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Thinking Afresh About Processing: An Exploration of New Market Opportunities for Apple Products

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Thinking Afresh About Processing:

An Exploration of New Market Opportunities for Apple Products



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Thinking Afresh About Processing:

**An Exploration of New Market
Opportunities for Apple Products**

A Final Report on the Marketing Research
Conducted for the Project:

Development of an Environmentally Sound, More Profitable
System for Production and Marketing of Value Added
Processing Apple Products in the Northeastern United States

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June 2001

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Executive Summary

This report compiles the results of several studies focused on the markets for processed apple products. These studies were conducted as part of a multidisciplinary project examining the processing apple industry in the Northeastern United States. The purpose of the studies was to explore the potential for new products and new marketing strategies that might bring innovation to the apple industry. In the global and highly competitive markets in which apple products fight for shelf space and consumer attention, innovation is a critical strategy to ensure success. This report focuses on the collection of data and analysis of market information that might help identify opportunities for innovation.

The research techniques selected for this project are those appropriate to the early stages of the innovative process. Data on market demographics, purchasing behavior, and attitudes about existing products, and reactions to new product concepts were collected to provide an understanding of the market and potential opportunities. The research included four main components: (1) a national survey of consumers, (2) consumer focus groups, (3) focus groups and interviews with foodservice managers, and (4) a survey of school foodservice directors in New York State.

Prior to these studies, a survey of the region's apple processors was conducted to assess their perspective on important issues in the industry and to evaluate their outlook for the industry's future. Perhaps the most striking result of this survey was the predominance of a negative outlook for the industry's future. Of those respondents that answered a question about their outlook, one half said that their outlook for the industry's future was negative. Many processors were very concerned about the current condition of the industry. The oversupply of apples, low prices for growers, global competition, stagnant consumption, and consolidation in the retail sector were mentioned frequently as concerns in processor responses. Some of the brighter spots in the survey included: the region's strength in processing apple production, strong apple product brands, and the availability of a consistent supply of apples. Several processors noted the lack of investment in marketing or innovation as a critical weakness of the current industry.

Also prior to the marketing studies, a workshop on new product development was held with industry leaders. The purpose of the workshop was to stimulate idea generation on new apple products. At the workshop, the process of innovation and the factors critical to success were reviewed, including the common reasons for new product

failures and the four primary motivators for today's consumers: convenience, wellness, safety, and gratification. The workshop included an "ideation" session during which the group discussed unique apple product applications that might offer increased marketing opportunities. Over thirty potential apple product concepts were identified, and several of these ideas were evaluated further in the project's marketing research.

The national consumer survey was conducted to assist in identifying and exploring opportunities for apple products. The survey results show that Apple product purchases were greatest in households with children, which represent 40% of U.S. households. The use of apple juice was high among black respondents as well as among Hispanic respondents, although the reliability of data on Hispanic respondents is limited by the overlap of racial categories in this survey.

Of the six processed apple products included in this survey, only applesauce and apple juice had been purchased in the past three months by more than nine percent of the population. The limited number of broadly appealing apple products in the current market points to a need, and possibly an opportunity, for new product development. Additionally, the existing products are relatively mature and may leave room in the market for the entry of innovative, new apple products.

The survey tested consumer interest in several new product concepts that were generated in the new product development workshop. Several of the product concepts had special appeal to households with children and black and Hispanic respondents. These concepts may offer processors and marketers a starting point from which to begin examining profitable products for these markets.

The survey was followed by a qualitative study using focus groups to further explore consumer attitudes toward and uses of apple products. The focus groups were used to better define the competitive context for apple products and to identify potential marketing opportunities.

The focus group discussions revealed that fresh apples are perceived as an important, traditional fruit. The focus group participants said that they grew up with apples, and they want their children to grow up with apples. The most appealing features of apples are their crisp and crunchy texture, juiciness, sweet and refreshing taste, and nutritional value. Some processed products lack these characteristics, and therefore lose some of the appeal of fresh apples.

Consumers are aware that apples are "good for you" and good for their children. Focus group participants were not clear about the specific health benefits of fresh apples. Several knew that apples offered fiber

content and vitamins, but most were unable to specify which vitamins. Many participants also perceived apples as healthy simply because they are a fruit, and they said they were concerned about having enough fruits and vegetables in their diets.

Many focus group participants knew that apples are produced in Washington State and New York State. However, the origin of apples was not important to their purchasing choices. Almost all of the participants said that they do not check where an apple was grown when they buy it. Additional quantitative study of the importance of apple origin is needed to assess the value of competing promotional efforts by state apple associations to distinguish their apples based on the state of origin.

The focus group participants thought that products made from apples are nutritious only to the extent that they contain apples, but many felt that processing destroys an apple's unique texture. Some were concerned about eating more apple products because, in general, they perceive them to have added sugar, high levels of fat and calories, and added preservatives and chemicals. These traits do not apply to all apple products, but this perception indicates the strength of the image of apple products as desserts.

Some of these participants also felt that increasing their consumption of apple products was restricted by a narrow range of available apple products outside of the dessert category, as well as limited menu compatibility. These limitations apply to many fruits, not just apples. They also indicate a potential opportunity to increase consumption with new apple products and for consumer education about product uses and recipes.

The apple industry should take note of the concerns expressed by mothers in these focus groups. Many of them said that they believed, or were led to believe by their pediatricians, that apple juice, especially full strength apple juice, may not be good for their young children, gastrointestinally or dentally. Conflicting nutritional advice on this issue may be confusing for consumers and adverse to apple juice sales. These data may point to a market opportunity for a premium priced apple juice and spring water beverage for young children. Many focus group participants responded positively to this product concept, especially if available in single-serve packages.

Each of the focus groups included samplings of apple products. The participants responded enthusiastically to a sparkling hard cider and a spicy apple butter. Fresh apple slices and baked apple chips were generally evaluated positively as well. The tart flavor of the apple slice samples adversely affected the results because most participants said

that they prefer sweeter apples. However, their comments indicated a market opportunity for this product. While apple chips received many positive comments, the product's benefits seemed unclear, and the product faces very high levels of competition in the snack market. Finally, the groups generally reacted negatively to the apple wines sampled. Market conditions appear to offer a potential opportunity for good-tasting fruit based wines, but additional product development is needed to find a taste more appealing than the formulations tested.

The focus groups confirmed that apples are a highly regarded fruit, at a time of heightened consumer interest in increasing fruit consumption. Apple products are a broad category encompassing a range of products. Consumers may perceive that the benefits of fresh apples are diminished in processed apple products, but their apple content appears to be important in gaining their acceptance with consumers. These results point to a number of potential opportunities for expanding consumption of fresh apples and processed apple products. Perhaps the most important findings are the need for continuous consumer education on the unique benefits of apple consumption and the opportunity for the development of innovative products that appeal to consumer desires for wholesome and convenient snacks.

Next the research turned to the foodservice industry. Meals away from home account for a growing share of food spending by U.S. consumers. The foodservice market currently accounts for 47.5% of food spending by U.S. consumers. The actual volume of food and beverage products sold in this market is smaller because prices in foodservice reflect the increased value of food preparation and service. However, the foodservice share of the food market is still considerable, and growth in this market makes it an attractive opportunity for food and beverage manufacturers.

A substantial portion of this project's research resources were used to explore opportunities in this important market. This emphasis was also driven by the interest of apple industry leaders in this market and the relative lack of data currently available on marketing to foodservice operations. The project involved collecting both qualitative and quantitative data on institutional foodservice with an emphasis on schools (K-12), and family restaurants.

In the fall of 2000, two qualitative studies assessed the use of apple products in institutional foodservice operations and family restaurants as well as the attitudes toward apple products and opportunities for new apple products. Overall, the best opportunities to increase the use of processed apples products in foodservice are most

likely in the institutional foodservice segment. This segment uses large volumes of apples and apple products. The foodservice managers in this segment demonstrated a high level of interest in a fresh-cut apple product. This type of product could fill a need in the institutional foodservice segment. Chefs in family-style and fine restaurants have also shown an interest in this product, but not with the same level of enthusiasm observed among institutional foodservice managers. In the both studies, chefs and managers made specific suggestions for improving apple products and apple product marketing. In general, all types of chefs and foodservice managers appear to be seeking new ideas continuously, and effective promotion of new products depends in part on communicating useful, new ideas to them.

A second study of the foodservice channel focused on school foodservice, which has traditionally been a strong market for apple products. It has been estimate that 1.3 million gallons of apple juice and cider, the equivalent of about 365,000 bushels of apples, are consumed in New York State schools annually. Because of the importance of this market for apple products, we chose to focus a survey specifically on this segment of the foodservice market.

A mail survey was developed to examine the use and perceptions of apple product in New York State school foodservice programs. The survey sample was the membership of the New York State School Foodservice Association, a trade organization for the state's school foodservice directors. The survey response rate was 41%, with respondents from throughout New York State.

According to the survey results, the use of fruits and vegetables has increased in school foodservice over the past five years. The degree of increase was reported to be greatest for fresh produce, substantial for pre-cut produce, and only slight for processed products. Apple juice and applesauce continue to be important fruit products on school foodservice menus. School foodservice directors perceive them to be nutritious, inexpensive, and appealing to their customers. Respondents reported that their use of apple juice and sauce has increased over the past five years.

In a state where apple cider production is widespread and an important value-added sector of the apple industry, only 35% of schools have served cider in the past year. A few schools serve cider frequently throughout the year, but most only serve it infrequently and seasonally.

Pre-cut apples have been served in about one quarter of the state's school districts in the past year. Results concerning perceptions of this product indicate that at its current price, many foodservice directors do

not perceive the product to be a good value. In the minds of many school foodservice directors participating in this study, the nutrition and appeal offered by this product are not great enough to justify its premium price.

The use of regionally produced foods is somewhat important to school foodservice directors. In buying fresh apples, 86% of respondents reported that they purchase New York State apples at least sometimes. McIntosh, Empire, and Red and Golden Delicious were the most preferred apple varieties among these school foodservice directors.

The existing widespread use of apple juice and applesauce may limit further significant expansion of these products in many school districts. However, the use of cider could be greatly expanded in the state's school foodservice programs. New products may also help to expand the use of apple products in this sector. New apple products that can offer the nutrition and relatively low prices of existing apples products are likely to be perceived as a good value by school foodservice directors.

Other papers produced through this project provide information on markets for apple products and the regional processing apple industry. One paper summarizes the results of the survey of apple processors and discusses the industry's current strategic situation. The results of the processor survey are referred to in this report, but the paper provides a more in-depth analysis. Two additional papers provide detailed analyses of the markets for juice, cider, hard cider, and apple wine. These papers are available as staff papers from the Department of Applied Economic and Management, College of Agriculture and Life Sciences, Cornell University.

The strengths and weaknesses of the regional industry were discussed with industry leaders throughout this project. Potential competitive advantages for the industry include: profitable and innovative retailers in the region, the high quality of assets at the retail level, sizable resources available for production-related research, investment in research and new technology at both the processor and retail levels, and an increase in export activities by producers (primarily fresh apples). Factors that may be competitive disadvantages for the regional include: a lack of profitability at the grower level, less than optimal storage capacity and handling procedures, a lack of investment in new technology for apple storage, a limited number of new products at the producer and processor levels, and a poorly developed relationship between growers and the foodservice channel. Advantages could be leveraged to improve the competitive position of the industry. More attention to or investment in the perceived disadvantages might also result in improving the position of the regional industry.

The research conducted for this report has limitations that should be considered in interpreting the results. Sample sizes limited the collection of result on some important sub-segments of consumer markets (e.g., Asian Americans). Additionally, qualitative research was used extensively in this project. While qualitative research can provide excellent support for the phases of idea generation and early product development, the techniques do not permit reliable statistical analyses that can be projected to the population of consumers. Qualitative research should be followed by additional quantitative research specific the target market of interest. Other limitations relate to the nature of marketing research and the resource constraints of this project. The primary caution in this respect is that markets are continuously changing, and market information becomes outdated. Marketing research should ideally be regularly updated to assess market changes.

A primary role of this research was to provide a catalyst for innovation in the Northeastern apple processing market. The information collected and the opportunities identified alone will not improve markets for processing apples and apple products. However, the findings can serve to stimulate future innovation and strategy development to meet the challenges of a changing market. Perhaps the most important finding of this research was the broad evidence of the need for innovation in this industry. Building on this research requires that food processors and entrepreneurs engage in additional market research that is specifically tailored to their needs and also in the risk-taking and investment on which the future of the industry hinges.

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Many people contributed to the completion of this project, and their efforts should be acknowledged. An advisory council of representatives of the industry was formed to help guide and review the research. The members of the committee generously volunteered their time and provided valuable comments and information throughout all phases of the project. Their names are listed below.

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Section I

Introduction

This report compiles the results of several studies focused on the markets for processed apple products. This research was conducted as part of a multidisciplinary project concerning the processing apple industry in the Northeastern United States. The purpose of the studies discussed in this report was to explore the potential for new products and new marketing strategies that might bring innovation to the apple industry. In the global and highly competitive markets in which apple products struggle for shelf space and consumer attention, innovation has become a critical strategy to ensure a presence on the shelves tomorrow, let alone next year. Market research and information is another important resource in keeping pace with competitors and in supporting successful innovation efforts. This report focuses on a research effort that sought to collect and analyze market information that might identify opportunities for innovation in an industry that is thirsty for it.

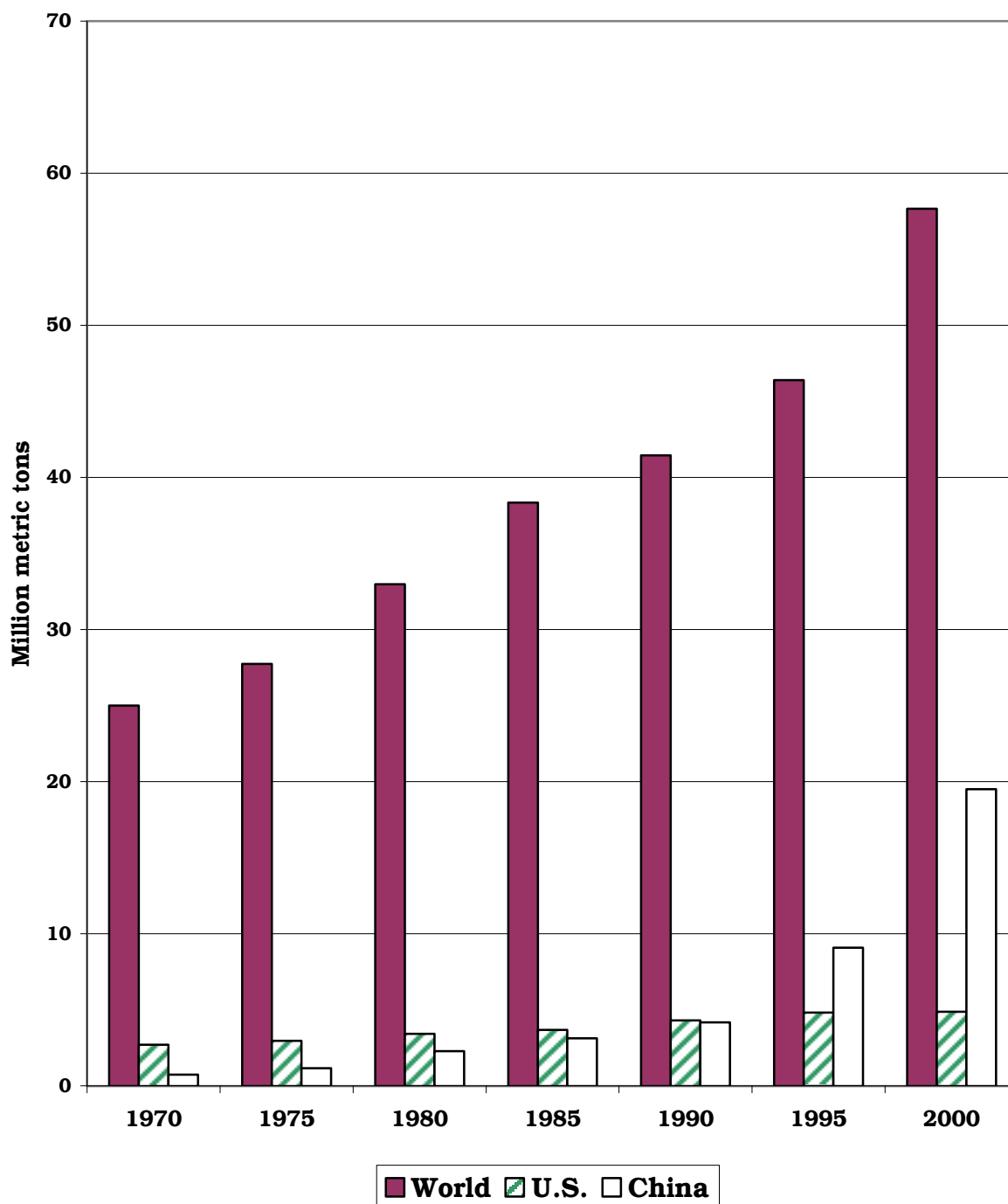
Apple Industry Situation

Economic stress is readily apparent in today's apple industry. Apple growers are concerned about their future in an industry characterized by low prices for apples, competition from low priced foreign apple juice concentrate, and the pressures of industry consolidation throughout the supply chain. The processing sector of the apple industry is particularly strained. Low apple prices and recent closures of Eastern U.S. apple processors have been cause for a negative outlook among many growers in the region. Apple products face increased competition from new products within their product categories. Among consumers, apple product consumption has generally been stagnant in recent years.

The current balance of supply and demand in the industry has created challenges for apple growers globally. The world apple supply has grown by 130% in the past 30 years, with recent rapid growth in Chinese apple production (see Figure I-1). The growth in apple production has outpaced global population growth. Over the past ten years, the global per capita apple supply has grown by 18% (UNFAO, 2001). With expectations for continued growth in the global supply, the industry faces substantial concern about future demand levels.

Currently, the average American annually consumes about 19 pounds of fresh apples and about 29 pounds of apples in processed apple products (USDA ERS, 2000). For comparison, Table I-1 shows the levels of fresh apple consumption in selected nations around the world.

**Figure I-1: World Apple Production:
1970-2000
Five Year Averages**



Source: UNFAO, 2001

Table I-1: Fresh Apple Consumption in Selected Nations: 1998

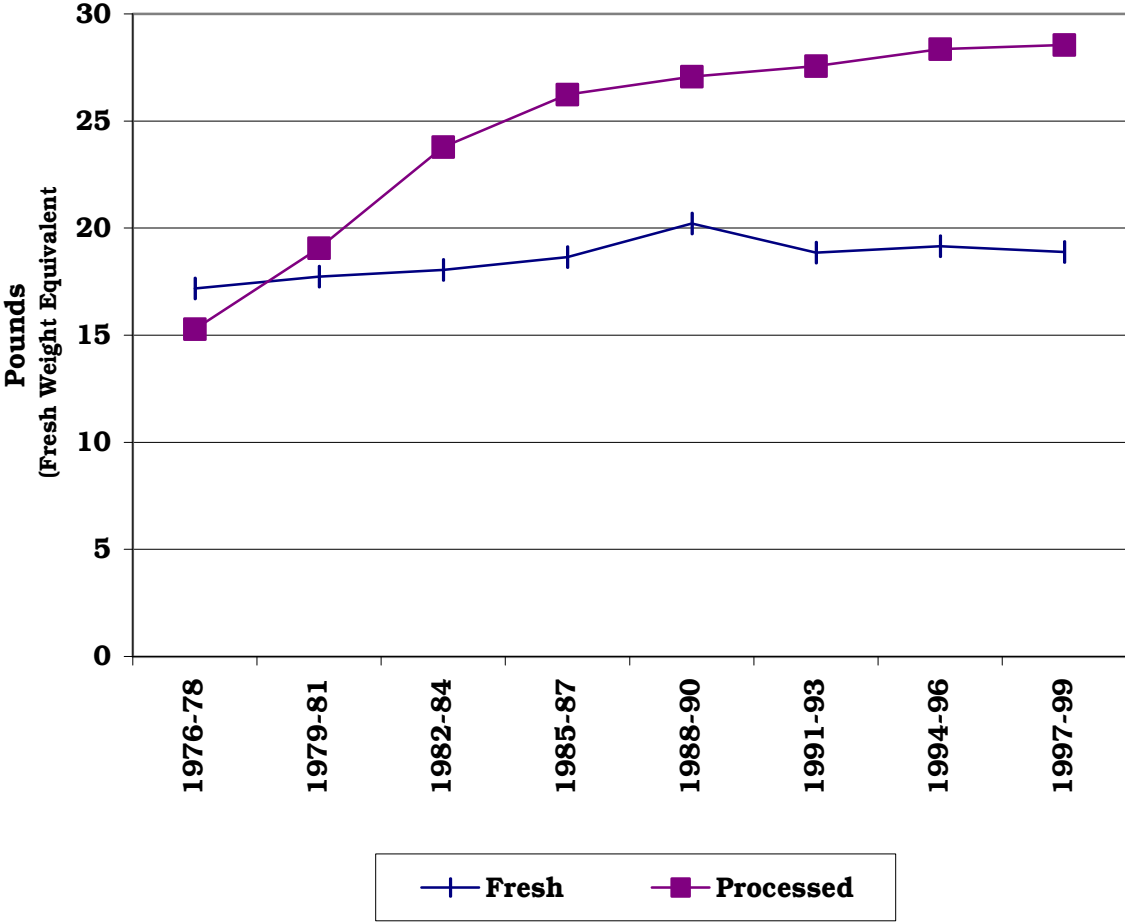
NATION	PER CAPITA CONSUMPTION (POUNDS)
U.S.	19.3
Canada	26.5
Mexico	9.6
China	32.2
Japan	12.3
Taiwan	16.5
Turkey	79.1
Argentina	22.1
Chile	14.5
Australia	18.7
New Zealand	67.6
EU	40.4
Poland	18.9
Russia	9.6

Source: Belrose, Inc., 2000

At the current level of consumption, the average American consumes only about one fresh apple per person each week. In 1999, the average American consumed about 278 pounds of fruit, both fresh and processed. By weight, 17% of all fruit that Americans consumed in 1999-2000 were apples and apple products. Among fruits, apples ranked 2nd behind oranges in 1999 in total U.S. per capita consumption (fresh and processed). Of the apples and oranges that Americans consume, a large portion of those fruits is processed. In 1999, 61% of the apples and 89% of the oranges consumed in the U.S. were in processed products (USDA ERS, 2000).

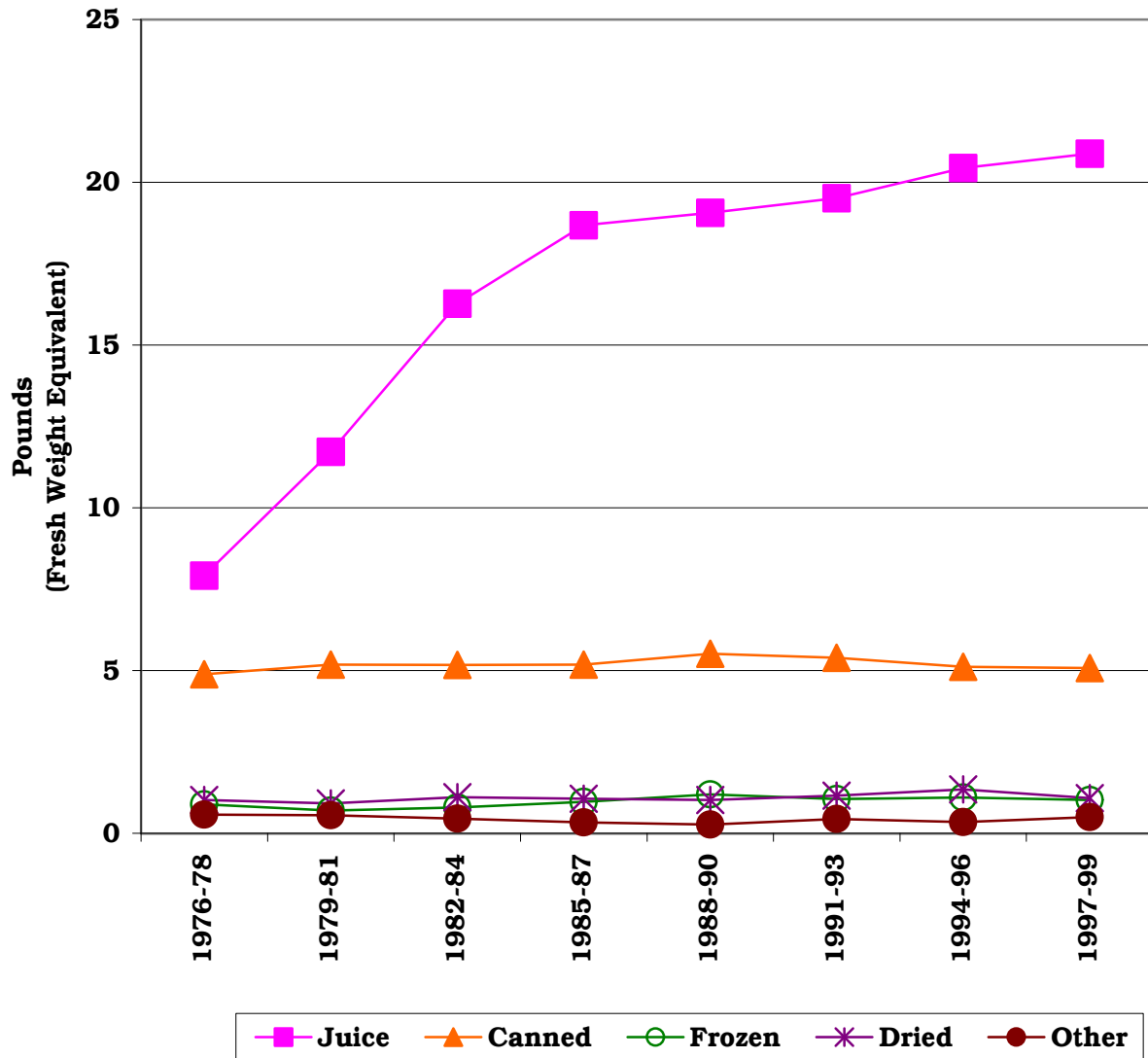
In the U.S., between 1976 and 1999, total per capita apple consumption rose by 46% to over 47 pounds per person annually (see Figure I-2). Most of this increase can be attributed to a 164% increase in the consumption of apple juice and cider during this period (see Figure I-3). Consumption of frozen apples increased over the same period by about 15%. Consumption of canned apples increased by 4%, and consumption of dried apples increased by 6%. Despite these increases over the 23-year period, all processed apple products except apple juice have experienced declines in per capita consumption in the past decade. Fresh apple consumption fluctuated over the 23-year period. It increased by 10% overall between 1976 and 1999, but per capita consumption of fresh apples has declined in the past decade.

**Figure I-2: U.S. Per Capita Apple Consumption:
1976-1999
Three Year Averages**



Source: USDA ERS, 2000

Figure I-3: U.S. Per Capita Apple Product Consumption: 1976-1999
Three Year Averages



Source: USDA ERS, 2000

Despite the increase in apple consumption over the two decades, U.S. consumption of apples and apple products has generally been flat in recent years. The market for processed apple products shows signs of stagnation. Products are generally mature, and consumers have well-established patterns of purchasing and using these products. Investment in consumer advertising is low, and product innovation is limited.

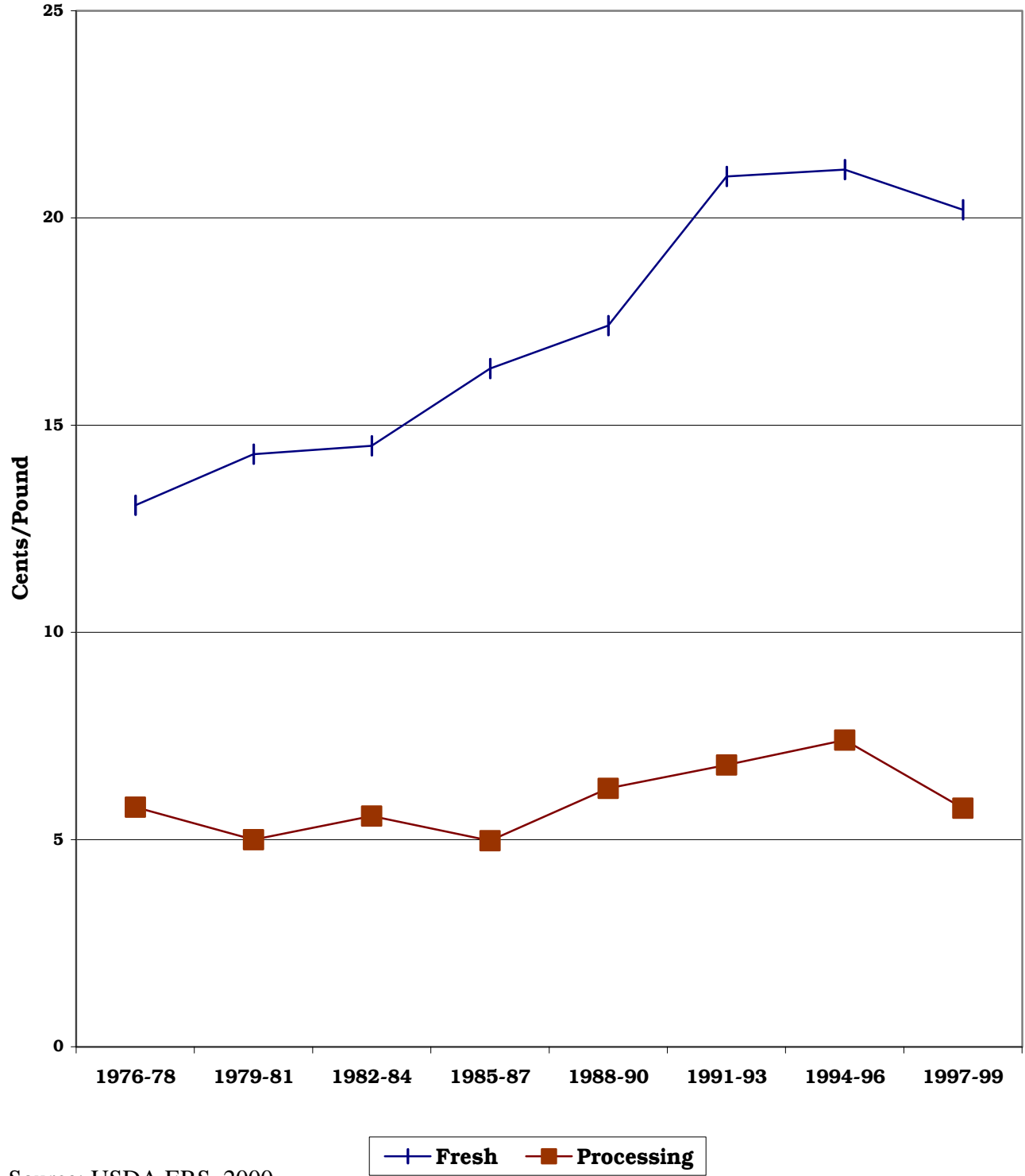
Globally, areas of the world with high per capita income are generally experiencing stagnant or declining per capita apple consumption. Apple consumption has increased, however, in countries where per capita income is increasing rapidly. For example, the fast-growing economies in Asia have had both increasing per capita income and increasing apple imports (Belrose, 1998). However, the Asian economic crisis of the late 1990's slowed expansion of apple consumption in this important region for the international apple trade.

Apple prices have been disappointing for growers in recent years. Between 1976 and 1999 in the U.S., average prices paid to growers for fresh apples increased, but prices for processing apples fluctuated with no change in the nominal price level (see Figure I-4). Prices for fresh and processing apples have not kept pace with inflation (see Table I-2).

Production yields have also increased over the same period, but have generally not increased enough to compensate for the decline in real prices. In 1982, the average U.S. apple yield was 19,400 pounds per acres. In 1999, the average yield was 22,900 pounds per acre, an 18% increase over 17 years (USDA NASS, 2000). During the same 17-year period, real prices for both fresh and processing apples declined. In the case of fresh apples, the increase in production yields may have been sufficient to offset the decrease in real prices. However, in the case of processing apples, the increase in yields could not compensate for the decrease in real prices, unless real production costs decreased substantially during the same period. In New York, cash expenses for apple farmers increased 4.6% annually during this time period, faster than the rate of inflation.

Simply put, data on supply and demand in the market for apples indicate a market that favors buyers. In today's market, retail food chains have particularly strong bargaining power as buyers of apples. Moreover, a recent trend of retail food store consolidation has strengthened the strategic position of these buyers. In consumer markets, apples and apple products face increased competition. Producers no longer only compete among themselves, but in food and

Figure I-4: U.S. Apple Prices: 1976-1999
Three Year Averages



Source: USDA ERS, 2000

beverage product categories that offer consumers a broadening array of choices.

Table I-2: Changes in U.S. Apple Prices Paid to Growers, Adjusted for Inflation: 1976-1999

	AVERAGE PRICE: 1976-1978	AVERAGE PRICE: 1997-1999	NOMINAL CHANGE IN AVERAGE PRICE	REAL CHANGE IN AVERAGE PRICE
Fresh (cents/pound)	13.07	20.20	+54.6%	-32.4%
Processing (cents/pound)	5.78	5.76	-0.3%	-56.4%
Canned (dollars/ton)	124	163	+31.5%	-42.5%
Frozen (dollars/ton)	136	163	+19.9%	-47.6%
Juice (dollars/ton)	104	83	-20.2%	-65.1%
Dried (dollars/ton)	130	102	-21.5%	-65.7%

Source: USDA ERS, 2000

Note: Inflation 1977-1998 by GDP Deflator: 128.6% (U.S. Budget Office, 2001)

Apple Processing Industry in the Northeastern U.S.

The scope for this research project was the apple processing industry in the Northeastern United States. For the marketing research component, we chose to define the regional processing industry to include the Eastern U.S. states where New York processing apples flow. In addition to New York, this region included processors in Massachusetts, Vermont, Pennsylvania, and Virginia. Some New York apples are sold to processors in other states. However, the bulk of the processing of New York apples is conducted in these five states. In fact, 82% of processing apples grown in New York State are processed in New York State. New York State apple processors report that 91% of the apples that they process were grown in New York State (NYASS, 2000).

Table I-3 shows the production of processing apples by state in the U.S. The table includes the top ten producers of processing apples, plus Massachusetts and Vermont. (Some unlisted states have higher levels of processing apple production than Massachusetts and Vermont, but these

two states are included here because they are in the study area.) The states in the study area (NY, PA, VA, MA, and VT) produce about 26% of the annual U.S. crop of processing apples. Among these states, New York is the largest producer of processing apples. New York has produced about 14.0 million bushels annually of processing apples in recent years, and it accounts for 13.4% of the U.S. processing apple crop. In the study area, New York accounts for slightly over half of processing apple production. In New York, the processing apple crop has had an average cash receipt value of \$46 million in the past five years.

Table I-3: Processing Apple Production in the U.S., Five Year Averages: 1995-1999

STATE	PROCESSING APPLE PRODUCTION (MILLION BUSHELS)	PRICE FOR PROCESSING APPLES (\$/TON)	VALUE OF PROCESSING APPLE CROP (MILLIONS)	PERCENT OF TOTAL APPLE PRODUCTION IN THE STATE	PERCENT OF TOTAL PROCESSING APPLE PRODUCTION IN U.S.
Washington	34.5	\$ 113	\$ 78.4	26.9%	33.1%
Michigan	16.4	149	49.1	67.3%	15.7%
New York	14.0	158	46.2	52.6%	13.4%
California	12.5	131	35.2	59.2%	12.0%
Pennsylvania	7.5	163	25.3	67.7%	7.2%
Virginia	4.9	157	15.9	64.7%	4.7%
North Carolina	3.0	151	9.3	62.8%	2.9%
West Virginia	2.4	158	7.7	77.3%	2.3%
Idaho	1.3	118	3.3	44.6%	1.2%
Oregon	1.1	124	2.9	30.3%	1.1%
Massachusetts	0.3	141	0.9	23.0%	0.3%
Vermont	0.3	130	0.7	24.2%	0.3%
Other States	6.0	-	20.1	-	5.8%
Total	104.2	135	295.0	40.9%	100%

Source: USDA NASS, 1997-2000

In the Northeast, apple processors provide a strategic outlet for apple growers. In New York, over half of the annual apple harvest is sold

in processing markets (see Table I-3). In Pennsylvania and Virginia, over 60% of the annual apple harvest is sold in processing markets. In the Northeast, apples are processed into apple juice, cider, sauce, pie slices, hard cider, dried apples, and several other apple products by processors in the region. Figure I-5 shows the utilization of the 1999 New York State apple crop among fresh and processing uses.

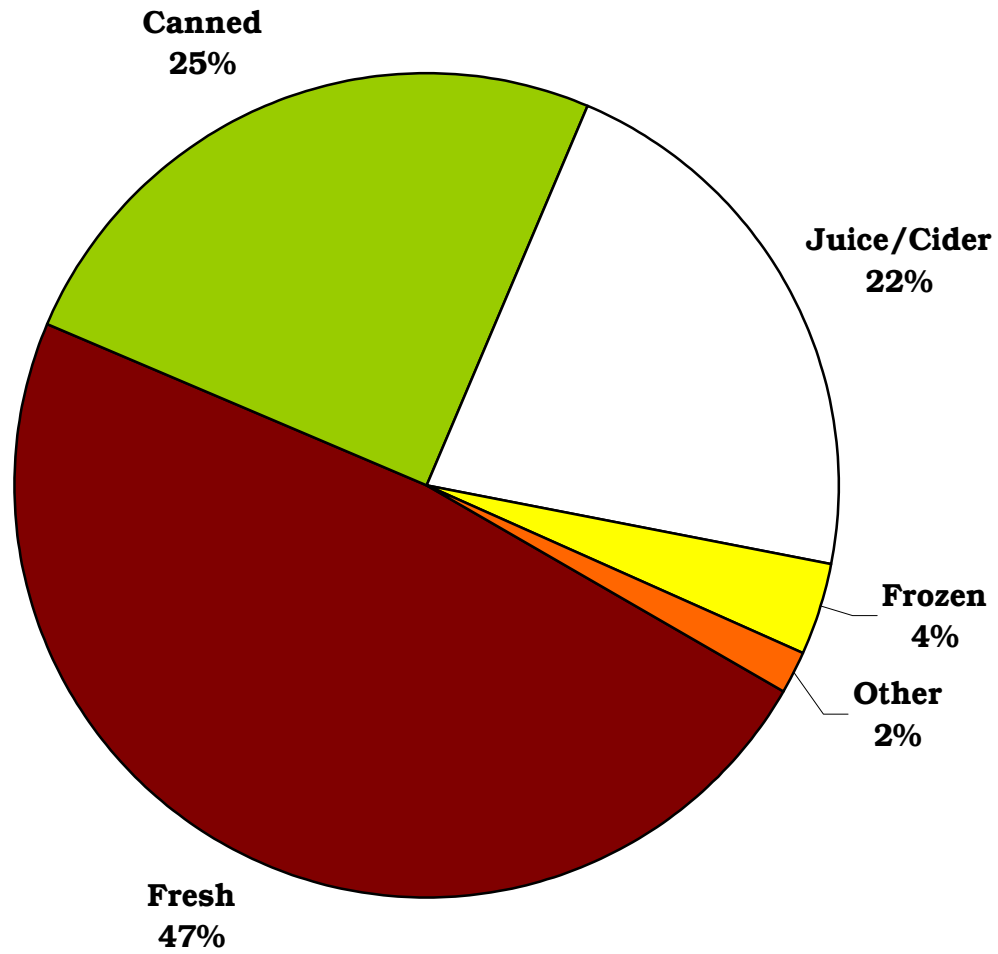
Between 1995 and 1999, New York State produced an average of 26.6 million bushels of apples annually. In the study area, apple production averaged 47.6 million bushels (USDA NASS, 1997-2000). New York is the second largest producer of apples in the U.S., behind Washington State. It is the fourth largest producer of processing apples in the U.S. Apple growers in the Northeast face all of the economic pressures of a changing market described above, and apple growers and processors in the region recognize the need to make strategic adaptations to enhance their competitiveness.

Northeastern Processor Perspective

As a preliminary step of the research described in this report, a survey of the region's apple processors was conducted to assess their perspective on important issues in the industry and to evaluate their outlook for the industry's future. (For a detailed report on the results of this survey, see the paper: *Industry Analysis: Apple Processors in the Northeastern U.S.*, Rowles, 2001). Perhaps the most striking result of this survey was the predominance of a negative outlook for the industry's future. Of those respondents that answered a question about their outlook, one half said that their outlook for the industry's future was negative. Many processors were very concerned about the current condition of the industry. The oversupply of apples, low prices for growers, global competition, stagnant consumption, and consolidation in the retail sector were mentioned frequently as concerns in processor responses.

Several respondents stated concerns about the relative costs of doing business in the Northeast, and specifically in New York State. They mentioned electric rates, property taxes, and other taxes as significantly higher in New York State. These comments echo similar concerns observed in a recent survey of food industry leaders from New York State (White et al., 1998). In this survey, respondents indicated that they felt they were being "nickel and dimed" by the costs of doing business in New York State, relative to other states. New York offers the advantage of proximity to markets, but on most other business factors

**Figure I-5: New York State Apple Crop
Utilization: 1999
Total Production: 30 Million Bushels**



Source: NYASS, 2000

(e.g., electric rates, worker's compensation), respondents did not feel that the state compares favorably.

As bright spots, in the survey of the region's apple processors, the respondents pointed to the region's strength in processing apple production, strong apple product brands, and the availability of a consistent supply of apples. Several processors noted the lack of investment in marketing or innovation as a critical weakness of the current industry. For example, some noted that the last major innovation in this industry was the single-serve applesauce cup over ten years ago. The need for innovation and marketing research is critical in an increasingly competitive market.

Innovation

As a marketing strategy, innovation is a technique to gain differential advantage over competitors. The advantage might come through new products, new packaging, new customer services, new methods of distribution, changes in supply chain management, or new ideas for cost cutting. Innovation increases competitive effectiveness and value to customers. A company that chooses continuous innovation as its primary marketing strategy is choosing the strategy of a good offense as the best defense. It chooses to take initiative and set the pace in the industry.

Many people think of innovation primarily in terms of new products. New product development is an important marketing innovation strategy, and it is the primary focus of this research. However, it is important to remember that innovation is not limited to new products. For example, innovation might come in the form of a new warranty for customers or the exploitation of a new distribution channel in which the product did previously exist. New product development is also not limited to the introduction of products that are completely new to the market. New product development includes a broad range of other activities, including product improvements, product line extensions, product re-positioning, new packaging design, and new flavors and colors. The spirit of innovation is adding value through change, in any number of forms.

Why is innovation important? Existing products are always vulnerable to changes in the market environment. Consumers' needs, tastes, and interests change. New technologies can make current products obsolete. Increased levels of competition, both foreign and domestic, can threaten an existing product's market position. The replacement of mature and declining products with new products is often

critical to maintaining and building sales. To adapt to changing market conditions, innovation is an important business strategy.

As noted by the processors, the apple industry has not been a hotbed of innovation over the past decade. Innovation is costly, and competitors in a mature market may choose not to risk the investment in what appears to be a declining product. Furthermore, current product sales may not be generating enough revenue to support research and development. Innovation requires marketers to take on new risks, costs, and uncertainty. However, those that do not innovate put themselves at risk in a fiercely competitive and changing market environment. In a mature market, successful innovation offers the ability enhance competitive advantage.

Successful innovators do not thrive on good ideas alone. Usually, they have at least three things working in their favor. First, success typically requires a commitment to research and development throughout the organization. Company leadership must demonstrate a commitment to innovation. Second, as mentioned above, the process of innovation is usually costly, and success in development and implementation of a new idea typically requires taking on significant financial risk. An innovator needs to have adequate financial resources to develop a new idea. Third, because innovation cannot be successful unless consumers are willing to pay for it, successful innovation goes hand in hand with marketing research. Companies that invest in gathering information in their target markets enhance their probability of success. These three factors are necessary, but not sufficient conditions for success. Most successful products have these factors working in their favor, but even with these factors, success is not guaranteed. Without them, however, the odds are stacked against new product success.

Role of this Research

This report attempts to address the third factor, marketing research. The marketing research reported here was designed to explore opportunities for new products and new marketing strategies in the processing apple industry. This research was conducted as a part of a larger research project at Cornell University. The project aims to provide direct assistance to the Northeastern processing apple sector in meeting its current challenges.

Three years ago, Cornell University received an anonymous grant to support a project focused on the Northeastern apple processing industry entitled “Development of an Environmentally Sound, More Profitable System for Production and Marketing of Value Added

Processing Apple Products in the Northeastern United States.” The purpose of this project was to assist growers and processors in the industry to face the challenges of the changing market and to take advantage of opportunities offered by new information and technologies related to production, pest control, product development, and marketing.

This project was multidisciplinary in its approach. The project included faculty and staff from five Cornell Departments in the College of Agriculture and Life Sciences: Entomology, Plant Pathology, Horticulture, Food Science, and Applied Economics and Management, as well as Cornell Cooperative Extension. By involving a broad range of experts, the project aimed to address a number of research questions for the industry. The goals of the project were:

- ◆ *To develop a more environmentally sound, cost-effective apple production and integrated pest management system,*
- ◆ *To stimulate growth of apple processing industry with new technologies that support commercial production of diversified, high value apple products, and*
- ◆ *To assess economic impacts, marketing potential, and consumer reactions to new products.*

Marketing research was just one component of this research, but it was an important step in addressing industry concerns. This report summarizes the marketing research studies conducted as a part of this project. An overview of the marketing research process in this project and the products of this research are provided in Appendix A. As described above, marketing research is an important factor in successful innovation, and many leaders in this industry feel that innovation is needed. This research is intended to serve as a seed for the development of new ideas.

The products of this research can be classified into two main categories: market information and concept development. This report includes results of both types. Data on market demographics, purchasing behavior, and attitudes about existing products were collected to provide an understanding of market dynamics. Other papers published through this research also provide this type of information. (See Appendix 1.) This report also includes data, both qualitative and quantitative, on new product concepts.

In planning and conducting this project, the researchers were challenged to define an appropriate and effective role for themselves in the field of applied marketing research. To ensure that their research

would complement, and not duplicate, other on-going market research in this sector, the researchers met with industry leaders and surveyed apple processors to assess the scope of on-going research and market data collection. Table I-4 summarizes the roles of the various parties that collect market information in the processing apple market, including university researchers, and Table I-5 provides an overview of the types of on-going research.

The audience, objectives, and products of university research differ from those of other entities, and these differences help to define the role of university research in this setting. To an extent, the role of the university researchers is similar to that of government agency research. Both serve public audiences, and both seek to improve the condition of the industry as a whole.

Most of this project’s research was focused on the preliminary stages of the new product and new marketing strategy development process. The selection of research techniques, with an emphasis on qualitative research, reflects this focus. The development of ready-for-market products and strategies is best completed by the private sector

Table I-4: Market Research Roles in the Processing Apple Industry

ENTITY	AUDIENCE	OBJECTIVE	PRODUCT
Individual Firm	Proprietary	Increase profits Increase market share	Internal reports
Trade Associations (e.g., Processing Apple Institute)	Members	Create benefits for members	Limited distribution
Producer Groups (e.g., U.S. Apple Association, New York Apple Association)	Producers	Expand use of raw product	Limited distribution
University	General public All levels of industry	Generate public good	Open reports
Government Agencies (e.g., USDA, NY Dept. of Agriculture & Markets)	Taxpayers	Economic development	Open reports and databases

Table I-5: Entities Conducting or Sponsoring Market Research related to the Northeastern Processing Apple Industry

ENTITY	RESEARCH ACTIVITY
U.S. Apple Association	<ul style="list-style-type: none"> ◆ Health benefits of apples and apple products ◆ Analysis of apple markets ◆ Apple storage and movement
NY Apple Association	<ul style="list-style-type: none"> ◆ Health benefits of apples and apple products ◆ NYS Apple exporting
Apple Processors (e.g., Mott's, Knouse, Agrilink)	<ul style="list-style-type: none"> ◆ Proprietary research and development
Processed Apple Institute	<ul style="list-style-type: none"> ◆ Health benefits of apples and apple products
USDA	<ul style="list-style-type: none"> ◆ Production ◆ Consumption ◆ Trade ◆ Prices
Cornell University (and other universities in the region)	<ul style="list-style-type: none"> ◆ Production ◆ Market opportunities ◆ Pest management ◆ Food science

parties, food processors and entrepreneurs, who are engaged in the marketing of the apple products. Research conducted at the university can be used to lay the foundation for private sector research, but it cannot replace the proprietary studies of those with a direct interest in the market.

With the assistance of industry leaders and the project's advisory council,¹ the researchers in this project further defined their role by developing the following criteria:

- ◆ To act as a catalyst for innovation in the market
- ◆ To stimulate interest in new product and new markets
- ◆ To not duplicate the efforts of others studying this market

¹ A group of eleven industry leaders from the Northeastern apple processing industry served as an advisory council to the marketing component of this research project. The council included representatives of apple growers, apple processors, an agricultural finance institution, a retail food chain, and industry trade associations. The advisory council met semi-annually and provided guidance on research plans and feedback on research results.

- ◆ To coordinate research to complement the efforts of others studying this market
- ◆ To provide forward-looking research, not snapshots of the market's history
- ◆ To analyze the competitiveness of the regional industry from a broad perspective

A clearly defined role for the project was important in the development of a research plan that would meet the needs of the industry and effectively leverage the resources of the university.

Organization of this Report

The sections of this report describe each of the major components of the marketing research conducted in this project:

- ◆ Section II summarizes the process of new product development, as discussed in a workshop held with industry leaders. This section reviews the process of new product development, discusses the leading motivators of today's consumers, and reports the results of a new product "ideation" session focused on the apple industry.
- ◆ Section III reaches from product ideas to consumer data by summarizing the results of a national consumer survey on apple product purchasing behavior and new apple product ideas. The survey collected responses on 15 new product ideas from the workshop discussed in Section II. The survey results also reflect demographic trends in consumer use of apple products.
- ◆ Section IV digs deeper into consumer behavior with regard to apple products as it reports the results of six focus groups held with apple product consumers. The purpose of the focus groups was to explore how consumers use various apple products and to examine their reactions to some prototype products.
- ◆ Section V focuses on an important and growing market channel in the food and beverage industry, the foodservice sector. This section summarizes the results of focus groups and interviews held with foodservice managers.
- ◆ Section VI continues with further discussion on the use of apple products in the foodservice sector, with a specific focus on school foodservice. This section reports the results of a survey of New York State school foodservice directors.

The report concludes with two final sections. Section VII provides an overview of the industry's competitive position. Section VIII discusses the limitations of this research, highlights the most promising opportunities uncovered in research, and makes suggestions for further research.

Section II

New Product Development

The creation of new products is an important innovation strategy, particularly in markets for mature products. New product development is a primary focus of this report. The marketing research conducted in this project was designed to support new product development. The techniques utilized are those commonly used in the early stages of new product development. This section discusses the process of new product development and examines some of the barriers to success. It concludes by summarizing the results of a new product development workshop that was held with regional processing apple industry leaders.

As mentioned in Section I, new product development encompasses a broad range of activities, and it should not be viewed as a narrow process that involves only the creation of products that are completely new to the world. New product development also includes activities such as improving existing products, adding new colors or flavors, changing product packaging, re-positioning a new product to a new market segment, and modifying a production process to create a similar product at a lower cost. Each of these actions requires a marketer to assume new risks, costs, and uncertainty. However, marketers of mature products that do not develop new products put themselves at risk in a competitive market environment. Marketing research is a tool that can be used to lessen some of the risk associated with new product development.

The Process of New Product Development

Products have a life cycle with distinct stages: introduction, growth, maturity, and decline. This view of marketing leads to the assumption that products have a limited life. For some products, the life cycle may be much longer than for others, and in the case of some unique products, the life cycle pattern may not apply.

At each stage throughout the product life cycle, a product demonstrates different patterns of sales and presents a different array of issues to the marketer. The product may also require different marketing, financial, and manufacturing strategies in each stage of the life cycle.

In today's economy, the product life cycle is becoming more compressed. As a result of increased competition and rapidly changing consumer interests, products move through the life cycle stages more quickly than in the past. As product life cycles have shortened, the rate

of new product introductions has accelerated. In 1997, over 25,000 new products were introduced, a more than fourfold increase since the early 1980's. In the late 1990's, new food product introductions appeared to be slowing slightly. The deceleration is due in part to consolidation in the food manufacturing industry. It can also be attributed to increased retailer controls over shelf space. For example, many retail chains charge manufacturers "failure fees" and "slotting allowances" for new products. These fees increase the costs of introducing new products. Despite the recent slowing, the pace of new product introduction remains fierce. Furthermore, variety remains a driving factor in the food industry, and consumers will continue to demand products offering new features, tastes, and experiences.

The new product development process can be broken into at least six stages: (1) opportunity identification, (2) concept screening, (3) marketing strategy development, (4) product development, (5) market testing, and (6) product introduction. In each stage, information about the market and consumers is needed to support critical decisions about the product. (For a more detailed discussion, see "Market Research for New Products", Rowles, September 2000.) The marketing research conducted for this project focuses on the first three stages of new product development. The new products workshop discussed later in this section is an example of opportunity identification, and the information collected in the research discussed in Sections III, IV, V, and VI support the stages of opportunity identification, concept screening, and marketing strategy development.

New product development is a challenging process for a business of any size. A widely cited statistic emphasizes this challenge: eight out of ten new products fail. This statistic stems from the numerous barriers to success that marketers of new products must overcome:

1. Costs: The costs of innovation can be substantial, and successful new products require significant levels of investment in product development and introduction. Some companies lack access to the capital or human resources needed to carry a new product through all the stages of development and into the market successfully.
2. Competition: As heightened competition has shortened product life cycles and product development timelines, a marketer must accelerate the product development process to beat competitors to market, and a product must also be successful quickly to provide a favorable return on investment. Many new products can be easily copied by competitors, and thus, the competition is likely to follow closely at one's heels.

3. Market Fragmentation: With increased competition, markets tend to fragment into smaller segments. Fragmentation may limit a marketer's ability to attract a wide audience with a single product or marketing strategy, and it increases the difficulty and costs of marketing. Fragmentation can also limit a product to a smaller market, thereby limiting the product's profit potential. However, market fragmentation may offer a competitive advantage to smaller firms that can focus on providing products that effectively serve narrow market segments.
4. Public concerns: The fourth barrier to success has two related elements: public concerns and government regulation. A company needs to address the concerns of the public and comply with government regulations on issues such as food safety and environmental concerns.

In addition to these barriers, a company also faces the challenge of entering markets already crowded with new products. In today's food industry, about 34 new products are introduced per day. With these substantial barriers to success, new product development is a risky endeavor, but it remains a fundamental strategy to adapt to a continuously changing market.

Why New Products Fail

In June 2000, a workshop on new product development was held as a part of this research project. The workshop was held at the New Products Showcase and Learning Center in Ithaca, NY². The Showcase has a collection of over 60,000 products collected over the past 30 years. The collection provides a rich environment for the process of new product development, and it is often used to stimulate idea generation in the new product development process.

The participants in this workshop included a group of 25 industry leaders and project researchers. Among this group were members of the project's advisory council, which includes apple growers, apple processors, trade association leaders, and representatives of the agricultural finance and retail food sectors. The workshop was a full-day session that included presentations by new product development consultants from the New Products Showcase in the morning and

² The New Products Showcase and Learning Center is now a part of New Product Works in Ann Arbor, Michigan. In the remainder of this section, many consumer trends and statistics are discussed. The source for this information was the presentations given at the new product development workshop by the New Products Showcase and Learning Center's consultants.

interactive brainstorming activities that made use of the showcase collection in the afternoon.

At the workshop, we considered the process of innovation and the factors critical to success in the new product development process. We discussed the following rules of thumb, which apply when developing new products:

- ◆ Strike a chord of familiarity. The core idea of the product should resonate with consumers.
- ◆ Keep it simple. Don't confuse the consumer with multiple ideas.
- ◆ Know your market. Research the relevant consumer trends, product histories, patents, and regulations.
- ◆ Make sure the product fits your strategy and image. Don't create a product just because you can.
- ◆ Study other product categories and markets. Most new product ideas come from other product categories.
- ◆ Fill current consumer needs.
- ◆ Learn from the past. Know the reasons for the failure of other products.

The New Products Showcase serves as a museum of product failures. At the workshop, we discussed many reasons why new products fail and observed real-life examples on the shelves of the collection. For example, some products fail because they have no chord of familiarity with consumers. New products that make giant conceptual leaps from products already in the market face an uphill battle in gaining consumer acceptance. Other reasons for product failure included:

- ◆ The product did not meet an existing consumer need.
- ◆ The product was promoted based on a technology change, not the benefits to consumers of that technology change.
- ◆ The company made an inadequate commitment to development of the product.
- ◆ The product was a poor extension of an existing brand.
- ◆ The company incorrectly assumed that consumers would know how to use the product.

However, the most valuable lesson that the collection offers is that the biggest reason for new product failure is a lack of innovation. Products that do not in some way provide a new benefit to the consumer are likely to fail.

In 1999, the Marketing Intelligence Service reported that only 7% of the new products introduced that year were innovative. The Marketing

Intelligence Service considers a product introduction to be innovative if it meets at least one of the following criteria:

- ◆ provides a consumer benefit with new packaging
- ◆ offers additional value with a new formulation
- ◆ positions a product to new users or usage
- ◆ introduces a new technology
- ◆ opens up a new market for a product
- ◆ uses a unique merchandising strategy

Exploring the shelves of the product showcase reveals that there is a relationship between innovation and success. However, the market is being inundated with new products, which, for the most part, are not innovative. Instead, most new products are “me-too” products that attempt to ride on the coattails of another product’s success or to catch the wave of a current fad or trend. Innovative new products do not mimic other products, but instead appeal directly to current consumer motivators.

How to Appeal to Today’s Consumer

A new product must motivate a consumer to take the risk of buying a new product. At the new product development workshop, the basic motivators for today’s consumers were reviewed. These motivators are the factors that are most likely to drive a consumer to consider trying a new product. In developing new products, the primary goal should be to appeal to the current prevailing consumer motivators.

Motivators differ from trends or fads. Motivators are longer lasting, and products that appeal to basic motivators are likely to have staying in the market. For example, a motivator for today’s consumer is the desire to save time. A related trend is hand-held food products, and a related fad is wrap style sandwiches. Appealing to the basic motivator for convenience with an innovative new product has a greater chance of market success than “me-too” products that follow a passing trend or fad. Of course, there are exceptions to this rule, but in general, real innovation is important to new product success.

At the workshop, we focused on four main consumer motivators in today’s market. These motivators are the basic reasons why consumers buy new products today. The four motivators are:

- ◆ Convenience
- ◆ Wellness
- ◆ Safety
- ◆ Gratification

Table II-1 briefly describes each motivator. These motivators are not tied to short-term trends, but underlie consumer preferences that have been driving consumer behavior for several years. Primary consumer motivators change over time, but more slowly than market trends or fads. The ability to successfully anticipate tomorrow's consumer motivators provides an obvious advantage in new product development. However, because of their staying power, appealing to current motivators is a powerful strategy. The following sections describe the four consumer motivators, as described by the new product development consultants at the New Products Showcase.

Table II-1: Consumer Motivators in Today's Market

<p><u>Convenience</u>: Consumers' need for more time drives the purchase of on-the-go foods, meal solutions, and functional packaging.</p>
<p><u>Wellness</u>: Fears about aging, declining health, and medical costs drive consumers to prevent and self-treat health problems with food and beverage products that offer health benefits.</p>
<p><u>Food quality and safety</u>: Consumers are drawn to products that offer quality assurance and reliable food safety.</p>
<p><u>Gratification</u>: Disposable income levels have been rising in the current strong economy, and consumers are seeking indulgence for themselves and their kids. They are drawn to buy gratifying products that taste good and offer the feeling, "I'm worth it."</p>

Convenience

As a motivator, convenience reflects a consumer desire to manufacture time. Convenience has long been a consumer motivator in the U.S. Sometimes when the economy slows, the consumer quest for convenience stalls, but it does not backslide. In slow economic periods, consumers generally have not turned to less convenient products, although they may temper their interest in more convenient products.

Convenient products can help consumers to do two things, or more, at once. For example, consumers are increasingly eating while they work or drive. At the workshop, the new product development consultants cited studies indicating that half of consumers eat while they

are working and that breakfast at the office has doubled in the past five years. An increasing number of meals are being eaten in the car. The following types of food products are popular with consumers for their convenience:

- ◆ On-the-go foods
- ◆ Meal solutions
- ◆ Heat-and-eat dishes
- ◆ Functional packages
- ◆ One-dish meals
- ◆ Products suitable as a snack or portable meal
- ◆ Products that require minimal preparation and minimal clean-up

As a part of the drive for convenience, snacking has become increasingly prevalent. For many American consumers, the difference between snacks and meals has blurred. They tend to eat at five or six separate occasions during the day. Snack foods are generally convenience foods. Traditionally, snack foods have been perceived as junk foods. However, sales of wholesome snacks grew in the 1990's.

Wellness

Consumer interest in wellness is driven by fears about aging, disease, and rising medical costs. Consumers are aware of shortcomings in their diets. They have concerns about high levels of cholesterol, lack of fiber, low vitamin intakes, high levels of fat and sugar, and the consumption of too many processed foods. They are less interested, however, in healthy eating, than in "problem-feeding," or addressing specific health concerns with specific products. They perceive foods as a tool for disease prevention and natural self-treatment for health conditions. They generally prefer natural foods, but fortified foods have also become more popular in recent years. In 1999, two-thirds of consumers tried to increase the amount of fortified foods that they consumed.

Wellness oriented food products include those which are:

- ◆ Protein rich
- ◆ Fortified with vitamins and minerals
- ◆ Suitable for restricted diets
- ◆ Naturally low-fat
- ◆ Naturally medicinal
- ◆ Targeted to a particular age group or sex for a specific health benefit
- ◆ Performance enhancers (energy, mood, sex, memory)

Consumers believe that fruit and vegetables are the most nutritious food. Many consumers buy particular fruits or vegetables with specific health benefits in mind. For example, many consumers buy bananas for their potassium content. Apples and apple products can provide health benefits, but consumers are not typically aware of what these benefits are. Information on the health benefits of apples needs to be more effectively communicated to consumers.

Food Safety

Food safety is an increasingly important motivator for consumers. Consumers are drawn to products that offer quality assurance and reliable food safety. This motivator is especially important to consumers who are the parents of young children. Food safety drives consumers to purchase products that are labeled as bacteria free, pesticide free, and preservative free. Many consumers feel more assured purchasing products that have some indication of food safety or quality standards or comply with a particular labeling regime that addresses their concerns. For example, kosher labels recently have been popular with consumer audiences broader than traditional religious adherents. Kosher labels are perceived to indicate quality and safety. Organic and eco-labels may assure consumers concerned about food production practices. Furthermore, when consumers seek quality assurance, well-established brand names can provide them with a sense of reliability and confidence in the product.

Interest in food safety draws consumers to products made from recognizable ingredients, also known as “pantry” ingredients, and away from products with long lists of unfamiliar ingredients. Pantry ingredients are perceived as more natural. The following food industry products and practices appeal to safety conscious consumers: vacuum packaging for self-serve items, freshness dating, tamper proof packaging, allergen-free foods, and produce washes.

Gratification

Gratification, the fourth consumer motivator, became important with consumers in the late 1990's as a result of strong economic conditions and rising disposable income levels. As a result of these economic trends, many consumers felt less price conscious and more free to seek indulgence. A quest for gratification draws consumers to products that offer the feeling, “I’m worth it.” This motivator relates not only to self-indulgence, but indulgence of one’s children. With the feeling that they have less time to spend with their children, many consumers feel guilt, which drives indulgence of their children.

The appeal of gratification has driven recent interest in a number of food products and practices, including:

- ◆ Ethnic foods, which offer variety
- ◆ Nostalgic foods, which fulfill the desire for the “good old days”
- ◆ Indulgent foods, which offer rich flavors
- ◆ Upscale packaging, which provides a feeling of indulgence
- ◆ See-through packaging, which connotes quality
- ◆ Fun packaging, which offers play value for children
- ◆ Samples and sharable foods, which offer the opportunity for measured or “rational” indulgence and variety

Products that are gratifying transform the ordinary into the extraordinary. By adding fun or indulgence, these products elevate the experience of eating and cooking to a special or rewarding activity.

Over time, the leading consumer motivators will be affected and changed by societal forces and events. For example, as economic conditions change, the drive for gratification may be tempered. For now, these four factors are the most dominant forces in consumer markets, and they drive consumer interests in new products.

While some products appeal to one motivator, products that appeal to multiple motivators have increased potential appeal. For example, single-serve soy beverages and fortified juices appeal to consumer desires for wellness and convenience. Apples and apple products have the potential to appeal to all four of these consumer motivators, and new product development in the apple industry should proceed with these motivators as a guide.

“Ideation” Session Results

After discussing the four consumer motivators and examining how appealing to these motivators has benefited various new products in the market, the workshop attendees turned their attention to identifying opportunities for the apple industry. Because other product categories are an excellent source of new product ideas, the Showcase’s collection of products to stimulate brainstorming about innovative apple products. This process, known as an “ideation” session, allowed participants to pool their knowledge about innovation and consumer behavior to generate a list of potential opportunities for new apple products and new marketing strategies. A facilitator from the New Products Showcase led the group through the “ideation” session.

In the first part of the session, the group listed the characteristics of apples that are most appealing. Many of these characteristics appeal directly to the four consumer motivators. These characteristics include:

- ◆ Low sodium
- ◆ Phytochemicals
- ◆ Fiber
- ◆ Year-round availability
- ◆ Easily digestible (good for children)
- ◆ Nostalgia
- ◆ Crunch (fun, flavor)
- ◆ Cheap (not necessarily positive when disposable incomes are high)
- ◆ Long-shelf life
- ◆ Good for infants
- ◆ Fun
- ◆ Good flavor

This discussion of the benefits of apples laid a foundation for idea generation about how to leverage apple characteristics in new product ideas.

Next, the facilitator led the group through successive rounds of discussion about product ideas. The participants took several breaks in the discussion to “shop” the Showcase’s collection for exemplary products and new ideas. The group “shopped” the Showcase’s collection for examples of products that appeal to the four consumer motivators. They examined how these products appealed to the four motivators. When “shopping” the collection, they did not limit themselves to apple products, but instead studied all types of food and beverage products. They analyzed the selected products in terms of consumer motivators and how to apply ideas borrowed from other categories to apple products.

Table II-2 lists the new apple product concepts that resulted from the “ideation” session. A part of the discussion was focused specifically on products for children, because of the traditional appeal of apple products for families with young children. The list reflects this focus with several products oriented toward children.

In the ideation session, the group also discussed how to make apple products more suitable as convenience foods. Many convenience food snacks are not wholesome and nutritious. Single-serve packages of applesauce, baked apples, apple slices, dried apples, apple chips, and apple fruit bars could be well suited to convenience-oriented, distribution channels. For example, convenience store chains are experimenting with various hand-held meal-replacement snacks, such as energy bars. Fruit products, aside from juices, are not well developed in this market. Hand-held and single-serve apple snack products have the potential to appeal to multiple consumer motivators, including convenience, wellness, and gratification.

Table II-2: Apple Product Concepts from the New Product Development Workshop at the New Products Showcase and Learning Center, June 2000

<p><u>Snacks</u></p> <ul style="list-style-type: none"> • Applesauce in squeeze-tube package for kids • Snack pack with pre-sliced apples, cheese, and crackers • Snack pack with pre-sliced apples and caramel dip • Snack pack with pre-sliced apples and peanut butter • Microwaveable apple and cheese turnover • Fortified apple bars • Apple and soy snack cups, fortified with vitamins
<p><u>Beverages</u></p> <ul style="list-style-type: none"> • Apple spritzer with sparkling cider and mineral water • Apple juice and spring water beverage for young children • Apple and green tea beverage • Fresh pressed chilled apple juice • Apple juice nectars • Ready-to-drink apple smoothies • Frozen apple smoothies • Fresh juice and cider blended with other fresh juices • Sparkling apple cider fortified with herbs • Hot apple cider in a self-heating can • Apple cider fortified with vitamins
<p><u>Sauces</u></p> <ul style="list-style-type: none"> • Stir-fry sauce with apple chunks and savory spices • Apple cider syrup for pancakes and desserts • Apple cider salad dressing • Pourable chunky apple topping • Fortified apple sauce (with antioxidant vitamins or herbs) • Fresh applesauce, refrigerated
<p><u>Desserts</u></p> <ul style="list-style-type: none"> • Fresh apple cobbler • Apple crisp baking kits • Apple cider ice cream • Fresh crepes with apple filling, refrigerated
<p><u>Quick Preparation Foods</u></p> <ul style="list-style-type: none"> • Pre-sliced apples for baking • Waldorf salad kit with pre-sliced apples • Ready-to-microwave baked apples
<p><u>Other Products</u></p> <ul style="list-style-type: none"> • Apple slaw • Apple baby-food in a self-heating can

During the last part of the “ideation” session, the group discussed unique apple product applications that might offer increased marketing opportunities. The idea was proposed that apple pomace, a processing waste product, may have potential for application in pet food products. Another suggestion was that apple by-products might make a competitive industrial base ingredient. It was noted that these applications would be low-value and could possibly detract from the perceived quality of apple products in general.

The ideation session resulted in a number of potentially useful product ideas. In the next section, the results of a survey that tested several of these ideas with consumers are reported. As listed here, these ideas are the threads of new concepts, and they point toward potential opportunities. Some may not be viable product concepts, in and of themselves, but ideas like these can help to initiate the process of innovation, within the context of the driving forces of today’s consumer markets.

Section III

Opportunity Identification in Consumer Markets

Developing new products, entering new markets, and adopting new marketing strategies can be risky and costly ventures. Experts estimate that eight out of ten new products fail in the market. When facing unfavorable odds, it pays to be informed and prepared to meet the challenges of the market. Marketing research is an essential tool to help boost the chances for success.

This section reports the results of a consumer survey conducted to assist in identifying and exploring opportunities for apple products. Surveys can be a good source of quantitative data about the market. In this case, the survey was designed with two goals:

1. To assess the incidence of apple product use in several apple product categories and along several demographic variables. These data were collected in order to better understand consumer behavior with respect to apple products and to identify any demographic trends in the use of apple products.
2. To evaluate consumer reactions to new product concepts developed in the workshop discussed in Section II. These data were collected in order to provide a measure of the viability of the new product concepts and to identify potential consumer segments to target.

Survey Methodology

This survey was administered by telephone to a sample of 1,011 women over 18 years of age in the continental United States. The telephone survey was conducted by Caravan Opinion Research Corporation of America during the period September 21-25, 2000. The survey sample was selected using random-digit-dialing, which provided a simple random sample of telephone households, including unlisted numbers. Sampling was stratified by geographic region. The survey results were weighted by four variables (age, sex, geographic region, and race) to ensure accurate representation of the U.S. population. Each respondent was assigned a weighting factor derived from the relationship between the proportion of the sample with her specific age, sex, geographic region, and race and the actual proportion of these characteristics in the population. Weightings were calculated by Caravan Opinion Research software.

The survey questions were developed to address the goals listed above. The survey questions are included in Appendix 2. The first

question in the survey asked each respondent to indicate which products on a list of apple products she had purchased in the past three months for her own consumption or for consumption by someone else in her household. The responses from this question are reported in terms of incidence. In marketing research, incidence is the frequency of something occurring in a population. It usually refers to people (e.g. the percentage of applesauce users in the population). In this data set, incidence specifically refers to the percentage of women that purchased a particular product in the past three months. The apple products included in this question were:

- ◆ Apple juice
- ◆ Apple sauce
- ◆ Apple butter
- ◆ Fresh apples for eating
- ◆ Fresh apples for baking or cooking
- ◆ Dried apples
- ◆ Apple chips
- ◆ Hard or alcoholic cider

Fresh apples were included to allow for exploration of potential relationships between fresh and processed apple product use.

The second question focused on the new product concepts previously developed. Each respondent was asked how interested she would be in each of the apple product concepts if it were available at what she thought was a fair price. The possible responses were: extremely interested, very interested, somewhat interested, not very interested, not at all interested, and don't know. Fifteen product concepts were presented to the respondents (see Table III-1). These concepts were selected from the list of ideas developed at the New Product Development workshop (see Table II-2). The nature of the telephone survey limited the number of product concepts that could be included, and it also required that the language of the concepts be structured as clearly and concisely as possible.

Data on the following demographic variable were collected for each respondent:

- ◆ Household income
- ◆ Metropolitan vs. non-metropolitan
- ◆ Children in household (total, under 12, 12 to 17)
- ◆ Education (highest level completed: high school incomplete, high school graduate, college incomplete, college graduate)
- ◆ Age
- ◆ Race
- ◆ Geographic Region (see Table III-2)

Survey results were statistically tested using t-tests and chi-squared tests to examine possible relationships among the demographic variables and responses to the survey questions. Significance testing at was conducted at the 95% confidence level.

Table III-1: New Apple Product Concepts Presented in the National Consumer Survey

- | |
|--|
| <ul style="list-style-type: none"> ◆ Applesauce In Squeeze-Tube Package For Kids ◆ Snack Pack with Pre-Sliced Apples and Caramel Dip ◆ Snack Pack with Pre-Sliced Apples, Cheese, and Crackers ◆ Apple Juice and Spring Water Beverage for Toddlers ◆ Waldorf Salad Kit with Pre-Sliced Apples ◆ Ready-to-Microwave Baked Apples ◆ Apple Juice Spritzer – Non-alcoholic ◆ Pre-Sliced Apples for Eating or Cooking ◆ Microwavable Apple Chunk-Cheddar Cheese Pocket ◆ Apple Cider Syrup for Pancakes and Desserts ◆ Snack Pack with Pre-Sliced Apples and Peanut Butter Dip ◆ Stir-fry Sauce with Apple Chunks and Savory Spices ◆ Pourable Chunky Apple Topping ◆ Apple Cider Salad Dressing ◆ Apple Slaw |
|--|

Table III-2: Geographic Regions for the National Consumer Survey

REGION	STATES
Northeast	Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont
North Central	Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, Wisconsin
South	Alabama, Arkansas, Delaware, Georgia, Florida, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, West Virginia (& Washington D.C.)
West	Arizona, California, Colorado, Idaho, Nevada, New Mexico, Oregon, Utah, Washington, Wyoming

A marketing research consultant, Donovan and Associates of New York City, assisted in this survey. Donovan and Associates was hired to facilitate the focus groups discussed in Section IV. This firm also assisted in identifying and contracting with Caravan Opinion Research Corporation, in designing the survey, and in interpreting the survey results.

Survey Results

The survey provided a rich data set with which to evaluate apple product use and consumer reactions to new product concepts. This section summarizes the results by focusing on those data that point to potential trends or opportunities in the market. Because of the large number of demographic variables included in the survey, the cross-tabulations available from the survey results are extensive. In this section, these data are summarized. The relationships between variable that were statistically significant at the 95% confidence level and interesting from a marketing perspective are presented and discussed in this section.

For some variables, the sample size was not adequate to evaluate a particular sub-group. For example, data on apple product use by Asian Americans were desired, but the sample size would need to be several times larger to distinguish any statistically significant differences for this group. The expense of such a large sample was prohibitive in this case. For the education level variable, the number of respondents that did not complete high school was too small to be analyzed as a separate group. Therefore, this group was combined with high school graduates for the purpose of these analyses. Also, while data was collected on Hispanic Americans, the category overlaps with other racial categories, and therefore, statistical analyses of this subgroup are not reliable.

Incidence of Fresh Apple and Apple Product Purchases

The purchase and use of apples and apple products is common in the U.S. population. In the survey, 91% of respondents reported having purchased fresh apples or apple products in the past three months. Purchases of apples and apple products were slightly more common in households with children (93%) than in the rest of the population. Figure III-1 charts the incidence of fresh apple and apple product consumers in the U.S., as reflected in this survey. Table III-3 lists the statistically significant survey results on the incidence of apple and apple product consumers. This table highlights the demographic variables for which the incidence of a particular sub-group was significantly different from the average for all respondents in the survey.

**Figure III-1: Incidence of Fresh Apple and Processed Apple Product Purchases in U.S.
(by adult women in past three months)**

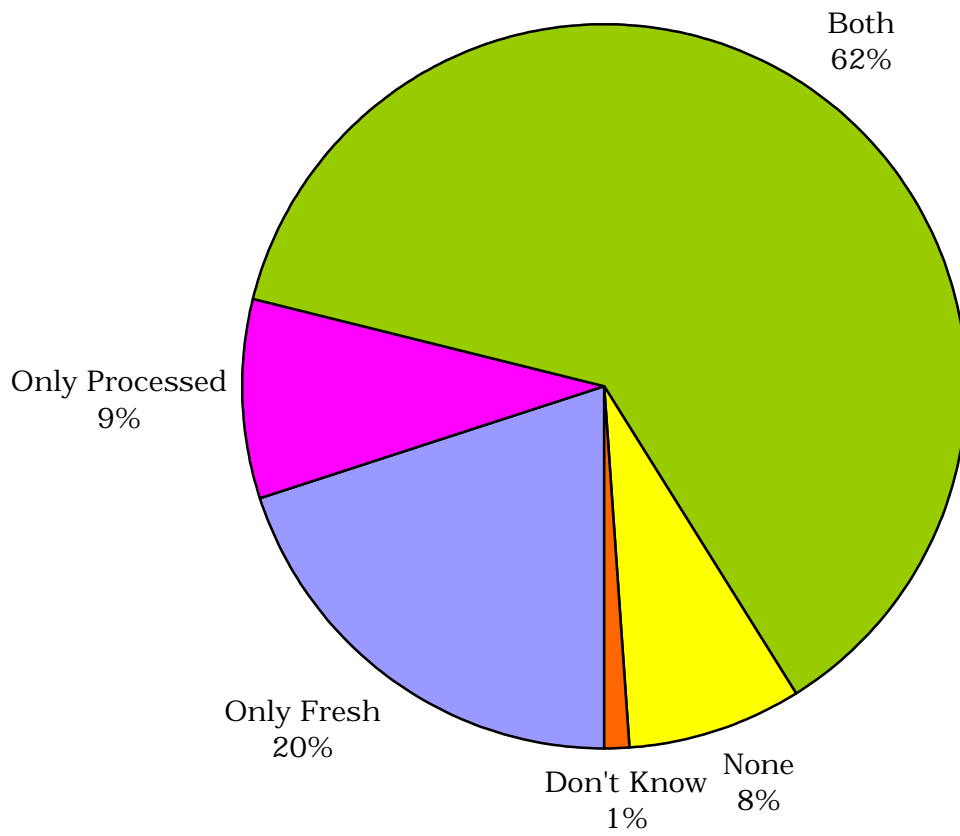


Table III-3: Statistically Significant Differences in the Survey Data Related to the Purchase of Apples and/or Apple Products

<u>VARIABLE</u>	<u>OBSERVED DIFFERENCES</u>	<u>SURVEY RESULTS</u> (Percent of women in this group that purchased fresh apples and/or apple products in the past three months)	
		GROUP	%
Age	* Women ages 18-24 are slightly less likely than other women to buy apples and/or apple products □ Other age groups were not statistically different from the average for all respondents.	Women 18-24 All respondents	87% 91%
Presence of Children in Household	* Households with children are slightly more likely than households without children to buy apples and/or apple products.	Children No children	93% 89%
Income	* Households with dual incomes are slightly more likely than other households to buy apples and/or apple products.	Dual income households All respondents	94% 91%
Education Level	* Women that attended college, but did not graduate, are slightly less likely than other women to buy apples and/or apple products. □ The averages for women at other education levels were not statistically different from the average for all respondents.	College incomplete All respondents	88% 91%

* Statistically significant at the 95% confidence level

The survey was designed to collect incidence data on consumers of fresh apples as well as processed apple products. Fresh apple data were collected to explore any relationships between fresh apple and processed apple product use. Also, because some consumers purchase fresh apples to make their own apple products (e.g., applesauce, pies), data on

the incidence of consumers who buy fresh apples for baking and cooking have an important relationship with data on the incidence of apple product consumers.

Figure III-2 summarizes the survey results on fresh apple purchases, and Table III-4 lists statistically significant survey results on the incidence of fresh apple consumers. Overall, fresh apples were purchased in the past three months by 82% of households. Significant demographic differences in fresh apple purchasing behavior were noted based on age, region, race, income, presence of children in the household, and education level. Most of these differences, while statistically significant, were only small variations from the incidence among all respondents.

The results indicate that 31% of respondents had purchased fresh apples for baking or cooking in the past three months. This group includes 30% of the total sample that purchased apples both for eating and for baking and cooking and 1% that purchased apples only for baking and cooking. Table III-5 lists variables for which statistically significant results were observed related to the purchase of fresh apples for baking and cooking: age, metropolitan/nonmetropolitan location, race, region, and income. Households with children were not observed to be more likely than other households to buy fresh apples for baking and cooking.

Overall, 51% of respondents had purchased apples only for eating and not for cooking or baking in the past three months. Table III-6 lists the variables for which statistically significant differences were observed related to the purchase of fresh apples only for eating. In general, young women were more likely and older women were less likely to buy apples only for eating, and not for baking or cooking. The highest income group and women from metropolitan areas were more likely to buy apples only for eating.

As shown in Figure III-1, 71% of respondents purchased one or more apple products in the past three months, including 62% that purchased both fresh apples and apple products and 9% that purchased only apple products. Figure III-3 summarizes the data on the incidence of apple product consumers by product type. Like the fresh apple data, the data for processed apple products was analyzed for sub-groups for which statistically significant differences in incidence were observed. Table III-7 lists the variables for which differences were observed in the data related to the purchase of any processed apple products. Tables III-8 through III-13 analyze the data for specific apple products.

**Figure III-2: Purchase and Use of Fresh Apples
in the U.S.
(by adult women in past three months)**

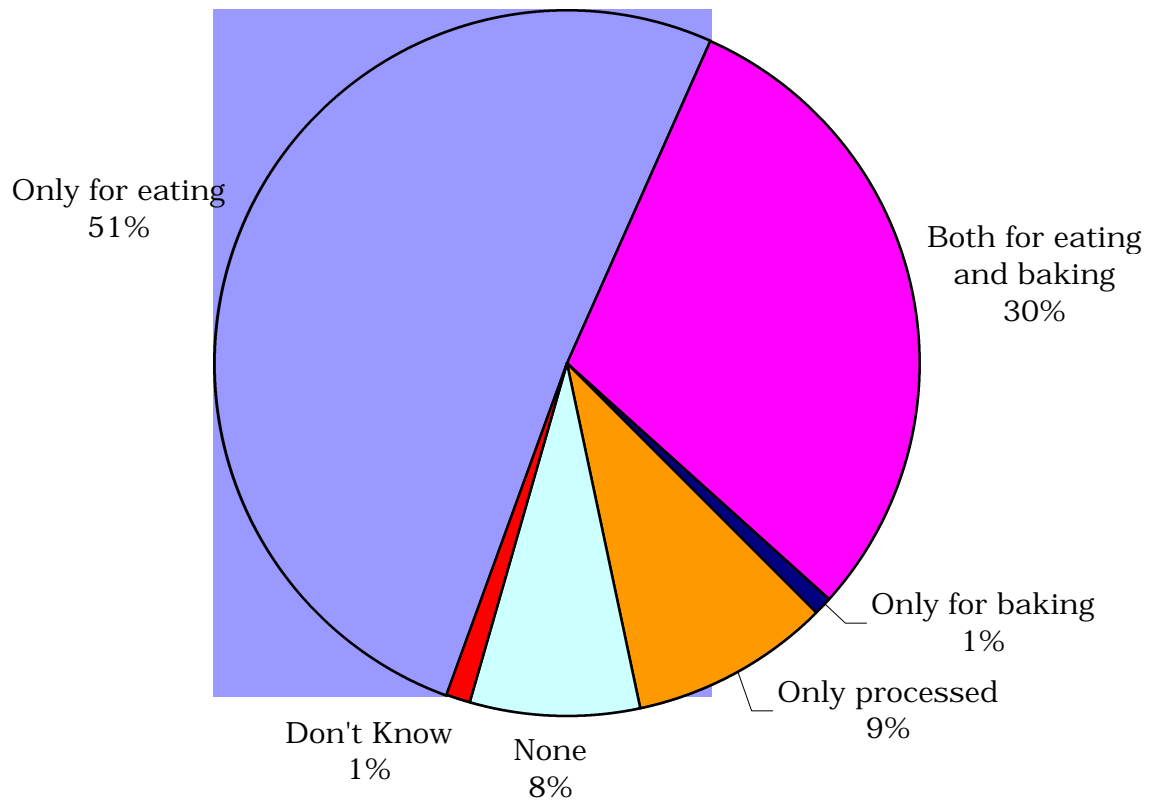


Figure III-3: Incidence of Apple Product Purchases
(by adult women in past three months)

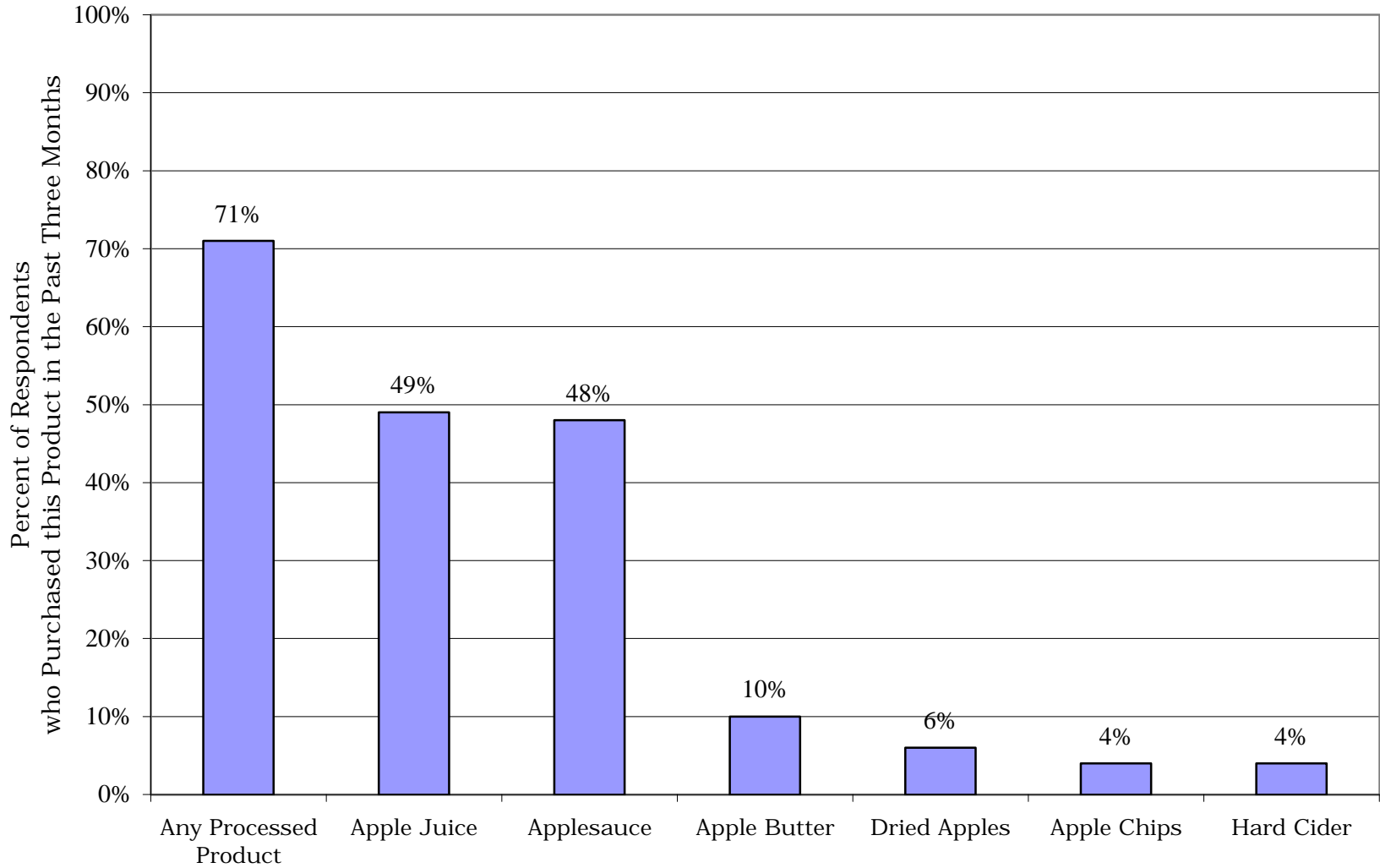


Table III-4: Statistically Significant Differences in the Survey Data Related to the Purchase of Fresh Apples

<u>VARIABLE</u>	<u>OBSERVED DIFFERENCES</u>	<u>SURVEY RESULTS</u> (Percent of women in this group that purchased fresh apples in the past three months)	
		GROUP	%
Age	<ul style="list-style-type: none"> * Women 18-24 are less likely than other women to buy fresh apples. * Women age 65 and older are more likely than other women to buy fresh apples. □ Other age groups were not statistically different from the average for all respondents. 	Women 18-24 Women 65+ All respondents	65% 89% 82%
Region	<ul style="list-style-type: none"> * Women in the North Central region are more likely than other women to buy fresh apples. □ Other regions were not statistically different from the average for all respondents. 	North Central All respondents	88% 82%
Race	<ul style="list-style-type: none"> * White women are more likely than black women to purchase fresh apples 	White Black	83% 72%
Income	<ul style="list-style-type: none"> * Women with household incomes less than \$25,000 are less likely than women with household incomes greater than \$25,000 to buy fresh apples. 	Under \$25,000 Over \$25,000	77% 85%
Presence of Children in Household	<ul style="list-style-type: none"> * Households with children are more likely than households without children to buy fresh apples. 	Households with children Households without children	86% 79%
Education Level	<ul style="list-style-type: none"> * Women who are college graduates are slightly more likely than other women to buy fresh apples. * Women who attended college, but did not graduate, are less likely than other women to buy fresh apples. □ The incidence of fresh apple consumers among women with a high school or lower level of education did not differ from the average for all respondents. 	College graduates College incomplete All respondents	86% 77% 82%

* Statistically significant at the 95% confidence level

Table III-5: Statistically Significant Differences in the Survey Data Related to the Purchase of Fresh Apples for Baking and Cooking

<u>VARIABLE</u>	<u>OBSERVED DIFFERENCES</u>	<u>SURVEY RESULTS</u> (Percent of women in this group that purchased fresh apples for baking or cooking in the past three months)	
		<u>GROUP</u>	<u>%</u>
Age	<ul style="list-style-type: none"> * Women age 65 and over are more likely than other women to buy fresh apples for baking or cooking * Women ages 18-44 are less likely than other women to buy fresh apples for baking or cooking □ Other age groups were not statistically different from the average for all respondents. 	Women 65+ Women 18-24 Women 25-34 Women 35-44 All respondents	48% 19% 23% 25% 31%
Location	<ul style="list-style-type: none"> * Women in nonmetropolitan areas are more likely than women in metropolitan areas to buy fresh apples for baking or cooking. 	Nonmetro Metro	41% 27%
Race	<ul style="list-style-type: none"> * White women are more likely than black women to purchase fresh apples for baking or cooking. 	White Black	32% 24%
Region	<ul style="list-style-type: none"> * Women in the West of the U.S. are less likely than other women to buy fresh apples for baking or cooking. □ Other regions were not statistically different from the average for all respondents. 	West All respondents	24% 31%
Income	<ul style="list-style-type: none"> * Women with household incomes between \$25,000 and \$35,000 are more to buy fresh apples for baking or cooking. □ Other income levels were not statistically different from the average for all respondents. 	\$25,000 to \$35,000 All respondents	39% 31%

* Statistically significant at the 95% confidence level

Table III-6: Statistically Significant Differences in the Survey Data Related to the Purchase of Fresh Apples Only for Eating (Not Baking or Cooking)

<u>VARIABLE</u>	<u>OBSERVED DIFFERENCES</u>	<u>SURVEY RESULTS</u> (Percent of women in this group that purchased fresh apples only for eating, not baking or cooking, in the past three months)	
		<u>GROUP</u>	<u>%</u>
Age	<ul style="list-style-type: none"> * Women ages 25-44 are more likely than other women to buy fresh apples only for eating. * Women age 65 and older are less likely than other women to buy fresh apples only for eating. □ Other age groups were not statistically different from the average for all respondents. 	Women 25-34 Women 35-44 Women 65+ All respondents	60% 62% 40% 51%
Location	<ul style="list-style-type: none"> * Women in nonmetropolitan areas are less likely than women in metropolitan areas to buy fresh apples only for eating 	Nonmetro Metro	44% 54%
Income	<ul style="list-style-type: none"> * Women with household incomes over \$50,000 were more likely than other women to buy fresh apples only for eating. □ Other income levels were not statistically different from the average for all respondents. 	\$50,000+ All respondents	60% 51%
Education Level	<ul style="list-style-type: none"> * Women who are college graduates are more likely than other women to buy fresh apples only for eating. □ Other education levels were not statistically different from the average for all respondents. 	College graduates All respondents	57% 51%

* Statistically significant at the 95% confidence level

Table III-7: Statistically Significant Differences in the Survey Data Related to the Purchase of Any Processed Apple Products

<u>VARIABLE</u>	<u>OBSERVED DIFFERENCES</u>	<u>SURVEY RESULTS</u> (Percent of women in this group that purchased any processed apple products in the past three months)	
		<u>GROUP</u>	<u>%</u>
Location	* Women in nonmetropolitan areas are less likely than women in metropolitan areas to buy processed apple products.	Nonmetro Metro	62% 74%
Race	* Black women are more likely than white women to purchase processed apple products.	Black White	79% 70%
Presence of Children in Household	* Households with children are more likely than households without children to buy processed apple products.	Households with children Households without children	79% 65%

* Statistically significant at the 95% confidence level

As shown in Figure III-3, 49% of respondents had purchased apple juice in the last three months. The purchase of apple juice appears vary with age, location, race, and the presence of children in the household. Table III-8 lists these observed differences. The largest observed differences were between white and black women and between households with children and households without children. No differences were observed based upon income or education levels.

Applesauce was purchased by 48% of respondents in the past three months (see Figure III-3). Table III-9 lists the variables for which statistically significant differences were observed in the incidence of applesauce consumers. Households with dual incomes were more likely to have purchased applesauce than single income households, but the purchase of applesauce did not vary significantly across income levels. Racial differences were not observed in the incidence of applesauce consumers.

Table III-8: Statistically Significant Differences in the Survey Data Related to the Purchase of Apple Juice

<u>VARIABLE</u>	<u>OBSERVED DIFFERENCES</u>	<u>SURVEY RESULTS</u> (Percent of women in this group that purchased apple juice in the past three months)	
		<u>GROUP</u>	<u>%</u>
Age	<ul style="list-style-type: none"> * Women ages 18-44 are more likely to buy apple juice than women 45 and older. * Women age 18-24 are more likely than other women to buy apple juice. □ Other age groups were not statistically different from the average for all respondents. 	Women 18-44 Women 45+ Women 18-24 All respondents	54% 43% 58% 49%
Location	<ul style="list-style-type: none"> * Women in metropolitan areas are more likely than women in nonmetropolitan areas to buy apple juice. 	Metro Nonmetro	52% 40%
Race	<ul style="list-style-type: none"> * Black women are more likely than white women to purchase apple juice. 	Black White	63% 46%
Presence of Children in Household	<ul style="list-style-type: none"> * Households with children are more likely than households without children to buy apple juice. * Households with children under 12 are more likely than households with children 12-17 to buy apple juice. 	Households with children Households without children Households with children under 12 Households with children 12 to 17	61% 40% 66% 57%

* Statistically significant at the 95% confidence level

**Table III-9: Statistically Significant Differences in the Survey Data
Related to the Purchase of Applesauce**

<u>VARIABLE</u>	<u>OBSERVED DIFFERENCES</u>	<u>SURVEY RESULTS</u> (Percent of women in this group that purchased applesauce in the past three months)	
		GROUP	%
Region	<ul style="list-style-type: none"> * Women in the Northeast of the U.S. are more likely than other women to buy applesauce. * Women in the North Central region of the U.S. are less likely than other women to buy applesauce. □ Other regions were not statistically different from the average for all respondents. 	Northeast North Central All respondents	55% 42% 48%
Location	<ul style="list-style-type: none"> * Women in metropolitan areas are more likely than women in nonmetropolitan areas to buy applesauce. 	Metro Nonmetro	50% 42%
Presence of Children in Household	<ul style="list-style-type: none"> * Households with children are more likely than those without children to buy applesauce. * Households with children under 12 are more likely than households with children 12-17 to buy applesauce. 	Households with children Households without children Households with children under 12 Households with children 12 to 17	56% 43% 61% 50%
Income	<ul style="list-style-type: none"> * Households with dual incomes are more likely than other households to buy applesauce. 	Dual income All respondents	55% 48%

* Statistically significant at the 95% confidence level

As shown in Figure III-3, survey responses indicate that ten percent of respondents had purchased apple butter in the past three months. Table III-10 lists the variables for which statistically significant differences were observed in the incidence of apple butter consumers. Apple butter purchases varied only with region and for one income group, and these differences were small.

Table III-10: Statistically Significant Differences in the Survey Data Related to the Purchase of Apple Butter

<u>VARIABLE</u>	<u>OBSERVED DIFFERENCES</u>	<u>SURVEY RESULTS</u> (Percent of women in this group that purchased apple butter in the past three months)	
		<u>GROUP</u>	<u>%</u>
Region	<ul style="list-style-type: none"> * Women in the South of the U.S. are more likely than other women to buy apple butter. * Women in the West of the U.S. are less likely than other women to buy apple butter. □ Other regions were not statistically different from the average for all respondents. 	South West All respondents	13% 6% 10%
Income	<ul style="list-style-type: none"> * Women with household incomes between \$25,000 and \$35,000 are more likely than other women to buy apple butter. □ Other income groups were not statistically different from the average for all respondents. 	\$25,000 to \$35,000 All respondents	15% 10%

* Statistically significant at the 95% confidence level

Dried apples had been purchased by six percent of respondents in the past three months (see Figure III-3). Table III-11 shows the single variable for which statistically significant differences were observed in the incidence of dried apple consumers. Only households with children ages 12 to 17 were statistically different from the incidence for all respondents. This group was slightly more likely to have purchased dried apples. Differences were not observed along the other demographic variables.

Table III-11: Statistically Significant Differences in the Survey Data Related to the Purchase of Dried Apples

<u>VARIABLE</u>	<u>OBSERVED DIFFERENCES</u>	<u>SURVEY RESULTS</u> (Percent of women in this group that purchased dried apples in the past three months)	
		<u>GROUP</u>	<u>%</u>
Presence of Children in Household	<ul style="list-style-type: none"> * Households with children ages 12-17 are more likely than other households to buy dried apples. □ Households with children under 12 and households with no children did not differ statistically from the average for all respondents. 	Households with children 12 to 17 All respondents	10% 6%

*Statistically significant at the 95% confidence level

Apple chips, a relatively new product in the market, had been purchased by four percent of respondents in the last three months (see Figure III-3). Table III-12 lists the variables for which statistically significant differences were observed in the incidence of apple chip consumers. While dual income households were slightly more likely to have purchased apple chips than other households were, incidence did not vary across income levels for this product.

The final apple product included in this portion of the survey was hard or alcoholic cider. As shown in Figure III-3, four percent of respondents had purchased hard cider in the past three months. Table III-13 lists the variables for which statistically significant differences were observed in the incidence of hard cider consumers.

Table III-12: Statistically Significant Differences in the Survey Data Related to the Purchase of Apple Chips

<u>VARIABLE</u>	<u>OBSERVED DIFFERENCES</u>	<u>SURVEY RESULTS</u> (Percent of women in this group that purchased apple chips in the past three months)	
		<u>GROUP</u>	<u>%</u>
Age	<ul style="list-style-type: none"> * Women ages 45-54 are more likely than other women to buy apple chips. □ Other age groups were not statistically different from the average for all respondents. 	Women 45-54 All respondents	7% 4%
Income	<ul style="list-style-type: none"> * Households with dual incomes are more likely than other households to buy apple chips. 	Dual income All respondents	6% 4%

*Statistically significant at the 95% confidence level

In the U.S., hard cider has generally been targeted toward consumers in their early twenties, and this data reflects strength in that market relative to other age groups. However, the product has also been targeted more toward male consumers, and because this survey sampled only women consumers, the data may not accurately or completely reflect the demographics of this market. The reason for the statistically significant difference in purchases of this product by households with children ages 12 to 17 is unclear.

The data can also be analyzed for which consumers purchase only fresh apples and no apple products and which consumers purchase only processed apple products and no fresh apples. Twenty percent of the respondents had purchased only fresh apples and no processed apple products in the past three months. Nine percent had purchased only processed apple products and no fresh apples in the past three months. Tables III-14 and III-15 analyze these data for groups statistically different from the incidence levels for all respondents.

**Table III-13: Statistically Significant Differences in the Survey Data
Related to the Purchase of Hard Cider**

<u>VARIABLE</u>	<u>OBSERVED DIFFERENCES</u>	<u>SURVEY RESULTS</u> (Percent of women in this group that purchased hard cider in the past three months)	
		<u>GROUP</u>	<u>%</u>
Age	<ul style="list-style-type: none"> * Women ages 18-24 are more likely than other women to buy hard cider. * Women age 65 and older are less likely than other women to buy hard cider. □ Other age groups were not statistically different from the average for all respondents. 	Women 18-24 Women 65+ All respondents	10% 2% 4%
Income	<ul style="list-style-type: none"> * Women with household incomes between \$25,000 and \$35,000 are more likely than other women to buy hard cider. □ Other income groups were not statistically different from the average for all respondents. 	\$25,000 to \$35,000 All respondents	10% 4%
Presence of Children in Household	<ul style="list-style-type: none"> * Households with children ages 12-17 are more likely than other households to buy hard cider. □ Households with children under 12 and households with no children did not differ statistically from the average for all respondents. 	Households with children 12 to 17 All respondents	7% 4%

*Statistically significant at the 95% confidence level

Table III-14: Statistically Significant Differences in the Survey Data for Respondents who Purchase Fresh Apples but No Processed Apple Products

<u>VARIABLE</u>	<u>OBSERVED DIFFERENCES</u>	<u>SURVEY RESULTS</u> (Percent of women in this group that purchased fresh apples but not processed apple product in the past three months)	
		<u>GROUP</u>	<u>%</u>
Age	* Women age 65 and older are more likely than other women to buy only fresh apples and no processed apple products. □ Other age groups were not statistically different from the average for all respondents.	Women 65+ All respondents	26% 20%
Location	* Women in nonmetropolitan areas are more likely than women in metropolitan areas to buy only fresh apples and no processed apple products.	Nonmetro Metro	28% 17%
Race	* White women are more likely than black women to buy only fresh apples and no processed apple products.	White Black	22% 9%
Presence of Children in Household	* Households without children are more likely than those with children to buy only fresh apples and no processed apple products.	Households without children Households with children	24% 15%
Education Level	* Women that attended college, but did not graduate, are less likely than other women to buy only fresh apples and no processed apple products. □ The averages for women at other education levels were not statistically different from the average for all respondents.	College incomplete All respondents	14% 20%

*Statistically significant at the 95% confidence level

Table III-15: Statistically Significant Differences in the Survey Data for Respondents who Purchased Processed Apple Products but No Fresh Apples

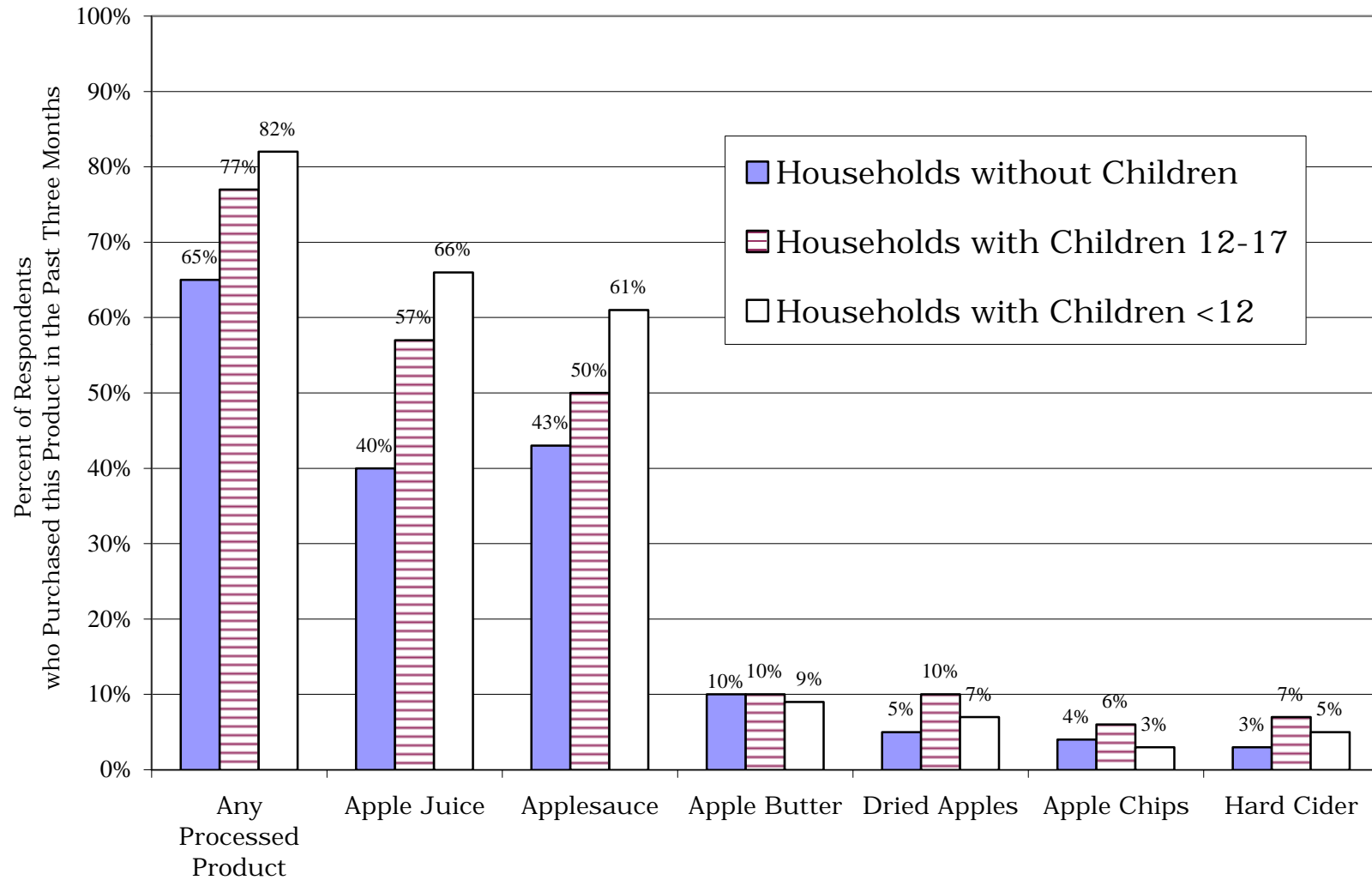
<u>VARIABLE</u>	<u>OBSERVED DIFFERENCES</u>	<u>SURVEY RESULTS</u> (Percent of women in this group that purchased only processed apple products and no fresh apples in the past three months)	
		<u>GROUP</u>	<u>%</u>
Age	<ul style="list-style-type: none"> * Women age 18-24 are more likely than other women to buy only processed apple products and no fresh apples. * Women ages 65 and older are less likely than other women to buy only processed apple products and no fresh apples. □ Other age groups were not statistically different from the average for all respondents. 	Women 18-24 Women 65+ All respondents	20% 4% 9%
Region	<ul style="list-style-type: none"> * Women from the South of the U.S. are more likely than other women to buy only processed apple products and no fresh apples. * Women from the North Central region of the U.S. are less likely than other women to buy only processed apple products and no fresh apples. □ Other regions were not statistically different from the average for all respondents. 	South North Central All respondents	12% 5% 9%
Location	<ul style="list-style-type: none"> * Women in metropolitan areas are more likely than women in nonmetropolitan areas to buy only processed apple products and no fresh apples. 	Metro Nonmetro	10% 5%
Race	<ul style="list-style-type: none"> * Black women are more likely than white women to buy only processed apple products and no fresh apples. 	Black White	16% 8%
Presence of Children in Household	<ul style="list-style-type: none"> * Households with children ages 12-17 are less likely than other households to buy only processed apple products and no fresh apples. 	Households with children 12 to 17 All respondents	6% 9%

*Statistically significant at the 95% confidence level

Overall, the most important factor driving incidence for processed apple products appears to be the presence of children in a household, especially children under 12. As illustrated in Figure III-4, this factor is significant in the incidence of apple juice and applesauce, but not the incidence of other processed apple products. Location in a metropolitan area, as opposed to a nonmetropolitan area, also appears to drive incidence for apple juice and applesauce, but not for other apple products (see Figure III-5). Some products, such as apple juice and hard cider, have decreased levels of incidence in older age groups. Other products do not vary significantly with age (see Figure III-6). Most products also do not vary significantly with income levels (see Figure III-7). Although the chart shows a general increase through the middle income levels and a decrease in higher income levels, for most products, these differences among income levels are not statistically significant. Region of the U.S. and education level appear to drive some variation in incidence for apple products (see Figures III-8 and III-9), but again, most of the differences that appear in these charts are not statistically significant.

Finally, race is a factor in the incidence of apple juice. As seen in Table III-8, black women are more likely than white women are to purchase apple juice. Figure III-10 charts the incidence of apple products by race. This chart includes data for Hispanic respondents. All respondents were asked, “Are you, or is anyone else in your household, Hispanic, that is, from a Spanish-speaking country, or the descendent of someone from a Spanish-speaking country?” Approximately 7% of respondents identified themselves as Hispanic. However, in this data set, Hispanic respondents are also included among the Black and White respondent categories. This overlap of categories prevented comprehensive statistical analysis of the data collected on Hispanic respondents. Their responses shown in Figure III-10 indicate that Hispanic respondents, like black respondents, appear more likely than white respondents to have purchased apple juice in the past three months. Hispanic respondents also appear to have a greater interest in apple chips than black and white respondents. Again, however, this data must be considered with caution.

**Figure III-4: Incidence of Apple Product Purchases:
Households with Children**



**Figure III-5: Incidence of Apple Product Purchases:
Metropolitan vs. Nonmetropolitan Location**

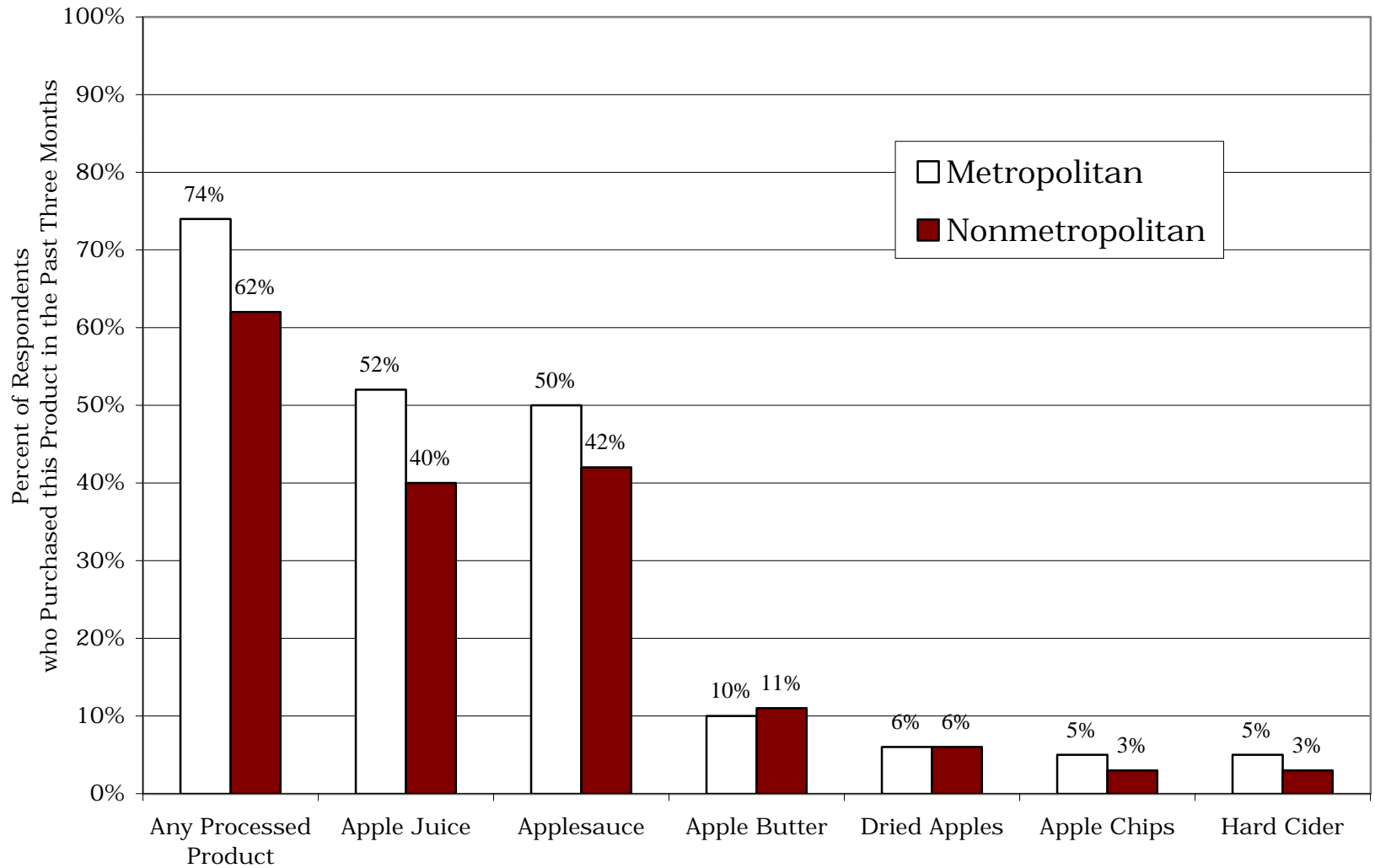


Figure III-6: Incidence of Apple Product Purchases by Age

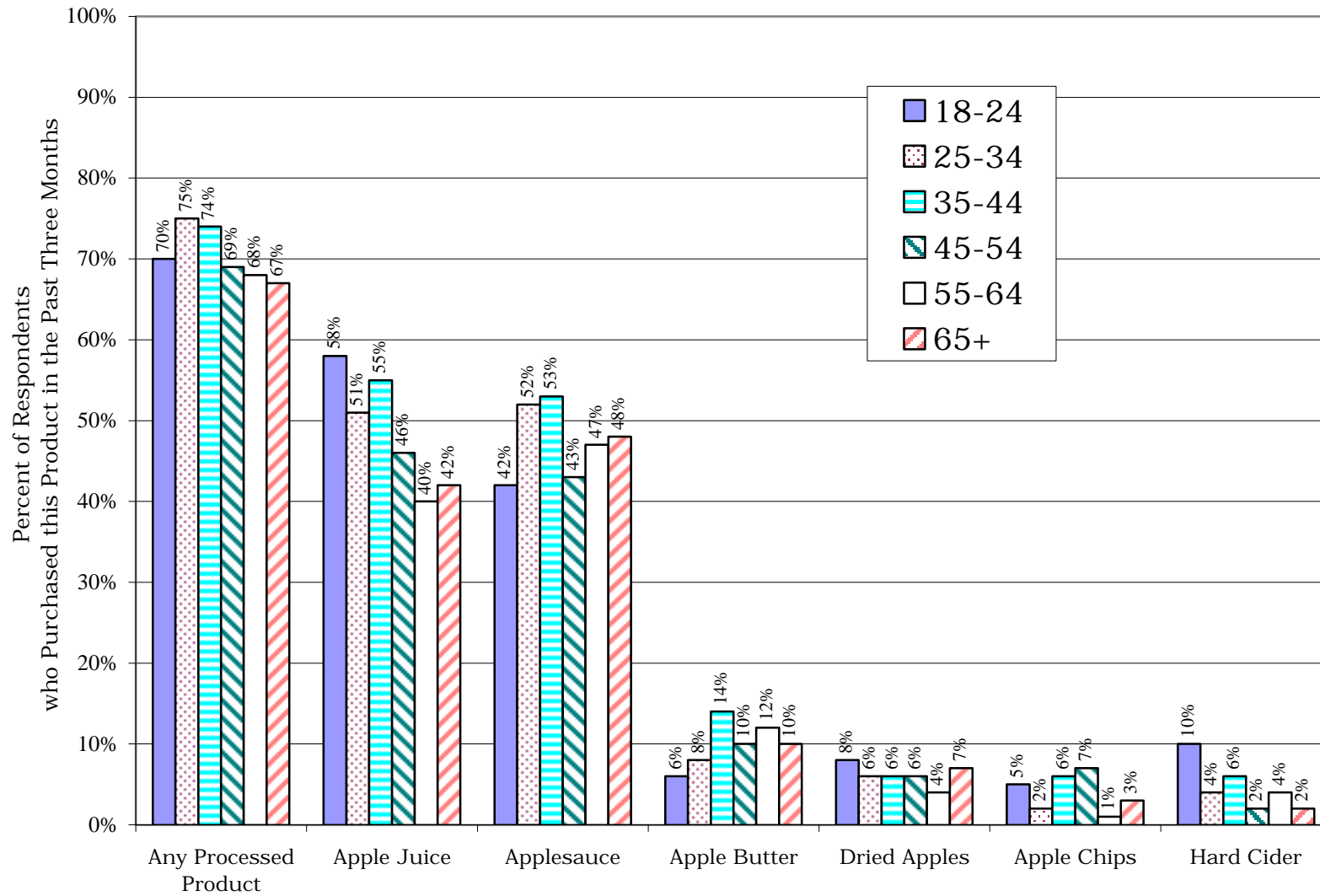


Figure III-7: Incidence of Apple Product Purchases by Income Level

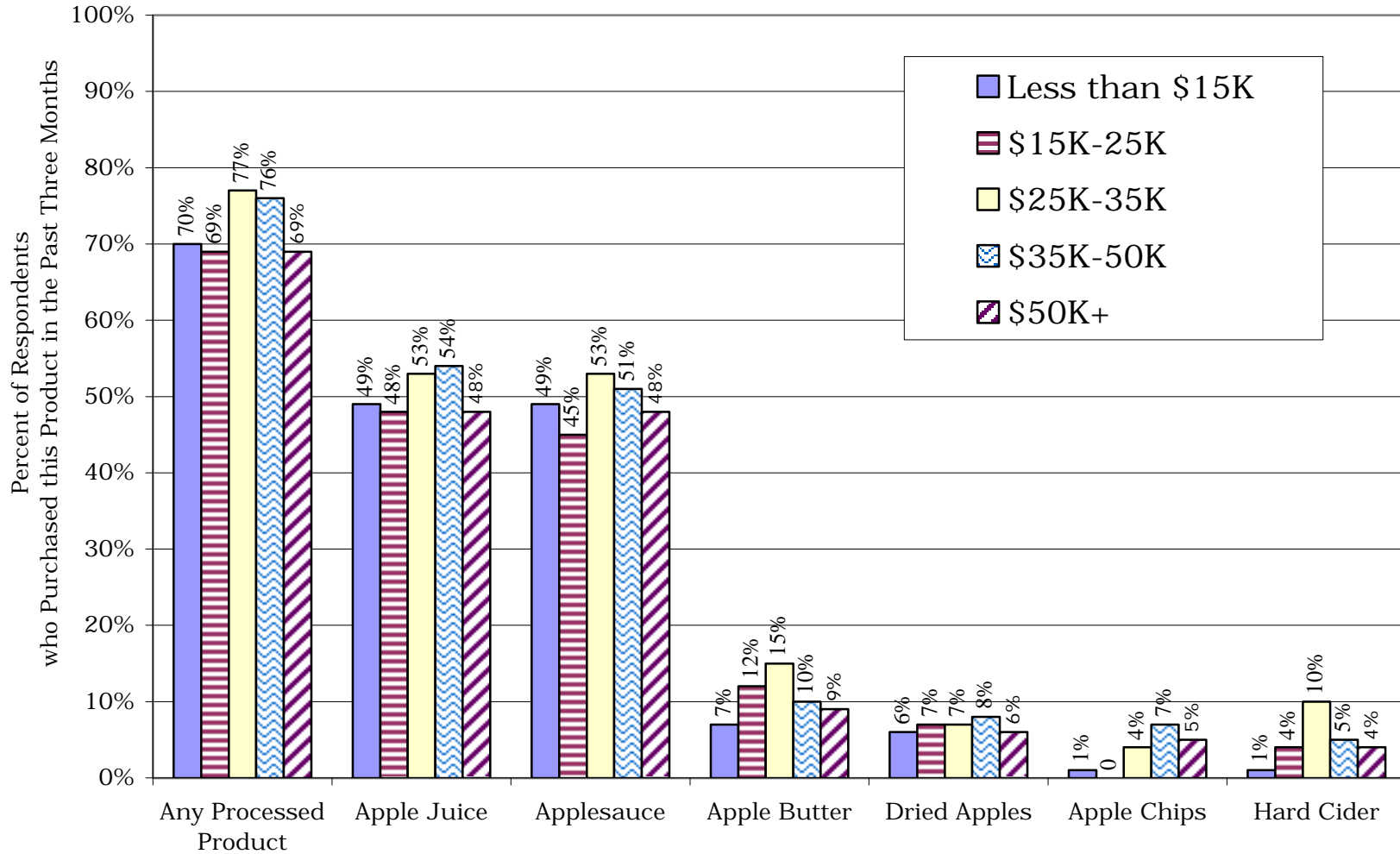


Figure III-8: Incidence of Apple Product Purchases by Region of U.S.

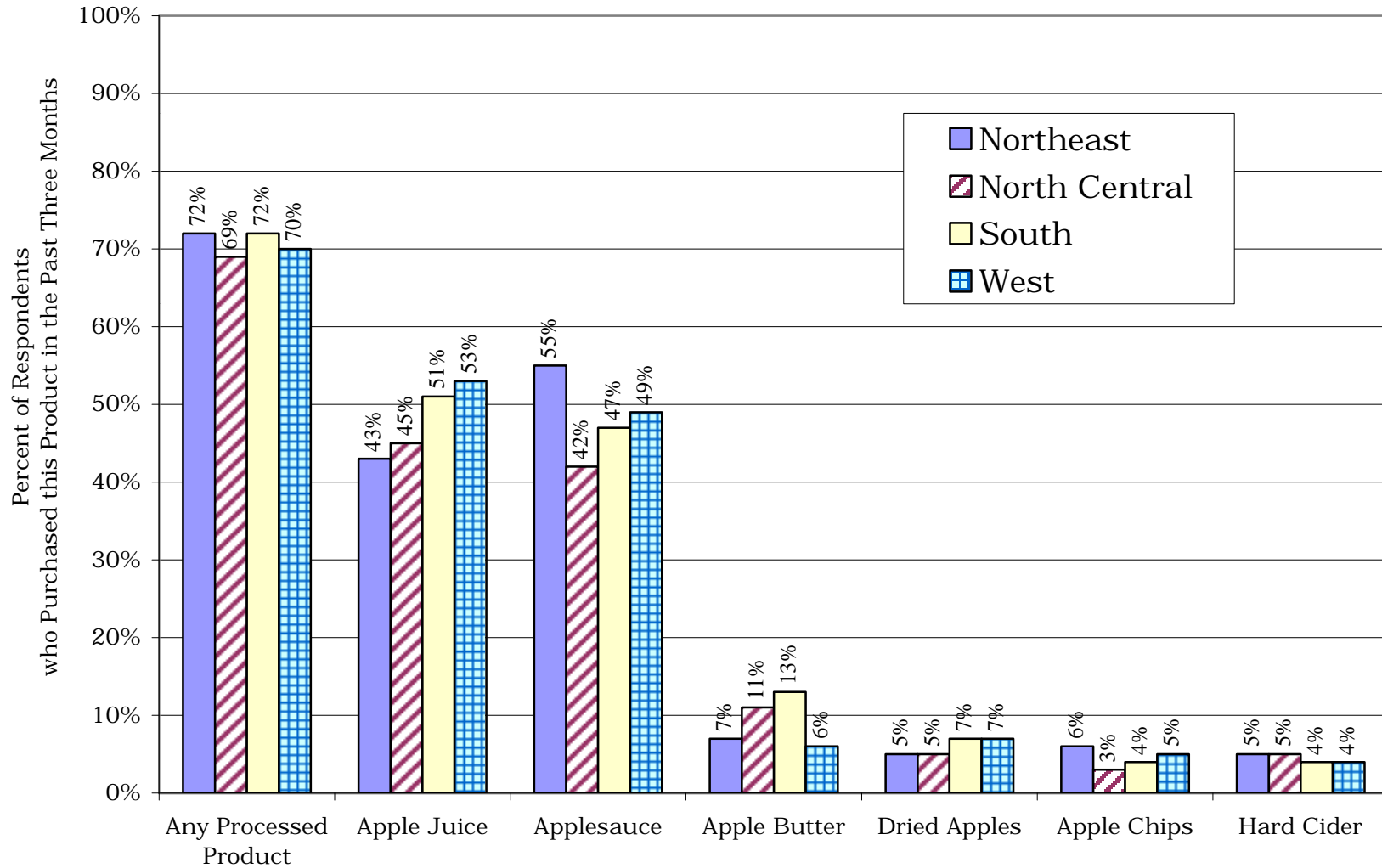


Figure III-9: Incidence of Apple Product Purchases by Education Level

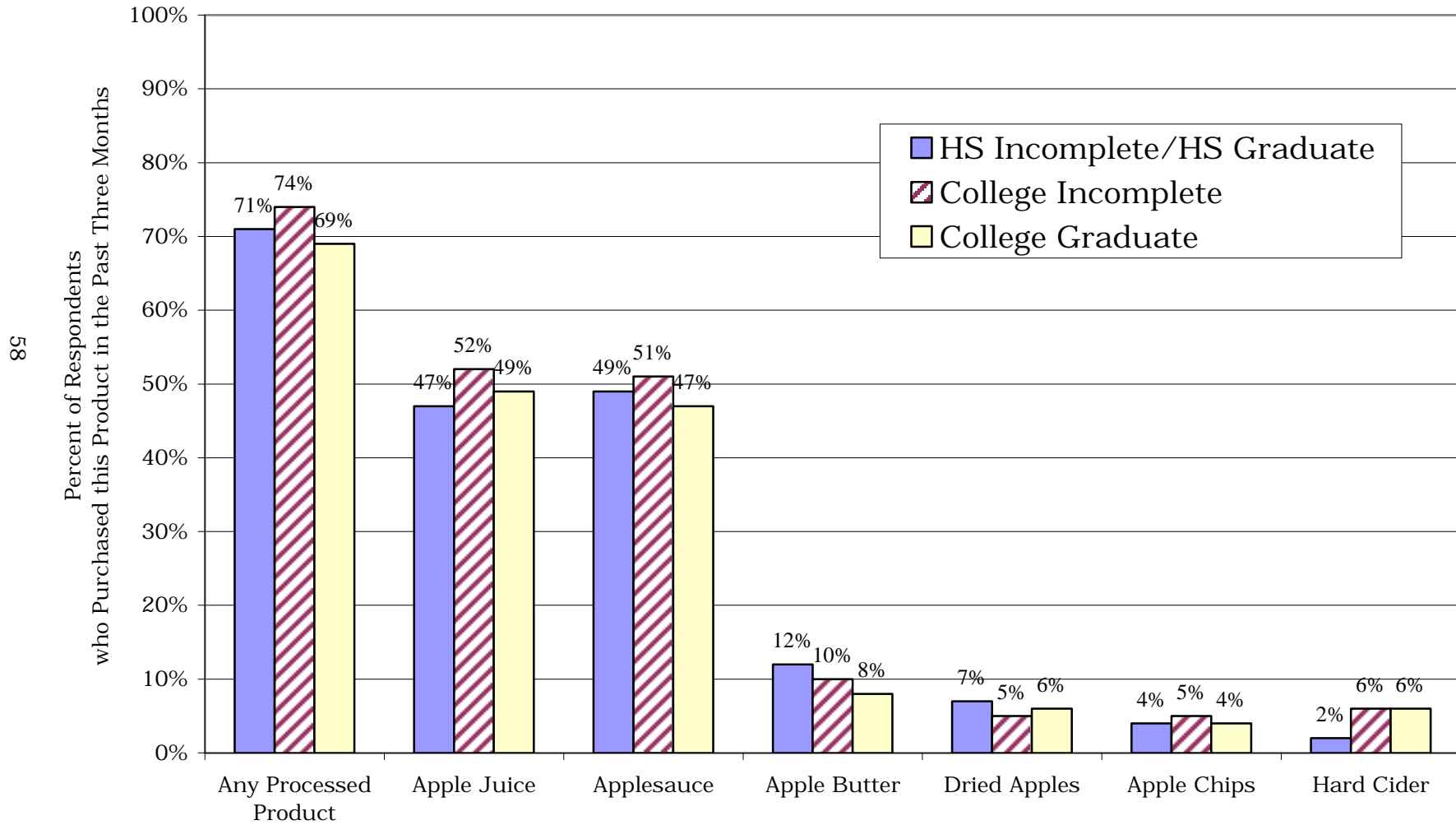
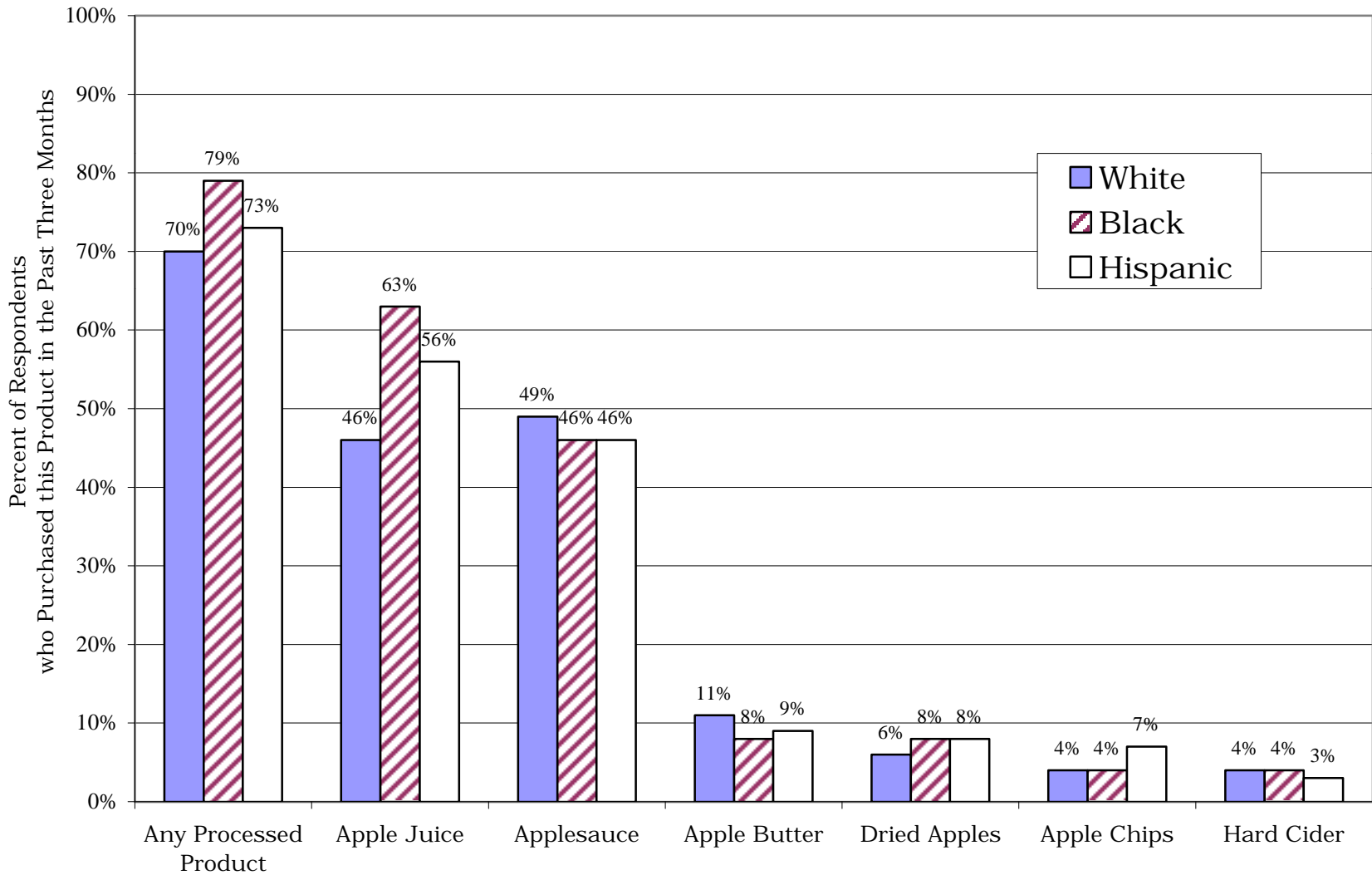


Figure III-10: Incidence of Apple Product Purchases by Race



Interest in New Products

In the second part of the survey, respondents were asked about their interest in 15 new product concepts. The possible responses were: extremely interested, very interested, somewhat interested, not very interested, not at all interested, and don't know. Table III-16 shows the level of interest ratings for each of the new product concepts included in the survey.

Typically, with this type of data, marketing researchers look closely at what proportion of respondents say that they are extremely interested or very interested in buying the product. This measure is often referred to as the "top-two box" rating or score. In product concept tests, a strong top two box score gives greater confidence in the product's chances for success in the market.

What is a strong score? A top-two rating of 30-50% could be considered strong, depending upon the design of the study and the marketing researcher who is interpreting the data. A score of over 50% in the top-two boxes would be very strong, and the product has a good chance of being successful. A score over 30%, while not as strong, warrants further consideration of the product.

In this survey, the respondents had very little information about the products. In some product concept tests, the respondents have the opportunity to sample or view the product in person. Most concept tests are administered face-to-face instead of by telephone. The limited level of exposure to the products in this telephone survey may have limited the scores for some products in this survey. Some products may have been difficult for respondents to understand fully based on their brief descriptions.

None of the products tested in this survey scored above 30% in the top-two boxes across the entire sample. However, several products scored above 30% in sub-segments of the sample, such as households with children. Table III-17 shows the top-two box scores for households with children. Some products also scored well among particular racial minorities. Table III-18 shows the top-two box scores according to race of the respondent.

Table III-16: Interest of Survey Respondents in New Apple Product Concepts

NEW PRODUCT CONCEPT	EXTREMELY INTERESTED	VERY INTERESTED	SOMEWHAT INTERESTED	NOT VERY INTERESTED	NOT AT ALL INTERESTED
Applesauce in Squeeze-Tube	4.6%	11.4%	15.9%	10.7%	56.4%
Pre-Sliced Apples for Eating or Cooking	6.5%	14.8%	23.5%	10.6%	43.8%
Snack Pack: Pre-Sliced Apples and Caramel Dip	6.6%	15.6%	24.7%	9.6%	42.7%
Snack Pack: Pre-Sliced Apples, Cheese, Crackers	5.0%	14.2%	23.8%	9.2%	46.9%
Waldorf Salad Kit with Pre-Sliced Apples	2.9%	8.4%	20.0%	12.7%	55.1%
Ready to Microwave Baked Apples	4.1%	12.2%	21.8%	11.9%	49.3%
Apple Juice Spritzer, Nonalcoholic	3.9%	13.1%	26.4%	10.7%	45.1%
Stir-Fry Sauce with Apple Chunks and Savory Spices	1.9%	6.1%	17.2%	14.9%	58.9%
Microwavable Apple Chunk-Cheddar Cheese Pocket	1.8%	4.5%	10.2%	11.9%	70.6%
Apple Cider Syrup for Pancakes and Desserts	2.4%	7.4%	21.4%	13.4%	54.4%
Snack Pack: Pre-Sliced Apples & Peanut Butter Dip	5.5%	11.9%	21.2%	10.2%	50.3%
Apple Cider Salad Dressing	1.5%	4.6%	12.4%	12.7%	67.6%
Pourable Chunky Apple Topping	1.5%	6.6%	20.5%	13.2%	57.2%
Apple Juice and Spring Water Beverage for Toddlers	6.8%	12.0%	15.3%	8.5%	56.0%
Apple Slaw	2.3%	4.1%	11.2%	12.7%	68.0%

Note: Lines do not total to 100% because respondents could answer "Don't Know."

Table III-17: Interest of Survey Respondents in New Apple Product Concepts by Presence of Children in Household, Percent Responding Extremely or Very Interested

NEW PRODUCT CONCEPT	HOUSEHOLDS WITH NO CHILDREN	HOUSEHOLDS WITH CHILDREN	HOUSEHOLDS WITH CHILDREN UNDER 12	HOUSEHOLDS WITH CHILDREN 12 TO 17
Applesauce in Squeeze-Tube	9%	27%	29%	20%
Pre-Sliced Apples for Eating or Cooking	18%	26%	25%	26%
Snack Pack: Pre-Sliced Apples and Caramel Dip	17%	30%	32%	26%
Snack Pack: Pre-Sliced Apples, Cheese, Crackers	12%	30%	32%	26%
Waldorf Salad Kit with Pre-Sliced Apples	12%	11%	9%	14%
Ready to Microwave Baked Apples	16%	17%	15%	17%
Apple Juice Spritzer, Nonalcoholic	14%	21%	22%	18%
Stir-Fry Sauce with Apple Chunks and Savory Spices	8%	8%	6%	12%
Microwavable Apple Chunk-Cheddar Cheese Pocket	5%	8%	8%	8%
Apple Cider Syrup for Pancakes and Desserts	8%	13%	14%	12%
Snack Pack: Pre-Sliced Apples & Peanut Butter Dip	12%	26%	28%	21%
Apple Cider Salad Dressing	6%	7%	7%	6%
Pourable Chunky Apple Topping	7%	10%	10%	13%
Apple Juice and Spring Water Beverage for Toddlers	11%	31%	34%	19%
Apple Slaw	5%	9%	9%	10%

Table III-18: Interest of Survey Respondents in New Apple Product Concepts: By Race, Percent Responding Extremely or Very Interested

NEW PRODUCT CONCEPT	WHITE	BLACK	HISPANIC
Applesauce in Squeeze-Tube	14%	27%	23%
Pre-Sliced Apples for Eating or Cooking	20%	32%	27%
Snack Pack: Pre-Sliced Apples and Caramel Dip	23%	21%	18%
Snack Pack: Pre-Sliced Apples, Cheese, Crackers	18%	29%	23%
Waldorf Salad Kit with Pre-Sliced Apples	11%	10%	11%
Ready to Microwave Baked Apples	17%	17%	13%
Apple Juice Spritzer, Nonalcoholic	15%	31%	25%
Stir-Fry Sauce with Apple Chunks and Savory Spices	8%	10%	8%
Microwavable Apple Chunk-Cheddar Cheese Pocket	6%	7%	2%
Apple Cider Syrup for Pancakes and Desserts	9%	13%	9%
Snack Pack: Pre-Sliced Apples and Peanut Butter Dip	17%	20%	26%
Apple Cider Salad Dressing	5%	11%	7%
Pourable Chunky Apple Topping	7%	14%	1%
Apple Juice and Spring Water Beverage for Toddlers	15%	41%	27%
Apple Slaw	5%	16%	7%

Overall, across the entire sample, the highest scoring product by the top-two box rating was the snack pack with pre-sliced apples and caramel dip, for which 22% of respondents said that they would be extremely or very interested in buying the product. Only one other product scored above 20%. The pre-sliced apples for eating and cooking scored 21%. Two other products scored 19%: snack pack with pre-sliced apples, cheese and crackers and apple juice and spring water beverage for toddlers.

Households with children appear to be one of the most promising markets for many of the new product concepts tested in this survey. As shown in Table III-17, three products score 30% or more in the top-two boxes among households with children: snack pack with pre-sliced apples and caramel dip (30%), snack pack with pre-slice apples and cheese and crackers (30%), and apple juice and spring water beverage for toddlers (31%). Each of these products received slightly higher ratings from households with children under 12, although the differences from the top-two box ratings for all households with children were not statistically significant. Three additional products scored in the 25-30% range among households with children: applesauce in a squeeze tube (27%), pre-sliced apples for eating or cooking (26%), and snack pack with pre-sliced apples and peanut butter dip (26%). The applesauce in a squeeze tube and the snack pack with apple slices and peanut butter dip scored slightly higher among households with children under 12, but again, these differences were not statistically significant.

Black and Hispanic households also showed a high level of interest in several of the new product concepts. Three products scored above 30% in the top-two boxes among black households in the survey: pre-sliced apples for eating or cooking (32%), apple juice spritzer (non-alcoholic) (31%), and apple juice and spring water beverage for toddlers (41%). Black households also rated two products in the 25-30% range: snack pack with pre-sliced apples and cheese and crackers (29%) and applesauce in a squeeze-tube package for kids (27%).

Hispanic respondents rated the product concepts generally lower than black respondents, and none of the products received greater than 30% in the top-two box rating among Hispanic households. However, for several products, Hispanic ratings were higher than among white respondents. Hispanic respondents rated the following product concepts in the 25-30% range: pre-sliced apples for eating or cooking (27%), apple juice and spring water beverage for young children (27%), snack pack with pre-sliced apples and peanut butter dip (26%), and apple juice spritzer (25%).

In summary, the results from the new product concept question do not identify any new products with a very high interest rating (>50% in top-two boxes). However, respondent reactions were positive enough for several product concepts to warrant further consideration and research, especially among households with children and black and Hispanic households. These products included:

- ◆ snack pack with pre-sliced apples and caramel dip
- ◆ snack pack with pre-slice apples and cheese and crackers
- ◆ apple juice and spring water beverage for toddlers
- ◆ pre-sliced apples for eating or cooking
- ◆ apple juice spritzer (non-alcoholic)

These products each scored 30% or more in the top-two boxes (extremely interested or very interested) with important sub-groups of the sample. Two additional products, applesauce in a squeeze and a snack pack with pre-sliced apples and peanut butter dip, did not score above 30%, but interest in these products was generally higher than for the other concepts tested.

Summary

Of the six processed products included in this survey, only two had an incidence of greater than nine percent (i.e., applesauce and apple juice). The limited number of broadly appealing apple products in the current market points to a need, and possibly an opportunity, for new product development in this industry. Additionally, the existing products are relatively mature and leave room in the market for the entry innovative new apple products.

In this survey, the incidence of apple products in the U.S. market was greatest in households with children. Households with children represent 40% of U.S. households. Incidence for apple juice was high among black respondents. It was also high among Hispanic respondents, although the reliability of data on Hispanic respondents is limited by the overlap of racial categories in this survey. In this survey, Black and Hispanic households were estimated to be 12% and 7% of U.S. households, respectively.

The groups that had the highest incidence for apple products are also likely to be the best targets for new apple products. Several of the product concepts had special appeal to households with children and black and Hispanic respondents. These concepts give processors and marketers a starting point from which to begin examining profitable products for these markets.

The new product concepts with the highest levels of interest could be examined further in more extensive concept tests. These tests should be administered face-to-face, and respondents should be given the samples and packaging prototypes to examine. The lack of this type of interaction with the product could have depressed scores somewhat in the telephone survey.

Additionally, further research might use focus groups to examine more closely the interest of minority group consumers in apple products and new apple product concepts. Focus groups with African-American or Hispanic-American consumers could be used to explore how best to appeal to these groups with existing and new products. Also, the sample in this survey was not large enough to explore smaller minority groups that might also be of interest for future data collection, such as Asian-Americans.

In this project, the quantitative survey was followed by a qualitative study using focus groups to explore consumer attitudes toward and uses of apple products. The qualitative study was also designed to assess consumer reactions to prototype apple products. The results of the consumer focus groups are discussed in the next section of this report.

Section IV

Digging Deeper into Consumer Behavior

In marketing research, qualitative studies allow us to explore consumer behavior in depth. By utilizing focus groups, a standard qualitative marketing research method, researchers can probe interesting findings as they arise in conversations with the subjects. Qualitative techniques are not a source of statistically reliable data on a consumer population. Instead, they are better suited to identifying potential opportunities and understanding the basis for consumer preferences and actions. Focus groups and other qualitative methods are appropriate techniques in the early stages of market research for exploring new products and new strategies. The results from qualitative studies can offer direction for more detailed research.

In this project, focus groups with consumers were chosen to build on the consumer survey. The purpose of the focus groups was to assess consumer attitudes and use behaviors for processed apple products and to explore consumer reactions to prototype processed apple products. In probing consumer behavior in this category, we aimed to assess consumers' reasons for using apple products as well as their likes and dislikes about apple products. We wanted to understand any concerns they might have about the products that affected their purchasing. We also wanted to assess their perceptions about the nutritional and health benefits of apple products. Through the focus groups, we hoped to define the competitive context for apple products and to identify potential marketing opportunities.

Methods

Six focus groups were held with consumers in October 2000 among three target audiences (see Table IV-1). The meetings were held at central interviewing facilities, equipped for focus group research with screening areas, conference rooms, observation rooms, and recording equipment. All participants were offered an honorarium of \$60 to \$75.

Two two-hour focus group sessions were held with each of three target audiences: women with children six years old and under, women age 25 to 49 who drink wine, and women age 50 to 69. Women with children under six were targeted because of the high incidence of apple product use in families with children and the higher than average interest of this group in new apple product concepts, as observed in the telephone survey discussed in Section III. Women age 25 to 49 who drink wine were targeted because of our interest in collecting information on the small but growing market for hard cider and fruit wines. A

Table IV-1: Consumer Focus Group Sessions: Location, Date, Participants, and Products

LOCATION	DATE	DEMOGRAPHIC	# OF PARTICIPANTS	PRODUCTS SAMPLED
Paramus, NJ	October 18, 2000	Women with children age six and under	8	Apple slices, chips apple chips, apple butter
		Women age 25 to 49 who drink wine	8	Apple slices, chips apple chips, apple butter, hard cider, apple wine
		Women age 50 to 69	8	Apple slices, chips apple chips, apple butter
Manhattan, NY	October 19, 2000	Women with children age six and under	8	Apple slices, chips apple chips, apple butter
		Women age 25 to 49 who drink wine	8	Apple slices, chips apple chips, apple butter, hard cider, apple wine
		Women age 50 to 69	8	Apple slices, chips apple chips, apple butter

number of regional entrepreneurs are interested in entering this market, and very little information about the market for these products is publicly available. Finally, we targeted women age 50 to 69 to explore attitudes and behaviors among older consumers, who are often considered an important target for apple products. In the telephone survey discussed in Section III, older consumers were in general slightly more interested in fresh apples and slightly less interested in apple products than younger consumers. They were also generally less interested than younger consumers in the new product concepts

presented in the survey. The focus groups offered an opportunity to explore these differences and potential opportunities for new products with this growing consumer group.

Each group had eight women screened to meet the above criteria. Additional screening criteria included:

- ◆ Participants must personally shop for their households.
- ◆ Participants must purchase and consume fresh apples at least once every three months.
- ◆ Participants must purchase and consume a minimum of one processed apple product at least once every three months.
- ◆ In each group, the household income levels of participants should be spread across a range of \$25,000 to \$75,000 and over.
- ◆ In each group, the education levels of participants should range from high school graduates to those who completed graduate school.
- ◆ In each group, the employment status of participants should be varied to include women working full-time, women working part-time, and women who are not working outside the home.
- ◆ Each group should not include more than two one-member households.
- ◆ No one with a household connection to a marketing or graphic arts firm or to a company that distributes or sells fruit or processed fruit products could participate.
- ◆ No one with experience with research on any food or beverage product could participate.
- ◆ No one with experience with any type of marketing research in the past three months could participate.

Additionally for the group of mothers with children under six, participants must feed their children at least two apple products, each at least four times per month. For the group that included sampling of hard cider and apple wine products, the participants must personally shop for and consume wine at least once every three months.

The screening guide that was used to recruit and select participants by telephone is included as Appendix 3. During recruitment, each participant was also subjected to an articulation question, which was used to summarize potential participants' abilities to describe themselves and express preferences verbally. Recruiting and screening of participants was provided by staff associated with the research facilities where the focus groups were held.³

³ The Paramus, NJ sessions were held at the facilities of Plaza Research. The Manhattan sessions were held at the facilities of Schlesinger Associates. Arrangements with each facility were made by the moderator.

The focus groups were led by a professional moderator, Richard Donovan of Donovan & Associates, who had extensive experience in food industry marketing research. A discussion guide for the focus groups was developed in conjunction with the moderator. A copy of the discussion guide is included as Appendix 4. In general, the discussion was facilitated to cover:

- ◆ Use of and attitudes toward fresh apples
- ◆ Use of and attitudes toward processed apple products
- ◆ Reactions to samples of prototype apple products
 - Fresh apple slices
 - Apple chips (baked, two recipes: plain and cinnamon)
 - Apple butter (spicy formulation)

For the two groups with women age 25 to 49 who drink wine, the following samplings were added to the program:

- Dry white apple wine
- Semidry white apple wine
- Sparkling hard apple cider

The focus group discussions began by considering fresh apples because of their similarity with apple products. By discussing the use of fresh apples, we could explore behaviors and attitudes that might uncover new opportunities for apple products, especially with the recent rapid growth of minimally processed fruit and vegetable products. Because the fresh and processed sectors are closely related in the Northeastern apple industry, collecting data on fresh apple use could be helpful to the industry.

The prototype products selected were available from the Cornell University food scientists collaborating on the larger research project described in Section I. The food scientists are working to improve the formulations and processing of these products. The prototype products were available for consumer testing, and so we included them in the focus groups to explore the consumer reactions and market potential.

The moderator recorded the focus group discussions on audio tapes. Each session was transcribed from the tapes. The moderator analyzed the transcripts and submitted a summary report based upon his observations of the sessions and past experience in related research.

Results

As discussed above, the results drawn from focus group sessions should not be interpreted as a statistically valid representation of the

target populations. Caution is always advised in the interpretation of focus group results. The results offer detailed observations from a limited sample on consumer behaviors and identify issues and opportunities for further research. They cannot be relied upon as a definitive indication of market conditions or the overall market potential of a product. With that caution, this section reviews the major themes uncovered in the focus group discussions.

Understanding the results of focus groups can be enhanced by the inclusion of quotes from the participants. The sections below include several such quotes to illustrate findings. The quotes are taken directly from the focus group transcripts. Sometimes, statements made in the natural flow of conversation appear awkward when written on paper. In some cases, clarifications are made in brackets. However, most statements did not require clarification. The reader should remember that the statements were made in a casual conversation. The concepts expressed should be fairly clear. In some cases, the reader might find a statement to be factually incorrect. Some factual errors are expected in this type of discussion, and they can offer valuable data regarding potential consumer misperceptions of a product. Correcting the participants was done only as necessary to prevent adverse effects on the rest of the discussion. Also, it should be remembered that although these quotes are accurate, as described above, they do not necessarily represent the thoughts of the target population of consumers at large.

Observations on Fruit and Apple Consumption

In all of the sessions, most of the participants said that they eat fresh fruit at least once per day. All of the participants have been eating apples since they were children. Most of them believed that they eat the same amount or more apples, as well as other fruit, than they did five years ago. Several said that their increase in fruit consumption was related to their increased nutritional awareness.

Overall, apples are a traditional fruit that these women grew up with. They want to make sure that their children grow up with them as well. They find apples appealing because of their crisp, crunchy texture, juiciness, and their sweet and refreshing taste. They also believe that apples are “good for you” and good for their children.

When asked to describe what they like about fresh apples, participants noted many features and benefits. These are listed in Table IV-2, including quotes from the participants. In all of the focus group sessions, apples were perceived to have a number of benefits, including several that are directly relevant to today’s consumers, such as their

portability and nutritional value. The use of apples as a diet aid was also a common theme.

Table IV-2: Focus Group Responses on Apple Benefits

<ul style="list-style-type: none"> ▪ Texture <ul style="list-style-type: none"> • “Crisp” • “Crunchy” ▪ Juicy ▪ Sweet or Tart Flavor <ul style="list-style-type: none"> • Most participants preferred sweet ▪ Great tasting <ul style="list-style-type: none"> • “Taste good” • “Really great flavor” ▪ Refreshing <ul style="list-style-type: none"> • “Leaves you with a fresh taste” • “Cleanses palate after a meal” • “Feels like I’m cleaning my teeth, my tongue, my insides” • “Clean out your whole mouth” • “It makes your breath feel good” • “It makes my mouth feel fresh” ▪ Good for you <ul style="list-style-type: none"> • “Healthy” • “Nutritious” • “Good nutrition value” • “Helps your teeth” • “Like going to the dentist” 	<ul style="list-style-type: none"> ▪ Year-round availability ▪ Variety of types ▪ Diet Aid <ul style="list-style-type: none"> • “They’re low in calories” • “Fill me up” • “Takes the craving away” • “Curbs my appetite” • “A satisfying fruit” • “Apple have a lot of chewing to them” • “Takes time to eat” ▪ Portable <ul style="list-style-type: none"> • “Ready to go” • “Just grab them and go” • “Travel well” • “Easy to grab one and just throw it in my bag” • “Sturdy” • “Easy to eat” • “Not messy” ▪ Extended Shelf Life <ul style="list-style-type: none"> • “Do not spoil easily” • “Keep for a long time” ▪ Versatile <ul style="list-style-type: none"> • “Chop in tuna salad” • “With cheese and crackers” • “Chunky apple sauce” • “Fried” • “Bake” • “Make apple pie” • “Eat as is”
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In all of the groups, comments indicated that apples are widely perceived as healthy. However, most of the women were not sure what specific nutritional benefits apples offered. Their comments confirmed their general notion that apples are good for you:

- ◆ “Nutritious. Good for my child.”
- ◆ “They’re healthy.”
- ◆ “It’s good and healthy for my family.”
- ◆ “It’s healthy, good for you, and natural.”
- ◆ “An apple a day keeps the doctor away.”

Although participants viewed apples as having health benefits, they generally could not articulate specifically why apples are healthy. One said, “They’re good for you, but I’ve never asked why.” Another said, “I just assume they are.”

Some thought that fiber was a nutritional strength of apples:

- ◆ “It’s high in fiber.”
- ◆ “Apples are fiber which is good for you.”
- ◆ “It’s mostly for digestion. Mostly. And it keeps you from getting fat because it fills your stomach.”
- ◆ “I think the skin has something to do with it...roughage.”
- ◆ “It’s also a good source of roughage.”
- ◆ “I’m not sure, but I know there’s fiber.”

Others said that apples contain vitamins, but when probed, they were not sure which vitamins are present in apples and in what amounts. They said:

- ◆ “They must have some vitamin C content.”
- ◆ “I don’t know what vitamins are in it.”
- ◆ “A good source of vitamins.”
- ◆ “Vitamins in the skin”
- ◆ “I don’t even know.”
- ◆ “I would say A is what I recall hearing.”

Those who noted that apple have vitamins could not explain what levels of vitamins apples have or how apples compare nutritionally with other fruits. In addition to vitamins, one or two participants, from all of the groups combined, said that apples contain pectin, which they said reduces cholesterol levels. A few mentioned that apples act as a digestive aid. None mentioned recent research findings on the presence of beneficial phytochemical anti-oxidants in apples.

A few also mentioned that apples are good for you simply because they are a fruit. This observation perhaps reflects the strength of the perception that one should consume fruit everyday for nutritional benefits. A few noted that they felt that most fruits are basically the same in that they are natural, low-fat foods that provide fiber to the diet. Thus, in addition to the benefits of apples, an important driver for fresh apple consumption could simply be their status as a fruit and the perception that fruit is nutritionally beneficial.

In general, the participants were satisfied with apples as they are, but we probed further in the discussion to find what characteristics of apples might be impediments to increased consumption of apples. We asked what they dislike about apples or what they would change about apples, if they could. None of the responses given were widely held opinions among the participants. The responses are listed in Table IV-3.

Table IV-3: Focus Group Responses: What do you dislike about apples? What would you change about apples?

• Possibly unclean	• Need to cut
• Browning	• Seeds
• Mushy	• Stickers
• Skin	• Wax
• Core	• Price
• Messy	• Allergic reaction
• Sticky	

Some women are bothered by the possibility that apples, and all other fresh produce, are possibly unclean, as a result of people handling the fruit or from pesticide residues or other contaminants. Many women reported that they wash or soak apples and other fruit in water. A few wash them in soap and water. One added bleach to the cleaning water, but the other women found this to be a drastic measure. Many of them seemed to be aware of a new produce cleaning product. However, most of the them did not use product due to its expense. One woman said about this product, “it looks like another chemical.”

While cleanliness is a concern of consumers with all types of produce, most of the other dislikes mentioned in Table IV-3 are more specific to apples. The three most widely stated dislikes were the oxidation of sliced and bitten-into apples, the mushy texture of some apples, and the peel. With regard to browning, comments included:

- ◆ “It’s a psychological thing...if something is prettier, you’re more attracted to it.”
- ◆ “It doesn’t taste the same.”
- ◆ “[My kids] don’t like to look at brown apples and eat them.”

However, some expressed that they felt that browning was natural process. Non-browning apples might raise concerns or skepticism with some consumers. For example, one woman said that a non-browning apple would be “abnormal.” She said, “I’d wonder what chemicals were in it.”

With regard to mushy apples, the women noted that it was hard to tell which apples would have bad texture by looking at them: “You can’t always tell the texture.” In regard to apple skins, several comments were heard:

- ◆ “Gets stuck in my teeth”
- ◆ “It tickles the back of my throat”
- ◆ “Hard to digest”
- ◆ “The taste of the skin from the pesticides”
- ◆ “Thick, heavy skins”
- ◆ “Tough skins”

A few women also thought that the skins upset their stomachs.

Other factors were less widely noted. Of those that said they did not like wax on apples, many felt it was particularly a problem on Red Delicious apples. Their concerns with wax were that it made apples harder to bite into, the perception that it may contain pesticide residues, and the need to scrub the apple, rather than just washing it, to remove the wax. With regard to price, a few said that they would increase their purchases if prices were lower. Other comments about dislikes or things to change about apples included:

- ◆ “Prefer a more exotic, more tropical taste.”
- ◆ “Sticky and messy as you continue to eat the peel of the apple off.”
- ◆ “The core is a big part of smaller apples.”
- ◆ “Disposing of the core”
- ◆ “Having to peel, core, and slice them for baking”
- ◆ “Having to cut them”
- ◆ “Not good out of season”
- ◆ Eating an uncut apple messes lipstick
- ◆ No expiration date
- ◆ Tartness, tanginess, acidity, sourness
- ◆ Boring

In each group, two or three women said that there was nothing that they disliked or that they would change about apples. Similarly, a few women simply felt that they already ate a lot of apples and that they would probably not increase their consumption because they had already reached their individual limits.

A few women said that they or someone they knew had an allergic reaction to apples. One woman said, “I just get itchy. I can tolerate it, but I won’t eat a raw apple because of that. I’m afraid. I never know what type of reaction I’m going to have.” As consumer concerns about food safety become more prominent, food allergies and sensitivities may become a more critical issue for the entire food industry. Additional research on the potential for allergic reactions to apples might assist the industry in better understanding any related consumer concerns.

To follow-up on the question about dislikes, we asked what the participants would wish for in an apple. Many women said that they were satisfied with apples as they are, and others said that they “stretched” to answer this question. Responses included:

- ◆ Skinless
- ◆ Easy to peel
- ◆ Thinner skins
- ◆ Coreless
- ◆ Seedless
- ◆ No wax
- ◆ Cheaper
- ◆ Won’t brown
- ◆ “Pop-in-your-mouth” size
- ◆ No stickers
- ◆ Full of calcium

Many of the dislikes point to potential demand for a fresh sliced apple product. This type of product could address many of the minor impediments that the women discussed. The product would be coreless and already cut. It would have a “pop-in-your-mouth” size. It wouldn’t brown. The product could be made available in peeled, as well as unpeeled versions. Several women said that they often slice their apples before eating them, especially when eating in front of other people. Pre-sliced apples would provide them with a ready-made snack.

We also asked about brands and labels for fresh apples. The participants generally did not see value in a brand for fresh apples. However, one woman noted, “if there was a brand, I could always go back to that brand, because sometimes I get screwed up with apples. They get

mealy, and I buy the wrong ones.” This comment indicates the opportunity to address quality concerns and build consumer loyalty with branding.

Regional labels were also discussed. Most of the women were aware that apples came from the states of Washington and New York. However, only one women in all of the focus groups said that she looked to see where apples were grown when purchasing them.

The discussion of fresh apples served as a precursor to the discussion of apple products. In this discussion, the value of apples as a traditional fruit was clear. These women want their children to grow up with apples. They also perceive apples to have good nutritional value, but they are unclear about what specific, health benefits apples offer. This observation points to a potential need for the intensification of public relations efforts about health benefits by the apple industry. The discussion of fresh apples also pointed to an opportunity for a fresh apple slices product to address some of the impediments to increased apple consumption.

Observations on Processed Apple Product Consumption

Across the sessions, participants named 35 different types of apple products that they had tried or of which they were aware:

Apple bread	Apple jelly	Applesauce
Apple breakfast bars	Apple liqueur	Baked apples
Apple butter	Apple juice	Candy-covered apples
Apple cake	Apple muffins	Canned apples
Apple chips	Apple newtons (fruit-filled cookies)	Caramel-covered apples
Apple cider donuts	Apple pancakes	Cider vinegar
Apple cinnamon yogurt	Apple pie	Dried apples
Apple cobbler	Apple pudding	Jelly apples
Apple compote	Apple rings	Rice cereal with apples
Apple cookies	Apple strudel	Scalloped apples
Apple danish	Apple turnovers	Stuffing with apples
Apple fritters	Apple wine	

In the telephone survey discussed in Section III, 10% of respondents reported having purchased apple butter in the prior three months, many women in the focus groups said that they had not tried apple butter. Most of the women in the focus groups were aware of apple chips, and some said that they regularly purchase this product, which scored only 4% incidence in the national telephone survey.

The focus group participants were asked to complete the following statement about apple products: “Knowing a product is made from apples makes me think the product is...” Their responses reflected varying opinions. The women in the two groups of mothers with young children were likely to say healthy or nutritious. The women in the other groups said that the product would be tasty or sweet, or they said that it would be healthy or nutritious. Very few said the product would be both tasty/sweet and healthy/nutritious.

In general, it appeared that opinions about the nutritional value of apple products were divided. One woman said, “Not everything made from apples is nutritious, just because the apple is nutritious. When you combine it with another product, it doesn’t necessarily become nutritious again. Apple pie is not nutritious.” Another said, “If it’s a fresh apple and it’s all natural, yes [it’s nutritious]. But if it’s a [brand name] apple pie or a [brand name] strudel, no, not at all.” However, another said, “It’s healthier because of the content. If you’re making an apple cake, you’re still getting some fruit in there.” These comments probably best apply to perceptions of apple dessert products, and the wide variety of apple products probably affected the broad range of opinions on this issue.

Their responses to the question, “What stops you from eating more products made from apples?” reflected further concerns about the nutritional value of some apple products. The three most frequently mentioned factors were sugar, calories, and undesirable ingredients.

Several felt that apple products were too sweet, and some were concerned about added sugars or fats. Comments included:

- ◆ “It can be too sweet for my child. [Available products] are more of a snack than a real meal.”
- ◆ “Syrupy”
- ◆ “High in sugar”
- ◆ “The product might be too sugary sweet. Sometimes even a donut, sometimes they’ll stuff it and it will be very sugary, almost thick from all the sugar that they added to it. The sugar and cinnamon.”
- ◆ “The sugar or the sweetness. And triglycerides.”
- ◆ “Some are high in calories because when I think of products made with apples, I think more of dessert.”
- ◆ “They add sugar and fat.”

In one of the above comments, a participant thought that cinnamon added calories or fat to the product. Another woman had a similar misconception about cinnamon in apple products. She said, “when you

bake the apples or put the apples in the microwave, you have to add cinnamon to them to really make them taste sweet.”

In addition to sugar and fats, women also had concerns about additives in processed products:

- ◆ “It looks like it has some good, healthy stuff in it and then you start looking at it and what else they added like the fat and the chemicals. And it’s just a turn-off.”
- ◆ “The additives. All these things to preserve this and preserve that. I can taste it. But I have to tell you, I don’t know what’s in the [brand name] apple turnovers, but I love them.”
- ◆ “The processing, and that’s it.”
- ◆ “If it’s a high caloric product or if it’s also high in fat, with again, the additives.”

From these comments, most of the women appeared to be thinking about apple products in general as primarily dessert products. Clearly, other types of apple products exist, but these products may be more prominently positioned in the minds of the mothers of young children, who are most likely to use these products (juice and sauce).

The dominance of association between desserts and apple products relates to another issue that the women mentioned as an impediment to increased apple product consumption. Some said that apple products lack variety. For example, one said “There is not really a great variety of interesting products to pick from.” A lack of recent innovation in the apple products industry may have contributed to this type of comment.

Similarly, some women felt that apple products have limited menu compatibility. While some noted that apple products nicely complement pork, participants also noted that they perceived the range of compatibility of apple products to be limited. For example, one said, “It’s limited in what it goes with in the other food groups. I like apple sauce with chicken....It’s hard to find a lot of apple products that will go with pasta.” Another simply said, “It doesn’t go with a lot of other food groups.” These comments may indicate a need for consumer education on new and varied product uses.

In the discussion of impediments to increased apple product consumption, some also noted the loss of the apple’s character in processed products. They felt that in processed products, apples lose the characteristics that they value in apples, such as crunch or flavor. Comments included:

- ◆ “The don’t retain their crunch.”

- ◆ “...lose an authentic apple flavor”

Another participant noted concern about finding pieces of the core in apple products “makes me nervous...like a fish bone.”

Finally, apple product consumption is limited by competition from other fruits and fruit products. One woman said in the fresh apple discussion that she prefers a more exotic or tropical flavor. This comment reflects the competition that apples face from other fruits, which may offer more exciting or novel flavors. Others talked about the variety of available and competing fruit products, particularly in the dessert category.

Overall, women primarily associated apple products with desserts. They had concerns about undesirable ingredients and the nutritional value of dessert products. Some seemed to indicate that a lack of variety in the types of available apple products limited consumption. Opportunities might exist for products that can offer an innovative, healthy, and natural alternative.

Specific Observations on Apple Juice

In several of the focus group sessions, especially those groups that included women with children, the use of apple juice was discussed. Some of the women indicated that they believe, or that they have been led to believe by their pediatricians, that apple juice may not be good for their young children at full strength, if at all. Many of them described diluting apple juice before serving it to their children, especially infants and toddlers. Concerns were focused on stomach and tooth problems and perceived high levels of sugar. A number of comments on this concern were heard in the groups:

- ◆ “They get gas pains from it.”
- ◆ “It’s really painful if she drinks the apple juice whole. So I cut it with water. I’ll actually buy [brand name]⁴ apple juice or I’ll dilute the regular apple juice.”
- ◆ “Straight juice upsets his stomach.”
- ◆ “There is a problem with the stomach. It’s too strong. I mix it half and half.”
- ◆ “I used to [dilute apple juice for her children], but then when they got wind of the real taste of apple juice, they don’t want the water anymore.”

⁴ This woman named an infant food products brand that has fruit juice products, including apple juice, which feature low-acid formulations, as well as vitamin fortification. Low-acid apple juice products might address some parent concerns about the consumption of apple juice by their children.

- ◆ “For really young children, on the bottle, I would dilute it because it wasn’t good for their teeth. The doctor said that. They fall asleep with the apple juice and it might hurt their teeth when they come in. Now that they drink from the cup, they get it straight.”
- ◆ “[Not good] to get all that sweet, high sugar so young.”
- ◆ “That’s why doctors say that you water down.”
- ◆ “I don’t water down my kids’ juices anymore. I did when they were little, but once they became three or so, I didn’t do that. That’s what my doctor told me to do. I don’t know. He said, don’t give them straight apple juice. Give them half and half. So I did.”

Many of their comments indicated that pediatricians were advising against full strength apple juice for children. In recent years, a leading grape juice producer has actively promoted white grape juice as a preferred product for young children. The company’s public relations campaign on this issue has included a targeting of pediatricians with the results of supporting research. These efforts may have had some negative effect on doctor’s perceptions and recommendations concerning apple juice. Apple industry groups, such as the Processed Apples Institute, have made an effort to promote the benefits of apple juice for young children.⁵ However, based on the results of these focus groups, public relations on this issue by the apple industry do not appear to have been as effective as they might need to be in countering negative perceptions.

The current perceptions of mothers and pediatricians about apple juice are cause for concern in the apple industry. Nutrition information available to parents varies on the value of fruit juices for young children. A recent recommendation from the American Academy of Pediatrics advises parents to limit their children’s fruit juice consumption. While the article recognizes the benefits of fruit juice for children, it provides specific limits based on a child’s age to prevent digestive and dental problems and to balance nutritional intake (AAP, 2001). The article basically advises that juice should be served to children in moderation as a part of a balanced diet. However, some in the juice industry are concerned that the article may cause confusion for parents about whether to serve juice to their children. This issue points to the need for more information for consumers about serving juice, and apple juice in particular, to young children.

Given the apparent high level of concern about serving apple juice to children, we asked the focus groups for their reactions to the concept of an apple juice and spring water beverage for young children. This product concept scored relatively well in the consumer survey discussed

⁵ For example, see the Processed Apple Institute website: www.applejuice.org

in Section III. The participants had a divided reaction to the product. Several liked the idea:

- ◆ “It would be nice. Lighter.”
- ◆ “In a pre-package? With little straws coming out? [Would that be a good idea?] Yes.”
- ◆ “Individual? So they can open it up by themselves easier and not be breakable?”
- ◆ “It sounds healthier in some way. It’s a mind trick.”
- ◆ “It’s easy to travel with.”

The group was divided over the value of the product when they considered the expense versus the convenience. Some felt the product would offer value, especially to busy young parents. Others were more skeptical:

- ◆ “It depends on the price.”
- ◆ “If it’s ridiculously prices for some spring water, then no.”
- ◆ “Oh, the same price? I’d get that one.”
- ◆ “If you’re diluting it, I could get twice as much from doing it myself.”
- ◆ “You already have water in the house. You already have apple juice. You can mix it.”
- ◆ “You don’t know how adulterated it is. Maybe it’s one-tenth apple juice and 90% water.”
- ◆ “If you drink apple juice and then you have to buy this apple juice and for the kid, another apple juice.”

Overall, it appears that this product might have potential with a segment of consumers. While many consumers thought that the product could be easily made at home, others saw value in the convenience of the concept. Further research on the segmentation of the market for this product would be needed to market the product successfully.

Interesting Apple Products

In each group, respondents were asked to complete the sentence, “I always thought that the following product made from apples would be interesting...”. While this question was designed to elicit new product ideas, it was not circumscribed to avoid discussion of existing products.

The most frequently given response was apple ice cream. It was suggested by at least one person in each of four groups. Comments and responses to those comments included:

- ◆ “Ice cream. I’ve had it and it’s really delicious.”

- ◆ “That’s a great idea.”
- ◆ “That’s a good one.”
- ◆ “That never even occurred to me.”
- ◆ “Excellent.”
- ◆ “What I had was, it had the cobbler, the cinnamon sugar stuff.”

Some expressed doubt that apple would be a good ice cream flavor:

- ◆ “Put a little flavor in there with the apples.”
- ◆ “I think the apple sorbet would be a better seller.”

Interestingly, in the new product development workshop described in Section II, apple ice cream was also discussed. That discussion focused on an upscale product with high-quality ingredients.

Other products that were suggested as “interesting” and that generated discussion included:

- ◆ Apples shaped as toys
“If they didn’t go brown.”
- ◆ Apple peanut butter
“You can mix it right in the jar with peanut butter and with apples. I know it would be excellent because I do it at home myself. I take peanut butter, apples with a bit of raisins and I put it in the toaster oven and I bake it. I spread the peanut butter on bread and then sliced apples on the top and then raisins and then put it in the toaster over.”
- ◆ Tea with apple, lemon & ginger
“I got it at a health food store...that’s very, very good. I gave some to my daughter and she kept saying, what is this? It had a lot of apple in it, but she didn’t really notice it. It just had a cool taste. It really had a nice taste to it and it had some lemon, ginger...I forgot what the other thing is. It was infused.”
- ◆ Hot mulled cider kit
“Apple juice or something packaged with cider spices and the directions to make it.”
- ◆ Pancakes
“It’s taking apple sauce and mixing it in the batter with a little bit of cinnamon.”

◆ Sliced fresh apples

“This only happened last week and that’s why I’m mentioning it. I went on a class trip with my daughter and I’m thinking about packages with sliced apple in it. They were [brand name]. I think they were called that. It was very good. There were like, not vacuum packed, but in those fresh packs.”

Although fresh apple slices are a product that has been distributed in the region where these focus groups were held, almost none of the other women had heard of the product before the focus groups.

Several other products were suggested as “interesting” without significant discussion:

Apple bread	Apple gum
Apple butter	Apple juice mixed with exotic fruits
Apple candy	Apple kugel
Apple chip cereal	Apple pretzels
Apple chocolate	Apple sandwich
Apple cigarettes	Apple soda ⁶

Although some of these products are not “new” product ideas, the range of concepts discussed was broad, and the ideas discussed may indicate potential new directions for product development. As mentioned in the discussion of apple products, the current range of apple products is perceived to be limited and uninteresting by some consumers. Innovation into new product areas may create new excitement about apples and apple products. Also, development of products in new product categories is less likely to negatively affect existing apple product sales.

Reactions to Prototype Products

The final part of each focus group was designed to assess consumer reactions to various product prototypes developed by the Cornell University food scientists working of this project. This part of the focus group research allowed for the linking of on-going food science research with our marketing research. The products chosen were those that we felt had the best market potential, as well as technical feasibility. They also were products in which we knew some regional entrepreneurs and apple processors had an interest.

The products included in this research were:

⁶ Coca-Cola North America and the Coca-Cola Bottling Company of Southern California recently introduced Manzana Mia, a new apple-flavored soda, to Southern California markets in March 2000.

- ◆ Fresh apple slices
- ◆ Apple chips
- ◆ Apple butter
- ◆ Dry white apple wine
- ◆ Semidry white apple wine
- ◆ Sparkling hard apple cider

The three alcoholic beverages were sampled only by the two groups that had been screened as wine drinkers.

In some quotes given below, participants make reference to the ratings they gave each product. Following each tasting, participants were asked to write down their comments before the discussion of the product began. They also were asked to record a rating on a one to ten scale for the product on a few variables. These ratings were not tallied because the sample was not appropriate for the collection of quantitative data. The rating system was employed only to stimulate participants' thoughts and comments.

Fresh Apple Slices

Food scientists at the New York State Agricultural Experiment Station in Geneva, NY have been working for a number of years with regional entrepreneurs on the technical aspects of production and packaging for fresh apple slices. One upstate New York apple processor has been commercially producing the product and distributing it primarily in single-serve packs to foodservice operations. A few West Coast producers have entered the market with fresh apple slice products as well. The relatively short shelf-life of the product supports the development of production capacity for this product in a regional manner, and currently a high level of interest in this product exists in the Northeastern apple industry.

We included this product in the consumer testing because it is currently not in wide distribution. Few consumers have had experience with the product, as noted in the focus group discussions. Only one participant had heard of or seen the product before attending the focus group. Also, although the product exists in the market, numerous product designs are possible, including variations on packaging, size of pack, non-browning treatment, combinations with sauces and other foods, flavors, and apple varieties. There is a diversity of potential opportunities for the development of new fresh apple slice products, as well as new distribution and marketing strategies for these products.

We presented participants with fresh slices of the variety NY 674, a new, unnamed variety developed at the New York State Agricultural

Experiment Station. This variety was chosen for the prototype samples by the food scientists due to its availability through this project, and also because they were engaged in assessing the variety's non-browning characteristic in this application for their own research under this project. The samples were treated with ascorbic acid to prevent browning, and they had been sealed in plastic packages and stored at 32 degrees (Fahrenheit) for several days. They were delivered on ice in a cooler to the focus group sites. Although this variety has non-browning characteristics, it still required treatment with ascorbic acid for use in this product. Also, a broad range of other apple varieties that do not have the non-browning feature can still be used in this type of product with the application of ascorbic acid based dip.

The samples were presented to participants on a plate. They were told that the slices had been prepared several days prior. If they asked, they were told that the slices had been treated with a "natural" coating. Later in the discussion, they were given more information on the formulation of the treatment. They were not told which apple variety was used to make the samples.

First, before tasting the product, the participants were asked to evaluate the appearance of the product. Their responses appeared to indicate a genuine interest in the product based on its appearance. They found the appearance very clean and fresh looking. Comments included:

- ◆ "Very fresh looking"
- ◆ "Like they were just peeled"
- ◆ "White, unbruised"
- ◆ "They look better than if I cut up a pile of apples, because they'd already be brown."
- ◆ "They look perfect."
- ◆ "They look clean. They look bright red."

While they responded positively to the appearance, they also expressed some skepticism and mistrust about non-browning of the slices. Comments included:

- ◆ "These are real apples? I'm amazed. Because the discoloration of an apple is a big turn-off to me."
- ◆ "It wouldn't stay that way. It's got to be some kind of an artificial...chemical."
- ◆ "Why didn't they turn brown? I'd want to know what was on it..."
- ◆ "They must have put...sulfides or whatever they call them."

Next, they tasted the samples. Reactions to these samples were mixed. Several praised their texture and juiciness:

- ◆ “I thought it was crisp and felt cool and refreshing...”
- ◆ “It was crisp, which is, it was crunchy. It was moist. It was a little tart.”
- ◆ “It was fresh. It was juicy.”
- ◆ “It was good and crispy. I can see even the napkin’s [on which it was sitting] moist. It is juicy. As far as a tart apple goes, it was a good apple.”
- ◆ “It was juicy. It’s on the tart side, but I like tart apples, too. The main thing that it wasn’t a dry apple. I thought it was good.”
- ◆ “It’s got a nice balance between sour and sweet.”

On the other hand, others found the taste disappointing. Their comments included:

- ◆ “...it didn’t really have flavor, per se.”
- ◆ “I didn’t particularly care for the taste or the crunchiness.”
- ◆ “It didn’t have that real apple taste that I like. Something’s missing.”
- ◆ “...but I just expected more from it, something else I require.”
- ◆ “They look great. I thought they would taste the same and I didn’t like them at all.”
- ◆ “It looks fresh and it smells fresh, but to me, that taste was just not there.”

A few of the women said that the taste improved after some “getting used to.” For example, one of them said, “When I tasted the first slice, I didn’t like it as much as when I tasted the second slice. I got used to the taste more.” However, some felt that the samples tasted somewhat counterfeit. For example, one said, “It tasted like it was not real almost. It tasted like it was a...like a synthetic kind of apple.” Another said, “It tastes like there was something else in there.”

Some of the comments were more likely specific to the variety of apple used. Most participants said that they prefer sweet apples, and most perceived these samples to be a tart apple variety. Comments included:

- ◆ “Too tart. I prefer a sweet apple.”
- ◆ “A little bit too tart for my perfect apple.”
- ◆ “To me, it wasn’t sweet enough, but I like very sweet apples. It was a borderline apple.”
- ◆ “I got a lot of tart and not enough sweet.”

The treatment with ascorbic acid may have increased the sensation of tartness. Formal taste testing would be required to understand reactions

to varieties and to separate responses to varieties and responses to non-browning treatments.

A few of the women said that they would like to know what variety of apple was used to make the product. Another noted that she would like to be able to buy packages with several varieties, in order to appeal to a range of tastes in her household. She said:

I would buy it if it was a variety. If there was a variety, kind of like a trail mix, an apple trail mix. Children like varieties and this one is a little sour, this one is a little sweet. I personally would buy a whole bag of just sweet apples, but my daughter, I'm sure she would like the variety of apple slices.

When asked to describe the aroma of the slices, most of the participants said that the aroma was faint, nondescript, or indiscernible. A few thought the aroma was vinegary, and a few thought it was fresh.

The participants identified several benefits of the product. In addition to the lack of browning, they primarily noted the convenience of the product. Comments included:

- ◆ “You know, giving it to your kids. It’s quick, it’s easy, it’s clean. There is no trash. You take them to the park with you. It would travel.”
- ◆ “They’re ready to eat.”
- ◆ “No core to dispose of.”
- ◆ “The convenience.”
- ◆ “There’s no pits in them.”

They could name several occasions for product use including snacks and lunches, especially for children. Some said that the product would be useful in the preparation of pies, salads, and casseroles, but at least one woman noted that the product would need to be peeled for most cooking and baking applications. One woman commented on the value of this product for children:

I teach little children, and if you would see what they come in with, this would be a welcome addition to a lunch box...because parents just are too lazy to make anything like cut an apple up. I never see an apple cut up, never, ever. Only if they come from a home that’s really into this natural stuff. And I’ve been doing this for a long time.

Another woman suggested a specific Jewish holiday application for this product:

I'm Jewish so we celebrate Rosh Hashanah and sliced apples are a big tradition. You have to have apples and honey. I agonize over that when I slice my apples, if they're going to turn brown before the company gets there. If I can buy apples like that? That would be good. That's a gold mine.

In each group, about half of the participants said that they would buy this product. Several who said that they would buy the product said that they would use it as an ingredient in cooking or baking. While this use may represent an important market, it also may not support a premium price for the product.

When asked about prices, the women said that they would expect to pay anywhere from \$1.19 to \$5.50 for a one pound bag of sliced apples in a re-sealable pouch. This packaging and size of pack had not previously been suggested in the discussion. It was chosen because of the relative ease of participant's to envision the size of a one pound package. The average price suggested was \$2.57. However, again, these results should not be interpreted as a statistical representation of the target market. Instead, the range of prices provides a basis for further study of price levels for the product. The broad range of prices suggested for this product indicates a need for further study, but it also indicates that perhaps consumers do not have a good sense of what they would expect to pay for this product. This uncertainty might provide an opportunity not available with products for which consumers already have a strong sense of price.

Evaluations of the taste of a product are highly dependent upon the formulation of the samples used. This limitation makes it difficult to extrapolate from these results to project consumer reactions to the product in the market. The results provide detailed information about reactions to a specific variety, but based on these results, this variety may not be the best choice of cultivar for this product. Also, as noted above, the samples may have been perceived to be relatively tart in part because of the ascorbic acid treatment. Taste testing would be needed to evaluate the effects of variety and treatment on consumer reactions.

Taste testing is a research technique commonly used in the middle stages of product development. It is used to assist in developing the formulation for a product. These focus groups were intended as an earlier stage research technique, and therefore, comments about taste and

formulation should be interpreted carefully. This study was not designed to assess these factors definitively.

While this study did not identify a specific, preferred product formulation, the results point to several areas of opportunity and questions for further research with this product. First, as described above, formal taste testing would be needed to support the development of product formulations. In these focus groups, it appears that most of the women would prefer a slice that is relatively sweet.

Second, several women felt that the product showed potential for baking and cooking applications. Further research would be needed to evaluate the size of the retail market for this product as an ingredient. With general consumer trends moving away from traditional baking and cooking and toward easily assembled meals, the market for a product oriented toward baking or cooking might be limited. On the other hand, perhaps opportunities exist for products, including apple slices, which provide consumers with an easy to prepare meal or dessert. For example, a fresh apple cobbler kit that could be prepared quickly might appeal to consumers as a product that is both convenient and nostalgic.

Third, among the best scoring products in the consumer survey discussed in Section III were snack packs, which combined fresh apple slices with crackers and cheese, caramel dip, or peanut butter. These products offer convenience value and support parents in providing their children with something healthy. This application of fresh slices warrants further research and development.

Fourth, participants raised one unique opportunity for occasion marketing: Rosh Hashanah. This opportunity might be used to build product interest. Occasion oriented packages could include servings of honey.

Fifth, concern over the treatment of the slices may present a marketing challenge for this product. Consumers expect apples to brown, and when this product did not brown, it raised questions in the minds of the focus group participants. Most of them were reassured when we later discussed the formulation of the treatment. Some even felt that ascorbic acid treatment might be promoted as a benefit because it is a source of vitamin C. However, their initial reactions are important. As discussed in Section II, food safety is an important consumer concern. Comments in the focus groups indicated that concerns about undesirable ingredients could be significant. Marketers of this product should address these concerns. Additional related concerns in the foodservice sector will be discussed in Section V.

Finally, overall, consumer reactions in the focus groups were generally positive to the concept of this product. Earlier discussions in the focus group sessions indicated the potential for this product to exploit a market opportunity by overcoming consumer dislikes about apples. A product that adds value with convenience in this way may not appeal to the broad market, but the data in this report point toward potential opportunities in particular market segments. In the focus groups, consumers generally liked the product concept, praised the product appearance, and could suggest use occasions for the product. Several concerns were also identified. However, with further study, this product appears to show promise. Additional discussion of opportunities for this product in the foodservice sector follow in Section V.

Apple Chips

Apple chips are a product recently introduced to consumers by two U.S. apple processors. The products currently marketed are chips fried in oil. The product lines include versions with different flavors and apple varieties (e.g., caramel, Granny Smith). Very little publicly available data exists on the performance of these products in the market. In the consumer survey discussed in Section III, the incidence of apple chip purchases by U.S. households was only 4% in the past three months.

We included apple chips in this study to explore opportunities for expanding consumption of this product. The product offers consumers a healthy alternative snack product. Because of the importance of health and convenience to consumers, this product appeared to have the potential to be quite appealing to consumers.

The samples used in the focus group study were baked apple chips. These chips were similar to the existing apple chip products in terms of size and appearance of the chips. However, they were not fried, but baked. Like the fresh apple slices, the chips were made with the variety NY674 and treated with ascorbic acid coating to prevent browning. Two versions were included in the sampling: plain and cinnamon.⁷ The samples were presented in a bowl, from which the focus group participants served themselves a few chips for sampling.

As with the apple slices, we first asked the focus groups to evaluate the appearance of the product. The responses about appearance were generally very positive:

- ◆ “I like the way it looks.”
- ◆ “It looks happy.”

⁷ The cinnamon chips were only sampled by five groups due to time constraints in the sixth group.

- ◆ “It looks crunchy.”
- ◆ “It’s pretty, I think.”
- ◆ “They’re clean.”
- ◆ “They’re much prettier than the dried ones.”
- ◆ “I like leaving the skin on it as color. It’s not boring.”
- ◆ “They’re kind of individual.”
- ◆ “They’re not like Styrofoam.”
- ◆ “I like the way it looks, the texture as I’m looking at it. It looks like a piece of cloth.”

Several women even felt that the chips could be used in decorations, especially the plain chips. Some of their comments included:

- ◆ “I might decorate with them.”
- ◆ “It reminds me of Christmas.”
- ◆ “Like you hang up on Christmas trees and stuff.”
- ◆ “I hate to say it, but Boy Scout Christmas wreaths.”

Some women did not like the appearance of the cinnamon chips. The cinnamon chips had been sprinkled with cinnamon after baking. Therefore, the cinnamon was not baked into the chips. Many of the women recommended that the cinnamon should have been baked into the chips. This factor clearly affected the appearance of the chips, as well as the flavor, which will be discussed below. Comments on the appearance of the cinnamon chips included:

- ◆ “It’s hard to tell if it’s clean.”
- ◆ “Yes, it makes me think bugs are in the bag.”
- ◆ “It could be dirt. I don’t know. They look dirty.”

The clean, white appearance of the plain chips seems to have been appealing, and they were clearly perceived as more attractive relative to the cinnamon chips. Again, NY674 was the variety used in the samples. The non-browning characteristic of this variety may have contributed to the bright, white appearance of the chips that the focus group participants praised.

Next, they tasted the plain chips. The taste of the plain chips received high ratings from many of the participants, particularly those that found the sweet and tart combination of flavors appealing. Positive comments about the flavor included:

- ◆ “Surprisingly, I gave it a ten [on a scale of one to ten], because to me it was sweet at first and then it got a little tart afterwards, but I like that. It’s sweet at first.”

- ◆ “It kind of had a range from sweet to tart.”
- ◆ “Maybe that’s what it was. It was just something different.”
- ◆ “It’s got both of them, the tart and the sweet.”
- ◆ “Very tart.”
- ◆ “Tart and moist.”
- ◆ “The right sweetness.”
- ◆ “Crunchy.”
- ◆ “They sizzle in your mouth.”

However, some did not like the tartness of the flavor:

- ◆ “I actually feel very ambivalent. On the one hand, I liked it. I liked the chewing, but I only gave it a six [on a scale of one to ten] because it was tart.”
- ◆ “It’s a little too sour for me.”
- ◆ “Because I feel them biting on my tongue from the sour. There’s got to be some sort of something to make them so sour. What’s the preservative?”

Next, they tasted the cinnamon chips. Reactions to the flavor were mostly negative:

- ◆ “It’s actually too heavily cinnamon.”
- ◆ “It’s so tart. Then mixed with the cinnamon, it’s too strong. It really tastes like cardboard to me.”
- ◆ “This isn’t cinnamon sugar. This is just cinnamon. So it’s real bitter.”
- ◆ “I expected it to be sweeter, but in fact, it did the total opposite.”
- ◆ “It’s the first thing you get on your tongue...the powder, before the apple flavor.”
- ◆ “The apples aren’t sweet. It doesn’t sweeten them, the cinnamon. A tart flavor with cinnamon on it, not good...”
- ◆ “What person’s job is on the line with that one?”

Some of the comments again reflected the perception that products with cinnamon are sweet, and in some cases, the misperception that the cinnamon itself is sweet. For example, one person said, “It was not sweet and seeing the cinnamon, I was thinking apple pie, sweet, and it was not.”

A few also noted that the cinnamon should have been baked into the chip:

- ◆ “It should be baked into it. It’s just sprinkled on top.”
- ◆ “It’s the difference between cooking pasta with salt in the water or trying to add it later. It just doesn’t work.”

A chip with baked-in cinnamon and sweetened with sugar would probably have been more appealing to these groups than the cinnamon chips that they sampled.

The issues of preservatives and allergies were again raised by a few women during the sampling of the chips. With regard to preservatives, a few asked whether the chips were treated with any chemicals. For example, one said, "It's real good. But to have this flavor...it's not stale to me. It seems very fresh. I would want to know what preservatives they use." With regard to allergies, after tasting the plain chips, one woman said that she was having an allergy type of reaction. She said, "I think I'm allergic to them because my eyes are going all funky now." The issue of food safety is currently very important with consumers. These comments are not evidence of insurmountable issues for the product, but they do draw attention to an issue which marketers should be aware of and approach carefully.

The participants suggested a number of possible uses for the product. They see the product as primarily a snack item for personal use at home, in the office, or in the car or for use at parties with other dry snacks and dips. Other use suggestions included:

- ◆ "I would crumble it up in ice cream."
- ◆ "I would love them with a bowl of honey to dip. Wouldn't that be so cool? Instead of chips and dip."
- ◆ "Fondue."
- ◆ "Sending it to school with your children in the little zip bags they have."

Other ideas for dips for the chips included caramel, cream cheese, and marshmallow sauce. As noted above, several women said that they might use the chips for decorations, particularly during the Christmas holiday. However, this use might raise some questions about the potential for a muddled perception of the product by consumers. A product used as a decoration, which does not spoil, might not be easily differentiated as a fresh, tasty, and wholesome snack.

Surprisingly, the nutritional value of these apple chips was not a topic of discussion in the focus groups. Baked apple chips are a low-fat alternative to fried chips, but this factor was not brought up by the participants, many of whom seem interested in healthy, low-fat or low-calorie foods at other points in the discussion. This product characteristic may need to be made more clear to consumers.

Overall, the plain chips were evaluated highly by participants, and the cinnamon chips, in this formulation, were rejected. When asked about price, they expected that the price for an 8 to 10 ounce bag of chips would range from \$1.19 to \$4.00, with an average of \$2.59. As for the apple slices, the range of expected prices was broad.

While participants liked the plain chips, additional research would be required to develop the product and choose an appropriate marketing strategy. For example, the sweet-tart taste combination was appealing to some, but not all of the participants. Formal taste testing could be used to refine the formulation and identify the target consumers for this flavor. A single formulation is unlikely to be appealing to everyone, and multiple product versions might be appropriate. The fried apple chips currently marketed are available in a variety of formulations.

In the highly competitive snack market, positioning for this product is an important issue. The product needs a clearly defined appeal for a more clearly defined target market. The comments received in these focus groups are evidence that baked apple chips may be appealing to consumers, but market positioning and strategy will be critical to product success.

Apple Butter

Samples of apple butter were included to explore reactions to the product. Traditionally, this product has been strongest in the southern and central parts of the U.S. In our survey, 10% of respondents said that they purchased apple butter in the past three months, but the women in the focus groups used very little apple butter, and a few said that they had never tried apple butter. Apple butter is a very mature product, and apple industry leaders interviewed in this project felt that apple butter is a product that many consumers keep in the back of their refrigerators and rarely use.

In this project, a regional entrepreneur had worked with Cornell University food scientists to create a new spicy formulation of apple butter to sell through an established farm-based retail operation in upstate New York. The product offered a zestier flavor and more distinct texture than traditional, commercial apple butters. We included samples of this product in the focus groups to explore consumer reactions to the new formulation and to attempt to evaluate opportunities for renewing consumer interest in this product.

In the focus groups, apple butter was served to the participants from a bowl. The participants were given plain saltine style crackers on

which to spread the apple butter. Again, they were asked to evaluate the appearance and the flavor of the product.

Overall, the appearance was rated very favorably. The apple butter was dark brown in color, and the texture was thick, with small bits of apple visible in the spread. Compared to most commercial apple butter, the consistency was much more viscous. Comments on the appearance included:

- ◆ “It looks good.”
- ◆ “It’s dark looking.”
- ◆ “It’s chunky.”
- ◆ “It’s not watery or anything. It’s firm.”
- ◆ “The consistency is very nice.”

In all but one group, most of the participants were enthusiastic about the product. They found the flavor to be unique. Most of the women in five of the groups said that they would buy the product. In the remaining group, the mothers with children under 6 in New Jersey, the participants had an opposite reaction to the product. They found the flavor too spicy. One of them said, “It smells like I ate a piece of potpourri.”

The strong, spicy flavor clearly polarized the participants. The division seemed to be based on their appreciation or lack of appreciation for cloves, which some mistook to be cinnamon. However, most of the women made positive comments about the spicy flavor, and some praised it over other apple butters:

- ◆ “Apple butter, I never eat, because the first time I ever had it, it tasted like watered down peanut butter. That funny consistency. This is lively in your mouth. I can’t tell you [how much I like it].”
- ◆ “It tastes better than regular apple butter.”
- ◆ “It has a little zing to it, a little bite.”
- ◆ “It would be better than butter.”
- ◆ “I thought it was plain apple butter when I first tasted it and I was like, wow. That’s really different. I think that’s a great alternative to what’s out there.”
- ◆ “But it’s really different from the apple butter that I have. The stuff that I’ve had is really bland compared to that. I think it’s a great product. I would definitely buy it.”
- ◆ “[The smell’s] overpowering. I pick up cloves, a lot of cloves in it, which I’m not used to, but when I taste it, the taste is absolutely delicious. It’s different from the apple butter that I have in my refrigerator right now...I would definitely buy this.”

A few made negative comments about the strength of the clove flavor in this formulation:

- ◆ “The cloves were a little overpowering.”
- ◆ “I said ‘7’ because of heavy cloves [on a scale of one to ten], but otherwise ‘10’ because I loved it.”
- ◆ “Like sticking your tongue in a cloves bottle.”

The participants noted a number of uses for the product. Several thought it would be good with breakfast foods including toast, English muffins, pancakes, waffles. Some said it would be good to add zest to bland food. Some more unique suggestions were for use in apple pie filling, to put on baked ham, and for use as an ice cream topping. One person suggested that it would go well with crackers and cheese.

When asked about what price they would expect to pay for this product, the participants’ responses ranged from \$1.59 to \$4.59 for a 6 to 8 ounce jar. The average expected price was \$2.51.

Overall, the responses to this product were positive, and in some groups, quite enthusiastic. The discussion seems to indicate the potential for revitalizing this market with a product that offers more flavor and a thicker texture than other commercial apple butters. The participants suggested several uses for the product. However, many of those uses would require consumers to change routine behaviors. The substitution of apple butter for butter or jelly might be an infrequent event, triggered perhaps by a special occasion, but the likelihood of consumers making this switch on a more frequent basis is questionable.

Apple Wine and Hard Cider

Two of the focus groups were designed to allow for the evaluation of three alcoholic apple beverages. These groups were conducted in the same format as the other groups, but at the end of these two meetings, the sampling of two apple wines and one hard cider were added to the program.

Hard cider and apple wine are not new products. In fact, both products have long histories. However, neither product holds a significant share of the U.S. alcoholic beverage market. The market for hard ciders is growing rapidly in the U.S., but it is still only a very small segment of the beer market. Apple wines have an even smaller market. However, the recent success of fruit-based and fruit-flavored wines in the U.S. market points to a potential opportunity for apple wines.

Several regional entrepreneurs have taken an interest in apple wine and hard cider products. Through this project, several of them have received support in developing product formulations. A paper which assessed the market for hard cider and apple wines was issued through this project in June 2000 (see Rowles, 2000). Due to the relative lack of information available on these markets, we included these products in the consumer focus group study to provide additional information to interested entrepreneurs.

The participants who sampled the wine and hard cider were screened to be women who drink wine and who purchase wine for their households. In the discussion, most of them said that they preferred sweet wines to dry wines and that they prefer white wines to red wines. The three products were presented separately, in the following sequence: dry apple wine, semi-dry apple wine, sparkling hard cider. Each product was discussed before the next product was presented. The women cleansed their palates before sampling each beverage with a small cracker and a drink of water. The beverages were served in small, clear, plastic sample cups, which were filled prior to being brought into the focus group room. The packaging for the products was not presented to the participants.

Neither the dry apple wine nor the semi-dry apple wine was popular with the groups. Their reactions were probably influenced primarily by these particular formulations. Some of their comments offer suggestions for improving the flavor. Both of the wines were still (not carbonated). The apple varieties used in producing the wines were Liberty and Northern Spy.

The dry apple wine was the least popular of the three beverages sampled. The participants generally praised the wine's appearance and aroma, but they did not like its taste and aftertaste. Comments on the dry apple wine included:

- ◆ "I thought it was very strong."
- ◆ "It was a little bitter or flatter, something."
- ◆ "I found it to be very sour. I really didn't like having it in my mouth."
- ◆ "I have to force myself to swallow that."
- ◆ "It's sharp."
- ◆ "I initially loved and then just...it wasn't great after that."
- ◆ "And the aftertaste I gave a 2 [on a scale of one to ten] because I'm still after-tasting it for awhile. It leaves kind of a bitter taste in my mouth."
- ◆ "And afterwards, I don't know. It tasted almost like it was burning."

The semidry wine liked a bit more by the participants than the dry wine. They again praised the wine's appearance and aroma. Some also had positive comments on the taste and aftertaste. However, the product generated little enthusiasm in either group. Comments on the semi-dry apple wine included:

- ◆ "I think if it was really chilled, really cold, it would go down smooth."
- ◆ "The taste and aftertaste I have nine [on a scale of one to ten]. It tastes weird to me, though. I would buy it."
- ◆ "I didn't care for it."
- ◆ "I think you would get nasty drunk on this."
- ◆ "To me, it's champagne and I'm not a champagne person."
- ◆ "I would buy it maybe if we were having a big gathering and I don't want to spend so much. After a while, a drunk is drunk and they'll drink anything. For dinner, I think it's a little rough."
- ◆ "It would definitely make a good conversation piece, to talk about this is made from apples versus grapes."

Overall, only a few said that they would buy the dry wine, and about half said that they would buy the semi-dry wine. The few who would buy the dry wine said that they would not hesitate to serve the wine to guests at dinner. Expected prices for 750ml bottles of the wines ranged from \$3.99 to \$12.99 with an average of \$6.74 for the dry wine and from \$5.00 to \$12.00 with an average of \$7.49 for the semi-dry wine.

The final product sampled was a sparkling hard cider. This cider was made from a combination of five apple varieties. The product was carbonated. In general, the participants liked this product much more than the wines, and some were enthusiastic about the product. They praised its appearance, aroma, taste, and aftertaste. Comments included:

- ◆ "It's very tasty."
- ◆ "It's good. It's very good."
- ◆ "It was very pleasant. I'd absolutely buy it."
- ◆ "I like it. It tastes like a sparkling apple juice kind of taste."
- ◆ "It kind of smelled like apples."

In general, they saw several occasions to use the product at informal gatherings or casual meals. Their suggestions included:

- ◆ "Parties."
- ◆ "Wine and cheese parties."
- ◆ "After dinner."

- ◆ “Italian food.”
- ◆ “I would say with turkey and chicken.”
- ◆ “Anytime.”

Some also felt it would be an appropriate gift to bring to a friend’s house. Expected prices ranged from \$4.99 to \$12.00 with an average of \$7.66 for a 750ml bottle. Almost all of the participants said that they would buy this product.

Hard cider is commonly available in retail markets. However, some of these women felt differently about this product than those that are commercially available. They did not see the product packaging, but many assumed it would be packaged like a wine in a 750ml bottle, as opposed to a 12-ounce beer bottle. This distinction may be important with women consumers, especially those that plan to serve the product when entertaining.

Summary of Product Sampling Results

Overall the product tastings were useful to gather consumer reactions to these products, all of which were variations on existing products. In product samplings, the potential exists for a positive bias in respondents’ comments. Many people do not feel comfortable giving direct negative feedback. The use of a moderator can help to lessen this effect, because the moderator is neutral. The moderator is not invested in the product. The moderator in these groups made it clear that he had no interest in or connection to these products, and the other researchers were not present in the focus group rooms. However, all results from the sampling portion of the meetings should be approached with some expectation of at least a slightly positive bias.

Most of the sampling results are very specific to the product formulations presented. Perhaps the most useful results to entrepreneurs interested in these products are not the evaluations of product taste, but the observations that provide a glimpse into the usefulness of a product in consumers’ lives. The data regarding suggested product uses might be the most valuable data from the samplings. Data on taste, aroma, and appearance are important only in that they provide direction to further research and product development.

Of all of the products sampled, the product with the greatest potential based on the sampling results appears to be the sparkling hard cider. Participants were the most enthusiastic about this product and could offer several occasions for its use. They also expressed enthusiasm about the apple butter, and market opportunities may exist for zesty apple butter. However, the product faces barriers in the need to change

consumer behaviors for successful adoption and re-purchase of the product.

Fresh apple slices and apple chips appear to have potential with consumers, but these products did not receive the same level of enthusiasm shown for the hard cider and the apple butter in the focus groups. Data from earlier discussions in the focus groups points to evidence of a consumer desire for such a product. It also fits nicely with current consumer interests in fresh, healthy, convenience foods. The product sampled by the groups was generally too tart for most participants. Also, concerns about the treatment being “natural” should be addressed in the marketing of the product.

The apple chips seemed to receive about the same level of interest in the samplings as the fresh slices, but this product faces the threat of formidable rivals in the highly competitive snack market. The product lacks clear market positioning. Attention should be given to clearly defining its benefits and choosing an appropriate formulation and target market.

Finally, the apple wines were not popular with the focus groups that sampled them. While the market is currently favorable for fruit-based wines, these formulations lacked appeal. The remarkable difference between the reactions to the still wines and the hard cider may also in part be due to the carbonation of the hard cider product. The recent success of fruit-based wines demonstrates a consumer desire for good-tasting, fruit-flavored wines. Other formulations of apple wine may be better able to exploit this opportunity.

Summary

In the focus groups, consumer perceptions of apples and apple products were explored in detail. Fresh apples are perceived as an important traditional fruit. These women grew up with apples, and they want for their children to grow up with apples. The most appealing features of apples are their crisp, crunchy texture, juiciness, sweet and refreshing taste, and nutritional value. Some processed products lack these characteristics, and therefore lose some of the appeal of fresh apples.

Consumers are aware that apples are “good for you” and good for their children. In the focus groups, they were not clear about the specific health benefits of fresh apples. Several knew that apples offered fiber contents and vitamins, but most were unable to specify which vitamins. Apples are also perceived as healthy because they are fruit, and many of

these consumers said that they were concerned about having enough fruits and vegetables in their diets.

Many focus group participants knew that apples are produced in Washington State and New York State. However, the origin of apples did not appear to be important in their purchasing choices. Almost all of the participants said that they do not check where an apple was grown when they buy it. Additional quantitative study of the importance of apple origin is needed to assess the value of competing promotional efforts by state apple associations to distinguish their apples based on the state of origin.

The focus group participants thought that products made from apples are nutritious only to the extent that they contain apples, but many felt that processing destroys an apple's unique texture. Also, they were cautious about eating more apple products because, in general, they perceive them to have added sugar, high levels of fat and calories, and added preservatives and chemicals. These traits do not apply to all apple products, but this perception indicates the strength of the image of apple products as desserts.

Some of these women also felt that their additional consumption of apple products was restricted by a narrow range of available apple products, outside of the dessert category, and limited menu compatibility. These limitations apply to many fruits, not just apples. They also indicate a potential opportunity to increase consumption with new apple products and with consumer education about product uses and recipes.

The apple industry should take note of the concerns expressed by mothers in these focus groups. Many of them said that they believed, or were led to believe by their pediatricians, that apple juice, especially full strength apple juice, may not be good for their young children, gastrointestinally or dentally. Conflicting nutritional advice on this issue may be confusing for consumers and adverse for apple juice sales. In recent years, a major producer of white grape juice has focused public relations efforts on the benefits of their product for young children, and these efforts may be contributing to negative perceptions of apple juice in this market. Many mothers reported diluting apple juice for their young children. These data point to a need for additional nutritional information and public relations by the apple industry on the benefits and appropriate use of apple juice with young children.

These data may also point to a market opportunity for a premium priced apple juice and spring water beverage for young children. Many focus group participants responded positively to this product concept,

especially if available in single-serve packages. The product might be enhanced with vitamin fortification to offer additional health benefits. Data from the consumer survey discussed in Section III, as well as polarized opinions on this product in the focus groups, indicate that the product may have specific audiences that would be most interested in purchasing it. A market segmentation study would help to identify the target markets for this product.

Prototype sampling in the focus groups provided data useful in evaluating directions for new apple product development. The sparkling hard cider and spicy apple butter received the most enthusiastic responses in the focus groups. The fresh apple slices and apple chips were generally evaluated positively as well. However, the tart flavor of the apple slice samples adversely affected the results because most participants said that they prefer sweeter apples. Data from the focus group discussions of dislikes about apples indicate a market opportunity for this product. Fresh apple slices overcome many of these impediments to apple consumption. Further research on product development could focus on the preferred flavor profiles for fresh slices. The potential for cannibalization of fresh apple sales would be another area for further study.

While apple chips received many positive comments, the product's benefits seemed unclear, and the product faces very high levels of competition in the snack market. Further research attention should be given to the strategic positioning of this product.

Finally, the groups generally reacted negatively to the apple wines sampled. Market conditions appear to offer a potential opportunity to good-tasting fruit based wines, but additional product development is needed to find a taste more appealing than the formulations tested.

The focus groups confirmed that apples are a highly regarded fruit, at a time of heightened consumer interest in increasing fruit consumption. Apple products are a broad category encompassing a range of products. Consumers may perceive that the benefits of fresh apples are diminished in processed apple products, but their apple content appears to be important in gaining their acceptance with consumers. These results point to a number of opportunities for expanding consumption of fresh apples and processed apple products. Perhaps the most important findings are the need for continuous consumer education on the unique benefits of apple consumption and the opportunity for the development of innovative products that appeal to consumer desires for wholesome and convenient foods.

Section V

Exploring Opportunities in the Foodservice Market

An analysis of market opportunities in the food and beverage industry is incomplete if it does not consider the foodservice market. In the U.S., foodservice is a rapidly growing segment of the economy. Americans are spending an increasing amount of their food budget on meals away from home. In 1999, 47.5% of the food spending in the U.S. was for food away from home (Clauson, 2000). Between 1990 and 1999, U.S. consumer spending on food away from home increased by 49% (Price, 2000). Adjusted for inflation, the increase in real spending for food away from home during the 1990's was 25%, while real spending for food at home increased by only 4.7% (Clauson, 2000). Growth in the foodservice channel offers new opportunities in an expanding market for food and beverage manufacturers.

As discussed in Section II, convenience is a primary motivator for today's consumers in the U.S. The drive for convenience among American consumers explains much of their increasing interest in and need for dining away from home. Increasing disposable incomes during a period of economic expansion contributed to increased spending on food away from home by U.S. consumers (Clauson, 2000). This trend relates to another important factor that drives consumer demand in today's market: gratification. Also discussed in Section II, gratification is a motivator that the foodservice channel is well suited to fulfill.

In addition to restaurants, the foodservice channel includes any operation that serves meals to consumers away from their homes. For example, institutional foodservice operations provide meals for patients in hospital and nursing homes, school foodservice operations provide meals for students in schools, colleges, and universities, and corporate foodservice operations provide meals for employees at their places of work. Foodservice statistics include meals purchased for in-restaurant consumption, as well as take-out food. These statistics do not include purchases of prepared meals in grocery store delis. However, these purchases are driven by the same consumer motivators, and during the 1990's, purchases of prepared foods from retail food stores increased (Clauson, 2000).

While the foodservice market currently accounts for 47.5% of food spending by U.S. consumers, the actual volume of food and beverage products sold is smaller because prices in foodservice reflect the increased value of food preparation and service. In the late 1990's, sales of fresh produce through foodservice operations (\$34 billion) were similar to sales through retail food stores (\$40 billion) (McLaughlin, 1999).

However, the volume of produce sold through the foodservice channel is much lower than through the retail food channel. Therefore, while foodservice spending is approaching 50% of the U.S. consumer food budget, consumers are acquiring much less than 50% by volume of their fresh produce through foodservice. However, the foodservice share of the food market is still considerable, and growth in this market makes it an attractive opportunity for food and beverage manufacturers.

Furthermore, the presentation of food and beverage products in foodservice operations can have a positive spillover effect on retail market sales. Consumers are often more willing to try new food and beverage products at a restaurant. A positive experience with a product in a restaurant can lead a consumer to buy the product for use at home. This benefit of foodservice sales can be particularly important for new products, especially those that feature unusual or unfamiliar flavors, textures, and ingredients.

In this research project, we devoted a substantial portion of our resources to exploring opportunities in this important market. This focus was driven by the growth and importance of the foodservice market. It was also driven by the interest of apple industry leaders in this market and the relative lack of information available on marketing to foodservice operations. The research conducted in this project included both qualitative and quantitative studies, and the markets explored included institutional foodservice, with an emphasis on schools (K-12), and family restaurants.

These types of operations were chosen because apple products seem particularly well suited to these markets. Traditionally, apples and apple products have been important in the institutional foodservice segment. In the institutional segment, nutritional value is an important driving factor in meal planning. Recent marketing efforts by the apple industry have focused on promoting apples and apple products for their nutritional benefits, and this focus may present new marketing opportunities in this segment. Targeting foodservice markets that serve children was a primary goal because of the importance of families with children as a market for apple products (see Section II). Therefore, school foodservice was an important priority for research. Family restaurants were important for this reason as well.

These segments of the foodservice industry are also important because of the large volume of food served in these markets. For example, a survey conducted by a joint committee of the New York State

School Foodservice Association and NY Farms!⁸ estimates that the about 1.3 million gallons of apple juice and cider are served in New York schools each year (NYSSFSA/NYF, 2000). This volume is the equivalent of about 365,000 bushels of apples.

In this project, qualitative research was conducted with institutional foodservice managers and family restaurant operators. The qualitative techniques included focus groups and telephone interviews. The quantitative research consisted of a mail survey of New York State school foodservice directors. The findings from the qualitative studies are discussed below, and the findings from the school foodservice survey are presented in Section VI.

In the fall of 2000, two qualitative studies were conducted to assess opportunities for apple products in the foodservice market. The studies were designed to assess the use of apple products in institutional foodservice operations and family restaurants. These studies were also designed to assess attitudes toward apple products and opportunities for new apple products. The results of these two studies are presented below.

Upscale restaurants are a segment of the foodservice market that was not explored in this research project. However, this segment was recently examined at a workshop sponsored by National Apple Month prior to the U.S. Apple Association annual meeting in August 2000. At the workshop, three chefs from upscale restaurants experimented with apples and apple products in various recipes and discussed their use of and interest in these products. A discussion of the observations made during this workshop is included in the findings discussed below.

Institutional Foodservice Market

In the first qualitative study in the foodservice market, two focus groups were held with representatives of the institutional foodservice segment. One focus group was held in Rochester, NY on November 7, 2000. The other focus group was held in the New York City metropolitan area (Clifton, NJ) on November 28, 2000. These locations provided perspectives from both upstate and downstate foodservice professionals.

Potential participants were identified through industry reference guides (e.g., *Who's Who is Healthcare and Hospital Foodservice*). Recruitment was conducted by telephone and fax. Potential participants

⁸ The New York School Foodservice Association is a trade association for school foodservice professionals. NYFarms! is a non-profit organization dedicated to the support and promotion of New York farms and farm products. The joint committee is a task force concerned with increasing the use of New York farm products in New York schools.

were recruited to take part in a focus group with other regional foodservice professionals to discuss their opinions about certain fresh and processed fruit products that they purchase and their suggestions for product improvements. Participants were offered an honorarium of \$50 each for attending the focus group. Eleven participants attended the Rochester focus group, and four participants attended the New York City area focus group.⁹

The focus groups were moderated using the discussion guide included in Appendix 5. In addition to their use of apple products, participants were asked to address their use of fresh apples. As in the consumer focus groups discussed in Section IV, an understanding of the uses of and attitudes toward fresh apples is important in understanding the use of and attitudes toward apple products. Additionally, participants were presented with samples of two apple product prototypes and asked to discuss their reactions. The prototypes were fresh apple slices and baked apple chips. The sessions were tape recorded and subsequently transcribed for reporting purposes. Recruitment, moderation, and reporting for the focus groups were provided by Cornell University's Office of Communication Strategies.

In total, 15 institutional foodservice professionals attended the focus groups. The participants included five directors of university and college foodservice operations, four directors of hospital foodservice operations, two directors of long-term care facility foodservice operations, two directors of foodservice for health systems that include a hospital and long-term care facility, and one school district (K-12) foodservice director. Most of the participants had been involved in foodservice management for ten years or more.

The findings from the focus groups are presented below. Quotes from the focus group participants are included in the findings to illustrate perspectives and opinions. These quotes were selected, not because they are representative for foodservice professionals in this segment, but because they illustrate the diversity of opinions in the field and, in some cases, identify potential opportunities or limitations that warrant additional research and consideration. The findings below are organized by discussion topic.

Use of Fresh Fruit and Fruit Products

All of the participants reported that they serve a variety of fresh fruits. The health care participants noted their need to serve patients on

⁹ There were eleven confirmed participants expected at the New York City area focus group. Four cancelled on the day of the session and three were no-shows.

restricted diets, which sometimes limits their use of fresh fruits. They were more likely than other participants were to mention limitations to using fresh fruit, including limited shelf life and preparation needs (i.e., slicing, peeling, seeding, and cutting). Most participants noted that they use canned fruits as a staple item in their menus. One participant noted the strengths of using processed fruits, such as fruit cocktail, “it’s instant food, obviously it’s less labor...it’s an easy sell, too.”

One of the participants mentioned petite bananas as an appealing foodservice product for health care operations. This product offers a desired nutritional benefit and a product that is sized to provide one fruit serving without preparation (i.e., slicing). Fruit servings sized to the equivalent of one nutritional fruit exchange are convenient in institutional foodservice settings where nutritional planning is especially important.

Fruits that can be served with minimal preparation, as easy to eat finger foods, are appealing in long-term care operations. Representatives from long-term care facilities said that they like to use fresh fruit when possible and that they are encouraged to do so by the health officials. Fruit is an important source of fiber for patients in health care institutions.

One of the university foodservice participants said that his operation uses as much fresh fruit as possible. He said that his customers demand high quality fresh fruit and vegetables. He said that he uses some canned fruits, but he did not feel that processed products could meet his quality needs. His operation provides customers with a large fresh fruit buffet bar.

Several participants felt that the fresh fruit that they receive is slightly lower in quality than the fruit in retail grocery stores. One of the participants noted the difficulty of acquiring competitive quality: “Wegman’s is the utopia of what our produce should look like. And our customers...expect that particular quality.” Several of the participants agreed that when they need very high quality produce for a special event, they will go and purchase produce at a local grocery store. In doing so, they ensure that the produce is fresh, attractive looking, and available when they need it, instead of held in storage from the time of delivery to the time of use.

A participant from a school foodservice operation said that in her cafeterias, some students drain the syrup from canned fruit dishes. She said, “it’s funny, the kids are smart nowadays, they don’t want the syrup. So they drain out all the syrup from their dishes.” As a result, her cafeterias get more waste when serving processed fruit than they do with

fresh products, but because the processed fruit is easy to serve, they retain it on their menus.

Most of the participants used some pre-cut produce and liked the labor saving advantages of these products, including sliced melons, pre-cut pineapples, and grapefruit sections. Some noted quality and taste problems with these products:

- ◆ “I think some of them are possibly preserved with benzoid or potassium or something and you can taste that.”
- ◆ “It just doesn’t taste the same.”
- ◆ “The fruit all tastes the same [in mixes].”
- ◆ “You can tell when you buy it processed, the taste and everything.”

However, many of the participants had discovered pre-cut products that they found acceptable to serve to their customers.

In general, the discussion revealed that apples and apple products compete for a place on foodservice menus with a wide variety of fruits and fruit products. Foodservice operations are constantly balancing their needs to control costs and meet customer needs. Foodservice operators find products more appealing when they help them to save labor, provide nutritional value, offer appropriate serving sizes, and do not compromise quality. More specific feedback on how products can meet the needs of foodservice operations is provided in the following sections.

Nutritional Needs

As mentioned above, foodservice managers in health care and school facilities appreciate the convenience of fruit and fruit products that are sized to be the equivalent of one nutritional fruit exchange. With apples, one fruit exchange is usually a small apple.

Several participants, especially in health care, emphasized their need to know about the ingredients in the products that they serve to protect their customers from potential allergens and to ensure adherence to restricted diets. One of the participants observed that hospital patients increasingly have special needs:

We’re seeing more and more folks in hospitals, because of the dynamics of health care and HMO’s and so forth, who are really sick. You don’t find just the everyday Joe in the hospital any longer. So you need those food products tailored and designed specifically for those high-risk populations. They’re growing as a

population within health care. What beds are still being occupied are for very sick people.

One participant has observed increasing cases of allergies to apples. She said, “The problem that I have with apple products is that I’m finding in the long-term care end that we’re seeing an increase in people with allergies to apples.” She noted a particular concern over products sweetened with apple juice, but not labeled to indicate the presence of an apple product. Allergy concerns were also mentioned in the consumer focus groups discussed in Section IV.

Many of the participants expressed concern over insuring food safety for their customers. They were very aware of current issues and techniques in the area of food safety. Nothing specific to the safety of apples and apple products was discussed in the groups.

Suppliers

Significant barriers to entry exist for the entry of new products and new marketers into the foodservice industry. Most participants reported using national foodservice distributors (e.g., Sysco, US Foodservice), food wholesalers, and group purchasing organizations. These distributors play an important role in determining what food and beverage products are utilized at individual foodservice sites. Most of the participants use a limited number of suppliers. One expressed how he appreciated the convenience of having the distributors do most of the sourcing work: “Lucky for me, I don’t have to deal with that, shopping around.” Another advantage of using these distributors was the option to lock in prices.

Some of the participants reported using a local wholesaler for produce. Only one reported buying produce directly from local growers. The dependence of these foodservice operations on a limited number of suppliers appears to limit opportunities for the introduction of new products and locally sourced products.

Comparison of Washington State and New York State Apples

Several of the participants commented on their use of Washington State apples. In general, they said that they favored these apples for their consistency of size, quality, and appearance, which are important factors in most foodservice operations. Several participants noted concerns about the consistency of grading in the local apples that they have used. Availability from suppliers is also a factor that favors the use of Washington State apples and limits the use of locally grown apples. Price is also an important factor, and one that often favors Washington

State apples. Many participants said that they felt New York apples had better flavor than Washington State apples, but the other factors appeared to dominate and favor the selection of Washington State apples by most of the participants.

Use of Apples and Apple Products

In the discussions, several participants explained their use of apple products, including some unique product uses. A few participants from health care operations said that they had prepared homemade applesauce in the past, but they generally felt that patients preferred canned applesauce because they are accustomed to its flavor. Canned applesauce is also considered convenient because it is labor-saving, shelf-stable, and available in single-serve containers. Health care participants noted that apples can be hard to chew for elderly patients. As a result, one serves baked apples to the patients. A few of the participants prepare Waldorf salads with apples. One noted that her operation peels the apples so that the salad can be eaten by patients on restricted diets. Two interesting apple dishes that the participants served were (1) an apple cup made with pie filling and streusel topping as a breakfast dish, and (2) an apple dessert pizza with butter and cinnamon sugar. Several other participants liked the dessert pizza idea and planned to try it in their own operations, although one noted that the labor involved in the preparing the apples (e.g., slicing, coring) might be a limitation.

Many of the participants said that labor constraints prevent them from preparing and using apples as much as they would like. Coring, slicing, and peeling require labor inputs when using apples in baking and cooking. Labor constraints are a significant concern. Speaking of the problem in general, one participant said:

Labor is the big problem. You just don't have it. We're using more and more convenience foods than we ever thought we would, and we can't afford the labor.

The browning of cut apples also limits their use in foodservice applications, including salad bars and fruit salads. Several of the participants found using lemon juice as an anti-browning agent to be unsatisfactory because it adds a lemon or acid flavor. One said, "it also changes the flavor, you bite into it, you've got to bite past that acid base."

Another participant said that he was sure that his customers would like to have cut apples on the salad bar, but he could not serve them because of the browning. A participant from a health care facility said that the use of lemon juice or acid for preventing browning limits to

whom he can serve cut apples because of restricted diets: “by just doing that, at least in my environment, limits who I can give it to because maybe they can’t have that acid. So how do you get by that?”

Another participant from a health care facility noted several frustrations with using apples. Her comments summarized the primary concerns mentioned about using apples. She noted the labor constraint to preparing apples and the difficulty that older patients have in consuming apples that have not been sliced or peeled. Her comments also echoed concerns about inconsistent grading of apple supplies she receives:

They are a very frustrating item because when you hear an apple a day keeps the doctor away, apples are promoted as such a healthy thing you expect to see them on the patient menus. But number one, they can’t eat them, they don’t have the labor to cut them, they’re not coming in consistent, they’re hard to serve.

Many of the comments indicated that this foodservice market might welcome a pre-sliced, non-browning apple product. One participant said, “Give me something that’s ready to use but has the natural flavor of the product I’m trying to market.” One discussion proceeded as follows:

Participant #1: If we could have an IQF [individually quick frozen] diced or sliced apple that once we thawed it out, and used it, tasted like an apple...

Participant #2: Right, tasted like an apple.

Participant #1: And didn’t cost four times the original raw product.

Participant #3: Or a processed apple product that’s vacuum packed so that it does not age for a certain period of time. Maybe you get like two or three weeks out of it...and then you pop it open, throw it on the pizza crust and then you’re good to go, without of course going way over the price from the raw state.

(The third participant makes a dessert pizza with apples.)

These comments came from a group in which no one had previously seen the pre-cut apple products recently introduced to the market. Only one participant, in the other focus group, had any prior exposure to a pre-sliced apple product. She was a school foodservice director. She was very impressed by the product: “Once in awhile, when I can afford it, I’ll get the sliced apple, like the Fuji apples in little packages, because the kids love anything that’s prepackaged. If it’s in a package and it’s fresh, they really like that.” She did not believe that the

preservative which prevented browning on this product was noticeable in the flavor: “There was ascorbic acid, something like that that you can’t taste.” After she described the product, another participant expressed an interest in it:

I did not realize that those apples, that you could get it sliced. I guess that I’ve never seen it. I think that’s a good idea, the slice, as long as the shelf life is something that’s realistic, and the price will have to go down. I suspect there will be a market for it because apples are popular and people would probably eat it. Even the nursing home patients, if it’s sliced they could probably use it as finger food. It would still be difficult for them to chew but it would be easier, they don’t have to bite into it. So I think there might be some opportunity for it.

In summary, the discussion of limitations to the use of apples revealed an opportunity in this market for a pre-sliced, non-browning apple product. The participants sampled a prototype later in the meeting. Comments on the prototype are summarized below.

Reactions to Product Prototypes

Two products were served in the focus groups: (1) fresh apples slices, treated with ascorbic acid to prevent browning, and (2) baked apple chips. These prototypes were produced by scientists in the Cornell Institute for Food Science at the New York State Agricultural Experiment Station in Geneva, New York. These samples were identical to those served in the consumer focus groups previously discussed in Section IV, and they were presented to these focus group participants in a similar manner.

The pre-cut, non-browning slices were very well received in these focus groups. The product met many of the needs expressed earlier in the discussion. It appealed to the participants because it is labor-saving, non-browning, and good tasting. Participants expected that their customers would like the product, and they could foresee a number of uses for the product. Comments included:

- ◆ “Salad bars have skyrocketed over the last ten years or so and just the ability to put this kind of product on a salad bar without it turning brown for even a short period of time will increase the volume significantly.”
- ◆ “Think of the fruit and cheese platters that you could have more than just grapes on them.”

- ◆ “Halves, like a stuffed apple half, and rings that I could grill mark on a grill and use that as a garnish on a pork catering plate.”

The discussion of the product raised several questions about specific attributes. These questions reflect some of the participants’ needs and expectations for such a product:

- ◆ What are the storage requirements?
- ◆ What happens if stored at higher or lower temperatures?
- ◆ Is a two-week product life long enough to ensure quality from processor to end-user? Can it be longer?
- ◆ Does the apple bake like a fresh apple, or is the water content going to need special consideration in baking recipes?
- ◆ Will it be affordably priced (i.e., comparable to fresh apples or other fruit substitutes)?
- ◆ Does the coating have potential side effects for people with allergies?
- ◆ Can the process be used to produce peeled slices, as well as unpeeled slices?
- ◆ Will it be available in shapes other than slices (e.g., cubes, whole peeled and cored, quarters, halves, rings)?

Considering these questions, a marketer of a fresh-sliced apple product could develop new approaches to meet the needs of the institutional food service market with this product.

The baked apple chips were received with less enthusiasm than the fresh apple slices. The participants made several positive comments about the product, but it did not appear to fulfill an existing need in the way that the fresh slice product does. The participants felt that three factors would affect the success of this product: price, shelf life, and competition from other snack products. This last factor may be the most important. The market for snacks is highly competitive, and many products in this market are supported with well-developed brand names and extensive marketing resources.

A few of the participants’ comments indicated that dried fruit had not done well in their operations, especially the college campus facilities:

- ◆ “I have this company that comes in there and they do dried fruit bags, a little concession thing of that. I tell the guy, I said you’re wasting your time really, I’ll have it for a whole year. I don’t know how he makes a living. I don’t sell anything. He works on consignment.”
- ◆ “In buying dried fruit, it always seems very, very expensive for us to put stuff on salad bars and that stuff, it’s been way too expensive.”

Others thought that the product might have appeal in certain applications, such as a healthy finger food for health care operations or for use in vending machines. However, again, the competitiveness of the snack market, offering innumerable competitive substitutes, creates a significant challenge to success of this product.

Suggestions to Expand Demand

At the end of the meetings, the focus group participants were asked for their suggestions on how to expand demand for apple products in the institutional foodservice market. The most frequent suggestion was to provide recipe cards and use suggestions. They said that they are always looking for new ideas. For example, in one of the meetings, several participants noted that they would try the apple dessert pizza that one of the participants described.

Participant comments about how to expand demand for apple products in their market included:

- ◆ “If you want them to use an item more, you shower them with recipe cards. I get that all the time...they’ll tell me how to use their item...That wrap company, Tyson Wraps, they gave us I think 100 menu items, how to stuff their Tyson Wraps. And that makes me want to sell more wraps, and I do. I’ll sell 20 or 30 cases a week of wraps because they gave me all these things I can push in my specials. “
- ◆ “Usually when there’s a major catering event, we’ll go through several foodservice magazines looking for ideas.”
- ◆ “That’s how you learn, actually, is just by the literature in the magazines that are out there. All the food companies send you all these free magazine and you learn so many neat ideas.”

Summary of Institutional Foodservice Focus Groups

In summary, the important themes from the institutional foodservice focus groups were:

- * Apples and apple products compete with many substitutes for space on foodservice menus.
- * Foodservice managers prefer to limit the number of suppliers that they use, and their distributors play an important role in deciding what food products are used in foodservice. This factor is a barrier to entry to the foodservice market for new apple products.

- * Consistency of size, appearance, and quality are critical factors in selecting fruit products for foodservice managers.
- * Labor constraints prevent institutional foodservice managers from using apples as much as they would like to on their menus. The oxidation and browning of cut apples also limits their use. These limitations point to an opportunity for a pre-sliced, non-browning apple product, and focus group discussions confirmed that this type of product could fill a need.
- * The pre-sliced apple samples were well received by participants. They raised several questions about the product that identify potential opportunities to tailor the product to foodservice customer needs.
- * The baked apple chips were reviewed positively, but not with the same level of enthusiasm shown for the pre-sliced apples. Apple chips face stiff competition in the market for snacks.
- * These foodservice managers are always looking for new recipes and menu ideas. Recipe cards and suggestions for new product uses were suggested as a primary strategy to increase demand for a product in this market.

Casual and Family Style Restaurant Market

The second qualitative study of the foodservice market focused on casual and family style restaurants. This study used telephone interviews instead of focus groups because of the difficulty of scheduling a common meeting time for the participants. The nature of their work and schedules made telephone interviews the best technique to gather qualitative data in this segment of the industry. Participants were identified using the *Directory of High Volume Independent Restaurants*. Independent restaurants, rather than chain restaurants, were targeted because of their perceived flexibility to revise menus and to experiment with different food items. Interview candidates were contacted by telephone, and when appropriate, convenient interview times were scheduled. With the permission of participants, the interviews were recorded. Nineteen managers and executive chefs were interviewed. Interviewees represented nine restaurants in the Rochester, NY area and ten restaurants in the Northern New Jersey area. These areas were selected to include representation of the upstate New York region as well as the New York City metropolitan area in the sample. The interviews were conducted between January 15, 2001 and February 5, 2001.

The interviewer used the script included in Appendix 6 to guide the telephone interviews. The interviews were designed to gain an

understanding of the ways that these restaurants use apples, to identify any special issues in incorporating apples into the menus of these restaurants, and to gain insight into how these restaurateurs think the use of apples and apple products can be expanded in their segment of the foodservice industry. Recruitment and interviewing were conducted by the Cornell University Office of Communication Strategies.

The findings from the interviews are presented below. Quotes from the interviews are included in the findings to illustrate perspectives and opinions. Again, these quotes were not selected because they are representative for foodservice professionals in this segment, but because they illustrate the diversity of opinions in the field and in some cases, identify potential opportunities or limitations which warrant additional research and consideration. The findings are organized by discussion topic. Because of the diversity of menus among restaurants of this type, fewer common themes were observed than among the institutional foodservice managers.

Use of Fresh Fruit and Fruit Products

The interviewees varied widely in their use of fruit in their restaurants. Some used fruit only for garnishes while others purchased a diversity of fruits for use on their menus. Fruits were used in salads, as dessert ingredients, in fresh fruit sauces, on buffets, in fruit salsas, and in bar drinks as purees or garnishes.

Suppliers

Most of the interviewees indicated that they try to limit the number of suppliers that they use to one or two. In some cases, they include among their suppliers a local distributor for fresh produce. Most of the interviewees felt that they could obtain any type of product they wanted from their suppliers. Only one said that he buys apples from local growers. Again, as in the institutional foodservice market, foodservice distributors play an important role in reaching foodservice customers. This factor can be a barrier to entry for new products throughout the foodservice industry.

Use of Apples and Apple Products

The interviewees mentioned a number of uses for apples and apple products on their menus. They used apples in fruit cocktails, on fruit platters, in apple desserts including tarts, pies, and crisps, in meat stuffings, in chutneys, and as garnishes. Apples are a popular item for brunch dishes, including Dutch apple pancakes, apple crepes, and apple and Brie cheese omelets. One interviewee served an apple and cheese

appetizer, and another served apples with a baked Brie appetizer. One interviewee served stewed apples with pork chops. Four interviewees said that they usually do not use apples on their menus. About half said that they use apples year round, and the others said that they use apples seasonally, with more apple dishes in the fall and winter.

Most of the interviewees reported buying primarily fresh apples and preparing the apples for use themselves. The labor constraints to using fresh apples discussed by the institutional foodservice managers were mentioned, but seemed to be less of a concern. This is likely because these restaurants use apples in lower volume than institutional foodservice establishments. One of the interviewees said, "We don't use many, so it's not a big deal to cut them up ourselves." However, opinions were not uniform on this issue. Another interviewee said:

Why don't I use fresh apples? With the way processing plants make things so easy now and so convenient, why would I want to start with a raw product? You know what I mean? Then you have to deal with peeling it, coring it, cooking it...In a restaurant, you're dealing with cooked products. A raw apple involves a lot of labor to get it to the finished product, so we're not going to screw around with it when you can buy it already done.

The browning of cut apples was also noted as a limitation to their use in restaurants. However, the use of lemon juice to prevent browning was a common practice, and most did not find this a major limitation. For example, one said:

When you're using fresh apples, browning is a consideration, but just a little lemon dip takes care of that. Theoretically, that's not a limitation because there's a corrective measure. Yeah, it would be better if they lasted for a couple of days, but that's not going to happen.

No one mentioned that they did not like the flavor imparted when using lemon juice in this way.

Again, these comments on the limitations of using fresh apples indicate the potential need that could be fulfilled by a fresh, pre-sliced, non-browning apple product. However, this need seems less significant than with the institutional foodservice managers. In general, the smaller volume of apples used in family restaurants compared to institutional foodservice facilities may explain the difference.

The use of processed apple products among these restaurants varied widely. Some of the interviewees do not use any processed apple products and use only fresh apples. Some said that they keep applesauce on hand but do not use it much. Some said that they use canned or frozen apples for garnishes, in sauces, and in desserts. For example, one interviewee said that he buys a frozen, sectioned, and sugared apple to bake and serve in lieu of a vegetable on an entrée plate. Again, because of the variety of menus and practices among these restaurants, it is difficult to draw conclusions about common themes in this segment as a whole.

Reactions to the Pre-cut Apples

The use of telephone interviews precluded product sampling, but interviewees were asked if they had used, seen, or heard of pre-cut, fresh apples. They were also asked whether they thought the product would be useful in their segment of the foodservice industry. None of the interviewees knew of the product. Their responses about the product's appeal and usefulness varied:

- ◆ "I'd rather use fresh. We don't have a high volume. If I was at a university or some other huge food operation, I couldn't do what I do, but at my volume I don't need to deal with processed."
- ◆ "I would think it would be useful. Especially at many large banquet centers, they have their own bakers."
- ◆ "I would have a tendency to say I wouldn't use something like that. We're dealing primarily with fresh produce, and I think that would carry over to apples. I find it difficult to believe that you're not going to be leaching out some flavor."
- ◆ "I haven't seen [the product], but it's definitely something I would take a look at. Something you've got to realize is there's a lot of waste, by the time you core the apple and take off the skin, there's a lot of waste. So that's something you have to consider, and the labor also."
- ◆ "I haven't used anything like that, but sure I'd try it if it maintained it's flavor and texture."
- ◆ "And for fruit salad, if apple was the only ingredient, but they would still be slicing all of the other ingredients, so I can't see it for our place."
- ◆ "That's what I'm developing into with my other salads. My potato salad, we used to take the raw potato...I've got somebody walking in the door right now with a sample of precooked, peeled, diced potatoes, with a 28 day shelf life. But if I was dealing with apples to a point where I would have to take them like that, I'd do it. As long as you could pass them off as fresh, hell yes."

For those that use a higher volume of apples, the product concept seemed attractive. However, many of these restaurants use only a small volume of apples. Therefore, the product might be attractive only to particular types of restaurants in this segment. For example, restaurants with brunch buffets and restaurants that offer baked desserts would probably have an interest in the product. Other restaurants would need to be sold on increasing their use of apples as well as on the product itself.

Several of the interviewees said that they serve apple juice at breakfast, and some have served cider in the past year. However, cider was not used in substantial volume at any of these restaurants. One interviewee said that he makes an apple cider ice cream with fresh cider.

Suggestions to Expand Demand

One interviewee expressed additional support for a fresh-sliced apple product and believed that the product would help to expand demand for apples: “If they were able to develop that fresh-sliced product at a decent price, I think it would definitely be worth their while.”

Another suggested that the availability of good quality, prepared pie crusts would complement the pre-cut fresh apple slices product: “Sometimes you’ll see the pie crust in the supermarket, but you really don’t see them marketed on the wholesale end. But I think that may be helpful to get people to use more fresh apples.”

Like the institutional foodservice managers, these restaurateurs believed that recipe cards and product use suggestions are an effective technique to build demand for a product in the foodservice industry. One interviewee said:

The only thing I can say is that they’d have to educate the people more on ways of using them. I read [recipe cards from food distributors], yeah. If I see something that looks pretty good, I might try it as a special and see what happens.

Independent restaurants generally have menu flexibility, and they can try new recipes and menu items as specials to evaluate customer reactions. One interviewee said:

I meet with vendors all the time. I have different vendors come in and try to sell me something, and I enjoy it. I’ll find products that I might be able to use. We have a menu that I run, so I can use just about

any kind of product I want, as long as the quality is there.

Another also voiced support for recipes as an effective strategy:

I think recipes are one of the big ways to promote the sales of apples. We made an apple stuffing for a pork chop, and I got that recipe out of one of the magazines, and people liked it. That particular week, of course, you're going to buy more apples to use for that.

This type of restaurateur might be responsive to recipe cards and new product use suggestions. However, some restaurateurs feel they have less menu flexibility: "We started out as a restaurant diner, so we have a very standard menu." Again, the diversity of menus and practices in this segment makes it difficult to make broad observations.

Summary of Family Restaurant Interviews

In summary, along with a variety of other fruits, apples are commonly purchased for use in casual and family-style restaurants, but are generally not used in large quantities. The primary uses for apples in these restaurants were in fruit salads, in baked desserts, and as garnishes. Among these restaurateurs, those that serve fruit salads do not seem to mind the preparation required in using fresh apples. Others that use apples in higher volume applications, such as apple crisp, were more interested in eliminating coring and slicing from the preparation process. The use of lemon juice to prevent the browning of cut apples was reported by many interviewees and seems to be an accepted practice in this segment of the restaurant industry.

Processed apple products were used primarily in cooked or baked products. A fresh sliced apple product had appeal for some of these restaurateurs, especially if taste and texture are not compromised. Others will resist using a "processed" apple and would have to be convinced that it is "fresh". Some restaurateurs who are not using a high volume of apples had little interest in a pre-sliced product and selling this product to these restaurateurs would also require promoting increased use of apples in general.

The wide variety of menus in this segment made it difficult to characterize practices, attitudes, and potential opportunities in family and casual restaurants. These restaurants appear to use a lower volume of apples and apple products than institutional restaurants, but individual establishments may emphasize apples on their menus, especially seasonally. A market opportunity may exist to target such

restaurants with apple and apple product promotions in the fall and winter. The diversity of this segment makes the promotion of apple products to these restaurants more complex. However, as with the institutional foodservice managers, these restaurateurs emphasized the importance of use suggestions and recipes for promoting the increased use of particular products.

Observations by Chefs from Fine Restaurants

In August 2000, the National Apple Month organization sponsored a pre-conference workshop at the U.S. Apple Association Annual Meeting in Chicago. This workshop was designed to explore opportunities for apples and apple products in foodservice. At the workshop, three Chicago area chefs from fine dining establishments each prepared several dishes incorporating apples and apple products as ingredients. While preparing their dishes, the chefs talked about their opinions on the advantages and limitations of cooking with apples and apple products. These comments complement the qualitative data previously discussed. Therefore, a summary of the chefs' comments is included here.

The chefs mentioned several flavors and ingredients that they thought worked well with apples. One chef felt that apples, ginger, and cucumbers made a good combination of light flavors appropriate for spring or summer seasonal dishes. The chefs acknowledged the traditional pairing of apples and cheese. One chef also noted that apples work well in dishes with smoked flavors. One chef said that the influence of Pacific Rim cuisine is important in today's foodservice market, and he noted that while apples are not usually included in such dishes, he believed that apples could work well in them.

In using apples, the chefs agreed that browning was a concern. They used lemon juice to prevent browning, but felt that the added lemon flavor was a drawback. The chefs had samples of a new product that is an anti-browning coating. They did not make many comments on their impressions of this product, but their reaction to the product was mixed. They were impressed with its effectiveness, but at least one chef felt he noticed a taste difference. The chefs seemed a bit reluctant to use a product that appeared to be a preservative.

The chefs discussed their views on using processed apples products in their menu items. In this style of restaurant, the image of freshness is important, and these chefs had some hesitation to use processed products. One said that canned foods have a stigma among chefs. He said that chefs do not like to have can-openers in their kitchens. One of the chefs said that using a processed product can make a chef feel like he is lowering his standards.

However, the chefs agreed that they could be sold on using a processed product if it offers quality, crunch, color, and consistency and it is right for the application. For example, one of the chefs uses individually quick frozen apple slices for French toast. He believes this product offers the traditional apple crunch he wants in the dish, and it allows him to save labor. However, the chefs also noted that in fine dining restaurants, labor availability is less of an issue than it is for larger volume foodservice operations. For example, one chef noted that at the time, he had an employee working on peeling hundreds of whole apples for use in a banquet as dumplings. This preparation would take many hours, but the chef believed that fresh, not frozen, apples should be used for this dish, and he had labor available to put to the task.

One of the chefs used ready peeled frozen apples on some occasions, and he said that he might use canned apples when apples are out of season to obtain consistency in his products. The chefs seemed to enjoy finding uses for some flavored applesauce samples they were given to use. The exotic flavor and bright color of a mango applesauce sample made it an interesting garnish.

One of the chefs suggested a new apple product: an apple cider syrup. He makes this product for use in his own cooking. He reduces apple cider to a thick syrup. He said that the product should not have added sugars, but it should be pure, reduced apple cider.

The chefs talked a bit about their potential use of fresh-cut apple products. Again, they said that the trick in selling them on a processed apple product was to make them feel like they were not lowering their standards. The chefs noted that other pre-cut vegetables and fruits are available in a variety of shapes, and they would like the same range of options with apples. One chef said that whole, peeled, and cored apples would be useful in making dumplings. Another chef noted that he thought chefs would usually prefer peeled apples for their uses of this product.

These chefs also talked about how to increase demand in their market. They each read several trade magazines and used these magazines as a source of new ideas. They suggested that the trade magazines are an effective way to show them new ideas, including recipes. They said that one-on-one sales appointments can be effective if conducted professionally. They also said to sell their distributors on new products. They talk with their distributors everyday and depend on them for information about new products. They said that samples were an important tool in promoting new products to chefs. They did not advocate trying to reach chefs at trade shows. They believed that trade shows overwhelm chefs with information, and in this setting, standing

apart from the crowd is very difficult. They also said that they actively read chef-oriented websites, such as Cheftalk (www.cheftalk.com), for new ideas.

These upscale chefs differed somewhat from the other foodservice professionals included in our studies. They emphasized their interest in serving seasonal dishes featuring fresh ingredients. They were interested in saving labor where possible, but they were not as driven by this concern as other chefs. Like other chefs, they showed an interest in fresh-cut apples. However, they would need to be convinced that they would not be lowering their quality and freshness standards in using this product.

Summary

Overall, the best opportunities to increase the use of processed apples products in foodservice are most likely in the institutional foodservice segment. This segment appears to use large volumes of apples and apple products. The foodservice managers in this segment demonstrated a high level of interest in a fresh-cut apple product. This type of product could fill a need in the institutional foodservice segment. Chefs in family-style and fine restaurants have also shown an interest in this product, but not with the same level of enthusiasm observed among institutional foodservice managers. In the both studies, chefs and managers made specific suggestions for improving apple products and apple product marketing. In general, all types of chefs appear to be seeking new ideas continuously, and effective promotion of new products depends in part on communicating useful, new ideas to them.

Section VI

Apple Products in School Foodservice

As mentioned in the last Section, foodservice is an important and growing market for the food and beverage industry. In particular, school foodservice is a large volume segment in the foodservice channel. School foodservice has traditionally been a strong market for apple products. As noted in the previous section, a recent estimates that about 1.3 million gallons of apple juice and cider, the equivalent of about 365,000 bushels of apples, are consumed in New York State schools annually (NYSSFSA/NYF, 2000). Because of the importance of this market for apple products, we chose to focus a survey specifically on this segment of the foodservice market.

Methods

A mail survey was developed to examine the use and perceptions of apple product in New York State school foodservice programs. Members of the New York State School Food Service Association -- NY Farms! Taskforce assisted in the development of this survey by participating in preliminary interviews and reviewing a draft version of the survey. (For a description of this taskforce, see the footnote in the previous section.) A copy of the survey is included as Appendix 7.

The survey sample was the membership of the New York State School Foodservice Association, a trade organization for the state's school foodservice directors. The list included 803 school foodservice directors from public school districts across the state. In October 2000, the members of the sample were mailed a post card to stimulate interest in the survey and to increase the response rate. Later in the same month, the survey questionnaire was mailed to the members of the sample. A cover letter explaining the purpose of the survey was included in the mailing, and a business reply envelope was provided to return the survey. Survey respondents were ensured anonymity in the cover letter.

A deadline of mid-December was set for return of the surveys. At the end of December 2000, the analysis of the survey responses began. A total of 327 surveys were returned. One survey was removed from the data set because the respondent failed to respond to most of the questions. The data from 326 surveys were analyzed. The survey response rate was 41%. All survey responses were coded and entered into a database for analysis. To determine significant relationships between variables, chi-squared and t-tests were performed on various

cross-tabulations of the variables. A 95% confidence level was used in the statistical tests.

Results

Survey respondents were spatially distributed throughout New York State. Figure VI-1 is a map indicating five regions of the state into which responses were divided. The responses were distributed across these regions as follows:

Western NY:	97 responses
Central NY:	64 responses
Northeastern NY:	77 responses
Hudson Valley:	50 responses
New York City/Long Island:	38 responses

Table VI-1 summarizes the total number of students and meals served by respondents in each region of the state. Table VI-2 categorizes the respondent school districts by the size and region of the school.

The respondents represented schools with a total student population of approximately 925,000 students. The survey responses indicated that the respondent schools serve a total of 477,416 school lunches and 122,186 school breakfasts daily during the school year. These totals are underestimates of the total population and meals served in the respondent schools because several respondents did not answer these questions. The responses represent about 26% of the school lunches and 25% of the school breakfasts served in the state's public schools daily.

Fruit and Vegetable Use

The survey asked how respondents' use of fruit and vegetables had changed over the past five years. They were asked about changes in their use of fresh fruit and vegetables, processed fruit and vegetables, and pre-cut fresh fruit and vegetables. The latter were defined to be fruits and vegetables that are sliced and packaged at a food processing plant, not in-house (e.g., packaged salad mixes, pre-washed and cut carrot sticks, pre-cut broccoli florets). The possible responses ranged on a one to five scale:

- 1: decreased significantly
- 2: decreased some
- 3: about the same
- 4: increased some
- 5: increased significantly

**Figure VI-1: Regions of New York State
for School Foodservice Survey**



Table VI-1: Student Population and Meals Served in Respondent School Districts by Region of the State

REGION	NUMBER OF RESPONDENTS	NUMBER OF STUDENTS IN RESPONDENTS' SCHOOLS (N=314)	AVERAGE NUMBER OF STUDENTS PER SCHOOL IN REGION	TOTAL NUMBER OF BREAKFASTS SERVED DAILY BY RESPONDENTS IN REGION (N=296)	AVERAGE NUMBER OF BREAKFASTS SERVED DAILY BY RESPONDENTS IN REGION	TOTAL NUMBER OF LUNCHES SERVED DAILY RESPONDENTS IN REGION (N=319)	AVERAGE NUMBER OF LUNCHES SERVED DAILY BY RESPONDENTS IN REGION
Western	97	315,129	3,283	53,486	594	178,033	1,874
Central	64	172,077	2,917	27,255	454	98,279	1,585
North-eastern	77	136,780	1874	18,001	243	74,375	979
Hudson Valley	50	106,263	2,169	11,304	241	49,782	1,016
NYC/Long Island	38	195,152	5,136	12,140	467	76,947	2,080
Total	326	925,401	2,947	122,186	413	477,416	1,497

Notes:

1. 307 (94%) of the respondent school districts serve breakfast. Only the schools that serve breakfast are included in the calculation of the average number of breakfasts served.
2. 325 of the school districts serve lunch. One school served only breakfast and no lunch. This school was not included in the calculation of the average number of lunches served.
3. Eleven respondents did not indicate the number of students in their schools. Eleven respondents did not indicate the number of breakfasts that they serve. Six respondents did not indicate the number of lunches that they serve. These schools were not included in the calculation of averages in the table above.

Table VI-2: Respondents by Size of School District and Region of State

SCHOOL DISTRICT SIZE (# OF STUDENTS)	WESTERN	CENTRAL	NORTH-EASTERN	HUDSON VALLEY	NYC/ LONG ISLAND	TOTAL
10,000+	4	1	2	0	3	10
5,000-9,999	9	8	3	6	14	40
2,500-4,999	22	11	12	9	14	68
1,000-2,499	40	30	26	19	6	121
<1,000	21	9	30	15	1	76
No Answer	1	5	4	1	0	11
Total	97	64	77	50	38	326

The average responses are shown in Table VI-3. These results indicate that across school districts in New York State, school foodservice directors report that they have increased their use of all types of fruits and vegetables, fresh, processed, and pre-cut. The greatest level of increase over the past five years was observed in the use of fresh fruits and vegetables. The use of pre-cut fruits and vegetables increased but not to the same degree as fresh fruit and vegetables. The use of processed fruit and vegetables increased only slightly over the past five years.

Table VI-3: Responses on Change in Use of Fruits and Vegetables in New York State School Foodservice

	FRESH (N=323)	PROCESSED (N=322)	PRE-CUT (N=299)
Average	4.1	3.2	3.8

In response to the questions about the use of fruits and vegetables, some statistically differences were observed by region. School districts in the Central region of the state reported a greater than average increase than the respondents as a whole (4.3 vs. 4.1). The respondents in the New York City and Long Island region reported a lower than average increase in the use of pre-cut fruits and vegetables (3.5).

In discussions of the survey results, school foodservice directors from the New York State School Foodservice Association – NYFarms! Taskforce said that some differences between upstate and New York City metropolitan area school districts should be expected. They said that New York City schools rely more on prepared foods than upstate schools. Many schools in the New York City area do not have full-service kitchens and serve meals prepared by a central kitchen. Some foodservice directors that discussed the results said that the New York City area school districts generally had larger per-meal budgets due to higher levels of federal subsidies for their meal programs. These factors should contribute to greater use of pre-cut produce.

However, in this survey, the results indicate that New York City school districts increased their use of pre-cut produce at a slightly slower rate than average over the past five years. One possible explanation is that New York City school districts may have been using pre-cut produce over a longer period of time, and other schools may have begun to use these products more recently. Another possible explanation is that non-response to the survey by large New York City school districts could have affected these results.

These result on the use of fruits and vegetables did not vary much with school size, except with respect to the use of pre-cut produce. The largest school districts (10,000 students or more) reported a greater than average increase in the use of pre-cut produce (4.3). This result may reflect the effect of economies of scale in using pre-cut products such as labor savings or quantity discounts.

Apple Juice and Cider Use

On average, the respondents serve apple juice 15 times per month at breakfast and 9 times per month at lunch. Table VI-4 summarizes the results on apple juice use. Of the respondents who serve breakfast, 61% reported that they serve apple juice at breakfast everyday. About 33% of the respondents reported that they serve apple juice at lunch everyday.

Table VI-4: Responses on Apple Juice Use in New York State School Foodservice

	AVERAGE RESPONSE
Days Per Month Apple Juice Served at Breakfast (n=301)	15
Percent that Serve Apple Juice Everyday at Breakfast	61%
Days Per Month Apple Juice Served at Lunch (n=318)	9
Percent that Serve Apple Juice Everyday at Lunch	33%
Change in Use of Apple Juice Over Five Years (n=312)	3.5

Some statistically significant differences in the frequency of serving apple juice were observed by size of the school district and by region. At lunch, school districts in the 2,500 to 5,000 students range served apple juice more frequently than average (12 times), and districts in the 1000 students or less range served apple juice less frequently than average (6 times). School districts in the Northeastern region served apple juice less frequently than average at lunch (6 times), and school districts in the New York City/Long Island region served apple juice more frequently than average at lunch (15 times). None of the regions varied significantly from the average for servings of apple juice at breakfast.

The survey also asked the respondents how their use of apple juice had changed over the past five years. These results are shown in Table VI-4. The possible responses ranged from one (decreased significantly) to five (increased significantly), along the same scale used in the questions regarding fruit and vegetable use. Overall, respondents reported that their use of apple juice had increased, with an average response of 3.5 (halfway between increased some and increased significantly). Some statistically significant differences were observed by region and size of school district. School districts in the Northeastern region reported that their use of apple juice had increased less than average (3.2). Schools districts with more than 10,000 students reported on average that their use of apple juice had not increased (2.8).

Respondents were also asked about their perceptions of apple juice, compared to substitute products. They were asked to evaluate how apple juice compared to other fruit juices with respect to nutrition,

price, and appeal to their customers (primarily students). The possible responses were:

<u>Nutrition:</u>	<u>Price:</u>	<u>Appeal to Customers:</u>
1: Much less nutritious	1: Much less expensive	1: Much less appealing
2: Less nutritious	2: Less expensive	2: Less appealing
3: About the same	3: About the same	3: About the same
4: More nutritious	4: More expensive	4: More appealing
5: Much more nutritious	5: Much more expensive	5: Much more appealing

The results are summarized in Table VI-5. Overall, these foodservice directors consider apple juice to have average nutritional benefits, to be slightly below average in price, and to have slightly above average appeal to their customers.

Table VI-5: Responses on Perceptions of Apple Juice in New York State School Foodservice, Compared to Other Fruit Juices

	NUTRITION (N=312)	PRICE (N=316)	APPEAL TO CUSTOMERS (N=316)
Average Response	3.0	2.7	3.2

One statistically significant difference was observed by region. Responses from schools districts in the Western region of the state indicate that these foodservice directors have a lower than average perception of the price of apple (2.5). The concentration of apple juice production in this region may contribute to this perception and possibly to lower prices in this region.

The survey also asked whether respondents had served apple cider in their program in the past year. Thirty-five percent of the respondents reported that they had served apple cider in the past year. Of those that had served cider, 75% had served it seasonally, in two months or less of the year. Only 6% of those that had served apple cider had served it in six or more months of the year. Of those that served apple cider, 36% had served it at breakfast, and 89% had served it at lunch. Tables VI-6 and VI-7 show how cider use varied by size and region of the school districts.

Table VI-6: Apple Cider Use in New York State School Foodservice by Region of the State

REGION	PERCENT OF SCHOOLS IN REGION THAT SERVED APPLE CIDER IN THE PAST YEAR
Western	56%
Central	38%
Northeastern	39%
Hudson Valley	10%
NYC/Long Island	5%
Total	35%

Table VI-7: Apple Cider Use in New York State School Foodservice by Size of School District

NUMBER OF STUDENTS IN DISTRICT	PERCENT OF SCHOOLS OF THIS SIZE THAT SERVED APPLE CIDER IN THE PAST YEAR
10,000+	20%
5,000-9,999	30%
2,500-4,999	35%
1,000-2,499	35%
<1,000	36%
Total	35%

School districts in the Western region of the state were more likely than average to have served apple cider, and school districts in the Hudson Valley, New York City, and Long Island were less likely than average to have served apple cider. These differences were statistically significant. Larger school districts (5,000+) appear to be less likely than smaller school districts to have served apple cider, but these results were not statistically significant.

Applesauce Use

Applesauce is a popular school lunch item, and some school districts serve applesauce for breakfast as well. Table VI-8 summarizes the results on applesauce use by respondents. Ninety-nine percent of the respondents serve applesauce at lunch, and ten percent of respondents serve applesauce everyday at lunch. On average, the respondents serve applesauce 7 times per month at lunch. Of the respondents that serve breakfast, 33% serve applesauce at breakfast, and only 2% serve applesauce everyday at breakfast. The respondents that serve breakfast serve applesauce at breakfast 2 times per month. Using the same scale used with apple juice, respondents reported that their use of applesauce had increased slightly over the past five years.

Table VI-8: Responses on Applesauce Use in New York State School Foodservice

	AVERAGE RESPONSE
Days Per Month Applesauce Served at Breakfast (n=304)	2
Percent that Serve Applesauce at Breakfast	33%
Percent that Serve Applesauce <u>Everyday</u> at Breakfast	2%
Days Per Month Applesauce Served at Lunch (n=324)	7
Percent that Serve Applesauce at Lunch	99%
Percent that Serve Applesauce <u>Everyday</u> at Lunch	10%
Change in Use of Applesauce Over Five Years (n=317)	3.3

Some statistically significant differences by region and size of school district were observed in the results on applesauce use. Larger school districts and school districts in the New York City and Long Island region served applesauce less frequently than average. School districts with 10,000 or more students served applesauce an average of 5 times per month at lunch and 1 time per month at breakfast. School districts in the New York City and Long Island region served applesauce 5 times per month at lunch and 1 times per month at breakfast.

Single-serve applesauce, packaged in 4 ounce serving cups, is a product that is made in upstate New York by apple processors. The success of this product has been important to the region’s market for sauce apples. Respondents were asked, “When you purchase applesauce, do you buy it in single-serve cups?” Possible responses were: always, sometimes, and never. Results from this question are shown in Table VI-9. Single-serve applesauce is not widely used in New York school foodservice programs. Ninety percent of respondents reported that they never use single-serve applesauce. Only eight percent reported that they purchase the product sometimes, and only one percent reported that they purchase the product always.

Table VI-9: Responses on Frequency of Use of Single Serve Applesauce in New York State School Foodservice

	NO ANSWER	NEVER	SOME-TIMES	ALWAYS
Do you buy applesauce in single-serve cups?	1%	90%	8%	1%

The results on the use of single-serve applesauce varied significantly by region. School districts in the Hudson Valley region used single-serve applesauce even less than the low average for all school districts. While nine percent of all respondents purchase single-serve applesauce sometimes or always, none of the Hudson Valley respondents reported that they purchase single-serve applesauce. Larger schools (10,000+ students) were more likely to purchase single-serve applesauce than other schools; thirty percent of these respondents reported that they sometimes purchase single-serve applesauce.

As with apple juice, respondents were asked about their perceptions of applesauce, compared to substitute products. They were asked to evaluate how applesauce compared to other fruit products with

respect to nutrition, price, and appeal to their customers. The possible responses were the same as those for apple juice (see page 132). The results are summarized in Table VI-10.

Table VI-10: Responses on Perceptions of Applesauce in New York State School Foodservice, Compared to Other Fruit Products

	NUTRITION (N=314)	PRICE (N=315)	APPEAL TO CUSTOMERS (N=320)
Average Response	3.0	2.4	3.5

Overall, these foodservice directors perceive applesauce as similar to apple juice in these characteristics. They perceive apple sauce to have average nutritional benefits, to be below average in price, and to have above average appeal to their customers. With respect to price and appeal, applesauce scored slightly more favorably than apple juice.

Some perceptions of applesauce varied significantly by region and size of school district. Respondents from school districts in the Northeastern region had a lower average perception of applesauce nutrition (2.8). Respondents from larger school districts (5000+ students) also perceived applesauce to be less nutritious (2.8). On the other hand, respondents from smaller school districts (<1000 students) perceived applesauce as slightly more nutritious (3.1). Perceptions of the price of applesauce did not vary significantly by region or size of the school district. For appeal, respondents from smaller school districts (<1000 students) perceived applesauce to have greater appeal to their customers (3.7).

Use of Pre-Cut Apples

Pre-cut fresh apples are a relatively new product, introduced in the past few years. Where available, the product has primarily been marketed as a foodservice product. As noted in Section V, many foodservice managers have not yet been exposed to the product. However, a marketing focus on school foodservice has made knowledge of this product more widespread among school foodservice directors than among other segments of foodservice market.

Pre-cut apples were defined in the survey to be “fresh apples that are sliced and packaged at a food processing plant (not in-house).” Respondents were asked, “Have you served pre-cut apples in the past

year?” They could circle yes or no in response. Respondents who had not served pre-cut apples were asked to indicate why not. Possible responses were: price, availability, size of slices, portion size, and quality. Respondents could also write in other reasons for not serving pre-cut apples.

Overall, 25% of the respondents had served pre-cut apples in the previous year (see Table VI-11). One statistically significant difference in the use of pre-cut apples was observed by size of school district. School districts with more the 10,000 students were more likely to have served this product (70%). Use of pre-cut apples did not vary significantly by region.

Table VI-11: Responses on Use of Pre-Cut Apples in New York State School Foodservice (n=326)

	NO ANSWER	YES	NO
Have you served pre-cut apples in the past year?	2%	25%	73%

For respondents who had not served pre-cut apples, price and availability were the leading factors for not using the product. The following reasons were given for not using pre-cut apples:

- ◆ Price: 56%
- ◆ Availability: 39%
- ◆ Quality: 16%
- ◆ Not well received by students: 5%
- ◆ Portion size: 4%
- ◆ Shelf-life: 3%
- ◆ Never thought of it: 2%
- ◆ Prepare our own slices: 1%

As with apple juice and applesauce, respondents were asked to evaluate pre-cut apples compared to substitute products. They were asked to score pre-cut apples compared to other fruit products with respect to nutrition, price, and appeal to their customers. The possible responses were the same as those for apple juice and applesauce (see page 132). The results are summarized in Table VI-12. Many respondents did not answer these questions, probably because many of them had not tried the product yet. Therefore, the sample size for these questions was smaller.

Table VI-12: Responses on Perceptions of Pre-Cut Apples in New York School Foodservice, Compared to Other Fruit Products

	NUTRITION (N=185)	PRICE (N=180)	APPEAL TO CUSTOMERS (N=165)
Average Response	3.2	3.8	3.1

Overall, the respondents perceive pre-cut apples as slightly above average in nutrition, above average in price, and about average in appeal to customers. These results indicate that pre-cut apples are perceived in this market to be only slightly more nutritious than apple juice and applesauce. The product has a premium price, but it did not rate highly with respect to appeal to students and other customers. These results point to a potential marketing challenge in efforts to expand product sales in this market. At current prices, school foodservice managers do not appear to perceive the product as offering them good value in terms of nutrition or appeal.

Significant differences in perceptions were observed by size of school district and region. Respondents from school districts with more than 10,000 students had a higher than average perception of the price of the (4.2). Respondents from the Western region also perceived the product to be more expensive (4.1). On the other hand, respondents from the Northeastern region had a lower than average perception of the product price (3.4). Respondents from the Hudson Valley region had lower than average perceptions of the product's nutrition (3.0) and appeal (2.7).

Other Apple Products

To limit the length of the survey, questions were not included about the use of other specific apple products. However, respondents were asked to list other apple products that they served. The following products were mentioned:

- ◆ Canned apple slices
- ◆ Apple crisp
- ◆ Frozen apple slices
- ◆ Apple cake
- ◆ Apple chips
- ◆ Apple pies

- ◆ Apple cobbler
- ◆ Apple muffins

Use of Regionally Produced Foods

The final section of the survey focused on the use of and attitudes toward regionally produced foods. In the survey, regional foods were defined as “food products grown and processed in your geographic region.” This section was included because several organizations in New York State are interested in and actively promoting the use of regional foods by public institutions in the state, including schools. This section was intended to evaluate the receptiveness of school foodservice directors to buying and using regional foods.

First, the respondents were asked to answer, “How important is the use of regional food products to you in making decisions about purchases for your foodservice program?” Possible responses ranged across a one to five scale:

- 1: Not at all important
- 2: A little bit important
- 3: Somewhat important
- 4: Important
- 5: Very important

Overall, the average response to this question was 3.3, on average between somewhat important and important (n=314). Statistically significant differences were observed in these responses by region. Respondents from the New York City and Long Island region had a lower than average response to this question (2.7). The degree of connection to agriculture and regional agricultural products could be expected to be lower in this region, especially in New York City. The responses for this question did not vary significantly by size of school district.

Next, respondents were asked, “When you buy fresh apples for your foodservice program, do you currently buy apples grown in New York State?” Possible responses were: always, sometimes, never, and don’t know. Additionally, many respondents wrote-in their response to this question as “always, when available.” Results for this question are shown in Table VI-13.

Table VI-13: Responses on Purchase of Apples Produced in New York State by New York State School Foodservice (n=326)

	WHEN YOU BUY FRESH APPLES FOR YOUR FOODSERVICE PROGRAM, DO YOU BUY APPLES GROWN IN NEW YORK STATE?
Always	41%
Always, When Available	5%
Sometimes	40%
Never	0%
Don't Know	12%
No Answer	2%

Overall, 46% of respondents said that they buy New York State apples always or always when available. Statistically significant differences were observed in these responses by region and size of school district. Respondents from school districts in the Central and Northeastern region were more likely than average to say that they purchase New York State apples always or always when available (58% and 57%, respectively). Only 26% of respondents from the New York City and Long Island region said that they purchased New York State apples always or always when available. By size of school district, only smaller school districts differed from the average, and among these school districts, the results were not consistent. School districts with 1000 to 2500 students were more likely than average to respond always or always when available (55%), and schools with less than 1000 students were less likely than average to respond always or always when available (34%).

Respondents were asked to indicate the reasons why they might not purchase New York State apples. Possible responses included: price, availability, size, and quality. Only 81 respondents answered this question. Among those that answered this question, the most frequently given responses were:

- ◆ Availability: 80%
- ◆ Price: 40%
- ◆ Size: 10%
- ◆ Quality: 10%

The percentage indicates the portion of those answering this question that gave this response. Respondents could give more than one answer to this question.

Last, respondents were asked to list the varieties of fresh apples that they prefer to purchase for their foodservice programs. The results for this question are shown in Table VI-14. McIntosh was the most frequently mentioned variety. Of those who stated a varietal preference, 78% listed McIntosh. Empire and Red and Golden Delicious varieties were also mentioned frequently by respondents.

Table VI-14: Responses on Apple Variety Preferences in New York State School Foodservice

WHAT VARIETIES OF FRESH APPLES DO YOU PREFER TO PURCHASE FOR YOUR FOODSERVICE PROGRAM?	PERCENT (OF THOSE WHO STATED A PREFERENCE, N=266)
McIntosh	78%
Empire	34%
Red Delicious	30%
Delicious (non-specific)	13%
Cortland	12%
Golden Delicious	6%
Macoun	6%
Ida Red	5%
Granny Smith	4%

Comments

Respondents were given the opportunity to provide their comments about the survey or their responses. Most comments clarified or expanded on survey responses. A few respondents noted that they try to purchase directly fresh apples directly from growers. However, others noted that they had experienced difficulties in doing so (e.g., problems with availability of delivery service, inconvenient billing practices). Others noted that they felt that more upstate produce suppliers should be urged to carry local apples to make local apples more readily available.

In the comments section, several respondents said that they receive government commodity applesauce and frozen or canned apple slices. For many schools, these free products are important to their foodservice programs financially and increase their use of apple products. With respect to pre-cut apple slices, a few respondents noted difficulty in buying this product from suppliers. Minimum order sizes, a lack of availability from suppliers, and price were the most frequently mentioned concerns in regards to purchasing pre-cut apples.

Summary

The use of fruits and vegetables has increased in school foodservice over the past five years. The degree of increase was reported to be greatest for fresh produce, substantial for pre-cut produce, and only slight for processed products. Apple juice and applesauce continue to be important fruit products on school foodservice menus. School foodservice directors perceive them to be nutritious, inexpensive, and appealing to their customers. Respondents reported that their use of apple juice and sauce has increased over the past five years.

In a state where apple cider production is widespread and an important value-added sector of the agricultural economy, only 35% of schools have served cider in the past year. A few schools serve cider frequently throughout the year, but most only serve it infrequently and seasonally.

Pre-cut apples have been served in about one quarter of the state's school districts in the past year. Results concerning perceptions of this product indicate that at its current price, many foodservice directors do not perceive the product to be a good value. In the minds of many school foodservice directors participating in this study, the nutrition and appeal offered by this product are not great enough to justify its premium price.

The use of regionally produced foods is somewhat important to school foodservice directors. In buying fresh apples, 86% of respondents reported that they purchase New York State apples at least sometimes. McIntosh, Empire, and Red and Golden Delicious were the most preferred apple varieties among these school foodservice directors.

Some statistically significant differences were observed in the survey results by region and size of school district. Variations were most frequently observed for the New York City and Long Island region. In follow-up discussions with upstate school foodservice directors about the survey results, many indicated that foodservice practices differ in the New York City region from those in upstate school districts. Schools in the New York City area are less likely to have on-site kitchens, and they

tend to make greater use of prepared and pre-cut foods. However, these results show that New York City and Long Island respondents reported a lower average increase in the use of pre-cut produce in the past five years than upstate schools. Some of the variation for the New York City region can also probably be explained by less of a connection to the upstate agricultural economy. The degree of connection is lessened by distance and by the urban character of the culture in the New York City region.

In summary, within the foodservice channel, schools are an important market for apple products. In general, apple products appear to be well received by those purchasing food for this foodservice segment. The existing widespread use of apple juice and applesauce may limit further significant expansion of these products in many school districts. However, the use of cider could be greatly expanded in the state's school foodservice programs. New products may also help to expand the use of apple products in this sector. New apple products that can offer the nutrition and relatively low prices of existing apples products are likely to be perceived as a good value by school foodservice directors.

Section VII

Northeast Apple Industry Situation

The preceding sections have provided a summary of the marketing research focusing on the food service market, prototype new products, and consumer attitudes. This section focuses on overall industry issues and the competitive position of the Northeast processing apple industry. The summary of a discussion by industry leaders on the competitiveness of the industry is presented.

Industry Context

The apple processing industry in the Northeast encompasses a broad range of participants from growers to consumers. Much of the research previously discussed in this report has focused on the consumer end of the marketing chain. However, an understanding of the industry as a whole, enhances and supports the effective application of this marketing research.

Other papers produced through this project provide information that is helpful in understanding the industry context. One paper that is concerned with the industry's current strategic situation is entitled "Industry Analysis: Apple Processors in the Northeastern U.S." This paper summarizes the results of a survey of apple processors. This survey was undertaken a preliminary step in this research. Two additional papers provide in-depth analyses of particular markets for processed apples products:

- ◆ *Processed Apple Product Marketing Analysis: Apple Juice & Cider*
- ◆ *Processed Apple Product Marketing Analysis: Hard Cider & Apple Wine*

The publications available from this project are listed in Appendix 1.

Competitive Position of the Industry

In this project, the competitive position of the region's industry was evaluated in a discussion of industry representatives at a meeting of the project advisory council. The advisory council (members and their organizational affiliations are listed in the acknowledgements) is a group of industry leaders that have been active in providing guidance and feedback on the project's research.

Table VII-1 is a summary of an evaluation of the strengths and weaknesses of the processed apple industry in the Northeast. This chart reflects the input of members of the project advisory council who

attended that meeting as well as the researchers involved. The chart summarizes ratings on a range of factors essential to maintaining a vibrant industry. Each factor was given a score based on three possible competitiveness ratings:

- ◆ Positive indicates a potential competitive advantage
- ◆ Neutral indicates no potential competitive advantage or disadvantage
- ◆ Negative indicates a potential competitive disadvantage

The set of factors that were rated included: profitability, quality of assets, research and technology, advertising and promotion, international markets, and supply chain relationships.

The factors that were rated as potential competitive advantages included:

- ◆ profitable and innovative retailers in the region
- ◆ high quality of assets at the retail level
- ◆ sizable resources available for production-related research
- ◆ investment in research and new technology at both the processor and retail levels
- ◆ increase in export activities by producers (primarily fresh apples)

Table VII-1: Ratings of the Competitive Position of the Northeastern Apple Processing Industry at the Producer, Processor, and Retailer Levels

FACTOR	RATING	COMMENT
<u>Profitability</u>		
Production	Negative	Series of negative income years for many growers
Processing	Neutral	Thin margins for processors
Retail	Positive	Northeast retailers generating earnings
<u>Innovation</u>		
Production	Neutral	Mixed degree of innovation at farm level
Processing	Neutral	Limited investment in new technology, marketing innovation, and new products
Retail	Positive	Retailers in Northeast are recognized as some of the most innovative in U.S.

FACTOR	RATING	COMMENT
<u>Quality of Assets</u>		
Production	Neutral	Mixed quality of orchards and varieties planted
Storage	Negative	Less than optimal storage capacity and post harvest handling procedures
Processing	Neutral	Shrinking number of plants and firms to make investment
Retail	Positive	Large number of new facilities
<u>Research & Technology</u>		
Production	Positive	Sizable investment in production research (NYS Agricultural Experiment Station)
Storage	Negative	Less resources for research and investment in new technology
Processing	Positive	Some new investment by processors
Retail	Positive	Ongoing investment in research and new technology
<u>Advertising & Promotion</u>		
Producers	Neutral	Growing commitment but still relatively small
Processors	Neutral	Limited investment - focus on other products and categories
Retailers	Neutral	Seeking more cost sharing by suppliers
<u>New Product Development</u>		
Production	Negative	Limited new products, some new varieties
Processing	Negative	Limited investment in new products, fewer firms
Retail	Positive	More new marketing activities
<u>International Markets</u>		
Producers	Positive	Growers increasing exports of fresh apples
Processors	Neutral	Limited exports with more imports of apples and concentrate
<u>Relationships</u>		
Producer-Processor	Neutral	Mixed, at times adversarial
Producer-Retailer	Neutral	Mixed, at times adversarial
Producer-Foodservice	Negative	Can be more difficult market to enter and poor quality experiences by buyers
Producer-Producer	Neutral	Increasing interest in collaboration
Processor-Retailer	Neutral	Retailers demanding more from suppliers

Factors rated as potential competitive disadvantages included:

- ◆ lack of profitability at the grower level
- ◆ less than optimal storage capacity and handling procedures
- ◆ lack of investment in new technology for apple storage
- ◆ limited number of new products at the producer and processor levels
- ◆ poorly developed relationship between growers and the food service level

The factors included in the chart are competitive qualities that are primarily internal to the regional industry. The perceived advantages can be hopefully leveraged to improve the competitive position of the industry. More attention to or investment in the perceived disadvantages might also result in improving the position of the regional industry.

External Factors

External factors are critically important to competitiveness. A more thorough discussion of external factors is included in the other project papers cited above. In summary, the following external factors are four important forces affecting the competitive position of this industry:

- ◆ Market globalization: International trade is increasingly important in the market for apples and apple products. A global oversupply of apples currently puts downward pressure on grower prices. The availability of low-priced, foreign apple juice concentrate has had a substantial effect on processing apple markets in recent years. The U.S. apple industry has reacted protectively by working to establish tariffs for Chinese apple juice concentrate. While this trend is adverse for growers who must compete with low cost supplies of raw materials, it benefit can processors by reducing the costs of supplies.
- ◆ Competitive pressure from West Coast apple producers: In recent years, prices for West Coast apples have been sufficiently low to offset the costs of shipping to the East Coast. Low prices for West Coast apples are viewed as a threat by many Northeastern apple growers, but processors may benefit from the price competition.
- ◆ Finished products markets: Apple products are marketed in highly competitive retail product categories, such as the markets for snacks and beverages. Success in these markets usually requires substantial investment in advertising and ongoing product innovation.

- ◆ Consolidation of customers: Consolidation of food retailers and foodservice distributors is a major factor in today's food industry. Consolidation increases the size and bargaining power of apple product customers. In turn, apple processors and growers that sell products to these customers must offer additional services or consolidate themselves in order to remain competitive.

Summary

These internal and external factors combine to create a market environment in which apple growers and processors face substantial challenges to their competitiveness. Adaptation to market conditions will require investment in new products, technologies, and new marketing strategies. This project has aimed to try to identify potential opportunities worth pursuing in the current market. These opportunities are summarized in Section VIII.

Section VIII

Conclusions and Areas for Further Research

In the final section of this report, the primary conclusions of this research are summarized. The limitations of this research are also discussed. The report concludes with suggestions for further research.

Limitations of this Research

In each of the preceding sections, qualifications to the various research methods were mentioned. These limitations are important to consider when interpreting the results of marketing research, particularly with qualitative research methods. In summary, the following qualifications apply to the findings generated from this research:

- ◆ **Target market**: Research on a particular segment of a market may not apply to other target markets, even though they may appear to be similar. The national consumer survey was designed to encompass various demographic segments of the consumer market as a whole. However, the qualitative studies were focused on particular segments of the market, and extrapolation of these results to consumers in general or other markets may not be accurate.
- ◆ **Timeliness**: Consumer markets are continuously changing. These studies were designed to reflect the current market and to project how current consumer attitudes will affect the future market. However, market conditions will change. Marketing research is ideally a continuous practice that keeps pace with change in the market.
- ◆ **Demographics**: The national consumer survey was designed to collect data on the market as a whole. However, the size of the sample was limited by budgetary constraints. The sample size was not large enough to represent market data on some demographic subsets, such as certain minority groups. As the U.S. population becomes increasingly diverse, marketing to particular demographic targets becomes more challenging. The ability of market research firms to collect detailed information on consumer behaviors supports the use of more specific or customized marketing techniques. In the national survey conducted for this study, Asian Americans were not represented in large enough numbers in the sample to draw conclusions about the use of apples and apple products by this ethnic group. Additionally, in Section III, the limitations of the data from Hispanic respondents are discussed. More targeted studies utilizing

larger and more diverse samples would be needed to explore opportunities among small but growing demographic segments.

- ◆ Breadth: This project started out with an inventory of the universe of known apple products. Processed apple products include a wide range of products that span across numerous of food and beverage product categories. This research had to emphasize some apple products over others, but was still quite broad in scope. To an extent, this breadth limits the depth of research in specific product categories. In-depth analyses of the markets for hard cider, apple wine, apple juice and cider were produced (see Appendix 1), but other products were not able to receive the same level of effort.
- ◆ Qualitative research: Several of the studies in this project used qualitative research techniques. Qualitative research does not allow for an analysis providing statistically significant results that can be used to draw conclusions about the population studied. Instead, qualitative research is an exploratory technique. It is well suited to the early stages of product development. Using qualitative research, one can explore how consumers use and perceive products. One can attempt to gain an understanding of why consumers perceive products as they do. Qualitative research can be used to search for opportunities in the market or identify areas for further research. However, the results of qualitative research are not conclusive. Therefore, results discussed in this report that rely on qualitative analysis provide only a starting place for additional research and need to be interpreted with an understanding of its limitations.

Market Opportunities for Apple Products

Each section of this report presented the results of a different research study conducted in this project. Each study collected data about the market for apples and apple products and identified potential opportunities for new products and marketing strategies. Table VIII-1 summarizes the opportunities uncovered in this research. These findings are not conclusive, but rather they lay a foundation for the next steps of product development and the creation of new marketing approaches.

Table VIII-1: Primary Findings on Market Opportunities for Apple Products

<u>FINDING</u>	<u>POTENTIAL OPPORTUNITY</u>
Section II: New Product Development	
New products should be designed to appeal to the primary motivators of today's consumers: convenience, wellness, safety, and gratification.	A list of apple products developed by industry leaders in a new product development workshop is given in Table II-2. These product ideas were suggested to appeal to these consumer motivators.
Section III: Opportunity Identification in Consumer Markets	
Only two apple products have an incidence of greater than nine percent in the U.S. consumer market.	A limited number of broadly appealing apple products indicates a need for new product development.
In the U.S. market, the incidence of the purchase of apple products is greatest in households with children.	These households are likely to be the best target for new apple products.
African American and Hispanic American households have a high incidence of apple juice purchases.	These groups may also be a good target market for new apple products.
Families with children and African American and Hispanic American households showed an interest in the following new product concepts: <ul style="list-style-type: none"> ◆ Snack pack with pre-sliced apples & caramel dip ◆ Snack pack with pre-sliced apples & cheese and crackers ◆ Apple juice & spring water beverage for toddlers ◆ Pre-sliced apples for eating & cooking ◆ Apple juice spritzer (non-alcoholic) 	Although these concepts did not receive scores high enough to indicate the potential for broad market success, they do warrant additional market research and development in these target markets.
Section IV: Digging Deeper into Consumer Behavior	
Consumers perceive fresh apples as a traditional fruit that they want their children to grow up with.	The traditional appeal of apples is important in promoting fresh apples and apple products.
Consumers know that apples are "good for you" and good for their children, but they are not sure why.	Additional consumer education on the specific health benefits of apples will build on an already strong consumer perception of apples as a healthy food.
Consumers are concerned that processed apple products may not offer the same level of nutrition as fresh apples, and they are cautious about eating processed products that they perceive to contain added sugar, high levels of fat, and added preservatives or chemicals.	Consumer education about the nutritional benefits and added ingredients of apple products that addresses these concerns may help to strengthen consumer perceptions of apple products.

<u>FINDING</u>	<u>POTENTIAL OPPORTUNITY</u>
Section IV: Digging Deeper into Consumer Behavior (cont.)	
Expansion of current apple product consumption may be limited by a narrow range of available products and a perception of limited menu compatibility.	New product development could help to add new choices and to enliven consumer interest in apple products. Recipes and product use suggestions may help to expand current consumption of apple products.
Some mothers are concerned or confused about whether their young children should consume full-strength apple juice.	Additional research and education appears to be needed to address this debate. Also, there may be a market opportunity for an apple juice and spring water beverage product for young children.
Focus group participants reacted enthusiastically to samples of sparkling hard	Consumers may be interested in apple products with new variations on flavors.
Fresh apple slices and baked apple chips were also well received by focus group participants.	Focus group discussions point to an unfilled need in the market that pre-sliced apples may fill. These consumers appear to favor a sweet tasting slice. While reactions to the chips were positive, this product appears to have less potential and greater competition in the market.
Section V: Exploring Market Opportunities in the Foodservice Sector	
Apple products are an important menu item in the institutional foodservice sector.	This sector of the foodservice industry is a good target for new apple products. It appears to offer the greatest opportunity for high volume use of new apple products in the foodservice sector.
Institutional foodservice managers described a need for a pre-sliced apple product without knowledge that the product exists.	Pre-sliced apples may fill a market need in the institutional foodservice sector.
Family-style and fine restaurant chefs liked the idea of a pre-cut apple product, but showed less enthusiasm than institutional foodservice directors.	These sectors may also be potential markets for the product, but the greatest opportunity appears to be in the institutional foodservice sector.
After sampling a prototype pre-sliced apple product, the institutional foodservice directors had several questions about the product regarding shelf-life, coating, price, and baking performance.	These questions should assist in developing a product that meets the needs of this sector.
Chefs and foodservice directors from all foodservice sectors explored said that recipe cards and product use suggestions are effective tools for increasing their interest in a product.	Efforts to market apple products to the foodservice sector should include recipes and use suggestions that will give chefs ideas for using the products.
Section VI: Apple Products in School Foodservice	
The fruits and vegetables, especially fresh and pre-cut, in school foodservice has increased over the past five years.	School foodservice directors are interested in serving more fresh and nutritious foods to students. Pre-cut produce decreases labor costs while still offering a relatively fresh product.

<u>FINDING</u>	<u>POTENTIAL OPPORTUNITY</u>
Section VI: Apple Products in School Foodservice (cont.)	
Apple juice and applesauce are prominent fruit products on school foodservice menus. They are perceived to be nutritious, inexpensive, and appealing to their customers.	This sector of the foodservice industry is a good target market for new apple products.
Only 35% of New York State school districts have served cider in their school foodservice programs in the past year. Only a few schools serve cider frequently throughout the year.	In a state where apple cider production is an important value-added sector of the agricultural economy, an opportunity exists to increase the use of cider, as a substitute for juice, in the state's schools. Increasing the sale of cider in this market will require packaging in small containers (4 oz.). It will also require cider producers to provide convenient delivery and ordering services to school customers or to partner with foodservice distributors.
One quarter of New York State school districts served pre-cut apple slices in the past year. Others did not buy the product because of its price, limited availability, or concerns about quality.	To increase sales of this product, it will need to be more widely available in foodservice distribution channels. Furthermore, the product is currently priced above what most schools can afford to use the product regularly on their menus.
Many school foodservice directors in New York do not perceive pre-sliced apples to be a good value, in terms of nutrition and appeal to their customers, relative to price.	An opportunity exists for a producer who can supply this product at a lower price to schools.
The use of regional foods is somewhat important to school foodservice directors. It is more important to school foodservice directors in upstate New York than in the New York City area.	Partnerships among producers and distributors to supply schools with regionally produced products would likely be most successful in the upstate region.

Areas for Further Research

As the various studies included in this report were discussed, a number of potential areas were identified which might merit further investigation. Some of these areas lend themselves to commercial new product development and would be best suited to further study by a firm or individual entrepreneur with the resources and ability to capitalize on commercializing the product. Other potential research topics would warrant further study by trade associations or industry groups. Yet other subjects may generate interest among academic researchers. It is worth reviewing what areas appeared to warrant further attention. The topics can be broken down into five areas: products, consumer attitudes, market channels, competitiveness, and innovation.

Products

Several products evaluated in this research warrant additional marketing research and development. For example, in Section III, five products were identified for additional research and development, particularly in the target markets to which they had greatest appeal. Some products require technical development (e.g., spring water and apple juice beverage for young children, apple juice spritzer), while others require further research into product positioning and market segmentation.

Consumers

Some demographic sub-groups in the survey were observed to have higher levels of apple product use and higher levels of interest in new apple products (e.g., families with children, African American households). Additional qualitative research on product use and perceptions directly with these groups could be used to develop products targeted to them. In the consumer focus groups in this project, research of this type was done with families with children and uncovered potential opportunities (e.g., apple juice and spring water beverage). Additional work is needed for racial and ethnic groups, such as Hispanic and African Americans.

Market Channels

Foodservice was a focus in this project because of the growing importance of this market and because of the relative lack of information available on this market. However, this research is only a starting point for those wishing to target this market. Additional information is needed on issues such as quality needs, product size and packaging, and product distribution. For example, institutional foodservice providers would like a sliced apple product that performs well in baking as well as in fresh servings. Additional research may be needed on product performance for this market. Also, the use of apple cider in the state's schools is limited. Research into effective promotion and distribution of cider could help to increase use of this product.

Additionally, direct marketing is an important channel for some apple products, especially hard cider and apple wine. Consumer preferences in this channel will likely vary from those in other channels, and therefore, specific research targeted to direct marketing consumers might uncover useful information.

Innovation

One conclusion of the study is a fairly obvious one, investment in innovation at all levels of the industry will be required to ensure that the industry will remain vibrant and able to generate the returns needed to support success. The specific elements of innovation needed throughout the apple marketing system include state of the art: production systems, storage and handling capacity, sales and distribution, supply chain management serving critical market channels, and innovative retailing

Discussions were generated on this subject for this project. Participants gave a mixed report on the level of innovation in the industry. Retailers received high marks, with producers and processors getting lower ratings. A more quantitative approach could be developed using a larger sample to evaluate the level of innovation at various links in the supply chain. Measures that could be considered include: the number of new products introduced, patents received, new processing technologies adopted, and other comparative benchmarks to analyze the level of innovation against other key production regions, in U.S. and around the world.

Competitive Position

A broader question that in part relates to the degree of innovation in the industry is: How competitive is the Northeastern apple processing industry when compared with other key production and processing areas? Again, in this project, a small group discussed some issues related to competitiveness, and their responses provide a jumping off point for further study (see Section VII). In addition to the degree of innovation, other factors considered were: profitability; quality of assets; research and technology; advertising and promotion; international markets; and supply chain relationships. More data on quantitative measures of competitiveness would be needed to arrive at substantial conclusions about the competitive position of the Northeastern apple processing industry.

Conclusion

A primary role of this research was to provide a catalyst for innovation in the Northeastern apple processing market. The information collected and the opportunities identified alone will not improve markets for processing apples and apple products. However, the findings can serve to stimulate future innovation and strategy development to meet the challenges of a changing market. Perhaps the most important finding of this research was the broad evidence of the need for innovation in this industry. Building on this research requires

that food processors and entrepreneurs engage in additional market research that is specifically tailored to their needs and also in the risk-taking and investment on which the future of the industry hinges.

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Appendix 1

Marketing Research Overview

PROJECT PHASE	ACTIVITIES	OUTPUTS/PUBLICATIONS
Industry Overview	<ul style="list-style-type: none"> ◆ Survey of apple processors ◆ Formation of Advisory Council ◆ Literature survey ◆ Cataloging of apple products in market ◆ Study of foreign markets by visiting student ◆ Attend industry meetings 	<ul style="list-style-type: none"> ◆ <i>Industry Analysis: Apple Processors in the Northeastern U.S.</i> (Staff Paper 2001-02) ◆ Four meetings of Advisory Council ◆ “Universe of Products” list ◆ Attended annual meetings of U.S. Apple Association, Cornell Cooperative Extension Hudson Valley Commercial Fruit Growers Schools, NYS Horticultural Society annual meetings, NY Apple Industry Strategic Plan committee and subcommittee meetings, meeting of Core Values Northeast
Market Analysis	<ul style="list-style-type: none"> ◆ New product development analysis ◆ Study of market for apple juice and cider ◆ Study of market for hard cider and apple wine ◆ Literature review on eco-labeling 	<ul style="list-style-type: none"> ◆ New Product Development Workshop at New Products Showcase and Learning Center ◆ <i>Processed Apple Product Marketing Analysis: Hard Cider and Apple Wine</i> (Staff Paper 2000-06) ◆ <i>Processed Apple Product Marketing Analysis: Apple Juice and Cider</i> (Staff Paper 2001-01) ◆ Analysis of apple product eco-labeling
Marketing Outreach	<ul style="list-style-type: none"> ◆ Preparation of Smart Marketing Columns ◆ Labeling, packaging, and product tests for Red Jacket Orchards blended ciders ◆ Packaging test for apple wine for King Ferry Winery with Penn State students ◆ Provide marketing information to food entrepreneurs 	<ul style="list-style-type: none"> ◆ “Are Your Products Relevant?” (published in <i>Fruit Growers News</i>, October 2000) ◆ “Market Research for New Products”, September 2000 ◆ “Adapting to Changing Markets with New Products”, March 2000 ◆ Summary report for Red Jacket Orchards ◆ Summary report for King Ferry Winery ◆ Presentation at NY Food Venture Center training for food

		entrepreneurs on marketing research
Marketing Research Plan	<ul style="list-style-type: none"> ◆ Gather feedback from Advisory Council and other industry leaders ◆ Interview potential consultants ◆ Develop plan for primary research 	<ul style="list-style-type: none"> ◆ Marketing research plan ◆ Selection of consultants to administer survey and moderate focus groups
Primary Research	<ul style="list-style-type: none"> ◆ Work with consultants to conduct primary marketing research ◆ Select and obtain product samples for testing from Cornell food scientists ◆ Analyze results ◆ Develop school foodservice survey with assistance of New York State School Foodservice Association – NYFarms! Taskforce members 	<ul style="list-style-type: none"> ◆ Consumer telephone survey ◆ Six consumer focus groups ◆ Two foodservice focus groups ◆ Nineteen foodservice interviews ◆ Survey of New York State school foodservice directors
Reporting	<ul style="list-style-type: none"> ◆ Prepare final report ◆ Prepare shorter papers for various academic forums and extension publications ◆ Post materials on website ◆ Present results to various organizations 	<ul style="list-style-type: none"> ◆ <i>Thinking Afresh About Processing</i> (this report) ◆ Publication of summary article in <i>New York Fruit Quarterly</i>: “Marketing Apple Products”, Vol. 8, No. 4, 2000 ◆ Presentations on project research and findings for: <ul style="list-style-type: none"> • Northeastern Agricultural and Resource Economics Association (June 2001) • Agribusiness Economic Outlook Conference (December 1999 & 2000) • New York Apple Industry Strategic Planning meeting (January 2001) • New York State Horticultural Society Annual Meeting (January 2000) • New Products and New Markets Subcommittee of New York

Apple Industry Strategic
Planning Committee (August
2000)

- Processing Committee of New
York Apple Industry Strategic
Plan Committee (April 2001)
- New York State Farmers' Direct
Marketing Conference (February
2001)
- Cornell Cooperative Extension
Hudson Valley Commercial Fruit
Growers School (February 2001)

Appendix 2

National Consumer Survey on Apple Products: Survey Questions

B1 In the past 3 months which, if any, of the following items have you purchased for your own consumption or for the consumption of someone else in your household? (READ LIST. RECORD AS MANY AS APPLY)

- 1 Apple juice
- 2 Apple sauce
- 3 Apple butter
- 4 Fresh apples for eating
- 5 Fresh apples for baking or other cooking
- 6 Dried apples
- 7 Apple chips
- 8 Hard or alcoholic cider
- 9 NONE OF THESE
- 10 DON'T KNOW

B2 How interested would you be in buying each of the following products if it were available at what you thought was a fair price? Would you say you would be extremely interested, very interested, somewhat interested, not very interested or not at all interested? (READ AND ROTATE ITEMS)

- 1 Extremely interested
- 2 Very interested
- 3 Somewhat interested
- 4 Not very interested
- 5 Not at all interested
- 6 DON'T KNOW

Applesauce in Squeeze-Tube Package for Kids
Pre-sliced Apples for Eating or Cooking
Snack Pack with Pre-Sliced Apples and Caramel Dip
Snack Pack with Pre-Sliced Apples, Cheese, and Crackers
Waldorf Salad Kit with Pre-Sliced Apples
Ready-to-Microwave Baked Apples
Apple Juice Spritzer - Non-Alcoholic
Stir-fry Sauce with Apple Chunks and Savory Spices
Microwavable Apple Chunk-Cheddar Cheese Pocket
Apple Cider Syrup for Pancakes and Desserts
Snack Pack with Pre-Sliced Apples and Peanut Butter Dip
Apple Cider Salad Dressing
Pourable Chunky Apple Topping
Apple Juice And Spring Water Beverage for Toddlers
Apple Slaw

Appendix 3

Screening Guide for Recruitment of Consumer
Focus Group Participants

10/2/00

**APPLE EXPLORATORY
SCREENER**

<u>Children</u> [] 12:30 p.m.	<u>50-69</u> [] 15:30 p.m.	<u>Wine</u> [] 17:30 p.m.
-----------------------------------	--------------------------------	-------------------------------

NAME: _____ TEL # [] _____

ADDRESS: _____

CITY: _____ STATE: _____ ZIP: _____

INTERVIEWER: _____ DATE: _____

Hi! My name's _____ from _____. We are conducting a brief study in your area among female heads of households and would like to ask you a few questions.

1. Are you the primary shopper for your household?
Yes [] No [] ASK TO SPEAK TO THE PRIMARY SHOPPER

2. Are you, or is any member of your household or are any close personal friends employed by or in any other way affiliated with READ LIST:

An advertising agency	Yes	No
A public relations firm	Yes	No
A marketing research company	Yes	No
In the graphic arts including package or industrial design	Yes	No
A company that manufactures, distributes or sells fruit or processed fruit products	Yes	No

THANK & TERMINATE
IF "YES"
TO
ANY.

3a. When was the last time that you, personally, participated in a marketing research survey or focus group discussion?

- Within the past 3 months THANK & TERMINATE
 More than 3 months ago ASK Q3b
 Never SKIP TO Q4a

3b. What was the subject or subjects being discussed?

TERMINATE IF THE SUBJECT WAS ANY KIND OF FOOD OR DRINK

4a. Which of the following products do you personally buy for consumption in your household on a regular basis, that is, at least once every three months? READ LIST

4b. Which of the following products do you personally consume on a regular basis, that is, at least once every three months? READ LIST

Products	Personally				
	4a. Buy		4b. Consume		
	Yes	No	Yes	No	
Fresh Apples for Eating	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	MUST BOTH BUY & CONSUME AT LEAST ONE
Fresh Apples for Baking or Other Cooking	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Apple Juice	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	MUST BOTH BUY & CONSUME AT LEAST ONE
Applesauce	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Apple Butter	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Apple Chips	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Dried Apples	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Hard or Alcoholic Cider	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Any kind of Wine	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	SEE BELOW

EVERY RESPONDENT FOR EACH QUOTA MUST BOTH BUY AND CONSUME AT LEAST ONE PRODUCT IN EACH OF THE DOUBLE LINED BOXES. IF NOT, THANK & TERMINATE

TO BE INCLUDED IN WINE GROUP AT 7:30 P.M., EVERY RESPONDENT MUST ALSO BOTH BUY AND CONSUME WINE.

5a. Including yourself, how many members are there presently living in your household?

1 member

More than 1 member [SPECIFY # ____]

[] NO MORE THAN 2/GROUP. SKIP TO Q6

[] ASK Q5b

5b. How many of these household members are? READ LIST AND CIRCLE APPROPRIATE NUMBER

Adults [18 yr. +] 0 1 2 3 4 5 6 7 8

Children 6 and under. 0 1 2 3 4 5 6 7 8

Children 7 - 12 years 0 1 2 3 4 5 6 7 8

Children 13 - 17 0 1 2 3 4 5 6 7 8

IF 1 OR MORE CHILDREN 6 OR UNDER, ASK Are you the mother of the children 6 and under? IF "YES" ASK Q5c; IF RESPONDENT IS NOT THE MOTHER OR HAS NO CHILDREN IN THIS AGE CATEGORY SKIP TO Q6a.

5c. ASK ONLY IF RESPONDENT IS MOTHER OF ONE OR MORE CHILDREN 6 AND UNDER. ALL OTHERS SKIP TO Q6a.

Which of the following foods do you ever feed your baby?
READ LIST

<u>Products</u>	<u>Q5c. Ever Feed</u>		<u>Q5d.</u>
	<u>Yes</u>	<u>No</u>	<u>Times/Month</u>
Apple Juice	[]	[]	___/month
Applesauce	[]	[]	___/month
Fresh Apples	[]	[]	___/month
Any other products made from or containing apples	[]	[]	
SPECIFY: _____	[]	[]	___/month
_____	[]	[]	___/month

5d. FOR EACH PRODUCT CHECKED "YES" ASK: How many times a month do you give your baby PRODUCT CHECKED "YES"?

TO QUALIFY FOR 12:30 P.M. GROUP, MUST FEED CHILD AT LEAST TWO PRODUCTS, EACH AT LEAST FOUR OR MORE TIMES A MONTH.

6a. Into which of the following groups does your age fall? READ LIST

Under 25	[]	THANK & TERMINATE
25 - 29	[]	SPREAD 7:30 GROUP
30 - 34	[]	
35 - 39	[]	
40 - 44	[]	
45 - 49	[]	
50 - 54	[]	SPREAD 5:30 GROUP
55 - 59	[]	
60 - 64	[]	
65 - 69	[]	
70 +	[]	THANK & TERMINATE

6b. ASK ONLY OF CANDIDATES FOR 7:30 GROUP If you are asked and decide to participate in this research, you may be asked to sample a beverage containing alcohol. When you arrive at the facility, you will be asked to sign a statement as to whether you are pregnant or not. If you state that you are pregnant, you will not be allowed to participate nor will you receive the honorarium for participating.

Are you currently pregnant?

No [] CONTINUE Yes [] THANK & TERMINATE

7. What is the last grade of school that you completed?

Some high school	[]	THANK & TERMINATE
Completed high school	[]	SPREAD
Some college	[]	
Completed college	[]	
Graduate school	[]	
Other technical/ business/ trade school	[]	THANK & TERMINATE

8. What is your employment status? Are you presently:

Employed full-time [] | ABOUT HALF IN EACH GROUP

Employed part-time [] | SHOULD BE EMPLOYED

Not employed [] | ABOUT HALF IN EACH GROUP

9. What is your marital status?

- Married []
- Living with a significant other []
- Single []
- Divorced/Widowed/Separated []

10. Which of the following groups represents your household's total annual income before taxes? READ LIST

Under \$25,000	[]	THANK & TERMINATE
\$25,000 - \$49,999	[]	
\$50,000 - \$74,999	[]	SPREAD
\$75,000 or more	[]	

11. I'd like you to think for a moment about your favorite book or movie. What is it that you like about this book or movie? AFTER RESPONDENT REPLIES, PROBE What do you get from this [book / movie] that you don't get from others? (WRITE DOWN RESPONSE AS CLOSE TO VERBATIM AS POSSIBLE)

THE PURPOSE OF THIS QUESTION IS TO MAKE SURE THAT THE RESPONDENT IS ARTICULATE, THAT IS, THAT THE RESPONDENT CAN EXPRESS HER THOUGHTS AND FEELINGS FREELY WITHOUT EXTENSIVE PROBING. IF RESPONDENT GIVES VERY BRIEF ANSWERS - "MUSIC," "SINGING," "PLOT," ETC. - THAT DON'T DISCRIMINATE ONE TITLE FROM ANOTHER OR SAYS "I DON'T KNOW", OR SEEMS UNCOMFORTABLE TALKING TO YOU, TERMINATE. THE SUPERVISOR SHOULD REVIEW ALL THESE ANSWERS AND THEY SHOULD BE FAXED ON A DAILY BASIS AS RECRUITING IS COMPLETED TO DONOVAN & ASSOCIATES.

FINALLY, QUALIFIED RESPONDENTS MUST BE:

- Fluent in English and free of accent or inflection
- Articulate
- Unknown to the recruiter
- Ethnically diverse, i.e., last name

FOR EACH GROUP, RECRUIT 10.

CHECK QUOTAS AND TIMES. INVITE QUALIFIED RESPONDENTS TO PARTICIPATE
IN A TWO-HOUR GROUP DISCUSSION ON OCTOBER 19, 2000 AT SCHLESINGER
ASSOCIATES, 500 FIFTH AVENUE, NW CORNER OF 42ND STREET AND 5TH AVENUE,
SUITE 1030. 730-6400 ASK FOR RICHARD DONOVAN.

CHECK QUOTAS AND TIMES; INVITE QUALIFIED RESPONDENTS TO PARTICIPATE
IN FOCUS GROUP LASTING TWO HOURS AT YOUR FACILITY ON OCTOBER 18.

Appendix 4

Consumer Focus Group Discussion Guide

I INTRODUCTION & WARMUP

Introduction of environment: audio taping. . . associates behind mirror, . . video taping. . .no nodding. . .no talking all at once. . .assurance of complete confidentiality. . .not selling anything. . .strictly for marketing research purposes.

Explanation of focus group techniques/objectives. . .no right or wrong answers. . .freedom, safety and importance to express only your personal opinions and attitudes, not what you think most people would say. . .not a consensus. . .not a survey . . . an opinion expressed by one person is as important as a different opinion expressed by seven. . .my role: to keep the discussion moving, to obtain your true reaction to everything put before you whether it is positive, neutral or negative

Why you're here - discussion about apples and foods and beverages made with apples. . . Therefore, need to establish that each of you regularly eat or cook with fresh apples and also eat one or more processed apple products . . CONFIRM

Introduce yourselves. . .name, current occupation, how often you eat fresh fruit and what are your three most favorite.

II USE AND ATTITUDES TOWARD APPLES

DISTRIBUTE AND ASK RESPONDENTS TO COMPLETE STATEMENTS: "What I like best about apples is...?" "I would eat more apples if ...?" "I wish apples were...?" "The main thing I dislike about apples is...?"

REVIEW AND DISCUSS ANSWERS PROBING IF NECESSARY When did you start eating apples? Do you eat more or less than you did five years ago and why? Why do you eat them now? Nutritional benefits? Taste benefits? Competitive context?

III USE AND ATTITUDES TOWARD PRODUCTS MADE FROM APPLES

DISTRIBUTE AND ASK RESPONDENTS TO COMPLETE STATEMENTS [FOR MOTHERS GROUPS, RELATE QUESTIONS TO CHILDREN 6 AND UNDER]:
"Knowing a product is made from apples makes me think that the product is...?" "What stops me from eating more products made from apples is ...?" "I always thought that the following product made from apples would be interesting..NAME PRODUCT MADE FROM APPLES" "The main thing I dislike about products made from apples is...?"

REVIEW AND DISCUSS ANSWERS PROBING IF NECESSARY The products made from apples ever tried. . products liked the most and why. . . products liked the least and why . . reasons leading to use . . compared to five years ago, which consume more and less and why . . the concerns that they might have . . perceived nutritional and other health benefits . . competitive context. .packaging issues. . seasonality. . indicated improvements in existing products. . their thoughts on and interest in possible apple-based desserts, sauces, condiments. Reaction to eco-labeling

IV PRODUCT TASTING AND REACTIONS

ASK TO RATE PRODUCT TASTED ON A SCALE OF 1-10 WHERE 10 IS THE BEST AND 1 IS THE WORST AND REASONS WHY. DISCUSS RANKINGS AND REASONS PROBING WITH what's liked. . disliked. . willingness to purchase. . expected price point. . suggested improvements. . competitive context.

Appendix 5

Institutional Foodservice Focus Group Discussion Guide

Introduce moderators

Purpose: We're here to discuss in what ways your foodservice operations purchase and utilize fresh fruit and processed fruit products. Also any obstacles or opportunities you see in the marketplace impacting the demand for fruit products.

Ground Rules for the Discussion:

- Everyone's opinion is important. But please, only one person speak at a time so we don't miss anything.
- We are taping the session so we accurately capture everyone's ideas.
- This is a nonjudgmental environment. Feel free to give your honest opinion, and to agree or disagree with what others have said.
- The anonymity of participants is assured. There will never be any reporting of who attended this discussion, or who said what.
- Pens and paper are provided so you can jot down notes or points that come to mind while someone else is speaking.
- We'd like to encourage a relaxed atmosphere. Feel free to get yourself a drink, use the rest room, etc.

Please tell us your name, where you work, a little about your duties, and how long you have been involved in the foodservice industry.

We'd like to start by discussing fresh fruit. Can you give us an idea of the variety of fresh fruits that you purchase?

What are some of the ways you use or serve fresh fruits?

What are some of the ways your facilities use fresh apples?

Do your apple purchase quantities vary seasonally? What factors influence changes in the quantity of apples you purchase?

Are you aware of any trends that might impact your demand for apples in the future?

In general, what is the image of apples within the foodservice industry? (e.g. nutritious?, snack food?, easy to handle?, etc.) What are their positive characteristics? Negative characteristics?

Aside from fresh apples, there are many processed apple products on the market. What are some of the processed apple products that come to mind?

What are some of the ways your operations use or sell these products?

What are some of the positive and negative characteristics of these products?

Are there any changes that can be made to make any of these products more appealing or useful to your foodservice operation?

We'd like to share with you a sample of a new apple product. While these look like normal apple slices, it may surprise you to hear they were sliced three days ago. A natural coating has been put on them to prevent browning.

What do you think? Can you envision serving an apple product like this?

Do you have other suggestions for new or improved apple products?

I'd like to talk about the procurement process. How many suppliers do you use for your food purchases?

Do your suppliers offer a wide range of apple products?

Where in your organization are decisions made to change menus or food offerings?

If you were consulting with apple growers and processors to help them expand the sales of apples and apple products within the institutional foodservice niche, what things would you recommend to them?

Appendix 6

Casual and Family-Style Restaurants Telephone Interview Guide

Hello, my name is Scott Marsh, and I'm working with professors and researchers at Cornell University who are interested in your opinion about certain fresh and processed fruit products, and their use within the restaurant industry.

The questions I have will take approximately 10 minutes to answer. Is now a convenient time, or can we schedule another time for me to contact you?

Can you give me an idea of the variety of fresh fruits that you purchase?

What are some of the ways you serve fresh fruits?

What are some of the ways you use fresh apples?

Do your chefs typically cut, slice, or otherwise process fresh apples?

Do you generally purchase a particular variety of apple? What are some of the reasons you select that particular variety?

What are some of the limitations of using fresh apples in the restaurant industry?

Does your demand for fresh apples vary seasonally? What influences this?

What are some of the ways your restaurant uses processed apple products?

Have you ever used or seen pre-cut fresh apples? What is your opinion about their usefulness in your industry?

In what ways can processed or pre-cut apple products be improved that would encourage you to use more in your restaurant?

Does your restaurant serve apple juice or cider? How did you select the brand you are currently serving? If cider, what are some of the reasons you selected cider over apple juice?

How many suppliers do you purchase produce from?

Does your supplier(s) offer a wide range of apple products?

If you were consulting with apple growers and processors to help them expand the sales of apples and apple products to restaurants, what things would you recommend to them?

Appendix 7

New York State School Foodservice Survey on Apple Products

CORNELL
UNIVERSITY

Department of Agricultural, Resource,
and Managerial Economics

Warren Hall
Ithaca, NY 14853-7801
USA

Facsimile: 607 255-9984

November 17, 2000

Dear School Foodservice Program Director:

As part of an on-going research program at Cornell University Department of Agricultural, Resource, and Managerial Economics, we are sending you the enclosed survey. We hope that you will be able to spend a few minutes completing the survey. The purpose of the survey is to measure the use of regional agricultural products in New York State school foodservice programs.

We have designed the survey so that you should be able to complete it in a short period of time. We appreciate your time in filling out the survey. The results will be used to gain a better understanding of the school foodservice market and to assist regional food producers in better serving this market.

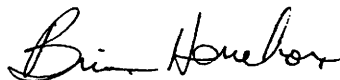
All survey results will be kept completely confidential. The data collected will be reported only at the aggregate level.

Your survey responses are important to our completion of a successful study. Please take a few minutes to complete and return the questionnaire.

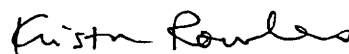
Please return the survey by December 20, 2000 in the enclosed postage paid envelope. If you have any questions about the survey or this research project, please contact Kristin Rowles, Department of Agricultural, Resource, and Managerial Economics, 105 Warren Hall, Cornell University, Ithaca, NY 14853. (Phone: 607-255-3731, E-mail: klr17@cornell.edu).

Thank you in advance for your participation.

Sincerely,



Brian Henehan
Senior Extension Associate



Kristin Rowles
Marketing Analyst

SCHOOL FOODSERVICE SURVEY

Please answer the questions below by filling in or circling the appropriate responses. *All survey results will be kept completely confidential.* Please return the survey in the enclosed postage paid envelope. If you have any questions about the survey or this research project, please contact Kristin Rowles, Department of Agricultural, Resource, and Managerial Economics, 105 Warren Hall, Cornell University, Ithaca, NY 14853. Phone: 607-255-3731 E-mail: klr17@cornell.edu

Thank you for participating!

1) Your School District

In which county is your school district located? _____

How many students are in your school district? _____

What is the average number of meals that your foodservice program serves per day during the school year?

Breakfast _____ Lunch _____ Other _____

2) Fruit and Vegetable Use

Please circle the most appropriate response to the following questions.

Over the past 5 years, how has your program's use of fresh fruit and vegetables changed?

1	2	3	4	5
Decreased Significantly	Decreased Some	About the Same	Increased Some	Increased Significantly

Over the past 5 years, how has your program's use of processed fruit and vegetables changed?

1	2	3	4	5
Decreased Significantly	Decreased Some	About the Same	Increased Some	Increased Significantly

Over the past 5 years, how has your program's use of pre-cut fresh fruit and vegetables changed? (*Pre-cut* refers to fruits and vegetables that are sliced and packaged at a food processing plant, not in-house. For example, packaged salad mixes, pre-washed and cut carrot sticks, pre-cut broccoli florets.)

1	2	3	4	5
Decreased Significantly	Decreased Some	About the Same	Increased Some	Increased Significantly

3) Apple Juice

Approximately how many days per month do you serve apple juice:

At breakfast? _____ At lunch? _____

Over the past 5 years, how has your program's use of apple juice changed?

1	2	3	4	5
Decreased Significantly	Decreased Some	About the Same	Increased Some	Increased Significantly

Compare apple juice to other fruit juices that you serve in your program. How does apple juice compare to other fruit juices along the following characteristics?

Nutrition

1	2	3	4	5
Much Less Nutritious	Less Nutritious	About the Same	More Nutritious	Much More Nutritious

Price

1	2	3	4	5
Much Less Expensive	Less Expensive	About the Same	More Expensive	Much More Expensive

Appeal to your customers

1	2	3	4	5
Much Less Appealing	Less Appealing	About the Same	More Appealing	Much More Appealing

Has your program served apple cider in the past year (circle response)? Yes No

If yes, in how many months of last year did you serve apple cider? _____

During those months, approximately how many days per month did you serve apple cider:

At breakfast? _____ At lunch? _____

4) Applesauce

Approximately how many days per month do you serve applesauce:

At breakfast? _____ At lunch? _____

When you purchase applesauce, do you buy it in single-serve cups (circle response)?

Always Sometimes Never

Over the past 5 years, how has your program's use of applesauce changed?

1	2	3	4	5
Decreased Significantly	Decreased Some	About the Same	Increased Some	Increased Significantly

Compare applesauce to other fruit products that you serve in your program. How does applesauce compare to other fruit products along the following characteristics?

Nutrition

1	2	3	4	5
Much Less Nutritious	Less Nutritious	About the Same	More Nutritious	Much More Nutritious

Price

1	2	3	4	5
Much Less Expensive	Less Expensive	About the Same	More Expensive	Much More Expensive

Appeal to your customers

1	2	3	4	5
Much Less Appealing	Less Appealing	About the Same	More Appealing	Much More Appealing

5) Pre-cut Apples

Pre-cut apples refer to fresh apples that are sliced and packaged at a food processing plant (not in-house).

Have you served pre-cut apples in the past year? Yes No

If no, why not (circle all that apply)?

- | | |
|--------------|----------------|
| Price | Size of Slices |
| Availability | Portion Size |
| Quality | Other _____ |

Compare pre-cut apples to other fruit products that you serve in your program. How do pre-cut apples compare to other fruit products along the following characteristics?

Nutrition

1	2	3	4	5
Much Less Nutritious	Less Nutritious	About the Same	More Nutritious	Much More Nutritious

Price

1	2	3	4	5
Much Less Expensive	Less Expensive	About the Same	More Expensive	Much More Expensive

Appeal to your customers

1	2	3	4	5
Much Less Appealing	Less Appealing	About the Same	More Appealing	Much More Appealing

6) Other Products

Have you served other apple products that were not mentioned in this survey? If so, please describe the product(s) below.

7) Regional Foods

Regional foods are food products grown and processed in your geographic region. How important is the use of regional food products to you in making decisions about purchases for your foodservice program?

1	2	3	4	5
Not At All Important	A Little Bit Important	Somewhat Important	Important	Very Important

When you buy fresh apples for your foodservice program, do you currently buy apples grown in New York State?

Always Sometimes Never Don't Know

If you do not purchase New York State apples, why not (circle all that apply)?

Price Size
Availability Quality
Other _____

What varieties of fresh apples do you prefer to purchase for your foodservice program?

8) Comments

Please feel free to make any comments about the survey or your responses.

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