Journal of Rural and Community Development

Diversifying Rural Economies with Natural Resources: The Difference between Local and Regional OHV Trail Destinations

Authors: Matthew Hughes, J. Adam Beeco, Jeffrey C. Hallo, & William Norman

Citation:
Hughes, M., Beeco, J. A., Hallo, J. C., Norman, W. (2014). Diversifying rural economies with natural resources: The difference between local and regional OHV trail destinations. *The Journal of Rural and Community Development, 9*(2), 149-167.

Publisher: Rural Development Institute, Brandon University.

Editor: Dr. Doug Ramsey

Issue Dedication:
This issue of the JRCD is dedicated to Cheryl Williams who passed away suddenly in 2010. She was in the first semester of her PhD program in Nursing at the University of Saskatchewan at the time of her death. Her co-authored paper in this issue is based on her master's thesis research. Pammla Petrucka was Cheryl's advisor. It was Pammla's wish to publish this peer-reviewed article in honour of Cheryl's work and her family.

ISSN: 1712-8277 © Journal of Rural and Community Development
www.jrcd.ca

Diversifying Rural Economies with Natural Resources: The Difference between Local and Regional OHV Trail Destinations

Matthew D. Hughes
Clemson University
Clemson, South Carolina, USA
mhughe2@clemson.edu

J. Adam Beeco
Clemson University
Clemson, South Carolina, USA
jbeeco@clemson.edu

Jeffrey C. Hallo
Clemson University
Clemson, South Carolina, USA
jhallo@clemson.edu

William C. Norman
Clemson University
Clemson, South Carolina, USA
wnorman@clemson.edu

Abstract

With an estimated forty-four million riders, Off-Highway Vehicle (OHV) usage is one of the fastest growing forms of recreation in the United States. The National Survey on Recreation and the Environment suggests that this recreation and growth is largely occurring on public lands, most of which are situated in rural areas. OHV riders have been reported to have a consumer surplus ranging from US$ 25.51 to US$ 131.58 for recreational day trips, creating a potential lucrative market for rural communities wishing to diversify their economy. However, research has also found that OHV use can negatively impact natural resources and the experience of other non-OHV visitors. Given the potential positive economic impact, as well as the potential negative environmental and social impacts, it is important to identify which factors are most important for attracting OHV users that maximize positive outcomes and reduce negative outcomes. Additionally, for destinations seeking to establish or expand OHV opportunities to attract substantial users, information is needed on the differences between trail systems that attract only local markets, versus regional or national markets. Results suggest that the primary factor distinguishing between local and regional trails systems is the number of miles of trail, with secondary considerations being trail design and management policies.

Keywords: Off Highway Vehicles (OHV), motorized recreation, rural natural resources, trail characteristics

ISSN: 1712-8277 © Journal of Rural and Community Development
www.jrcd.ca

1.0 Introduction

Off-Highway-Vehicle (OHV) use has been a growing form of recreational activity in the United States for the past few decades, especially among middle class America (Cordell et al., 2004; Cordell, Betz, & Green, 2008; Cordell, Betz, Green, & Owens, 2005). OHV users have also been identified as a high spending recreational group based on OHV users spending over US$ 900 on travel-related expenses (Foulke, Batian, Taylor, Coupal, & Olson, 2008; Holmes & Englin, 2010). Despite this growth, trail access and development for OHVs has grown at a slower rate than demand (Center for Business and Economic Research, 2006). These conditions make OHV development a potentially lucrative market for rural communities, particularly those adjacent to public lands that are suitable for OHV recreation.

Research concerning OHV recreation has primarily focused on the economic, social, and environmental impacts rather than on amenities and trail system attributes to attract OHV users (Crompton, 2006; Jakus, Keith, & Liu, 2008; Jakus, Keith, Liu, & Blahna, 2010; Priskin, 2003a). Generally, these economic and environmental findings suggest that while OHV usage provides an economic boast, there are numerous social and environmental concerns associated with OHV use, particularly on public lands. Overall, destinations that capture the economic benefits while mitigating the social and environmental impacts could produce viable and sustainable OHV tourism.

Despite these findings, there is little understanding of what attracts OHV users to trail systems. A better understanding of OHV user preferences for trail systems including design of trails, length of trails, and policies of a trail system are needed to attract OHV users (Hallo & Manning, 2009; Kil, Holland, & Stein, 2012). Additionally, for the establishment of regionally attractive destinations based on criteria desired from regional OHV users, more information is needed to identify which characteristics differentiate between local and regional trail system designs. This categorization will help planners of both public land management agencies and tourism bureaus to effectively target the appropriate market. Therefore, this article focuses on OHV destination preferences for trail systems. There are two primary objectives: a) identify generally desirable and undesirable characteristics of OHV trails from the user perspective, and b) distinguish differences between trail system characteristics desired for local or regional OHV destinations. This research is timely and pertinent given the continued increase in OHV use, the potential economic impact associated with OHV tourism, and management strategies needed to produce both regionally attractive and sustainable OHV trail systems.

2.0 Trends in Rural America

The 1990s and the beginning of the 21st century showed a trend of urban to rural migration across the United States (Jones, Fly, Talley, & Cordell, 2003). While the 2012 census suggests a large decline in rural areas in the United States previous research suggests that the baby-boomer generation is seeking refuge in smaller towns away from the problems of major city life (Jones et al., 2003). Another major cause of population growth is the access and proximity to public lands that house desired natural amenities such as mild climate conditions, topographic variations, and the presence of water areas (McGranahan, 1999). This is especially increasing

in "gateway" communities that operate as staging areas for recreation purposes (Howe, McMahon, & Probst, 1997). While many rural community economies still rely on traditional extraction (agriculture, mining, timber, etc.) or manufacturing within their natural resources, there are growing trends of using these natural resources for recreation based tourism (Krannich & Petrzela, 2006). There are nearly 680 million acres of public lands in the United States managed for different types of public usage (Zaslowsky & Watkins, 1994). Policy and rural community developers are challenged with designing and implementing strategies that must mediate competing claims on these resources, ensure equity of access, and protect the resource base and landscape for future generations (Brown & Swanson, 2006). While the National Parks are largely preserved for their natural beauty and historical significance, they largely operate as attraction or tourism destinations for gateway communities (Zaslowsky et al., 1994). Land operated by the United States Forest Service, Bureau of Land Management, and the National Wildlife Refuge has more flexibility in regards to natural resource management, affecting not just gateway communities but many adjacent rural communities (Zaslowsky et al., 1994). Within these public lands lie mountains, rivers, lakes, wilderness areas, and other natural features which offer a distinct competitive advantage over more urban areas (Galstron, Baehler, & Baehler, 1995). Accessing these amenities and the opportunity for recreation has spurred the growth of tourism to both gateway communities as well as non-traditional tourism communities with ample access to recreation based tourism (McGrenahan, 2006).

2.1 Tourism in Rural Communities

As with many forms of economic development, tourism as an economic driving force has both positive and negative consequences. In urban communities, where economies are large and diversified, tourism as part of an economic diversification initiative is possible (McGrenahan, 2006). However, in rural communities careful planning and decision making are necessary when incorporating tourism as it has the potential to make communities just as dependent and vulnerable to economic fluctuation as any other industry. However, given the previously mentioned natural amenities (mild climate conditions, topographic variation, water areas, etc.) that are present in rural communities, nature and recreation based tourism can be a viable option to diversify an economy (Krannich et al., 2006).

These natural resources in which recreation takes place can see the development of major resorts and infrastructure designed to support access to these natural amenities. However it should be noted that economic and policy changes in these resource dense communities are rarely based off local initiative but rather state or federal interests (Krannich et al., 2006). Where economies are dependent on tourism, research has found that there are higher income levels, faster population growth, and higher housing prices (English, Marcouiller, & Cordell, 2000). As mentioned, communities can become dependent on the tourism industry if proper planning is not utilized. This dependence can come with seasonal and part-time employment opportunities that lack benefits. Many investors in the region may not be local, causing money to leave the community. Other issues also arise including property value inflation and migrant workforces that can displace residents during peak seasonal activity. These new industries may generate revenue but rarely exceed the additional costs associated with the need to expand public infrastructure and services. Many rural residents may not be prepared, trained, or interested in working

in amenity-based economies. This may occur if this new industry is inconsistent with the traditional ways of life and occupations of an area (Carroll, 1995).

It is this last point that is exceptionally important in communities with strong and traditional identities. Occasionally small communities that embrace their small, intimate rural past may begin portraying a "phony folk culture" (Hester, 1990). Gatlinburg and Pigeon Forge, Tennessee, are prime examples of rural communities that embraced such plans and in turn developed an exploitative tourism environment. Furthermore, natural amenities, the very basis for the tourism industry in these rural areas, can lose much of their value when an ever increasing population comes to visit them, requiring individuals who seek solitude to travel farther and farther off the beaten path.

With all of these things needing to be considered during policy and community development in rural communities, tourism can offer a positive addition to a diversifying economy. Minimizing seasonality and developing a tourism base that in its own right encourages further development and diversification can be a welcomed economic driving force. Recreation, and specifically OHV users operating as recreation tourists, can create such an economy. By developing a proper set of trails, OHV users can begin to frequent a trail system supporting the local economy in a multitude of ways.

2.2 Off-Highway Vehicle Impacts and Considerations

The literature has referred to OHVs as off-road vehicles, motorcycles, trail bicycles, all-terrain vehicles, utility type vehicles, large trucks, snowmobiles, swamp and dune buggies (Cordell et al., 2005; Hallo, Manning, & Stokowski, 2009; Havlik, 2002; Stokowski, Lapointe, & LaPoi, 2000). Three different types of OHV impacts have been highlighted within this line of research. These impacts include the potential and beneficial economic impacts of OHV usage to specific areas, the mixed socio-cultural impact of OHV enthusiasts and other non-OHV user groups, and the negative environmental impacts OHV usage has on natural resources. As with other recreation management opportunities, managers must balance these three components to provide the best overall experience for different stakeholders. However, OHV use is unique because each of these economic, social, and environmental impacts are magnified compared with other non-OHV users. This literature highlights these three areas of consideration and how they have been addressed in the OHV literature.

2.3 Economic considerations

OHV enthusiasts are a market that can offer a supplemental economic option for rural communities with lands available that are large enough to support OHV usage. Wyoming OHV visitors spent more than US$ 900 on their most recent trip for travel-related expenses (Foulke et al., 2008). Furthermore research suggests that OHV users have a consumer surplus that varies from US$ 25.51 to US$ 131.58 (Holmes & Englin, 2010). Similar research suggests that an average consumer surplus of US$ 78 translates to a per trail per summer minimum consumer surplus of between US$ 219,467 and US$ 296,876, and a county level surplus per summer to be between US$ 796,447 and US$ 1,077,367 in Larimer County, Colorado (Deisenroth, Loomis, & Bond, 2009). While these results may vary from trail system to trail system, the potential economic impact can be of particular interest to rural communities wishing to diversify their economic development. Furthermore the additional business required to maintain these OHV and support such a tourism community would

further assist in diversifying an economy. While basic amenities will already be present, additional gas stations, overnight accommodations, and OHV repair shops will likely be supplementary business required to support an influx of OHV users. Trails that are open throughout the year (pending weather conditions) may also help minimize seasonality for other dimensions of the economy.

2.4 Socio-Cultural Impacts

OHV recreation is growing at an impressive rate. Havlik (2002) mentions the long-time use of motorcycles on public land and Cordell et al. (2005) discuss the addition of the all-terrain vehicle (ATV) furthering this growth and demand on public and private lands. With growth of over 100 % in the past decade nearly 25% of people ages 16 and above now participate in some form of OHV recreation (Cordell et al., 2005). OHV recreationalists enjoy an enhanced experience with nature, as well as having stories to share with their peers. The ability to connect with oneself as well as one's family and friends over the use of OHV recreation was also found in previous studies (Manning, 2011). This increase in use can be attributed to an increase in the U.S. population, declining prices, and obese and aging populations still wishing to access remote areas (Flather & Cordell, 1995). Increasing technology has also influenced the growth of OHV popularity. This increase in technology has allowed for a growing range of equipment and usage behaviors. This research suggests that OHV recreation creates a unique cultural identity, in which individuals identify with other OHV users and benefit from engagement with their peers and nature (Manning, 2010).

However, there are negative socio-cultural impacts to other non-OHV-users. This largely occurs when OHV users come into contact with others and create conflict. There are many well-documented cases of conflict between OHV users and non-users. This includes but is not limited to the conflict between snowmobilers and skiers (Vaske, Needham, & Cline, 2007), and hikers, horseback riders, bikers, and motorcyclists (McCay & Moeller, 1976). Recreation based conflict has been linked to four main factors. These factors include activity style, resource specificity, mode of specificity, and lifestyle tolerance. Varying degrees of interaction may arise based on any one of these factors or multiple factors at one time; however, improved information of desired trail conditions from OHV users might be beneficial for improved management implications. For instance, creating policy that only allows OHV users on OHV trails and limits use from other groups may be beneficial to all recreation users and may minimize conflict. Furthermore creating a trail system in a community that has a culture and tradition that is more accepting of OHV usage will likely be a more successful community enterprise than trying to do the same thing in a community that does not share the same sentiment. Further research also highlights the negative impact that OHVs have on the perceptions other recreation users have concerning OHV usage (Priskin, 2003b). Many other recreation users have negative perceptions of OHV based off the well documented negative environmental degradation that occurs on intensely used OHV areas.

With social impacts being both positive (for the users) and negative (for conflicting non-OHV users) conflict mitigation strategies are likely to play a large role in the successful implementation of OHV tourism. However, there are still environmental concerns that must be addressed.

2.5 Environmental Impacts

Given the growing popularity of this form of recreation, escalating concerns related to the environmental damages that OHV use may bring have been expressed and documented. Ecological research on impacts of OHVs has largely focused on the negative impacts of such usage. Godfrey & Godfrey (1980) found that OHV usage can largely contribute to vegetation damage, increased erosion, reduced air quality, and disturbances of wildlife. The USDA Forest Service supports these findings, and suggests that wherever OHV usage occurs there are increases in environmental damage, declaring unmanaged recreation activity, especially of OHV type as one of the four greatest threats to National Forests and Grasslands (USDA Forest Service, 2006).

While there is ample research on the negative impacts of OHV usage, there is limited research concerning the user experience. There is a growing need for this type of research to be conducted as it can provide information for improved management (Hallo & Manning, 2009; Hallo et al., 2009). Some work has been conducted on OHV users and their desired experience (Hallo & Manning, 2009; Hallo et al., 2009; Kil et al., 2012; Smith & Burr, 2011). This research is more specific and highlights ideal trail characteristics OHV users would like in both a local and a regional site.

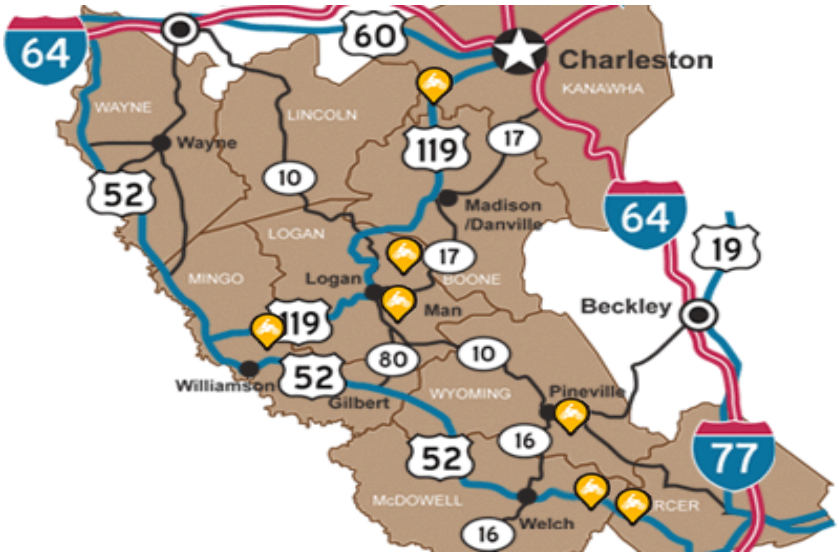
3.0 Destination and Local Trail Systems

Data collection occurred at multiple sites. The first site was the Hatfield-McCoy Trail system in West Virginia (see Figure 1). The other sites were smaller local trail systems located throughout South Carolina. The Hatfield-McCoy Trail system is a nationally renowned network of OHV trails known for a unique Appalachian OHV riding experience. With over 600 official miles of trail and an additional 2,000 planned, this trail system is second in length only to the Piaute OHV trail system in Utah. The Hatfield McCoy trail system is a statutory corporation developed by the West Virginia Legislature to assist in the development and diversification the economy in the counties of Logan, Kanawha, Wyoming, McDowell, Mercer, Wayne, Lincoln, Mingo and Boone with major support communities of Gilbert and Man, West Virgina, amongst others. These counties and rural communities have created ordinances to allow for OHV use on public roads and designed tourism development to increase OHV use. The Hatfield-McCoy Trail Authority is behind the majority of these promotional and managerial efforts. This organization has been behind the development of the extensive length of trail and support infrastructure in the area, making West Virgina and the Hatfield-McCoy trail system a premiere North American destination for OHV riders and an important addition to the economic development of the area. With so many trails available there is a large diversity of activities for riders of various skills who want to stay for multiple days.

For the Hatfield McCoy Trail system, data collection occurred during the Trailfest event which occurs in the fall in Gilbert, West Virginia. Trailfest is a widely attended OHV event representing dozens of states and multiple countries. This event alone is an excellent economic contributor for the area and a great marketing strategy for the trail system. During data collection it was quite clear that the local communities, Gilbert in particular, have a certain level of acceptance for OHV users in that community represented by the encouragement of OHV usage through laws and ordinances. These communities allow OHV riders to use the streets, drive their vehicles through dining options, and supply multiple shops and other

accommodations that encourage use of the trail systems including gas stations, OHV repair, and hotels located within a close proximity, and in some cases right on trails within Gilbert.

Figure 1. Hatfield-McCoy Trail system trailheads and effected counties and community centers – http://www.trailsheaven.com/



Source: Hatfield-McCoy Regional Trail Authority, 2012

The Center for Business and Economic Development at Marshall University conducted an extensive economic impact and contribution of the Hatfield-McCoy trail system in 2006. Within this report the authors highlight that:

> Direct effects of the Hatfield-McCoy Trail system produced over US$ 5 million in additional regional output that would not have existed if the system had not been there. This translates into almost US$ 2 million in additional income for those 112 individuals who were directly employed (full or part time) due to the spending. This direct spending resulted in indirect results of approximately an additional US$ 1 million in output, almost US$300 thousand in additional income received and employment of 10.5 additional workers. (Center for Business and Economic Research, Marshall University, p. 38)

To represent local trails, data was also collected from three sets of trails located in Sumter and Frances Marion National Forests in South Carolina. Each of the trail systems is managed by the USDA Forest Service. They are the Enoree Trail located in Enoree Ranger District, the Parson's Mountain and Cedar Spring trails located in the Long Cane Ranger District, and the Wambaw Cycle Trail located in the Frances Marion National Forest. Figure 2 shows how spread out these trail systems are from one another.

These three trails are isolated in different parts of the state, each one having less than 50 miles of trail. Each trail has limited connectivity to accommodations and trails do not offer a diversity of riding experiences. Many of these trails cannot support or entertain large populations of users for multiple days, as is the case with the larger

trail systems. During data collection it was made aware to the researchers that the two most commonly visited, and entertaining sites (anecdotal evidence) were the 22.5 mile Enoree Trail and the 40 miles Francis Marion Wambaw Cycle Trail.

Figure 2. Sumter National Forest Vicinity Map, National Forest Service Store - http://nationalforeststore.com/

Source: USDA Forest Service, 2014

4.0 Data Collection and Analyses

A mixed method approach was used to refine and better understand the differences between users of local trail systems and users of regional/national trail systems. An on-site visitor survey consisting of open and closed ended questions was used to gather data on users of both local trail systems and a regional/national trail system. Demographics, travel patterns, total spending, type of OHV recreation, and preferences for OHV site characteristics were all constructs of interest.

A total of 301 on-site surveys were obtained consisting of 161 from local trail systems, and 140 from the regional/national trail system. Questionnaires were administered in a total of four locations in the summer, fall, and winter of 2010. During Trailfest 140 surveys were collected from regional/national visitors to the area over a three day data collection period. The 140 surveys included individuals from two countries, 20 states and 98 unique locations (metropolitan areas were counted as one, even if zipcodes were different), including states as far away as Florida and Arkansas. While this sample does not represent North America in its entirety, it is a very geographically diverse sample.The sites in South Carolina included the previously mentioned Enoree trail system, Francis Marion, and Parson's Mountain/Cedar Springs trails. Of the 161 surveys collected in South Carolina, only two states were represented, North Carolina and South Carolina, with

only 60 unique locations. Data was collected over a total of 12 days over 8 weekends. Refer to Table 1 for a more thorough breakdown of each trail system and their respective number of sampling days and visitors sampled.

Table 1. *Sample days and locations*

	Number of Sampling Days	Number of Visitors Sampled
Hatfield-McCoy	3 (1 weekend)	140
Enoree	5 (4 weekends)	87
Francis Marion	6 (3 weekends)	68
Parson's Mountain and Cedar Spring	1	6

Note: The Parson's Mountain and Cedar Spring trail heads were only sampled once, due to multiple trail heads and little visitation

Both qualitative and quantitative analyses were used to assess the differences between visitors to local trail systems and a regional/national trail system. The qualitative results are derived from a single self-report question about the most important factors when making the choice to travel somewhere to ride an OHV. These responses were transcribed verbatim, then coded and analyzed according to procedures adapted from Miles and Huberman (1994). Open coding was used to group responses into similar categories to derive commonalities within each group (i.e., local users and regional/national users; Corbin & Strauss, 2008). Two researchers independently used open coding to establish these codes and categories with a goal of reaching 80% inter-rater reliability. The inter-rater reliability between the two trained researchers for the codes generated was 93% for local trail users and 92% for regional/national trail users. Next, the researchers collectively discussed differences until 100% agreement was reached.

5.0 Results - Qualitative Themes

Qualitative themes from an open ended question about what the most important considerations were when making the choice to travel somewhere to ride OHVs revealed differences between local and regional/national trail users. Analysis of the qualitative data revealed six themes. These themes resulted from patterns found in each of the participants' responses within this question. Two of these themes were the same for both local and regional users. These themes focused on *trails* and *safety*, suggesting that well maintained and safe trails were crucial for most users. For local day users, the cost, being affordable, and the distance from home were important. These users often travel to and from home the day of participation, suggesting while accommodations are not necessary, an affordable distance, as determined by gas costs, is important to the decision making process.

Regional/national riders expressed greater importance for accommodations and the need for a welcoming culture of ATV users. Specifically related to this welcoming culture, participants reported hospitality, easy access to trails from accommodations, and an ATV friendly town as important when deciding where to ride. This further supports the success that West Virginia has seen in the rural communities that have embraced OHV friendly policies. These policies include but are not limited to

allowing OHVs on public roads, public parking, and business that are OHV accessible including drive-thrus and filling stations.

5.1 Results - Quantitative Findings

In an effort to gain more detailed information on the differences between local trail users and regional/national trail users, statistical differences between groups were compared on a number of survey questions. Many of these questions offer additional insight into the differences within the qualitative findings. Independent sample t-tests were used to identify differences. All Likert-type questions were on a 9 point scale.

5.1.1 Demographics

Differences for general demographics were tested for local trail users versus regional/national trail users. Results revealed that regional/national trail users were significantly older ($t = 2.93$, $p < .05$) and more likely to be female than local trail users ($t = 4.83$, $p < .05$). There were no differences between household income or education.

5.1.2 Travel Behavior

There were significant difference between local trail users and regional/national trail users with respect to group size ($t=4.5$, $p<.05$) and trip length ($t=17.4$, $p<.05$). For local trail users, group size averaged 3.3, while regional/national users averaged 5.5. Trip length for local trail users was about 7.98 hours, and 78.14 hours for OHV riders at the regional/national trail system.

5.1.3 Total Spending

As expected there were vast differences in the expenditures for the current trip between local trail users and regional/national trail users ($t = 10.5$, $p < .05$). Specifically, regional/national trail users reported spending a mean of US$ 774 on the current trip, while local trail users spent US$ 76.

5.1.4 Riding Behavior

A number of similarities and differences were found between local trail users and regional/national trails with respect to riding behavior. Regional/national trail users reported staying more days on a typical OHV riding trips ($t = 6.7$, $p<.05$), riding more miles per day on OHV riding trips ($t = 3.8$, $p<.05$), and riding more hours per day on OHV riding trips ($t = 4.8$, $p < .05$). However, no differences were found regarding how often trail users road their OHV nor were difference found for how often OHV riders traveled more than 50 miles from their home for OHV trips.

5.1.5 Willingness-to-Pay

As expected regional/national trail users reported a higher maximum willingness to pay per person per day to ride on trail systems that included trail characteristics that they favored ($t = 4.17$, $p < .05$). The mean reported for regional/national trail users was 26.2 dollars, while local trail users reported a mean of 16.6 dollars.

5.1.6 Travel from Home

As suggested by the qualitative findings, there were differences found between how important the time traveling from home is in the decision where to ride. The importance of travel time was measured by 3 Likert-type questions for within 1, 3, or 6 hours of home. Participants were found to significantly differ on the importance of 1 hour travel time ($t = 3.047$, $p < .05$), but not on travel time within 3 or 6 hours. Local trail users reported travel distance to be a more important consideration.

5.1.7 Trail Characteristics

As stated above, both local trail users and regional/national trail users reported trail characteristics to be an important consideration when choosing where to ride. A series of t-test were used to examine differences in specific trail characteristics that might help clarify this important factor.

The importance of the amount of trail miles within a system revealed insightful differences between groups. A series of 3 Likert-type questions were used to assess differences between the importance of a trail system having at least 25, 50 or 100 miles. The mean importance for local trail uses had an inverse relationship with increasing trail mileage (25 miles = 7.3, 50 miles = 6.6, 100 miles = 6.3), while regional/national users importance ratings had a positive relationship with increasing trail mileage (25 miles = 6.7, 50 miles = 7.0, 100 miles = 7.2). Additionally, t-tests revealed significant differences between local trail users' and regional/national trail users' importance ratings for trail mileage. Local trail users reported having at least 25 miles to ride was more important ($t = 2.3$, $p < .05$), while regional/national trail users reported having at least 100 miles to ride was more important ($t = 2.901$, $p < .05$).

When comparing specific trail characteristics additional differences were found. Local trail system users rated having children/training loops ($t = 2.0$, $p < .05$), one-way trails ($t = 6.7$, $p < .05$), and both double and single track trails ($t = 2.1$, $p < .05$) as more important than the regional/national trail users. However, regional/national users found that having trails that are two way ($t = 3.5$, $p < .05$), mud bogs ($t = 4.6$, $p < .05$), and open play/free-ride areas ($t = 3.3$, $p < .05$) were more important than local trail users.

5.1.8 OHV Convenience and Culture

A battery of questions related to the importance of convenient access to restaurants, activities, and attractions, as well as, having OHV friendly towns was used to assess differences between local trail users and regional/national trail users. These results all suggest that regional/national users find these conveniences important when deciding where to travel for OHV riding. Regional/national trail users reported significantly higher importance ratings for things to do nearby ($t = 6.6$, $p < .05$), having OHV friendly towns that allow OHVs on streets ($t = 5.3$, $p < .05$), having trails that can be accessed directly from campgrounds ($t = 2.4$, $p < .05$), having trails that provide access to restaurants and stores ($t = 4.8$, $p < .05$), and having trails that provide access to historic sites or similar tourist attractions ($t = 3.2$, $p < .05$).

5.1.9 Policies

A number of questions related to the importance of different policies governing behavior were also used to assess differences local trail users and regional/national trail users. These questions focused on sound restrictions, free to ride, permit requirements, natural resource protection, and controlling inconsiderate/inappropriate behaviors. While the means for both groups were all above 5 for all questions (indicating an overall support for related policies), the groups only differed on the importance of the trails to be free to use ($t = 4.35$, $p < .05$) and the importance of policies controlling inconsiderate/inappropriate behaviors ($t = 2.26$, $p < .05$). While regional/national users reported it was more important for trails to be free to use, local trail users reported it was more important to have policies governing inconsiderate/inappropriate behavior. Finally, local trail

users reported a higher importance rating for OHV trails not to allow use of other activities (i.e., hiking and mountain biking).

6.0 Building a Local OHV Trail System

Under first impressions and prior to conducting this research, it was quite clear that these two types of trails (regional and local) offer unique packages for rural communities to embrace their natural resources and diversify their economy. However, as this research suggests, there is more to developing trails than simply building and managing extensive and diverse trails.

The results above outline generally clear and consistent profiles for local trail users versus regional national trail users. The results suggest that local trail users and regional/national trail users have different preferences and exhibit different traveling and riding behaviors. These results strongly suggest that destinations seeking to attract regional/national OHV users should employ different strategies than OHV destinations that prefer local riders.

The primary concern for local OHV trail systems should be trail mileage and policies. The results suggest that a minimum of 25 miles of trails are necessary to attract local users. Increasing beyond this point to 50 miles will not likely attract more local users. Additional local trail users were more willing to accept trail user fees. However, local trail users did find it to be more important than regional/national trail users that there be policies to control inconsiderate and inappropriate behavior.

Considering trail design characteristics, the inclusion of both double and signal track trails, trails that are one-way, and the opportunity for children/training loops were important. These suggestions are supported by both the qualitative and quantitative results. Local users are also in favor of policies to support safety of their trail system. Day users are unlikely to receive the best possible experience if trails are not managed for inappropriate behaviors. Finally, local trail users did find it more important than regional/national trail users that OHV trails be used only by OHV users (not hikers and mountain bikers).

6.1 Building a Regional/National OHV Destination

It is important for an OHV trail system trying to attract regional/national users to have a sufficient number of trail miles. The results of this research study suggest that having a minimum 100 miles of trail will attract regional/national users above and beyond local users. When considering specific trail characteristics, regional/national trail users did report different preferences than local trail users. Specifically, these users preferred mud bogs and open play areas.

When considering regional/national trail system development as a way to diversify a rural economy there is more to consider than simply the length of the trails. Community planners, developers and managers must also provide a welcoming and accommodating local cultural and policies for attracting these OHV visitors. Specifically these visitors are more concerned with accessing trails, stores, dining options, and other conveniences directly from their OHV. This is likely due to the difficulty of navigating and negotiating a new area with trucks and trailers. Policies such as allowing OHV riders to access public roads into towns or supply areas, and having hotels or campgrounds that can directly access trail heads allows these visitor not to have ‘load up and lock up’ on a regular basis. Additionally, regional/national

trail system users are also more interested in attractions and other activities. This desire is likely prompted by a need for things to do for non-riders and when riders are not on the trails.

Insights gained in Alaska may be relevant for other remote areas and regions with indigenous populations. Many indigenous residents already use the Internet at home or elsewhere in the community, and are strongly interested in broadband. However, affordability remains a major concern. Also a majority of those who intend to subscribe say that they will continue to use broadband connections elsewhere in the community – at school, work, library, or tribal/community center – even if they subscribe at home. These conditions are also likely to be common in other remote regions.

Equipment and skills are of concern to Alaska Natives in the villages that tend to have less education and lower cash incomes than residents in regional centers. Therefore, digital literacy training, IT support, and "infomediaries" to help users track down required information and services are likely to be important to facilitate adoption.

While entertainment is a driver of Internet adoption and interest in broadband, there is significant interest in educational applications, access to government information, and teleworking. Again, training and efforts to use broadband as part of overall economic development strategies for the region may be necessary to optimize benefits from broadband.

As is true in many other regions, mobile phone use is now very widespread, and mobile subscribers want to be able to access the Internet and other broadband services on their phones and on other portable devices. Planners and policy makers need to consider mobile as well as fixed infrastructure in plans for universal broadband in remote and indigenous regions.

However, capital investments in infrastructure do not guarantee sustainability in many remote and indigenous regions. Policies are required to encourage maximum adoption and constructive utilization of broadband and to ensure ongoing sustainability. For policies to be effective, users and providers need to be aware of opportunities and motivated to take advantage of them, and regulations must be enforceable.

Based on research to date, it would appear that many applications of broadband by rural residents, social services, non-profit organizations, and commercial enterprises can contribute to economic growth and diversification, and to improved delivery of services and access to educational resources in remote communities. But many other factors such as digital literacy, relevant content, and opportunities to generate income are likely to be required if these benefits are to be realized; as with other forms of telecommunications, broadband may be *necessary but not sufficient* for rural development.

7.0 Conclusions

Rural communities wishing to diversify their economies may have a couple options if they wish to use OHV recreation as a potential economic stimulant. The results from the qualitative themes suggest local versus regional/national OHV riders should not necessarily be considered a single group with respect to preferences for OHV trail systems. Therefore rural communities considering OHV usage as an additional economic dimension must consider and weigh their desired outcomes appropriately. While the primary considerations for both groups were quality, variety, and length of trails as well as safety, secondary considerations differed.

Specifically, minimizing travel distance was a major concern for local trail users, while regional/national users did not identify travel distance as an important consideration. Additionally, local users also reported cost to be a more important consideration than regional/national users. However, regional/national users were more focused on accommodations than local users. Once more, regional/national users reported that the welcoming atmosphere of the area they were visiting was an important consideration on their travel choices. Specifically, ATV friendly towns, easy access to the trail system from accommodations, and easy access to towns or areas for resupply were far more important to regional/national users than local users. These findings have important implications for areas looking to establish or expand OHV as a way to diversify their economic development.

Based on the qualitative and quantitative data as well as the previously reviewed literature and regardless of trail size, a local community culture that accepts OHV usage is a necessary consideration for policy makers. Without the support and acceptance of the local community culture it is likely that trail visitation will not be as successful as planned. Local business may not be as willing to support these OHV visitors and henceforth these visitors may be turned away from the lack of accommodating infrastructure that supports their form of recreation. Furthermore, conflict may arise from non-OHV users currently using the resource. While smaller trails designed for local usage may come with less potential conflict (fewer miles of trail, less land usage) they may not have the economic potential of larger regionally designed trail systems. However, OHV usage as a growing market may be a viable option for many rural communities with appropriate resources. This may be especially fruitful in rural communities experiencing growth of both tourism and local populations. Gateway communities of new designated protected areas may be prime examples of these types of communities. These communities offer individuals access to natural amenities bolstering a rural community as a destination.

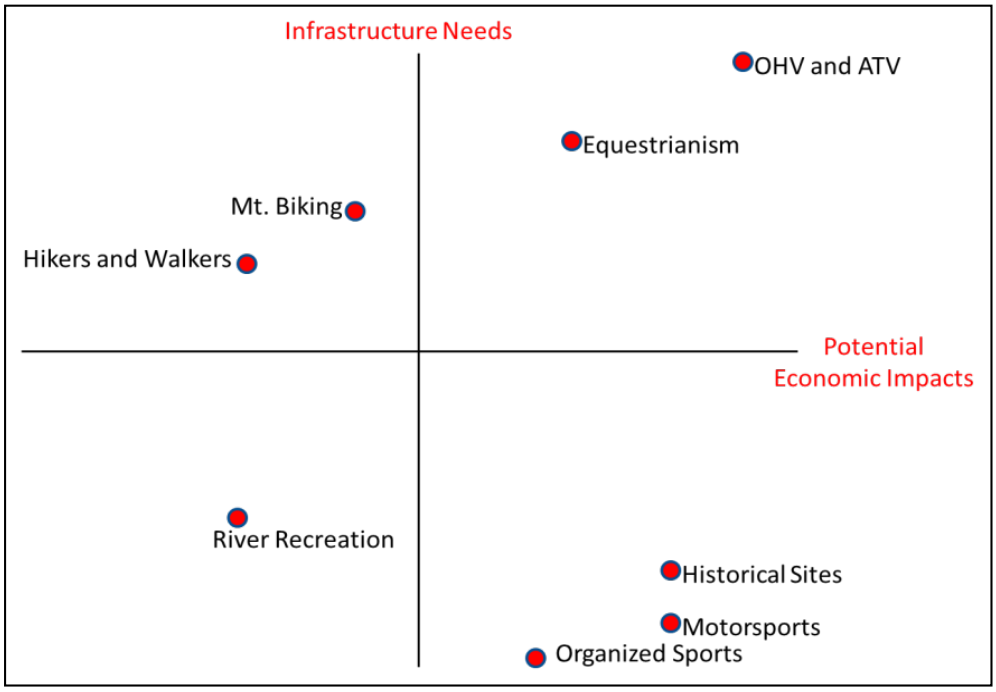
7.1 Implementation Example

Alongside this research it was found that OHV recreation may be a potentially lucrative market for rural central South Carolina and similar regions and communities. Currently there are only 22.2 miles of public trails in this region (Enoree Ranger District). Based on this research the trail system would need an additional 25 miles to meet the minimal desired trail length for local users, and would need at least 100 additional miles to make it a regional destination. Figure 3 suggests that out of all the recreational opportunities found within the region, OHV usage was both the most lucrative economically and required the highest infrastructure needs. However these needs, including the creation and management of new trails as well as business and accommodations, would also create jobs and other investment opportunities. This suggests that OHV recreation would be a suitable long term tourism niche market. While infrastructure needs are high for this type of recreation, the economic impact is also extremely high. Additionally, the motorsports culture already established within the region would most likely support and enhance the success of OHV/ATV recreation, therefore providing a symbiotic relationship.

Furthermore, the Sumter National Forest already has experience managing and permitting ATV recreation making the transition and establishment of additional trail miles easier. There is a 22.5 mile trail (Enoree Cycle Trail) just outside the county that is known throughout the state. Additionally, there are very few ATV trail miles (approximately 100) throughout the state on public lands. This limited supply

of trails could contribute to making Union County an ATV destination. The topography of Union County is also preferable for ATV recreation. The rolling hills contribute to the ATV experiences, while the gentler slopes have less resource impact (e.g., erosion).

Figure 3. Economic Impact and Infrastructure needs.



Source: Beeco, Hallo, Norman & Brookover, 2011

The Clemson Institute conducted an economic impact analysis using IMPLAN (Impact Analysis for Planning) software for Economic and Community Development to assess the potential monetary contribution of OHV recreation in the region. This economic impact analysis cannot indicate what number of visitors would come to Union County as a result of the development of a local or regional trail system. However, reasonable assumptions about the number of additional visitors were used to help quantify the potential economic impact of developing both heritage tourism and OHV recreation within Union County. Assuming that an OHV trail system was developed and that 1,000 visitors purchase use permits annually, this would result in a net increase in the economy of the region. In the case of Union County, it was estimated that there would be an increase of US$806,166 total industry output, 20.2 jobs would be created, and an increase of US$412,361 gross regional product.

This research has a few particular limitations. As mentioned, data collected at the regional/national trail system occurred during Trailfest and might provide responses on the differences between an ‘event’ and non-event as opposed to specific difference between local users and regional/national users. That being said, as mentioned in section 4.0, the Hatfield-McCoy trail system data included 2 countries, 20 states and over 90 unique locations, while the South Carolina trail systems represented only 2 states and 60 unique locations. The Hatfield-McCoy Trail system is a one of a kind opportunity and may experience a significantly different type of traveler than might be expected to come to a smaller trail system. This trail system

bills itself as a national destination and trailfest as a national event. While our data may not be representative of the entire United States, it is still very diverse. The local communities' culture of both areas may have different acceptable levels of OHV usage. The communities around the Hatfield McCoy trail system have accommodations that support the frequent usage of OHVs (e.g. gas, food, accommodations) that support longer stays. During Trailfest users are allowed to ride their OHVs in town on commuter streets. This practice may not be acceptable elsewhere, therefore attracting a unique population. Future research should address a few of these other variables previously mentioned as well as address if benefits of local communities differ depending on who is managing trails whether they be publicly or privately managed.

If communities are interested in developing a trail system to bring OHV riders as consumers it is important to consider that regardless of the target market all visitors care about the quality, variety, and length of the trails, as well as the safety of the trail system and area. This should be the primary concern. However, areas that would prefer attracting only local users should focus on keeping cost to users low. Areas focused on attracting regional/national trail users should exert efforts to provide a variety of accommodation types (from camping to hotels), as well as creating an infrastructure and policies that encourage OHV usage. Specifically, providing conveniences for OHV users such as easy access to towns or resupply areas, and allowing OHV use on public roads to access grocery stores and restaurants.

Finally it should be noted that the authors of this study realize that not all rural communities have an abundance of resources for which to create OHV trails. On the surface this article is designed to suggest that, if these resources exist and the community is willing, OHV trails might be one way to diversify the economy. However delving more into development and diversification, many rural communities may have some resources, natural or built, that can be used for recreation purposes other than OHV. This manuscript is designed to offer but one example of recreation as a way to diversify an economy.

References

Brown, D., & Swanson, L. (2006). *Challenges for rural America in the twenty-first century*. University Park, PA: Pennsylvania State University Press.

Beeco, J., Hallo, J., Norman, W., & Brookover, B. (2011). *Development of an Action Plan to Increase the Sustainable and regionally Appropriate Use of Natural and Historic Resources in Union County Final Report.* Unpublished report, Clemson University, Clemson, SC.

Carroll, M. (1995). *Community and the Northwestern logger: Continuities and changes in the era of the spotted owl.* Boulder, CO: Westview Press.

Center for Business and Economic Research, (2006). *The economic impact of the Hatfield~McCoy trail system in West Virginia*. Huntington, WV: Marshall University. Pp. 1–65. Retrieved from https://www.trailsheaven.com/shared/content/pdfs/Hatfield%20McCoy%20Study%2010-06%20final%20for%20printing.pdf

Corbin, J., & Strauss, A. (Eds.) (2008). *Basics of qualitative research: Techniques and procedures for developing grounded theory*. Sage Publications.

Cordell, H. K., Betz, C. J., Green, G., Mou, S., Leeworthy, V., Wiley, P., et al. (2004). *Outdoor recreation for the 21st century, a report to the nation: The national survey on recreation and the environment*. State College, PA: Venture Publishing, Inc.

Cordell, H. K., Betz, C. J., & Green, G. T. (2008). *Off-highway vehicle recreation in the United States, regions, and states: A national report from the National Survey on Recreation and the Environment (NSRE)*. USDA Forest Service, Washington Office. Web Report 2007, pp. 1-104. [Research Report]

Cordell, H. K., Betz, C. J., Green, G., & Owens, M. (2005). *Off-Highway vehicle recreation in the United States, regions and states: A national report from the national survey on recreation and the environment (NSRE)*.Retrieved from http://www.fs.fed.us/recreation/programs/ohv/OHV_final_report.pdf

Crompton, J. (2006). Economic impact studies instruments for political shenanigans. *Journal of Travel Research*, *45*(1), 67–82.

Deisenroth, D., Loomis, J., & Bond, C. (2009). Non-market valuation of off-highway vehicle recreation in Larimer County, Colorado: Implications of trail closures. *Journal of environmental management*, *90*(11), 3490-3497.

English, D., Marcouiller, D., & Cordell, H. (2000). Tourism dependence in rural America: Estimates and effects. *Society and Natural Resources*, *13*(9), 701-712.

Flather, C. H., & Cordell, H. K. (1995). Outdoor recreation: historical and anticipated trends. I R. Knight, & K. Gutzwiller (Eds.), *Wildlife and Recreationalists: Coexistence through Management and Research* (pp. 3-16). Washington, DC: Island Press.

Foulke, T., Batian, C, Taylor, D., Coupal, R., & Olson, D. (2008) Off-road vehicle recreation in the west: Implications of a Wyoming analysis. *Western Economics Forum*, *7*(2), 1-11

Galston, W. A., & Baehler, J. K. (1995). *Rural development in the United States: Connecting theory, practice, and possibilities*. Washington, DC: Island Press.

Godfrey, P. J., & Godfrey, M. M. (1980). Ecological effects of off-road vehicles on Cape Cod. *Oceanus*, *23*, 56–66.

Hallo, J. C., & Manning, R. E. (2009). Understanding and managing the off-road vehicle experience: standards of quality. *Managing Leisure*, *14*(4), 269–285.

Hallo, J. C., Manning, R. E., & Stokowski, P. A. (2009). Understanding and managing the off-road vehicle experience: Indicators of quality. *Managing Leisure*, *14*(3), 195–209.

Hatfield-McCoy Regional Trail Authority (2012). Hatfield-McCoy regional map. Retrieved from http://www.trailsheaven.com

Havlik, D. (2002). *No place distant: Roads and motorized recreation on America's public lands*. Washington, DC: Island Press.

Hester Jr., R. T. (1990). The sacred structure in small towns: A return to Manteo, North Carolina. *Small Town*, *20*(4), 4-21.

Holmes, T. P., & Englin, J. E. (2010). Preference heterogeneity in a count data model of demand for off-highway vehicle recreation. *Agricultural and Resource Economics Review, 39*(1), 75–88.

Howe, J., McMahon, & Probst, L. (1997). *Balancing nature and commerce in gateway communities*. Washington, DC.: Island Press.

Jakus, P. M., Keith, J. E., & Liu, L. (2008). *Economic impacts of land use restrictions on OHV recreation in Utah* (A report for the Utah Governor's public lands policy Coordination Office). Logan, UT: Utah State University, Department of Applied Economics.

Jakus, P. M., Keith, J. E., Liu, L., & Blahna, D. (2010). The welfare effects of restricting off- highway vehicle access to Public Lands. *Agricultural and Resource Economics Reviews, 39*, 89–100.

Jones, R.E., Fly, J.M., Talley, J., & Cordell, H.K. (2003). Green migration into rural America: The new frontier of environmentalism? *Society & Natural Resources: An International Journal, 16*(3), 221–238.

Kil, N., Holland, S. M., & Stein, T. V. (2012). Identifying differences between off-highway vehicle (OHV) and non-OHV user groups for recreation resource planning. *Environmental Management, 50*(3), 365–380

Krannich, R. & Petrzelka, P. (2006). Tourism and natural amenity development: Real opportunities? In D. Brown & L. Swanson (Eds.), *Challenges for Rural America in the Twenty-First Century* (pp. 190–199). University Park, PA: Pennsylvania State University Press

Manning, R. (2011). *Studies in outdoor recreation: Search and research for satisfaction* (3rd ed.). Corvallis, OR: Oregon State University Press.

McCay, R., & Moeller, G. (1976). *Compatibility of Ohio Trail Users*. USDA Forest Service Research Note NE-225.

McGranahan, D. (1999). Natural amenities drive rural population change. Agriculture Economic Report 781, October, Food and Rural Economics Division, Economic Research Service, U.S. Department of Agriculture. Washington, DC.

McGranahan, D. (2006) How people make a living in Rural America. In D. Brown & L. Swanson (Eds.), *Challenges for Rural America in the Twenty-First Century* (190-199) University Park, PA: Pennsylvania State University Press.

Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis: An expanded sourcebook*. Sage Publications.

Priskin, J. (2003a). Physical impacts of four-wheel drive related tourism and recreation in a semi-arid, natural coastal environment. *Ocean & Coastal Management, 46*(1-2), 127–155.

Priskin, J. (2003b). Tourist perceptions of degradation caused by coastal nature-based recreation. *Environmental Management, 32*(2), 189–204.

Smith, J., & Burr, S. (2011). Environmental attitudes and desired social-psychological benefits of off-highway vehicle users. *Forests, 2*(4), 875–893.

Stokowski, P. A., & Lapointe, C. B., (2000). *Environmental and social effects of ATVS and ORVs: An annotated bibliography and research assessment*. Burlington, VT: University of Vermont, School of Natural Resources.

USDA Forest Service. (2006). Four threats to the health of the nation's forests and grasslands. Retrieved from http://www.fs.fed.us/projects/four-threats/

USDA Forest Service. (2014). Sumter National Forest Vicinity Map. Retrieved from http://www.nationalforeststore.com.

Vaske, J. J., Needham, M. D., & Cline, R. C. (2007). Clarifying interpersonal and social values conflict among recreationists. *Journal of Leisure Research*, *39*(1), 182.

Zaslowsky, D. & Watkins, T. (1994). *These American Lands: Parks, Wilderness, and the Public Lands*. Washington, DC.: Island Press.