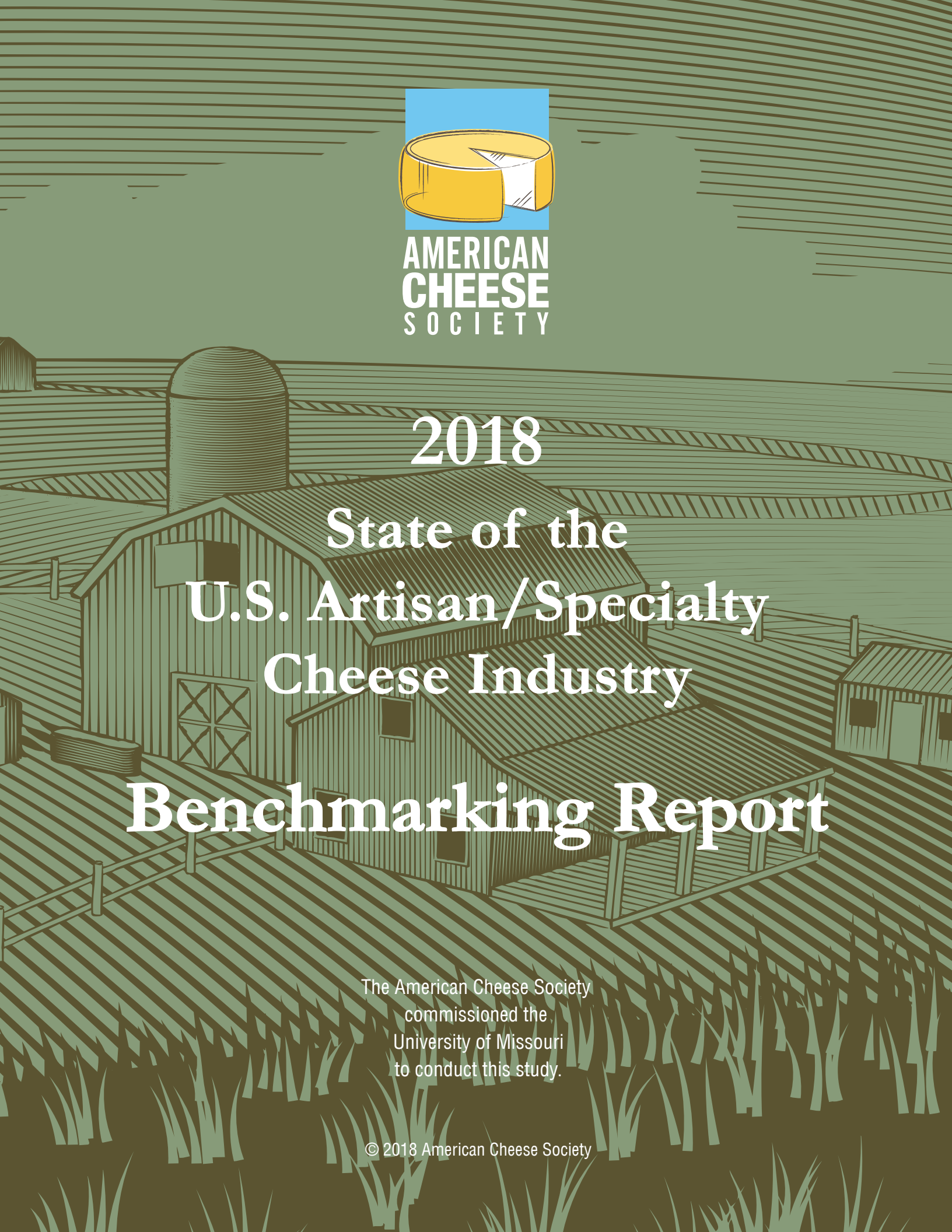

AMERICAN CHEESE SOCIETY

2018 State of the U.S. Artisan/Specialty Cheese Industry Benchmarking Report

The American Cheese Society commissioned the University of Missouri to conduct this study.

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Acknowledgements

This project would not have been possible without the participation of cheesemakers. For both the 2016 and 2018 surveys, more than 200 cheesemakers took the time to respond to survey questions so that everyone in the artisan, farmstead, and specialty cheese industry can improve and continue to grow both their businesses and the broader industry. The data provided by the cheesemaker-respondents (hereinafter referred to as “cheesemakers”) have been used to identify trends and insights about the artisan, farmstead, and specialty cheese industry.

The project was also made possible through the support of the American Cheese Education Foundation.

We hope that industry members will find the information presented in this report to be useful, and that it can provide some support in operating cheese businesses sustainably and profitably.

Researchers from the University of Missouri collected and analyzed the survey data and developed this benchmarking report. University of Connecticut researchers developed and conducted the 2016 survey and analyzed the data.

Executive Summary

This report presents a summary of the findings from the production, marketing, demographic, and industry participation data generously provided by U.S. artisan, farmstead, and specialty cheesemakers via the 2016 and 2018 surveys.

Key findings include:

- Cheesemakers who use sheep milk were more likely to be located in the West and Northeast regions.
- Cheesemakers using unpasteurized milk with no heat treatment were more likely to be located in the Northeast than any other region, and they're more likely to use a higher percentage of this milk in their cheesemaking than producers in other regions.
- The majority of cheesemakers participating in government or government-sponsored programs in the previous three years were located in the Midwest and Northeast regions. Average production volume of these cheesemakers in 2017 was 63,000 pounds.
- Cheesemakers in the Northeast and West were more likely to be members of a state, regional, or local cheese guild or council than those located in the South and Midwest regions.
- Continuing the finding from the 2016 study, there was a negative relationship between average profit margin and the number of cheese products made. This means that average profit margin tends to decrease as cheesemakers add cheeses to their range of product offerings.
- A marked difference existed between distribution channels used by larger cheesemakers compared with those used by smaller cheesemakers.
- Average profit margins decreased as production volume increased.

Introduction

Survey Background

The inaugural State of the U.S. Artisan/Specialty Cheese Industry survey was conducted in 2016 to provide much-needed information about the artisan, farmstead, and specialty cheese industry in order to support cheesemakers and their businesses. The second survey, conducted in 2018, shares the latest insights about this unique segment of the cheese industry. The American Cheese Education Foundation supported both the 2016 and 2018 surveys. Using the information presented in this report, cheesemakers may be able to assess how their businesses have performed relative to the businesses of other producers making artisan, farmstead, and specialty cheese.

Who We Are

The American Cheese Society (ACS) is the leader in promoting and supporting American cheeses, providing the cheese industry with educational resources and networking opportunities, while encouraging the highest standards of cheesemaking focused on safety and sustainability.

Definitions

There are no legal or regulatory distinctions of “artisan,” “farmstead,” or “specialty” cheeses. The following definitions are used by the American Cheese Society:

Artisan Cheese

“Artisan” or “artisanal” implies that a cheese is produced primarily by hand in small batches with particular attention paid to the tradition of the cheesemaker’s art, and thus using as little mechanization as possible.

Farmstead Cheese

In order for a cheese to be classified as “farmstead,” the cheese must be made only from milk produced by the cheesemaker’s own herd or flock and produced on the farm where the animals are raised.

Specialty Cheese

Specialty cheese is defined as cheese made in limited quantities with particular attention paid to natural flavor and texture profiles.

Commodity Cheese

Cheese that’s produced in large volume using industrial manufacturing techniques such as milk standardization, mechanization, and automation and that’s often used in private labeling, food service, mass retail, or institutional settings. Responses from commodity cheesemakers were included in the data analysis if those cheesemakers also produced artisan, farmstead, or specialty cheese.

Cheesemaker

Any producer of cheese in the United States whose production meets the above definition(s).

Economic Factors Affecting Industry

According to the USDA Economic Research Service, per capita cheese consumption in the U.S. has steadily risen since 1970. In 2015, consumption was estimated to be 35 pounds per person. According to Euromonitor International, U.S. sales of processed cheese were projected to drop 1.6% for 2018 as millennials seek cheeses with fewer preservatives (Mulvany & Patton, 2018). The number of U.S. cheese factories increased by 40% between 2000 and 2017, and production increased with the greater number of facilities (Mulvany & Patton, 2018). Although artisan, farmstead, and specialty cheesemakers contribute a relatively small percentage of total cheese production in the U.S., analysts believe the growth in U.S. cheese production is largely due to small, specialty cheesemakers (Mulvany & Patton, 2018). In ACS's 2018 survey, 95% of cheesemakers responding produced less than 750,001 pounds of cheese in the prior year (2017). Annual cheese production for cheesemakers who produced no more than 750,000 pounds averaged 51,484 pounds.

Many dairy farmers have chosen to diversify their businesses and make cheese. As a value-added dairy product, cheese sales enable dairy producers to earn a higher price for their milk than what they could capture in today's commodity market, which is characterized by milk prices being lower than production costs. Two-thirds of cheesemakers in the 2016 survey and 65% of those in the 2018 survey reported sourcing milk from their own animals.

Labor is a key production cost for cheesemakers. Depending on specific factors, businesses have labor costs associated with cheese production, sales, and marketing. Large-scale cheesemakers may achieve economies of scale. As cheesemakers increase production volume, the percentage of sales spent on facilities, food safety testing, marketing, and labor declines.

Milk is a major component of a cheesemaker's cost of goods sold. Milk sourced from cows is significantly cheaper than milk sourced from goats and sheep, yet artisan cheeses made from cow, goat, and sheep milk sell for nearly the same retail price. In 2017, the average profit margin for cheesemakers who used cow milk to make cheese was 21% compared with 19% for those who used goat milk and 14% for those who used sheep milk. The 2016 report suggested that diversified dairy farmers — those who produce both fluid milk and cheese — earned a lower profit margin, but the 2018 analysis showed no significant difference among the average profit margins of diversified farmer-cheesemakers, cheesemakers who source 100% of the milk they use from other dairy farmers, or cheesemakers who use a mix of their own herds' milk and milk sourced from other suppliers.

Section 1

Survey Description

About the Survey

The first artisan, farmstead, and specialty cheese industry survey was conducted for ACS in 2016 by researchers at the University of Connecticut. A total of 897 cheesemakers were invited to participate, and 216 participant responses were analyzed. The results of this first study were published in 2017 and emphasized the value of gathering operational data in order to better describe the scope and scale of the growing American artisan, farmstead, and specialty cheese industry.

The American Cheese Society engaged researchers at the University of Missouri to conduct a second study in 2018. Nearly 1,000 U.S. artisan, farmstead, and specialty cheesemakers were invited to participate in the survey. Responses from 209 participants were received. Responses from five participants were excluded from the analysis as those five producers exclusively made commodity cheese. Thus, the final sample included 204 participants. The response rate was deemed statistically reliable with 95.5% confidence. Participation in the 2016 and the 2018 studies was voluntary. In 2018, participation requests were made by university researchers; ACS; and state and local cheese guilds; and during the ACS Annual Conference in July 2018, where ACS and University of Missouri personnel promoted the survey.

The 2018 survey consisted of 59 questions about the following topics:

- Production (10 questions),
- Marketing (6 questions),
- Food safety (18 questions),
- Demographics (15 questions),
- Industry participation (6 questions) and
- Outlook and attitudes (4 questions)

Not all questions were answered by all participants. In some cases, questions weren't relevant for a particular participant based on his or her previous answers to a question, or participants may have chosen not to answer some questions.

In some cases, this report shares multiyear data collected in the 2016 and 2018 surveys. To answer some survey questions, cheesemakers recorded information about their operations in the 2015 and 2017 calendar years, while to answer other questions, cheesemakers provided responses to reflect their current attitudes and experiences. As a result, the multiyear data presented in the report may be labeled as 2015 and 2017, or 2016 and 2018, depending on the structure of the question and time period that the data represent.

Benefits of Participation

Cheesemakers who participated in the 2018 survey will be provided with an electronic copy of this benchmarking report. In addition, all respondents were entered into a drawing to win one of four $100 Amazon gift cards.

Benchmarking Goals and Processes

The U.S. artisan, farmstead, and specialty cheese industry is growing, and consumers have increasing interest in these unique cheese products. However, challenges such as maintaining profitability in light of rising costs are also present.

This report provides insights into management practices that may provide opportunities for cheesemakers to achieve higher margins. Examples include reducing the number of products sold or the number of distribution channels employed.

Statistical significance was an essential part of this study. Only relationships between variables that were found to be statistically significant — and not due to chance — are included in this report.

Allowing Fair Comparisons

Due to the differences among the businesses that participated in this study, it is important to discuss how data were compared. Throughout this report, cheesemakers who produced no more than 750,000 pounds of cheese in 2017 may be referenced in order to compare their characteristics. Cheesemakers who produced more than 750,000 pounds accounted for 5% of all respondents. Including their responses in comparisons meant that some averages were high and did not provide a true picture of the majority (95%) of cheesemakers. This report denotes instances where averages for all cheesemakers may have skewed the analysis, and in such cases, the discussion focuses on cheesemakers who produced no more than 750,000 pounds of cheese.

Confidentiality

This benchmarking report contains results obtained from aggregated data. Thereby, it protects the confidentiality of all cheesemakers participating in the surveys. All raw data provided to ACS lack any information that could be used to identify a single producer.

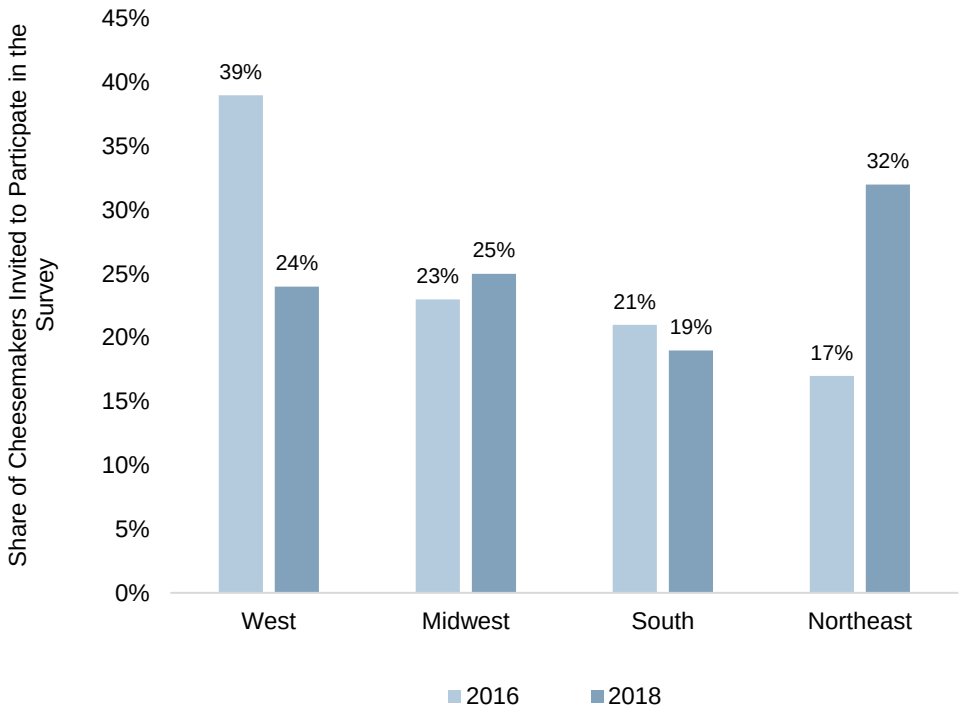
Section 2

Geography

This section describes cheesemaker survey data by region. To conduct this analysis, U.S. states were divided into four regions: the West, Midwest, South, and Northeast. In order to maintain comparability with the 2016 report, states were assigned to regions in the same order as they were in 2016.

Nearly 1,000 U.S. artisan, farmstead, and specialty cheesemakers were invited to participate in the 2018 survey. Of those producers, 32% were from the Northeast, 25% were located in the Midwest, 24% in the West, and 19% in the South. See Exhibit 2.1.

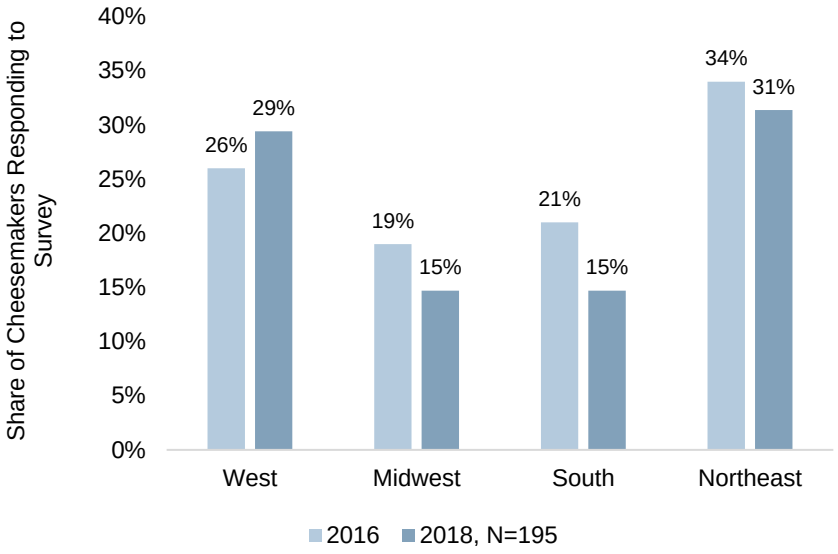
Exhibit 2.1 — Share of Cheesemakers Invited to Participate in Surveys by Region, 2016 and 2018



For the 2016 survey, more than 900 cheesemakers received information about participating in the survey. Relative to 2018, a much larger share of the cheesemakers invited to participate in 2016 were from the West, and a much smaller share were from the Northeast. This doesn't necessarily suggest that fewer cheesemakers operated in the West and more cheesemakers operated in the Northeast during 2018. Efforts were made to update the survey distribution list in 2018 to make it as inclusive as possible of U.S. artisan, farmstead, and specialty cheesemakers, and those efforts contributed to differences in the list's geographic composition. Extensive online search efforts identified that there were a number of cheesemakers from the Northeast region that were not on the previous distribution list.

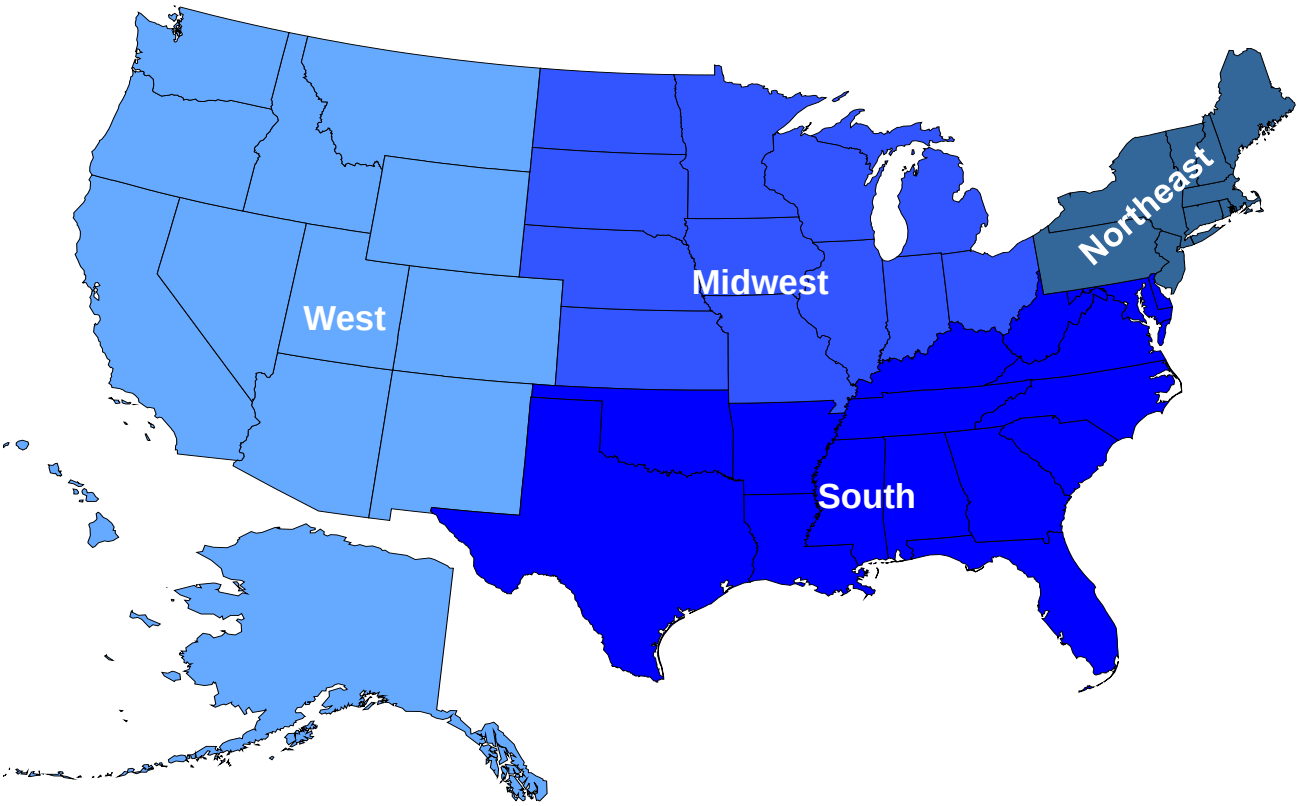
In 2018, 31% of survey respondents were from the Northeast region. See Exhibit 2.2. This is not surprising given that the largest share of cheesemakers invited to participate were from this region. Of the cheesemakers responding to the 2018 survey, 29% produced cheese in the West region, and the remaining shares of cheesemakers were split evenly between the Midwest and South regions. The total does not add to 100% as 10% of respondents did not answer this particular question; 195 respondents answered this question, whereas 204 cheesemakers were included in the final survey sample. The 2016 survey had 34% of its respondents from the Northeast region, compared with 26% from the West, 19% from the Midwest, and 21% from the South.

Exhibit 2.2 — Share of Cheesemakers Participating in Surveys by Region, 2016 and 2018



The map in Exhibit 2.3 shades states according to their respective regions.

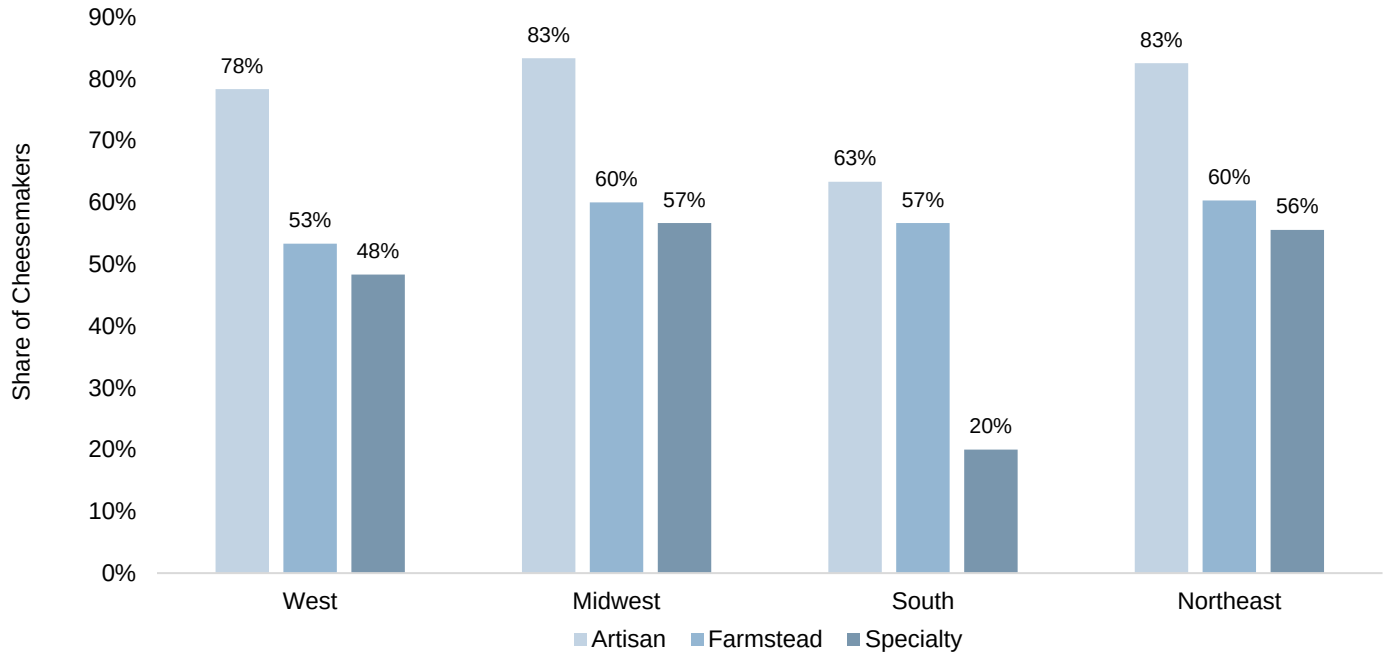
Exhibit 2.3 — Geographic Regions Used in Survey Analysis



Analysis 1: Production & Milk Types

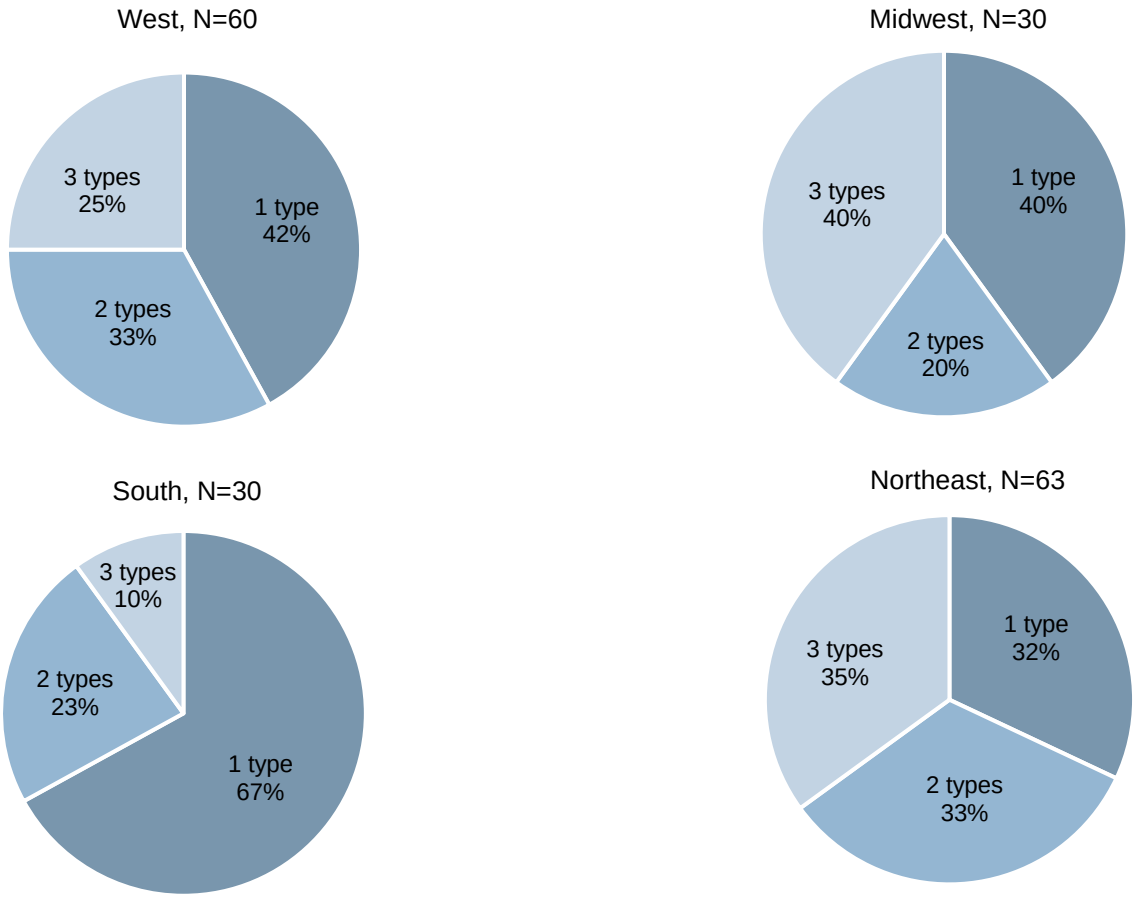
Production type ("type") refers to whether a cheesemaker produces cheese that fits artisan, farmstead, or specialty definitions. In all four regions, the greatest share of cheesemakers in 2017 produced artisan cheese, followed by farmstead cheese, and then specialty cheese. Exhibit 2.4 shows at least 75% of cheesemakers in the West, Midwest, and Northeast regions reported making artisan cheese compared with 63% of those from the South. With respect to farmstead cheese production, 60% of cheesemakers in both the Midwest and the Northeast made farmstead cheese, compared with 53% of those in the West region, and 57% of those in the South. Cheesemakers in the South were least likely to make specialty cheese compared with those in the West, Midwest, and Northeast regions.

Exhibit 2.4 — Share of Cheesemakers Producing Cheese by Type, 2017, N=199



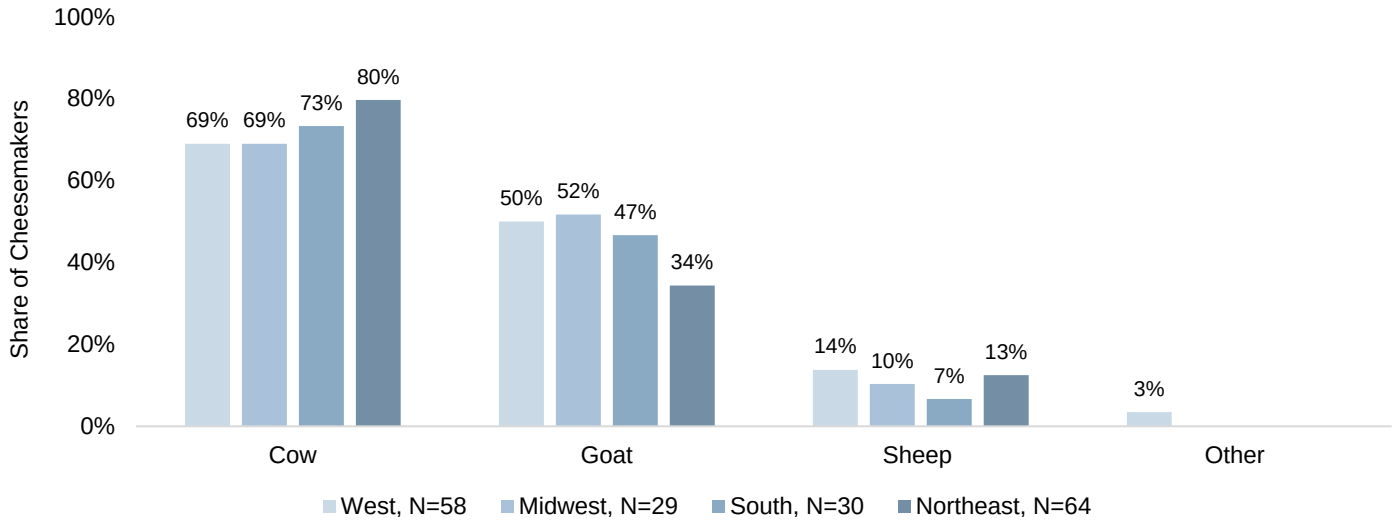
Some cheesemakers reported making a combination of artisan, farmstead, and specialty cheese in 2017. Four in 10 Midwest cheesemakers indicated that they made all three — artisan, farmstead, and specialty cheese. Exhibit 2.5 illustrates that no other region had a larger share of cheesemakers who make all three types of cheese. In the West region, 42% of cheesemakers made one type, 33% made two types, and 25% made three types. Southern cheesemakers predominantly made one type of cheese; just 33% made two or more types. Northeast cheesemakers were nearly evenly split in producing one, two, or three types of cheeses.

Exhibit 2.5 — Number of Cheese Production Types Implemented by Cheesemakers by Region, 2017 (Types = Artisan, Farmstead, Specialty)



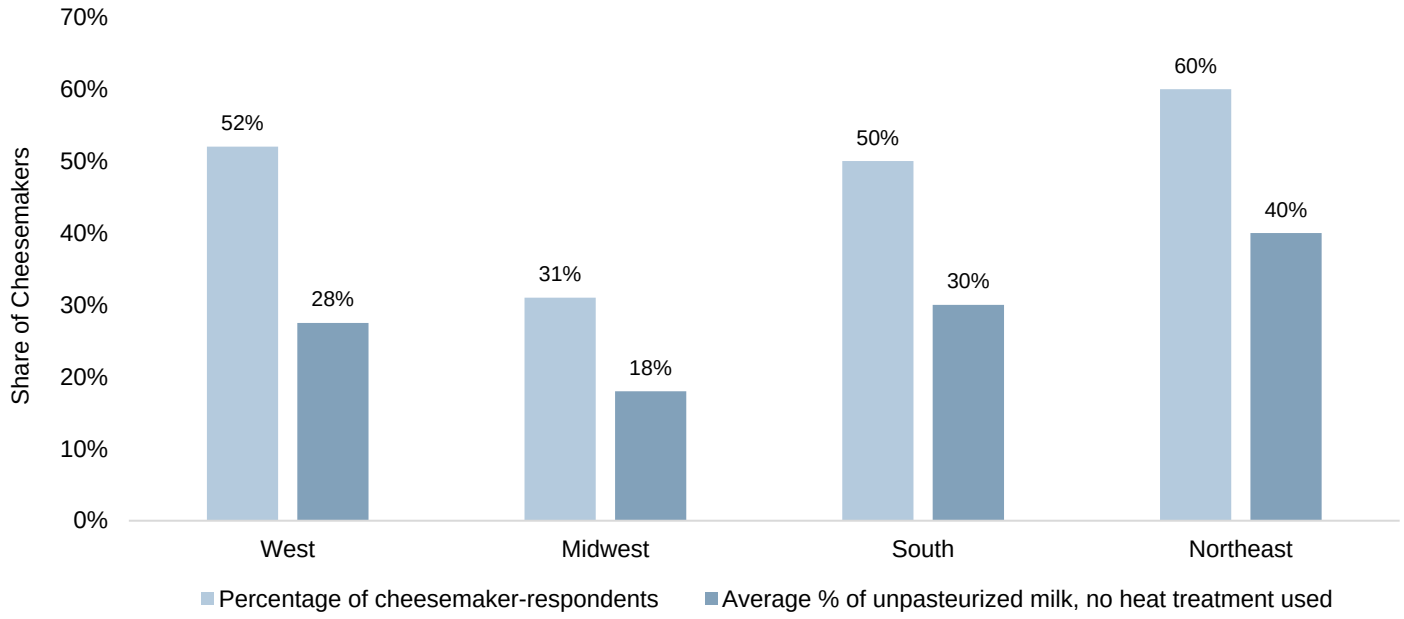
In all four regions, the greatest share of cheesemakers produced cheese from milk sourced from cows. Cheesemakers using sheep milk were statistically more likely to be located in the West and Northeast than any other region as is shown in Exhibit 2.6.

Exhibit 2.6 — Milk Types Used by Cheesemakers by Region, 2017



As shown in Exhibit 2.7, cheesemakers using unpasteurized milk with no heat treatment were more likely to be located in the Northeast than any other region. Cheesemakers in the Northeast also used a higher percentage of unpasteurized milk with no heat treatment in their cheesemaking than cheesemakers in any other region.

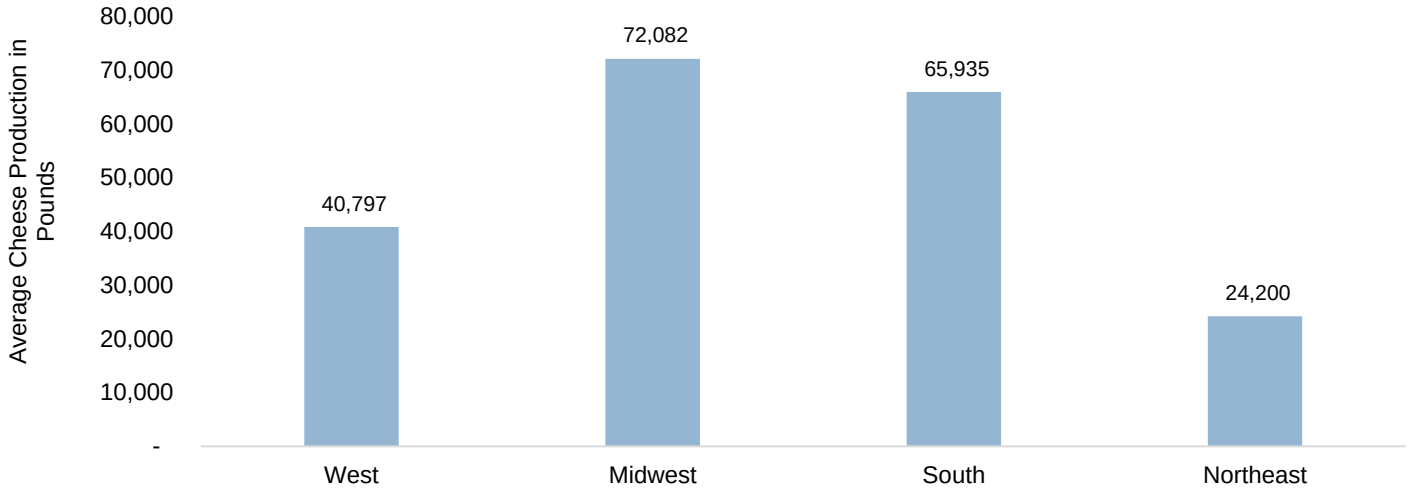
Exhibit 2.7 — Cheesemakers Using Unpasteurized Milk, No Heat Treatment, N=101 by Region, 2017



Analysis 2: Production Volume

A statistically significant relationship was identified between production volume and geographical location for cheesemakers producing less than 750,001 pounds per year. Midwest cheesemakers producing less than 750,001 pounds per year produced 72,082 pounds on average in 2017. This was closely followed by cheesemakers in the South who had an average production volume of 65,935 pounds. The lowest average production was in the Northeast at 24,200 pounds. See Exhibit 2.8.

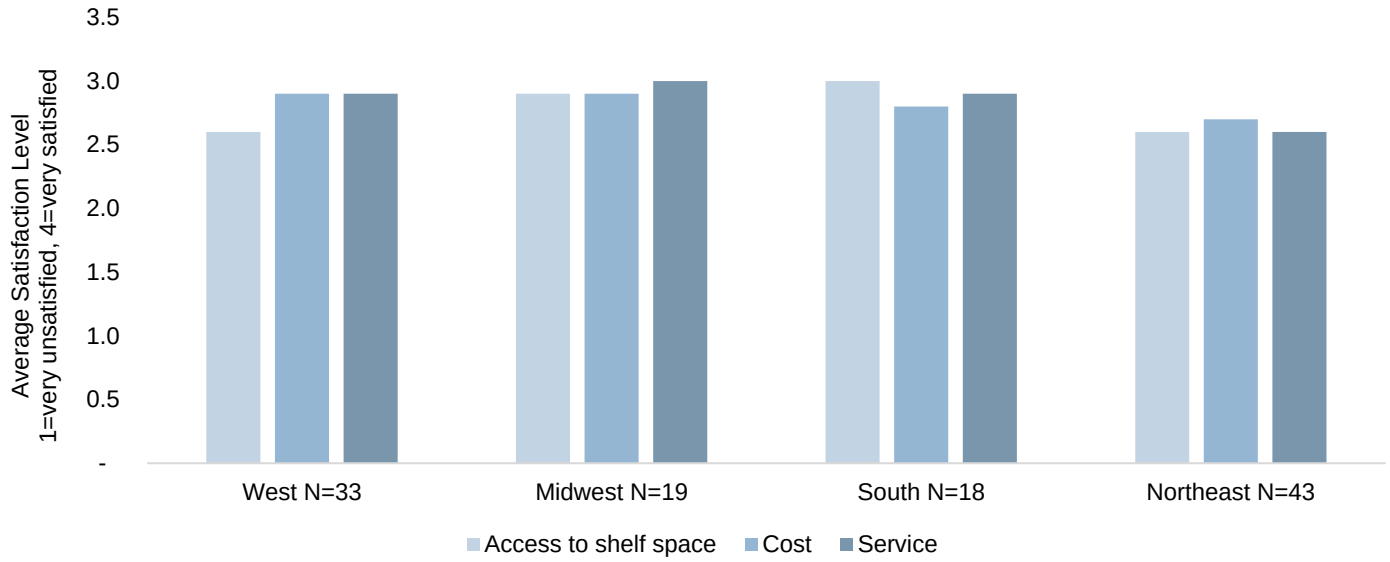
Exhibit 2.8 — Average Annual Cheese Production Volume by Region, 2017, N=161



Analysis 3: Satisfaction with Distributor/Wholesaler

Cheesemakers in the Midwest and South were more likely to report being satisfied with their access to shelf space obtained via a distributor or wholesaler than those in the Northeast and West. Overall, cheesemakers in the Northeast were least satisfied with their distributors or wholesalers, as they reported lower average satisfaction levels for access to shelf space, cost, and service. See Exhibit 2.9.

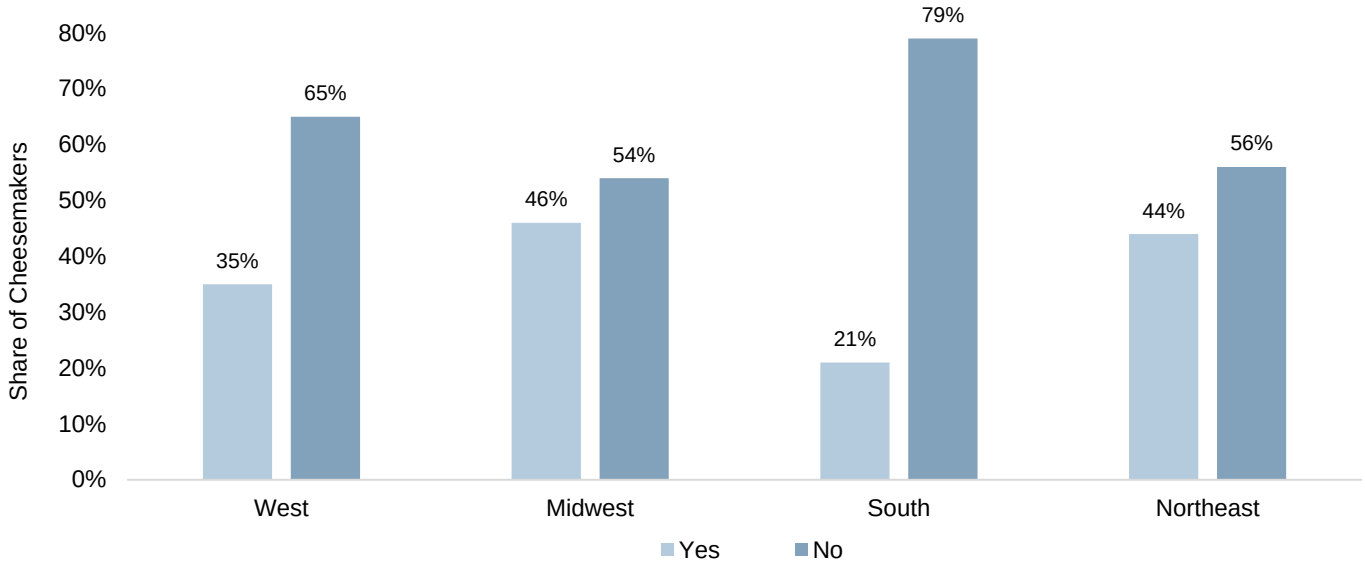
Exhibit 2.9 — Cheesemaker Average Satisfaction with Distributor or Wholesaler by Region, 2018, N=128



Analysis 4: Participation in Government or Government-Sponsored Programs

46% of cheesemakers from the Midwest region and 44% of those from the Northeast region reported that they had participated in government or government-sponsored programs during the previous three years. Exhibit 2.10 reports the share of cheesemakers participating in such programs by region. Cheesemakers in the West and South regions were much less likely to have participated in government or government-sponsored programs during the three years preceding the survey. As noted, 65% of cheesemakers in the West and 79% of cheesemakers in the South hadn't participated in government or government-sponsored programs in the previous three years. Among cheesemakers producing less than 750,001 pounds of cheese per year, those participating in government or government-sponsored programs in the previous three years had an average production volume of 63,000 pounds in 2017.

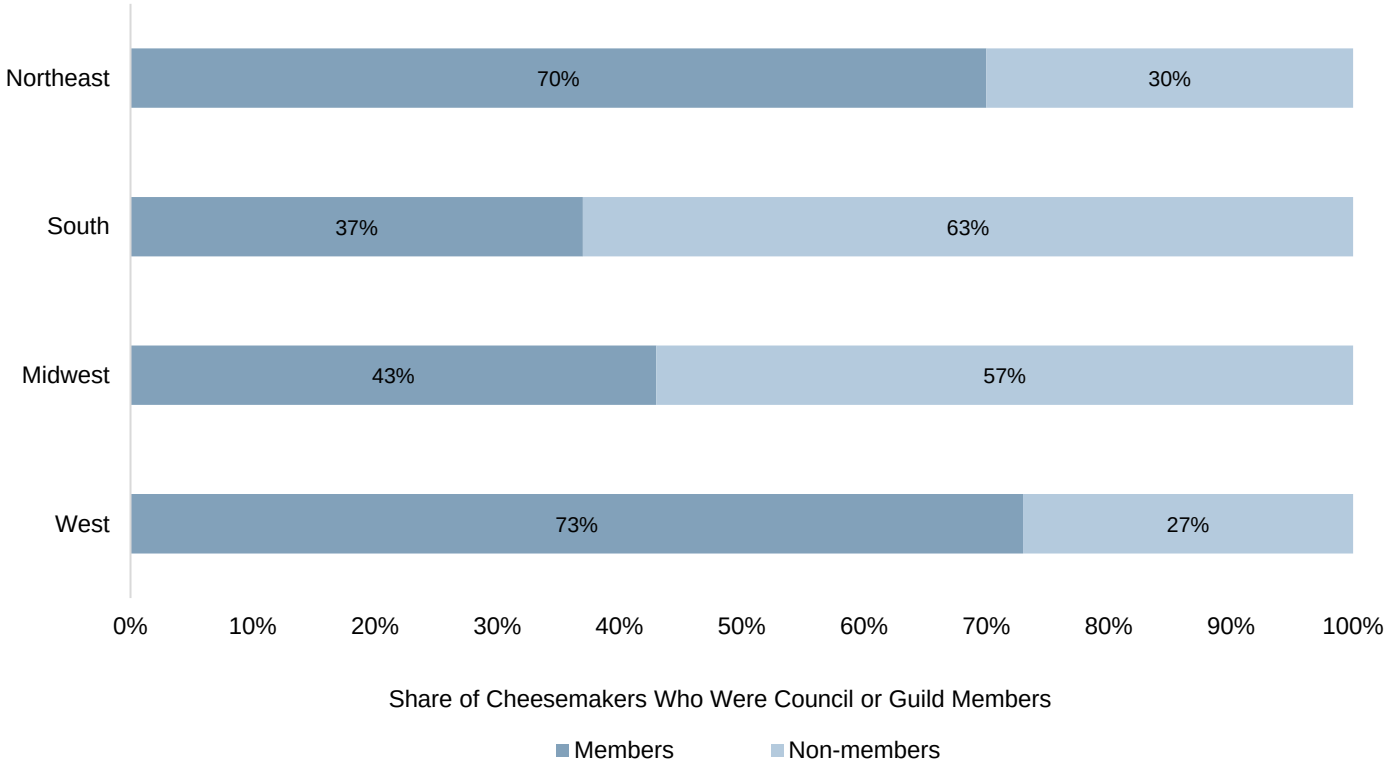
Exhibit 2.10 — Cheesemaker Participation in Government or Government-Sponsored Programs in the Three Years Preceding the Survey by Region, 2018, N=180



Analysis 5: Industry Participation

Northeast and West cheesemakers were most likely to report that they were members of state, regional, or local cheese guilds or councils. Of the total respondents in these regions, 70% and 73%, respectively, indicated being state, regional, or local cheese guild or council members, as illustrated in Exhibit 2.11. 37% of cheesemakers from the South region and 43% of those from the Midwest stated that they were members of state, regional, or local cheese guilds or councils.

Exhibit 2.11 — Cheesemaker Membership in State, Regional, or Local Guilds or Councils by Region, 2018, N=178



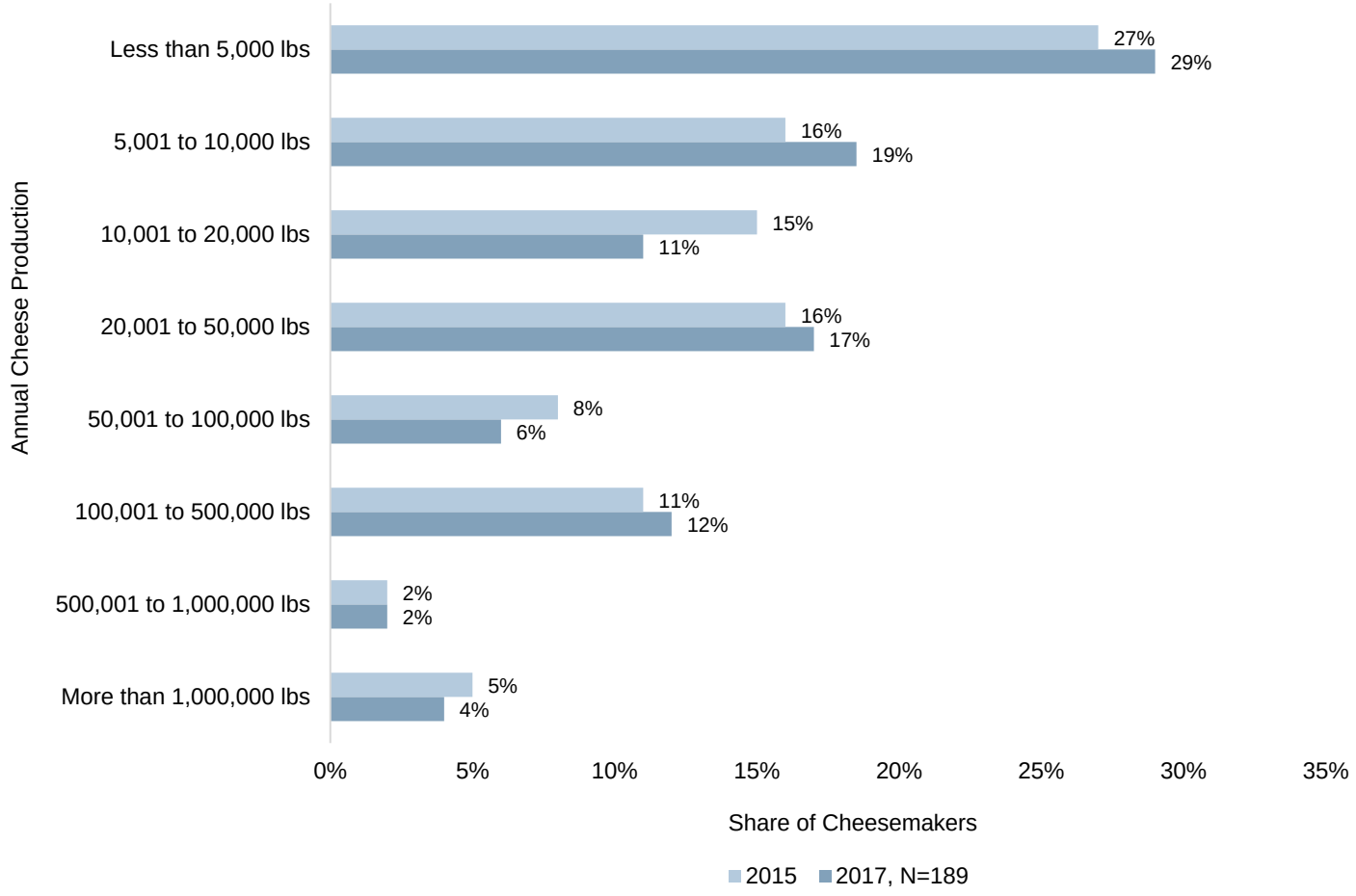
Section 3

Production Volume

This section describes cheesemaker survey data by annual cheese production volume. To conduct this analysis, cheesemakers were divided into eight categories based on their annual cheese production in 2017. In order to maintain comparability, the production level categories used in the 2016 analysis (based on cheesemaker data from 2015) were also used in this analysis.

Exhibit 3.1 compares annual cheese production of cheesemakers in 2015 and 2017. Nearly six in 10 cheesemakers in 2015 and 2017 produced no more than 20,000 pounds of cheese. During both 2015 and 2017, 18% of cheesemakers produced at least 100,000 pounds of cheese annually. In 2017, 95% of cheesemakers produced less than 750,001 pounds of cheese.

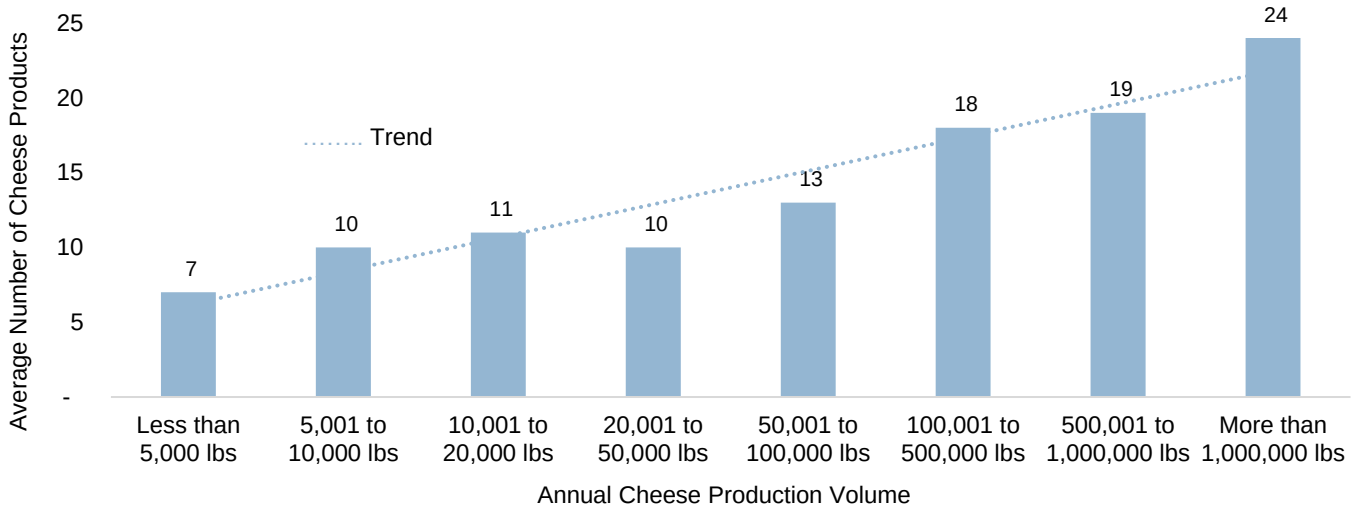
Exhibit 3.1 — Annual Cheese Produced by Cheesemakers, 2015 and 2017



Analysis 1: Number of Products

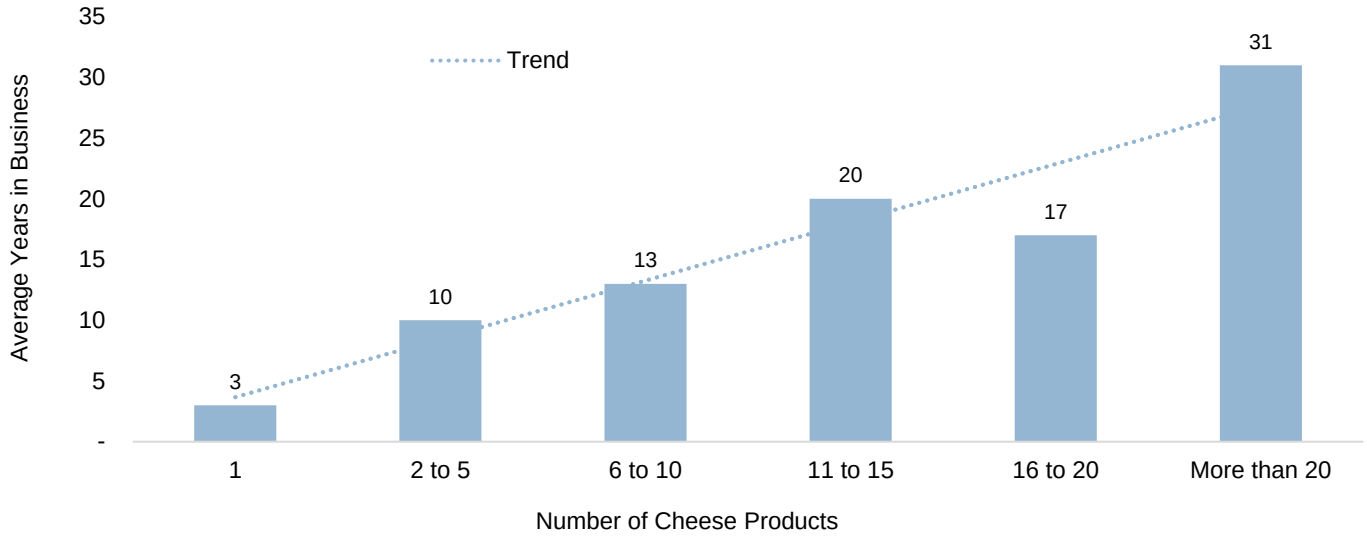
A statistically significant relationship was identified between the number of cheese products a cheesemaker sells and that cheesemaker's average production volume. On average, for every additional cheese product made, production volume increased by an average 30,000 pounds per year. Exhibit 3.2 illustrates the relationship. Cheesemakers who produced less than 5,000 pounds of cheese annually made seven cheese products on average in 2017. In contrast, those making more than 1 million pounds offered 24 cheese products on average.

Exhibit 3.2 — Cheese Products Produced by Cheesemakers According to Annual Cheese Production Volume, 2017, N=184



Years of experience in the cheesemaking business and the number of cheese products offered also showed a statistically significant and positive relationship, which the trend line notes in Exhibit 3.3. Cheesemakers who reported making just one cheese product had been cheesemakers for three

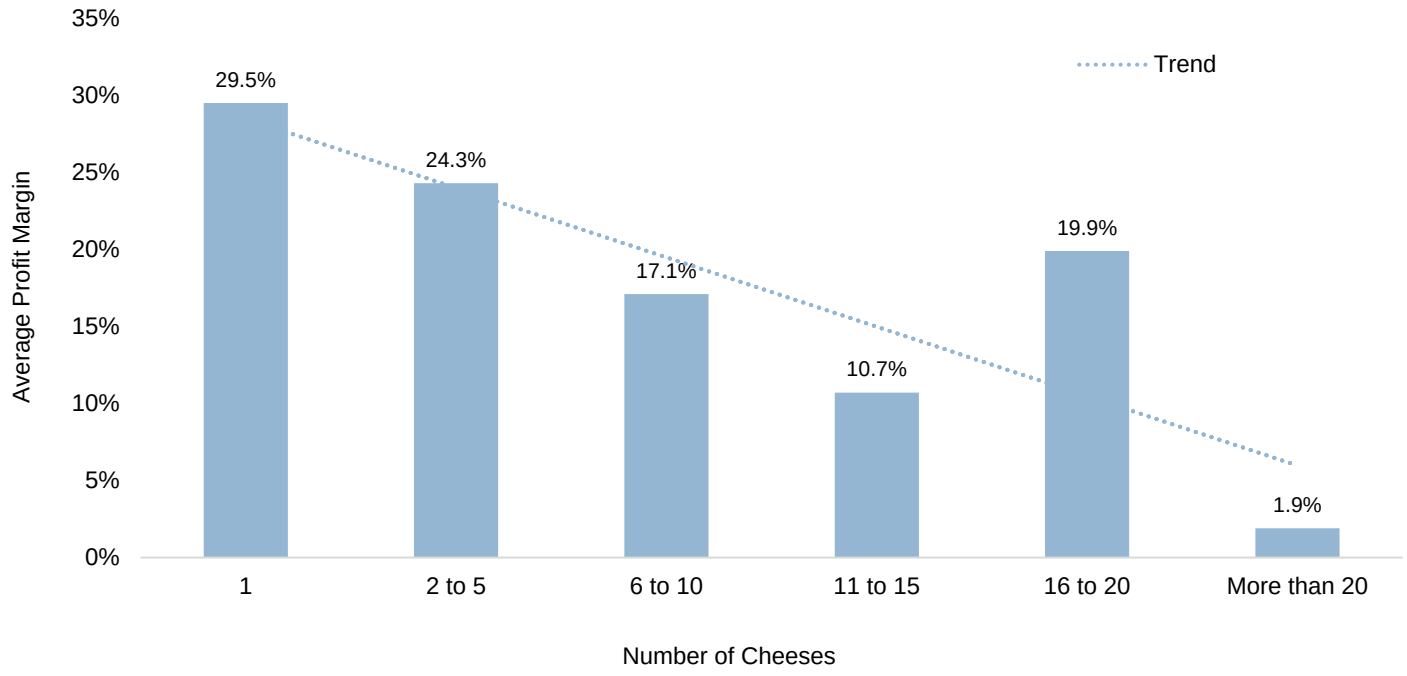
Exhibit 3.3 — Relationship between Number of Cheese Products Offered and Average Years in Business, 2017, N=181



years on average. Among cheesemakers who offered more than 20 cheese products, the number of years that they had been operating in business averaged 31 years.

As cheesemakers offered more cheese products, they tended to capture lower profit margins. Exhibit 3.4 charts the relationship between the number of cheese products offered and average profit margin. As illustrated, cheesemakers that reported offering just one cheese product captured a 29.5% profit margin on average. Among the cheesemakers who offered more than 20 cheese products, the average profit margin was just 1.9%. The exception to the overall trend was cheesemakers who made between 16 and 20 cheese products. Their profit margins averaged levels higher than those captured by cheesemakers who offered six to 10 cheese products and those who offered 11 to 15 cheese products. On average, profit margin was found to decrease by 0.4 percentage points for every additional cheese product.

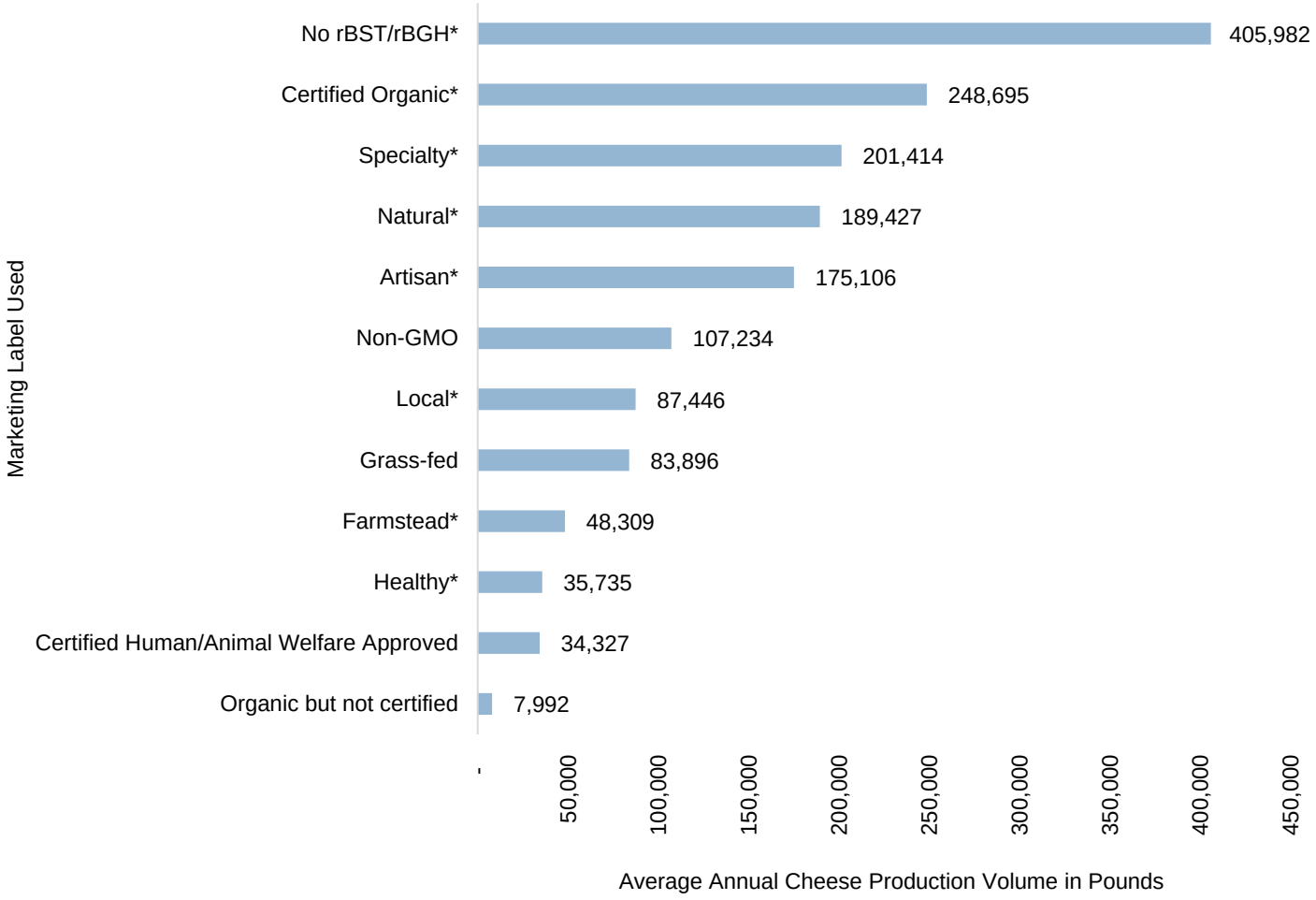
Exhibit 3.4 — Relationship between Number of Cheese Products Offered and Average Profit Margin, 2017, N=126



Analysis 2: Marketing Labels Used

A statistically significant relationship was identified between the marketing labels used by cheesemakers and their size, in terms of annual cheese production volume. Labels favored by producers producing more than 150,000 pounds of cheese were “natural,” “specialty,” “no rBST/rBGH,” “certified organic,” and “artisan.” These cheesemakers were less likely to use the terms “healthy,” “local,” and “farmstead” in their marketing materials. “Organic but not certified,” “certified humane/animal welfare approved,” “healthy,” and “farmstead” were labels most commonly used by cheesemakers who made less than 50,000 pounds of cheese per year relative to those producing more than this volume of cheese.

Exhibit 3.5 — Relationship between Marketing Labels Used by Cheesemakers and Annual Cheese Production Volume, 2017, N=176



*Statistically significant

Analysis 3: Distribution Channels

Exhibit 3.6 reports the share of cheesemakers who used various channels to distribute their cheese according to their 2017 annual cheese production volume. Direct-to-retailer and direct-to-restaurant sales were channels pursued by at least two-thirds of cheesemakers regardless of their annual cheese production volume.

A statistically significant relationship was found between distribution channels and production volume. All cheesemakers who produced more than 50,000 pounds of cheese engaged distributors and wholesalers. This practice was less common among cheesemakers who produced no more than 50,000 pounds of cheese. For cheesemakers, operating their own brick-and-mortar stores tended to be a distribution strategy used more frequently as production volume increased.

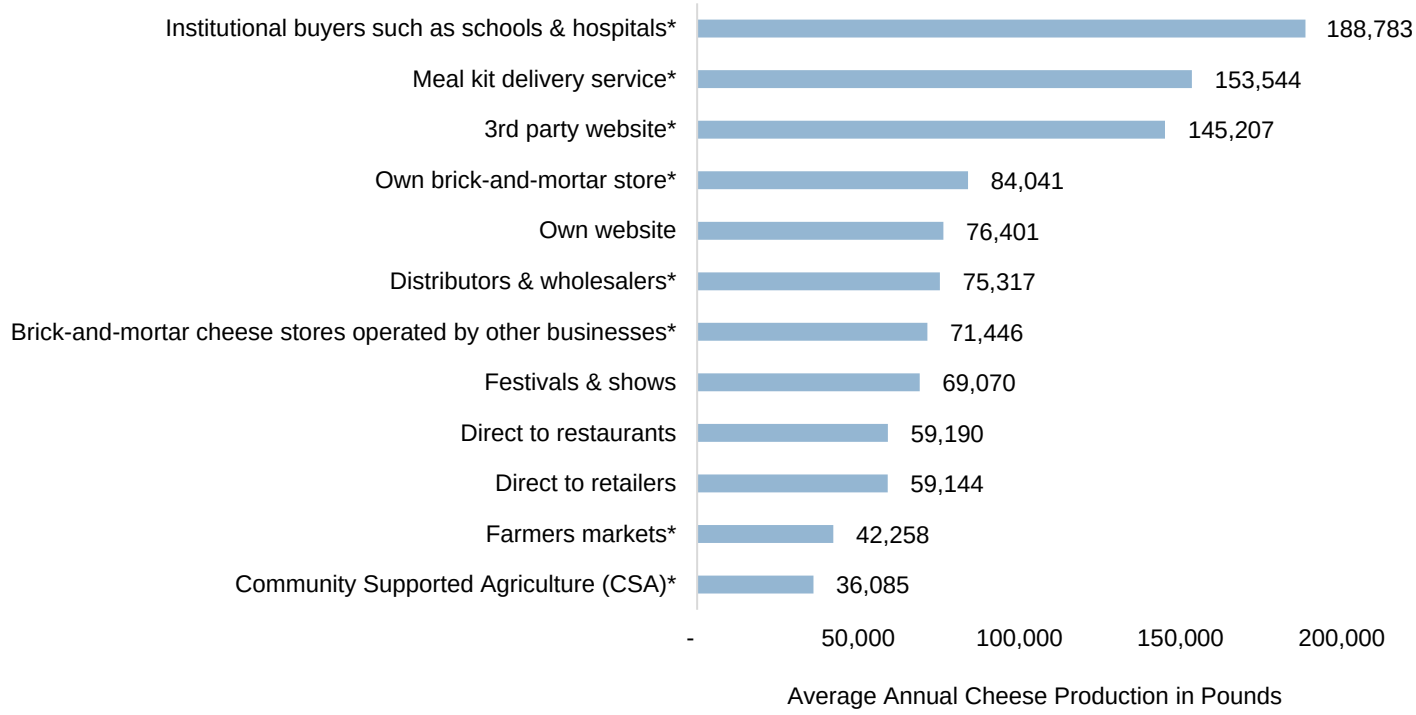
Exhibit 3.6 — Distribution Channels Used by Cheesemakers According to Annual Cheese Production Volume, 2017, N=179

	Annual Cheese Production Volume						
	Less than 5,000 lbs	5,001 to 10,000 lbs	10,001 to 20,000 lbs	20,001 to 50,000 lbs	50,001 to 100,000 lbs	100,001 to 500,000 lbs	500,001 to 1,000,000 lbs
Direct to retailers	67%	86%	81%	88%	73%	91%	100%
Direct to restaurants	67%	77%	81%	88%	82%	87%	100%
Distributors & wholesalers*	35%	63%	71%	75%	100%	100%	100%
Meal kit delivery service*	5%	0%	0%	6%	0%	17%	0%
Farmers markets*	75%	74%	71%	75%	36%	65%	25%
Own brick-and-mortar store*	36%	31%	43%	59%	45%	78%	100%
Own website	36%	34%	52%	56%	73%	78%	50%
Third-party website*	5%	0%	5%	6%	45%	26%	0%
Festivals & shows	36%	49%	43%	59%	73%	70%	50%
Community Supported Agriculture (CSA)*	20%	34%	38%	41%	27%	17%	0%
Brick-and-mortar cheese stores operated by other businesses*	35%	54%	52%	75%	64%	78%	100%
Direct to institutional buyers such as schools and hospitals*	0%	0%	10%	6%	9%	26%	25%

*Statistically significant

As shown in Exhibit 3.7, large-scale cheesemakers were more likely to distribute their cheese through institutional buyers such as schools and hospitals, meal kit services, and third-party websites. For smaller scale cheesemakers — those who produced no more than 50,000 pounds of cheese annually — farmers markets and CSAs were both relatively popular distribution strategies.

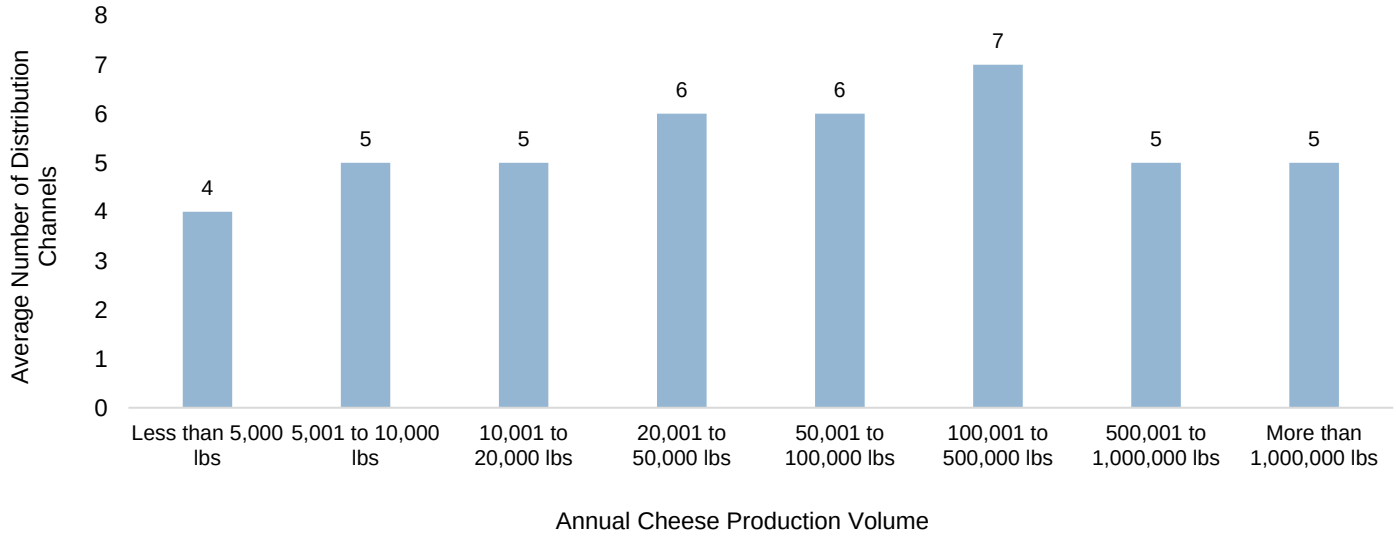
Exhibit 3.7 — Average Annual Cheese Production Volume of Cheesemakers Producing No More Than 750,000 Pounds by Distribution Channels, 2017, N=179



*Statistically significant

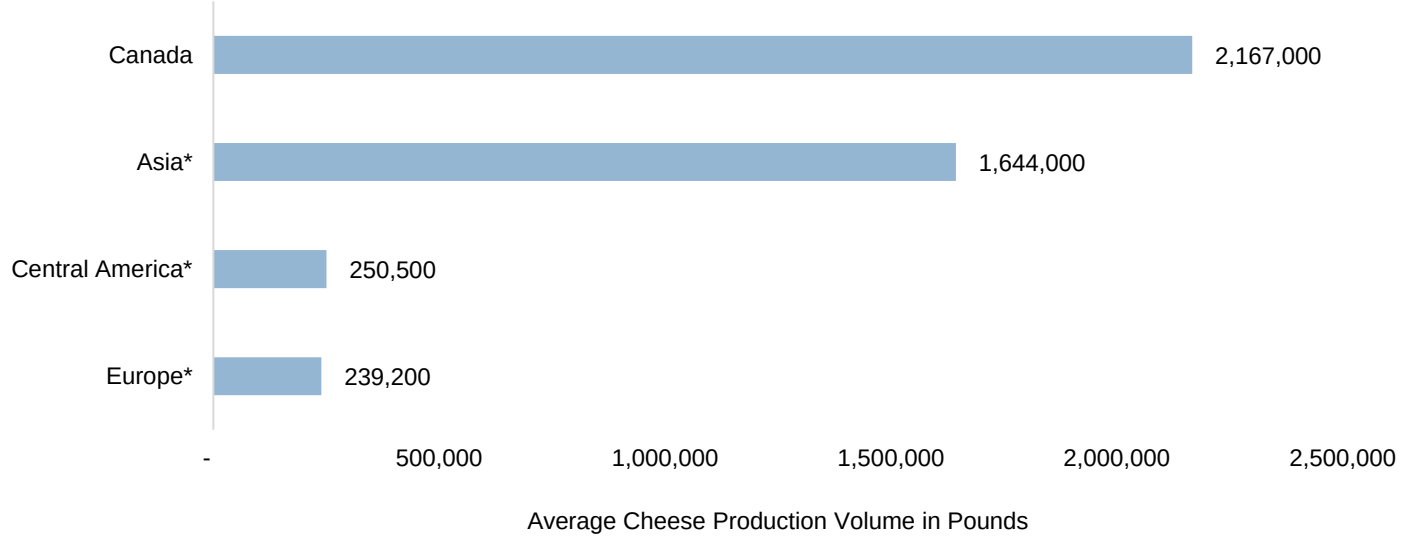
The relationship between the number of channels used to distribute cheese and annual cheese production had a slight bell pattern in 2017. See Exhibit 3.8. For cheesemakers who produced less than 750,000 pounds of cheese in 2017, there was a statistically significant relationship that suggests that average production would increase 16,000 pounds for every additional channel used. Cheesemakers who made 100,001 pounds to 500,000 pounds annually used seven distribution channels on average. Those making 5,001 pounds to 20,000 pounds and more than 500,001 pounds used five channels on average. On average, those who made less than 5,000 pounds of cheese annually used four distribution channels.

Exhibit 3.8 — Relationship between Number of Distribution Channels Used by Cheesemakers and Annual Cheese Production Volume, 2017, N=179



In terms of export markets, cheesemakers who reported exporting to Central America, South America, and Asia tended to be those with larger-than-average cheese production volumes, whereas cheesemakers exporting to Europe and Africa tended to have smaller production volumes.

Exhibit 3.9 — Average Production Volume of Cheesemakers Who Exported Cheese, 2017, N=204



Analysis 4: Employees

Cheesemakers who made no more than 50,000 pounds of cheese in 2017 tended to rely more on part-time employees to complement their full-time staff than larger scale cheesemakers. Exhibit 3.10 reports the average number of cheesemakers' full-time, part-time, and seasonal employees according to cheesemakers' annual cheese production. Cheesemakers who made 50,001 pounds to 100,000 pounds of cheese in 2017 hired the most seasonal workers on average — 6.1 seasonal employees.

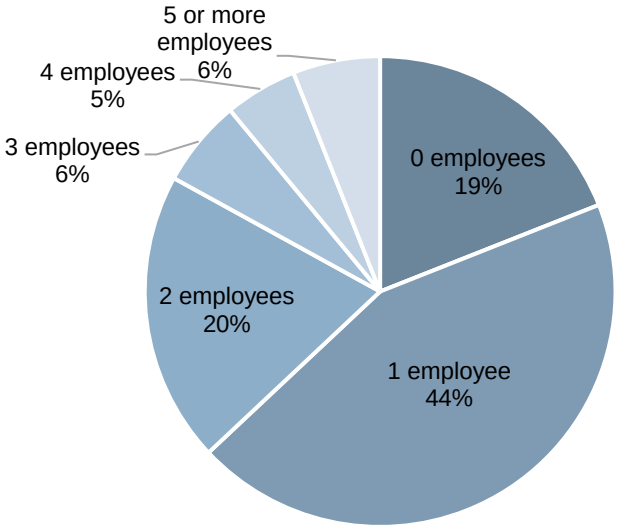
For cheesemakers who made no more than 750,000 pounds of cheese in 2017, every additional employee equated to the cheesemaker increasing its cheese production by 6,800 pounds (standard error 1,043 pounds). Employing a family member full-time was associated with a 14,000-pound increase in production (standard error 4,360 pounds).

Exhibit 3.10 — Average Number of Full-Time, Part-Time and Seasonal Employees Working for Cheesemakers According to Annual Cheese Production, 2017, N=183

	Full-time employees	Part-time employees	Seasonal employees
Less than 5,000 lbs	2.6	2.7	1.7
5,001 to 10,000 lbs	1.9	1.3	0.7
10,001 to 20,000 lbs	3.1	2.4	0.8
20,001 to 50,000 lbs	3.4	3.0	1.0
50,001 to 100,000 lbs	16.0	1.7	6.1
100,001 to 500,000 lbs	13.6	2.2	1.4
500,001 to 750,000 lbs	22.4	4.0	1.4

In 2017, 81% of cheesemakers reported having at least one employee with formal cheesemaking training. The number of employees with formal cheesemaking training increased as annual cheese production volume increased. Every additional formally trained cheesemaker equated to an average 20,500-pound increase in cheese production by the cheesemakers.

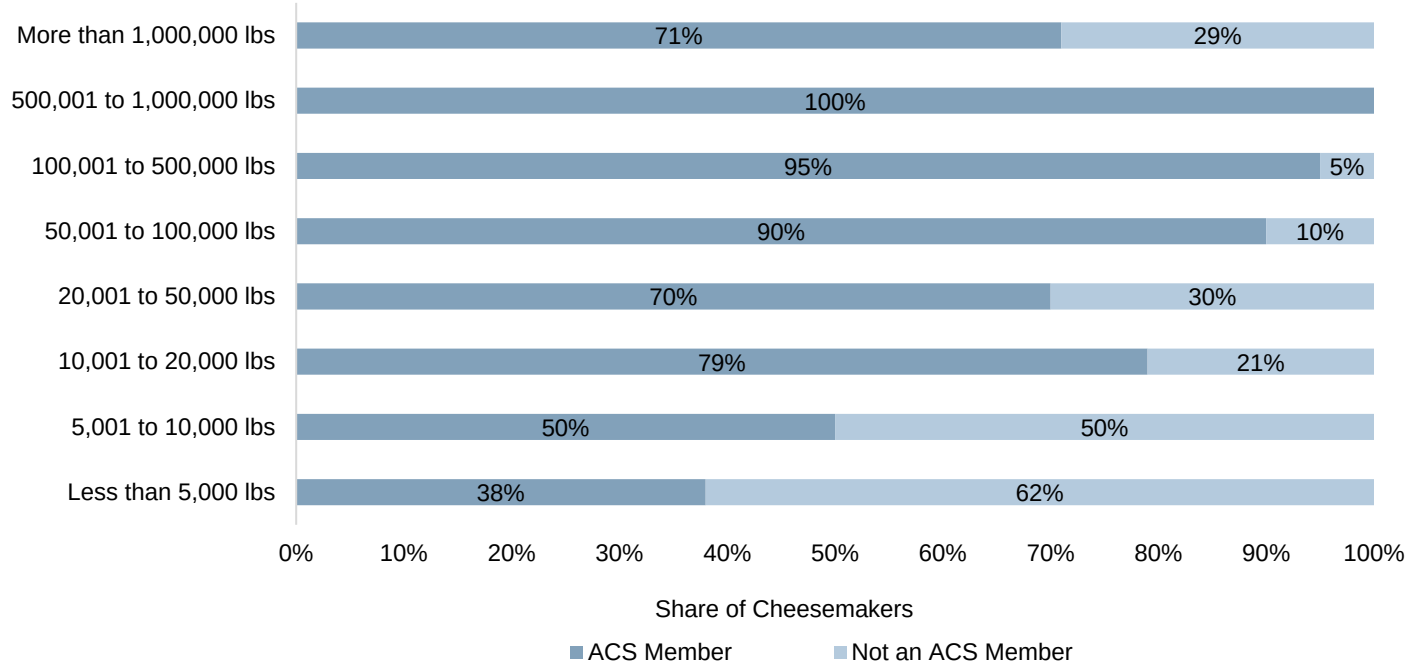
Exhibit 3.11 — Percentage of Cheesemakers with Employees Formally Trained in Cheesemaking, 2017, N=181



Analysis 5: Industry Participation

While there was no statistically significant relationship between the likelihood of a cheesemaker being a member of ACS and the size of the cheesemaker in terms of production volume, cheesemakers with larger production volumes were more likely to be members of ACS than smaller cheesemakers. See Exhibit 3.12. It presents the percentage of 2017-produced cheese in each volume category that was made by ACS members and non-members, according to their membership status in 2018.

Exhibit 3.12 — 2017 Annual Cheese Production Volume for ACS Members and Non-Members, N=177



Section 4

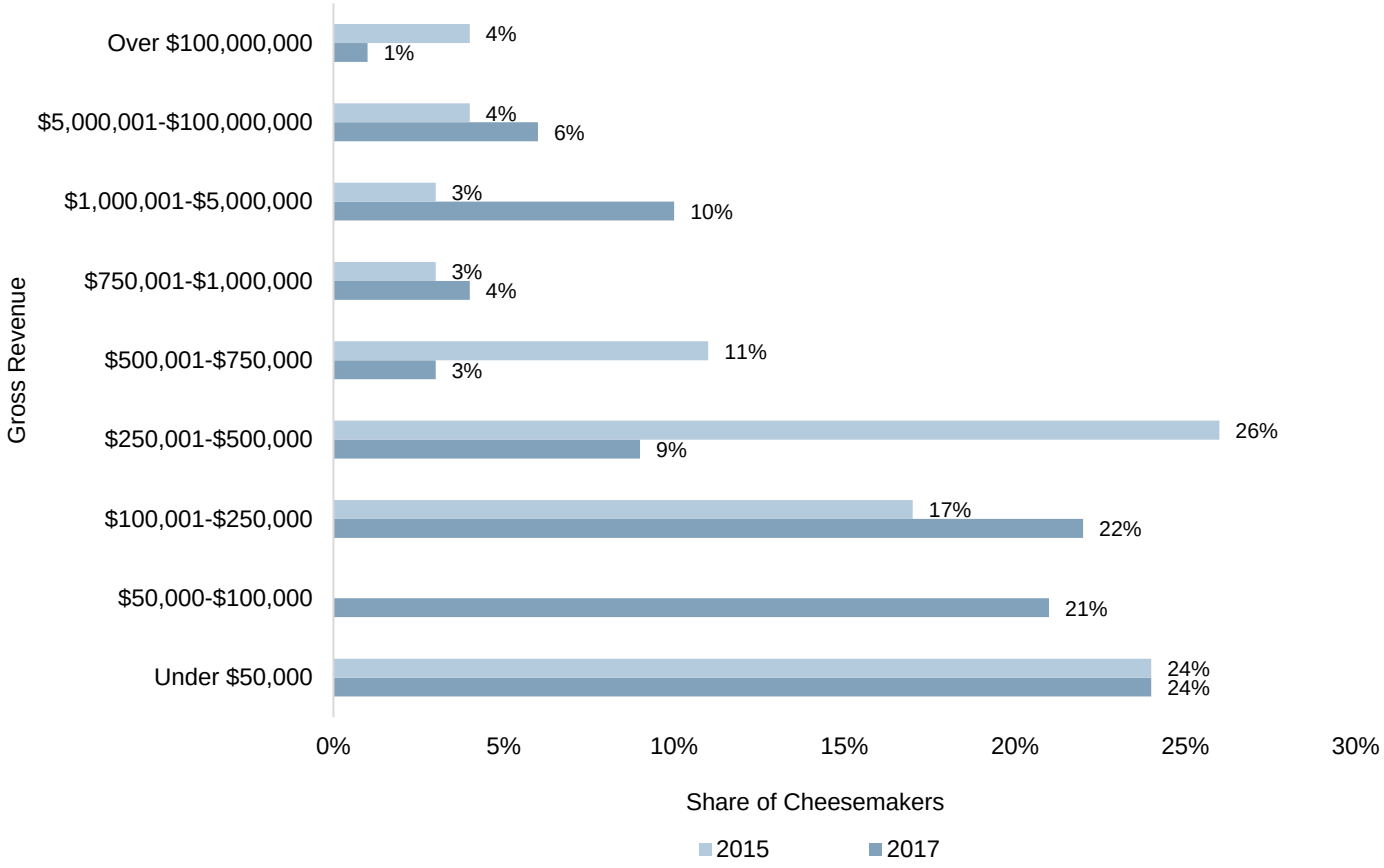
Profitability

67% of cheesemakers collected no more than $250,000 in gross revenue from cheese sales in 2017. The percentage reporting revenues of less than $50,000 stayed stable between 2015 and 2017. On the high end, the percentage of cheesemakers reporting revenues that exceeded $100,000,000 dropped slightly between 2015 and 2017.

Gross revenue does not necessarily reflect profit. Maintaining profitability was noted as an area of concern for 92% of cheesemakers. Almost 25% of cheesemakers indicated they didn't operate profitably in 2015. This figure dropped slightly to 20% in 2017. Among the cheesemakers who were profitable in 2017, the average profit margin was 21% — a slight drop from the 23% average profit margin for 2015.

It is important to note that the survey asked cheesemakers to self-report profit margin as "gross revenue less expenses divided by gross revenue." It was not computed by the authors of this survey.

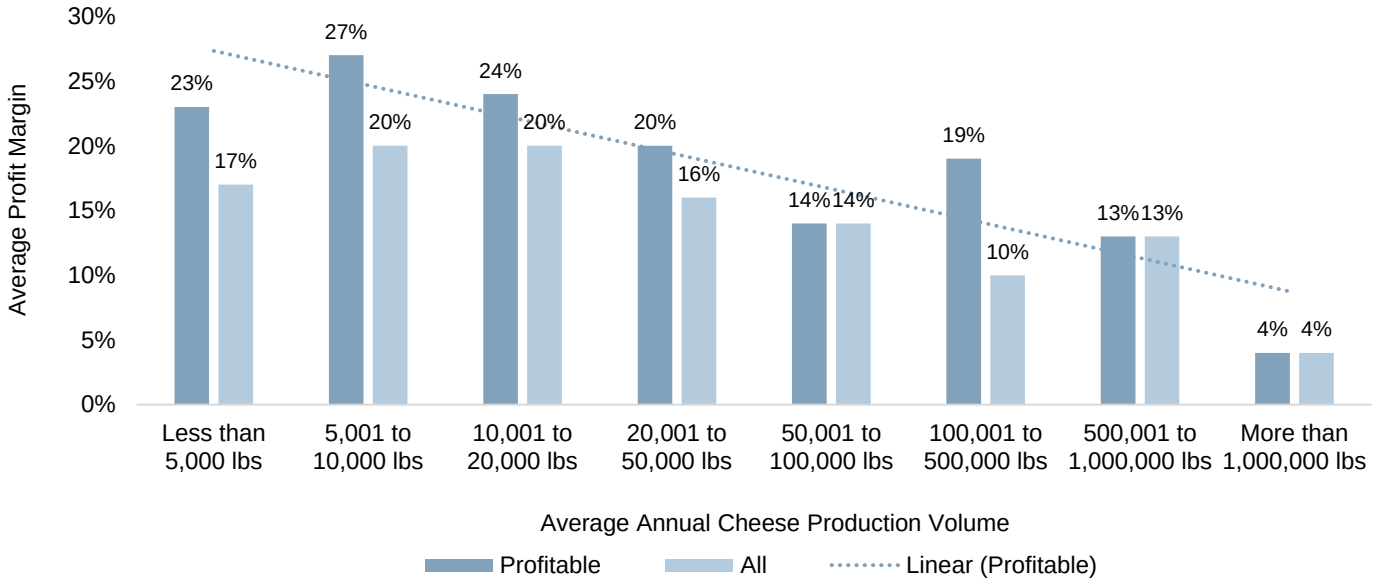
Exhibit 4.1 — Gross Revenue of Cheesemakers, 2017, N=175



Analysis 1: Production Volume

Unsurprisingly, cheesemakers with a higher production volume reported higher gross revenue. However, the higher the production volume of a cheesemaker, the lower the profit margin tended to be. See Exhibit 4.2. Contrary to the 2016 report, which reported a positive relationship between production volume and profit margin, the 2018 report found a negative relationship — higher production volume was associated with lower average profit margins.

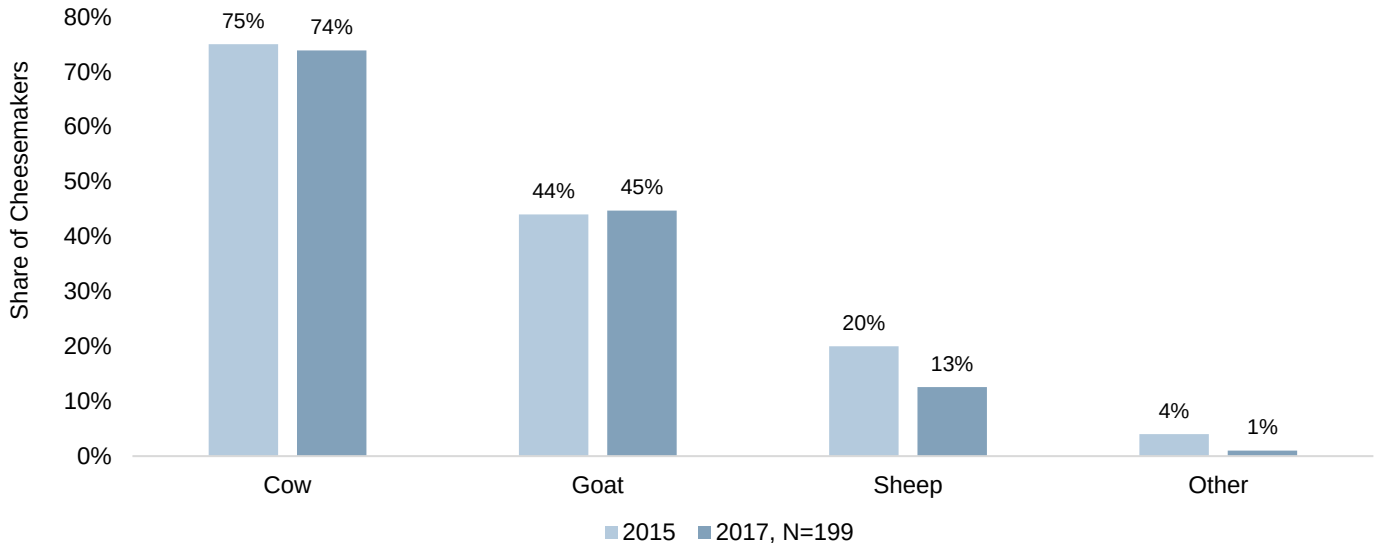
Exhibit 4.2 — Average Profit Margin of Cheesemakers by Production Volume, 2017, N=128



Analysis 2: Milk Type

The majority of cheesemakers used cow milk to make cheese in 2017, as shown in Exhibit 4.3. Goat milk followed as the second-most-used milk by cheesemakers. This is consistent with data from 2015. There was a significant decrease in the percentage of cheesemakers who reported using sheep milk to make cheese from 2015 to 2017.

Exhibit 4.3 — Share of Cheesemakers Using Different Milk Types



A statistically significant relationship was found between the type of milk used and average profit margin. On average, using cow milk yielded a 21% profit margin in 2017 — slightly more than the average for all cheesemakers of 20%.

As illustrated in Exhibit 4.4, using goat milk was associated with a 19% average profit margin, and cheesemakers who used sheep milk averaged a 14% profit margin.

In 2017, 73% of cheesemakers made cheese using one single milk type. Milk type refers to the type of animal that produced the milk used for cheesemaking: cow, goat, sheep, or milk from another animal. Exhibit 4.5 shows that 22% of cheesemakers reported making cheese from two types of milk, and just 5% used three or more types of milk for cheesemaking.

Just as adding an extra cheese product doesn't necessarily yield improved profitability — refer to Exhibit 3.4 — using more than one type of milk was found to be associated with a lower profit margin. See Exhibit 4.6. On average, for every additional type of milk used for cheesemaking in 2017, profit margin decreased by 5.7 percentage points. No statistically significant relationship was found between

Exhibit 4.4 — Average Profit Margin Associated with Milk Type Use, 2017,

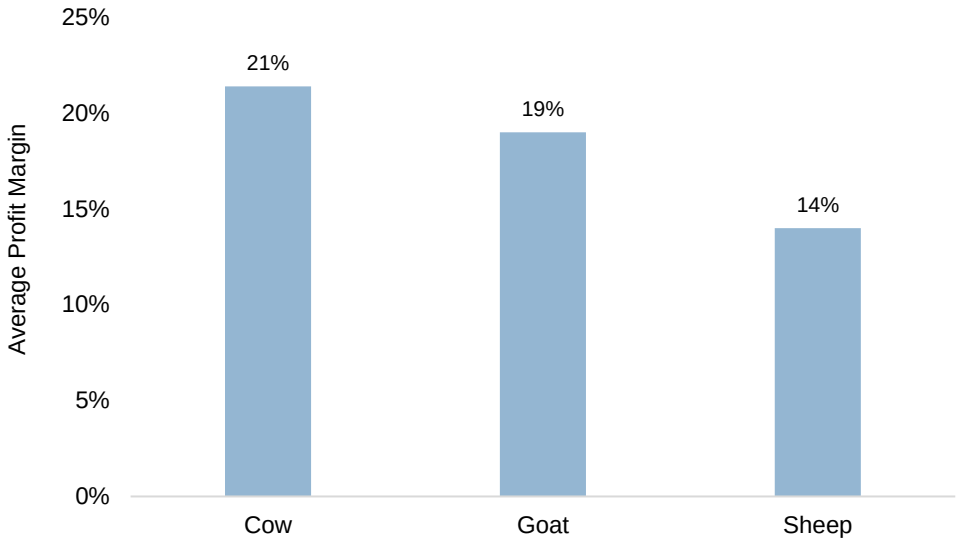


Exhibit 4.5 — Share of Cheesemakers Using Multiple Milk Types, 2017, N=199

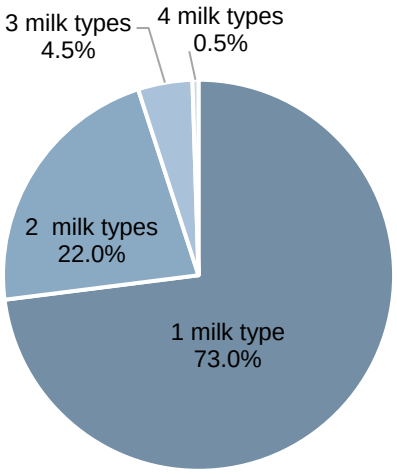
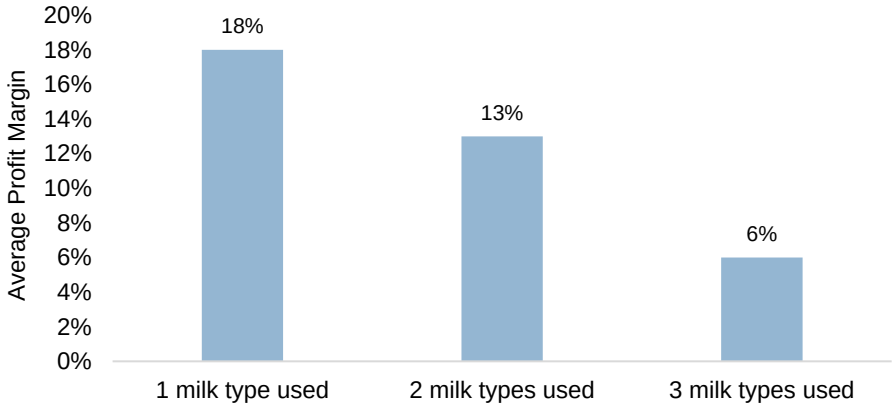


Exhibit 4.6 — Average Profit Margin Associated with Number of Different Milk Types Used, 2017, N=130



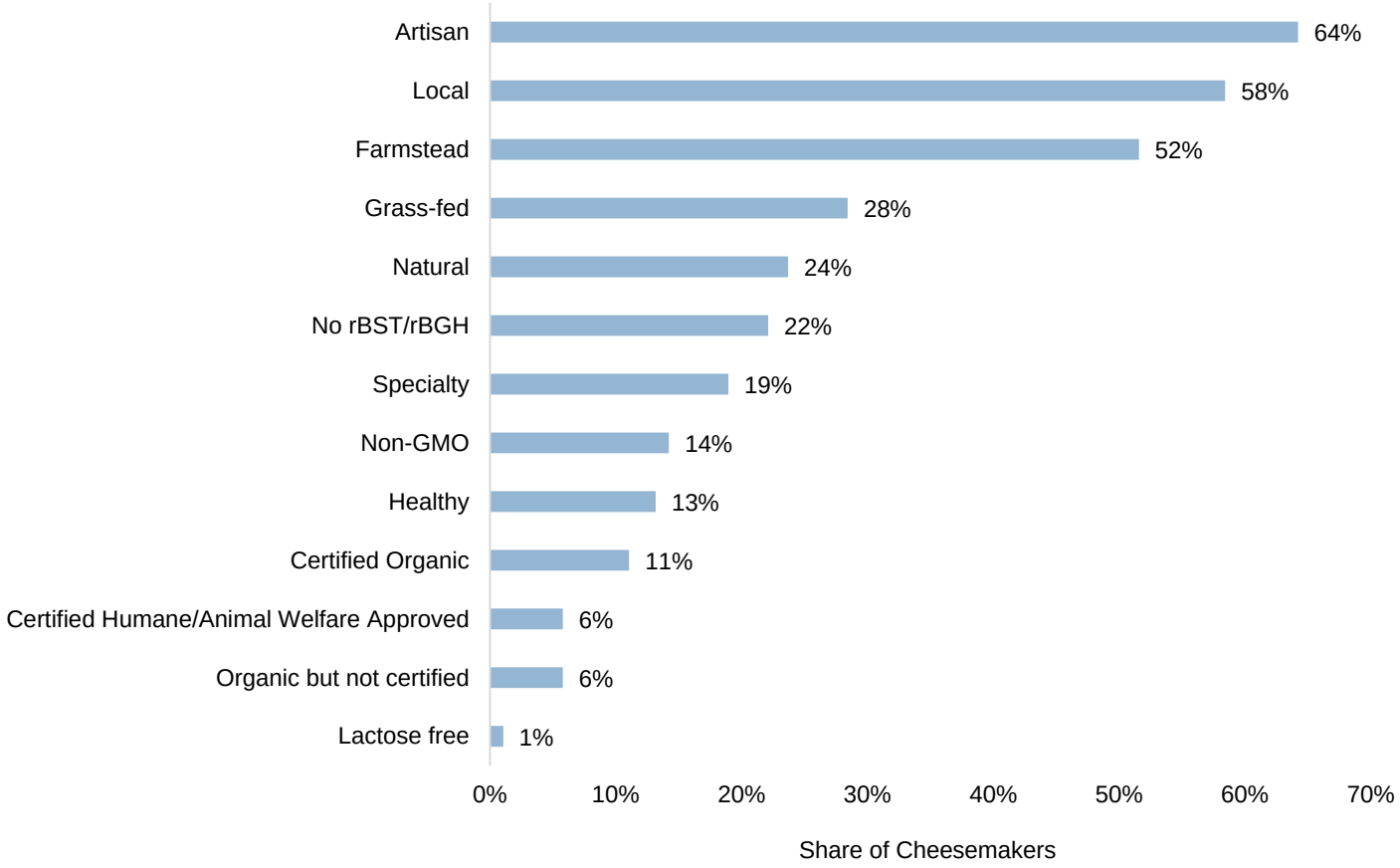
profit margin and whether cheesemakers used pasteurized milk, unpasteurized milk with no heat treatment, or unpasteurized milk with some heat treatment.

Analysis 3: Marketing Labels

More than 50% of cheesemakers used the terms “artisan,” “local,” and “farmstead” when marketing their cheese products. Exhibit 4.7 reports the percentage of cheesemakers using various labels in their cheese marketing materials.

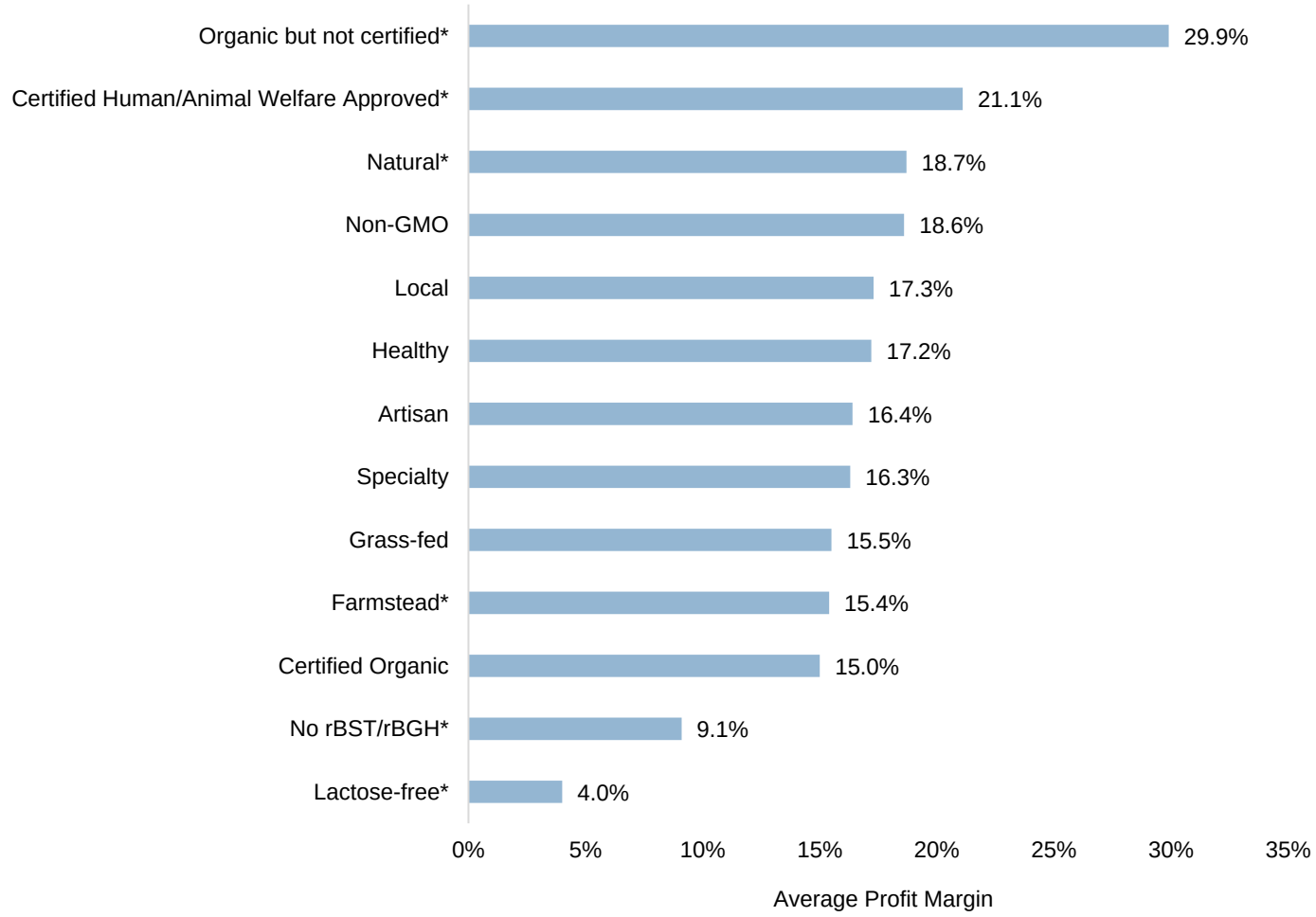
“Certified Organic,” “no rBST/rBGH,” and “natural” were labels used by cheesemakers who had been in business longer than the average survey respondent; the average length of time in business was 16 years. “Farmstead,” “local,” “non-GMO,” and “healthy” were, on average, used by cheesemakers who had been in business less than 16 years.

Exhibit 4.7 — Marketing Labels Used by Cheesemakers, 2017, N=201



As shown in Exhibit 4.8, higher-than-average profit margins were associated with the terms “organic practices but not certified,” “Certified Humane/Animal Welfare Approved,” and “natural.” Producer-respondents who used the label “organic practices but not certified” had an average profit margin 11 percentage points higher than those who didn’t using this label. Lower-than-average profit margins were associated with the terms “farmstead,” “no rBST/rBGH,” and “lactose free.”

Exhibit 4.8 — Average Profit Margins Associated with Marketing Labels Used by Cheesemakers, 2017, N=123

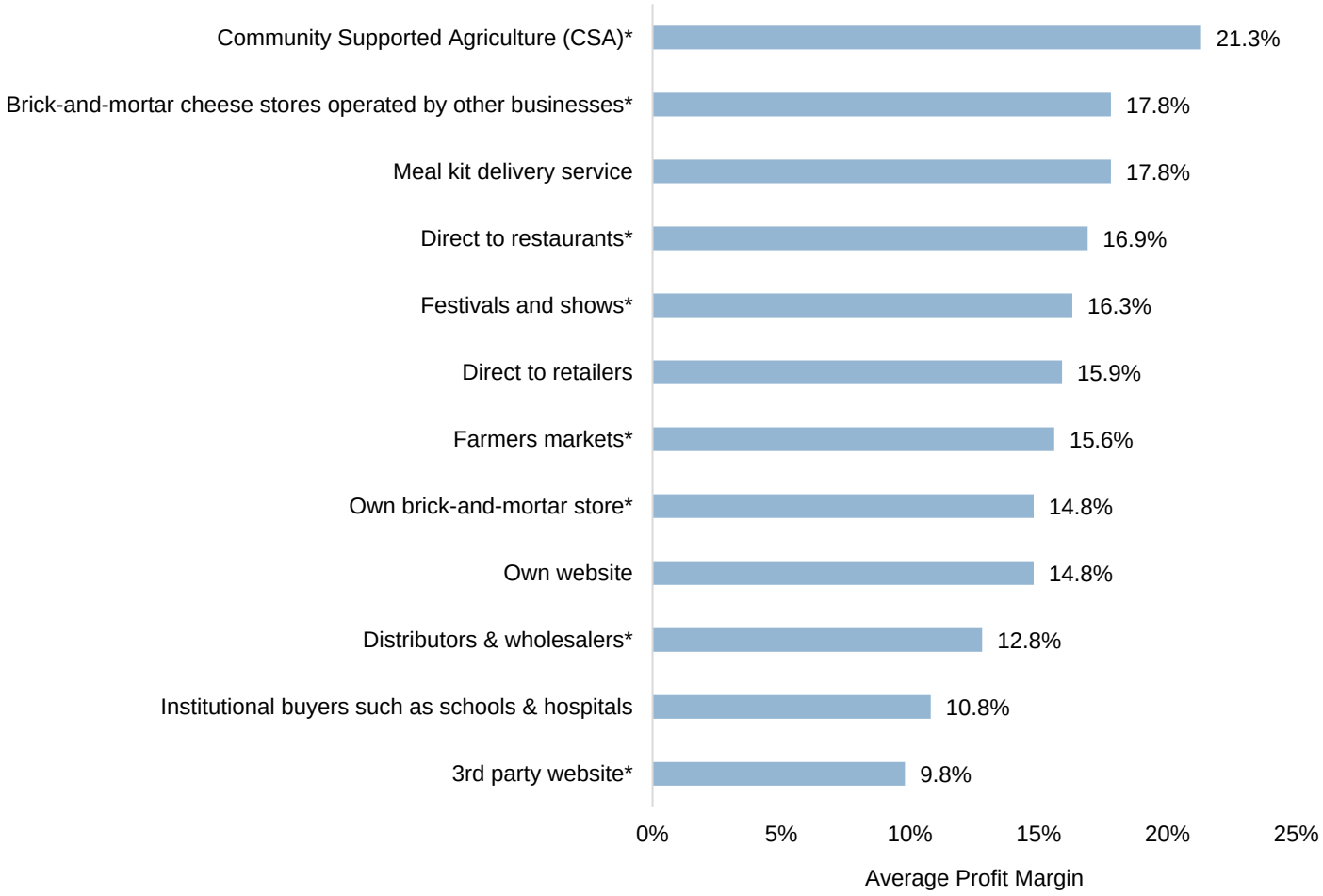


*Statistically significant

Analysis 4: Distribution Channels

Exhibit 3.7 shows the statistically significant relationships identified among distribution channels and production volume. Statistically significant relationships were also identified among distribution channels and profit margin. See Exhibit 4.9. On average, distributing cheese through CSAs, direct-to-restaurant relationships, festivals and shows, and brick-and-mortar cheese stores operated by other businesses was associated with higher average profit margins. On average, if a cheesemaker used a distributor or wholesaler in 2017, then that cheesemaker captured a profit margin that was 12 percentage points lower than the profit margin realized by cheesemakers who didn't use this channel. Other distribution channels associated with lower-than-average profit margins were farmers markets, brick-and-mortar cheese stores owned by the producer, and third-party websites.

Exhibit 4.9 — Average Profit Margins Associated with Distribution Channels Used by Cheesemakers, 2017, N=131



*Statistically significant

Reference

Mulvany, L., & Patton, L. (2018, October 10). *Millennials Kill Again. The Latest Victim? American Cheese*. Retrieved from Bloomberg: https://www.bloomberg.com/news/articles/2018-10-10/american-cheese-is-no-longer-america-s-big-cheese