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# **Linking Tourism Resources and Local Economic Benefits: A Spatial Analysis in West Virginia**

By

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**Abstract:** Tourism has been playing an increasingly important role in the economic development and promotion for the state of West Virginia. However, how tourism resources are spatially distributed across all the state's 55 counties has not received much attention. This study could be among the first in West Virginia to create a tourism resource inventory database at the county level, and to spatially examine tourism resource distribution patterns across all counties, based on the tourism resource quantity measured by size, length, or number, as well as on the quality determined by the Analytic Hierarchy Process (AHP) through surveys of 191 visitors. Based on the data collected, a four-level amenity index is created using the standard deviation method and mapped using GIS. The study indicates that nature-based tourism resources are largely concentrated in the eastern or central eastern part of West Virginia centering around Pocahontas County, while cultural resources do not exhibit a distinct clustering pattern. In addition, the cultural resource distribution pattern not only visually resembles that associated with visitors' travel spending, but also has a statistically significant correlation with travel spending after controlling the spatial dependence. That being said, there is no such relationship that exists between natural tourism resources and travel spending, suggesting that more efforts are needed in the future to develop and market nature-based tourism in those counties with higher levels of natural tourism resources, but lower levels of visitor spending. It also implies that natural tourism is not a major contributor to the local economy for most counties. Rather, other forms of tourism activities such as gambling generated a large portion of travel/tourism related revenues, despite this contribution being only limited to a few counties.

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# **Linking Tourism Resources and Local Economic Benefits: A Spatial Analysis in West Virginia**

## **Introduction**

External forces such as globalization and technological change have led to a decline in traditional agricultural, forestry, and mining jobs in many rural areas in the United States, leading to a large population migration to urban areas over the past 50 years. According to Freudenberg (1992), employment in traditional farming has dropped about 70% from the early 1900s and employment in other natural resource-dependent industries such as mining and forestry has been cut in half. These rural economic trends led the former Agriculture Secretary Mike Johanns, when speaking at the 2006 Agriculture Outlook Forum, to suggest that rural policies and programs need to pay special attention to providing greater economic opportunities for rural residents beyond agriculture (Selin, 2007).

One important contributor to economic restructuring and economic well-being is tourism which has been regarded as an economic development tool for rural America since the late 1970s and early 1980s (Gartner, 2004) and many small towns are trying to acquire a share of this growing industry (Galston & Baehler, 1995). This is particularly the case for West Virginia, the second most rural state in the United States (West Virginia Department of Health and Human Resources, 2007), whereas rural communities in the state have been struggling with developing effective ways including rural tourism to improve their quality of life without losing their rural atmosphere. Speaking about Ogleby Resort in Wheeling in October 2007 as an inspiration for tourism development throughout the state, Governor Manchin stressed that “state politicians need to think beyond their next elections and have a vision that includes tourism promotion” (“Manchin”, 2007).

As far as “tourism promotion” is concerned, questions such as what, where, and how tourism should be promoted to create competitive advantages through regional collaboration while avoiding internal competitions still remain largely unaddressed in the state. To answer these questions, it is necessary to have a complete inventory of existing tourism resources and tourism businesses, and then to spatially examine how the travel and tourism related economic benefits are distributed in relation to how the tourism resources or tourism businesses are distributed throughout the state. To this end, a comprehensive study was conducted by authors of this paper with funding from West Virginia University Regional Research Institute. Reported here are findings on the spatial distribution of tourism resources as they relate to local economic benefits generated from travel and tourism. Analyses were made on the county level since “the analysis of travel impacts at the county level provides a valuable overview of how the economic benefits of travel and tourism are distributed throughout the state” (Dean Runyan Associates, 2009, p. 28). Specifically, the following two questions were examined:

Question 1: What natural and cultural tourism resources does the state have? And how are they spatially distributed?

Question 2: To what extent tourism resources in the state have contributed to local economic development and how is this contribution linked to tourism resources?

## **Study Area**

West Virginia, also called the “Mountain State”, is the second most rural state in the nation; 20 of the state’s 55 counties (Figure 1) are 100% rural and an additional 14 are >75% rural, according to the U.S. Census Bureau definition (West Virginia Department of Health and Human Resources, 2007). West Virginia has rich and abundant natural resources and has great potential

for natural and cultural tourism development. Tourism is the second largest industry in the state in terms of its total economic impact and employment, second to coal mining and followed by forestry (West Virginia Division of Forestry, 2006).

West Virginia is located within 500 miles of 60% of the nation's population. Its rural characteristics and unique location made the state a popular tourism destination for surrounding states. It was estimated that 39.9 million day trips and 11.43 million overnight trips were made to and in West Virginia in 2006 (Longwoods International, 2006).

In 2006 travel industry GDP in West Virginia represents about 3% of total state GDP as opposed to about 2.5% of national GDP by the U.S. travel industry (Dean Runyan Associates, 2007), indicating the importance of tourism for the state in terms of its economic contribution. The size of the travel industry in relation to the total economy of a locale is more significant in some smaller communities and rural areas of the state as compared to the state's most urban area (Charleston metropolitan area in Kanawha County), which offers visitors a variety of commercial lodging accommodations and entertainment facilities while smaller communities and rural areas offer visitors unique scenic and outdoor recreational opportunities. For some counties (i.e., Fayette, Greenbrier, Tucker, and Pocahontas) the travel industry is an extremely significant component of the total local economy (Dean Runyan Associates, 2005).

## **Literature Review**

It is widely accepted that tourism development for a destination is largely dependent upon tourism resources that the destination possesses in terms of their quality and quantity. It was found that those areas and places rich in scenic and recreational amenities were more likely to experience substantial population growth than areas with low levels of natural amenities. For instance, Johnson and Beale (2002), in a national study of American rural counties, reported a

significant population rebound during the 1990s with “recreation counties” -- those selected with high tourism receipts and business activity -- leading the way with a 20.2% population increase compared to a 10.4% increase for all rural counties. Shumway and Otterstrom (2001) also reported that counties rich in natural amenities experienced dramatic increases in employment in service sectors such as health care, personal services, recreation and entertainment, and professional services.

To link natural amenities to local development requires the natural amenities in question to be evaluated appropriately. Two approaches have evolved in measuring natural amenities: a summary index approach and an aggregate factor score approach (Kim *et al.* 2005). The summary index approach defines natural amenities as a single index of different natural amenity attributes while the aggregate factor score approach categorizes a wide array of natural amenity attributes into multiple but similar groups (Kim *et al.* 2005).

McGranahan (1999) from USDA ERS developed a summary index of each county's natural amenities that includes measures of mild sunny winters, moderate summers with low humidity, varied topography, mountains, and abundance of water area. This study found that there had been a strong association between the population change in rural counties and their natural amenities as places to live. In the past 25 years, the population was growing in these counties that scored high in these amenities. The high-score counties almost doubled their population, while over half of the low-score counties lost population. They also found that employment change in rural counties was another element which has been highly related to natural amenities in the same period.

The summary index approach as discussed above is not without problems. First, decisions about which amenity attributes should be incorporated to develop a single

summary index are quite subjective (Kim *et al.* 2005). Second, the relative importance of selected attributes was not considered. Third, attributes selected to develop such a summary index are climatically and geographically related which may apply to a large region (i.e., the whole country) but may not work out for a smaller area (i.e., West Virginia), where climate and geographical features vary slightly across all counties. Finally, the use of climate and geographical attributes for the development of such an index rather than the use of entities (i.e., national parks, golf courses, state parks, etc.) and associated characteristics (i.e., scenic beauty, size, accessibility, etc.) may cover the reality of natural amenities of an area. For instance, counties located within or nearby Monongahela National Forest are of similar climate and geographical characteristics and the natural amenity index for each of these counties may be more or less the same (in fact, they are almost the same in natural amenity index as reported by McGranahan, 1999) if calculated based on such attributes. However, in reality, significant changes occurred in counties nearby Snowshoe Resort and Spruce Knob/Seneca Rocks National Recreation Area (Siniscalchi *et al.* 2006). These counties if measured by proximity to entities will definitely score higher than others.

Alternatively, several recent studies have evaluated the economic impacts of natural amenity attributes using the aggregate factor score approach (e.g., Deller *et al.* 2001; English *et al.* 2000; Henry *et al.* 1997; Marcouiller *et al.* 2004; Spotts, 1997). Principal component analysis or factor analysis was used by all these studies to produce smaller sets of factors that can be used in subsequent modeling such as regression analysis (Kim *et al.* 2005). For example, Spotts (1997) classified Michigan's tourism resources into five groups using factor analysis: urban tourism resources, general wildland tourism resources, general coastal tourism resources, parkland tourism resources, Lake Michigan coastal tourism

resources, and canoeing/ORV riding tourism resources. More recently, Kim *et al.* (2005) used principal component analysis to categorize amenity attributes into five general groups: land-based, river-based, lake-based, warm-weather-based and cold weather-based.

Compared to the single index approach, aggregate factor score approach is less subjective and more scientifically sound and practically reasonable by including entities such as state parks as well as magnitude of such entities (i.e., size measured by acres) and considering the clustering distribution of such entities. However, the final measures (factor scores) may not be easy to interpret and to map compared to the single index approach. Moreover, the relative importance of selected attributes was not considered in this approach, either. Spotts (1997, p. 14) noted that “since qualitative considerations obviously influence tourist decisions, it clearly would be useful to incorporate qualitative measures in future inquiries (assuming this can be scientifically accomplished).”

In order to develop an index that includes the advantages of both approaches while avoiding the disadvantages of them, an innovative method involving both qualitative and quantitative aspects is needed. To this end, this study used the Geographic Information System (GIS) technology and the Analytical Hierarchical Process (AHP, Saaty, 1980) to develop and map tourism resources, which were then analyzed in relation to tourism related economic benefits.

## **Methodology**

A GIS inventory of tourism resources in the state at the county level was developed based on information from: 1) WV GIS Technical Center, 2) face to face interview with selected Convention and Visitor Bureau (CVB) directors, 3) county and regional travel



brochures, and 4) online search. Tourism resources in the state mainly consist of natural resources (i.e., national parks, national forests, state parks, national scenic byways, state or local scenic roads, trails, state forests, wildness management areas, fishing areas, lakes, springs, golf courses, resorts, agriculture, forest land, and other attractions) and cultural/heritage resources (i.e., historical sites, museums, festivals). The relative importance of these resources was then judged by visitors using the Analytic Hierarchy Process (AHP).

#### *AHP Hierarchy Construction*

An AHP hierarchy structure was constructed by reference to the format used by Strager and Rosenberger (2006). This format is also the default for the Expert Choice 11.5, a software used for this study that is specifically designed for constructing an AHP structure and analyzing AHP data. The relative importance of one attribute over another is determined through the application of pairwise comparisons among the various elements, based on a scaling ratio, which is used to reveal the relative priority assigned to compare any two elements (Table 1). Geometric mean was used to calculate the average value of one attribute over another assigned by visitors.

Table 1. The Application of Paired Comparisons using the AHP Scale

<i>Intensity of importance</i>	<b>Determination and Explanation</b>
1	Two attributes are equally important
3	One attribute is slightly more important than the other
5	One attribute is moderately important over the other
7	One attribute is very important over the other
9	One attribute is extremely important over the other

*Index Development*

Due to measurement units for different resources being different, values for each resource were standardized. The standardized values were then summed up to get a single value for each county. The weights obtained from the AHP analysis were also used to derive the weighted single values. These single values were then classified into four levels based on the following standards (ref. Deng *et al.*, 2002; Spotts, 1997):

- Level 1:  $x \geq 0.5 \text{ standard deviation} + \text{mean}$
- Level 2:  $\text{mean} \leq x < 0.5 \text{ standard deviation} + \text{mean}$
- Level 3:  $\text{mean} - 0.5 \text{ standard deviation} \leq x < \text{mean}$
- Level 4:  $x < \text{mean} - 0.5 \text{ standard deviation}$

*Visitor Survey*

Data were collected during summer of 2009 at two locations: I-68 Welcome Center and Gauley Bridge Kanawha Falls by the authors of this paper. The questionnaire consists of three sections: trip characteristics, relative attractiveness of tourism resources, and background information. Only those visitors who have visited West Virginia at least once and are familiar with tourism resources in the state were surveyed. A sample of the questionnaire follows:

	Extremely important	Very important	Moderately	Slightly important	Equally important	Slightly important	Moderately	Very important	Extremely important	
Golf courses	9	7	5	3	1	3	5	7	9	Skiing resorts
Skiing resorts	9	7	5	3	1	3	5	7	9	Cabins
Cabins	9	7	5	3	1	3	5	7	9	Campgrounds

## *Data Analysis*

Correlation analysis and spatial regression analysis were conducted in this study using SPSS and GeoDa.

## **Results**

### *Response Rate*

A total of 360 visitors were approached. Of this number, 170 visitors were not surveyed for major reasons of not being interested or familiar with West Virginia tourism resources (110 visitors), resulting in a response rate of 52.9%.

### *AHP*

The relative attractiveness of natural resources over cultural resources is 3 over 1 (0.75 : 0.25). In the natural resource category, the top ten most attractive resources are: state parks, national forests, wildlife management areas, state forests, national parks, rivers, lakes, state byways, forest lands, and cabins (Figure 1). For the cultural/heritage resource category, historic sites were evaluated by visitors as the most attractive, followed by festivals and museums, with weights being 0.507, 0.27, and 0.223, respectively. When all natural and cultural resources are considered together, historic sites topped the list (0.086), followed by state parks (0.083), national forests (0.060), wildlife management areas (0.060), national parks (0.055), state forests (0.055), rivers (0.055), lakes (0.046), festivals (0.046), and state byways (0.046) (Figure 3).

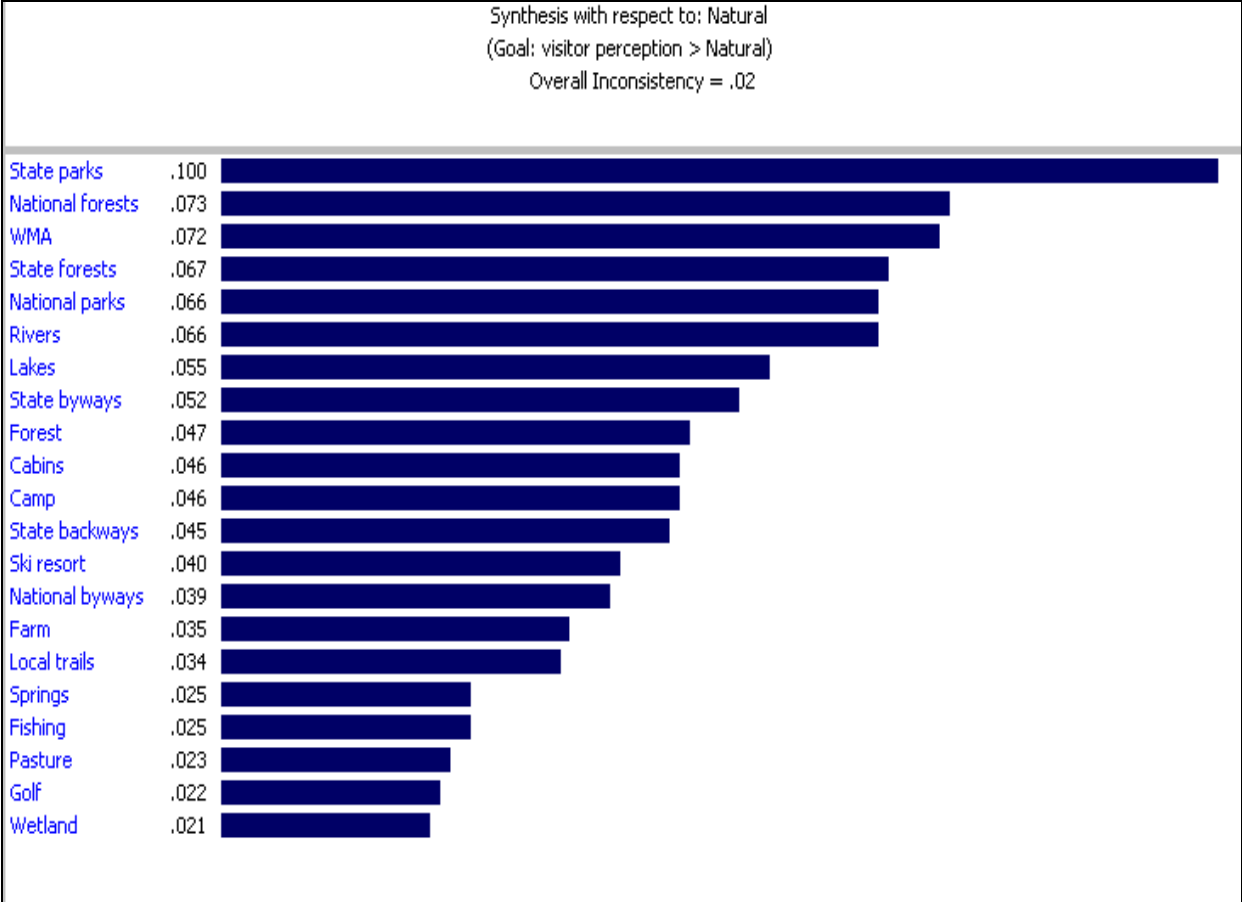


Figure 1. Weights for 21 natural resoruces in West Virginia

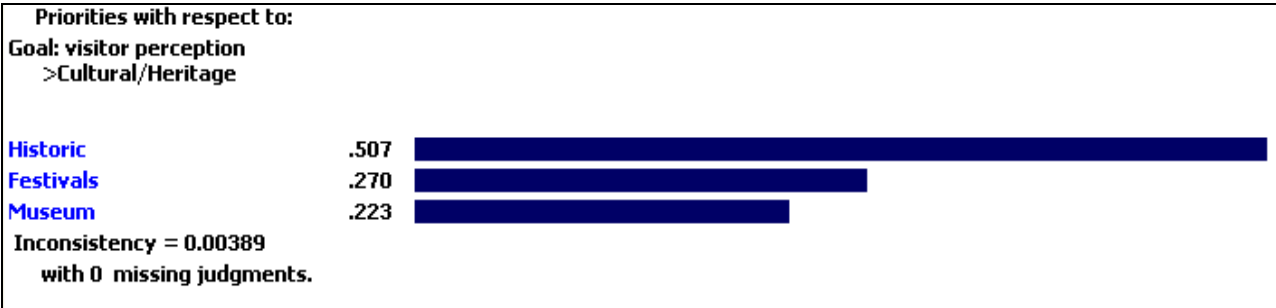


Figure 2. Weights for three types of cultural resoruces in West Virginia

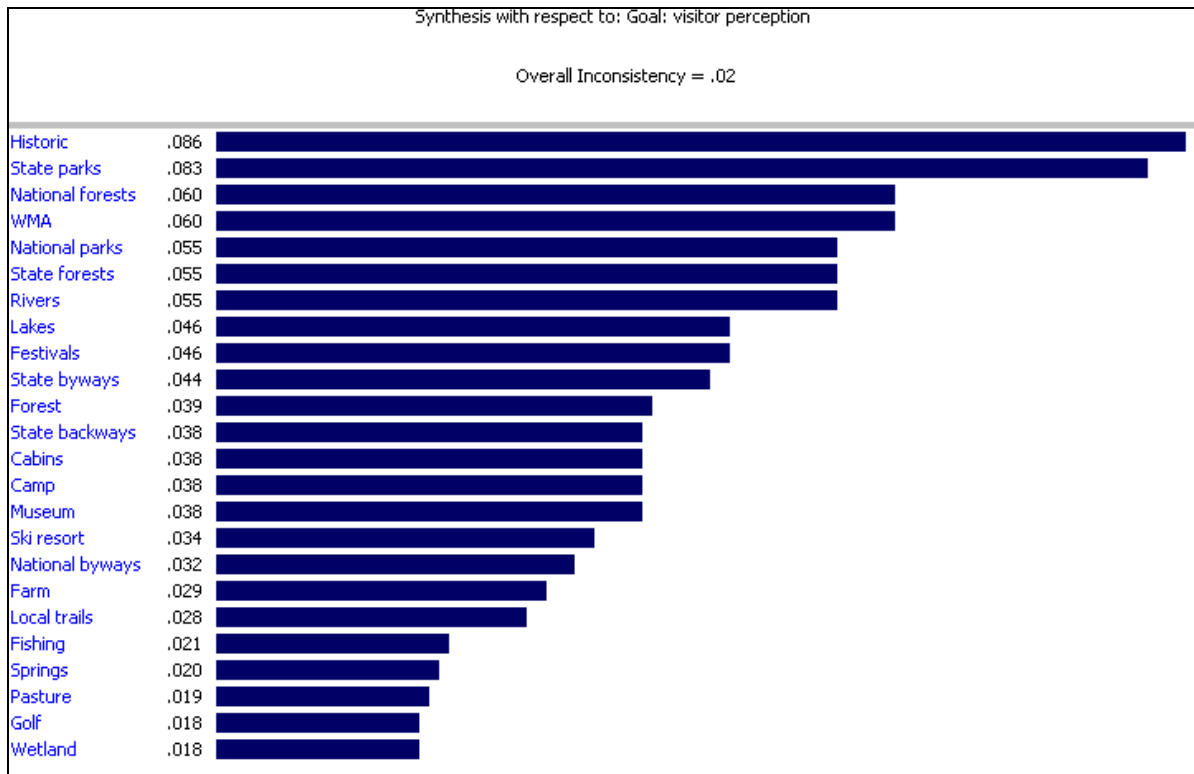


Figure 3. Weights for natural and cultural resources in West Virginia

*Index Maps*

Four index maps for natural resources (Figure 4), cultural resources (Figure 5), all tourism resources (i.e., cultural and natural resources combined) (Figure 6), and travel spending (Figure 7) were created based on the aforementioned standard deviation method. As shown, natural resources are concentrated along the eastern part of the state with nine level 1 amenity counties clustered around Pocahontas County. In the case of cultural resources distribution, a clear cluster pattern does not occur, in that counties with the high level of cultural amenity values are not concentrated in one cluster, instead, in several clusters. When the four maps are visually compared, the cluster pattern for cultural resources resembles, to some extent, that for travel spending distribution.

West Virginia Outdoor Recreation Resource Amenity Map

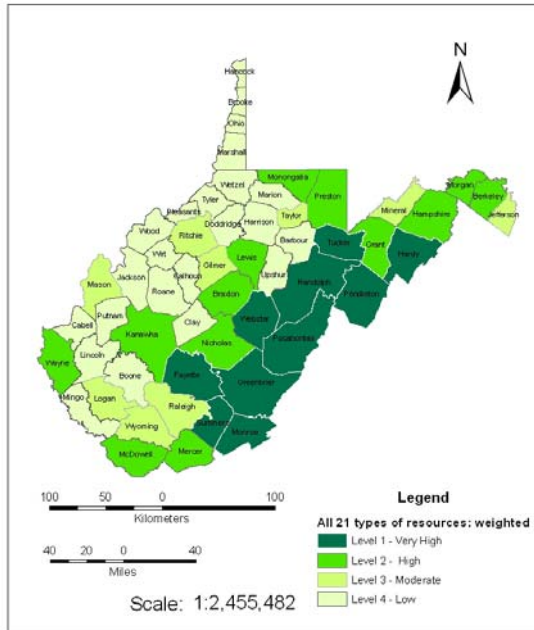


Figure 4. Natural resource index map

West Virginia Cultural/Heritage Resource Amenity Map

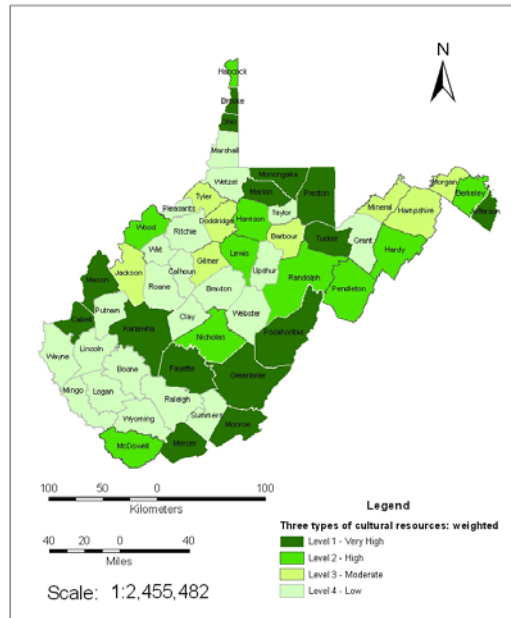


Figure 5. Cultural resource index map

West Virginia Tourism Resource Amenity Map

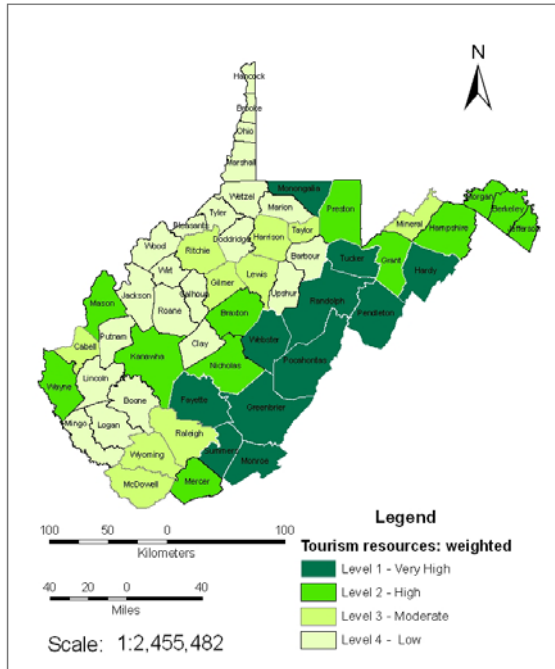


Figure 6. Tourism resource index map

West Virginia Travel Spending Distribution, 2008

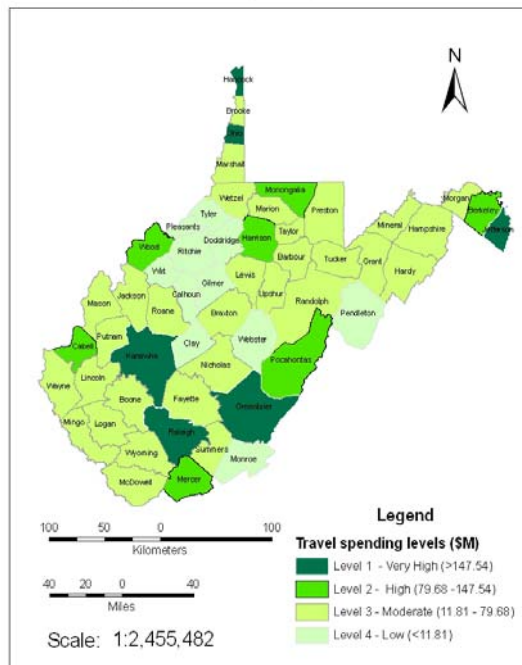


Figure 7. Travel spending index map (2008)

### *Correlation Analysis*

Results of the correlation analysis of four index variables are presented in Table 2. As shown, natural, cultural and all tourism resources significantly correlate with one another. However, only cultural resources are significantly related to travel spending, while natural resources and all tourism resources are not.

Table 2. Summary results of the correlation analysis

	Natural	Cultural	All resources	Travel spending
Natural	1			
Cultural	0.36*	1		
All resources	0.95*	0.45*	1	
Travel spending	0.05	0.46*	0.13	1

\* $p < .01$ .

### *Spatial Regression*

Table 3 presents the spatial regression results using GeoDa (Spatial error model). As shown, cultural resources are significantly related to travel spending ( $p < 0.001$ ) after controlling for spatial dependence, while all resources and natural resource are not. It should be noted that the relationship between natural resources and travel spending is negative after correcting for spatial dependence, suggesting that high levels of natural amenities for some counties did not lead to high levels of travel spending.

Table 3. Summary of spatial regression output

Variable	Coefficient	Std. Error	z-value	Probability
Constant	2.22	0.30	7.42	0.00
All resources	0.26	0.29	0.91	0.36
Natural	-0.34	0.28	-1.22	0.22
Cultural	0.32	0.09	3.47*	0.00
Lambda	-0.01	0.19	-0.03	0.98

\* $p < .001$ .

### Discussion and Conclusion

Tourism has been playing an increasingly important role in promoting the economic development in West Virginia. Since tourism development is largely dependent upon tourism resources in terms of quantity and quality, an inventory/compilation and an evaluation of major tourism/outdoor resources in the state are necessary. This study is among the first in the state for such efforts.

This study found that nature-based tourism resources are largely concentrated in the eastern or central eastern part of West Virginia centering around Pocahontas County. In contrast, cultural resources do not exhibit a distinct clustering pattern as compared with natural resources. However, the cultural resource distribution pattern not only visually resembles that associated with visitors' travel spending, but also statistically significantly correlate with travel spending after controlling spatial dependence (albeit not significant). This finding has important managerial and marketing implications for the state. First, the state needs to continue to pay attention to heritage tourism while in the meantime more



management effort needs to be put on nature-based tourism resources, particularly those counties with higher levels of natural amenity, but lower levels of travel/tourism related economic benefits. Second, economic benefits from tourism are highly concentrated in counties (i.e., Jefferson, Ohio, Hancock, and Kanawha) with gambling centers. This raises the question as to what kind of tourism should be developed and promoted and how tourism should be developed in a balanced manner, particularly for western West Virginia.

More efforts are needed in the future to create a more complete and accurate database, not only including tourism resources, but also tourism businesses. The creation of these databases would be very useful for spatial analyses involving other socio-economic variables. For example, these databases, once created, can be used to examine the link between amenity and migration, between resource distribution/use and socio-economic groups, etc. Given the nature of such an effort, collaborations among different agencies are needed to update existing databases and to create more accurate and comprehensive databases.

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