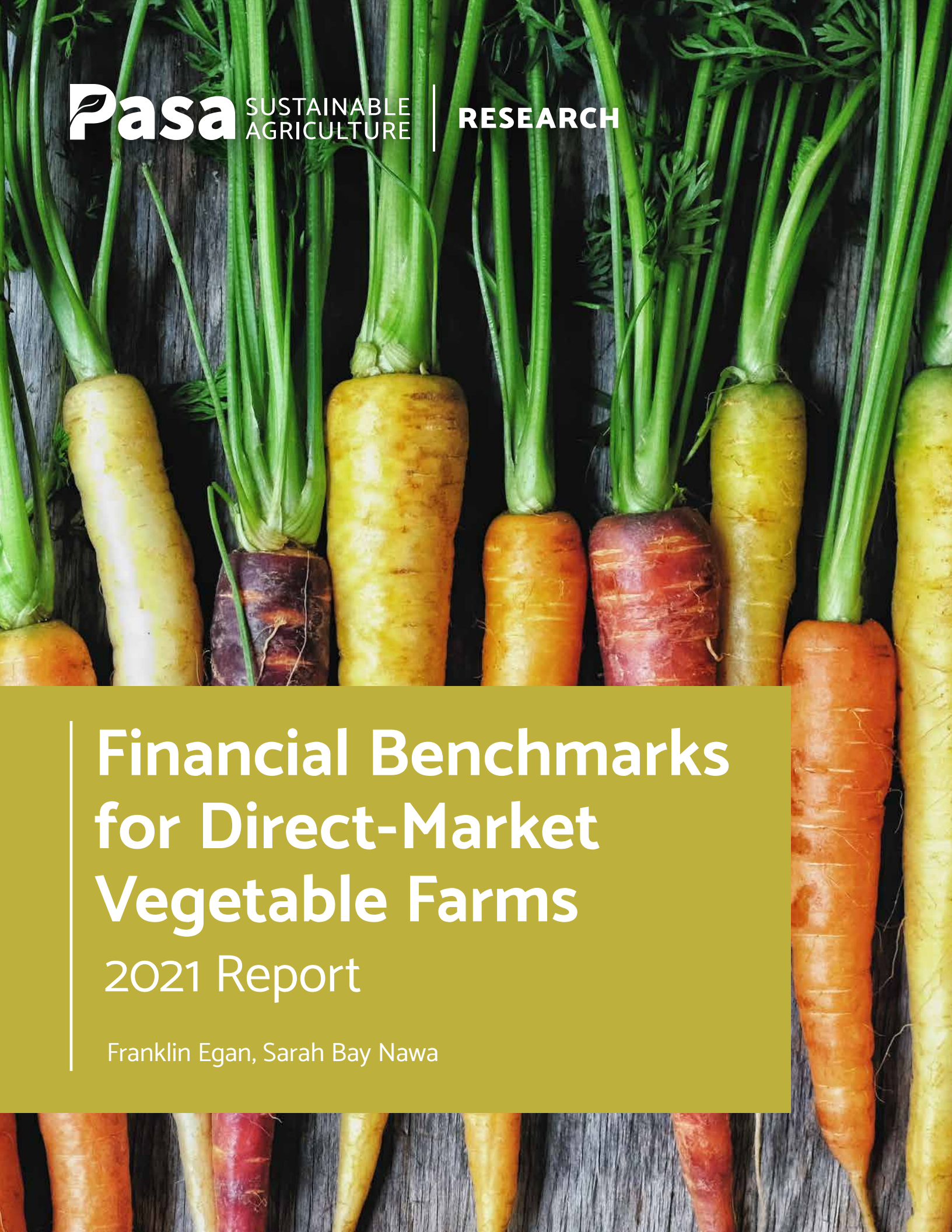

Pasa SUSTAINABLE AGRICULTURE | RESEARCH

Financial Benchmarks for Direct-Market Vegetable Farms

2021 Report

Franklin Egan, Sarah Bay Nawa

Study Contributors

Thank you to the 39 farmers who contributed their time, insights, and data to this study.

John Hendrickson, Brad Barham, and Matthew Klein (University of Wisconsin) helped design our survey instrument and analyze data.

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This report is available on Pasa's website at pasafarming.org/financial-benchmarks-2021.

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Pasa Sustainable Agriculture cultivates environmentally sound, economically viable, community-focused farms and food systems.

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Executive summary

Direct-market vegetable farming—where farmers sell their produce through farmers markets, community supported agriculture (CSA) programs, on-farm stores, and direct wholesale—is a growing sector of the agricultural economy in the Mid-Atlantic region and nationally. Yet despite its popularity among both farmers and eaters, there is little information available to help farmers start and grow successful direct-market businesses.

In 2017 we launched an ongoing study to help fill this critical gap in information and provide insights that could help vegetable farmers start and grow successful businesses. We compiled custom financial benchmark reports for each farm participating in the study, and we hosted meetings where participants could share and discuss their business finances openly.

This report shares detailed financial benchmarks and insights from the 39 vegetable farms that participated in our study. These farms were all located in four Mid-Atlantic states (Pennsylvania, Maryland, Virgina, West Virginia) and sold some or all of their produce through direct-market channels during tax years 2017 through 2019. We also share trends over time for a subset of 19 farms that participated in our study all three years. Lastly, we explore strategies farmers can use to improve their direct-market income, and consider how public policy can support the long-term financial viability of these essential businesses.

To our knowledge, this report is the most comprehensive review of direct-market vegetable farm business models produced to date. Our findings include:

- **Most direct-market vegetable farmers are not earning a middle-class income.** A quarter of farms in our study earned more than the Pennsylvania median household income. Most, though, had a median net farm income that was less than half the Pennsylvania median for all farms.

- **No single direct-market channel outperformed all others.** We found that all of the major direct-market channels used by farms in our study—farmers markets, CSAs, direct wholesale—had a mix of higher and lower income cases.

- **Larger production scales bring higher incomes.** Farms in our study with more acres in vegetable production generally realized higher net incomes than farms with less acres in vegetable production.

- **Farms that focus on vegetables make more money on vegetables—but may miss out on higher net incomes from other enterprises.** We found that farms in our study operating enterprises beyond solely marketing vegetables grown on their farms had higher net farm incomes. This was especially true for farms that resold products from other farms.

- **Farms steadily increased incomes and equity over time.** Farms in our study generally become more profitable the longer they were in business. Most farms exceeded the Pennsylvania median household income within 12 years of business, while accumulating significant wealth in land, buildings, and equipment assets.

- **There are three major pathways to make more money growing vegetables.** Our data point to expanding production scale, increasing revenue per acre, or improving cost and labor efficiency as the top three strategies for increasing direct-market vegetable income.

- **The financial benchmarks presented in this report are consistent with persistent structural challenges in the agricultural industry.** Creating and expanding public programs is necessary to help direct-market vegetable farmers continue their essential work providing fresh, nutritious food for their communities.

- **Farmers value sharing and discussing financial data.** Most farmers participating in our study found the insights they received and the opportunities to discuss their business finances with other farmers in a safe environment highly valuable.

Our Direct Market Benchmark Study is an ongoing project. Since compiling the findings detailed in this report, we've partnered with peer organizations in New England (Community Involved in Sustainable Agriculture) and the Carolinas (Carolina Farm Stewardship Association) to expand the scope of our study to include data from vegetable farms located outside of the Mid-Atlantic region. We will also be analyzing the impact the COVID-19 pandemic has had on participating farms in a future report.

GET INVOLVED: If you own or manage a vegetable farm that sells some or all of your products through direct market channels, we welcome you to join our ongoing study. Learn more at **pasafarming.org/research** or contact us at **research@pasafarming.org** to get involved.

Introduction

Farmers markets, community supported agriculture (CSA) programs, farm stands, and direct wholesales to grocery stores, restaurants, and institutions are sales channels that have long been cornerstones of the sustainable agriculture movement in Pennsylvania and across the U.S. By building in-person relationships with customers and garnering price premiums for fresher, higher quality, and more sustainably grown produce, direct-market vegetable farms have carved out an important niche in the modern agricultural industry. The National Agricultural Statistics Service (2016) estimates that direct-market farms generate $439 million in sales per year in Pennsylvania, with much of this business coming from vegetables.[1]

Direct-market farming has provided an on-ramp into farming careers for many beginning farmers and supplied communities with better access to fresh, nutritious food. Direct-market farms have also pioneered sustainable growing techniques that rely on biodiversity to build soils and control pests. Yet, despite the big-picture success of direct-market business models, there is surprisingly little information available to help current or aspiring farmers answer a very basic question: Can farmers make a middle-class income selling vegetables through direct-market outlets?

This report contributes to a very small set of resources exploring finances for direct-market vegetable farms. Existing resources on this topic include data compiled by Practical Farmers of Iowa and the Center for Integrated Agricultural Systems.[2,3] Our data set also expands on existing resources by including a range of variables describing each participating farm's market channels, production scale, level of diversity and specialization, and years of farming experience. This allows us to provide a uniquely detailed look at some of the key factors shaping financial outcomes for direct-market farms.

“

Despite the big-picture success of direct-market business models, there is surprisingly little information available to help current or aspiring farmers answer a very basic question: Can farmers make a middle-class income selling vegetables through direct-market outlets?

Participating farms

Since the fall of 2017, we have recruited 39 farms in Pennsylvania, Maryland, Virginia, and West Virginia to participate in our Direct Market Financial Benchmarks Study (Table 1). **All eligible farms needed to be for-profit commercial operations and generate a significant portion of their revenue through direct-market sales of produce grown on the farm.**

TABLE 1. PARTICIPATING FARMS BY YEAR

Year	Number of farms
2017	36
2018	32
2019	23
Total	**39**

Of the farms that participated in our study in 2017, 81% returned for 2018, with several additional farms joining the project that year. Participation declined in 2019, as many farms found it difficult to submit their data in the spring of 2020 when the COVID-19 pandemic erupted.

We sought out candidate farms through our email newsletter; exhibiting and presenting at farm conferences and events; and by advertising in various trade publications.

Participating farms typically managed a range of enterprises, including growing vegetables, reselling products grown or raised on other farms, and hosting on-farm events and agritourism. Farms were located in peri-urban and rural areas, and spanned a range of production scales from less than an acre in vegetable production to more than 90 acres (Figure 1). Participating farmers also had an assortment of experience levels, ranging from new start-ups to decades in business (Figure 2). Just under half of participating farms primarily leased or rented their farmland. Land ownership was more common among larger farms, with all farms that had more than 12 acres in vegetable production primarily owning their farmland (Figure 3).

FIGURE 1. ACRES IN VEGETABLE PRODUCTION

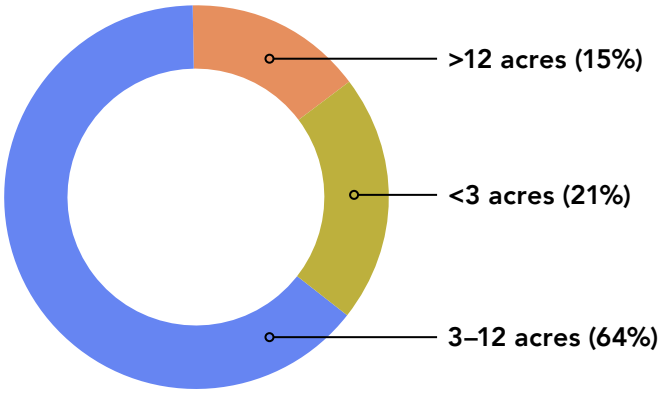


FIGURE 2. YEARS OF FARMING EXPERIENCE

Includes experience as farm managers and farm workers

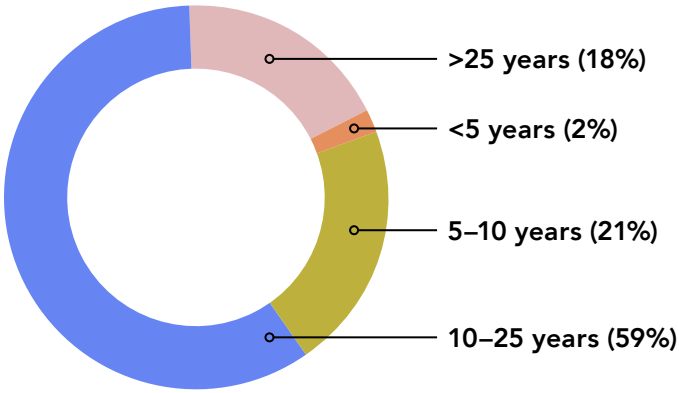
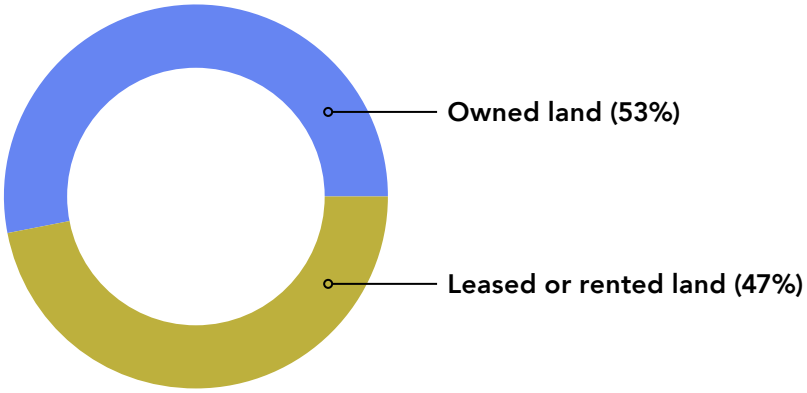


FIGURE 3. LAND TENURE



Methods

Over the winter months of 2018, 2019, and 2020 we coordinated a series of in-person and virtual work sessions to help farmers complete a detailed survey regarding their farm finances for the 2017, 2018, and 2019 tax years. We developed our survey with support from educators at the University of Wisconsin, building on a survey they had shared with similar farms in Wisconsin. Farmers were offered a $100 stipend for completing a survey for each tax year.

Our survey required farmers to draw information from their crop plans, annual profit-and-loss statements, Schedule F tax form or similar tax documents, and business balance sheets. We reviewed each survey carefully, typically following up with farmers to clarify any ambiguities or inconsistencies in their responses. As a result, we have a "carrots-to-carrots" dataset for which we normalized different approaches to bookkeeping among different farm business models.

Many of the farmers contributing to this project manage multiple enterprises, including vegetables, livestock, fruit, and resale of products from other farms. In order to make balanced comparisons, this report presents benchmarks for each farm's **vegetable enterprise** as well as their **farm business** as a whole.

Our **vegetable enterprise benchmarks** refer to the production and marketing of vegetables grown on each farm (this does not include any resale products). Our definition of vegetables for the purpose of this study includes melons, herbs, strawberries, and other specialty crops often grown on diversified vegetable farms. Our definition does not include perennial fruit trees, perennial berries, cut flowers, or nursery or bedding plants. Farmers reported vegetable sales by distinct market channels, including farmers markets, CSA programs, and direct wholesale to restaurants, institutions, and grocery stores. Many direct-market farms also use intermediary wholesale channels such as produce auctions, food service companies, and marketing co-ops.

Our **farm business benchmarks** refer to *all* of a farm's agricultural enterprises—including vegetables, resale products, nursery plants, livestock, and agritourism or on-farm events—viewed as a combined business.
We used this data to calculate a series of standard business benchmarks for each farm's vegetable enterprise and for their farm business as a whole. We also explored correlations between benchmark indicators and key aspects of the farm business model and context, including market channels, production scale, farmer experience, and enterprise diversity.

Benchmarks

This section reviews the financial benchmarks achieved by the 39 vegetable farms that participated in our study between tax years 2017 and 2019. Each table represents a combined average for these three years.

We segmented each benchmark by farm scale, so you can see values for farms with less than three acres in vegetable production (21% of participants), farms with more than 12 acres in vegetable production (15% of participants), and those that fall in between (64% of participants).

For each benchmark, we show the 10, 25, median (50), 75, and 90 percentile value. For example, as shown in Table 2, the 25th percentile value for gross vegetable enterprise revenue was $41,844 for farms with less than three acres in vegetable production. That means that 25% of farms of this scale sold on average less than $41,844 during tax years 2017–19.

VEGETABLE ENTERPRISE BENCHMARKS

The benchmarks in this section apply to vegetables produced on and marketed by a farm.

TABLE 2. GROSS VEGETABLE ENTERPRISE REVENUE

Scale	Percentile				
	10	25	median	75	90
< 3 acres	$17,264	$41,844	$64,704	$82,260	$114,761
3–12 acres	$32,752	$44,543	$92,030	$140,370	$218,435
> 12 acres	$457,584	$464,974	$488,773	$606,969	$750,297

Gross vegetable enterprise revenue measures the total sales revenue of vegetables grown on a farm through all market channels combined. This may include farmers markets, CSAs, on-farm stores, direct wholesale to restaurants, grocery stores, and institutions, and wholesale through intermediaries.

TABLE 3. GROSS VEGETABLE ENTERPRISE REVENUE PER ACRE

Scale	Percentile				
	10	25	median	75	90
< 3 acres	$19,882	$27,032	$46,413	$56,193	$64,820
3–12 acres	$8,393	$11,223	$20,655	$29,194	$33,565
> 12 acres	$11,600	$20,854	$23,250	$33,834	$35,342

= gross vegetable enterprise revenue / acres in vegetable production

Gross vegetable enterprise revenue per acre measures the *intensity* of an operation—in other words, it shows how much revenue a vegetable enterprise generates per acre. Higher values can reflect combinations of more productive soil, better marketing opportunities, or more intensive management systems.

Acres in vegetable production includes only acres that were used for vegetable production for at least part of the year. It does not include farm lanes or acres that were in full-season cover crops or short-term fallow.

TABLE 4. VEGETABLE ENTERPRISE NET INCOME

Scale	Percentile				
	10	25	median	75	90
< 3 acres	-$8,764	$77	$1,844	$6,435	$8,684
3–12 acres	-$27,064	-$5,216	$12,079	$30,825	$53,096
> 12 acres	$54,052	$74,207	$86,964	$116,079	$161,947

= gross vegetable enterprise revenue – vegetable enterprise operating expenses

Vegetable enterprise net income shows the total income generated by a vegetable enterprise that is available to compensate salaries for farm owners, or to make capital investments in the operation.

Our definition of operating expenses includes all production and marketing costs for vegetables grown on a farm, including paid labor, land rental costs, and mortgage interest payments. Our definition of operating costs does *not* include salaries for farm owners or business partners.

TABLE 5. NET INCOME PER ACRE IN VEGETABLES

Scale	Percentile				
	10	25	median	75	90
< 3 acres	-$4,310	-$101	$2,163	$2,901	$8,180
3–12 acres	-$7,337	-$1,166	$2,890	$6,464	$9,094
> 12 acres	$1,950	$2,139	$2,968	$3,232	$7,016

= (gross vegetable enterprise revenue – vegetable enterprise operating expenses) / acres in vegetable production

Net income per acre in vegetables shows what a farm earns per acre in vegetable production after subtracting all operating expenses.

TABLE 6. VEGETABLE ENTERPRISE LABOR PAYROLL TO REVENUE RATIO

Scale	Percentile				
	10	25	median	75	90
< 3 acres	0%	3%	12%	19%	70%
3–12 acres	11%	19%	26%	31%	53%
> 12 acres	32%	32%	33%	33%	35%

= 100% * paid labor for vegetable enterprise / gross vegetable enterprise revenue

Vegetable enterprise labor payroll to revenue ratio shows the cost of paid labor associated with a vegetable enterprise relative to *gross vegetable enterprise revenue*. It does not include wages or salaries paid to farm owners, family members, or business partners.

On some smaller-scale farms, where the farm owner(s) and their family account for all labor, this ratio can be zero. On larger farms with many paid employees, labor costs can be a significant percentage of revenue.

TABLE 7. VEGETABLE ENTERPRISE NET INCOME TO REVENUE RATIO

Scale	Percentile				
	10	25	median	75	90
< 3 acres	-12%	-4%	3%	12%	15%
3–12 acres	-87%	-6%	14%	22%	38%
> 12 acres	9%	9%	14%	26%	34%

= 100% * (gross vegetable enterprise revenue – vegetable enterprise operating expenses / gross vegetable enterprise revenue

Vegetable enterprise net income to revenue ratio shows *vegetable enterprise net income* as a percentage of *gross vegetable enterprise revenue*. This ratio can provide insight into the profit potential and viability of a vegetable enterprise.

Because our definition of operating costs does not include compensation for farm owners, other family members, or business partners, a vegetable enterprise is probably not financially viable if this indicator is consistently less than zero, or only slightly above zero. By contrast, ratios well above 20% are probably necessary for most farms to be in a position to compensate farm owners.

> “Before [this study], we had no basis for comparison to help determine if we were fairly successful relative to other farms, as well as how much is reasonable to expect to make from other similarly sized farm businesses.
>
> –Study participant

TABLE 8. VEGETABLE ENTERPRISE RATE OF RETURN ON FARM OWNER LABOR

Scale	Percentile				
	10	25	median	75	90
< 3 acres	-$45,956	-$278	$1,462	$2,273	$5,135
3–12 acres	-$60,109	-$2,101	$9,819	$16,770	$31,882
> 12 acres	$19,840	$20,307	$34,319	$49,248	$56,039

= 100% * (gross vegetable enterprise revenue – vegetable enterprise operating expenses) / FTEs farm owner labor for vegetable enterprise

Vegetable enterprise rate of return on farm owner labor shows the financial returns of the labor a farm owner(s), other family members, and business partners contributed to a vegetable enterprise. It is the ratio of the *net income from vegetables* to the total farm owner labor on the farm, expressed in full time equivalents (FTEs) of 2,000 hours per year.

Most farmers work much more than 2,000 hours per year (~38.5 per week)—half of farmers participating in our study worked more than 45 hours per week on average, and 25% worked more than 55 hours per week on average. We standardized the farm owner input in terms of a 2,000 hour annual FTE, such that a farmer who works 55 hours per week on average would be represented as ~1.4 FTE.

To put this indicator into context, a **vegetable enterprise rate of return on farm owner labor** of $20,000 indicates that each farm owner is earning about $10 per hour while working on the vegetable enterprise.

> “[This study] prompted us to take a closer look at our finances, which is never time wasted. And it’s really helpful to know how we compare to other farms in terms of expenses and revenue generated per acre.
>
> –Study participant

FARM BUSINESS BENCHMARKS

The benchmarks in this section apply to all enterprises on a farm combined.

TABLE 9. GROSS FARM BUSINESS REVENUE

Scale	Percentile				
	10	25	median	75	90
< 3 acres	$17,587	$72,259	$80,623	$133,046	$193,922
3–12 acres	$62,661	$82,964	$111,876	$216,734	$290,681
> 12 acres	$508,299	$579,144	$773,046	$1,158,227	$1,366,547

Gross farm business revenue shows the overall economic scale of a farm business. As mentioned above, this includes a farm's vegetable enterprise as well as all other revenue gained from other farm enterprises. This may include revenue sources such as eggs, dairy products, meat, agritourism, custom services, or resold products.

TABLE 10. PERCENT FARM BUSINESS REVENUE FROM VEGETABLE ENTERPRISE

Scale	Percentile				
	10	25	median	75	90
< 3 acres	55%	60%	75%	86%	98%
3–12 acres	34%	56%	80%	98%	100%
> 12 acres	37%	51%	87%	95%	98%

= 100% * gross vegetable enterprise revenue / gross farm business revenue

Percent farm business revenue from vegetable enterprise shows the degree to which a farm specializes in vegetable production. It shows a farm's *gross vegetable enterprise revenue* (Table 2) as a percentage of the *gross farm business revenue* (Table 9).

TABLE 11. FARM BUSINESS NET INCOME

Scale	Percentile				
	10	25	median	75	90
< 3 acres	-$9,536	$2,968	$5,791	$13,577	$21,186
3–12 acres	-$8,266	$9,915	$29,907	$52,145	$65,048
> 12 acres	-$12,134	$48,915	$81,151	$162,695	$228,083

= gross farm business revenue – farm business operating expenses

Farm business net income shows the total income generated by a farm business that is available to compensate farm owners or make capital investments in the operation.

Our definition of operating expenses includes all farm production and marketing costs, including paid labor, land rental costs, and mortgage interest payments. Farm business operating expenses may also include the cost of goods sold for resale products. Our definition of operating expenses does not include salaries for farm owners, other family members, or business partners.

TABLE 12. FARM BUSINESS NET INCOME TO REVENUE RATIO

Scale	Percentile				
	10	25	median	75	90
< 3 acres	-7%	3%	9%	17%	19%
3–12 acres	-16%	11%	18%	35%	45%
> 12 acres	1%	8%	11%	17%	26%

= 100% * (gross farm business revenue – farm business operating expenses) / gross farm business revenue

Farm business net income to revenue ratio shows the *farm business net income* (Table 11) as a percentage of the *gross farm business revenue* (Table 9). It provides insight into the profit potential and viability of a farm business. Because our definition of operating costs does not include compensation for farm owners, other family members, or business partners, a farm business is probably not financially viable if this indicator is consistently less than zero, or only slightly above zero. By contrast, ratios well above 20% are probably necessary for most farms to be in a position to compensate farm owners.

TABLE 13. FARM BUSINESS RATE OF RETURN ON FARM OWNER LABOR

Scale	Percentile				
	10	25	median	75	90
< 3 acres	-$9,777	$1,484	$3,826	$6,692	$11,885
3–12 acres	-$8,217	$7,800	$14,990	$19,130	$39,986
> 12 acres	-$31,984	$18,917	$26,937	$54,935	$68,411

= (gross farm business revenue – farm business operating expenses) / FTEs farm business labor

Farm business rate of return on farm owner labor shows the financial returns of all of the labor farm owners, other family members, and business partners contributed to the farm business. It is the ratio of the *farm business net income* (Table 11) to the total farm owner labor on the farm, expressed in full-time equivalents (FTEs) of 2,000 hours per year.

While most farmers work much more than full time—half of farmers participating in our study worked more than 45 hours per week on average, and 25% worked more than 55 hours per week on average—we standardized farm owner labor in terms of a 2,000 hour annual FTE (~38.5 hours per week).

To put this indicator into context, a **farm business rate of return on farm owner labor** of $20,000 indicates that each farm owner is earning about $10 per hour while working on the farm business.

TABLE 14. FARM BUSINESS DEBT-TO-ASSET RATIO

Scale	Percentile				
	10	25	median	75	90
< 3 acres	0%	0%	6%	49%	79%
3–12 acres	0%	1%	18%	46%	67%
> 12 acres	5%	13%	25%	50%	61%

= 100% * farm business debts / farm business assets

Farm business debt-to-asset ratio is a measurement of a farm's overall solvency. It shows the proportion of assets that are financed by loans versus investments from a farm family and business partners. This indicator is the ratio of the remaining principal on debts owed by a farm business (including mortgage debt for farmland, loans for equipment purchases, and operating loans) to the estimated market value of the farm's business assets (including farmland, buildings, equipment, and inventory).

Insights

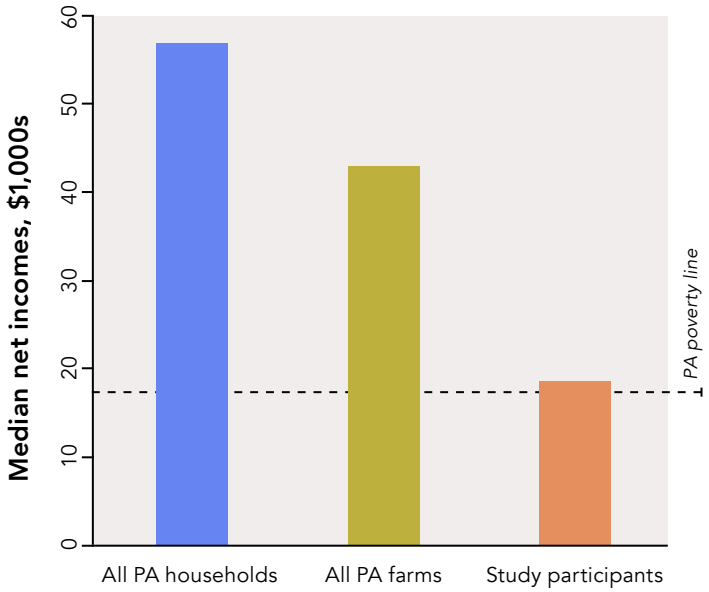
MOST DIRECT-MARKET VEGETABLE FARMERS ARE NOT EARNING A MIDDLE-CLASS INCOME

Some direct-market vegetable farmers have reached various degrees of financial stability. Most, however, aren't earning a middle-class income—or even a living wage.

A quarter of farms are earning net incomes greater than the Pennsylvania median household income of $56,951. For most, though, the median net farm business income of $18,549 is substantially less than the Pennsylvania median household income. For context, the statewide poverty rate in Pennsylvania for a two-person household is $17,420.[4]

Additionally, 71% of participating farms had net farm business incomes less than the average Pennsylvania farm income of $42,875. Notably, however, roughly 55% of all Pennsylvania farms operated at a net loss in 2017 (the date of the most recent Census of Agriculture), while 82% of the vegetable farms in our study showed positive incomes each year.[5]

FIGURE 4. MEDIAN NET INCOMES FOR PA HOUSEHOLDS, FARMS & STUDY PARTICIPANTS



NO SINGLE DIRECT-MARKET CHANNEL OUTPERFORMED ALL OTHERS

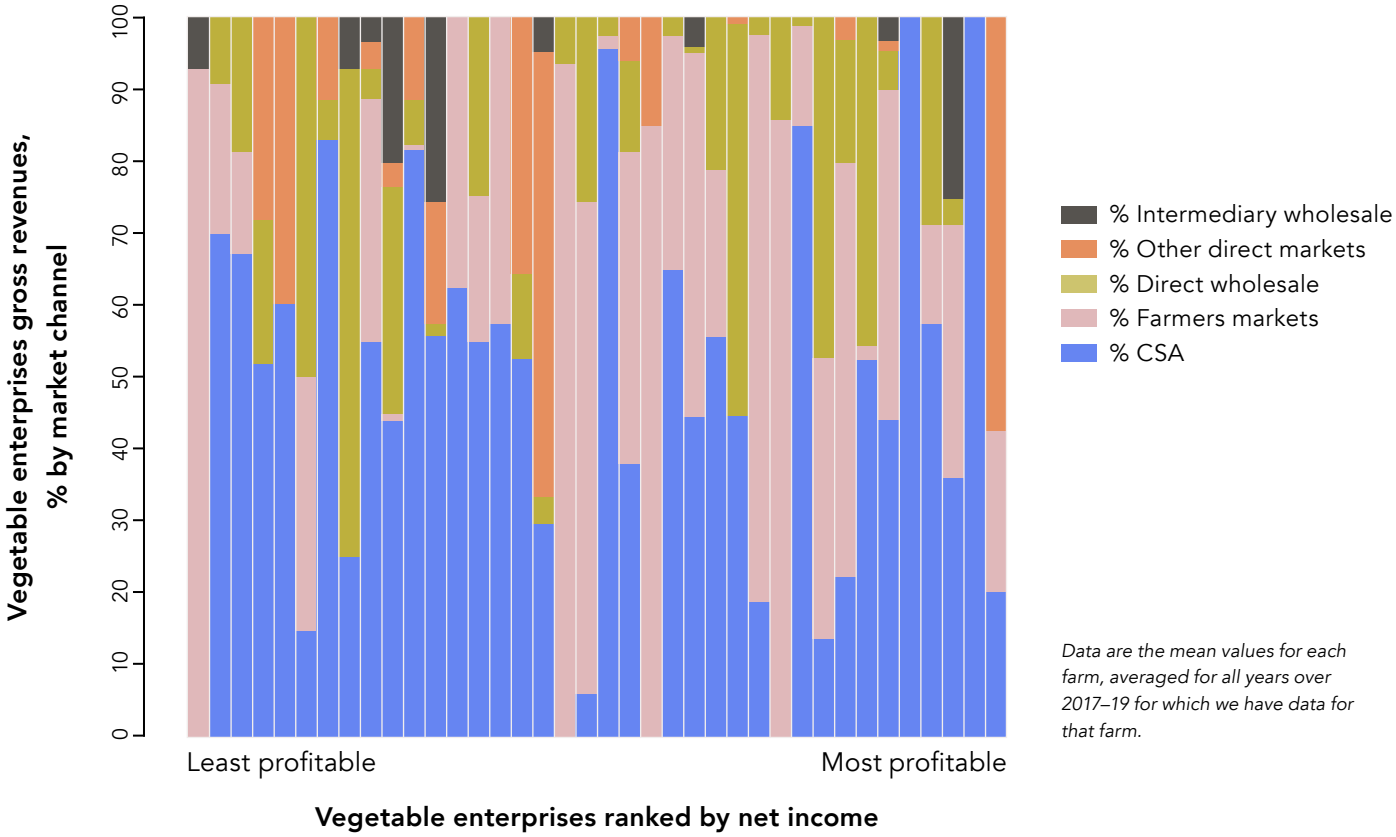
Direct-market vegetable farms typically utilize a variety of sales channels, including farmers markets; CSA programs; direct wholesale to restaurants, grocery stores, and institutions; and other direct markets including on-farm and online stores. Some direct-market farms also use wholesale-to-intermediary channels such as produce auctions, food service companies, and marketing co-ops. Are some of these market channels consistently more profitable than others?

Figure 5 shows each participating farm's **gross vegetable enterprise revenue** (Table 2), allocated by its percentage of sales through CSAs, farmers markets, direct wholesale, other direct markets (often on-farm and online stores), and wholesale to intermediaries.

Each farm is ranked by profitability, as measured by their **vegetable enterprise net income to revenue ratio** (Table 7).

The chart suggests that no single direct-market channel is consistently more profitable than others. We found profitable farms using a mix of market channels. We also found profitable farms primarily focused on selling their products through CSAs or farmers markets. Conversely, we also found less profitable farms using a mix of market channels, and less profitable farms focused on single market channels. For context, the most profitable vegetable enterprise in our study had an average net income of $192,525 while the least profitable vegetable enterprise had an average net income of -$42,408.

FIGURE 5. NET VEGETABLE ENTERPRISE INCOME & MARKET CHANNEL COMPOSITION



Data are the mean values for each farm, averaged for all years over 2017–19 for which we have data for that farm.

LARGER PRODUCTION SCALES BRING HIGHER INCOMES

Farms in our study were growing vegetables across a wide range of scales, from approximately half an acre to 90 acres (with a median of four acres). To explore relationships between scale and profit, we reviewed both the **vegetable enterprise net income to revenue ratio** (Table 7), which measures the proportion of revenue that farmers are able to keep, and the **vegetable enterprise net income** (Table 4), which measures the net amount that farmers earn from vegetables.

We did not see a consistent correlation between the number of acres in vegetable production and the **vegetable enterprise net income to revenue ratio** (Figure 6A). While there is considerable variation across the median (the horizontal line), the lack of a clear correlation suggests that farmers can achieve similar profit margins across a range of production scales. In other words, smaller farmers are not consistently more or less "efficient" at earning income than larger farmers.

At the same time, there is a clear correlation between the number of vegetable acres in production and **vegetable enterprise net income** (Figure 6B). Although there is also considerable variation in this pattern, the trend line suggests that for larger farms, the farm owners and business partners are able to draw larger incomes from their vegetable enterprises. While scaling up acres in vegetable production is rarely easy and not always desirable, these data do suggest that bigger scales can lead to higher incomes for farmers.

FIGURE 6A. VEGETABLE ENTERPRISE NET INCOME TO REVENUE RATIO RELATED TO ACRES IN VEGETABLE PRODUCTION

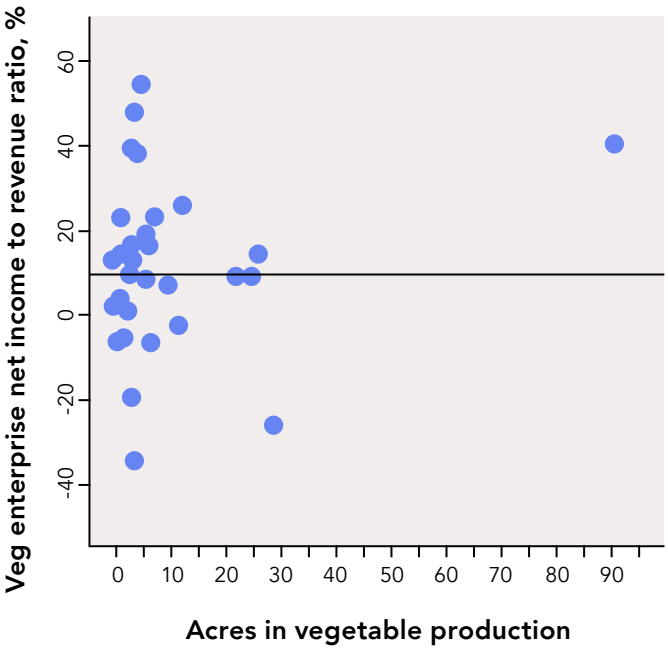
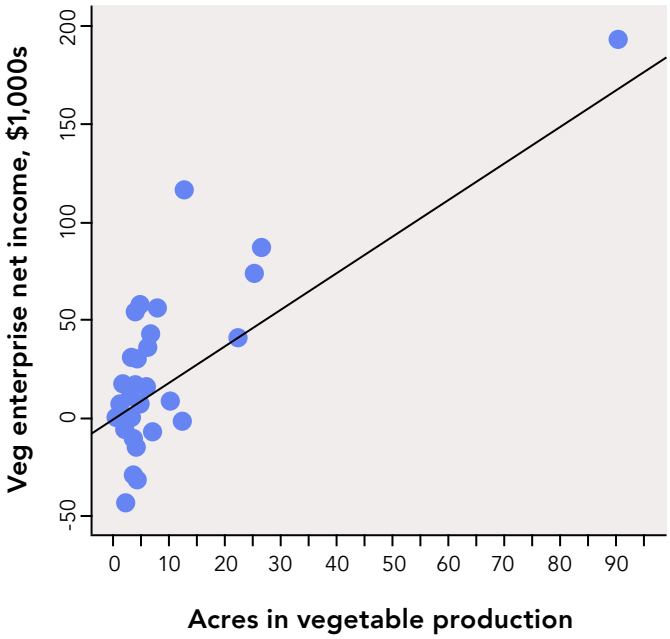


FIGURE 6B. VEGETABLE ENTERPRISE NET INCOME RELATED TO ACRES IN VEGETABLE PRODUCTION



Data are the mean values for each farm, averaged for all years over 2017–19 for which we have data for that farm.

FARMS THAT FOCUS ON VEGETABLES MAKE MORE MONEY ON VEGETABLES—BUT MAY MISS OUT ON HIGHER NET INCOMES FROM OTHER ENTERPRISES

Do farms that primarily focus on growing vegetables make more or less money than farms that diversify into other enterprises? Based on the **vegetable enterprise net income to revenue ratio** (Table 7), we found that farms with a high degree of focus in vegetable production tended to be more profitable in their vegetable enterprise (Figure 7A).

Although we found significant variation, farms with 90% or more of their revenue coming from vegetables grown on their farm showed some of the highest **vegetable enterprise net income to revenue ratios** in our cohort. This trend suggests that farmers who focus on growing vegetables can build efficiencies in their operations that farm businesses with more diverse revenue streams may be less likely to develop.

At the same time, we found several examples of profitable farms that earned a significant percentage of their revenue through enterprises other than vegetables (Figure 7B). While the relationship is not statistically significant, some of the most profitable farms in our study made more than 20% of their revenue from other enterprises. The most common enterprise other than vegetables in our cohort was reselling products grown or raised on other local farms.

This suggests that reselling can be a valuable strategy for increasing **farm business net income** (Table 11). By offering a greater range of livestock products, fruit, and vegetables grown or raised on other local and sustainable farms, reselling can help attract and retain customers. Collaborating with partner farms that are more efficient producers of supplementary products can also often help farmers capture a higher margin with resale items than comparable items grown on their own farm.

Other profitable enterprises among participating farms included nursery and ornamental plants; on-farm events and agritourism; and pastured livestock, including sheep, pigs, and poultry.

FIGURE 7A. VEGETABLE ENTERPRISE NET INCOME TO REVENUE RATIO RELATED TO CONCENTRATION IN VEGETABLE ENTERPRISE

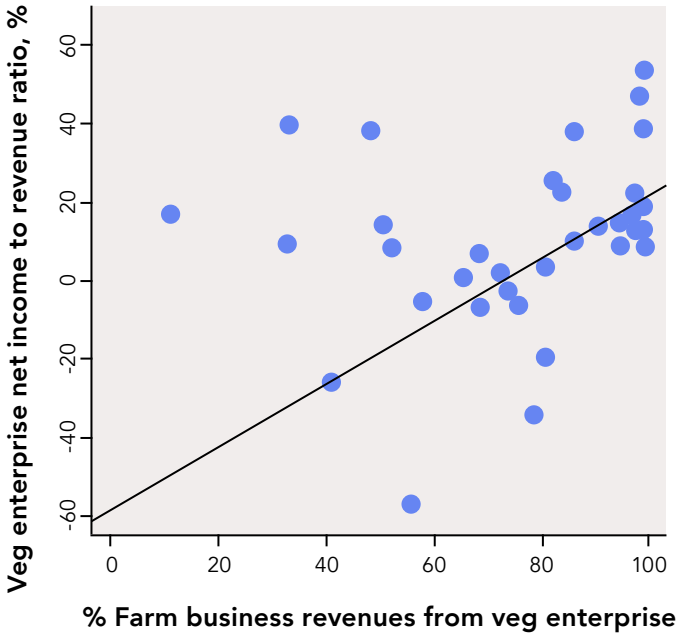
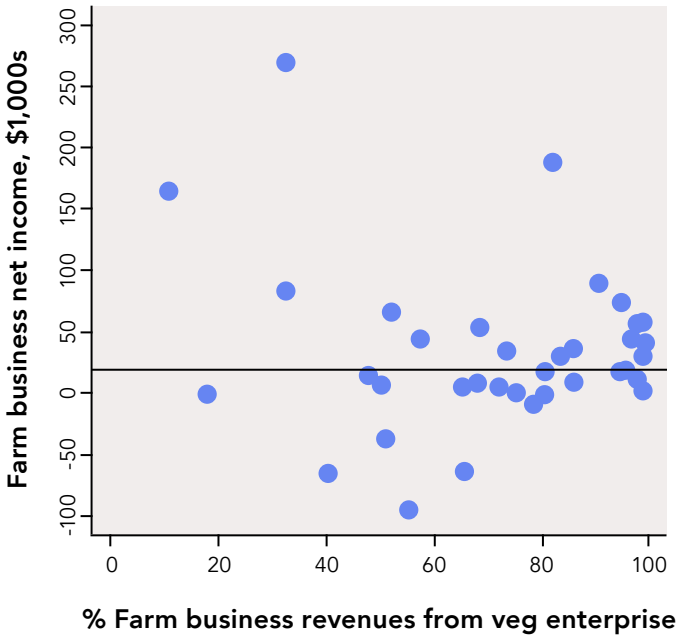


FIGURE 7B. FARM BUSINESS NET INCOME RELATED TO CONCENTRATION IN VEGETABLE ENTERPRISE



Data are the mean values for each farm, averaged for all years over 2017–19 for which we have data for that farm.

FARMS STEADILY INCREASED INCOME AND EQUITY OVER TIME

Farmers in our study possessed a wide range of vegetable production and business management experience. The newest participating farm started in 2017, while other businesses in our study had existed for more than 40 years.

For the farm business as a whole, there is a clear relationship between a farm's number of years in business and its **farm business net income** (Table 11). In Figure 8A we can see that although there is considerable variation, the trend line in solid black suggests that it can take approximately 10 years for a farm business to achieve a **farm business net income** equal to the 2017 Pennsylvania median household income of $56,951, represented by the dotted line.

We also found a clear pattern between the number of years a farm was in business and its farm business equity, which is a farm's total value of assets minus its debts, as shown in Figure 8B. Many farmers build considerable equity in their business as they continue farming—most farms that had been in business for 10 or more years had considerably more equity in their business than the median 2017 Pennsylvania household net worth of $105,594 (represented by the dotted line).

FIGURE 8A. FARM BUSINESS NET INCOME RELATED TO NUMBER OF YEARS IN BUSINESS

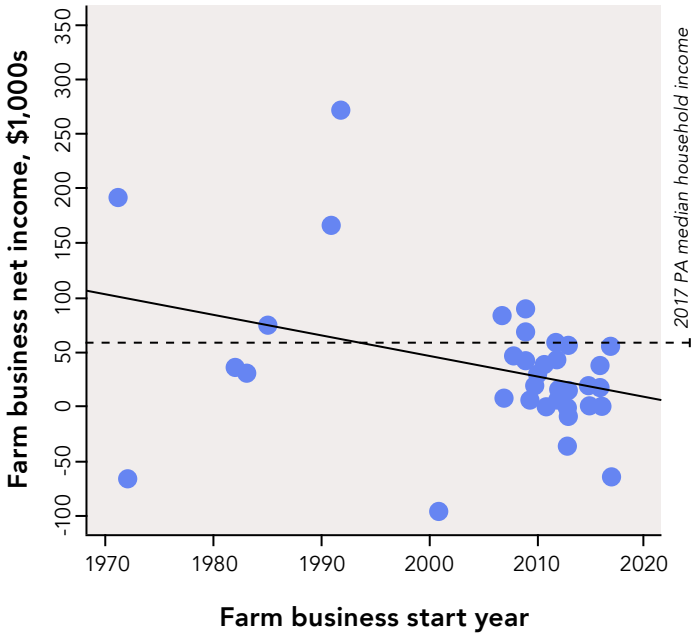
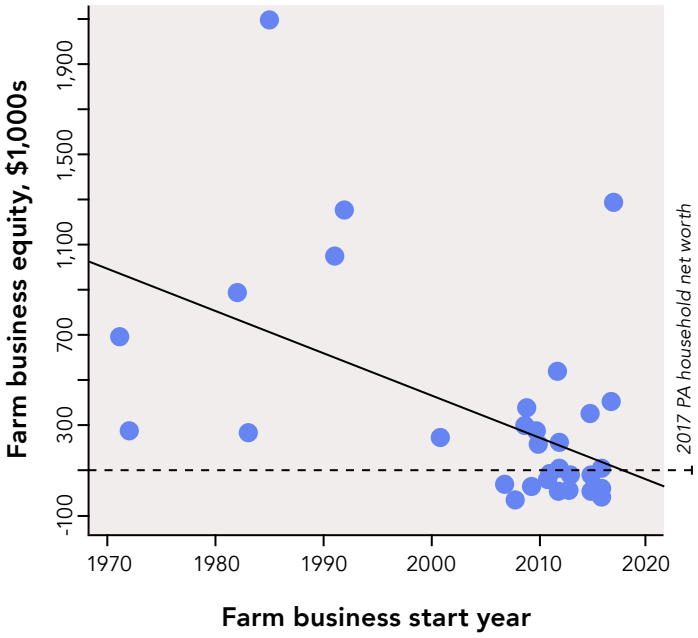


FIGURE 8B. FARM BUSINESS EQUITY RELATED TO NUMBER OF YEARS IN BUSINESS



Data are the mean values for each farm, averaged for all years over 2017–19 for which we have data for that farm.

Trends: 2017–19

A subset of 19 farms participated in our study over three years between 2017 and 2019. By monitoring these farms over multiple years, we're offered a unique look at how farm business outcomes might change over time.

In Figures 9A–C we show year-to-year trends for three key indicators: **gross vegetable enterprise revenue per acre** (Table 3), **vegetable enterprise income to revenue ratio** (Table 7), and **vegetable enterprise net income** (Table 4). These data suggest that most farms improved or maintained their finances over the three years they participated in our study.

FIGURE 9A. TRENDS IN GROSS VEGETABLE ENTERPRISE REVENUE PER ACRE, 2017–19

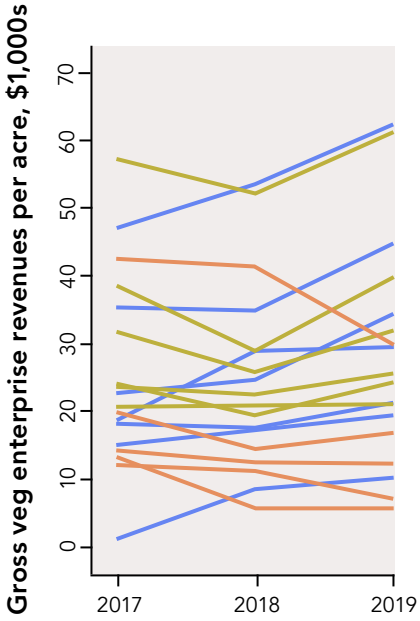


FIGURE 9B. VEGETABLE ENTERPRISE NET INCOME TO REVENUE RATIO, 2017–19

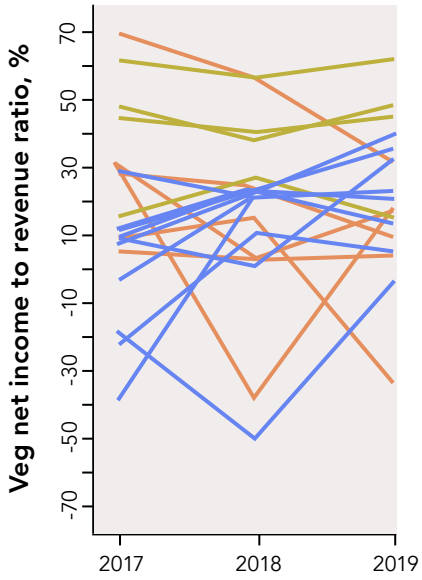
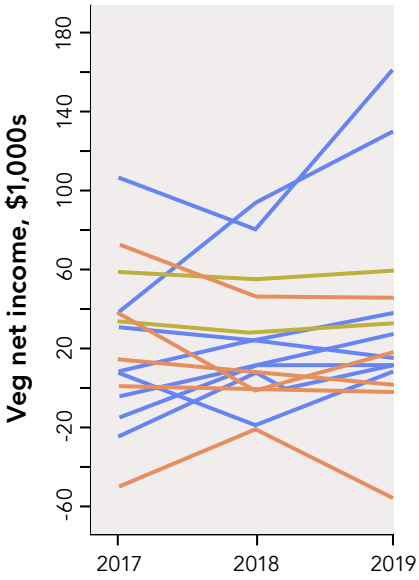


FIGURE 9C. VEGETABLE ENTERPRISE NET INCOME, 2017–2019



For each indicator, each line represents an individual farm.

Blue line: *Farm that showed a 10% or greater increase*
Orange line: *Farm that showed at least a 10% decrease*
Green line: *Farm with little change*

As shown in Figure 9A, seven of the 19 farms increased their **gross vegetable enterprise revenue per acre** by more than 10% over three years, while six roughly stayed the same.

Trends in **vegetable enterprise net income to revenue ratio**, as shown in Figure 9B, were more variable. Two farms showed very pronounced dips in 2018, but by 2019 one of these had achieved a net increase while the other recovered to a more modest loss. By 2019, nine had substantially increased their ratio, while six had decreases of 10% or more relative to 2017.

As shown in Figure 9C, 12 out of 19 farms increased their **vegetable enterprise net income** by more than 10% while two stayed roughly the same. One farm with more than 12 acres in vegetable production increased its net income by more than $92,000 over this period, achieved by simultaneously expanding its vegetable acres in production; improving its equipment and infrastructure; and fulfilling large wholesale contracts to intermediaries.

The 2018 season was exceptionally notable for the severe weather in the Mid-Atlantic region, especially during the late summer and fall months. Annual precipitation was 50% above average in much of the region, leading to many counties being declared federal disaster areas due to persistent floods. Many farmers in our study reported major drops in yields and even abandoned some fall crops.

Fortunately, despite these setbacks, our data suggest that these farms' business models were resilient against disastrous weather. Most farms maintained consistent net incomes in 2018, while some even improved their net incomes. Anecdotally, many farms reported that their CSA programs were critical to this resilience—prepaid spring CSA revenue allowed them to maintain cash flow despite lower yields. In 2019, most of their CSA customers returned to enjoy renewed availability and diversity of produce in their subscriptions.

“
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Three pathways to higher incomes

For all three years of the study combined (2017-2019), the median **net farm business income** (Table 11) for all participating farms was $18,549, which is well below the 2017 Pennsylvania median household income of $56,951. In terms of **return on farm owner labor** (Table 13), the median was only $11,684 per full-time equivalent. While wealth accumulated in assets over time adds a level of nuance (Figure 7B), most of the farmers in our study worked long hours for very little income.

These are sobering realities, but our study points to several strategies that farmers can pursue to improve their bottom lines. To demonstrate these strategies, we created a simple exercise that compares three different business models generating a **net vegetable enterprise income** (Table 11) of $56,951—the Pennsylvania median income. In each scenario, income is the product of production scale, the value of vegetables produced per acre, and the efficiency at which a farm can reduce costs and keep more of its revenue as income.

Vegetable enterprise net income = vegetable acres * gross vegetable enterprise revenue per acre * vegetable enterprise net income to revenue ratio

The baseline scenario in our exercise shows a farm with a vegetable enterprise net income currently at $34,486 and assumes 2019 median values for vegetable enterprise gross revenue per acre and the vegetable enterprise net income to revenue ratio, for a farm with 10 acres in vegetable production. Table 15 demonstrates three ways this farm might increase its income.

TABLE 15. SCENARIOS FOR ACHIEVING A NET INCOME GOAL ($56,951) FROM A VEGETABLE ENTERPRISE BY INCREASING SCALE, INTENSITY, OR EFFICIENCY

Scenario	SCALE *(acres in vegetable production)*	INTENSITY *(gross revenue per acre in vegetable production)*	EFFICIENCY *(vegetable net income to revenue ratio)*	Vegetable enterprise net income
Baseline	10	$27,589	12.5%	$34,486
1. Increase scale	16.5	$27,589	12.5%	$56,951
2. Increase intensity	10	$45,561	12.5%	$56,951
3. Increase efficiency	10	$27,859	20.4%	$56,951

INCREASE SCALE

In scenario 1, we set **net revenue per acre** and the **net income per revenue ratio** at the median study values of $27,589 and 12.5%, respectively. We find that the farm in this example would need to increase the number of acres in vegetable production from 10 to 16.5 to meet the net income target with this business model.

However, if increasing the number of acres in vegetable production isn't possible—say, due to a limited amount of land available—a farmer might consider the next two pathways toward higher income.

INCREASE INTENSITY

In scenario 2, our example farm focuses on increasing the amount of revenue it earns in vegetables per acre. Perhaps the farm adjusts its crop plan to focus on growing higher value crops with quicker rotations.

By increasing its **gross vegetable enterprise revenue per acre** from $27,589 to $45,561, our example farm can meet its income goal. In fact, in 2019, 13% of farms in our study realized a gross revenue per acre in vegetable production above $45,000, illustrating that this strategy can be feasible with the right mix of crops and market channels.

INCREASE EFFICIENCY

In scenario 3, our example farm works to increase its cost efficiency, perhaps by controlling spending associated with payroll, supplies, and fuel. The farm increases its **vegetable net income to revenue ratio** from 12.5% to 20.4%, thereby reaching its income goal. In fact, in 2019, 30% of farms in our study realized a ratio over 20%. Since payroll is typically among the biggest operating expenses, improving labor efficiency and employee management skills are among the most important aspects of this business strategy.

Public support for fair farm incomes

Of course, expanding scales, boosting revenue, and cutting costs are much easier said than done. Only approximately 25% of farms in our study were able to achieve net incomes at or above the median Pennsylvania household income ($56,951); most farms' net incomes were less than half of this. The farmers who did achieve higher incomes typically attributed their success to a mix of hard work and good fortune—such as access to lucrative markets or reliable farmland arrangements—that other farmers might not have.

All of the farmers participating in our study want to operate profitable, self-sustaining businesses. Yet the sobering financial benchmarks presented in this report are consistent with persistent structural challenges in the agricultural industry that negatively impact small- and medium-scale farms. Creating and expanding public programs will be necessary to help direct-market vegetable farmers continue their essential work providing fresh, nutritious food for their communities. These programs should focus on equitably increasing farmland access, improving market opportunities, encouraging workforce development, reducing financial risk, and rewarding conservation best practices such as building soil health, protecting wildlife, and improving water quality.

“Only approximately 25% of farms in our study were able to achieve net incomes at or above the median Pennsylvania household income ($56,951); most farms' net incomes were less than half of this.

Conclusion

This report shares a comprehensive and unique set of business benchmarks for an important, growing sector of the agricultural landscape: direct-market, diversified vegetable farms. Our data show that while some farms participating in our study have achieved a range of degrees of financial stability, most farms in this sector are earning incomes substantially below the household—and farm—medians for Pennsylvania.

Our data show that successful farms utilize a range of specific direct-market channels—farmers markets, CSAs, on-farm stores, and direct wholesale—and that no one channel clearly outperforms all others. We also found that income and equity steadily increase with farmer experience, suggesting that financial benchmarks may improve as farms in our cohort continue to evolve and mature.

Our study points to increasing production scale, revenue per acre, and labor and cost efficiency as key pathways to improving net incomes among direct-market vegetable farms. While entrepreneurial skill and grit are important, it is also the case that sustainable, direct-market farmers are providing valuable public services but retain little compensation from their efforts due to persistent structural barriers to achieving long-term financial viability in the agriculture industry. New and expanded public programs for equitably increasing farmland access, improving market opportunities, encouraging workforce development, reducing financial risk, and rewarding conservation best practices are needed for these farms to thrive.

The power of this study is that participating farms can more clearly see the range of financial possibilities for their businesses and connect with other farmers who are navigating similar challenges. Without these data, farmers are unable to know if their farms' finances are normal or atypical, and they are unable to gauge if plans for the future may be achievable or unreasonable. We hope this report offers farmers, farmer organizations, policymakers, and communities valuable insights that can be drawn from to improve financial outcomes for direct-market vegetable farms.

Moving forward, we will continue to collect direct-market financial benchmarks with our growing cohort of Mid-Atlantic vegetable farmers. We are also working with peer organizations in New England (Community Involved in Sustainable Agriculture) and the Carolinas (Carolina Farm Stewardship Association) to build new cohorts of direct-market vegetable farmers in other regions. We also plan to use our data to provide a detailed look at how the COVID-19 pandemic affected marketing, labor, and incomes on farms that have participated in our study over multiple years.

We always welcome direct-market vegetable farms to join our ongoing study. Participating farms receive custom financial benchmark reports and access to a learning community of their peers.

Learn more at **pasafarming.org/research** or contact us at **research@pasafarming.org** if you are interested in joining.

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