# Marketing Channel Assessment Tool (MCAT) Benchmark Performance Metrics

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**Introduction**

Since 2008, 31 farms small- and medium-sized fruit and vegetable producers have participated in Marketing Channel Assessment Tool (MCAT) evaluations on their farms, comprising 133 unique farm-channel observations (as of this writing, additional MCAT data collected from fall 2014 will be included in an update to this publication). The evaluations are conducted to assess and rank channel performance for consideration of improving the farm's marketing strategy. Farms provide comprehensive labor marketing hours for different phases of marketing their products (i.e., labor hours for harvest, process and packing, transportation and distribution, and sales and bookkeeping), mileage costs, and revenues by channel for a typical peak season week. A program developed in excel, then computes rankings of each channel based on the cost and revenue data provided for five important metrics: total sales volume, profit margin, labor requirements, business risk, and lifestyle preferences. Rankings for the ladder two metrics are provided by the farm participants for the channels they participate in. A final ranking for each channel is based on the combined rankings of the five individual metrics.

MCAT is customizable in that the final performance of a channel is determined by a weighted average ranking of each metric's rank for that channel, with the weights set by the participant. Participants are asked to assign a weight to each of the metrics from zero to one, such that the sum of the weights across all five metrics equaled one. If all metrics receive an equal weight, they are each assigned a value of 0.2. Simply put, channels ranked higher are preferred to lower ranking channels, and channels ranked high and near to each other provide evidence for preferred multi-channel marketing strategies. In addition, individual post-assessment simulations can be conducted from the existing performance data to help assess potential changes to a farm's marketing strategy and its expected impacts on farm performance. Finally, follow up MCAT evaluations following changes to a farm's marketing strategy are available and can be used to track changes in farm marketing performance over time.

While participating farms receive customized results for their operation to assess potential changes in their marketing strategy, it is also useful to examine channel performance across farms to begin to develop benchmark performance statistics for various direct and wholesale marketing channels. The metrics receiving the highest average weights across our sample of producers were profit margin (0.24) and labor requirements (0.21); average weights for total sales volume, business risk, and lifestyle preferences were 0.19, 0.15, and 0.20, respectively. Accordingly, we examine channel performance measures for profit margin and sales per labor hour to develop benchmark performance measures by marketing channel type. In particular, we compute the 25th, 50th (median), and 75th percentiles for each channel category examined. The median (or 50th percentile) is a measure of central tendency and represents the value at which one-half of the observations are above that point and one-half are below. The 25th (75th) percentile represents the value at which 25% of the observations are below (above) that

value. We use these percentiles to identify bottom and top performing channel observation values, respectively.

Of the 31 participating farms, 27 (87%) provided complete channel information (i.e., marketing labor hours, mileage, and revenues by channel for a typical peak-period week) resulting in a total of 104 unique channel observations. In addition, most producers provided supplemental information about their operations (supplemental information was requested beginning in 2009). We continue now with a brief description of the general characteristics of the farms sampled. This is followed by a summary of performance metrics across channels to provide producers with benchmarks on channel performance based on profit margin (profits divided by total sales) and labor utilization (sales per labor hour).  Finally, we take a closer look at the allocation of marketing labor by type (i.e., labor usage for harvest, process and packaging, transportation and distribution, and sales and bookkeeping). By comparing labor allocations amongst labor types for upper and lower performing channels, we can begin to assess the appropriate labor mix for channels to improve channel profitability. We close with some summary conclusions and directions for future research.

**Descriptive Statistics**
As the MCAT evaluations were targeted towards small- and medium-sized fruit and vegetable operations, the relatively small number of acres in production was expected. On average, producers farmed about 12 acres, with a range from 1 to 40 acres (Table 1). Farm owners ranged in age from 25 to 78, with an average age of 48. Most owners considered farming as their full time occupation (84%), and about as many had at least an undergraduate college degree (82%). Most farms did not have a written business plan, nor did they do mechanical harvesting or processing. Finally, about one-third of the farms sold at least some value added products in addition to fresh fruits and vegetables, albeit a relatively small proportion of total farm sales.

**Table 1. Summary Statistics of Farms Participating in MCAT Evaluations (2008-2013).**

| Variable | N | Mean | Std. Dev. | Minimum | Maximum |
|---|---|---|---|---|---|
| Total acres in production | 26 | 11.96 | 10.31 | 1.00 | 40.00 |
| Age of primary owner | 18 | 48.22 | 14.72 | 25.00 | 78.00 |
| Full time farmers (1=yes, 0=no) | 19 | 0.84 | 0.37 | 0.00 | 1.00 |
| College degree (1=yes, 0=no) | 19 | 0.82 | 0.39 | 0.00 | 1.00 |
| Have a business plan (1=yes, 0=no) | 19 | 0.21 | 0.42 | 0.00 | 1.00 |
| Do mechanical harvesting (1=yes, 0=no) | 19 | 0.32 | 0.48 | 0.00 | 1.00 |
| Do mechanical processing (1=yes, 0=no) | 19 | 0.21 | 0.42 | 0.00 | 1.00 |
| Sell value added products (1=yes, 0=no) | 19 | 0.37 | 0.50 | 0.00 | 1.00 |

The formal business structure of the participating farms varied, but most (61%) were organized as sole proprietorships (Figure 1). Finally, we considered production method as either conventional, certified organic, non-certified organic, or mixed (both conventional and organic). Nearly 70% of the farms were organic, with two-thirds of those not going through formal certification processes (Figure 1). While it would be additionally useful to examine channel performance statistics differentiated by some of these farm/operator characteristics (e.g., does channel performance improve with education, or do organic farms have higher performing channels than conventional farms?), the limited sample size makes this investigation infeasible.  In the benchmarking that follows, all farms are included in the computed statistics.
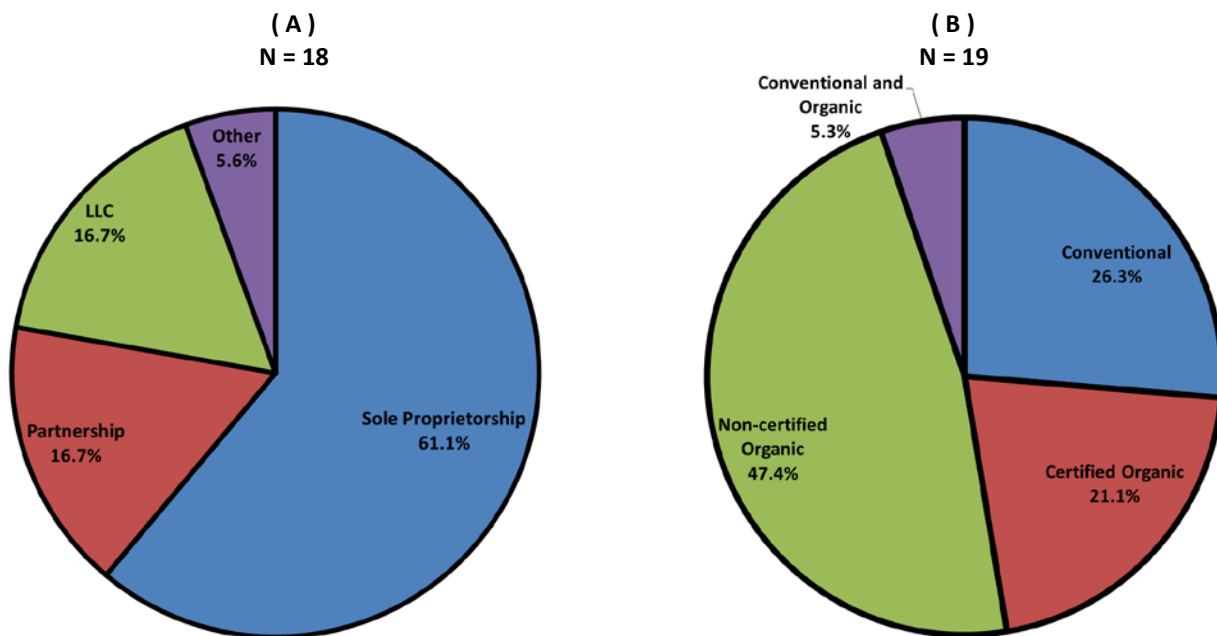
**Figure 1. Distribution of Farms Sampled by Business Structure (A) and Production Method (B).**

Participating farms utilized a number of marketing channels. On average, farms participated in about four channels, with a range between two and six. Direct marketing channels were utilized much more than wholesale channels. Of the 104 unique farm-channel observations with complete data, just over one-half were for farmers markets (Figure 2). In fact, it was common for producers participating in farmers markets, to sell at more than one market. Community Supported Agriculture (CSA) operations and farm stand/stores were the next most popular channels, comprising around 16% and 10% of the farm-channel observations, respectively. Selling to grocery stores was the most popular wholesale channel (8%), followed by restaurants at nearly 5%. A mix of other wholesale channels were also utilized; e.g., auctions, processors, distributors, but were relatively small in number, or were unspecified (i.e., simply classified as "wholesale").  Overall, approximately 80% of the channels evaluated were direct marketing channels.
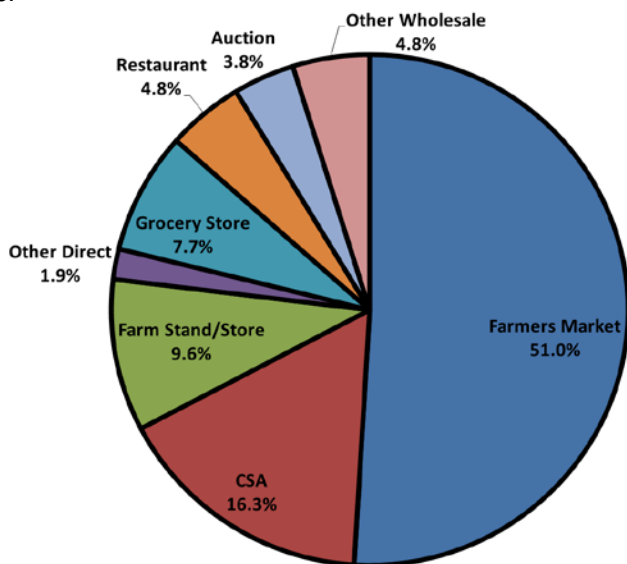


**Figure 2. Distribution of Channels Utilized**

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**Benchmark Performance Estimates**

Below we describe the benchmark performance estimates following both aggregated and individual channel categorizations. All channel observations are included in their respective aggregated categories (i.e., All Channels, Direct Channels, Wholesale Channels); however, due to limited data we are unable to compute benchmark statistics for some individual channels (e.g., internet, u-pick, processor, distributor).

*Aggregated Marketing Channels*

The results considering aggregated marketing channel classifications; i.e., all, direct, or wholesale channels) and a profit margin metric (profit/total sales) are shown in Figure 3. Across all channels, the median profit margin was just over 70%; top performers (i.e., those in the 75th percentile) exceeded 80%, while the lower performing channels (i.e., those in the 25th percentile) were below 60%. Interestingly, while the median for wholesale channels was slightly below that for direct, both showed top performers above the 80% profit margin watermark. That said, there did exist a cluster of poorly performing channels below 35%. While top-end performance was similar for direct and wholesale channels in aggregate, there would appear to be a higher low-end profit risk for wholesale channels. Given the differences in the number of channels in each category, some caution is advised; i.e., the results are relatively thin for the wholesale channel category.

When viewed in terms of sales per labor hour, a similar result emerges (Figure 4). In this case, the median performance between direct and wholesale channels is quite similar (about $32/hour), suggesting relatively similar central tendencies in performance. However, in this case the top-end performers were slightly higher for wholesale channels (around $55/hour), and the bottom-end performers, as before, considerably worse than the direct channels (less than $15/hour). When viewed in terms of these aggregate results, it would appear that direct and wholesale channels can compete on relatively even footing in terms of profitability and labor commitments per value of sales, but larger downside risk on wholesale channels may result if not properly managed. Importantly for producers, is to examine where their channel performs relative to these summary benchmarks.
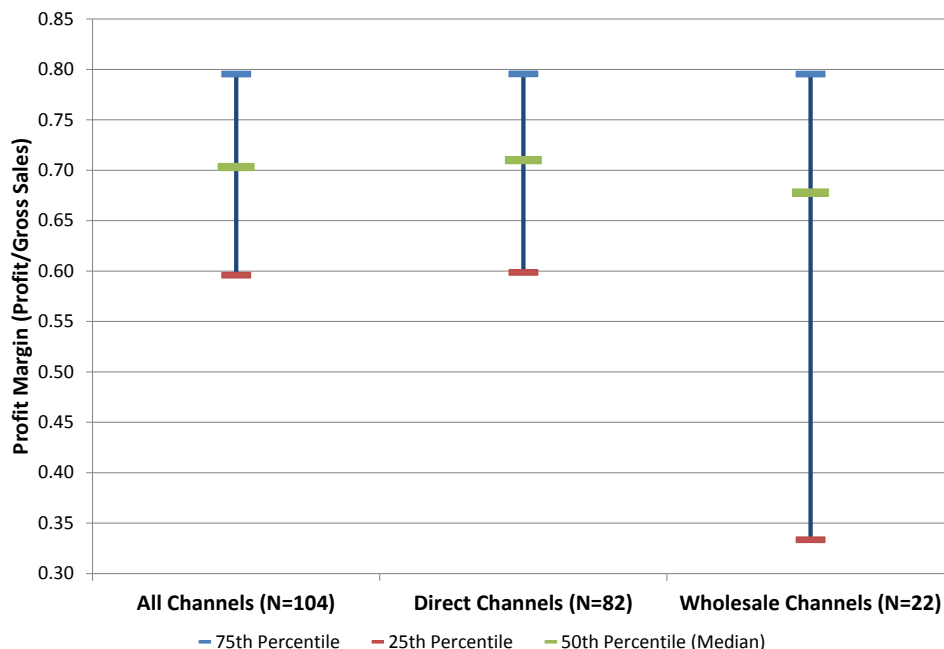


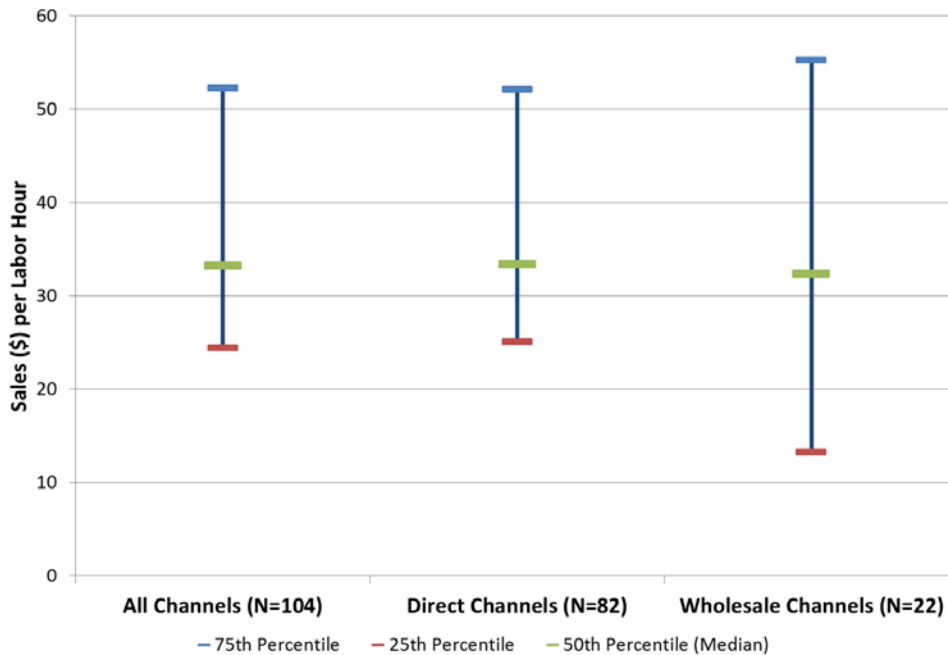**Figure 3. Profit Margin Percentiles, by Aggregated Marketing Channels.**

**Figure 4. Sales per Labor Hour Percentiles, by Aggregated Marketing Channels.**

*Disaggregated Marketing Channels*
Given the variety of direct and wholesale channels included here, and distinct differences in their operation and management, it is useful to examine particular channel performance metrics. Disaggregated channel results (for those with sufficient data) are shown in Figures 5 and 6 (direct channels) and Figures 7 and 8 (wholesale channels).

In terms of profit margins for the direct marketing channels, CSA for our sample was the best overall performing channel (Figure 5). The median profit margin was nearly 85%, while the top performers (i.e., those in the 75th percentile) had margins of at least 88%. CSAs also had the highest bottom percentile indicating, in part, lower downside risk for this channel. The relative closeness of the median to the 75 percentile indicates a relatively high number of firms with reasonably good performance. The results based on sales per labor hour are similar (Figure 6); however with more variability between the upper and lower percentiles for the CSA channel, likely due, in part, to differences in distribution models for varying CSAs. The 75th percentile results indicate that the top 25% of CSA channels had sales per hour at $80 or larger.

The median margin performance and sales per labor hour for farmers markets was considerably below that of CSAs at 68% and $29/hour, respectively. The 75th percentile values for each metric were also considerably below that for CSA. While certainly the most popular channel in our sample, of the individual direct channels considered, its performance on profit margin and sales per hour were the lowest. While participation in this channel may extend beyond profitability measures, producers should consider its performance carefully, particularly with respect to marketing labor requirements. Under both metrics, farm stands performed in between the CSA and farmers market channel results, with a median profit margin (sales per hour) of 71% ($37/hour); however, the relatively smaller sample size (N=10) should be considered. One reason why CSA may have relatively higher performance is likely due to an under-reporting of sales time involved in recruiting member shares. As the data was collected for operating CSAs, this upfront investment of time is likely not fully accounted for in the typical peak-
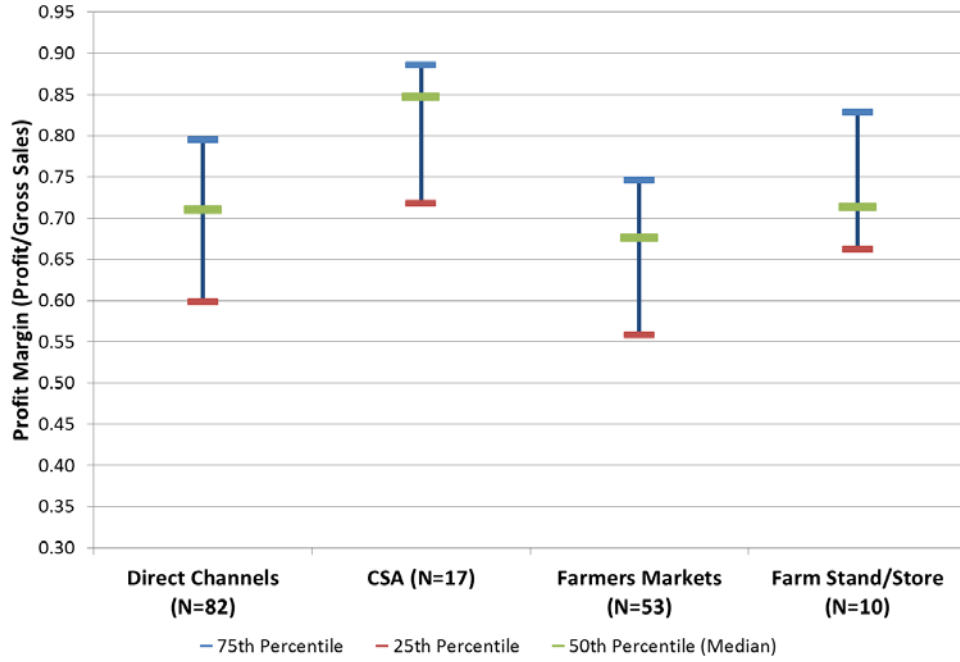
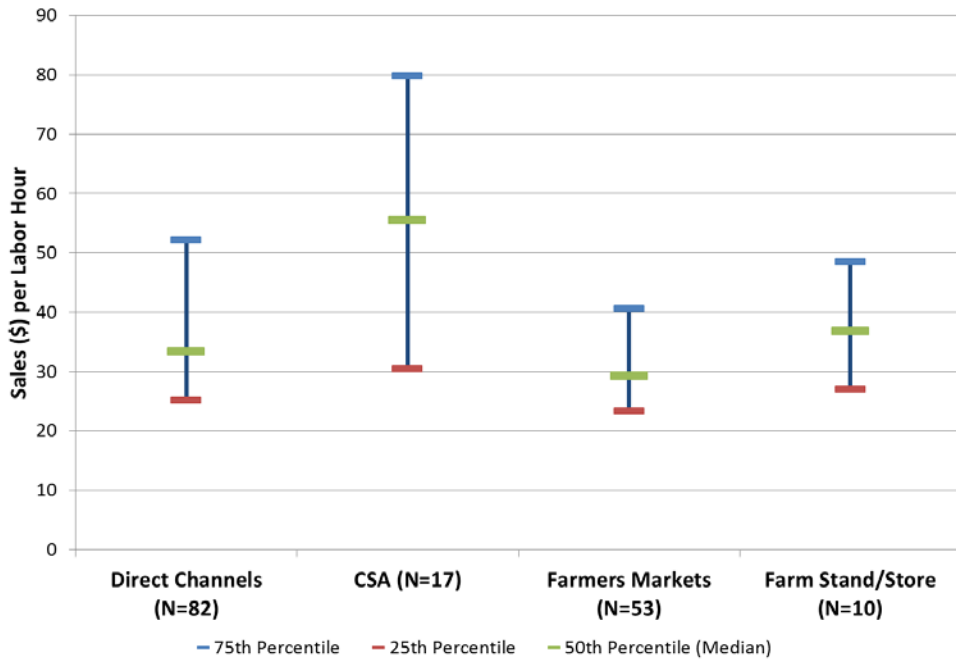**Figure 5. Profit Margin Percentiles, by Direct Marketing Channels.**



**Figure 6. Sales per Labor Hour Percentiles, by Direct Marketing Channels.**
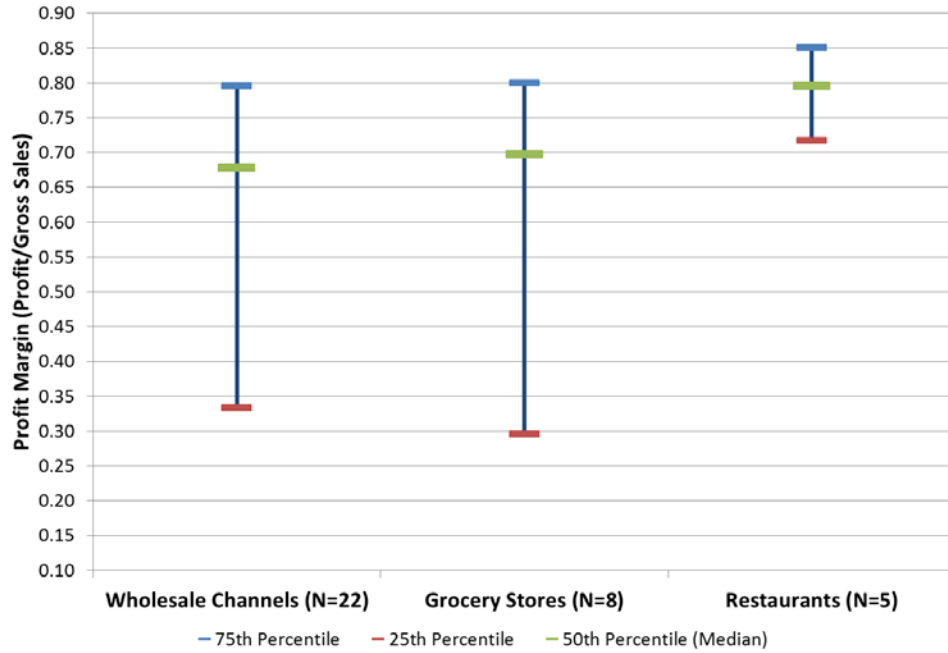
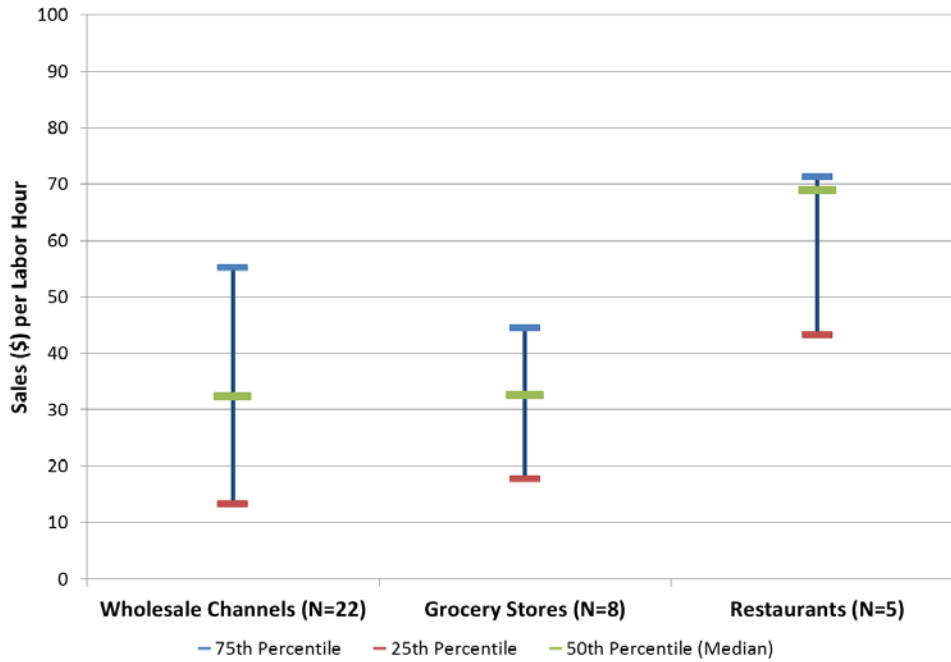**Figure 7. Profit Margin Percentiles, by Wholesale Marketing Channels.**



**Figure 8. Sales per Labor Hour Percentiles, by Wholesale Marketing Channels.**

season week data. In any event, the percentile estimates should provide reasonable benchmarks for producers to consider against their own channel performance results similarly constructed.

Less information can be gleaned from the individual wholesale channel results. The results for grocery stores (N=8) and restaurants (N=5) are shown in Figures 7 and 8. Extreme caution should be used in their interpretation given their small sample sizes (the other/unspecified category is excluded given that it likely contains numerous types of wholesale channels). From the small sample results, it appears that the restaurant channel results are superior to that in wholesale. Profit margins were considerably more variable for the grocery channel observations, and the median statistics were considerably larger for the restaurant channel (profit margin = 80%, sales/hour = $69) than that of grocery (70% and $32, respectively). Higher volumes are likely available in grocery channels, albeit at reduced rates of profitability per unit. The relatively narrower distributions on profit margins and median values close to the 75% percentiles also provide some evidence of improved channel performance for restaurants, albeit based on very small sample. Additional wholesale channel observations to assess the robustness of these results are needed, but at least provide some preliminary benchmark estimates.

**Marketing Labor Allocations**
We now assess differences in the average allocation of labor amongst the various labor marketing activities (i.e., harvest, process and package, transport and distribution, and sales and bookkeeping) considering the top (75$^{th}$ percentile) and bottom (25$^{th}$ percentile) performing channel observations (based on the profit margin percentiles reported earlier). As above, we consider both the channels in aggregate, and then at an individual channel level.

When considering all channel observations, grouped as either direct or wholesale, we can see the distribution of labor allocations are relatively similar between the top performing direct and wholesale channels – roughly one-third allocated to harvesting activities, another one-third to processing and packaging, and the final one-third split between transportation and distribution and sales and bookkeeping (Figure 9). Poorer performing wholesale channels allocated too little time for sales and bookkeeping, likely reflecting the time to properly establish and maintain buyer relationships, and too much time on particular harvesting activities. We see just the opposite for the direct channels, whereby top performing channels allocated less time to sales and bookkeeping; likely due to the influence of profitable unmanned farm stands within the sample, relative to more time-intensive but less profitable farmers markets. Given differences in individual labor requirements by channels within each of these broader categories, it is difficult to discern much, other than to note that, on average, labor allocations amongst activities are more similar between direct and wholesale channels than is generally inferred. The higher allocation to transportation and distribution for wholesale channels is likely influenced by the opportunities for wholesaling in more distant (urban) markets.

Variations in labor requirements for individual direct channels are clearly seen in Figure 10, where individual results for farms stands, farmers markets, and CSAs are given. Small sample sizes again reduce the generalization of the results beyond the sample, but in any event help illustrate channel labor requirement variation. The farm stand results are perhaps the most striking, likely exhibiting differences between staffed (bottom performers) and unstaffed farm stands (top performers) in our data. While our results could be strengthened with a larger sample size that effectively separates these two types of farm stands, the results illustrate that producers can concentrate their time into appropriately harvesting and packaging their products for sale, rather than allocating time to staffing the store, and improve channel profitability performance. Interestingly, little variation is shown between the top and bottom performing farmers market channels – top performing channels allocated slightly more time to
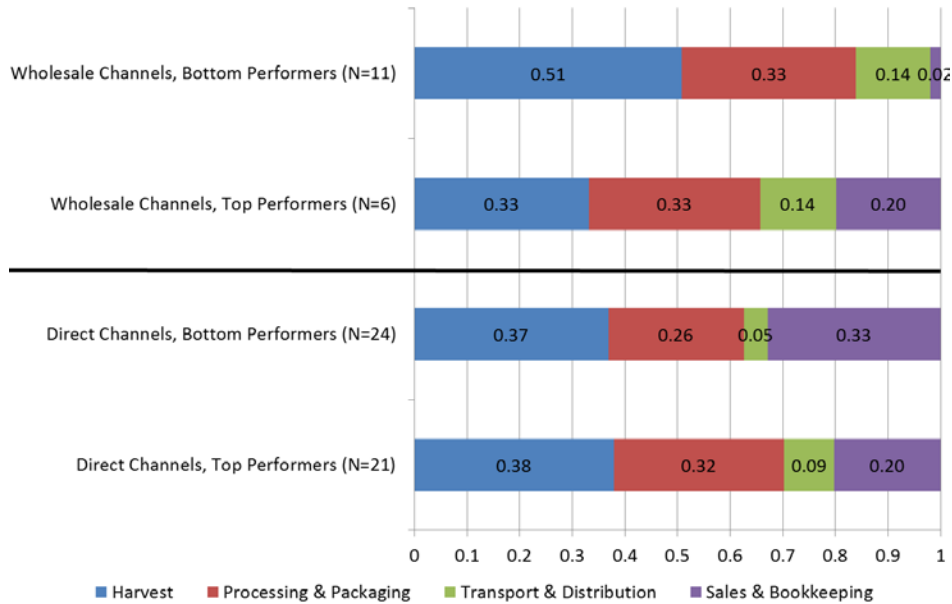
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**Figure 9. Distribution of Labor by Marketing Activity, Top (75th Percentile) and Bottom (25th Percentile) Performing Channels, All Direct and Wholesale Channels.**
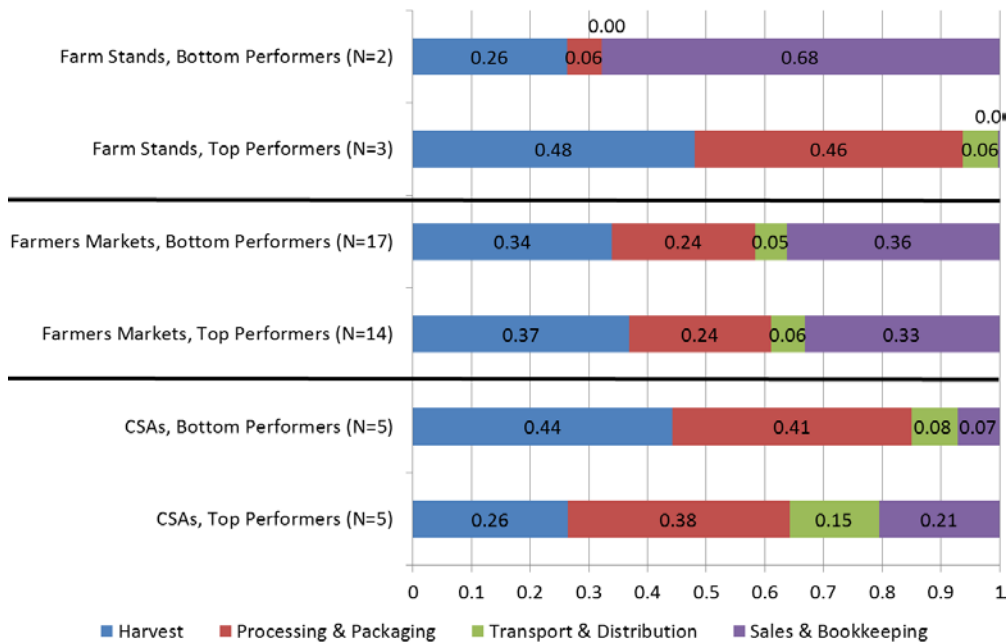


**Figure 10. Distribution of Labor by Marketing Activity, Top (75th Percentile) and Bottom (25th Percentile) Performing Channels, Direct Channels.**

harvest activities and less to sales and bookkeeping time. This is likely due in part to the nature of the farmers markets requiring staffing time during the particular hours of operation. That said, in deference to CSAs, top performing farmers markets require more particular harvesting activities in meeting customer expectations, but less packaging time. Interestingly, top performing CSAs spent less time in harvesting, and more time in transportation and sales time, likely reflecting the importance of higher

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share CSAs in more distant (urban) markets and the necessary communication time to keep CSA members apprised of product delivery specifications.

The general wholesale channel results (Figure 9) are supported by the individual restaurant and grocery store results in Figure 11. In particular, the higher allocations of marketing labor to sales and bookkeeping in the top performing channels. In particular, for higher performing restaurant channels, harvesting and processing activities are reduced, in favor of additional sales time with the buyer clients. Less time was also allocated to transportation and distribution, indicating that nearby restaurant sales may be an avenue worth pursuing. Top performing grocery channels reduced the emphasis on particular packaging (likely the result of their own product displays already in place) and increased the emphasis on sales and bookkeeping time with grocery buyers.
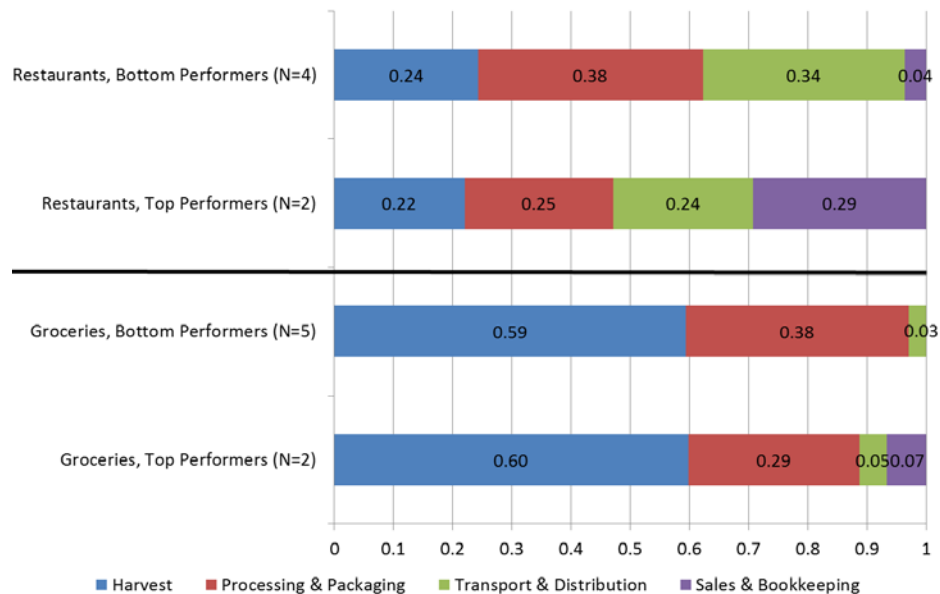


**Figure 11. Distribution of Labor by Marketing Activity, Top (75th Percentile) and Bottom (25th Percentile) Performing Channels, Wholesale Channels.**

**Conclusions**

The MCAT project has been successful in identifying the need for proper data collection to assess marketing channel performance for producers. The tool has been implemented successfully in New York State and continues to be utilized to assist management decisions by small-scale fruit and vegetable producers. The purpose of this article was to begin to establish benchmark performance statistics from the farm data for the use of other producers in assessing their own performance relative to their peers. Benchmark performance metrics on profit margin (profit/total sales) and labor efficiency (sales/labor hour) were estimated, along with average labor allocations among labor marketing activities, differentiated by top and bottom performing channel observations. The generalizations of the results beyond the sample are limited given the relatively small sample size, for certain channels in particular. Expanding the sample size through additional MCAT evaluations will improve the robustness of our results and also allow us to assess differences in channel performance for differing geographic locations and/or farm and manager characteristics. A careful examination of these issues is a top priority for our continuing research.

## OTHER A.E.M. EXTENSION BULLETINS

| EB No | Title | Fee (if applicable) | Author(s) |
|---|---|---|---|
| 2014-12 | Manure Application Cost Study | | Howland, B. and J. Karszes |
| 2014-11 | Cost of Establishment and Production of Hybrid Grapes in the Finger Lakes Region of New York, 2013 | | Tang, Y., Gómez, M. and G. White |
| 2014-10 | New York Economic Handbook, 2015 | ($10.00) | Extension Staff |
| 2014-09 | Dairy Farm Business Summary, Northern New York Region, 2013 | ($12.00) | Knoblauch, W., Dymond, C., Karszes, J., Howland, B., Murray, P., Deming, A., Balbain, D., Buxton, S., Manning, J., Collins, B. and A. Figueras |
| 2014-08 | Dairy Farm Business Summary, Hudson and Central New York Region, 2013 | ($12.00) | Knoblauch, W., Conneman, G., Dymond, C., Karszes, J. Howland, B., Buxton, S., Kiraly, M., Kimmich, R. and K. Shoen |
| 2014-07 | Dairy Farm Business Summary, New York Small Herd Farms, 140 Cows or Fewer, 2013 | ($16.00) | Knoblauch, W., Dymond, C., Karszes, J. and M. Kiraly |
| 2014-06 | Dairy Farm Business Summary, Western New York Region, 2013 | ($12.00) | Knoblauch, W., Dymond, C., Karszes, J., Howland, B., Hanchar, J., Carlberg, V., Kimmich, R. and J. Petzen |
| 2014-05 | Dairy Farm Business Summary, New York Large Herd Farms, 300 Cows or Larger, 2013 | ($16.00) | Karszes, J., Knoblauch, W. and C. Dymond |
| 2014-04 | Agriculture-Based Economic Development in New York State: The Contribution of Agriculture to the New York Economy | | Schmit, T. |
| 2014-03 | Agriculture-Based Economic Development in New York State: Assessing the Inner-Industry Linkages in the Agricultural and Food System | | Schmit, T. and R. Boisvert |