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Article

Direct Sales Approaches, Visitors, and Profitability of Agritourism Operations in the US

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Abstract

Agritourism operations enhance economic viability and sustain the business by opening farms to visitors for education, recreation, entertainment, and direct sales of farm products and services. Previous studies in the US show that on-farm direct sales, in general, show a positive association, whereas off-farm direct sales show a negative association with the profitability of agritourism operations. Farmers consider U-pick, sales through a farm stand/store, and subscription farming or community supported agriculture (CSA) (on-farm pick up) as on-farm, and CSA (off-farm delivery) and selling at a farmers' market as off-farm direct sales approaches. However, which specific approach attracts more visitors to a farm and generates higher profitability remains underexplored. Multivariate analysis using the recently collected data from a U.S. national survey of operators reveals that on-farm direct sales such as a U-pick and a farm stand/store attracted significantly more visits to an agritourism operation, which ultimately yielded higher profitability. In contrast, the selling of produce at farmers' markets attracted significantly fewer visits to the farm and reportedly reduced profitability. This evidence has implications to agritourism operators, policymakers, and Extension educators engaged in starting, expanding, and promoting direct sales at agritourism operations for their economic viability and sustainability.

Keywords: agritourism; on-farm direct sales; off-farm direct sales; profitability; visitors

1. Introduction

Agritourism, adding tourism to agriculture, has been an important source of diversifying incomes for many small and medium-sized U.S. farmers to remain competitive in farming (Bhandari et al., 2024; Bowen et al., 1991; Chase et al., 2018; Hollas et al., 2021; McGehee et al., 2007). Agritourism operators open their farms and invite visitors to offer various experiences and attractions such as products and services, education, active involvement on the farm, recreation and entertainment (Chase et al., 2018; Veeck et al., 2006). In exchange, these farmers benefit from directly selling their products and services to visitors (Hollas et al., 2021; Nickerson et al., 2001; Tew & Barbieri, 2012). Thus, an agritourism owner's/operator's goal is to increase income by attracting more visitors and selling products and services to them (Barbieri, 2009; Barbieri et al., 2008; Brandth & Haugen, 2007, 2011; Nickerson et al., 2001; Tew & Barbieri, 2012; Veeck et al., 2006).

Conceptually, the number of farm visits is one of the keys to securing higher income for agritourism operations ((Bhandari et al., 2024). Offering of various attractions at the farm increases visitors' flow as they enjoy the benefits of attractions. These attractions may range from direct sales of a farm's fresh and value-added produce to education, experiential experiences and classes, and enjoyment from festivals and entertainments presented at the farm. The increased flow of visitors will increase direct sales, resulting in higher profits without competing with the large farms in the open market. An operation also generates additional income from visitor fees, fees for educational classes, and experiential hands-on. Thus, any activity that attracts more visitors to the farm is expected to enhance farm revenue and, thus, profitability.

Direct sales, the selling of products and services directly to consumers, is the common marketing approach used mostly by small farmers (Schmidt et al., 2023). According to the 2022 U.S. Census of Agriculture, the trend of selling produce directly to consumers is growing over the years. The economic value of food sold directly to consumers was estimated at 3,263,074 thousand dollars in 2022 that increased from 2,805,310 thousand dollars reported in 2017. Similarly, the number of farms that sold food directly to consumers increased from 21,570 to 27,981 in 2022. This is the value of edible products that include value-added products sold directly to consumers at farmers' markets, on-farm stores or farm stands, roadside stands or stores, u-pick, CSA (Community Supported Agriculture), and online marketplaces (National Agricultural Statistics Services, 2022).

There are several approaches to direct sales. Some of the commonly used approaches are selling produce at the farm through U-pick (or also known as pick-your-own, PYO), farm stand or a farm store, adopting a community-supported agriculture (CSA) or subscription farming, online marketing, and selling at farmers' markets (Chase et al., 2018; Schmidt et al., 2023; Veeck et al., 2006). These techniques are commonly referred to as on-farm direct sales as the customers purchase various products and services directly from the seller at the farm. On the other hand, selling of produce at the farmers' market, through online marketing, and CSA, also known as off-farm direct sales, are designed to pick up deliveries off the farm. Thus, these varying types of direct sales approaches may have differing levels of visitor attractions to the farm and, therefore, will have differential links with profitability.

A previous study using the survey data from Maryland, however, did not reveal the direct significance of the number of visitors on the profitability among agritourism operators (Bhandari et al., 2024). However, the number of employees and the history of the operation increased the number of visitors. Moreover, the various attractions (direct sales approached) offered to the visitors, although were significantly associated with both the number of visitors and profitability, the significance was lost when other confounders were netted out, perhaps suggesting that the number of helping hands and the goodwill developed over time could have influenced the number of visits and thus, the profitability. However, this study was based using data from a small number of cases in one state of the U.S.

Another study using the national survey data of agritourism operators in the U.S., however, revealed that on-farm direct sales, in general, shows a positive and independent association with the profitability of an agritourism operation (Hollas et al., 2021). Contrastingly, farmers who sold their produce directly to customers off the farm, indeed, reported a loss. In the meantime, the number of visits also did not significantly contribute to profitability. It could be because this study utilized the raw number of visits to explain profitability with highly skewed distribution. Moreover, this study did not examine the role of on-farm or off-farm direct sales on the number of visits to a farm.

Farmers invite visitors to their farms and sell their products and services to customers through a variety of direct sales approaches such as U-pick, at a farm stand/store, subscription farming, or community supported agriculture (CSA), and at a farmers' market. However, which approach of direct sales welcomes more visitors and generates higher profitability remains underexplored. This paper answers: Does a specific approach of (on-farm or off-farm) direct sales invite significantly more or less visits to a farm, independent of other factors? The studies above did not examine this issue focusing on a specific on-farm or off-farm direct sales approach. In addition, the number of visits (and visitors) to an agritourism operation is crucial for making profits. Thus, next, we further examine whether the profitability reported by agritourism operators does vary by types of direct sales approaches used, and the number of farm visits mediates the relationship between (on-farm and/or off-farm) direct sales and profitability.

This study is important primarily because attracting visitors to promote direct sales is the goal of each agritourism operation to enhance their profitability by selling products and services to them. This way agritourism operations reduce the marketing costs associated with intermediaries and increase their marketing margins. This is the reason agritourism operations diversify their income sources. They make profits by directly selling their products such as wine, beer, fresh produce (e.g.,

strawberries, cherries, apples, blueberries, honey and other value-added products), by charging registration fees for events, classes and hands-on training, demonstrations, organizing entertainment events such as festivals), and more. More importantly, these operations add extra dollars to their pocket by not going through intermediaries or other supply chain channels. We further expand the evidence by further investigating which specific approach of on-farm direct sales, such as a u-pick and farm stand/store, or community-supported agriculture (CSA) pick-up, or off-the-farm direct sales such as through farmers' markets or community-supported agriculture (CSA) delivery, attracts more visitors to the farm and whether it results in higher profitability or not. This is the significant contribution of this study. Unlike the previous studies (Bhandari et al., 2024; Hollas et al., 2021), first, we investigate the influence of specific direct sales approaches on the number of visits, and then, on the profitability, while controlling for many other theoretically important confounders.

To investigate the issue, we used the national survey of agritourism operators' data (n=1263) from the U.S. The results revealed that, on average, a farm operation received slightly over 7,800 (5.95 logged) visits, with a skewed distribution ranging from a minimum of 1 to a maximum of 1,300,000 visits. Nearly one-quarter (24.6%) of the operations reported that they incurred no profit, or incurred a loss, and 12% of them reported a net profit of less than \$1,000. Nearly 28% of them reported a profit between \$1,000 and \$9,999, another 28% reported a net profit between \$10,000 and \$100,000, and the remaining 7.6% reported a net profit of \$100,000 or more.

Twenty-nine percent of the operations reported that they offered a u-pick to the visitors. Slightly over half (57%) of them reported they had a farm stand or a farm store. Only 13% of them revealed that they had an on-farm community-supported agriculture (CSA) - the members picked up their delivery from the farm. Twenty-nine percent of them reported the sale through a farmers' market, and nearly 10% reported that they delivered produce to members at various locations to their CSA subscribers.

Our findings from the multivariate analysis show that net of controls, a U-pick and a farm stand/farm store sale significantly and positively attracted more visits than those that did not use these approaches. On the other hand, those who sold their produce at the farmers' market significantly reduced the number of visits to the farm. However, those operators who sold their produce through community-supported agriculture (CSA) pick up at the farm or off-site delivery were not significantly associated with the number of visits. In addition, while the u-pick and farm store sales significantly increased profitability, these effects were lost when the number of visits was adjusted, suggesting the significance of the number of visits in profitability. These findings have implications for agritourism operators, policymakers, and Extension educators engaged in beginning, expanding, and promoting agritourism to enhance the economic viability and sustainability of farms.

1.1. Direct Sales Approaches

Selling of products and services directly to consumers also referred to as 'direct sales' is a common marketing approach used by agritourism operators (Schmidt et al., 2023). The producers or farmers invite visitors to the farm and sell products and services directly to them (Schmidt et al., 2023; Simona et al., 2022; Veeck et al., 2006). This approach offers one of the shortest paths to reach consumers and increases profit margins for the producers by bypassing intermediaries and receiving the full consumer dollar share by saving direct and indirect costs accrued to various marketing channels in the value chain. Producers or sellers have control over the sales process, distribution, and have flexibility in pricing, promotions, and product offerings. More importantly these sales approaches allow a direct interaction between a seller and a buyer.

Agritourism operators commonly organize a U-pick (pick-your-own, PYO) or sell products at a farm stand or a farm store, adopt a community-supported agriculture (CSA) or subscription farming, sell produce online, and at farmers' markets (Chase et al., 2018; Schmidt et al., 2023; Veeck et al., 2006). Farmers who produce fresh fruits and vegetables on their farms organize U-pick where customers or visitors harvest the type and quantity of produce of their interest by themselves. Producers offer

various options to pickers or visitors. For example, some of them provide various sizes of boxes or containers to the visitors with a fixed price and visitors pick as much as they want. In other cases, per unit price is fixed and pickers pay the price for the amount they have harvested. A U-pick has been a popular method of direct sales that invites visitors to their farms and allows visitors self-experience picking fresh products. While producers save labor costs, they may lose produce as pickers may eat (such as blueberries, strawberries) produce or damage crops by over-picking or picking immature produce as waste. In one of the agritourism traveling workshops organized by the UMES Extension, a host farmer stopped u-pick operation for fruits (apples and peaches) due to significant amount of damage and switched to producing value-added products and selling fresh produce (fruits, peaches) at farmers' markets, CSA, and pre-order online sales for pick up. The owner-operator reported that "Some people would pick too much and then dump them," and he was not keen on losing products (Stephens, 2024).

Other farmers sell produce at the farm stand or at a roadside stand, such as a table, stall, or tent nearby their farm. Other farmers sell at the farm store, where they keep commodities including their own produce. The opportunity to buy off-the-farm commodities invites more visitors and the sellers also benefit from selling products, including their own.

Another growing approach of direct sales is through subscription farming or community-supported agriculture (CSA). A CSA is a community of individuals or families who pledge support (subscribe) to a farm operation so that the farmland becomes the community's farm. Both the growers and consumers provide mutual support and share the risks and benefits of food production locally. Thus, CSAs are advantageous to both producers and consumers (Myers, 2010; Roos, 2025; Woods et al., 2017). While some subscriptions involve members coming to the farm to pick their subscription, other farmers deliver produce to a different location, and members pick up their produce from an off-farm location without visiting a subscribing farm.

Farmers' markets have been the most common platforms where farmers sell their produce such as fruits, vegetables, crafts, baked goods and more at a local marketplace. The marketplace provides space for several (two or more) vendors that sell produce directly to customers. Farmer sellers transport their commodities to the marketplace on the day the marketplace is open and sell their produce. Thus, visitors buying produce at the farmers' markets do not necessarily require visiting a farm. However, this is an important venue to promote farms and encourage visitors to come to their farms.

Farmers are increasingly using online portals to sell their produce to customers (O'Hara & Low, 2020). Farmers who are tech-friendly use methods such as Facebook, e-mail, and websites for business marketing and selling products. According to O'Hara and Low, the online marketplaces promote farms to directly compete with customers, making their products and services available to the customers on the internet, which reduces the costs for search and transportation as compared to in-person direct-to-consumer (DTC) transactions. While an online marketplace can be a strategy for income diversification, this will be less desirable for agritourism farms that have a goal to attract visitors to their farms. However, such marketplaces will be useful to customers who are distantly located.

Direct marketing techniques can be grouped as on-farm and off-the-farm direct sales. A u-pick, a farm stand/farm store, and CSA (on-farm pick-up) are grouped as on-farm direct sales. On the other hand, selling of produce at the farmers market, online marketing, and CSA, designed to pick up deliveries off-farm, are known as off-the-farm direct sales. These off-the-farm direct sales approaches do not encourage visitors to visit the farm but may influence them to visit farms in a later date. Thus, these varying types of direct sales approaches obviously have differing levels of visitor attractions. However, it is not clear whether they will have a differential link to profitability.

1.2. The Conceptual Framework

The number of visitors is a key to increasing income for an agritourism operation. Although the number of visits *per se* does not result in profitability, it is the number of visitors that purchase

products and services and help generate revenue for the farm. Various products for direct sales could be fresh produce, such as fruits, vegetables, flowers, and value-added products, such as honey, raw honey should not be a value-added product, processed meat, (wine, beer only if fermented and brewed in the farm). Similarly, an operation may generate extra income if it charges any fee for the visitors. Some operations offer educational classes or courses to visitors for a fee. Some agritourism operations with a farm stay benefit from hospitality services such as lodging and food. Additionally, those operations that organize festivals and entertainment events generate income by selling tickets to visitors.

Thus, it is theoretically expected that any activity that offers an on-the-farm direct sales approach will attract more visitors to a farm. An increased number of visitors will increase direct sales and thus increase profitability. Overall, it is hypothesized that the agritourism operations with the opportunity for on-the-farm direct sales, such as u-pick or sales through a farm stand/store, or selling produce through subscription of community supported agriculture (CSA) will (a) *attract more visitors to the farm*, and (b) *increase the profitability of a farm*. Conversely, those operations that sell off-the-farm products, such as at farmers' markets or CSAs, that deliver food to other locations off-the-farms obviously discourage the number of visits to the farm. However, whether there will be any influence on profitability is not known, because the aim of selling produce through CSA or at the farmers' markets is also to increase revenue.

Many other factors, such as the length of operation, rural or urban location, offerings of other services, such as a class, hands-on skills, and recreation through organizing festivals and entertainment events, the number of days of operation, and the season of operation, potentially influence the number of visits to the farm (Barbieri et al., 2008; Bhandari et al., 2024; Hollas et al., 2021). The number of visits would likely be affected by experience, reputation (goodwill), and the accumulation of greater assets for investment (Barbieri & Mshenga, 2008). Barbieri and her colleagues found that the length of operation significantly increased farm income, which is likely due to the increased number of visitors.

The number of staff available at the farm could be another factor, as human resources are important for managing and delivering products and services to visitors. The Agritourism and On-Farm Direct Sales Survey reported that labor shortage was among the top two challenges facing agritourism operations in the U.S. (Chase et al., 2021). Of the total respondents, 89% reported that labor was somewhat or very challenging. The Maryland Agritourism Operator's Survey also revealed a labor shortage as a farm management problem (Ejiogu et al., 2023). Barbieri & Mshenga (2008) and Bhandari et al. (2024) provide evidence that the number of employees on a farm significantly and positively influences an agritourism operation's performance. Thus, if a farm has enough staff to efficiently and effectively manage and deliver products and services on time, it is expected to attract more visitors. Distance to the farm from the more extensive population base, the source of visitors, is another important factor (Hollas et al., 2021). A convenient and nearby location for an agritourism operation for people will attract more visitors. With this, a farm located in rural areas may attract fewer visitors due to limited access to many visitors and amenities and a longer travel distance, unlike in urban areas.

2. Materials and Methods

2.1. Data

This paper used the National Agritourism and On-farm Direct Sales Survey data collected by a group of scholars from the University of Vermont, Oregon State University, the University of California, and West Virginia University in 2020 (Chase et al., 2021). This is a national survey of farms that were open to visitors for product sales and/or experiences. The survey was administered online, starting in November 2019 and ending in February 2020. A link to the survey was shared among farmers and ranchers through email, social media, and newsletters throughout the U.S.

The survey was responded to by 1834 operations from all 50 U.S. states. These operations reported that they invited visitors to their farms and or ranches for various reasons, such as to buy products from their farmstands or for u-pick, community-supported agriculture (CSA), tours, overnight stays, events, hunting, and to have any other experiences at the operation. For more details, refer to (Chase et al., 2021; Hollas et al., 2021).

In this study, of the total 1834 cases interviewed, excluding 571 cases with missing values, the remaining 1263 cases with valid responses were included in the analysis.

2.2. Measures

2.2.1. Outcome Measures

There are two outcomes: (a) the number of visits, and (b) net income from agritourism, a measure of profitability. The first measure is the number of visits to the farm. It was measured by asking, “Approximately how many visits (paid and unpaid) took place on your farm/ranch in 2018? Count the number of visits, not visitors, so that one person who visited 10 times in 2018 would be 10. A tour bus of 50 people would be 50 visits.” Respondents provided an estimated number of visits. As the range of the number of visitors greatly varied (with a minimum of 1 to a maximum of 1,300,000) and had a highly skewed distribution, this outcome variable was transformed using natural log to normalize the data.

The second outcome, the self-reported net profitability, was measured by asking: How much profit (net income) do you estimate your agritourism enterprise(s) generated in 2018? Several options were provided. The response was measured on an ordinal scale (in categories). Because the frequency distribution for a few categories was small, we collapsed those categories as provided in Table 1.

Table 1. Descriptive statistics of variables used in the analysis (n=1263).

Variables	Mean/%	SD
<i>Dependent variables</i>		
Number of visits (min 1, max=1,300,000)	7,840.0	46,237.65
Number of visits logged (natural) (min 0, max=14.08)	5.96	2.52
Profitability of an operation (ordinal scale, min 1, max 8)	4.03	2.44
Profitability levels (percent)		
1. No profit or the operations incurred a loss	24.5	
2. Less than \$1,000	12.0	
3. \$1,000-\$2,499	10.1	
4. \$2,500-\$4,999	7.7	
5. \$5,000-\$9,999	10.0	
6. \$10,000-\$24,999	13.9	
7. \$25,000-\$99,999	14.3	
8. \$100,000 or more	7.6	
<i>Explanatory variables</i>		
On-farm direct sales		
U-pick (yes=1)	29.1	
Farm stand/farm store (yes=1)	56.8	
Community-supported agriculture (CSA) (yes=1)	12.7	
Off-farm direct sales		
Farmer’s market (yes=1)	28.9	

CSA pick up or delivery (yes=1)	9.8	
<i>Controls</i>		
Length of operation (years) (min=0, max=93)	13.42	13.55
Experience types		
Accommodation and lodging (yes=1)	21.3	
Education (yes=1)	58.6	
Entertainment events (yes=1)	50.4	
Outdoor recreation (yes=1)	28.3	
Total number of days per year open to visitors (min 1, max=365)	181.32	132.40
% of visits who traveled 50 miles or more one way (min=0, max=100)	35.30	30.72
Location from a city of at least 50,000 people (miles)		
Less than 10 miles	20.9	-
10-29 miles	27.1	-
30-49 miles	21.2	
50 miles or more	30.2	
Geographic region of the operation		
Northeast (yes=1)	22.6	-
Midwest (yes=1)	21.9	
Southern (yes=1)	29.5	
Western (yes=1)	26.0	-

Source: National Agritourism Survey, 2019.

2.2.2. Explanatory Measures

The survey first asked if the farm/ranch offered the types of experiences to the visitors in 2018. There were 6 categories of experiences offered: (1) On-farm direct sales, (2) Accommodations and lodging, (3) Education, (4) Entertainment/events, (5) Outdoor recreation, and (6) Off-farm direct sales. If a farm/ranch provided experiences other than the six indicated above, they were asked to list as Other. In this study, we included cases that reported either on-farm direct sales/or off-farm direct sales.

If a farm/ranch reported on-farm direct sales offered in 2018, they were further asked if they offered (a) U-pick, (b) Farm stand/farm store, (c) community supported agriculture (CSA) on-farm pickup, and/or (d) other. Similarly, if they offered Off-farm direct sales, they were asked if they provided (a) farmers’ markets, and (b) community supported agriculture (CSA) pick up or delivery, and or others. The responses were recorded as offering the experience (coded 1) and did not offer the experience (coded 0).

2.2.3. Controls

Several factors may influence the number of visits to a farm and its profitability. Thus, the following potentially confounding factors were controlled in the analysis, and their measurement is discussed below.

Experience types such as Accommodations and lodging, Education, Entertainment/events, and Outdoor recreation, other than those that offered direct sales (On-farm and/or Off-farm), also influence the number of visits to and profitability of an agritourism farm/ranch. Whether an agritourism operation offers these experiences - Accommodations and lodging, Education,

Entertainment/events, and Outdoor recreation - was controlled. The responses were recorded as offering the experience (coded 1) and did not offer the experience (coded 0).

The length of operation is measured by asking, "What year did you begin offering agritourism, including on-farm direct sales? The response was recorded as the year of offering agritourism, including on-farm direct sales. Since the data was collected in 2019, the year was subtracted from 2019 to get the number of years of operation. The next factor controlled is the total number of days per year the farm/ranch is open to visitors measured by asking, "About how many days per year is your farm/ranch operation open to visitors?" In addition, we also used whether the farm/ranch operated all year (all four seasons, coded 1) or for only part of the season (coded 0).

The percentage of visitors who travelled 50 miles or more was another variable controlled. This item was measured by asking, "Approximately what percentage of these visits were from people who traveled 50 miles or more (one-way) from their homes?" The responses are in percentages. A farm's distance from a city of at least 50,000 people (miles) is one of the common measures influencing the number of visits and profitability. This item was measured by asking, "How far is your farm/ranch from a city of at least 50,000 people?" The responses were recorded as (i) located in a city with a population of 50,000 or more; (ii) Less than 5 miles (a reference category), (iii) 5=9 miles, (iv) 10-29 miles, (v) 30-49 miles, (vi) 50 miles or more. Considering the distribution of responses, the following groups were created (i) less than 10 miles, (ii) 10-29 miles, (iii) 30-49 miles, and (iv) 50 miles or more. The next variable is the geographic region of the operation measured as located in the (a) Northeast, (b) Midwest, (c) Southern, or (d) Western. The Northeast cluster was used as the reference category.

3. Analysis

Descriptive statistics of the measures from 1263 agritourism operations used in this study were calculated. We provided frequencies, percentages, means, and standard deviations where appropriate. Finally, as the dependent variables of interest were scale variables, we used the multiple linear regression (ordinary least square) technique to examine the associations between the outcomes and the variables of interest. The equation is as follows:

Predicted Y' =β0+β1X1+...+βnXn+ ε

Where, Y ' = predicted value of the dependent variables (the number of visits (logged), and the profitability levels); β0=intercept; β1+ ... + βn =regression coefficients (beta coefficients); X1+....+Xn independent (or explanatory) variables; ε = error term.

We estimated three regression models to explain the number of visits by types of on-farm and off-farm direct sales (Table 3). Model 1 provides the unstandardized regression coefficients from the ordinary least square technique to examine the associations between direct sales and the number of visits without adjusting for any other confounders. In model 2, we estimate these relationships controlling for other firmographic and geographic characteristics such as the length of operation, total number of days per year open to visitors, an operation's location from a city of at least 50,000 people, and the geographic region of the operation. In model 3, in addition to model 2, we further control the effects of other experience types such as accommodation and lodging, education, entertainment events, and outdoor recreation that are equally important in attracting visitors to an agritourism operation.

To examine whether profitability is independently explained by the types of on-farm and off-farm direct sales, we estimated four regression models (Table 4). As in Table 3, Model 1 provides the unstandardized regression coefficients from the ordinary least squares technique to examine the associations between direct sales and profitability without adjusting for any other controls. Similarly, in model 2, we estimated these relationships netting out the effects of other firmographic and geographic characteristics such as the length of operation, the total number of days per year open to visitors, an operation's location from a city of at least 50,000 people, and the geographic region of the operation. In model 3, in addition to model 2, we further adjusted the effects of other experience types

such as accommodation and lodging, education, entertainment events, and outdoor recreation that are equally important in attracting visitors and, hence, the profitability of an agritourism operation.

Theoretically, we expected that the number of visits to an agritourism operation is the proximate determinant of profitability. Thus, we adjusted for the effects of the number of visits to examine whether the relationships between the on-farm and off-farm direct sales remain. This analysis helps us understand the mediating role of the number of visits in terms of the profitability of an operation.

For a categorical (or a dichotomy) explanatory variable, if the regression coefficient is positive, this will be interpreted as the outcome variable of interest (here the number of visits and the profitability) increased or is higher by the unit of the regression (β) coefficient as compared to the reference category (that is coded 0), net of other factors. Similarly, if the regression coefficient is negative, this implies that the outcome measure of interest (here, the number of visits and the profitability) decreased or is lower by the unit of the regression (β) coefficient as compared to the reference category (that is coded 0), net of other factors. For a continuous explanatory variable, a positive coefficient indicates that other things remain the same, a one-unit increase in the variable of interest increases the number of visits or the profitability by a given unit (β coefficient). Conversely, for a negative coefficient, a one-unit increase in the explanatory variable of interest decreased the outcome measure of interest (here, the number of visits and the profitability) by a given number (β coefficient).

4. Results and Discussion

As described earlier, in this study, we examined whether the specific types of on-farm and off-farm direct sales independently influence the number of visits, and ultimately the profitability of an agritourism operation in the U.S. First, we provide the descriptive statistics of various measures – outcomes, predictors, and other controls used in the analysis.

Table 1 provides the results from a descriptive analysis. The results reveal that the average number of visits to a farm operation, the first outcome variable, is slightly over 7,800 (5.95 logged), with a highly skewed distribution ranging from a minimum of 1 to a maximum of 1,300,000 visits. The second outcome variable is *the self-reported profitability of an agritourism operation*. Of the total, nearly one-quarter (24.6%) of operations reported that they incurred no profit, or the operation incurred a loss. On the other hand, 12% of them reported a net profit of less than \$1,000. Nearly 28% of them reported a profit between \$1,000 and \$9,999, another 28% reported a net profit of \$10,000 to below \$100,000, and the remaining 7.6% reported a net profit of \$100,000 or more.

Table 1 also provides the distribution of specific approaches of on-the-farm and off-the-farm direct sales to examine their influence on the number of visits to and the profitability of an operation. Among on-the-farm direct sales, of the total, 29 percent of the operations reported that they had a pick-your-own (u-pick) operation offered to the visitors. Similarly, slightly over half (57%) of them reported that they had a farm stand or a farm store. On the other hand, only 13 percent of them revealed that they had community-supported agriculture (CSA) where the members picked up their delivery from the farm (on-the-farm CSA pick up).

The sale of produce at the farmers’ market and the delivery of produce to the members of community-supported agriculture (CSA) were the two off-the-farm methods of direct sales assessed. Of the total, 29 percent reported selling through a farmers’ market, and nearly 10 percent reported that they deliver produce to their members at various agreed-upon locations (off-the-farm pick up).

The average length of operation was slightly over 13 years. While nearly 3 percent of the operations had just started agritourism operations in the survey year (2019), slightly over one percent (1.3%) had started about 50 years ago. While nearly three-fifths of operations (58.6%) provided educational activities, such as tours, classes, hands-on practices, and so on, slightly over half of them (5.4%) offered entertainment events such as festivals, concerts, and more. Twenty-eight percent of them provided outdoor recreation activities, and slightly over one-in-five operations provided accommodation and lodging. Nearly 18 percent of them offered only one activity (no diversification, mostly those offering on-farm direct sale), slightly over one-quarter (25.3%) offered a combination of

2 experiences, nearly 27 percent of them offered a combination of 3 activities, and nearly 30 percent of them provided 4 or more activities (diversified operation) to the visitors (results not shown).

On average, an operation was open to visitors for about 181 days (6 months), with a minimum of 1 to a maximum of 365 days (year-round). Slightly over one-third (35.3%) of visitors traveled to the operation from 50 miles or more. Slightly over one-fifth (20.0%) of operations reported that they were located within 10 miles of a city with a population of 50,000 or more. On the other hand, slightly over 30 percent of them were located within 50 miles or more of a city with a population of 50,000 or more. About 23 percent of them were in the Northeast region, whereas nearly 30 percent of them were in the Southern region. The results show that about an equal proportion of the operations were distributed in all four different regions.

4.1. Direct Sales and the Number of Visits

Our first research question is: *Does a specific approach of on-farm or off-farm direct sales influence the number of visits to an agritourism operation differently?* Results from Table 2 (panel i) reveal the average number of visits to operations that offer various on-farm and off-farm direct sales. For example, on average, an operation with on-farm direct sales, in total, received 9,097 visits (logged 6.148) in a year. As expected, those farms that sold their produce directly to customers off the farm reported fewer visits to their farm (7,564).

Specifically, those that offered u-pick received the most – 15,798 (logged 6.735) visits, followed by 13,499 (logged 5.746) visits at community-supported agriculture (CSA, on-farm pick up) and 11,309 (logged 6.353) visits at the farm that had a stand/store.

On the other hand, an operation with a farmer’s market, on average, received 7,564 (logged 5.792) as compared to 13,290 (logged 5.370) visits at CSA (pick up or delivery). Note that the normalized (logged) numbers are slightly different than the raw numbers due to a highly skewed distribution, making the use of logged numbers more sensible.

Table 2. Number of visits by direct sales approaches.

Direct sale	Average number (std. dev.)	Average number (logged) (std. dev.)
On-farm (total, n=1,015)	9,097 (51,124)	6.148 (2.511)
U-pick (n=368)	15,798 (76,950)	6.735 (2.681)
Farm stand/store (n=717)	11,309 (59,911)	6.353 (2.537)
CSA on-farm pick-up (n=160)	13,499 (106,761)	5.746 (2.514)
Off-farm (total, n=572)	7,564 (59,868)	5.792 (2.485)
Farmers’ market (n=365)	7,570 (71,150)	5.674 (2.444)
CSA pick-up or delivery (n=124)	13,290 (117,425)	5.370 (2.291)

Source: National Agritourism Survey 2019.

Note that these numbers are just an indication of the trend of visitors and are not mutually exclusive. A farm may have used one or more types of direct sales methods to sell its products to visitors. For instance, a farm that has a pick-your-own operation may also sell produce at the farm stand/store or at a farmers’ market or through subscription to a community-supported agriculture (CSA).

Results from Table 3 reveal the relationships between the types of on-farm and off-farm direct sales and the number of visits to an agritourism operation. The results from three nested equations (models) are designed to present the effects. As described earlier, Model 1 provides the relationship between the types of direct sales and the number of farm visits without adjusting for the effects of other controls. In Model 2, we adjust for the effects of a series of controls. As explained in the

theoretical reviews, these controls are expected to confound the relationship between the types of direct sales and the number of farm visits. Finally, in Model 3, these relationships are further adjusted, controlling for the effects of other agritourism experiences that are equally important in attracting visitors to an operation. Now, let’s discuss the results.

4.1.1. U-Pick and the Number of Visits

As shown by the results, an operation with a U-pick received a significantly greater number of visits (0.935 logged number) (unstandardized $\beta=0.935$, $p<0.001$) as compared to those that did not offer a U-pick, net of other types of direct sales. Additionally, when we adjusted for the effects of other confounders such as the length of operation, total number of days open to visitors, farm’s location from a city of at least 50,000 people, and the geographic location of a farm, the direction and the strength of the association remained except a slight decrease in its magnitude (unstandardized $\beta=0.877$, $p<0.001$, model 2). Furthermore, we controlled other agritourism activities such as accommodation and lodging, education, entertainment, and outdoor recreation that potentially influence the relationship between the number of visits and the types of direct sales. Even after adjusting for the effects of other agritourism activities, direct selling of produce through U-pick still attracted significantly more visits to the operation than those without it (unstandardized $\beta=0.808$, $p<0.001$, model 3). These results provide us with confidence in our results.

Table 3. Unstandardized regression coefficients from the ordinary least squares technique to examine the associations between direct sales and the number of visits net of controls (n=1263).

Variables	Model 1	Model 2	Model 3
<i>Independent Variables</i>			
On-farm direct sales			
U-pick (yes=1)	0.935***	0.877***	0.808***
Farm stand/farm store (yes=1)	0.946***	0.821***	0.688***
CSA on-farm pick-up (yes=1)	-0.045	-0.003	-0.059
Off-farm direct sales			
Farmer’s market (yes=1)	-0.639***	-0.493**	-0.451**
CSA delivery (yes=1)	-0.461+	-0.488+	-0.418
<i>Controls</i>			
Length of operation (years) (mean) (min=0, max=93)	-	0.027***	0.027***
Total number of days per year open to visitors (mean)	-	0.002***	0.002***
Farm’s location from a city of at least 50,000 people	-		
(Ref=less			
than 10 miles)			
10-29 miles	-	-0.154	-0.133
30-49 miles	-	-0.593**	-0.517**
50 miles or more	-	-0.622***	-0.448*
Geographic region of the operation (Ref=Northeast)	-		
Midwest (yes=1)	-	-0.091	-0.183
Southern (yes=1)	-	0.045	-0.028
Western (yes=1)	-	0.338+	0.283
<i>Experience types</i>			
Accommodation and lodging (yes=1)	-	-	-0.462**

Education (yes=1)	-	-	-0.145
Entertainment events (yes=1)	-	-	1.165***
Outdoor recreation (yes=1)	-	-	0.135
Intercept	5.385***	4.938***	4.559***
Regression sum of square	636.52	1052.380	1490.538
Residual sum of the square	7398.12	6982.256	6544.099
Residual degrees of freedom	1257	1249	1245
ANOVA F-ratio	21.630***	14.481***	16.681***
Adjusted R-square (%)	7.6	12.2	17.4

+p<.10, * p<.05, ** p<.01, ***p<.001.

4.1.2. Direct Sale at a Farm Stand/Farm Store and the Number of Visits

Our results also revealed that an agritourism operation that sells produce directly to customers in a farm stand/store also attracted significantly more visits to their farm than those without a farm stand/store (unstandardized $\beta=0.946$, $p<0.001$, model 1) as compared to those that did not have a farm stand/store. These results hold true even after adjusting for other controls (in models 2 and 3).

4.1.3. Community-Supported Agriculture and the Number of Visits

Some farms offer CSA subscriptions to customers to maintain a regular supply of produce. Some other farms sell CSA memberships to some customers while offering many other attractions. In addition, some CSA members pick up produce from the farm, whereas others want it delivered off-site.

In both cases, the evidence suggests that an operation with a CSA on-farm pick-up, off-site pick-up, or delivery reduced the number of visits to the farm. However, the results are statistically not significant, implying no difference from those who did not have this offer. This is true in all three models assessed (Table 3). The size of the relationships is also as expected – an operation with off-site delivery of CSA products receives fewer visits to the farm compared to on-site delivery or pick up, although both are statistically not significant.

4.1.4. Direct Sales (off-farm) at the Farmers’ Market and the Number of Visits

The evidence from Table 3 clearly shows that if an operation sells produce at a farmers’ market, the operation receives a significantly lower number of visits to the farm than those that do not sell there. The evidence is that the number of visits to the operation is reduced by 0.639 units (logged) (unstandardized $\beta=-0.639$, $p<0.001$, model 1) if an operation sells at a farmer’s market. This result continues to hold true even after adjusting for the effects of several other variables in the equation (in models 2 and 3). This result is plausible because off-the-farm sales do not necessarily attract visitors to a farm.

Now, let us examine the theoretical validity of relationships. As theoretically expected, the length of operation (number of years of establishment of the operation) statistically significantly increased the number of visits to an operation. Similarly, the number of days the operation was open had a positive impact on the number of visits. On the other hand, if the farm is located further from a city of at least 50,000 population, it significantly reduces the number of visits to the operation. However, these results did not significantly vary by geographic regions. More interestingly, the direction and the magnitude of the relationships remained with a marginal decline even after adjusting for the effects of other experience types (model 3). These results provide us with great confidence in the reliability of the instrument and the validity of our results.

4.1.5. Direct Sales, Number of Visits, and Profitability

A previous study provided evidence that operations that directly sold their produce at the farm reported significantly higher profitability. In contrast, operations that sold their produce off-farm (i.e., at the farmers’ market and/or CSA delivery) reported significantly lower profitability (Hollas et al., 2021). However, it is not clear what specific approach of on-farm or off-farm direct sales generates more profits than others and why. Motivated by this research, this paper dove deeper and examined the next research questions: (ii) *Does a specific approach of on-farm or off-farm direct sales independently influence the profitability of an agritourism operation?* And (iii) *Does the number of farm visits mediate the relationship between on-farm and/or off-farm direct sales and the profitability of an agritourism operation?*

Table 4 (panel i) provides the losses or profits experienced by operations by types of direct sales. The results show that slightly larger proportions of those who offered off-farm direct sales reported either no profit or incurred a loss (24.1%) compared to 22.1% of those who offered on-farm direct sales. In particular, fewer proportions of those who had a u-pick (20.9%) and a farm stand/store (21.8%) reported either no profit or incurred a loss, as compared to 28.1% of those who offered community-supported agriculture (CSA) on-farm pick-up. On the other hand, a similar proportion of those who sold their produce at the farmers’ market (22.7%) and CSA pick-up or delivery (23.4%) did not make a profit.

We also examined whether the number of visits differed by the amount of profitability reported by farms (Table 4, panel ii). The trend of the relationship (based on logged value) suggests a positive correlation between the two – farms reporting the higher level of profitability with the greater number of visits. In general, the trend of distributions shows an association between the types of direct sales, the number of visits, and the profitability of an agritourism operation.

Table 4. Direct sales, profitability, and the number of visits.

i. Profitability by types of direct sales approaches		
Direct sale	Yes, profit (%)	No profit or incurred a loss (%)
On-farm (total, n=1015)	77.9	22.1
U-pick (n=368)	79.1	20.9
Farm stand/store (n=717)	78.2	21.8
CSA (on-farm pick-up, n=160)	71.9	28.1
Off-farm (total, n=572)	75.9	24.1
Farmers’ market (n=365)	76.3	22.7
CSA pick up or delivery (n=124)	76.6	23.4
ii. Number of visits and profitability status		
Profitability levels	Average number (std. dev.)	Average number (logged) (std. dev.)
1. No profit or incurred a loss (n=310)	2,970 (15,761)	5.446 (2.305)
2. Less than \$1,000 (n=151)	866 (3,412)	4.549 (2.003)
3. \$1,000-\$2,499 (n=128)	803 (2,852)	5.094 (1.879)
4. \$2,500-\$4,999 (n=97)	1,335 (2,770)	5.660 (1.923)
5. \$5,000-\$9,999 (n=126)	3,431 (8,933)	6.449 (2.088)
6. \$10,000-\$24,999 (n=175)	3,084 (6,252)	6.299 (2.308)
7. \$25,000-\$99,999 (n=180)	11,466 (34,474)	7.055 (2.633)
8. \$100,000 or more (n=96)	58,148 (149,081)	7.969 (3.452)

Source: National Agritourism Survey 2019.

Now, let us focus on the results of the multivariate analysis to determine whether the profitability of an agritourism operation significantly differs by specific method of on-farm or off-farm direct sales. Results from Table 5 (model 1) reveal that an agritourism operation with a u-pick and or a farm stand/store statistically significantly increases the chance of reporting profits. These results are consistent and remain statistically significant after controlling for all other theoretically important confounders (model 2) and various experience types (model 3). However, we find a slight decline in the magnitude and the strength of relationships when we control other factors.

It is interesting to note that the direct selling of products to customers through a farmers’ market, CSA on-farm pick up, and CSA off-farm pick up, or delivery were statistically significantly not associated with the profitability of an operation. Surprisingly, although statistically not significant, the direction of the relationship between the profitability and selling of produce at the farmers’ market and CSA delivery of produce on-farm were negative and the CSA off-farm delivery was positively associated with profitability.

Table 5. Unstandardized regression coefficients from the ordinary least square technique to examine the associations between direct sales and profitability, net of controls (n=1263).

Variables	Model 1	Model 2	Model 3	Model 4
<i>Independent Variables</i>				
On-farm direct sales				
U-pick (yes=1)	0.586***	0.426**	0.409**	0.212
Farm stand/farm store (yes=1)	0.558***	0.441**	0.385**	0.216
CSA on-farm pick-up (yes=1)	-0.362	-0.156	-0.185	-0.170
Off-farm direct sales				
Farmer’s market (yes=1)	-0.295+	-0.125	-0.107	0.004
CSA pick up or delivery (yes=1)	0.121	0.169	0.212	0.314
<i>Controls</i>				
Length of operation (years) (mean) (min=0, max=93)	-	0.047***	0.047***	0.041***
Total number of days per year open to visitors (mean)	-	0.001*	0.001*	0.001
Percent of visitors who traveled 50 or more miles (min=0, max=100)	-	0.009***	0.009***	0.009***
Farm’s location from a city of at least 50,000 people (Ref=less than 10 miles)	-			
10-29 miles	-	-0.165	-0.167	-0.135
30-49 miles	-	-0.369+	-0.349+	-0.224
50 miles or more	-	-0.461*	-0.396*	-0.289
Geographic region of the operation (Ref=Northeast)	-			
Midwest (yes=1)	-	-0.078	-0.118	-0.074
Southern (yes=1)	-	0.296	0.273	0.278
Western (yes=1)	-	0.053	0.018	-0.052
<i>Experience types</i>				
Accommodation and lodging (yes=1)	-	-	-0.080	0.030

Education (yes=1)	-	-	-0.132	-0.097
Entertainment events (yes=1)	-	-	0.545***	0.260+
Outdoor recreation (yes=1)	-	-	-0.130	-0.163
Number of visits (logged)	-	-	-	0.245***
Intercept	3.664***	2.702***	2.592***	1.474***
Regression sum of square	223.11	900.118	985.603	1377.899
Residual sum of the square	7279.63	6602.616	6517.131	6124.835
Residual degrees of freedom	1257	1248	1244	1243
ANOVA F-ratio	7.705***	12.153***	10.452***	14.718***
Adjusted R-square (%)	2.6	11.0	11.9	17.1

+p<.10, * p<.05, ** p<.01, ***p<.001 Source: National Agritourism Survey, 2019.

Now, let us empirically investigate the next research question: whether the number of farm visits is a proximate determinant of profitability. A previous study by Hollas and colleagues (Hollas et al., 2021) showed that the number of visits did not have a statistically significant association with profitability. These scholars suggested that this could be possibly because “... many farms remain open longer and receive more visitors, without charging each visitor for their experience” (p. 9). However, as theoretically expected, our results using the same data that used a direct sales approach clearly reveal that the number of visits statistically and significantly increased (unstandardized $\beta=0.245$, $p<0.001$; model 4, Table 5), the profitability of an agritourism operation, net of all other controls. In addition, the model’s explanatory power increased from 11.9% (model 3) to 17.1%, revealing this variable’s significance. Perhaps this result is true for those who sold their produce using direct sales approaches. Conversely, the magnitude of the relationship for all the direct sales approaches was reduced, and the relationship turned out to be statistically insignificant, suggesting that the number of visits is the direct determinant of profitability.

In summary, the various types of direct sales approaches differentially attracted the number of visits to the farm. For example, the u-pick and a farm stand/farm store attracted significantly more visits to an operation, ultimately and significantly increasing the likelihood of profitability. However, the other three approaches of on-farm and off-farm direct sales did not contribute significantly to the number of visits as well as profitability. Perhaps, as indicated by other scholars, these marketing approaches, CSA and farmers’ market sales, were used by agritourism operations as a marketing tool for the farm’s products and services, and thus, the revenues or profits from agritourism were indirectly influenced (Hollas et al., 2021; Tew & Barbieri, 2012). Interestingly, this is further worth investigating even though many agritourism operations use farmers’ markets as an important outlet to sell their farm-fresh produce, and more of them are increasingly attracted towards ‘subscription farming’ or community-supported agriculture to diversify incomes.

Several of the theoretically important variables, such as the length of operation (number of years of establishment), the number of days the operation was open, and the percentage of visits from 50 or more miles, significantly and positively contributed to profitability. On the other hand, as expected, if a farm’s location is farther away from a city of 50,000 or more people, the profitability of operations decreases. These results are consistent with the findings from previous studies (Barbieri et al., 2008; Bhandari et al., 2024; Hollas et al., 2021) providing us confidence in our findings.

5. Conclusions and Implications

Previous research using this same survey data provided evidence that on-farm direct sales increased the profitability of an agritourism operation, whereas the off-farm direct sales were significantly but negatively associated with the profitability (Hollas et al., 2021). These authors, however, did not examine the relationships between specific direct sales approaches and profitability. Expanding the findings from Hollas and colleagues, in this paper, we examined whether a specific

type of direct sale increases or decreases the number of visits to a farm and whether these direct sales approaches increase or decrease the profitability differentially. Moreover, we first examined the significance.

Our findings provide empirical evidence that (a) the number of visits to an agritourism operation depends on the types of direct sales approach adopted, (b) the types of direct sales at first glance significantly influence the profitability of an agritourism operation, and (c) however, the profitability generated by a farm is directly influenced by the number of visits. In conclusion, as theoretically expected, we knew that not all the methods of direct sales invite significantly more visitors to a farm. For instance, a u-pick and a farm stand/store significantly increased the number of farm visits, (b) selling of produce through a farmers' market significantly reduced the number of farm visits to the farm, and (c) community-supported agriculture (on-farm pick-up or off-site delivery) neither directly influenced the number of visits to a farm nor profitability. These results have both theoretical as well as practical implications.

Theoretically, we specifically examined the relationships between various methods of direct sales, the number of visits, and profitability. The common belief is that any method of direct sales would increase the profitability of an operation. However, this relationship was not examined for different approaches to direct sales specifically. This paper contributes to the existing literature with differential evidence on the relationships between the types of direct sales, number of visits, and profitability. Secondly, this paper also provided evidence of the independent effect of the number of visits on profitability. Contrastingly, the previous research had found that the number of visits was not significantly associated with the profitability (Hollas et al., 2021). However, our results clearly indicated that the effect of direct sales and the other experience types indeed worked through the number of visits that resulted in profitability. Therefore, increasing the number of visits to the farm and encouraging direct sales of a farm's products and services is quite important for generating profitable incomes and for sustaining their businesses for the long-term economic viability.

These findings are relevant to those agritourism operators who are planning to establish or expand their operations to invite more visitors to their farms and generate revenue from it. More importantly, to those who are planning to sell their produce through community-supported agriculture or at the farmers' market, this finding will be very helpful. However, more investigation is necessary about the significance of CSAs and farmers' markets. In addition, adding entertainment opportunities would significantly increase the number of visits as well as profitability. From a policy perspective, it is important for the government to find supporting mechanisms for small and medium farmers to encourage inviting visitors to their farms through on-farm direct sales approaches. Extension agents in the field will find these findings that attract to promote to generate more income for their economic sustainability.

6. Limitations and Future Considerations

Despite the significant evidence, consider the findings carefully for several reasons. First, we used crude measures of the number of visits and profitability from the agritourism operations. Because these numbers do not directly come from a farm's record but are self-perceived reporting by an operator. However, we believe these are the best reports measured thus far by any agritourism survey. In addition, results from longitudinal (panel) data could generate more conclusive results than those based on cross-sectional data used here. Even though this is the most recent and highly rich data collected from a variety of agritourism operations spread over all 50 states of the United States. Future studies considering these limitations and augmented by mixed method approaches (enriched by qualitative methods) and using the longitudinal (panel data) could generate conclusive evidence

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