plus Technologies <sup>[B]</sup>  
 PublicPolicyAsia Advisors Pte. Ltd <sup>[E]</sup>  
 Quaife, Tom <sup>[B]</sup>  
 RB International <sup>[Co]</sup>  
 Ready Ink Communications <sup>[C, E]</sup>  
 Renee Comet Photography, LLC <sup>[C]</sup>  
 Research Resources <sup>[I]</sup>  
 Results Direct <sup>[C, E]</sup>  
 Rise Interactive Media & Analytics, LLC <sup>[C]</sup>  
 River Global, LLC <sup>[E]</sup>  
 Rogers, Paul <sup>[B, E]</sup>  
 RTI International <sup>[N]</sup>  
 Ruby Do, Inc. <sup>[C]</sup>



Schweitzer Consulting <sup>[B]</sup>  
Shamrock Farms <sup>[P]</sup>  
Shelford, Timothy <sup>[B]</sup>  
Shiftology Communication <sup>[C]</sup>  
Sidley Austin, LLP <sup>[K]</sup>  
Sikand, Vadna <sup>[B]</sup>  
Sohn's Market Makers <sup>[E]</sup>  
Soil Health Institute <sup>[S]</sup>  
Sopexa <sup>[E]</sup>  
Southeast United Dairy Industry Association  
d/b/a The Dairy Alliance <sup>[U]</sup>  
sparks & honey, LLC <sup>[C, K]</sup>  
Spherix Consulting Group <sup>[B]</sup>  
Stoury Creative, LLC <sup>[C]</sup>  
Strategic Conservation Solutions, LLC <sup>[C]</sup>  
Strategy Muse <sup>[K]</sup>  
Sustainable Environmental Consultants <sup>[S]</sup>  
SWC Technology Partners, LLC <sup>[B]</sup>  
Taco Bell Corporation <sup>[P]</sup>  
Taylor, Tammy <sup>[B]</sup>  
Team Services, LLC <sup>[60]</sup>  
Technomic, Inc. <sup>[K]</sup>  
Texas A&M AgriLife Research <sup>[K]</sup>  
The Context Network, LLC <sup>[S]</sup>  
The Economist Intelligence Unit, NA, Inc. <sup>[K]</sup>  
The Family Room <sup>[C]</sup>  
The Foundation for National  
Institutes of Health <sup>[N]</sup>

The Fresh Approach, Inc. <sup>[C]</sup>  
The Garage Group <sup>[K]</sup>  
The Kroger Company <sup>[P]</sup>  
The McCully Group <sup>[E, I]</sup>  
The Nature Conservancy <sup>[S]</sup>  
Tomlinson Consulting LLC <sup>[S]</sup>  
TradeMoves, LLC <sup>[E, K]</sup>  
United Dairymen of Arizona <sup>[U]</sup>  
United States Farmers and Ranchers <sup>[B]</sup>  
USDA Agricultural Research Service,  
Western Human Nutrition Research  
Center <sup>[K]</sup>  
Van Amburgh, Michael <sup>[S]</sup>  
Villacorta, Manuel <sup>[C]</sup>  
Volp, Lori <sup>[B]</sup>  
Waldvogel, Jay <sup>[B]</sup>  
Washington Dairy Products Commission <sup>[U]</sup>  
Watkinson & Miller <sup>[B]</sup>  
Watson Green, LLC <sup>[B, N, U]</sup>  
Whey Protein Research Consortium <sup>[N]</sup>  
White, Richard <sup>[E]</sup>  
Williams, Alexa <sup>[U]</sup>  
Wilken, Edith <sup>[E]</sup>  
Xemble Technologies <sup>[B]</sup>  
Youth Improved Inc. d/b/a GenYouth <sup>[N, 60]</sup>  
Ypulse, Inc. <sup>[C]</sup>  
Zenith International Ltd. <sup>[E, I]</sup>  
Zipper, Sam <sup>[S]</sup>

## National Fluid Milk Processor Promotion Board Contracts Approved by USDA, 2021

### Contractor Name [Contract Activities]:

A=Advertising and Marketing

B=Business Development

K=Knowledge and Insights

P=Partnerships

Anderson, Tyler <sup>[A]</sup>  
Barker, Terrel <sup>[A]</sup>  
Biondo, Roland <sup>[A]</sup>  
Brier, Michele V. <sup>[B]</sup>  
Bridge <sup>[P]</sup>  
BWS Productions, Inc. <sup>[A]</sup>  
CMGRP, Inc. d/b/a Weber Shandwick <sup>[A]</sup>  
Coastal Brand Management, LLC <sup>[A]</sup>  
Cook, Lois <sup>[A]</sup>  
Crazy Cool Media, LLC <sup>[A]</sup>  
Crème de la Crumb, LLC <sup>[A]</sup>  
Dairy Management Inc. <sup>[P]</sup>  
Dunston, Rachel <sup>[A]</sup>  
Ebiquity, Inc. <sup>[A]</sup>  
Feeding America <sup>[P]</sup>  
Food for Thought Consulting, Inc. <sup>[K]</sup>  
Food52 <sup>[A]</sup>  
Forever Three 17, LLC <sup>[A]</sup>  
Gale Partners, LLC <sup>[A]</sup>  
General Mills, Inc. <sup>[P]</sup>  
GENYouth, Inc. <sup>[P]</sup>  
GOOD Worldwide, LLC <sup>[A]</sup>  
Gwazdauskas, Sam <sup>[A]</sup>  
Hertz, Brittany <sup>[A]</sup>  
Information Resources, Inc. <sup>[B]</sup>  
InTech Integrated Marketing Services <sup>[B]</sup>  
International Dairy Foods Association <sup>[B]</sup>  
Jimmy Chin Productions, Inc. <sup>[A]</sup>  
JUS10, LLC <sup>[A]</sup>  
Kai's Peak, LLC <sup>[A]</sup>  
Kantar Consulting LLC <sup>[K]</sup>  
KGL Sports, LLC <sup>[A]</sup>  
King Henry, LLC <sup>[A]</sup>  
Kristin Armstrong Academy, LLC <sup>[A]</sup>  
Kuykendall, Morgan <sup>[A]</sup>  
Long, Jessica <sup>[A]</sup>  
Lowe & Partners Worldwide, Inc. <sup>[A]</sup>  
Love and Noor, LLC <sup>[A]</sup>  
Malone, Jamie <sup>[A]</sup>  
MARS Advertising, Inc. <sup>[A]</sup>  
McCoy, Maurio <sup>[A]</sup>  
MLA Integrated Marketing Consulting <sup>[K]</sup>  
No Plan Productions <sup>[A]</sup>  
Nuthcher, Erin <sup>[A]</sup>  
NY Farm Girls <sup>[A]</sup>  
Osterman, Catherine <sup>[A]</sup>  
Overtime Sports, Inc. <sup>[A]</sup>  
Parkers Plate, LLC <sup>[A]</sup>  
Pickle Tree 1 <sup>[A]</sup>  
Pollard, Roland <sup>[A]</sup>  
Pondera Advisors, LLC <sup>[B]</sup>  
Prime Consulting Group <sup>[A]</sup>  
Pritchard, Norah <sup>[A]</sup>  
Protagonist, LLC <sup>[K]</sup>  
Purrier, Elle <sup>[A]</sup>  
Raboutou, Brooke <sup>[A]</sup>  
Radius Global Market Research <sup>[K]</sup>  
Red Spark Consulting, LLC <sup>[A]</sup>  
Rinny Runs Endurance Sports, Inc. <sup>[A]</sup>  
Roberts, Hannah <sup>[A]</sup>  
Rubin, Ronald <sup>[B]</sup>  
Snell, Latoya Shauntay <sup>[A]</sup>  
Snyder-Cohn, PC <sup>[B]</sup>  
Spectrum Group Productions, Inc. <sup>[B]</sup>  
Staples, Christon <sup>[A]</sup>  
St Louis Baking and Pastry <sup>[A]</sup>  
Stop & Go Productions, LLC <sup>[A]</sup>  
SuperAwesome, Inc. <sup>[A]</sup>  
Team JuJu, LLC <sup>[A]</sup>  
Team Services, LLC <sup>[A]</sup>  
The Colony Group, LLC <sup>[B]</sup>  
The Heshey Company <sup>[P]</sup>  
The Marketing Arm, Inc. <sup>[A]</sup>  
Torres, Ariel <sup>[A]</sup>  
Vice Media, LLC <sup>[A]</sup>  
Villacorta, Manuel <sup>[A]</sup>

Voicebox Creative <sup>[A]</sup>  
Ward, Jennifer <sup>[A]</sup>  
Watkinson Miller, PLLC <sup>[B]</sup>

Watson, Eric <sup>[A]</sup>  
Whistle Sports, Inc. <sup>[A]</sup>  
United States Olympic Committee <sup>[P]</sup>

## **National Dairy Foods Research Centers**

Established in 1987, there are six university-affiliated National Dairy Foods Research Centers supported by the National Dairy Council. The mission of the National Dairy Foods 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.

Each center has a comprehensive array of expertise and resources including dairy pilot plants to accomplish this mission. The centers transfer knowledge to industry by developing future professionals, offering technical assistance, providing technical training and short courses. Applications labs within the dairy centers assist in concept creation, prototype development, troubleshooting, scale-up, sensory, and consumer evaluation. For additional information, please visit: <https://www.usdairy.com/research-resources/dairy-foods-research-centers>.

### **California Dairy Research Center**

- California Polytechnic State University – San Luis Obispo
- David W. Everett, PhD., Center Director
- [www.dptc.calpoly.edu](http://www.dptc.calpoly.edu)

### **Midwest Dairy Foods Research Center**

- University of Minnesota – St. Paul
- Iowa State University – Ames
- South Dakota State University – Brookings
- Lloyd Metzger, PhD., Center Director
- [www.midwestdairy.umm.edu](http://www.midwestdairy.umm.edu)

### **Northeast Dairy Foods Research Center**

- Cornell University
- David M. Barbano, PhD., Center Director
- [www.foodscience.cals.cornell.edu/cornell-dairy](http://www.foodscience.cals.cornell.edu/cornell-dairy)

### **Southeast Dairy Foods Research Center**

- North Carolina State University
- MaryAnn Drake, PhD., Center Director
- [www.sdfrc.ncsu.edu](http://www.sdfrc.ncsu.edu)

### **Western Dairy Center**

- Utah State University – Logan
- Donald J. McMahon, PhD., Center Director
- [www.westerndairycenter.usu.edu](http://www.westerndairycenter.usu.edu)

### **Wisconsin Center for Dairy Research**

- University of Wisconsin – Madison
- John Lucey, PhD., Center Director
- [www.wisc.edu](http://www.wisc.edu)

## Approved Nutrition Competitive Research Activities, 2021

### Principal Investigator, Institution, Project Title, and Status

Lacy Alexander, PhD (Pennsylvania State University): *Cheese consumption and human microvascular biomarkers of inflammation* [ongoing 2021].

Mary Cloud Ammons, PhD (Idaho Veterans Research and Education Foundation) & Margaret Doucette, DO (Boise Veterans Affairs Medical Center): *Data collection cooperative research and development* [commenced 2021].

Daniela Barile, PhD (University of California-Davis): *Whey Phospholipid concentrate as a source of bioactive compounds that improve human health* [ongoing 2021].

Christopher Blesso, PhD (University of Connecticut): *Milk Phospholipids for the prevention of Atherosclerosis* [concluded 2021].

Bradley Bolling, PhD (University of Wisconsin-Madison): *Anti-Inflammatory activity of yogurt mediated by the intestinal barrier* [ongoing 2021].

Richard Bruno, PhD (Ohio State University): *Alleviation of Metabolic Endotoxemia in adults with metabolic syndrome with milk fat globule membrane* [concluded 2021].

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 2021].

Wayne Campbell, PhD (Purdue University) & Whey Protein Research Consortium: *Whey protein effects on Type 2 Diabetes Mellitus risk factors: A systematic review of clinical trials* [commenced 2021].

In-Young Choi, PhD (University of Kansas): *Dairy intake and cerebral antioxidant defense in aging: A dietary intervention study* [ongoing 2021].

Sharon Donovan, PhD, RD (University of Illinois at Urbana - Champaign): *STRONG Kids 2: A cells-to-society approach to nutrition in early childhood* [ongoing 2021].

Darcy Freedman, PhD, MPH (Case Western University): *Modeling the future of food in your neighborhood study* [concluded 2021].

Foundation for the National Institutes of Health: *The performance of Novel Cardiac Biomarkers in the general U.S. population* [ongoing 2021].

Osama Hamdy, MD, PhD (Joslin Diabetes Center): *Dairy and Type 2 Diabetes: Research, Outreach, and Education* [ongoing 2021].

Thom Huppertz, PhD (Wageningen University): *Quantifying differences in bioavailability of different dietary proteins in older adults* [commenced 2021].

Andrea R. Josse, PhD (York University): *Assessing diet quality and the use of dairy foods in meals and snacks during and after a lifestyle modification intervention in overweight and obese adolescent girls* [concluded 2021].

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 2021].

Jana Kraft, PhD (University of Vermont): *Full-Fat Yogurt and Glucose Tolerance* [concluded 2021].

Kevin C. Maki, PhD (Midwest Biomedical Research, a division of MB Clinical Research & Consulting): *Scientific literature review on the naturally occurring hormone contents of foods* [ongoing 2021].

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* [commenced 2021].

Maria Marco, PhD (University of California-Davis): *Fermented dairy effects on markers of intestinal health: A literature review* [commenced 2021].

Nicola McKeown, PhD (Tufts University): *Building a database and evidence map on dairy, health, and environmental factors* [commenced 2021].

Daniel Moore, MD, PhD (University of Toronto): *Anabolic potential of dairy and dairy products for active children and adolescents* [ongoing 2021].

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 2021].

Paul Moughan, PhD, DSc, Hon DSc (Massey University): *Impact of protein quality in assessing dietary protein intakes and metrics of food sustainability and shifting diet recommendations* [concluded 2021].

Yanni Papanikolaou, PhD (Nutritional Strategies): *Dairy food consumption and association with mortality risk* [ongoing 2021]; *Animal protein intake and association with mortality risk* [ongoing 2021].

Stuart Phillips, PhD (McMaster University): *The mechanistic underpinning of protein quality and quantity in aging skeletal muscle: A high sensitivity Proteome profiling approach* [ongoing 2021].

Shivani Sahni, PhD (Harvard University, Hebrew Rehabilitation Center): *Dairy food intake, Vitamin D status and bone measures* [ongoing 2021].

Jeffery Schwimmer, MD (University of California, San Diego): *Whole dairy foods consumption*

*for children with NAFLD [commenced 2021].*

Marie-Pierre St-Onge, PhD (Columbia University): *The role of dairy products on sleep health: A narrative review [commenced 2021].*

Elena Volpi, MD, PhD (University of Texas Medical Branch at Galveston): *A Phase I 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 2021].*

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 [commenced 2021].*

## Approved Sustainability Competitive Research Activities, 2021

### Principal Investigator, Institution, Project Title, and Status

Brent Auvermann, PhD (Texas A&M AgriLife Research): *U.S. Dairy Net Zero Initiative: Improving Dairy On-Farm Sustainability through Improved Soil Health and Manure Management* [commenced 2021].

Joshua Boltz, PhD (Arizona State University): *Maximizing value from dairy-cow wastewater by intensifying anaerobic digestion* [commenced 2021].

Roger Cady, PhD: *Consumer questions on environmental impact of dairy farming and its measurement* [concluded 2021].

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* [commenced 2021].

Foundation for Food and Agriculture Research: *The Greener Cattle Initiative (GCI) Program* [commenced 2021].

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* [commenced 2021].

Quirine Ketterings, PhD (Cornell University): *U.S. Dairy Net Zero Initiative: Improving Dairy On-Farm Sustainability through Improved Soil Health and Manure Management* [commenced 2021].

Ermias Kребreab, PhD (University of California - Davis): *Quantitative assessment for feed additives enteric methane mitigation protocol* [ongoing 2021]. *Statistical analysis of dairy cow diet re-formulation to mitigate enteric methane* [commenced 2021].

Kim Stackhouse-Lawson, PhD (Colorado State University): *U.S. Dairy Industry inventory of sustainable practices* [commenced 2021].

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* [commenced 2021].

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* [commenced 2021].

Cristine Morgan, PhD (Soil Health Institute): *U.S. Dairy Net Zero Initiative: Improving Dairy On-Farm Sustainability through Improved Soil Health and Manure Management* [commenced 2021].

Keith Paustian, PhD (Colorado State University): *Modeling environmental impacts of synthetic*



*and dairy-manure based fertilizers in U.S. Dairy Farms [ongoing 2021].*

Kristan Reed, PhD (Cornell University): *The ruminant farm system model - dairy cow ration formulation and feed allocation modules [ongoing 2021].*

Daniel Sumner, PhD (University of California - Davis): *Economic, environmental and resource impacts of using by-products as ingredients in feed rations on U.S. Dairy Farms [commenced 2021].*

Greg Thoma, PhD (University of Arkansas): *Environmental Stewardship – Reporting Platform [ongoing 2021].*

Melissa Wilson, PhD (University of Minnesota): *Understanding the relationships between dairy manure and soil health to promote dairy's sustainability [concluded 2021].*

## Approved Competitive Research Projects, 2021

### Principal Investigator, Institution, Project Title, and Status

Alirez Abbaspourrad, PhD (Cornell University): *Chemoenzymatic Synthesis of some of the Human Milk Oligosaccharides (HMOs)* [concluded 2021]; *Novel approaches to encapsulate live and active cultures to extend their shelf life in low acid beverages and allow for non-refrigerated storage* [concluded 2021]; *Conversion of Lactose to Surfactants* [ongoing 2021]; *Designing new ion exchange resins targeting Lactoferrin recovery from sweet whey* [ongoing 2021]; *Improvement of Lactoferrin thermal stability and functionality by complex Coacervation and Microencapsulation methods* [commenced 2021]; *Isolation and encapsulation of Tryptophan to improve stability and reduce bitterness* [commenced 2021]; *Modifying butter spreadability using microbubbles generation and controlling fat crystallization* [commenced 2021].

Jennifer Acuff, PhD (University of Arkansas): *Determination of thermal inactivation kinetics of Salmonella and a surrogate in dairy powders* [ongoing 2021].

Samuel Alcaine, PhD (Cornell University): *Create nationwide food safety resources and provide support for Artisan/Farmstead dairy producers* [commenced 2021].

Jayendra K. Amamcharla, PhD (Kansas State University): *Development, characterization, and evaluation of modified milk protein concentrate with enhanced functional properties* [ongoing 2021]; *Tailoring protein interactions to influence functional properties of milk protein concentrate powders* [ongoing 2021]; *Development and validation of a simple and rapid water adsorption kinetics-based approach to measure solubility of dairy powders* [commenced 2021].

David J. Baumler, PhD (University of Minnesota): *Evaluation of intense pulsed light technologies for non-thermal processing to kill bacterial spores in dry milk powders* [concluded 2021].

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* [commenced 2021].

MaryAnne Drake, PhD (North Carolina State University): *Identification of consumer-centric messaging for these products* [concluded 2021]; *Southeast Dairy Center Application Laboratory Program* [ongoing 2021]; *Dairy Foods that are Calming/Immune boosting and identification of sources of undesirable flavors in aseptic milk* [ongoing 2021]; *Sugar reduction in school lunch chocolate milk* [ongoing 2021].

Kathleen Glass, PhD (University of Wisconsin-Madison): *Mapping the Development of D- and Z-Values for L. Monocytogenes and Escherichia Coli O157:H7 in cheese milk to reduce pathogen risks in cheese manufacture* [ongoing 2021].

Julie Goddard, PhD (Cornell University): *Mining value added, naturally derived, sweeteners from Dairy Co-Product Streams* [concluded 2021].

Selvarani Govindasamy-Lucey, PhD (University of Wisconsin-Madison): *Innovative powders*

*and cheesemaking processes for the overseas manufacture of recombined cheeses* [concluded 2021]; *Shelf-Stable snacks made by extrusion of natural cheeses* [ongoing 2021]; *Improving the functionality of frozen and superchilled shredded cheese during extended storage* [commenced 2021].

Federico Harte, PhD (Pennsylvania State University): *Effects of Calcium Chelation and alteration of serum composition on low temperature gelation of concentrated milk protein solutions* [ongoing 2021]; *Transforming High Pressure Jet (HPJ) processing into a commercially viable technology for the dairy industry* [ongoing 2021].

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 desserts* [ongoing 2021].

Helen Hopper, PhD (Pennsylvania State University): *Optimizing acceptability of sugar- and sodium-reduced chocolate milk via cross-modal interactions for two different consumer segments* [concluded 2021].

Andrew Hurley, PhD (Package InSight): *Gallon Milk Container – Phase 1 and 2* [ongoing 2021].

Tu-Anh Hyunh, PhD (University of Wisconsin-Madison): *Inhibition of Listeria Monocytogenes on Wooden Cheese Board Microbiota* [ongoing 2021].

Mark Johnson, PhD (University of Wisconsin-Madison): *Innovative Approaches to Increase the Shelf Life of String Cheese and Fresh Cheese Curds* [ongoing 2021].

Helen Joyner, PhD (University of Idaho): *Creating Cleaner Label Process Cheese Foods by Replacing Emulsifying Salts with Dairy Proteins* [ongoing 2021].

John A. Lucey, PhD (University of Wisconsin-Madison): *Wisconsin Center for Dairy Research Applications Laboratory* [ongoing 2021]; *Novel Ceramic Nanofiltration to improve coproduct quality and increase utilization* [ongoing 2021]; *Dairy Beverage Innovation* [commenced 2021]; *Controlling sedimentation during storage of high protein UHT beverages* [commenced 2021].

Curtis Lockett, PhD (University of Tennessee): *Preference mapping of the Chinese Cheese Market* [ongoing 2021].

Lux Research: *Identifying new research opportunities in dairy products* [concluded 2021].

Sergio Martinez-Monteagudo, PhD (South Dakota State University): *Effective Phospholipids extraction from dairy byproducts using switchable solvents* [ongoing 2021].

Susan Mayer (RTI Innovation Advisors): *International wellness benefits for dairy* [commenced 2021]; *Permeates – Market Opportunity Scouting* [commenced 2021].

Owen M. McDougal, PhD (Boise State University): *Cost effective dairy protein certification method* [ongoing 2021].

Lloyd Metzger, PhD (South Dakota State University): *Midwest Dairy Foods Applications Laboratories Program* [ongoing 2021]; *Manufacture of ingredients for use in clean label process cheese and recombined cheese in export markets* [ongoing 2021].

Carmen I. Moraru, PhD (Cornell University): *Cheese snack products: consumer trends and a novel manufacturing approach using vacuum microwave drying technology* [ongoing 2021].

Daniel Noguera, PhD (University of Wisconsin-Madison): *Microbial production of value-added constituents from lactose-rich dairy coproducts* [ongoing 2021].

NIZO Food Research B.V. (Netherlands): *Reduction of spore count in milk powder production - Phase II of development of an improved enumeration method for highly heat resistant spores* [ongoing 2021].

Reza Ovissipour, PhD (Virginia Polytechnic Institute and State University): *Reducing surface bacterial contamination with nanobubbles to enhance sanitation in dairy processing facilities* [commenced 2021].

Scott A. Rankin, PhD (University of Wisconsin-Madison): *Production of lactose-free dairy products by the Catalytic Hydrolysis of lactose in dairy streams with solid acid catalysts* [ongoing 2021].

Stephen Ritchie, PhD (University of Alabama): *Functionalized mesh materials for Listeria mitigation in milk and milk derived products processed in dairy plants* [concluded 2021].

Dojin Ryu, PhD (University of Idaho): *Enhancing the functionality of milk protein concentrate through direct steam injection cooking* [concluded 2021].

Tonya Schoenfuss, PhD (University of Minnesota): *Improvement of processing and functional properties of milk protein concentrate and micellar casein by pulsed electric field pre-treatment* [ongoing 2021].

Abigail Snyder, PhD (Cornell University): *Management of yeasts and molds through strain-level PCR-based typing schemes* [commenced 2021].

Caixia Wan, PhD (University of Missouri): *Process development for bioplastics production from lactose permeate* [commenced 2021].

Ruihong Zhang, PhD (University of California-Davis): *A novel integrated system for Polyhydroxyalkanoates (PHA) production from cheese production byproducts* [ongoing 2021].

Qixin Zhong, PhD (University of Tennessee): *Improving Functionalities of Spray-Dried Skim Milk Powder by Supplementing Soluble Caseins* [ongoing 2021].

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* [commenced 2021]; *Soft matter strategy for creating novel food texturizer: replacement of starch by using whey protein aggregates and the aggregates stabilized o/w Pickering emulsion droplets* [commenced 2021].