

# Using Lodging Tax as an Economic Indicator of Nature-Based Tourism

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## Introduction

“Tourism is a dynamic force homogenizing societies and commodifying cultures across the globe. It is promoted as a positive means of economic development for the many countries and communities who have lost their traditional industries, or for those who simply hope to improve their general economic condition.” (Reid) According to the World Tourism Organization, in 2000, \$6 trillion was spent internationally on tourism activities (figure excludes revenue from airfare). (Neale) Moreover, without overall concurrence on definitions of categories describing tourist activities, there is great difficulty discerning the proportion of each in relation to the total. A major problem arises when one tries to divide tourism into specific groups. “Any examination of the economics of travel and tourism requires definitions of the subject, and its components, which are suitable for economic analysis.” (Bull) Tourism is a broad topic and encompasses many different travel approaches. Furthermore, “Tourism is neither a phenomenon nor a simple set of industries. It is a human activity that encompasses human behavior, use of resources, and interaction with other people, economies and environments. It also involves physical movement of tourists to locales other than their normal living places. Although most tourism around the world is a form of recreation, thus implying use of an individual’s discretionary time, some tourism is inevitably linked with obligations, such as business or health requirements.” (Bull) Unless tourists make their intentions unambiguous, there is no way to separate forms of tourism into precise economic categories. However, defining these categories can give us a better conceptual understanding of the tourism market.

## Nature Tourism

First, nature based tourism, sometimes referred to as ecotourism, is an increasingly relevant subsection in the tourism industry. Previously, economists made distinctions between ecotourism and nature based travel, but current literature suggests the words can be used

interchangeably. "Ecotravel involves activities in the great outdoors-nature tourism, adventure travel, birding, camping, skiing, whale watching, and archeological digs that take place in marine, mountain, island, and desert ecosystems." (McLaren) This definition includes nature tourism within ecotourism, making it evident that the two are invariably converged. In defining ecotourism, Rosaleen Duffy explains, "Ecotourism can be broadly defined as nature-based tourism that does not result in the negative environmental, economic and social impacts that are associated with mass tourism. Ecotourism is promoted as a form of travel that brings only benefits to the host societies, because ecotourists are thought to be culturally aware 'ethical travelers' who are keen to reduce negative impacts on the environment." (Duffy) Despite this idealistic notion of ecotourists, many tourists travel to exotic areas to observe natural beauty, yet they fail to eliminate negative impacts. Therefore, nature-based tourism is more ubiquitous because most tourists do not travel as efficiently as possible. Chris Ryan observes, "The impact of the tourist upon nature can be considerable and is not restricted to the major tourist development areas." (Ryan) The impact tourists have on local environments has been a major drawback against further development of many tourist destinations. "As the global tourism industry continues a trend of sustained growth, moving more people and generating more domestic and foreign revenues, it often does so at the expense of the social and ecological integrity of destination regions." (Fennell and Dowling) However, with proper community planning and oversight (not merely governmental), these impacts can be eliminated, or at least reduced. Conserving natural habitats ensures long-term economic profits throughout the tourism sector of the economy. Further, protecting biodiversity for nature tourists guarantees their satisfaction and provides future business opportunities. Using revenue generated from these tourists, policymakers and environmentalists can reinvest money generated through tourism into the protection of natural habitats, as well as sheltering plant and animal life within protected areas. Moreover, a positive political and cultural attitude toward local environments will ensure sustainability of both tourism and biodiversity. Ecologically and socially conscious consumers will also help to minimize the negative aspects of the tourism industry, so communities will target this type of tourist to ensure environmental or cultural degradation is minimal.

## **Central Flyway**

Next, nature based tourism is often linked with hunting game birds or simply observing their natural beauty. Tracking birds and their movements in the 21<sup>st</sup> century has become increasingly effortless. Recognizing observed migratory patterns commonly allows people to find particular birds or other wildlife within proximity. There are four recognized flyways in North America: the Atlantic, Central, Mississippi and Pacific. We will focus on the Central Flyway, which is comprised of Texas, Oklahoma, Kansas, Nebraska, South Dakota, North Dakota, Montana, Alberta, Saskatchewan and the Northwest Territories. An oversight council, the Central Flyway Council or CFC, "...determines actions required for sound migratory game bird management and make recommendations to the U.S. Fish and Wildlife Service" ([centralflyway.org](http://centralflyway.org)). The continental divide is near the western border of the flyway until reaching Montana where the border extends slightly east of the divide. The eastern border is an

arc from the southeastern corner of Texas to the southwestern edge of the Hudson Bay in Canada. The overall shape of the flyway resembles that of an hourglass with the narrowest section in the middle, within the states of Nebraska and South Dakota. The following figures (1(a) and 1(b)) illustrate the migration route more effectively than explanation.

**Figure 1(a): Central Flyway**

<http://platterriver.unk.edu/Flyway.html>



**Figure 1(b): Central Flyway**

[www.ianr.unl.edu/ianr/pwp/facts/flyway.jpg](http://www.ianr.unl.edu/ianr/pwp/facts/flyway.jpg)



While one often thinks of ecotourism associated with travel to exotic locations in Africa and the Amazon, south-central Nebraska has its own nature based tourism niche. Sandhill cranes, utilizing the migratory path labeled Central Flyway, provide a seasonal event that brings nature enthusiasts from around the world to Nebraska. “Changing land use patterns and development of the Missouri River have shaped the Flyway into an hourglass figure, with its narrow waist in south central Nebraska.” (platterriver.unk.edu) Observation of the Central Flyway makes evident the migratory route’s narrowing in Nebraska in relation to other areas within the flyway. This bottleneck in the flyway becomes a 75-80 mile wide corridor, thus forcing the birds into dense concentrations. According to Nebraska Travel, “An estimated 500,000 sandhill cranes pass through the Platte River Valley (located in south-central Nebraska)...” during their annual migration (rowesanctuary.org). This estimate reflects the volume of birds seen in the region and suggests 80% of the world’s population of sandhill cranes pass through Central Nebraska during their journey north. One interesting discussion point is the fact these cranes can be hunted in every area of the Central Flyway except the state of Nebraska.

## Sandhill Cranes

Sandhill cranes, or *Grus Canadensis*, are somewhat large birds with long legs and a long straight neck. They are comparable to herons in looks, but during flight cranes keep their necks extended, whereas herons make an "S" shape while flying. Another characteristic of sandhill cranes is the feather over the back of their body, "Long, fluffy tertials droop down over (the) tail and primaries" ([mbr-pwrc.usgs.gov](http://mbr-pwrc.usgs.gov)) Their heads are only feathery when they are adolescent, and adults are typically grey in color with brown or dark red patterns on their wings and body. Young sandhill cranes are grey in color, and sometimes have light red discolorations on their body. Sandhill cranes can weigh anywhere between 6-14 lbs., depending on where they breed and nest. A similar species of cranes, known as whooping cranes are endangered species. "While the numbers change annually, there are now approximately 156 whooping cranes in the wild. Traveling singularly or in small flocks, they use the Central Flyway while moving between their wintering grounds at Aransas National Refuge in South Texas and nesting areas in Canada. Their use of the Middle Platte depends upon local weather conditions. In November 1994, a flock of seven whooping cranes remained on Funk Lagoon, a 2,000-acre wetland twenty-five miles southwest of Kearney, for ten days. Unlike Sandhill cranes, which stage on the Platte for up to six weeks in March and April, whooping cranes generally move north after a few days." ([Platteriver.unk.edu](http://Platteriver.unk.edu))

This period of time in March and early April provides nature enthusiasts the opportunity to view the sandhill cranes in their natural habitat. These cranes necessitate specific habitats because a wide range of needs must be met in order to ensure their survival. Wetlands, grasslands, and crop fields are all requirements of the sandhill cranes and are contained within the area of south-central Nebraska. First, the Platte River provides adequate wetlands for the cranes needs. The river affords the cranes not only a sense of safety, but also one of their food sources. Invertebrates on riverbanks, as well as channels within the river, allow the birds to consume protein to strengthen their muscles and gain weight. By storing fat reserves cranes can gain weight during their stay, thus enabling them to sustain flight for the remainder of their migration. Other food sources in the area do not allow sufficient protein intake, therefore this source is necessary for crane's diverse diet. Also, the field of vision along the river allows the cranes the opportunity of spotting potential predators before they can attack. The sense of safety the river provides for the birds allows them to be more gregarious and joyful than they are most of their migration. Next, grasslands enable the cranes to acquire essential nutrients that are a requirement for roosting. "All cranes are omnivorous. Sandhill Cranes are generalists and feed on a wide variety of plant tubers, grains, small vertebrates (e.g. mice and snakes), and invertebrates such as insects or worms" ([savingcranes.org](http://savingcranes.org)). The biodiversity within the grasslands satisfy many of the cranes' dietary needs. Finally, there is no shortage of crop fields in central Nebraska, allowing cranes to acquire grains. According to national geographic, "Scientists estimate that cranes eat 1,600 tons (1,500 metric tons) of waste corn every spring. That breaks down to about five pounds (two kilograms) for each bird and just under two pounds (one kilogram) stays with them. The corn is essential to provide energy for their northward migration" ([nationalgeographic.com](http://nationalgeographic.com)). In summation, the Platte River region in south-central Nebraska affords sandhill cranes a variety of environmental and food sources that are essential to their particular needs. "The Platte River Basin is the only ecosystem along the

crane migration route that meets all of their requirements for roosting, resting, and restoring themselves.” (Cranemeadows.org)

## Local Organizations

Moreover, the Platte River has changed dramatically over time and without the help of local citizens, government agencies, and nature sanctuaries, sandhill cranes may choose alternative routes for migration. Crane Meadows Nature Center is a local organization specializing in the preservation of wildlife habitat. They realize, “The future of the sandhill crane depends on the preservation of their habitat along the Platte River Valley” (cranemeadows.org). Another environmental organization dedicated to preserving crane habitat is the Rowe Sanctuary and Iain Nicolson Audubon Center. Locally referred to as simply the Rowe Sanctuary, this organization is, “Owned and managed by the National Audubon Society, the original purchase of 782 acres in 1974, which was funded by Lillian Annette Rowe of Trenton, NJ, included 2.5 miles of river channel, wet meadows, and some agricultural fields. Additional land acquisitions have increased the current size of the sanctuary to 1,448 acres” (rowesanctuary.org). Additionally, this land must be maintained because the river does not carry the same capacity of water it used to. The river was maintained by large amounts of water flowing from snowmelts in the Rockies that would clear sandbars and provide channels wide enough to maintain its relative shape. However, drought and human interference with the water table has made it necessary to clear sandbars of trees and banks of grass. Rowe Sanctuary cooperates with several entities to ensure the longevity of sandhill crane migration. First, they use machinery to clear trees and other growth from the Platte River. “Once the island has been cleared, then it is disked in order to inhibit the woody growth even further. This process must be repeated over time, otherwise the island will disappear in trees.” (rowesanctuary.org) Both Crane Meadows Nature Center and the Rowe Sanctuary offer crane-viewing tours during migration season and some tourists believe this to be the best way to view cranes and other area wildlife. According to representatives of Rowe Sanctuary, there are typically thirteen to fifteen thousand sightseers in the months of March and early April. The sanctuaries protect certain sections of the river that the visiting cranes will inhabit, thus providing habitats that replicate natural environment conditions.

## Obstacles

However, observing environmental protection, such as expending resources to clear trees from sandbars, from an economic standpoint is difficult. “In the absence of market forces, many researchers have attempted to measure the value of utility or personal benefits generated by free resources.” (Bull p. 153) The method by which economists evaluate environmental services and ecosystem protection is known as contingent valuation. This method is difficult to administer because it directly asks the public what they would be willing to pay for environmental services. Since many people are not experts in the field, it is a controversial method of evaluation. Placing a value on intangible goods, such as personal enjoyment, is not a common practice economists utilize because contingent valuation is based

on people opinions, not actual market behavior. For instance, “a study to determine what kind of regulation we ought to adopt for a particular environmental problem is a case of normative economics because it involves more than just know how things work; it also involves value judgments.” (Field and Field p. 3) Some problems arise when decisions are made based on personal judgments. Whose opinions should be chosen? If experts in the field disagree and lobbyists pressure politicians, then whose decision should be trusted? Also, people’s evaluations of an issue may not reflect their true feelings. Sometimes people answer questions the way they think the question should be answered, instead of expressing their actual opinion. Further, those who directly benefit from certain laws or regulations will place a greater value on that which is being protected. For example, even though a person does not care about animals, if there is an endangered species near their land, they will support laws that protect endangered species because their land value is increased by the presence of rare animals. To put it simply, much complexity arises when a consensus is needed for environmental costs and benefits, and the process can become quite debatable.

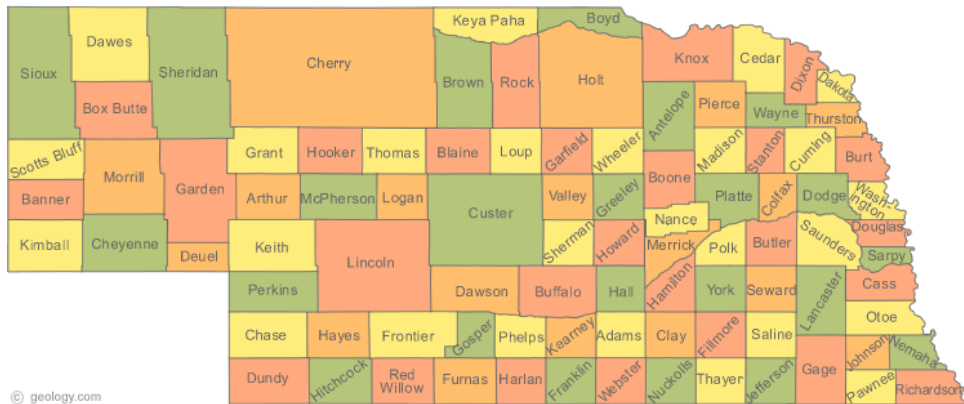
## Data Set

Additionally, quantifying the impact of nature tourism produces complex choices. Specifically, what source of generated revenue should be chosen as a model for nature tourism’s economic impact? Gasoline tax collected and sales tax are often suggested, but they pose some problems. People may travel throughout the year for differing motives such as sporting events, family functions, work, etc. They may be in town long enough to purchase fuel and eat at a restaurant, but they were not in a location for long enough to be considered tourists. The sales tax market is more elastic than lodging tax because business closing or vehicle sales increase can inflate sales tax numbers in any given month. Moreover, by only documenting the number of tourists who visit Rowe Sanctuary or Crane Meadows, the numbers would again be inflated because some visitors arrive out of convenience. Visitors to such viewing areas may be from nearby areas or visiting residents of the area during the migration. Some of the tourists that visit parks and sanctuaries may be there temporarily because they are simply passing through the area with destinations beyond south-central Nebraska. For these reasons the focus will not be on the number of tourists because of the drawbacks. Instead lodging tax will be analyzed because it is gathered bureaucratically and without predisposition. This tax gives the clearest picture of those coming to an area for specific reason. For example, the Husker Harvest Days, a local farmer’s expo, is held in Hall County during mid-September. A visible spike in lodging tax collection is observable during September. (The graph on page 14, Figure 6, illustrates this point.) Lodging tax is a source of revenue that is collected and recorded by the Nebraska Department of Revenue, and is a great representation of tourist’s monetary impact on the state’s economy. Lodging tax accounts for revenue generated by, “any commercial, nonprofit, or state-owned facility in which the public may, for a consideration, obtain sleeping accommodations...[In] a hotel, inn, bed and breakfast, court or motel; or a tourist home or campground” (revenue.ne.gov). Lodging tax is a homogeneous system of indirectly gathering revenues from tourists that is collected in every county in the state. The rate charged is also consistent when comparing counties in the state of Nebraska.

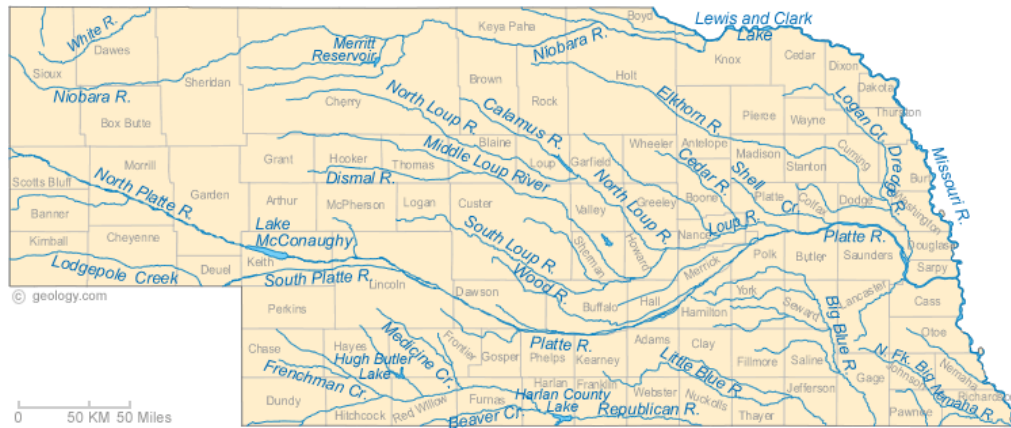
The actual rate varies from 2% to 4%, depending on what county you are in. Several counties have increased their rates in recent years, while others have continued to charge the same rate. For example Buffalo and Lincoln counties have charged 2% since 8/1/80, whereas York and Hall counties increased their rate to 4% as of 10/1/05 (revenue.ne.gov). These four counties lodging tax receipts will be used to determine the presence of crane tourism’s economic impact in the Platte River region. The proportion of lodging tax collected every month will provide a statistical curve of total revenue. To put it more simply, one must add the monthly collections and divide individual months by the sum. Upon doing so, one would ascertain a seasonal trend in Nebraska’s tourism industry. The peak tourist season in Nebraska is summer, with a curve building up, peaking, and then descending in a fairly uniform manner.

However, when we observe the same relevant statistics sorting lodging tax by county, a different picture emerges where crane migration encourages tourism. Hall and Buffalo are located within the Central Flyway and near both Crane Meadows Nature Center and Rowe Sanctuary. The largest portion of the population in these counties is directly off Interstate-80, a major interstate in the region. Lincoln County lies just west of the Central Flyway, just off Interstate-80, and contains the Platte River. York County also has a large proportion of residents near the interstate, and is located east of the Central Flyway. All four counties have similar population sizes, are near the interstate, and as previously discussed, charge similar lodging tax. The map (Figure 2) will illustrate each counties location within the state of Nebraska. The second map (Figure 3) is to display the location of the Platte River which goes through the middle of the state.

**Figure 2**  
**Nebraska Political Map**



**Figure 3**  
**Nebraska Rivers/Counties**



Maps provided by geology.com

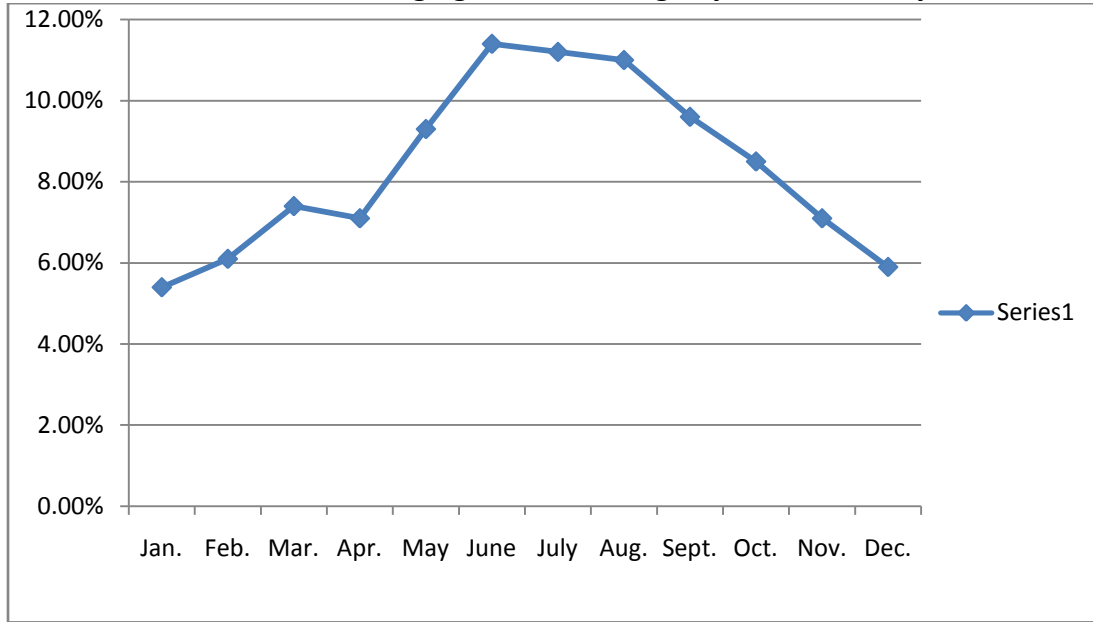
**Economic Impact**

Now that we have determined the similarities between the counties being discussed, we will examine them more closely to determine differences. Using monthly proportions of total lodging tax collected, a different pattern emerges from Buffalo and Hall counties when compared to the entire state. Also, York and Lincoln counties show entirely different tourism patterns from Buffalo and Hall County, despite their similarities. Buffalo and Hall county experience a significant increase in lodging tax collected in the month of March. Because this is only characteristic of Hall and Buffalo, and we know sandhill crane viewing tourists arrive in March, then one can conclude the spike in tourism must be attributed to crane-viewing nature tourism. Other factors must be considered, for instance weather, but they can be ruled out by the convincing indication of a reoccurring spike in lodging tax percentage. The first graph (Figure 4) is a statewide average of the percentage of lodging tax collected each month. The graph represents a three year average divided by the total tax collected throughout the years of 2002, 2003, and 2004. The same years were used for the county averages and correspond to the latest available figures. These illustrations will better one’s understanding by providing a visual image to describe the previous statement. The vertical axis represents the percentage of tax collected by the horizontal axis, which represents the month.



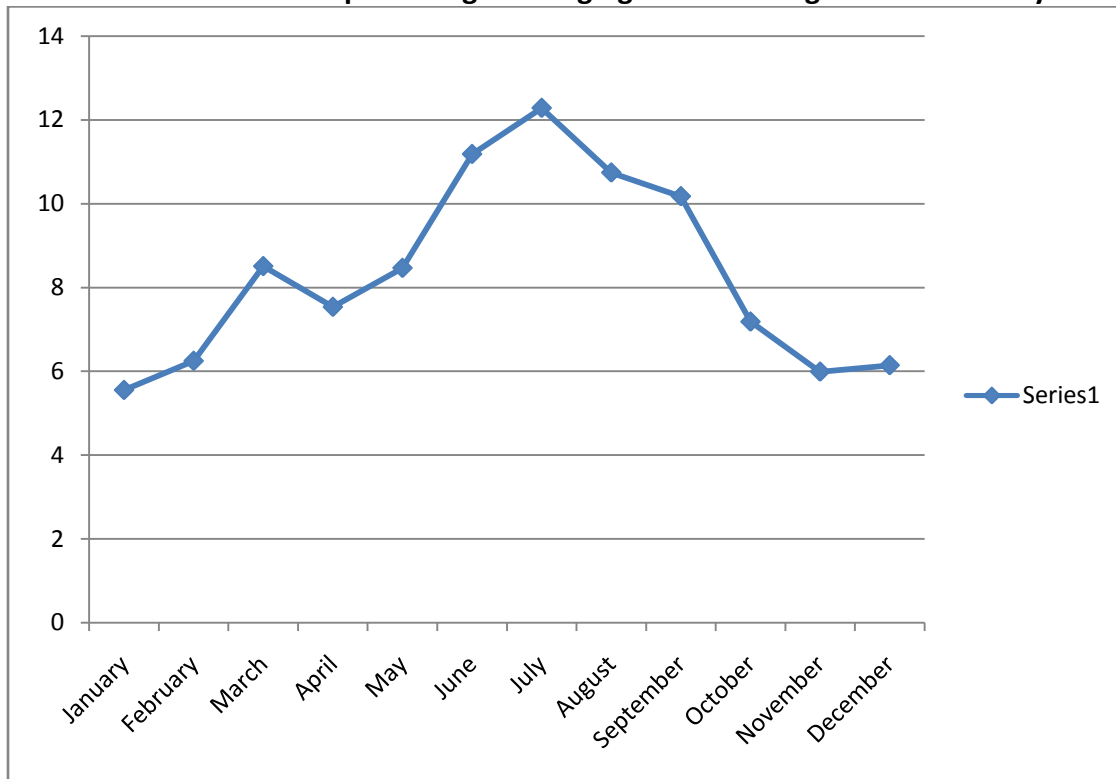
**Figure 4:**

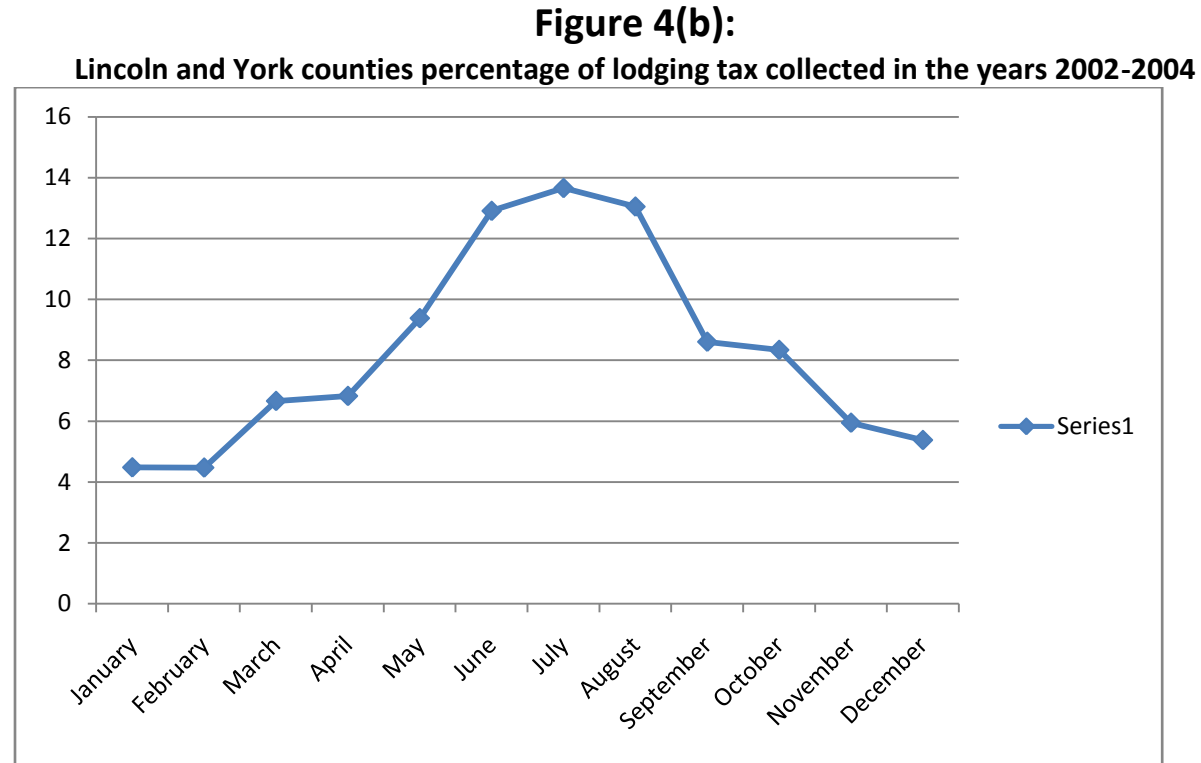
**Nebraska State Lodging Tax, Percentage by Month in the years 2002-04**



**Figure 4(a):**

**Buffalo and Hall counties percentage of lodging tax revenue generated in the years 2002-2004**





(Statistics were provided by the Nebraska Department of Revenue.)

### Conclusion

Upon observing the trends established by percentages of lodging tax compared by month we can detect a difference. Buffalo and Hall Counties report equal or greater tax revenue from March than in April (figure 4[a]), whereas, Lincoln and York display similar numbers from both months (figure 4[b]). Moreover, Lincoln and York counties have a larger proportion of lodging tax collected in the summer, displaying a larger peak in the summer than Hall and Buffalo. Specifically, Buffalo and Hall reveal 8-9% of yearly lodging tax is collected in March, while Lincoln and York only collect 6-7% in the same month. Also, in June, July, and August Lincoln and York show roughly 12-14% of their lodging tax gets collected each month of summer. But, Buffalo and Hall County collect 9-12% each month of summer which illustrates another difference. Also, York and Lincoln counties exhibit distribution as a curve, but Buffalo and Hall counties appear to have scattered distributions that must be attributed to something. The seasonal trend of tourism is consistent between the state and counties outside the Platte River region within the Central Flyway; however Buffalo and Hall counties show a spike in the spring and less of a peak in the summer. The presence of nature tourism in south-central Nebraska is therefore established, and can be observed by those studying this phenomenon. In conclusion, nature based tourism is a socially and environmentally acceptable form of tourism that has many benefits. The entire state of Nebraska benefits from the unique event of crane migration, both economically and environmentally. The state receives taxes from those visiting the area, and organizations catering to nature tourists ensure habitat protection. The revenue

generated by tourists and local business can be reinvested into the state's economy leading to the multiplier effect. Economically, the multiplier effect occurs when there is an increase in spending felt by a local economy. The increased spending leads to higher overall incomes in the community, and business revenues and jobs are more easily attainable. Tom Doering, the Research Coordinator at the Nebraska Department of Economic Development, explained that the statewide multiplier was 2.7. This means that there is a 2.7% increase in incomes that can be attributed to the multiplier effect. This number may not be overwhelming, but the multiplier effect will not cause major economic growth. Partly because potential output at full employment has supply-side barriers, but also because the increase in consumer spending is less than the increase in consumer incomes. Also, if the multiplier effect led to an increase in production at full employment, the increased demand would cause inflation. From an economic standpoint, nature tourism is ideal because of its long-term sustainability. Local economies are strengthened by tourism revenues in ways that allow them to reinvest in the protection of plant and animal life. Even though enormous amounts of money are not being received in the short-term, many believe the environmental and social benefits to the region are more important than devastating local environments for economic gain.

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