



A Geographic Analysis of Agritourism in Virginia

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Abstract

Agritourism in Virginia is growing at a rapid rate because it fits a specific need in the agricultural industry. The purpose of this paper is not to focus on the growth of agritourism in the region, but rather to explain why growth is unequal across regions by presenting the current density of agritourism in Virginia and defining the geographic and structural characteristics that make a region more suitable for an agritourism operation. By evaluating Sloagett and Woods (2003) and their key factors in industrial location in Oklahoma, this paper extrapolates the same factors and applies them to agritourism in Virginia. Accordingly, it was found that proximity to consumer markets, the structure and composition of consumer markets (median income, population density, and population growth of the region), the ease of transportation, and the natural amenities and recreational scores of a county all played a key role in the propensity to start an agritourism operation in a given region or county. All of these factors help to show why the Shenandoah Valley is a flourishing region for agritourism and vineyards alike. Despite the regional scope of this study (Virginia), the importance of the seven location factors discussed applies regardless of region, although the weight and influence of each factor may change.

I. Introduction

Agriculture is the largest industry in Virginia, with an economic impact of about \$52 billion, and it provides over 357,000 jobs to Virginia's residents (VDACS 2013). In addition, those value-added industries that depend on the farm products employ an additional

76,000 individuals, which generates another \$34.6 billion in value-added revenue (VDACS 2013a). Despite the impact that the agriculture industry has on Virginia's economy, there are several issues of concern.

The first issue has to do with the inability of small and medium-size farms to capture scale efficiencies due to resource constraints. This has created a need for farmers with small and medium-size farms to supplement income loss due to scale inefficiencies. In this context, agritourism is a feasible business venture that may decrease financial risk by supplementing income as well as diversifying revenue streams. According to Brown and Reeder (2007), one reason why agritourism is an attractive option is because it can diversify the income stream of the farmer to stabilize sudden changes in income due to weather, prices, and government payments.

The second issue affecting the agriculture industry is that the total number of farms has decreased by approximately 3,000 over the past 14 years, accompanied by a 700,000-acre decrease in farmland (table 1). If separated into typology, it is apparent that the smallest farms (less than \$2,500 in sales) and the largest farms (\$500,000 or more in sales) are the only farms that have grown in number over the period of 1997 to 2007, according to the 2007 Census of Agriculture (USDA 2008). Other small and medium-size farms have in fact decreased over this same time period. In addition, the aging farmer population represents a threat to the sustainability of future agriculture operations. These land and human capital constraints for the agriculture industry may create further problems, especially for small and medium-size farms.

Table 1. Virginia farming trends, 1997 to 2012.

Year	No. of farms	Land in farms (acres)	Total crop land (acres)	Avg. age of principal operator
1997	49,366	8,753,625	43,124	55.8
2002	47,606	8,624,829	41,047	56.7
2007	47,383	8,103,925	35,954	58.2
2011	46,400	7,950,000	unreported	unreported
2012	46,200	8,050,000	unreported	unreported

Source: USDA-NASS (2013); VDACS (2013a).

Finally, not only has acreage been on the decline over the past decade in Virginia, so has the market value of production. As seen in figure 1, small and medium-size farms¹ have been decreasing for an extended period of time (1992-2007). While market values of agricultural products sold by smaller Virginia farms remained fairly constant from 1987 to 2007, the top two tiers exhibited a constant decline and appear to have impacted the overall direction of the small and medium-size farms. This reveals a serious reduction in income from agricultural products for farmers with small and medium-size farms. In contrast, large farms with agricultural sales of \$500,000 to \$999,999 have seen the market value of their product increase over time, which may suggest that larger farms may not have the economic incentive to add agritourism activities to their portfolios.

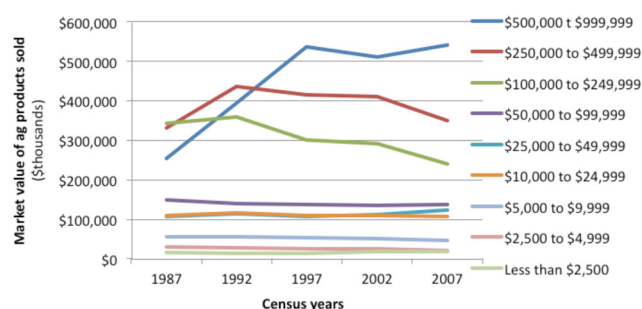


Figure 1. Class typology and the market value of agriculture products sold in Virginia, 1987-2007.

Source: USDA (2008).

In Virginia, small farms are an important part of agriculture and may still play an important role. Small farms are in a good position to capitalize on the value-added markets and increasing demand for agricultural prod-

ucts that are produced locally and sustainably. Considering that the very small farms are relatively stagnant, the significant decline seen in the \$100,000 to \$249,000 sales segment represents the overall picture of the small farm typology. This is due in part to the fact that over the 20 years shown, this segment makes up 40 percent of the total market value of agriculture products sold by small farms in that same time period. When looking at this combination of all the small farms, figure 2 shows a consistent decline in the total value of agricultural products. In addition to the problems in small farm revenue, there is also an issue arising with the mid-size farms because they are being squeezed out to form a more bimodal agriculture industry, characterized mostly by small and large farms. Overall, small and medium-size farms are declining in the value for their products and need a way to expand total farm income.

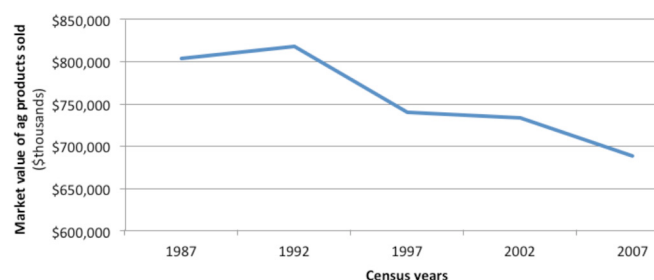


Figure 2. Total value of agricultural products sold in Virginia, small farms, 1987-2007.

Source: USDA (2008).

In contrast, the tourism sector in Virginia demonstrates a positive market outlook. According to the electronic door count at welcome centers in Virginia, there has been a steady increase in visitors from just shy of 1.4 million in 2007 to more than 2.3 million in 2012.² As

¹According to the USDA National Institute of Food and Agriculture (USDA-NIFA 2013), small farms are those with agricultural product sales of less than \$250,000; medium-size farms are those with sales from \$250,000 to less than \$500,000.

² This is the best approximation of the number of visitors to Virginia (Virginia Tourism Corporation 2013).

for revenue streams and the economic impact of tourism, figure 3 shows that with the exception of years surrounding the recent economic recession, there has been a steady increase in revenue from the Virginia tourism industry over the last decade. In 2012, the commonwealth's tourism industry generated more than \$21.2 billion, which was a 4 percent increase over 2011. In addition, employment in this industry has increased by more than 3,000 from 2010 to 2011. In 2012, employment increased another 3,000 over 2011 numbers, from 207,000 to 210,000. Not only we can find a direct effect of tourism on employment and revenue, but there is also an indirect effect on tax revenue. More specifically, tourism-related tax revenue generated by domestic travel in Virginia in 2012 reached \$2.7 billion, which exceeded 2011 statistics by 3.3 percent (Virginia Tourism Corporation 2013). Thus, the consensus is that the tourism industry in recent years has become increasingly important to the overall economy in Virginia. More importantly, if Virginia agriculture is able to capitalize on the growth in the tourism sector, the benefits could offset some of the economic losses experienced in the agricultural sector.

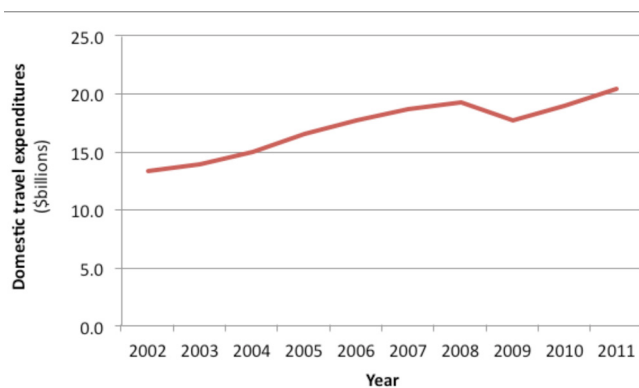


Figure 3. Virginia domestic travel expenditures, 2002-11.

Source: Virginia Tourism Corporation (2012).

Overall, agritourism is simply a value-added product that generates additional income from the land and introduces a farm brand to customers, which forms the opportunity for the creation of a loyal consumer base for all farm products (Hawkes 2013). Agritourism also allows for diversification of income sources, decreasing market risk exposure. Tew and Barbieri (2010) suggest that diversification from production agriculture to agritourism is a low-risk mechanism for farmers to cope with the rising cost of inputs and technology in the

agriculture industry. Not only does it help with these costs, this diversification and risk reduction would suggest that agritourism is a good strategy to cope with bad crop years, disasters, and drought (Hawkes 2013). There is also a wealth of other economic and non-economic benefits to agritourism, such as the preservation of agricultural heritage, maximization of productivity and resources, and improvements in the economic situation of a community (Tew and Barbieri 2012). The rate at which agritourism is increasing in popularity is impressive. Income from agritourism has more than doubled in the U.S. since 2002 and has generated about \$24,400 per farm for those 23,350 farms surveyed, according to the 2007 Census of Agriculture (Hawkes 2013).

As a prime illustration of how agritourism can support the agriculture industry, one can point at the Virginia wine industry and its notable growth. In 1979, there were only six wineries in the state, a number that increased to 130 by 2007 (VDACS 2013a). In 2013, there were 248 wineries — a 90 percent increase over 2007 statistics (Virginia Wine 2013). Importantly, from 2005 to 2010, the economic impact of the Virginia wine industry almost doubled to \$750 million, and tourists associated with wineries increased by 620,000 over that same period (Felberbaum 2012). Furthermore, industry-related jobs also increased by nearly 1,600 in the same time period (Virginia Wine 2013). In summary, future synergies between a declining agricultural industry and an expanding tourism sector could provide additional revenue to Virginia's primary industry and create an economic revival in rural areas, as exemplified by the wine industry.

Statistics on Virginia agritourism operations are outdated; therefore, two central goals of this study are: (1) to map the locations of existing Virginia agritourism operations; and (2) to identify those factors that might influence the location of agritourism operations. More specifically, this study attempts to identify the deciding geographical factors when choosing to start an agritourism venture. The findings of this study will provide the necessary direction to those agricultural operators who are interested in starting an agritourism operation on their farms. For current agritourism operations, the findings may provide insight regarding the long-term sustainability of an agritourism business model as well as offer ideas for a farm's continued growth.

II. Introduction to Agritourism in Virginia

Although there is no universally accepted definition of agritourism in the U.S., for legal purposes, Virginia defines an agritourism activity as

any activity carried out on a farm or ranch that allows members of the general public, for recreational, entertainment, or educational purposes, to view or enjoy rural activities, including farming, wineries, ranching, historical, cultural, harvest-your-own activities, or natural activities and attractions. An activity is an agritourism activity whether or not the participant paid to participate in the activity. (Code of Virginia § 3.2-6400; 2006)

With this specific definition in mind, McGehee and Kim (2004) identify the motivations and demographics of agritourism operators in Virginia. This seminal study on agritourism in Virginia shows that additional income and the utilization of resources are the top two motivations for starting an agritourism operation. In addition, working farms, Christmas tree farms, and pick-your-own operations are the primary sources of income reported by survey respondents. Other than the identification of motivation, little research has been done on the characteristics, locations, and factors affecting the profitability of agritourism operations in Virginia.

Statistical data from the U.S. Department of Agriculture's National Agricultural Statistics Service (USDA-NASS 2013) also notes a nontrivial increase in receipts per agritourism operation in Virginia from \$4,396 in 2002 to \$27,119 in 2007. Over this same time period, the 2007 Census of Agriculture points out that the number of Virginia agritourism operations with receipts has gone down from 610 to 476. Therefore, certain operations are flourishing and creating greater receipts, while others are failing and dropping out of the industry. Although seemingly a negative aspect, current estimations reveal that Virginia agritourism operations have increased to more than 500 in 2013 (VDACS 2013b; Virginia Wine 2013; PickYourOwn.org 2013).

III. Mapping Virginia Agritourism

While many agricultural operations are attempting to take advantage of growing tourism activity and expanding their operations into agritourism ventures,

the establishment of agritourism operations in Virginia has been concentrated in certain parts of the state. This seems a reasonable starting point in the identification of common geographic factors associated with starting an agritourism venture. These concentration patterns are represented by several existing agritourism clusters in Virginia. For example, there is a higher concentration of agritourism operations along Interstate 81 and the Appalachian Mountains (fig. 4).

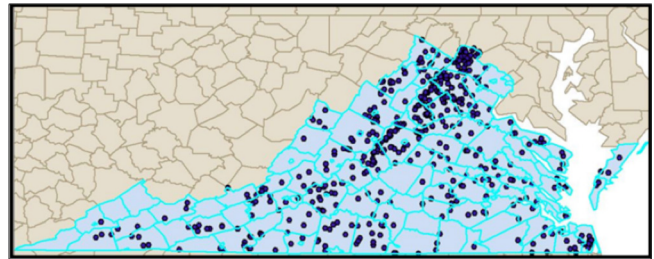


Figure 4. Agritourism operations in Virginia in 2013.

Source: VDACS (2013b) *Virginia Grown*; *Virginia Wine* (2013); *Pickyourown.org* (2013); Extension agent correspondence, 2013.³

A closer analysis of this area — The Shenandoah Valley region — shows four main agritourism clusters (fig. 5). Interestingly, the clusters become smaller and less dense as we move south along the Appalachian Mountains and away from Northern Virginia. The density of agritourism operations in Northern and Central Virginia is due in part to the concentration of wineries in these regions. Outside of these main clusters, there are two smaller agritourism clusters around the Central Virginia region and the Hampton Roads region. All other regions have some operations, but they are more sparsely distributed.

Figueiredo, Guimaraes, and Woodward (2002) suggest that agglomeration or external economy may be a location determinant for any small business as investors face imperfect information, which leads firms to imitate the existing structure and patterns. Additionally, Donaldson and Momsen (2011) mention that clustering can also take on the role of networking among operations as well as allowing the easy flow of visitors from one operation to another. These could potentially affect the initial farm location decision, but it is less effective in the decision to start an agritourism operation. Instead, it is more likely that location affects the type of operation and the events that it offers. According to Amanor-Boadu (2013), farms that offer recreational events tend

³VDACS (2013b), *Virginia Wine* (2013), and *Pickyourown.org* (2013) were used to create a database of contacts used to create this map. In addition, Extension agents emailed and added to the contact list to create a more detailed database. To construct the map, ArcMap 10.1 GIS software was used.

to be located closer to cities in order to benefit from the larger populations that exist there, while those offering hunting tend to be in rural areas.

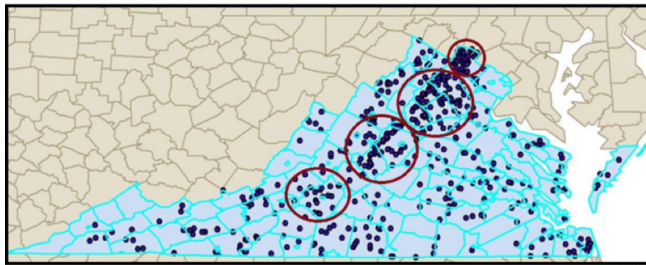


Figure 5. Agritourism operations in Virginia with cluster radii in 2013.

Source: VDACS (2013b) *Virginia Grown*; *Virginia Wine* (2013); *Pickyourrown.org* (2013); Extension agent correspondence, 2013.⁴

Because most operators are motivated by the potential for success or profit, it is important to discuss the links between business location and success. Wadhwa et al. (2009) found that entrepreneurs from different parts of the U.S. weigh the importance of location on business success differently. Overall, the Southern region finds location relatively important, with more than 65 percent of businesses in Virginia and the surrounding Southern states rating it as slightly important or higher (fig. 6). Minai and Lucky (2011) also found that entrepreneurs believe location to be an indispensable factor that determines the success or failure of development and business activity. Because research supports the idea that location plays a key role in the development of most businesses, the following sections of this pub-

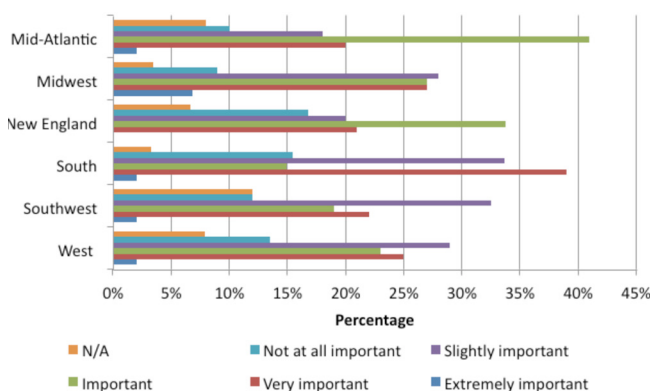


Figure 6. Importance of location among entrepreneurs in the United States by region, 2009.

Source: Wadhwa et al. (2009).

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lication will attempt to explain the factors behind those agritourism agglomerations in Virginia and what gives those regions more appeal.

IV. Factors Defining Agritourism Operation Density in Virginia

As pointed out previously, there are four distinct agritourism clusters in the Shenandoah Valley region that extend to the Blue Ridge region. There are several possible explanations as to what makes certain regions more attractive to a small business operation than others. According to Sloagett and Woods (2003), the attraction of any area for business is defined by consumer markets, labor, raw materials, transportation, industrial site, utilities, and financial capital. These general decision-making factors are now applied to the agritourism industry.

Consumer Markets

The proximity of an agritourism operation to its consumer market(s) is important to its success. For instance, an individual who plans to visit an agritourism operation may only be willing to travel a certain distance, so proximity to a metropolitan area and the accessibility and ease of travel are very important. In most analyses of tourism flows, the distance between the destination and the origin area is a proxy for transportation costs and is expected to have a negative impact on tourism movement (Marrocu and Paci 2012). Consequently, those operations that are not within a minimal distance to their consumer base are less likely to succeed, due to a lack of visitors. According to Bernardo, Valentin, and Leatherman (2004), the average distance a visitor travels in Kansas to participate in on-farm activity is about 129 miles, with 50 percent of visits involving trips of fewer than 50 miles. In other words, half the consumer base for a given agritourism operation will be located within 50 miles of the operation. This perception is confirmed by Nasers (2009), who found that 30 percent of Iowa State Fair attendees preferred to travel between 31 and 50 miles to an agritourism destination. In addition, Donaldson and Momsen (2011) state that a 2009 California agritourism survey found 50 percent of the 2.4 million tourists came from the same county

as the agritourism operation. That being said, counties in California are much larger than in Virginia; therefore, further analysis is needed to test this hypothesis in Virginia.

In an attempt to support the argument that mileage to the consumer base affects the number of visitors to a location, Bagi and Reeder (2012) indicate that the distance from a farm to a city or town with at least 10,000 residents has a negative impact on the farmers' willingness to participate in agritourism. In other words, the shorter the distance the consumer has to travel, the more likely the farmer is to start an agritourism venture. This is most likely due in part to the concept that there will be a decrease in visitors the farther the operation is from the consumer base — in this case, a city or town of at least 10,000 residents. In Virginia, counties near Washington, D.C., epitomize the correlation between agritourism operation density and the proximity to a metropolitan area or area with a high population density. The greater density of agritourism in Northern Virginia counties like Loudoun, Fauquier, and Culpeper can likely be explained in part by their proximity to Washington D.C. (fig. 7). Other counties, like Albemarle and Nelson, although located in Central Virginia, may be close enough to D.C. to be considered accessible by agritourism visitors from this metropolitan area. In addition, the presence of numerous agritourism operations in the Hampton Roads region is possibly explained by the Virginia Beach-Norfolk-Newport News metropolitan area, which includes most of the cities in Hampton Roads.

Not only is having a metropolitan area in proximity to the operation important, but the structure and composition of the population within that metropolitan area

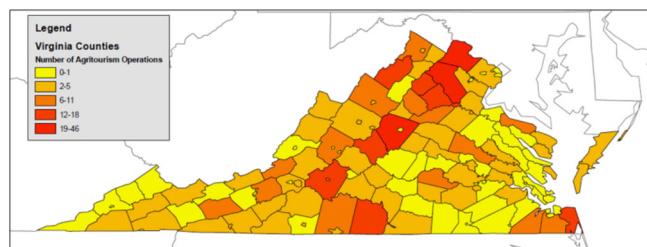


Figure 7. Density of agritourism operations in Virginia, 2013.

Source: VDACS (2013b); Virginia Wine (2013); Pickyourown.org (2013); Extension agent correspondence, 2013.⁵

⁵VDACS (2013b), Virginia Wine (2013), and Pickyourown.org (2013) were used to create a database of contacts that were used to create this map. In addition, Extension agents emailed and added to the contact list to create a more detailed database. To construct the map, ArcMap 10.1 GIS software was used.

is also significant. Such idiosyncrasies include the demographics and income of the individuals as well as the densities and growth rates of the total population. Optimal consumer bases would be those metropolitan areas with higher population densities. This hypothesis is confirmed by the high density of agritourism operations in Northern Virginia (figs. 7 and 8). More specifically, Alexandria, Arlington, Falls Church, and Manassas Park are the highest density independent cities or counties in Virginia, all with upwards of 5,000 people per square mile (U.S. Census Bureau 2013).

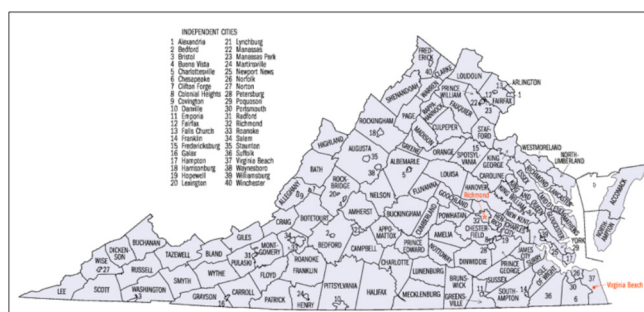


Figure 8. Counties and independent cities of Virginia.

Source: U.S. Census Bureau (2013).

On the opposite side of the spectrum, lower population densities are seen in Southern Virginia. The one exception is Danville, which ranks 37th among Virginia's counties and independent cities in terms of population density (U.S. Census Bureau 2013). Interestingly, the Danville region (including Pittsylvania County) sustains a sizeable agritourism operation density (fig. 7). Several hypotheses may explain this exception. First, Danville is classified as a "micropolitan" statistical area, which means it has a high enough population density to meet the criteria but is not as densely populated as a metropolitan area. More importantly, Danville is optimally located within 90 miles of several North Carolina metropolitan areas, including Greensboro, the Triangle area (Durham, Chapel Hill, and Raleigh), and Winston-Salem.

Outside of population density, there is another essential factor in evaluating a metropolitan area as a good consumer base — median income. Being located near a metropolitan area with a high median income can create the potential for cash inflow at an agritourism

operation. According to Marrocu and Paci (2012), in tourism, income level in the destination region is a proxy for the level of economic development in an area. High-income regions are assumed to provide better public services, which attract visitors. The top household median income counties in Virginia are Loudoun, Fairfax, and Arlington, all of which are in Northern Virginia near Washington D.C. (U.S. Census Bureau 2013). According to the Washington Post (Sept. 20, 2012), these three counties were also the top three counties in the United States in terms of income in 2011. Thus, Loudoun, Fairfax, and Arlington counties, along with much of Northern Virginia, make a perfect location for agritourism due to its great consumer base.

Finally, population growth rate could be a key factor in evaluating a metropolitan area as a potentially successful consumer base. According to Brown and Reeder (2007), earnings tend to be highest in densely populated areas where the growth rate is low or negative. When this was tested at the national level, they found that population growth rate was negative and statistically significant at the 1 percent level for recreational earnings. In Virginia, the lower population growth rates are not necessarily associated with more agritourism operations. The only counties with negative population growth rates that have more than 10 operations are Nelson, Halifax, Madison, and Rappahannock counties.⁶ Other notable counties with negative growth rates are Bedford, Giles, and Pittsylvania counties, all containing at least five agritourism operations (U.S. Census Bureau 2013). All other cities and counties have either positive growth rates or minimal operations. Thus, further analysis is needed to analyze the relationship between population growth rate and the number of operations in a location.

To bring all aspects analyzed together, one could look at Richmond, Va. Despite the high population density of this metropolitan region, Richmond has a low median income and a high population growth rate (U.S. Census Bureau 2013). Both of these aspects likely contribute to the low agritourism density of Richmond, as seen in figure 7. This may be due in part to urban centers being less likely to have agritourism anyway, due to their lack of rural area. This is exemplified by the surrounding, more rural, counties of Hanover, Goochland, and Powhatan, all of which have a higher median income and a decent amount of agritourism operations but lower

population densities than Richmond. Overall, distance to a metropolitan or consumer base is important, but possibly more important is the composition and structure of the consumer base, such as median income, population density, and population growth.

Labor

Labor tends to be a critical factor in agriculture and business geographic decisions, but in agritourism, operators often rely more on family labor than outside labor. Schilling et al. (2006) found this to be the case in New Jersey, while Tew and Barbieri (2010) argue that agritourism tends to be a strategy that helps to bring supplementary income without large investments in infrastructure, labor, or equipment. Some options are more labor-intensive than others, which provides options to farmers who are deciding on agritourism operations and events.

Although labor is the largest cost for most farms, often-times, agritourism simply reallocates excess or existing labor to other tasks. For example, rather than hiring additional labor, an operator may use existing labor to complete additional agritourism tasks. In this sense, Fleischer and Tchetchik (2005) state that in tourism ventures, the reallocation of labor creates more efficient use of an operator's labor resources, which can help market products. In addition, most farmers have cheap hired labor available on the farm. Consequently, it appears that the issue of labor availability is relatively unimportant for agritourism operations and their location.

Raw Materials

The availability of raw materials in a region tends to be less important for small businesses in deciding on a location when compared to labor and markets (Sloagett and Woods 2003). Additionally, agritourism is a service industry with little reliance on raw materials. The existence of amenities, both natural and man-made, may be an important factor for agritourism that is comparable to the availability of raw materials for manufacturing industries. According to Brown and Reeder (2007), natural amenities not only provide the on-farm consumer base with a vast variety of natural resources and recreational opportunities but can also have long-term effects in the form of increased farmland value. In

⁶The U.S. Census Bureau (2013) calculated population growth rates for the counties of Virginia as a percent change in population from April 1, 2010, to July 1, 2012.

addition, Bagi and Reeder (2012) found that the percentage of U.S. farms involved in agritourism tends to be highest in areas with more natural amenities, such as the Rocky Mountains. In general, tourism benefits from a certain natural element because tourists are attracted by the natural environment of a destination (Marrocu and Paci 2012). Therefore, the presence of natural amenities and recreation in a county might be important in defining its agritourism density due to the incentives it can provide to tourists.

One way to measure the presence of natural amenities in a specific county is the USDA amenities score. According to Brown and Reeder (2007) and their USDA report, the natural amenity score is a measure of the physical attributes that make a county a better place to live or, in this case, to visit. According to the USDA Economic Research Service (1999), the amenities value is measured by a series of six measures within the three attributes of climate, topography, and water area.⁷ According to this measure, Bath, Franklin, and Alleghany counties have the highest scores for natural amenities in Virginia (fig. 8). While this may be regarded as a contributing factor to agritourism location, a closer analysis shows that there may not be a clear relationship between the presence of natural amenities and agritourism location in Virginia. This is because the density of agritourism operations in those three counties is lower compared to the highly dense counties of Northern Virginia.

The next step is to analyze the links between agritourism density and recreational score. In their study, Johnson and Beale (2002) identify nonmetro recreational counties (according to 1993 Office of Management and Budget delineation) based on a weighted index of four key aspects: (1) the budget and salary in entertainment and recreation, accommodations, eating and drinking establishments, and real estate; (2) the percentage of total personal income reported for these same sectors; (3) the percentage of housing units for seasonal use; and (4) per capita receipts from all hotels and motels. Based on these criteria, Nelson, Rappahannock, Bath, and Highland are among the top nonmetropolitan recreational counties of Virginia. Some of these counties are also higher in agritourism operation density than other counties in Virginia (fig. 7), which may point to

a possible relationship between recreational scores and agritourism operation density on that same county.

Transportation and Infrastructure

Another central factor is the presence or absence of transportation infrastructure. In general, transportation has widely eased travel and spurred the tourism industry. According to Sorupia (2005), modern transportation has created an ease of accessibility that has encouraged a widespread growth of nature tourism in the United States. More specific to agritourism, Jensen et al. (2006) find that easy transportation access was rated extremely important or highly important by 71 percent of Tennessee agritourism businesses surveyed. In addition, Marrocu and Paci (2012) argue that a tourism destination that is easy to reach benefits from an increase in tourists. To account for the ease of travel and accessibility, the presence of a major interstate running through each county was documented. This information is now used to analyze the relationship between agritourism density and the presence of interstates in a county (fig. 9). We can see when comparing figure 5 and figure 7 that those counties with interstate highways tend to have a larger number of agritourism operations, but some are more populated than others. As previously discussed, more operations are located along Interstate 81 through the Shenandoah Valley than along I-77 in Southern Virginia. In addition, operations seem to follow I-66 in the North, I-64 and I-95 through Central Virginia, and I-85 in the South. In summary, the presence of interstate highways and the ease with which a visitor can travel to an operation seem to be

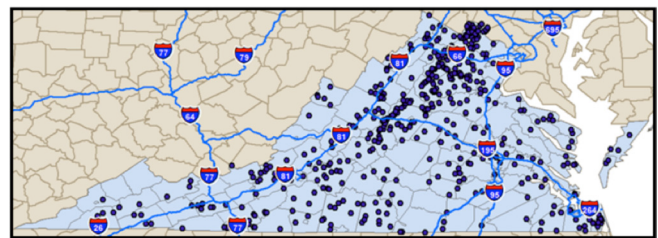


Figure 9. Map of major interstate highways in Virginia.

Source: VDACS (2013b); Virginia Wine (2013); Pickyourown.org (2013); Extension agent correspondence, 2013.⁸

⁷According to the USDA Economic Research Service (USDA-ERS 1999), the six sub-categories include warm winter, winter sun, temperate summer, low summer humidity, topographic variation, and water area.

⁸VDACS (2013b), Virginia Wine (2013), and Pickyourown.org (2013) all were used to create a database of contacts that were used to create this map. In addition, Extension agents emailed and added to the contact list to create a more detailed database. To construct the map, ArcMap 10.1 GIS software was used.

linked to the density and popularity of agritourism operations in Virginia.

Industrial Site, Utilities, and Financial Capital

Finally, according to Sloagett and Woods (2003), entrepreneurs and small business owners place importance on availability of energy, water, and wastewater treatment at a reasonable price. In addition, the presence of an industrial site may be a central factor when deciding the location of any small business. Metropolitan areas tend to have reasonably priced industrial sites and utilities. Thus, the farther from the consumer base (metropolitan areas), the more utilities will cost. In the case of agritourism, this may not be an issue because many operations conduct agritourism activities on-farm, meaning they utilize the existing structure to create more value. This seems to support the concept articulated by Schilling et al. (2006) that one of the advantages of agritourism is the utilization of excess resource capacity.

In general, access to capital is crucial to the success of any small business. In a survey of 549 company founders in the United States, Wadhwa et al. (2009) found that 68 percent of respondents viewed the availability of financing or capital as important. On average, these same entrepreneurs listed access to capital as the second most difficult challenge to face. Although this is often a difficult task, agritourism operators may view this as relatively less challenging because major capital investment has already been made, in most cases, through the purchase of farmland and equipment. Additionally and as previously stated, agritourism often uses the excess or underutilized capital from farm production to create added benefit to an operation. In summary, while additional operational capital is sometimes necessary and affects the profitability of an operation, oftentimes the location decision has been already made; therefore, the issue of access to capital is less important for the agritourism industry.

V. Case Study: The Shenandoah Valley Region and the Impact of Wineries

The influence of the aforementioned location factors in the Shenandoah Valley likely contributes to the partici-

pation and appeal to agritourism operators. The region accrued \$2.1 billion from tourism in 2011, which accounted for approximately 10 percent of the tourism dollars spent in Virginia (Virginia Tourism Corporation 2013). Other counties near the Shenandoah Valley also reap the benefits of its prime location. For example, Albemarle and Nelson counties most likely benefit from their proximity to the scenic views and historic attractions of the Appalachian Mountains in the Shenandoah Valley region.

Wine regions are often associated with escape and relaxation and are typically linked to idyllic rural and cultural experiences. The concept of a rural paradise where leisure, cuisine, scenery, and outdoor activities are prominent has been conveyed by wine producers (Brown and Getz 2005). The promotion of this type of atmosphere may be a contributing factor to why counties in or surrounding the Shenandoah Valley have a high concentration of wineries. For example, wineries constitute approximately 60 percent of agritourism operations in Nelson County and about 50 percent of those in Albemarle County (author's own calculations). Furthermore, Albemarle, Greene, Nelson, and Orange counties are all part of the Monticello American Viticultural Area, which was approved by the Alcohol and Tobacco Tax and Trade Bureau in 1984 (Virginia Wine 2013).

The wineries of the Shenandoah Valley region present a perfect example for the explanation of the benefits of agritourism and the factors discussed previously. Wineries in Virginia tend to follow a similar trend as agritourism operations and often define the agritourism industry because they make up about 40 percent of Virginia agritourism operations. It is important to note that while wine tourism is a subsector of agritourism, not all wineries are agritourism operations because they have to provide a certain service or experience that customers want to visit. Figure 10 shows the density of wineries that are considered agritourism⁹ by county, and it reveals a similar density pattern to the overall agritourism operations shown in figure 7. These patterns can be explained by the same factors that explained the total agritourism industry and by the necessity of certain conditions to grow grapes. The conditions that must exist for grape growing give rise to the importance of the “terroir” and other winery-specific location factors; “terroir refers to various pertinent aspects of climate,

⁹Wineries and vineyards were determined to be agritourism operations if they presented a rural experience, such as a wine tasting room, vineyard tour, or an educational experience. Vineyards must also be located in a rural setting or on a farm to promote the agricultural atmosphere and must be open to the public, considering agritourism is heavily based on the full experience.

topography, soils, geology, and so on that determine the quality of the vine's growing conditions. Vineyard site selection therefore is crucial" (Anderson 2013, p. 4). The large number of wineries in the Shenandoah Valley is a clear indicator of its favorable conditions for grape

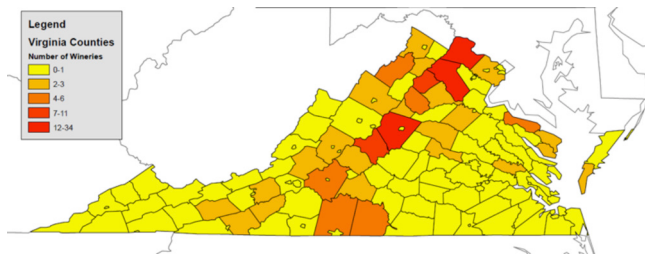


Figure 10. Density of wineries in Virginia in 2013.

Source: *Virginia Wine (2013)*.¹⁰

production.

Overall, the Shenandoah Valley region is characterized by having some of the previously explained factors. More specifically, it has a wide consumer base to choose from, ranging from various metropolitan areas in and around the region that includes Harrisonburg, Roanoke,¹¹ Staunton-Waynesboro, and Winchester. Importantly, this region is reasonably accessible from Washington, D.C., and other important metropolitan areas in Virginia. Shenandoah, Frederick, and Rockingham counties are areas where agritourism operations and wineries have a tendency to agglomerate (figs. 8 and 10). Other benefits of the region include the scenic views of the Appalachian Mountains as well as the high amenity values of counties within the region, such as Alleghany County. Finally, this area benefits from the presence of an important transportation infrastructure — Interstate 81. According to Perdue (1996, p. 44), “previous research has determined that population, accessibility, and destination attractiveness are the primary determinants of recreational travel flows.” With this in mind, the Shenandoah Valley seems to be a perfect travel destination and therefore, a suitable location for agritourism operations.

VI. Conclusion and Policy Implications

The literature on the demographics of Virginia agritourism is limited to one study: McGehee and Kim (2004).

Since then, the number and popularity of agritourism ventures have increased, which calls for a more current evaluation of this industry. In addition, the same study focused on the motivational factors and demographics of agritourism operators and did not address the location and profitability of an operation.

Thus, the current paper contributes to the body of literature on agritourism by providing insight into the geographical factors that influence the number of agritourism operations in a region. Furthermore, this study evaluates and applies the business location framework of Sloagett and Woods (2003) to agritourism in Virginia. A series of geographical factors were applied and adapted to the framework, such as the influence of metropolitan areas, interstates, population density, population growth, median household income, and natural amenities. Among these factors, amenities seem to be the least clear as to whether they affect agritourism operation density.

The next step is to conduct an updated survey of agritourism operators in Virginia that addresses the role of these location factors in the profitability of a venture. A future survey could empirically test the ideas that a series of factors, such as proximity to a metropolitan area, population trends (growth and density), income, and recreational counties are influential factors in the location of an agritourism operation and its success. Furthermore, future research could address other key issues, such as the lack of a relationship between natural amenities and the location of agritourism operations or the importance of labor availability. In addition to a future survey and the factors discussed, there are some other influential factors not discussed in this study (e.g., revenue streams, personal preference, local government support, etc.) that would merit future research. Other possibilities for future research include an examination of profitability factors of agritourism operations, promotion and marketing strategies, evaluation of agritourism obstacles, and how to mediate those obstacles to create fewer barriers to entry.

There are some political and informational gaps that need to be addressed in future research of agritourism operations. In Bruch and Holland (2004), 11 percent of Tennessee agritourism operators stated a need for financial assistance. The same study noted a problem in the transparency of knowledge, as informational gaps

¹⁰ArcMap 10.1 GIS software was used to create this map.

¹¹According to *Virginia Wine (2013)*, Roanoke is considered part of the Shenandoah Valley region, while Blacksburg-Christiansburg is considered part of the Blue Ridge region.

existed, creating the need for education and outreach. Thus, there is a possible need for state organizations to create transparency of information through education, as well as to create funding opportunities. Tew and Barbieri (2010) confirm this concept and describe a need for a two-way conversation among all stakeholders. As far as the relationship among funding, outreach, and location, Bagi and Reeder (2012) suggest that the importance of public access and good location can help experts and lenders know where to invest their money, time, and resources. In addition, these individuals will know what areas are in need of promotion or which areas to promote. This can also inform farm operators on which locations are best suited for investment in agritourism events.

Conclusions from this study suggest four significant areas of focus for Virginia agritourism: proximity to the consumer base, transportation infrastructure and accessibility, population trends, and the possible importance of amenities — both natural and manmade. As for amenities, it is imperative to bring manmade amenities to more rural areas that do not have great access to the consumer base to increase attractiveness. Building other attractions and cultivating links to other entertainment venues can help bring the consumer base to more rural areas and provide more incentive for consumers to increase the number of miles they will travel.

With natural amenities, there is little to no ability for movement, and therefore, the important policy implication is to make them more accessible and well-known in order to increase visitation. This may mean creating more interstate highway exits to increase the accessibility of a county from the interstate or developing promotional efforts. Lastly, increasing the accessibility from higher population counties to rural areas through infrastructure and roads is important. For example, increasing the ability and efficiency with which Northern Virginia residents can travel to rural areas of the Shenandoah Valley would likely increase visitors to agritourism ventures.

Finally, it is essential to note the application of this study across regions. Despite the regional scope (Virginia) of this study, its findings are of value for other regions in which agritourism plays an important economic role. The influence of the seven general location factors exists regardless of region, although the weights and influence of each factor may change for different

locations.

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