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Characteristics of New Jersey Agritourism Farms

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Abstract

Agritourism is an important alternative farm enterprise strategy in the U.S., especially for farms operating under urban influence. This paper develops a logit model to identify the characteristics of farms engaged in agritourism using 2007 Census of Agriculture respondent-level records. New Jersey, which ranks first nationally in the proportion of farm income derived from agritourism, provides the geographic context. We find that fruit/vegetable farms, rural residential/retirement farms, and intermediate-scale farms are more likely to offer agritourism. We also find that the likelihood of engaging in agritourism is significantly higher for farms employing organic production techniques and farm conservation practices.

Keywords: agritourism, direct marketing, urban fringe agriculture

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Introduction

The convergence of global competition, rising input costs, structural changes in domestic markets, and urban expansion represents a significant challenge to the economic viability of many small American farms. When faced with declining profitability, farm operators may exit agriculture, expand off-farm employment, or develop alternative agricultural enterprises (McGehee 2007; Ollenburg and Buckley 2007). Agritourism is becoming an important alternative farm enterprise strategy for many U.S. farms, especially those operating within the fringe of urban influence where consumer markets are more proximate. Analysis of Census of Agriculture data reveal that the urbanized Northeast states produce less than 5% of total national farm revenue but account for more than one-quarter of farm direct marketing sales and nearly 14% of agritourism income (Schilling et al. 2012).

Agritourism has a long history in Europe; however, its emergence in the United States as a topic of agricultural discourse and academic attention has been a more recent phenomenon. Areas of past research have included the characterization and perceptions of agritourism operators (Barbieri and Mshenga 2008; Tew and Barbieri 2012), gender roles in agritourism (McGehee, Kim and Jennings 2007), and farmer motivations for agritourism development (McGehee and Kim 2005; Nickerson et al. 2001).

Farm income generation has been identified as a common rationale for agritourism development (see, for example, McGehee and Kim 2005; Schilling, Marxen, Heinrich and Brooks 2006); however, Tew and Barbieri (2012) consider the literature on the economic benefits of agritourism inconclusive. Several early studies conclude that agritourism income is often an insubstantial contributor to farm income (Busby and Rendle 2000; Opermann 1995; Sharpley and Vass 2006). More recent work by Barbieri (2012), however, concludes that agritourism has greater positive effect on farm profitability than other farm entrepreneurial activities. Schilling, Attavanich and Jin (2014) find that agritourism increases the profitability of small commercial farms in New Jersey.

While a few scholars have begun examining U.S. agritourism in earnest over the past decade, there remain gaps in our understanding of this sector's structure and economic importance, as well as factors likely to affect its future trajectory. Clear understanding of the dynamics of the agritourism sector, is obfuscated by several factors. First, consistent longitudinal data on U.S. agritourism are limited.[1] Contributing to this problem is the lack of a standard definition of agritourism, limited consensus on the types of activities that constitute agritourism, and variable nomenclature (i.e., farm tourism, agritourism, agritainment, agricultural tourism, and rural tourism) (Phillip, Hunter and Blackstock 2010; Schilling et al. 2006; Busby and Rendle 2000).

A second factor is the diversity of U.S. agriculture and emerging evidence that development of agritourism enterprises is driven by different motives, both monetary and non-pecuniary (Schilling et al. 2012). Agritourism offers the potential to increase farm income, diversify product lines and market outlets, fulfill operator entrepreneurial goals, educate the non-farm

[1] The National Agricultural Statistics Service only began collecting data on "recreational services" as a component of "income from farm-related services" in the 2002 Census of Agriculture. A slightly different definition, "agri-tourism and recreational services" was employed in the 2007 Census.

public about agriculture, and enhance community engagement (Busby and Rendle 2000; Nickerson, Black and McCool 2001; Che, Veeck and Veeck 2005; McGehee and Kim 2004; Mitchell and Turner 2010; Ollenburg and Buckley 2007; Tew and Barbieri 2012). The importance of these drivers of agritourism development vary across farm scales. Research on New Jersey's agritourism sector, for example, shows that small farms (defined by the USDA's Economic Research Service as those earning less than $250,000 in farm income) are more likely than large farms to earn a greater proportion of farm income from agritourism (Schilling et al. 2012). Census of Agriculture data support a similar observation. New Jersey's small family farms account for only 15% of total state farm income, but 58% of state agritourism revenues.

Assessment of future growth patterns in the agritourism sector, as well as industry challenges and educational programming needs, will benefit from knowledge of the type and characteristics of farms presently engaged in agritourism. For example, more informed understanding of the types of farms incorporating agritourism enterprises will enable refined industry performance benchmarking and analysis over time (i.e., by focusing on segments of the farm industry where agritourism is most prevalent). Similarly, such information will allow Extension educators and agricultural service providers to better predict clientele needs (i.e., certain types of farms may have a greater propensity to transition into agritourism over time) and deliver targeted educational training. To provide such insight, this study develops a logit model to identify the characteristics of New Jersey agritourism farms. Data are primarily derived from respondent-level records collected during the 2007 Census of Agriculture.

Conceptual Framework

Farm engagement in agritourism can be expressed in binary form (a farm is either offering agritourism or it is not). Therefore, we develop a logit model to analyze the characteristics of New Jersey farms offering agritourism. The logit model's asymptotic properties and constraint that the predicted probabilities range from zero to one make it a preferred method for this type of analysis (Agresti 1990).

The logit model assumes that the probability of agritourism adoption (P_i) can be predicted by a vector of independent variables (X_i):

(1) $$Prob(farm\ engages\ in\ agritourism) = P_i = \frac{e^{Xi}}{1+e^{Xi}}$$

and therefore

(2) $$Prob(farm\ does\ not\ engage\ in\ agritourism) = 1 - P_i = \frac{1}{1+e^{Xi}}.$$

Because X_i is a linear combination of independent variables, it follows that

(3) $$Z_i = log\frac{P_i}{1-P_i} = \alpha_0 + \beta_1 x_{1i} + \beta_2 x_{2i} + \cdots + \beta_j x_{ji} + \varepsilon_i$$

where Z_i is the log of the odds for the i^{th} observation, X_{ji} is the j^{th} explanatory variable for the i^{th} observation, { α, β_1, β_2… β_j} are the parameters to be estimated, and ε is the error term. The likelihood of observing the dependent variable was tested as a function of independent variables including farm characteristics, location characteristics and farmer socio-demographic characteristics.

Data and Empirical Model

New Jersey provides an interesting geographic context for the analysis for several reasons. Since the 1950s, extensive urbanization has contributed to a significant displacement of agriculture in most parts of the state. Approximately 58 percent of the farms and 57 percent of the farmland acreage existing in 1950 have been lost, most often to suburban subdivisions and related commercial infrastructure. Today, the U.S Census Bureau's urban-rural classification data show that nearly 40 percent of New Jersey's land area is developed, making it the most urbanized state in the nation. Remaining farms have made various adaptations to urban growth pressures, including aggressive movement into direct marketing and agritourism. Schilling et al. (2007) find that 21 percent of New Jersey farms are engaged in agritourism (defined to include on-farm retail marketing). The 2007 Census of Agriculture shows that New Jersey ranks first nationally in the proportion of farm income derived from agritourism (2.5%) and sixth in terms of the percentage of farm income derived from direct marketing (3.1%) (USDA-NASS 2009).

Our study uses respondent-level data from the 2007 Census of Agriculture to examine the characteristics of New Jersey farms engaged in agritourism. As previously noted, there is no standard definition of agritourism. It is the authors' opinion that the National Agricultural Statistics Service definition employed in the Census of Agriculture is limited due to the exclusion of on-farm direct marketing activities. Following past agritourism research in New Jersey (Schilling et al. 2012) and Vermont (New England Agricultural Statistics Service 2004), this study defines agritourism broadly to include direct marketing (e.g., farm markets and pick-your-owns).

The binary dependent variable (AGTOURISM) developed for the logit model is therefore defined as one if a farm reported income either from "agri-tourism and recreational services" (common examples include farm tours, corn mazes, hayrides, hunting and fishing, and farm stays) or direct-to-consumer marketing, and zero otherwise. Cheng et al. (2012) note that the Census of Agriculture farm direct marketing definition includes only farm products that are "for human consumption," thus excluding non-edible products (i.e., ornamentals, a large sector within New Jersey agriculture). The authors correctly note that this leads to an underestimate of the extent and value of farm direct marketing. However, definitions of agritourism (inclusive of direct marketing) in the academic literature increasingly include the proviso that agritourism involves a link to a working farm. The NASS definition does not exclude off-farm marketing venues (i.e., community farmers markets), resulting in a potential overestimation of agritourism activity. Despite these limitations, the authors concur with Cheng et al. (2012), finding that Census of Agriculture data on direct marketing are the most accurate available.

Variables are described in Table 1. Farm characteristic variables derived from the 2007 Census of Agriculture include total farm acreage (FARMSIZE) and binary variables reflecting whether the farm is engaged in organic production (ORGANIC) or has installed conservation practices (i.e., no till production, nutrient management, etc.) (CONSERV). A binary variable is included to reflect whether the farm is preserved under the state's purchase of development rights (PDR) program. Data on farmland preservation status were obtained from the administrative records of the State Agricultural Development Committee, the administrative agency responsible for the state's farmland preservation program.

The USDA's Economic Research Service classifies farms under a farm typology that considers the economic scale of operation and operator characteristics (Hoppe and MacDonald, 2013; Hoppe and Banker, 2010). The basic classification scheme includes small family farms (farms with farm income less than $250,000), commercial family farms (farms with farm income of $250,000 or more) and non-family farms. Small family farms are further decomposed into rural-residence farms, which are small family farms operated by retired persons or individuals for whom farming is not a principal occupation, and intermediate family farms (farms with farm income less than $250,000 that are operated by individuals for whom farming is a primary occupation). For modeling purposes, farms are classified according to their 2007 Census of Agriculture designation as RURAL_RESID, INTERMEDIATE, COMMERCIAL or NON _FAMILY.

Farms are also classified in the Census of Agriculture by North American Industrial Classification System (NAICS) codes to reflect their primary production activity. A truncated set of production classes is employed in the model. ANIMAL represents farms primarily engaged in livestock (including poultry) production and dairy; EQUINE represents horse or pony production; FRUIT/VEG represents fruit, berry, or vegetable production; GRAIN represents grain, hay or other crop production; and NURSERY represents nursery, greenhouse or sod production.

Farm operator characteristics included in the final model are operator gender (OPSEX) and age (OPAGE) and the number of years the operator reported being on the current farm (OPYEARS). PCTINCFARM is the percentage of household income derived from farming and OCC_FARMING is a binary variable indicating whether the farm operator's principal occupation is farming. LIVEONFARM is a binary variable reflecting whether the operator lives on the farm.

Location and spatial variables were incorporated into the dataset from several secondary sources. Data on population density (POPDENS) are 2007 estimates from the New Jersey Department of Labor and Workforce Development's online municipal and county population and housing database. Data on median household income (MED_HH_INC) were obtained from the 2000 Census of Population and Housing. As a proxy for rurality, data on the percentage of the municipality in which a farm is located that is enrolled in farmland assessment (New Jersey's use value assessment program) (PCT_FA) were obtained from the New Jersey Field Office of the National Agricultural Statistics Service. To capture effects of proximity to urban centers, Euclidean distance (in miles) between each farm and New York City was determined using Geographic Information System (GIS) software. Farms were geocoded using farm zip codes and centroid point information for New York City was obtained from ESRI StreetMap USA 2006 (DIST_NYC).[2]

Descriptive statistics for all variables are presented in Table 2 for the entire sample and the subsets of agritourism farms (n=1479) and non-agritourism farms (n=5061). The final dataset contained 6,540 farms, of which 22.6% reported revenue from agritourism or direct marketing. The empirical model was formulated as:

[2] A Euclidean distance measure to Philadelphia was also constructed and included in earlier versions of the model. However, the measure was found to lack statistical significance as a predictor of agritourism adoption.

$$AGTOURISM = \alpha_0 + \beta_1 FARMSIZE + \beta_2 ORGANIC + \beta_3 CONSERV + \beta_4 PRESERVE + \beta_5 ANIMAL + \beta_6 EQUINE + \beta_7 FRUIT/VEG + \beta_8 NURSERY + \beta_9 RURAL\_RESID + \beta_{10} INTERMEDIATE + \beta_{11} COMMERCIAL + \beta_{12} OPSEX + \beta_{13} OPAGE + \beta_{14} OPYEARS + \beta_{15} PCTINCFARM + \beta_{16} OCC\_FARMING + \beta_{17} LIVEONFARM + \beta_{18} PCT\_FA + \beta_{19} DIST\_NYC + \beta_{20} POPDENS + \beta_{21} MED\_HH\_INC + \varepsilon.$$

The logit model was estimated with STATA using maximum likelihood estimation (MLE). MLE produces parameter estimates that are consistent and efficient asymptotically (Pindyck and Rubinfeld 1991).

Table 1. Description of Variables

Variable Name	Description
Dependent Variable	
AGTOURISM	'1' if farm engages in agritourism, '0' otherwise
Farm Characteristics	
FARMSIZE	Farm size (acres)
ORGANIC	'1' if organic production, '0' otherwise
CONSERV	'1' if conservation practices are used, '0' otherwise
PRESERVE	'1' if farm is preserved, '0' otherwise
Commodity Type	
ANIMAL	'1' if production is livestock, poultry, or dairy, '0' otherwise
EQUINE	'1' if production is equine, '0' otherwise
FRUIT/VEG	'1' if production is fruit, berry, or vegetable, '0' otherwise
GRAIN*	'1' if production is grain or hay, '0' otherwise
NURSERY	'1' if production is nursery, '0' otherwise
ERS Farm Type	
RURAL_RESID	'1' if small family farm with sales <$250k and operator's primary occupation is not farming (or operator is retired), '0' otherwise
INTERMEDIATE	'1' if small family farm with sales <$250k and operator's primary occupation is farming, 'o' otherwise
COMMERCIAL	'1' if family farm with sales of $250k or more, '0' otherwise
NON-FAMILY*	'1' if non-family farm, '0' otherwise
Operator Characteristics	
OPSEX	'1' if principal operator is male, '0' if female
OPAGE	Principal operator age (years)
OPYEARS	Operator years on current farm (years)
PCTINCFARM	Percent of household income earned from farm operation (%)
OCC_FARMING	'1' if operator's principle occupation is farming, '0' otherwise
LIVEONFARM	'1' if principal operator lives on farm, '0' otherwise
Location Characteristics	
PCT_FA	Percent of municipality's land area farmland assessed (%)
DIST_NYC	Euclidean distance to New York City (10's miles)
POPDENS	Municipality's population density (100 persons/sq. mile)
MED_HH_INC	Municipality's median household income ($10,000s)

* Represents the omitted category.

Table 2. Summary Statistics for Variables used in the Analysis

	Full Sample		Agritourism Farms		Non-Agritourism Farms	
Variable Name	**Mean**	**Std Dev**	**Mean**	**Std Dev**	**Mean**	**Std Dev**
Dependent Variable						
AGTOURISM	0.23	0.42				
Farm Characteristics						
FARMSIZE (acres)	83.98	208.86	66.44	172.94	89.11	218.00
ORGANIC	0.02	0.15	0.07	0.25	0.01	0.10
CONSERV	0.22	0.42	0.29	0.45	0.21	0.41
PRESERVE	0.11	0.31	0.10	0.29	0.11	0.31
Commodity Type						
ANIMAL	0.22	0.42	0.33	0.47	0.19	0.40
EQUINE	0.12	0.32	0.04	0.20	0.14	0.35
FRUIT/VEG	0.18	0.39	0.40	0.49	0.12	0.32
GRAIN[a]	0.24	0.43	0.12	0.33	0.28	0.45
NURSERY	0.23	0.42	0.10	0.30	0.27	0.44
ERS Farm Type						
RURAL_RESID	0.69	0.46	0.71	0.45	0.69	0.46
INTERMEDIATE	0.18	0.39	0.19	0.39	0.18	0.38
COMMERCIAL	0.08	0.26	0.06	0.23	0.08	0.27
NON-FAMILY[a]	0.05	0.22	0.04	0.19	0.05	0.23
Operator Characteristics						
OPSEX	0.80	0.40	0.80	0.40	0.80	0.40
OPAGE (years)	57.32	12.51	57.00	11.79	57.41	12.71
OPYEARS (years)	20.39	14.11	19.88	13.80	20.54	14.20
PCTINCFARM (%)	19.43	30.94	19.77	30.75	19.33	31.00
OCC_FARMING (%)	0.47	0.50	0.48	0.50	0.46	0.50
LIVEONFARM	0.808	0.394	0.842	0.365	0.799	0.401
Location Characteristics						
PCT_FA (%)	32.45	20.25	30.70	19.33	32.96	20.48
DIST_NYC (10s of miles)	6.56	2.75	6.16	2.62	6.67	2.78
POPDENS (100 ppl/sq. mi.)	12.39	74.89	11.30	41.84	12.71	82.07
MED_HH_INC ($10,000)	6.73	2.00	6.90	1.97	6.69	2.01

[a] Represents the base category in the analysis.

Model Results

Model results are summarized in Table 3. Farm size is found to have a significant and negative, but negligible, effect on the probability of a farm hosting agritourism. No statistically significant

correlation is found between participation in the state PDR program and engagement in agritourism. Positive relationships are found between engagement in agritourism and other practices designed to bolster market access or enhance farm sustainability within an urbanizing environment. Farms classified as organic are 30.2% more likely to engage in agritourism than farms employing traditional production systems. Farms employing some form of resource conservation method are 7.5% more likely to offer agritourism than those not utilizing conservation practices.

Relative to grain or hay farms, fruit or vegetable farms are 42.2% more likely to offer agritourism. This observed market response is consistent with past research documenting strong consumer demand for local produce among New Jersey consumers (Govindasamy and Nayga 1997). Livestock farms are 23.6% more likely to offer agritourism than grain or hay operations. In contrast, nursery operations and equine farms are less likely to host farm visitors (by 2.3% and 6.1%, respectively). The latter finding may be explained by the high numbers of residential/pleasure horse operations that have been documented in the state (Gottlieb et al. 2007).

Rural residential/lifestyle family farms are 8.7% more likely to offer agritourism than non-family farms, while small farms operated by individuals identifying farming as a primary occupation (intermediate farms) are 6.6% more likely. The finding that rural residential farms have a greater propensity to engage in agritourism is noteworthy. A possible explanation may be that these small-scale farms, which lack wholesale market access, are motivated by relatively low revenue expectations (i.e., income sufficient to qualify their properties for use value assessment or a secondary source of household income) that can be achieved by modest levels of direct marketing activity. This is consistent with a 2007 economic impact assessment which found a high reliance on agritourism as a source of farm income among small New Jersey farms (Schilling et al. 2011).

Unexpected is the finding that the likelihood of commercial farms offering agritourism is not statistically different from non-family farms. While not statistically significant, the negative coefficient is further surprising. This finding, upon first consideration, appears inconsistent with previous research which found that large-scale farms are significantly more likely to engage in agritourism (Schilling et al. 2012). However, the binary measure of agritourism engagement in this study assumes a value of one only when agritourism or direct marketing revenue is reported by the farm. Schilling et al. (2012) document that nearly one-third (32%) of large New Jersey agritourism farms (defined as having agricultural sales of at least $250,000) do not earn revenue from such activities.[3] Because of the manner in which Census of Agriculture data are collected, this study in not able to examine the characteristics of farms that offer agritourism without charge.

Several operator characteristics (age, gender, years on the current farm) were found to have no statistically significant influence on whether agritourism was offered on farms. The likelihood of offering agritourism rises nominally with the percentage of household income derived from farming. Similarly, farms with operators declaring farming as a primary occupation are 2.8% more likely to offer agritourism than farms operated by individuals that are retired or primarily

[3] Schilling et al. theorize that agritourism may be offered without immediate revenue expectations, at least in part, due to farmers' interest in generating public awareness of agricultural issues and support for farm retention policies. Practically speaking, the authors also point to anecdotal evidence of farmers allowing non-fee hunting to reduce crop damage caused by wildlife.

employed off-farm. Past research has documented a significant level of involvement in agritourism among farm women (see, for example, McGehee et al. 2007). The lack of significance assigned to the operator gender variable should not be construed as a contradictory finding since it reflects the gender of the *primary* farm operator. Farms managed by operators residing onsite are 3.5% more likely to host agritourism activities.

The variable capturing urban proximity effects (distance to New York City) carries the expected negative sign, indicating that the likelihood of offering agritourism declines as distance from the city increases. The negative marginal probability associated with PCT_FA suggests that farms are slightly more likely to offer agritourism in communities of suburban or urban character. This seemingly reflects the propensity for farms under immediate urban influence to capitalize upon proximity to consumer bases through agritourism development, as well as the general lack of "destination" farms in highly rural regions of the state.

Table 3. Maximum Likelihood Estimates from Logit Model

Parameter	Parameter Estimate	Standard Error	Marginal Probability
INTERCEPT	-2.091	0.351	
FARMSIZE	-0.001	0.000	0.000***
ORGANIC	1.452	0.202	0.302***
CONSERV	0.468	0.081	0.075***
PRESERVE	-0.075	0.120	-0.011
NURSERY	-0.158	0.123	-0.023
FRUIT/VEG	2.103	0.105	0.422***
EQUINE	-0.463	0.161	-0.061***
ANIMAL	1.299	0.100	0.236***
RURAL_RESID	0.635	0.182	0.087***
INTERMEDIATE	0.407	0.187	0.066**
COMMERCIAL	-0.202	0.218	-0.028
OPSEX	-0.006	0.004	-0.008
OPAGE	-0.055	0.086	-0.001*
OPYEARS	0.001	0.003	0.000
PCTINCFARM	0.003	0.001	0.000**
OCC_FARMING	0.188	0.090	0.028**
LIVEONFARM	0.247	0.091	0.035***
PCT_FA	-0.005	0.002	-0.001***
DIST_NYC	-0.082	0.016	-0.012***
POPDENS	-0.001	0.001	0.000
MED_HH_INC	0.023	0.021	0.003
No. of observations	6,540		
-2 log likelihood	5817.65		
McFadden's pseudo R^2	0.168		

Note: Statistical significance represented by *** p<.01, ** p<.05, * p<.10. Marginal probabilities are calculated at the mean of each covariate.

The Hosmer and Lemeshow goodness of fit test is insignificant (p = .12), indicating that the model provides a good logistic fit (Agresti 1990). Overall, the model correctly predicts whether a farm offers agritourism in 74.8% of the cases (Table 4).

Table 4. Predictive Success of the Logit Model

		Predicted	
		AGTOURISM=1	AGTOURISM=0
Actual	AGTOURISM=1	948	531
	AGTOURISM=0	1,120	3,941
Number of Correct Predictions		4,889	
Percent Correct Predictions		74.8%	

Conclusion

The objective of this paper is to examine the characteristics of farms offering agritourism in New Jersey, a leading agritourism state. A logit model is developed to determine the influence of farm and operator characteristics, as well as location and spatial variables, on the probability of farm engagement in agritourism. Data are derived from respondent-level 2007 Census of Agriculture records and other secondary sources.

In no other state is urbanization more advanced than in New Jersey. At the same time, the state is among the early adopters of several now ubiquitous farm retention policies (i.e., agricultural use value assessment and right to farm legislation) and has a long history of aggressive farmland preservation programming. Similarly, New Jersey farmers have made substantial structural and enterprise adjustments to adapt to rising farmland prices, farmland fragmentation, loss of supply and market infrastructure, and the less farm-friendly regulatory environments that frequently accompany suburban expansion into farming regions (Lopez, Adelaja and Andrews 1988; Larson, Findeis and Smith 2004).

Agritourism is a prime example of positive adaptation to urbanization pressure, one whereby farmers seek to capitalize on access to proximate markets for their products, expand on-farm employment, and effectuate greater appreciation and understanding of farming within the non-farm community. Our study finds that the development of agritourism enterprises on New Jersey farms correlates positively with other "sustainability" efforts, including the adoption of resource conservation practices and responsiveness to market opportunities (i.e., consumer interest in organic products). The emergence and growth of agritourism nationally, and particularly in the Northeast, represents a promising counterbalance to the "impermanence syndrome" affecting urban fringe farming first articulated by Berry (1978). Characterized by reduced investments in agriculture and less confidence in the long term viability of farming, this condition effectively shortens the planning horizons of farm operators in agriculture (Adelaja et al. 2011).

As anticipated, a strong link between produce production and agritourism development is demonstrated by the model. New Jersey is viewed by the USDA as a specialty crop state, meaning that it is heavily engaged in the production of intensively cultivated plants, including

fruits, vegetables, nursery products, and floricultural crops. The adoption of agritourism as a revenue-enhancing strategy is consistent with the well-defined shift among New Jersey producers from low-value to high-value production that has occurred over recent decades in response to rising land values, declining farmland resources, and other business climate factors. It is also a logical marketing response that allows farmers to capitalize on growing consumer interest in local farm production.

Lastly, model results also suggest a higher engagement in agritourism among small farms, particularly lifestyle and retirement farms. Although they are small contributors to statewide farm income, lifestyle and retirement farms operate 207,904 acres of New Jersey farmland, equivalent to more than one-quarter of the state's farmland base (USDA-NASS 2009). Identifying and addressing the programming needs of small and very small-scale agritourism operators represents an area of increasing demand for Cooperative Extension and other agricultural service providers, particularly on matters related to marketing, biosecurity (for livestock owners), farm safety, and liability management.

We conclude by recognizing a data limitation in this study. Previous research has documented the development of free recreational or educational activities (e.g., tours, non-fee hunting, hiking) on a significant proportion of large New Jersey farms. Since agritourism revenue is not earned, these farms do not appear as "agritourism farms" in the Census of Agriculture dataset used for this research. Therefore, the characteristics of these farms remain unexamined. A caveat about the applicability of this research to other states is also warranted. The structure of New Jersey's farm sector has been strongly influenced by urbanization pressures over the past half-century. The resulting agricultural business climate and market opportunities, as well as the nature of agritourism itself, are therefore dissimilar to more rural regions of the country. Therefore the robustness of findings from this research in other state contexts will need to be determined through further research.

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