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GROWTH OF MAPLE SYRUP AND RELATED PRODUCTS IN MAINE

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This study shows the following:

- ⇒ Maine's maple syrup industry is characterized by a high percentage of small producers and relatively few large operations. The largest operations with over 10,000 taps—which make up 12 percent of all maple farms—account for 86 percent of the taps in Maine.
- ⇒ The total number of taps on incumbent maple farms (i.e., those in operation in 2008 and 2013) increased by 16 percent between 2008 and 2013. The smallest operations exhibited the most rapid growth rates, but the maple farms with over 10,000 taps accounted for 75 percent of the overall growth in the number of taps (contributed by incumbent operations).
- ⇒ Small and large operations have different opinions about the factors affecting the future viability of maple syrup production in Maine. Land lease costs and finding qualified workers are more important to large operations than small ones, whereas small maple farms believe that direct-to-consumer sales and Maine Maple Sunday are important to their future viability. All can agree—both large and small producers—that spring weather conditions and equipment costs will affect the future viability of maple syrup production in Maine.

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1. INTRODUCTION

Maple syrup production is an important part of Maine’s forest products sector, and it provides a source of food and other products that are “Made in Maine.” Maine’s maple syrup industry—counted here as the production of maple syrup and other maple products, and sales at retail stores and businesses impacted by Maine Maple Sunday—generates an annual statewide economic contribution, including multiplier effects, of an estimated \$48.7 million in output, 805 full- and part-time jobs, and \$25.1 million in labor income (Gabe 2014).²

Maine is one of the top states for maple syrup production. According to the U.S. Department of Agriculture, Maine ranks behind only Vermont and New York in terms of the number of taps and overall syrup production in 2013.³ Among these three states, Maine had the highest growth rate of syrup production between 2011 and 2013 (25 percent), followed by Vermont (16 percent) and New York (2 percent).

² Economic impact figures are from the following report: Gabe, Todd. “Economic Impacts of Maine’s Maple Industry,” School of Economics, University of Maine, Staff Paper 614, February 2014. This report on the growth of maple syrup production can be thought of as a “companion study” to the economic impact analysis.

³ USDA figures are from a June 2013 *Maple Syrup Production* “News Release” of the National Agricultural Statistics Service, United States Department of Agriculture.

The purpose of this study is to examine the growth of maple syrup production in Maine. First, we analyze the change in the number of taps from 2008 to 2013, and then look at the expected growth in maple taps between 2013 and 2018. Second, we examine the factors that Maine maple syrup producers believe are important to the future viability of maple syrup production in the state. The analysis in this report uses information from a recent University of Maine survey of licensed maple syrup producers in Maine.

2. DATA COLLECTION

A survey of Maine's licensed maple syrup producers was conducted to collect information about their operations. The first round of surveys took place in December of 2013, and replacement surveys were sent to non-respondents in January of 2014. The original target population consisted of 399 licensed maple syrup farms, and this group decreased to 373 after removing "bad address" (i.e., surveys that were returned by the Postal Service) and producers that are no longer in operation. As of May 1, 2014, 149 surveys had been returned. This translates into a response rate of 40.0 percent.⁴

In terms of operation size (i.e., number of taps), Maine's maple syrup industry is characterized by a high percentage of small producers and relatively few large operations. About 70 percent of the maple syrup farms responding to the survey had fewer than 1,000 taps in 2013, a size that is less than one-quarter of the average number of taps for a maple syrup

⁴ The companion study on the economic impact of maple syrup production (see footnote 2), released in February of 2014, used information from 128 surveys that had been returned as of January 25, 2014. Because the economic impact figures were estimated based on the total amount of maple syrup production in Maine—using USDA statistics (see footnote 3)—the inclusion of the additional surveys received after January 25th would not substantially change the economic impact results.

producer in Maine. Furthermore, about 35 percent of the maple syrup farms had fewer than 250 taps—these operators would almost certainly describe their maple syrup production as a “hobby.” At the opposite end of the spectrum, 12 percent of the operations had over 10,000 taps—these farms account for 86 percent of the total taps covered by the maple syrup producers in the sample.

In terms of the age of Maine’s maple syrup producers (i.e., when they began operations), 12 percent began tapping trees prior to 1970 and about 35 percent have been in operation since at least 1989. Some of these farms, in operation for well over 20 years, may have spanned multiple generations. About 30 percent of the maple syrup operations began tapping trees during the 2000s, and 11 percent started operations in 2010 or later.

3. GROWTH OF MAPLE SYRUP PRODUCTION IN MAINE

As noted above, USDA statistics show that Maine experienced a 25 percent increase in maple syrup production between 2011 and 2013. This increase is the result of an increase in the yield per tap, as well as an increase in the number of taps.⁵ Looking over a longer time frame of 2008 to 2013, changes in the total number of taps statewide could arise from the growth or decline of “incumbent” maple syrup producers (i.e., those in operation in 2008 and 2013), taps gained from new operations, and taps lost from maple syrup producers that ceased operations. Focusing on incumbent operations (that tapped trees in 2008 and 2013), results of the survey show that the number of taps in Maine expanded by 16 percent between 2008 and 2013.

⁵ According to USDA statistics (see footnote 3), the number of taps in Maine increased by 2 percent between 2011 and 2013; and the yield per tap increased by 22 percent over the same period.

In Table 1, we see that growth in the number of taps varied widely by the maple syrup farm’s initial size in 2008. Farms in operation with less than 100 taps in 2008 grew by 260 percent between 2008 and 2013, while operations with 10,000 or more taps grew by 14 percent over the same period. Although the smallest category of maple syrup farms exhibited the most rapid growth rate, it accounts for a very small share—just 3 percent—of the overall growth in the number of taps in Maine. The largest operations, on the other hand, account for three-quarters of the growth in the total number of taps (contributed by incumbent maple syrup farms).

Table 1. Growth in Taps (2008 to 2013) by Initial Size in 2008 (n=134)

Number of Taps, 2008	Growth in Taps, 2008 to 2013	Contribution to Past Growth
Less than 100	260%	3%
100 to 249	117%	7%
250 to 499	63%	5%
500 to 999	23%	4%
1,000 to 9,999	20%	7%
10,000 or more	14%	75%

Notes. Information is from a University of Maine survey of maple syrup producers that are licensed in Maine. Figures are based on maple syrup producers (in the sample) that were in operation in 2008 and 2013. The “Growth in Taps” is the aggregate change in the number of taps for operations in the given size category. The “Contribution to Past Growth” is the percentage of the total change in the number of taps (for all of the operations in the sample) that is accounted for by operations in the given size category.

Table 2 presents information on the growth in the number of maple taps between 2008 and 2013, organized by the age of the maple syrup farm. We find that the youngest (i.e., began operations between 2000 and 2008) and the oldest (i.e., began operation before 1970) operations exhibited the fastest growth rates, although the maple syrup farms that began

tapping trees before 1970 account for the highest contribution to the overall growth of taps in Maine. Maple syrup farms that opened between 1970 and 1989 grew slower and, collectively, account for 11 percent of the overall growth in the number of taps.

Table 2. Growth in Taps (2008 to 2013) by Age of Operation (n=134)

Year that Operation Began Tapping Trees	Growth in Taps, 2008 to 2013	Contribution to Past Growth
Before 1970	69%	43%
1970 to 1979	3%	4%
1980 to 1989	3%	7%
1990 to 1999	21%	35%
2000 to 2008	34%	11%
2009 or Later	NA	0%

Notes. Information is from a University of Maine survey of maple syrup producers that are licensed in Maine. Figures are based on maple syrup producers (in the sample) that were in operation in 2008 and 2013. The “Growth in Taps” is the aggregate change in the number of taps for operations in the given age category. The “Contribution to Past Growth” is the percentage of the total change in the number of taps (for all of the operations in the sample) that is accounted for by operations in the given age category.

To summarize our analysis of the growth of incumbent maple syrup farms in Maine between 2008 and 2013, the survey results show a 16 percent growth rate in the total number of taps. Considerable variation exists, however, among the growth rates of individual maple syrup farms along the characteristics of operation size and age. The smallest operations—i.e., those with fewer than 100 taps as of 2008—exhibited the fastest growth rates, yet these maple syrup farms account for a very small percentage of the overall growth in the number of taps. The largest operations had the slowest growth rates, yet they made up 75 percent of the overall growth in the number of taps. Looking at the age of incumbent operations, we find that

the oldest and youngest maple syrup farms grew the fastest and accounted for most of the overall growth in the number of taps (contributed by incumbent operations).

This information on the growth of maple syrup farms between 2008 and 2013 provides a picture of what happened in the past, but our analysis of the expected growth in the number of taps between 2013 and 2018 gives an indication of the maple syrup industry's outlook for the future. Collectively, the maple syrup farms in our sample expect to grow by 16 percent between 2013 and 2018. This means that the outlook for maple syrup production in Maine is very similar to the actual growth that occurred between 2008 and 2013 (which also had a growth rate—for incumbent operations—of 16 percent). As was the case with the growth that occurred between 2008 and 2013, however, the outlook for future growth varies considerably by operation size and age.

As shown in Table 3, the operations with less than 100 taps in 2013 expect to grow the fastest, yet the second fastest projected growth rate belongs to operations with between 1,000 and 9,999 taps. This second largest category of maple syrup farms is expected to account for 55 percent of the future growth in the overall number of taps (contributed by maple syrup farms that were in operation as of 2013). Whereas the operations with 10,000 or more taps (as of 2008) accounted for 75 percent of the actual growth in taps that occurred between 2008 and 2013, the largest maple syrup farms as of 2013 expect to contribute 32 percent of the growth projected over the next five years.

Table 3. Projected Growth in Taps (2013 to 2018) by Number of Taps in 2013 (n=128)

Number of Taps, 2013	Expected Growth in Taps, 2013 to 2018	Contribution to Future Growth
Less than 100	100%	1%
100 to 249	17%	1%
250 to 499	32%	3%
500 to 999	48%	8%
1,000 to 9,999	81%	55%
10,000 or more	6%	32%

Note. Information is from a University of Maine survey of maple syrup producers that are licensed in Maine. The “Expected Growth in Taps” is the aggregate change in the expected number of taps for operations in the given size category. The “Contribution to Future Growth” is the percentage of the total change in the expected number of taps (for all of the operations in the sample) that is accounted for by operations in the given size category.

Table 4 presents information on the projected growth in the number of taps between 2013 and 2018, organized by the age of the maple syrup farm. The operations that started during the 2000s and after 2009 expect to grow by 98 percent and 84 percent, respectively, and these operations—collectively—account for close to one-half of the expected growth in the overall number of taps between 2013 and 2018. The oldest maple syrup producers—i.e., those that began tapping trees before 1970—expect to exhibit modest growth over the next five years, as do the operations that began tapping trees during the 1980s.

Table 4. Projected Growth in Taps (2013 to 2018) by Age of Operation (n=134)

Year that Operation Began Tapping Trees	Expected Growth in Taps, 2013 to 2018	Contribution to Future Growth
Before 1970	4%	4%
1970 to 1979	25%	16%
1980 to 1989	3%	6%
1990 to 1999	13%	26%
2000 to 2009	98%	23%
2010 or Later	84%	26%

Note. Information is from a University of Maine survey of maple syrup producers that are licensed in Maine. The “Expected Growth in Taps” is the aggregate change in the expected number of taps for operations in the given age category. The “Contribution to Future Growth” is the percentage of the total change in the expected number of taps (for all of the operations in the sample) that is accounted for by operations in the given age category.

With the overall 16 percent growth rate in the expected number of maple taps statewide between 2013 and 2018, the maple syrup farms in our sample appear to be reasonably optimistic about the future of maple syrup production in Maine. To gain some insights into how maple farms perceive the environment for syrup production in Maine, the survey asked about the factors affecting the viability of their operations. The survey included 20 growth factors, and respondents were asked to indicate whether or not each factor “affects the future viability” of their maple farms.

The 20 growth factors are listed in Table 5 in descending order of the percentage of all respondents that indicated the factor affects their viability. As we see in the first column of figures, at least one-half of all survey respondents indicated that the following factors affect their future viability: spring weather conditions, equipment costs, direct-to-consumer sales, Maine Maple Sunday, and the practice of Maine retailers selling syrup from outside Maine. At the bottom of Table 5, we see that non-environmental regulations and out-of-state marketing efforts matter to less than 20 percent of all maple operations. Other factors that less than one-

quarter of all respondents indicated as affecting their future viability include: environmental regulations, labor costs, land lease costs, government programs, and finding qualified workers.

The final two columns of Table 5 show the percentages (and rank order) of operations that perceive a growth factor as affecting their viability, but—in this case—the results are weighted by the operations' size (i.e., number of taps). Whereas the first set of rankings treats all maple farms the same, the second set of rankings provides “more votes” to larger operations. In simple terms, the weighted rankings can be thought of as the “percentage of taps” in Maine for which the growth factor affects future viability.

Based on the weighted rankings, the top five factors affecting the future viability of maple syrup production in Maine are: energy costs, spring weather conditions, land lease costs, finding qualified workers, and equipment costs. Land lease costs and finding qualified workers are important to over 70 percent of the taps in Maine, yet these factors affect the viability of less than one-quarter of the operations. This means that these growth factors, along with labor costs, are considerably more important to the larger operations than the smaller ones. On the other hand, the growth factors of direct-to-consumer sales and Maine Maple Sunday are considerably more important to smaller operations than the larger maple farms. In fact, these growth factors affect the viability of less than 20 percent of the taps in Maine—but over one-half of the operations.

Growth of Maple Syrup and Related Products in Maine, June 2014

Table 5. Factors Affecting the Viability of Maine’s Maple Syrup Producers (n=varies)

Growth Factor	% of Operations that the Growth Factor Affects Viability	Rank Order	% of Taps that the Growth Factor Affects Viability	Rank Order
Spring weather conditions in recent years	80%	1	84%	2
Equipment costs	70%	2	72%	5
Selling directly to consumer	61%	3	19%	15
Maine Maple Sunday	52%	4	15%	16
Maine retailers selling syrup from out of state	50%	5	33%	9
Energy costs	49%	6	91%	1
Wholesale syrup prices	44%	7	49%	7
Property taxes	40%	8	36%	8
Cooperative Extension programs	36%	9	12%	17
Website and social media	35%	10	25%	11
Competition in Maine	33%	11	24%	14
Industry programs	30%	12	11%	19
Costs of purchasing land	26%	13	24%	12
Finding qualified workers	24%	14	73%	4
Government programs	24%	15	11%	18
Land lease costs	22%	16	83%	3
Labor costs	22%	17	66%	6
Environmental regulations	20%	18	24%	13
Out-of-state marketing (e.g., The Big E Fair)	18%	19	26%	10
Non-environmental regulations	16%	20	9%	20

Note. Information is from a University of Maine survey of maple syrup producers that are licensed in Maine. The “top five factors”—i.e., those with the highest percentages of maple farms (or taps) that indicated the factor affects their viability—are shown in bold.

4. CONCLUSIONS

The most interesting (and reoccurring) theme that arises from the analysis of the growth of maple syrup production in Maine is that the state’s “maple syrup industry” is really two distinct sectors. First, you have the smaller operations that are the majority of maple farms. Although these operations have grown rapidly and expect to grow in the future, they account for a small percentage of the total number of taps as well as small shares of past and expected future growth in the overall number of taps in Maine. These smaller operations believe that direct-to-consumer sales and Maine Maple Sunday—among other factors—are important to their future viability, and labor availability and costs are of less importance to the smaller maple syrup producers.

As a second distinct segment of the industry, you have a relatively small number of very large operations. These maple syrup producers account for the vast majority of all taps in the state, and contribute significantly to the overall growth of maple syrup production in Maine. From the perspective of the largest operations, the growth factors of direct-to-consumer sales and Maine Maple Sunday do not affect their future viability. Rather, it is energy costs, land lease costs, finding qualified workers (and the costs of labor) that are most important to the viability of the largest maple syrup producers in Maine. All can agree—both large and small producers—that spring weather conditions and equipment costs will affect the future viability of maple syrup production in Maine.

REFERENCES

Gabe, Todd. "Economic Impacts of Maine's Maple Industry," School of Economics, University of Maine, Staff Paper 614, February 2014.

United States Department of Agriculture, National Agricultural Statistics Service. "Maple Syrup Production," June 2013 News Release.