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# Stimulating agritourism loyalty in the Mid-Atlantic states of the USA

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**ABSTRACT**

Agritourism as a niche tourism market has become an alternative income-generating sector for conventional farmers that focus on both production and marketing. Agritourist activities involve joining production and harvest, receiving education and on site-training. However, unless individuals endeavor and they consistently demand these activities, agritourism cannot be promoted among farm operators. In other words, agritourism is a demand-driven sector and requires the loyalty of participants which was measured with respect to more than a single take up of agritourism in the past two years. With this research, the loyalty of agritourists and the factors affecting their persistent participation were estimated based on a sample from the Mid-Atlantic states of the USA. The findings infer that agritourism loyalty is stimulated by the rising level of agritourist education and increasing income. Married people with children also prefer rural participation. Agritourists, who have the potential to become loyal, focus above all on buying fresh and high-value products. Following this, they demonstrate a rising tendency to learn about agricultural production, and to spend quality time with family/friends. These results suggest that with proper marketing strategies, supportive actions designed for farmers that seek alternative income, and the involvement of regional/local authorities in decision making and promotional processes, may contribute to the development of agritourism and expand its market through assuring customer loyalty.

**KEYWORDS**

agritourism, demand, loyalty, discrete choice, probability, COVID-19

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## 1. Introduction

Agritourism, an increasingly popular niche within the tourism sector, combines elements of agriculture and tourism to create experiences that foster a deeper connection between visitors and rural life. Over the past few decades, agritourism has evolved into a crucial economic strategy for farmers, offering them additional revenue streams beyond traditional agricultural practices via utilization of available resources. In the

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post-productivism era, multifunctional use of farmland and the countryside, and provision of services as well as products, has become a new economic segment of agriculture (Flanigan et al., 2015). Agritourism was considered as demonstration of economic power earlier, especially in Europe, and modern or proto-agritourism was initiated by the socialization esteem of aristocrats in Europe (Lamie et al., 2021). Farms have been considered as social gathering places all over the world and gained social characteristics.

Definition and promotion of new tourism service packages that provide accommodation and various activities on farms and other enterprises began in the early 1990s. This development of services appeared to be a financial extension strategy for large agricultural actors. At the same time, agritourism was presented and promoted to small enterprises as part of a financial survival strategy (Evans & Ilbery, 1992). Even if agritourism has numerous definitions, in most cases it is acknowledged as rural tourism attached to farm operations, with involvement in activities and at some level including on-site training. Accommodation in farmhouses or on non-working farms is a part of rural or countryside tourism (Lamie et al., 2021). Therefore, agritourism is also a method of farm income diversification that enables management of the rising costs of production and supplies, and the preservation of agricultural and rural holdings (Lucha et al., 2016; Tew & Barbieri, 2012). Recent research on Polish 81 agritourism farm owners indicated that these farmers decided to extend their activity scope to enrich their income via providing leisure and accommodation on their farms confirming the financial view of tourist services supporting agricultural production (Roman et al., 2020).

Looking from a broader perspective, agritourism has been gaining in importance for the survival of small farms and the sustainability of production. When the recent data was checked, it was understood that the global agritourism market had a size of $69.24 billion by 2019 and is expected to rise to $197.37 billion by 2032 due to the statistical projections (Fortune Business Insights, 2024). The major destinations will still be found in Europe and Northern America. In the data framework, it was observed that the market in the USA was below $200 million in 2002, which more than tripled to $950 million as recorded by an agriculture census (Whitt et al., 2019). Yet, it is important to keep in mind that alternative tourism service development is more of a demand-driven approach and the socio-economic indicators of development of this alternative service niche are especially worth investigating. Accordingly, it was intended with this article to understand those demand inducing factors in the Mid-Atlantic region of the USA.

The Mid-Atlantic region holds great economic importance and is characterized by the core values of the USA, including diversity, resilience and innovation. It encompasses Pennsylvania, Maryland, Delaware, New Jersey, New York, and parts of Virginia and West Virginia. The region boasts dominance in various industries and services.

Despite its industrial and service sector-oriented development and production capabilities, rising income potential will be promising for population shifts from metropolitan to less-populated rural areas. This shift should be planned and promoted for the region, which has a very low rural population. According to the 2020 census results, the rural population share for the most prominent states of the region can be indicated as follows (United States Census Bureau, 2020): the lowest rate was observed in New Jersey with 6%, while it was around 14–15% in Delaware, Maryland and New York. The highest shares, on the other hand, were observed in Pennsylvania and Virginia with 26%. In addition, following a decade of decline, the non-metropolitan rural population in the USA has been rising since 2020 as noted by USDA (Davis et al., 2023). In other words, increasing income generation potential in the rural districts of the region can also contribute to this population shift from urban to rural and increasingly tourism practices can be attached to these objectives.

Considering the extension of services, the tourist significance of the region is noteworthy. In addition to conventional tourist activities, alternative forms of tourism have been on the agenda of economic policymakers, with agritourism as a viable alternative. The Mid-Atlantic region features multi-purpose farms, and agritourism empowers these farms to diversify their revenue streams beyond the traditional agricultural practices which alone may not be sufficient for economic viability. The importance of agritourism here has been underscored by the need to diversify farm income in the face of rising costs and the changing dynamics of agricultural markets. It not only provides financial benefits to farmers but also plays a vital role in preserving the agricultural landscape and heritage of the region. It also offers a platform for educating the public about agricultural practices, promoting local products and fostering a sense of community between urban and rural populations. In this context, understanding the factors that influence agritourism loyalty – defined as the likelihood of visitors to repeatedly engage in agritourism activities – is essential for the sustained success of agritourism operations.

Here loyalty was considered arbitrarily as being a frequent agritourist and relying on the concept of 'destination loyalty'. Destination loyalty occurs following satisfactory experiences and if the individual continues to visit similar sites and/or do similar activities (Oppermann, 2000). Besides, promotion of

agritourism among agricultural operators is also related to a projection of continuous demand, which is again related to loyalty (Andjelic & Ilic, 2022). With agritourism loyalty, participation in similar or different activities or specific venues was not taken as a reference point. In other words, individuals engaging in activities of production/ harvest/ training/ accommodation frequently were considered loyal disregarding their attendance on the same farm or enterprise. Accordingly, it was intended to differentiate between an agritourism trial and continuity of demand in the scope of probability theory.

Through agritourism, farmers and local businesses have capitalized on an additional source of income, contributing to the economic vitality of rural communities. Tourist engagement in activities such as pick-your-own or cut-your-own produce, farm tours, farm stays and agricultural festivals, seasonal events, farm museums and on-site teaching of farming practices generates revenue for farmers (Bhandari et al., 2024). These environmentally-oriented activities have the potential to revitalize local economies through spending on lodging, dining, and other goods and services.

Therefore, the region has a potential for agritourism supply. This potential can be discussed and converted into sustainable policies via analysis of the demand for and reasons affecting frequent participation in agritourism activities. Prior to analysis and evaluation of agritourism demand, previous research on agritourism strategy development has been overviewed briefly for the world and for the region.

## 2. Literature review

Despite the growing importance of agritourism, challenges remain in understanding and harnessing its full potential. One of the key challenges is identifying the factors that drive repeated visits, crucial for developing effective marketing strategies and ensuring the long-term sustainability of agritourism businesses. Studies have indicated that factors such as visitor demographics, motivation and the quality of the agritourism experience all play a role in determining visitor loyalty (Tew & Barbieri, 2012). For instance, visitors who seek educational experiences or who have strong connections to rural life are more likely to become frequent visitors (Flanigan et al., 2015).

The increasing importance of agritourism for the Mid-Atlantic region can be emphasized by examining agritourism endeavors in different parts of the world. Much previous research has focused on the value-added potential of agricultural activities, which can be realized through the inclusion of services such as tourism.

Recent studies have shown that agritourism has the potential to significantly impact the economic sustainability of rural communities by attracting a diverse range of visitors, including families, educational groups and eco-tourists. Findings from a survey in Wielkopolskie Voivodeship, Poland, where agritourism substantially contributes to household income, inferred information on the relationship between services provided and agritourism income (Jęczmyk et al., 2015). Food services play a crucial role in the success of activities and there is a strong correlation between agritourism income and revenue from providing meals to visitors. Data analysis from the Canadian Travel Activities and Motivation Survey showed that agritourists share similarities with other groups participating in rural tourism activities in terms of socio-demographic characteristics (Ainley & Smale, 2010).

Another paper explored the growth of agritourism in the rural communities of the USA and proposed a model addressing the needs of farm families, destination marketing organizations (DMOs) and agritourists (McGehee, 2007). Through effective communication and the application of Weber's rationality principles (United States Census Bureau, 2024), the model aims to foster mutually beneficial relationships, offering decision-support tools for enhancing economic sustainability and community well-being in agritourism. Pevetz (1991) discussed the unique geographical and functional connections between tourism and agriculture in Austria, highlighting its rarity elsewhere. The article emphasizes the exceptional nature of this interrelation, particularly in Central Europe, and underscores the benefits both sectors derive from each other, including more revenue streams for farmers through direct and indirect involvement in tourism activities. Neate (1987) examined the evolution of farm-based tourism in the Scilly Isles, UK, emphasizing its socio-economic and environmental significance highlighting how the unique historical development of land agreements and farming practices there led to a small-scale farm structure uniquely reliant on tourism. This structure is related to operational aspects of farming conducive to diversification without compromising primary agricultural activities, resulting in a transformed rural economy while maintaining traditional family-run holdings. Frater (1983) explored the intersection of growing tourism demand and farmers' recognition of financial opportunities, prompting research on their involvement in the tourism industry in Britain and Europe. It aims to offer factual insights into the participation of farmers in farm tourism and the preferences of visitors using such accommodation, defining farm tourism as supplementary enterprises on working farms.

Previously quoted research by Bhandari et al. (2024) noted that the profitability of agritourism operations in Maryland is closely associated with factors such as the quality of visitor experience, the diversity of activities offered, and the ability to market these experiences effectively. Similarly, Whitt et al. (2019) suggested that the growth of agritourism in the US has been driven by an increasing demand for authentic and educational experiences that allow visitors to engage directly with farming activities.

The COVID-19 pandemic further highlighted the resilience of agritourism as a sector. As traditional tourism activities declined due to travel restrictions, agritourism provided an alternative that met the public's growing desire for outdoor, socially distanced activities. Callahan (2023) notes that it played a crucial role in helping farmers in California mitigate the economic impacts of the pandemic by attracting local visitors who were unable to travel internationally. This trend was mirrored in the Mid-Atlantic region, where agritourism operations saw a surge in demand as people sought safe and meaningful leisure activities closer to home.

At this moment, situating and promoting agritourism as an alternative can be achieved through analysis and management of the demand. In the light of these considerations, this study aims to explore the factors that stimulate agritourism loyalty in the Mid-Atlantic region of the USA. By analyzing the socio-demographic characteristics and motivations of agritourism visitors, the study seeks to provide insights that can help agritourism operators and policymakers enhance the appeal of destinations, thereby contributing to the economic vitality of rural communities in the region.

## 3. Materials and methodology

### 3.1. Materials

An online survey was conducted with residents of the Mid-Atlantic states in 2020 under the coordination of Rutgers, the State University of New Jersey, to assess individual views on agronomic topics including agritourism demand. The probability of frequently taking part in agritourism activities – more than once in the past 24 months – was estimated, with 428 participants showing their interest on agritourism through previous involvement. The analysis and inference relied on agritourism loyalty, as all individuals in the survey declared previous participation and frequency was taken as a reference point for loyalty. Agritourism, as pre-defined, was used to indicate frequent visits to agritourism venues relying on the 'destination loyalty' concept. Among these 428 individuals, 64 (15%) had participated in these activities once, while 364 people were classified as loyal agritourists, having participated in at least two activities in the past two years, representing 85% of the respondents.

In addition, the correlation between food, agricultural purchases and agritourism preferences was assessed based on whether the person bought agricultural and food products during the activity and how much the person normally spent on fresh fruit and vegetables per month. The impact of COVID-19 was also measured, concerning changes in the frequency of participation due to the pandemic, as the data collection period coincided with its onset.

### 3.2. Methodology

The aim was to estimate the probability that being a loyal agritourist develops the idea of stimulating and promoting agritourism among agricultural producers and farm operators. In estimating the existence of a situation in discrete or scaled form that does not have a normal distribution, different probabilistic methodologies such as logistic, probabilistic and tobit regression were used. Binary outcomes are estimated in general terms, while the dependent variable converges to a normal distribution as it ranges within limits. The difference between logit and probit is related to the distribution function. When the estimates are expected to have a normal distribution, probit might be more appropriate, however, with non-balanced binary dependent variables, inference on logit estimates appear to be more convenient. The probability of being a loyal tourist or participating in agritourism activities more frequently in the scope of this research was estimated using binary logistic regression in the Python statistical package. Logistic regression analysis entails estimating the likelihood of occurrence of an event versus non-occurrence. In this research, instead of focusing on nonoccurrence, randomness was considered in relation to loyalty. The basic model is presented below:

$$\text{logit}[Pr(Y=1|X;D)] = \ln\left[\frac{Pr(Y=1|X;D)}{1-Pr(Y=1|X;D)}\right] = \\ = \sum \beta_i x_i + \sum \alpha_i D_i + \alpha_0$$

where: $Y$ – binary dependent variable 1: being a loyal agritourist, with more than once participation in the past 24 months, 0: otherwise meaning participation of one time. Among explanatories $x_i$ represents quantitative – continuous variables explaining the probability of being a loyal agritourist and coefficients ($\beta_i$) represent the quantitative degree of the effects. Finally, $D_i$ represents dichotomous or polychotomous variables (demographics) explaining the probability of being a loyal agritourist and their coefficients ($\alpha_i$) were estimated in this scope; $\alpha_0$ denotes the constant (intercept) in the model.

The quantitative – continuous variables ($x_i$) used as explanatories were household size, number of household members below 17 years old, age and annual income level. In addition, payment on fresh fruit and vegetables (FFVs) per month ($) was considered as a potential continuous determinant.

The dichotomous or polychotomous variables ($D_i$) were categorical socio demographic factors such as gender, marital status, education and employment status. The origin of the respondent as being white American, African American, or other (Hispanic/Indian American/Hawaiian/Asian) was evaluated as well in correlation to the other factors. Residency was another social comparison aspect. Individuals were categorized as being from New York, New Jersey, Pennsylvania, Maryland, North Carolina and Virginia. Tourism season preference of the correspondent was also classified as spring, summer, autumn or winter. Individual specific decisions were also considered as potential effective categorical factors. As the respondents were already aware of agritourism, their source of information and their situation regarding product purchases during tourism participation were investigated categorically. In addition, the main motivation for agritourism participation was also categorized, aiming to differentiate between the objectives of being an agritourist only once or frequently. Therefore, the following objectives or motivations of being an agritourist were evaluated as separate binary variables.

1. To purchase fresh FFVs.
2. To purchase value added products.
3. To support local farmers.
4. To enjoy rural scenery/nature.
5. To spend time with family/friends.
6. To learn local food production.
7. To learn where products are grown.
8. It is close and convenient to visit.
9. To receive farm experience.

## 4. Results

### 4.1. Socio-demographics

The 428 participants surveyed exhibit diversity in terms of their major socio-demographic characteristics. Firstly, the number of individuals classified as loyal agritourists, meaning they participated in activities more than once, was 364 (85%), while 64 (15%) participated only once. Thus, the survey participants were experienced in agritourism. The main socio-economic features of the sample are demonstrated in Table 1 and individuals were from six states in the Mid-Atlantic region: New York (113), Pennsylvania (77), North Carolina (66), New Jersey (60), Virginia (60) and Maryland (42).

Table 1. Socio-economic attributes of the individuals ($n$ = 428)

| Socio-economic profile | | Number of observations |
|---|---|---|
| State | New York | 113 |
| | Pennsylvania | 77 |
| | North Carolina | 66 |
| | New Jersey | 61 |
| | Virginia | 60 |
| | Maryland | 42 |
| Gender | Male | 165 |
| | Female | 263 |
| Origin | White American | 334 |
| | African American | 59 |
| | Other | 35 |
| Education | No schooling | 6 |
| | High school | 80 |
| | College | 120 |
| | Bachelor of Arts (BA) / Bachelor of Science (BSc) | 114 |
| | Master of Science or higher (MSc+) | 108 |

Source: authors.

Most of the sample comprised females, 263 participants (61%), while 165 (39%) were male. The average age of the respondents was between 33 and 40, signing a middle-aged sample. There was a visible dominance in terms of origin, with 334 participants, accounting for 78% of the sample, being white Americans. The average level of education among participants was significant, which may be related to awareness. The lowest education level was secondary, with 80 high school graduates, followed by 120 college and technical school graduates (28%), 114 bachelor's degree holders (27%), and 108 with a master's degree or higher (25%). Therefore, 52% held at least a tertiary level degree.

The average household size was three, but with 51 families consisting of at least five members. The presence of young household members is one of the specific factors considered to affect agritourism loyalty. However, in 201 families (47%), there were no young members below 17 years old, and 94 households declared having just one. The income level of the sample was scaled to from below $20,000 to above $200,000 and demonstrated in Figure 1.

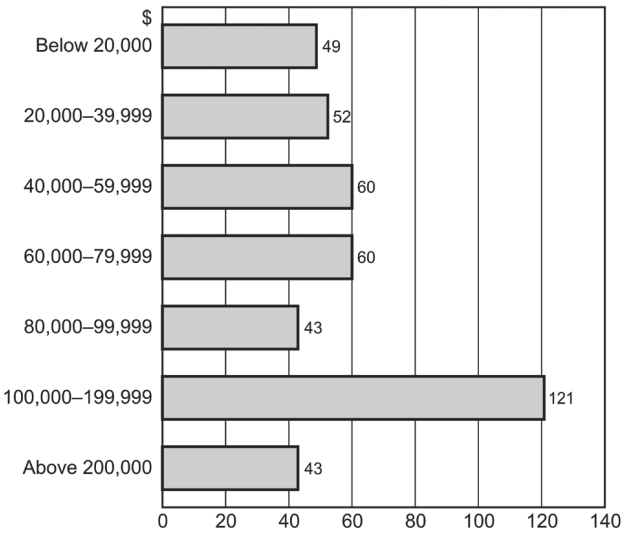



Figure 1. Income distribution of the sample ($n$ = 428)
Source: authors

It was seen in the figure that 28% of the sample declared an income ranging between $100 to $200,000 per year while the income of 53% fell between $60,000 and $200,000. The average monthly expenditure typically made by these individuals on food products was $360, with an average annual income ranging between $60,000 and $79,000. Thus, the respondents had reached a medium level of income.

Following this summary, the subsequent section mostly focuses on measuring the impacts of these diversified factors.

### 4.2. Probability of reaching agritourism loyalty

Initially, responses collected from 428 individuals were analyzed against all 43 indicators listed earlier. The accuracy of estimation of the full model was 84% based on the $F_1$ statistic, and the pseudo-$R^2$ was 51%. The

Table 2. Factors affecting the probability of being loyal agritourists – full model

| Factor | Estimate | Factor | Estimate |
|---|---|---|---|
| Season – spring | 0.38* | Married | 0.07 |
| Season – summer | –0.24 | Other | –0.19 |
| Season – autumn | 0.76** | Single | 0.07 |
| Season – winter | –0.15 | Education – high school | 1.48* |
| Learning center | 1.15*** | Education – college | 1.75* |
| Fresh fruits and vegetables (FFVs) purchase during activity | 0.54** | Education – Bachelor of Arts (BA) | 1.11 |
| Food payment | 0.15 | Education – Master of Arts+ (MA+) | 1.96** |
| To purchase fresh FFVs | –0.13 | Full time employed | 0.10 |
| To purchase value added products | 0.59* | Self-employed | 0.01 |
| To support local farmers | 0.05 | Student | 0.38 |
| To enjoy rural scenery/nature | –0.13 | Retired | 0.31 |
| To spend time with family/friends | –0.08 | White American | 0.85** |
| To learn local food production | –0.31 | African American | 3.01*** |
| To learn where products are grown | 0.28 | Other origin | –1.28** |
| It is close and convenient to visit | 0.45* | Annual income | 0.06* |
| To receive farm experience | –0.39 | Age | –0.94** |
| WTP for farmlands | 0.22 | State – New York | 0.78 |
| Change – COVID-19 | 0.35* | State – New Jersey | 0.37 |
| HH | –0.31* | State – Pennsylvania | 0.19 |
| HH17 | 0.47* | State – Maryland | 0.05 |
| Gender (male = 0, female = 1) | 0.11* | State – North Carolina | 0.67 |
| | | State – Virginia | 0.49 |

Note: significance levels: *0.10, **0.05, ***0.01.
Source: authors.

likelihood of the fit of the estimates was –68.08, with a probability value below 5%. Before evaluating the success of the full model, parameter estimates were demonstrated in Table 2 and assessed.

First of all, the base for evaluation of the effective factors was gender of the participant. Accordingly, gender have no effect on the odds and estimated probability for males. Yet, the probability rises for female participants due to initial findings. The seasonal preference for participation in agritourism in spring and autumn leads to a higher probability of visiting venues than in summer or winter. Highly educated individuals tend to participate more in agricultural activities during their vacation times. This demographic inference may include having young household members below 17, in contrast to having more household members. In other words, large families have lower tendencies, while families with younger members are more inclined to enjoy these activities. Similarly, individuals willing to pay for forest and farmland preservation are more sensitive towards nature and are more likely to visit agritourism districts. Rising income also appeared as another appreciating indicator in conformity with expectations. The difference in seasonal preference can be attributed to the nature of activities, as people tend to be more active in the environment when the weather is temperate, as in spring and autumn. This preference is confirmed earlier in New Jersey, where the fall season is mostly preferred for such involvement (Infante-Casella et al., 2021). The seasonal preference for spring and autumn was also validated for New York, according to research conducted by extension specialists (Roth & Ochterski, 2016).

However, this full model was tested for variation caused by its explanatory variables. The variance inflation factors for education were considerably higher than the baseline of 10 and it can be noted that education at all levels has an appreciating effect on agritourism loyalty. An African American origin also seemed to be a variance inflation factor with some recent studies indicating that African American farm owners tend to open their farms for tourism, mostly in cooperation with tourist service providers (Carter & Alexander, 2020). Therefore, their tendency to take part in activities, both as service providers and beneficiaries, can be higher. Residency in some states of the region also appeared to increase the variation. Participants from New York and Pennsylvania, which also host the highest number of households, were removed from the explanatory variables. However, it is worth noting again that residing in New York state had a positive effect on demand, while it was negative for Pennsylvania. Marital status had multilayered involvement in explanatory variables, and due to multicollinearity detection, these variables were reduced to one with the variable comparing married participants against others being kept in the model. Therefore, an alternative model was also estimated with the reduction of these variables.

With reduced variables, the fit statistics changed. Goodness of fit with pseudo-$R^2$ was reduced to 48%. However, the likelihood ratio inferred significance of the findings at –72.01, and the accuracy score was 84%. These fit statistics showing information on the accuracy of the estimated models are summarized in Table 3.

Table 3. Fit statistics of models

| Model | Pseudo-$R^2$ | Likelihood ratio | Accuracy ($F_1$) |
|---|---|---|---|
| Full | 51% | –68.08 (ϱ = 0.05) | 84% |
| Reduced | 48% | –72.01 (ϱ = 0.05) | 84% |

Source: authors.

The outcomes of the reduced were interpreted with reference to odds ratios and marginal effects. While odds ratios refer to the direction of the impact, marginal effects signal the magnitude of change in percentages.

Subsequently, the relevant statistics for the probability impact of 30 demographic and situational variables were demonstrated in Table 4.

Table 4. Factors affecting the probability of Mid-Atlantic residents' agritourism loyalty: odds ratios and marginal effects of the reduced model

| Indicator | Odds ratio | Marginal effect | Indicator | Odds ratio | Marginal effect |
|---|---|---|---|---|---|
| Annual income | 1.01 | <0.0001 | High school | 1.31* | 0.064 |
| Gender (male = 0, female = 1) | 1.09* | 0.007 | College/ technical school | 1.38 | 0.077 |
| Marital status – married – others | 1.21 | 0.015 | Bachelors of Arts (BA) | 0.91* | 0.045 |
| No of households including those below 17 years old | 1.49*** | 0.029 | Master of Arts+ (MA+) | 1.75*** | 0.092 |
| Household size | 0.89* | –0.013 | To purchase fresh FFVs | 1.04 | <0.0001 |
| Age | 0.52 | –0.051 | To purchase value added products | 1.63*** | 0.039 |

Table 4 (cont.)

| Indicator | Odds ratio | Marginal effect | Indicator | Odds ratio | Marginal effect |
|---|---|---|---|---|---|
| Origin white American | 1.44* | 0.036 | To learn where the products are grown | 1.27 | 0.019 |
| Origin African American | 3.86 | 0.149 | It is close and convenient to go | 1.36 | 0.022 |
| Origin other | 0.55** | –0.065 | To learn local food production | 0.80 | –0.017 |
| New Jersey | 1.04 | 0.006 | To receive farm experience | 0.66 | –0.026 |
| North Carolina | 1.31 | 0.021 | Agri and food purchases | 1.69** | 0.038 |
| Virginia | 1.21 | 0.011 | Dollars spent on FFVs | 1.01*** | 0.009 |
| Retired | 1.16** | 0.011 | Willingness to pay for farmland | 1.24 | 0.013 |
| Seasonal preference – spring | 1.16 | 0.009 | Where s/he learned about agritourism | 2.41** | 0.059 |
| Seasonal preference – autumn | 1.72 | 0.039 | Change due to COVID-19 | 1.22 | 0.019 |

Note: significance levels of parameter estimates reflected odds ratios: *0.10, **0.05, ***0.01.
Source: authors.

The positive impact of education being considered as a common factor, the employment situation was checked to study the socio-economic situation of the participants. The analysis found that the probability of being a frequent participant is lower for non-registered workers, however, the probability rises for married people with young household members. Referring to the initial question of the research, it can be said that these mostly white-collar individuals use rural tourism opportunities more often. After removing the African American respondents because of unusual data variation, results concluded that being white American is a positive factor for preference towards agritourism, while the effects were negative for other groups. The low-income average of Hispanic households can be cosidered as a reason for this negative effect, as recorded by central authorities. According to the United States Census Bureau (2024) the share of Hispanic families who are below the poverty line was 14.8% in 2020 and rose to 15.2% in 2022. A Senate report prepared by the Joint Economic Committee (Maloney, 2019) indicated that the average median income of Hispanic households was $20,000 lower than that of White Americans for whom it was $51,450.

Another factor that leads to a rising probability for an individual's agritourism participation appeared as the intention to purchase more value-added products nearby where it is convenient and to learn where local products are grown. We found that people who would prefer to buy FFVs in agricultural districts and who have a desire to learn farming practices are less likely to be loyal or else they can enjoy these activities but do not become consistent participants. People who find agritourism destinations convenient, have a 2.2% higher probability of becoming loyal participants.

With age, the likelihood declines by 5.1% for the concerned sample of 428 and this can be expected for agritourism due to its activity scope. While enlarged families are 1.3% less likely, families that involve young members are 2.9% more likely to become loyal participants. When the origin of the correspondent was evaluated, it was seen that African Americans had an almost 15% greater tendency, followed by white Americans at 3.6% and those outside these categories are less likely by –6.5%. The residency indicators refer to a rising tendency with 2.1% in North Carolina, followed by Virginia with 1.1%. The residents of New Jersey have a positive tendency too but with a lower marginal value of 0.6% while the remaining were detected to have a much lower negative and multicollinear impact on the probability. Considering the base of evaluation, the gender of the participant, it was confirmed that females have more tendency to become loyal agritourists but the quantitative effect is almost negligible. Being a female neither increases the probability significantly in accordance with other positive factors, nor it has a strict offsetting effect to negative factors with its below 1% marginal effect.

Education has a positive effect on the probability of attending rural and agricultural leisure activities. In detail, individuals holding master's or higher degrees have the highest likelihood with 9.2%, followed by college-technical school graduates (7.7%), and high school graduates (6.4%). The positive but lowest likelihood are those that hold Bachelors of Arts (BA)/ Bachelors of Science (BSc) degrees (4.5%). This educational variation can be related to the occupational positions of respondents. Employment status factors were mostly ineffective, but for those who were retired by the time of the survey, the tendency to enter in agri/rural tourism activities appeared to be higher at 1.1%. Rising annual income is almost ineffective, with a negligible reducing impact. However, the rising amount spent on agricultural and food products contributes to the probability positively by around 4%.

The frequency of participation in activities rose during COVID-19 and the positive impact of the pandemic can be observed with a 2% rise in the probability. Recent research in the USA confirms the role of agritourism activities in compensating for the losses of Californian farmers during the pandemic (Callahan, 2023).

Briefly, with rising education, awareness and economic prosperity, the desire to be a loyal agritourist increase. People who have been seeking information and who have tried to reach that information from various sources are more interested in the activities as well, with almost 6% likelihood of participation. Seasonal preferences of the Mid-Atlantic residents surveyed were restricted to spring and autumn due to the significance of estimates and positive contribution to the tendency. In many travel-oriented countries, seasonal preference ranges from spring to autumn as well, as these times are planting and harvesting periods such as in Germany (Bosmann et al., 2021) or Italy (Domi & Belletti, 2022).

## 5. Conclusions and discussion

The findings of this research emphasized how individuals become loyal agritourists with the influence of various socio-demographic factors and attitudes towards agritourism. Our research also facilitates policymakers and stakeholders in understanding the role of these factors which is crucial for them in developing effective strategies and policies to promote agritourism and capitalize on its potential for agri-food production and marketing.

According to research, individuals with higher levels of education are more likely to engage in agritourism activities. This finding proposes that educated individuals may have a greater admiration for the cultural and educational aspects of tourism, and they attempt to find opportunities to learn about local food production and agricultural practices. There are similar findings in the literature signaling the importance of formal and non-formal education. The cluster analysis findings of a survey conducted with 1003 agritourists visiting Colorado between 2005 and 2007 inferred that rising education and interest in learning by experience increases the agritourism participation and loyalty of individuals (Gascoigne et al., 2008). The level of education is not the only sign of attraction to alternative leisure activities. The extensive information available on internet resources and social media both stimulates and increases interest in alternative tourism demand. This is also valid for the supply side. The intention of farm operators to get involved in agritourism activities was found to rise with the impact of social media and smartphone usage on the responses of 160 Tennessee farmers (Holland et al., 2022). This also implied the role of the internet and online resources for agritourism to thrive.

The second effective factor is employment status. The research highlighted that employed individuals are more likely to have the financial means and flexibility to engage in leisure activities and this could be attributed to factors such as disposable income, time availability and lifestyle preferences.

According to our research, household composition, particularly families with younger members, may consider this niche tourism market as a valuable opportunity for educational and recreational experiences gained within family time. Marital status may intersect with other socio-demographic factors or lifestyle preferences, but research found that marital status unveils a mixed influence on loyalty. Married individuals show the highest probability of frequent participation in agritourism activities, followed by single, separated and divorced individuals.

Factors like seasonal preferences, motivation for participation and willingness to support local farmers or economically contribute to the sustainability of farms significantly influenced the frequency of participation. Therefore, environmental protection was found to be effective for increasing agritourism loyalty. This environmentalist view needs to be watched closely by the supply side as the success of agritourism firms in natural preservation is expected to grant them more visitors and agritourism revenue, relying on findings of a principal component analysis (PCA) undertaken in Italy (Brandano et al., 2018).

Research found that seasonal preferences, particularly for spring, summer and autumn activities, were positively associated with higher probabilities of frequent participation. This finding underlines the importance of aligning agritourism offerings with seasonal attractions and activities to affect and retain visitors throughout the year. Motivations such as spending time with family and friends, supporting local farmers and purchasing fresh products are strong participation predictors for loyalty.

The intention to purchase local products appears as a significant positive predictor in frequency of participation attracting visitors and encouraging repeated visits. Ultimately, promotion of local food systems and highlighting unique agricultural products can be attached to the services. In their research Huber et al. (2020) surveyed 780 individuals that visit (133) or plan to visit (647) agritourism farms in Switzerland to understand the future potential. It was understood that while potential customers for agritourism are interested in rural and regional authenticity and local products, actual customers care more about comfort and consumption confirming the importance of local/regional products in promotion of agritourism. Besides,

the relation between food purchases and agritourism demand needs to be considered as bidirectional. The survey conducted with 328 agritourists participating in on-site activities on six farms in North Carolina in 2018–2019 suggested that increasing recreational activity promotion also increases farm sales that then contribute to farm income (Brune et al., 2021). It is important to pay attention to this inference in agritourism policy development and promotion.

The research found various implications for policy-makers, agri-food marketers and tourism operators who seek to enhance the attractiveness and viability of destinations. Targeted marketing and promotion directed to appeal to educated, employed individuals with young families can help increase participation. Emphasis on the educational and recreational benefits of agritourism experiences may resonate with this demographic. The importances of on-farm experiences and educational incentives have been considered in different parts of the world as well. Vazin and Alavijeh (2023) undertook a field survey on service demand in Iran. They reached the conclusion that the main inducers of agritourism demand are related to agri-recreation, agri-experience and agri-accommodation interests. Diversification of offerings may motivate participation towards attracting a broader audience and encouraging visit repetitions. Themed events, educational workshops and family-friendly activities can increase the number of agritourism destinations, attractions and engagements throughout the year.

Enhancing accessibility to agritourism destinations and investing in infrastructure can remove barriers to participation and enrich the overall visitor experience. It is a promising idea to improve signage, transportation options and amenities to make destinations more attractive and accessible to visitors of all backgrounds. This implication is not only valid for the research region, but rather can be generalized and adapted to other districts.

## 6. Policy implications for promoting agritourism participation

The analysis of socio-demographic factors influencing loyalty reveals insights into the preferences and behavior of individuals engaging in rural tourism activities. Understanding these dynamics is crucial for formulating effective policies to promote and sustain agritourism initiatives. Based on the results obtained from the study, several policy implications emerge aiming to enhance agritourism participation and its socio-economic benefits.

The impact of education, employment status and being informed by external resources were previously measurable in the region as well. Govindasamy and Kelley (2014) assessed the socio-economic attributes of 972 individuals participating in wine tasting activities in the Mid-Atlantic region as an example of agritourism activities. This research has been one of many stimulants of the current research and analysis of purchases. The previous research conducted with logistic regression inferred that individuals having a greater tendency to taste wines were above 50 years old, had a graduate degree and were mostly self-employed. Besides, it was understood from the audience surveyed in 2010 that they were stimulated by advertisements and information from news articles. The changing factors that affect the decisions of individuals, and their continuous demand for alternative tourism activities related to agricultural practices, provide insight for future planning. The resemblance of findings as well as differences helps confirm recent research and enable making policy suggestions that may enlighten future strategies as well.

### 6.1. Targeted marketing strategies

Given the observed influence of education, income and geographical location on participation, policymakers should tailor marketing strategies to resonate with diverse demographic segments. Targeted campaigns highlighting the experiential and educational aspects of agritourism can be developed to attract individuals with higher educational attainment and disposable income. Moreover, emphasizing the seasonal appeal of destinations, particularly during spring and autumn, can capitalize on preferences for temperate weather conditions.

### 6.2. Support for local farmers and producers

The intention to purchase fresh and value-added products emerges as a significant motivator for frequent agritourism participation. Policy interventions aimed at facilitating direct sales between farmers and consumers, such as farmers' markets and farm-to-table initiatives, can bolster the economic viability of operations. Providing incentives for the production and promotion of local products can further incentivize consumers to engage in activities while supporting the sustainability of rural economies.

### 6.3. Community engagement and collaboration

Promoting agritourism requires fostering partnerships between local communities, agricultural stakeholders and tourism agencies. Encouraging collaboration among farmers, tour operators and hospitality providers can enrich the experience by offering diverse activities and accommodation options. Community-based initiatives,

such as festivals and cooperative marketing efforts, can enhance the visibility and appeal of rural destinations, driving visitor engagement and economic growth.

### 6.4. Resilience and adaptation in response to external factors

The positive impact of the COVID-19 pandemic on agritourism participation underscores the resilience of this sector in times of crisis. Policymakers should recognize this importance as an economic driver and prioritize measures to support its continued growth and adaptation. This includes investing in infrastructure improvements, digital marketing capabilities and risk management strategies to mitigate the impact of future disruptions and ensure the long-term sustainability of agritourism enterprises.

The policy implications outlined above provide a framework for fostering inclusive, sustainable and resilient agritourism ecosystems. By addressing the diverse needs and preferences of participants, promoting local entrepreneurship and fostering collaboration within communities, policymakers can harness the potential of agritourism to drive economic development, preserve cultural heritage and promote environmental stewardship in rural areas. The regional orientation of the research and methodological contribution appear to be enlightening for future planning. Effective implementation of these policies requires concerted efforts from government agencies, industry stakeholders and local communities to unlock the full socio-economic benefits of agritourism for all.

**Declarations of interest**

There is no conflict of interest between co-authors or with third parties.

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