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Tourism, Mapping, Retail and Recreational Trails: A Case Study of Connectivity between Trails and Adjacent Downtowns in Anniston, Alabama, USA

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Tourism, Mapping, Retail and Recreational Trails: A Case Study of Connectivity between Trails and Adjacent Downtowns in Anniston, Alabama, USA

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Abstract

This study examines the estimated increase in economic impact on a geography's local economy by creating cross-marketing efforts between expanding an established outdoor recreation trail to a closely located city downtown commerce district. This research will analyze the resulting potential rise in sales/lodging tax revenues for that city by mapping the trail and downtown district, and cross-marketing the other to users of both or either venue. Potential increase in economic impact will be estimated utilizing IMPLAN methodology by assessing the economic impact on the local economy that a percentage range of increased spending resulting from this cross-marketing effort could generate.

Acknowledgements

I would like to thank Dr. Mark Sciuchetti for his advisement while I have been a student in the JSU GIS master's program. His mentorship and teaching style have made me a better student and professional. I would like to thank Dr. Saideh Gharehchahi for her teachings in remote sensing and for agreeing to be a part of my review team as well as Dr. Benjamin Boozer for the years of mentorship and collaboration we have shared studying the economic impact and contribution analysis. I would also like to thank Dr. Joseph Morgan for introducing me to the world of GIS many years ago.

Table of Contents

List of Tables

List of Figures

Introduction

Tourism infrastructure development aimed at soliciting remote visitors from other cities, counties, states, and countries has become one mechanism in the toolbox of economic developers to assist their communities further diversify the local economy. Whether a byproduct of the 2020 Coronavirus (COVID-19) pandemic or not, people all over the world are flocking to outdoor recreation venues to enjoy open space and clean air (ARC et. al. 2021).

Developing outdoor recreation amenities both attracts visitors to a community and provides a positive quality-of-life component for local citizens. Utilizing geographic information systems (GIS), ESRI Business Analyst, and other geospatial approaches, community leaders can assess the development of tourism infrastructure to improve tourism to local communities, both metropolitan and rural.

In Fiscal Year 2020, the Appalachian Regional Commission (ARC) (n.d.) granted nearly $6.4 million in 23 projects within the ARC region to build regional culture and tourism. "Regional Culture and Tourism" and "Building Community Infrastructure" are two of five investment priorities for ARC funding through 2025 (EDA).

The Economic Development Administration (EDA) (n.d.) began a program in Fiscal Year 2021 called the "Travel, Tourism & Outdoor Recreation Program" which is focused on accelerating the recovery of communities that rely on the travel, tourism and outdoor recreation sectors. EDA allocated $750 million of their American Rescue Plan funds to support state tourism grants ($510 million) and community-level competitive grants ($240 million). (EDA.gov).

Along with this EDA funding, federal funding assistance is abundant through the different national economic recovery plans adopted since the COVID-19 outbreak. Whether it be the Appalachian Regional Commission (ARC), Economic Development Administration (EDA), U.S. Department of Agriculture (USDA), Small Business Administration (SBA), U.S. Department of Transportation (USDOT), etc., rural communities especially, should be pursuing this type of community infrastructure funding. But once the infrastructure is there, then what? How do communities capitalize on this infrastructure and economy-diversifying opportunity? Are these schemes successful, and do they yield the results intended for the community? How can we examine the success/failure of the investment in these communities?

This paper addresses how a city (using Anniston, Alabama as a case study) might market to visitors using a recreational trail. The 33-mile Chief Ladiga Trail in northeast Alabama is a local playground that travels through friendly communities and rural settings. The rail-trail, which follows a former CSX railroad line, is named for the chief of the native Muscogee (Creek) people who ratified the Cusseta Treaty in 1832 and gave up the tribe's last remaining parcel of property in the region. (americantrails.org) Currently, this trail ends in Weaver, AL just outside of the city of Anniston. However, Anniston has the last seven miles of the trail being readied for construction to extend it past Weaver to the Amtrak station at the multi-modal transportation center located in Anniston. This extension will allow cyclists to cycle from Atlanta to Anniston and ride the Amtrak train back to Atlanta if they wish. This seven-mile extension will also bring the trail right along Anniston's beautiful downtown district. (Bennington, T.) Leveraging the location of the trail and the tourism sites in the downtown, Anniston will be able to

cross-market the two asset locations to potentially increase disposable income spending in downtown Anniston.

Cities need to examine amenities in their downtown areas and show visitors how they may best navigate to local restaurants, retail shops, hotels, cultural art centers, etc. If a visiting cyclist, whether they are using a trail as a form of exercise or participating in an event, is unaware of the amenities close to them, it is unlikely that they will navigate far from the trail path. But if a community were to provide way-finding signage, instructions and sufficient mapping to a safe and well-lit downtown environment, it is much more likely that they will spend disposable income at that geography if information is efficiently communicated and the visitor feels safe. Otherwise, communities are literally having hundreds, if not thousands of people on a year basis pass their city by because a visitor is not well informed due to a lack of marketing and information along the recreational trail or at the recreational venue.

One way to know what visitors a city might be missing out on is to geofence popular rest areas along the trail. Geofencing is a technology that allows the movements of a person, vehicle, etc. to be recorded using satellite signals based on the type of hardware the person or vehicle (RFID, GPS technology) is equipped with (Perusomula et al. 2023). Taking the Chief Ladiga as an example, there are at least four to five very popular “resting stops” that could be geofenced and intercept surveyed at various times of year to see the origin of those visitors, identify the mobile market area and assess quantity of visitors from residential trail users.

Communities could then best identify what geography a majority of their non-local visitors originate from, determine the best locations within the mobile marketing

area to market their outdoor recreation amenities. Ideas for marketing along the trail include providing a kiosk with mapping local amenities.

Literature Review

In recent years, the role of outdoor recreation and trails in regional economic development has gained increased attention among scholars, policymakers, and practitioners. This literature review examines various studies that have explored the economic impacts of outdoor recreation and trails, with a particular focus on the role of participatory regional policy, place attachment, and the rural growth trifecta in less developed regions.

The economic impact of outdoor recreation and trails has been a popular topic of research among scholars. For instance, Bowker et al. (2007) estimated the economic value and impact of the Virginia Creeper Rail Trail and found that the trail generated approximately $1.8 million in economic activity annually. Similarly, the Alta/Greenways (2013) study of the Silver Comet Trail in Georgia found that the trail generated $119.5 million in economic activity and supported 1,300 jobs.

Butzin and Terstriep (2022) examined the role of place-sensitive-participatory regional policy in strengthening place attachment in a less developed region. The study found that a participatory regional policy that involves stakeholders in decision-making and planning can help to build trust and increase social capital, which can in turn strengthen place attachment and lead to positive economic outcomes.

McGranahan et al. (2011) examined the rural growth trifecta, which posits that the combination of outdoor amenities, a creative class, and an entrepreneurial context can drive economic growth in rural areas. The study found that the presence of outdoor

amenities, such as trails and parks, can help to attract and retain the creative class, leading to positive economic outcomes. Landry et al. (2021) investigated the impact of the COVID-19 pandemic on outdoor recreation in the US and found that outdoor recreation activities have increased, highlighting the potential for trails and other outdoor amenities to support economic growth.

Koster et al. (2022) examined the role of long-haul economies in economic development and found that the concentration of long-haul activities can lead to agglomeration effects and positive economic outcomes. Research by Bareseghyan and Coate (2022) examined the impact of corrective taxation on community development and found that taxation can be used to mitigate externalities associated with economic development.

Watson (2007) highlighted the importance of distinguishing between economic contributions and economic impacts when measuring the economic effects of trails and other outdoor amenities. Additionally, various methods for counting trail users, such as geofencing and traffic counters, have been used to estimate trail usage (American Trails, n.d.; TRAFx, n.d.).

Overall, the literature reviewed suggests that outdoor recreation and trails can have positive economic impacts, particularly in less developed regions. Furthermore, participatory regional policy, place attachment, and the rural growth trifecta can play important roles in promoting economic development through outdoor recreation and trail development. However, further research is needed to explore the effectiveness of these approaches and to develop appropriate methods for measuring economic impacts.

Methodology

Economic Contribution Analysis Methodology

Economic impact analysis (EIA) and economic contribution analysis (ECA) are two related methods used to measure the economic effects of a specific event or policy.

Economic impact analysis estimates the total economic effects of an event or policy change on a particular region or industry. It takes into account, not only the direct effects of the event or policy change, but also the indirect and induced effects on other sectors of the economy. EIA typically uses input-output models to estimate the economic impacts. EIA can provide a comprehensive estimate of the total economic benefits and costs of an event or policy, which can be useful for making informed decisions about resource allocation, investment, and policy development.

On the other hand, economic contribution analysis estimates the economic effects of a particular industry or sector on a region or national economy. It focuses on the direct effects of the industry or sector on employment, output, income, and taxes. ECA can be useful for demonstrating the importance of a particular industry or sector to the economy, and for identifying potential areas for growth and development.

The "event" that this research is analyzing is the economic contribution analysis of a range of percentage increases to sales tax revenue collected due to effective tourism cross-marketing between the expanded Chief Ladiga Trail in Anniston, Alabama and the proximity of the trail to the downtown retail district.

Both methods can be useful for different purposes and can provide valuable insights into the economic effects of various events and policies. (Watson, et al.) For this research, we are using the economic contribution analysis method because we are

analyzing the importance of a particular industry, tourism, to the local economy of Calhoun County and more specifically, Anniston, Alabama, which is a potential area for growth and development once the remaining corridor of the Chief Ladiga Trail has been constructed.

IMPLAN economic modeling software was used for this analysis. This software is primarily used for input-output (I/O) analysis, which examines the interdependencies between industries in a particular economy. It is classified as a static I/O model because it analyzes the structure of the economy at a specific point in time. This means that it assumes that the structure of the economy remains constant over time, and any changes that occur in the economy are due to external factors, such as changes in policy or technology. Static models are useful for analyzing short-term effects, but they may not be as accurate when examining longer-term impacts. The specific point in time we are examining in this research is the potential economic contribution analysis that could be realized once the Chief Ladiga Trail expansion is completed in approximately 2024.

A dynamic I/O model, however, takes into account changes in the economy over time. Dynamic models use mathematical equations to simulate how changes in the economy will affect different industries and sectors over time. These models are more complex than static models and require a lot of data and computational resources to run and were not cost-effective for the purpose of this research.

While IMPLAN is a static model, it does allow for some dynamic analysis through the use of multipliers. Multipliers are used to estimate the indirect and induced effects of change in one sector of the economy on other sectors. This allows researchers to estimate the ripple effects of changes in the economy over time.

Multiplier Analysis

Economic multipliers are a measure of the total contribution analysis, as it relates to this research, or a particular economic activity on a local or regional economy. Specifically, economic multipliers are rations that describe the change in total economic output, income or employment that results from a change in a specific economic activity, such as increased local tourism spending.

For example, a multiplier of 2.0 indicates that for every $1 of spending or investment, the total impact on the economy will be $2. This is because the initial spending or investment creates a ripple effect throughout the economy as the money is spent and re-spent on goods and services, leading to additional rounds of economic activity and creating jobs and income for workers.

Economic multipliers can be direct, indirect, or induced. Direct multipliers refer to the initial impact of the economic activity, such as the direct employment and income generated by a new business or infrastructure project. Indirect multipliers capture the secondary effects on suppliers and other businesses that provide goods and services to the direct activity. Induced multipliers capture the additional spending and income generated by households and individual who are indirectly or directly affected by the activity.

Economic multipliers are important tools for economic analysis and planning, as they allow policy makers and businesses to estimate the potential impacts of their decisions on local or regional economies. However, it is important to note that the size of the multiplier depends on a number of factors, including the specific economic activity, the size and characteristics of the local economy, and the assumptions used in the analysis.

As a result, economic multipliers should be used as a guide, rather than a definitive measure of the impact of a particular activity on an economy.

A simplified example of direct, indirect, and induced effects is to imagine the scenario that a tourist is visiting a city (whether it be for leisure or business travel). That tourist spends $120 to stay in a local hotel (direct effect). The hotel in turn uses revenues collected from the tourist to pay the salary for housekeeping staff that live within the same local geography (indirect effect). That housekeeping staff person uses their salary paid by the hotel to then buy household groceries for their family (induced effect). This is the ripple effect that occurs in the local geography from that initial direct effect spending.

Based on the particular economic activity (tourism spending) and location (Anniston, AL), IMPLAN creates three multipliers: employment, labor income, and production, as follows:

- The employment multiplier calculates the overall change in employment within an industry as a result of each change in the direct labor force employed within that industry on a per-unit basis. The multiplier connects changes in total employment within the studied economy to changes in direct employment.
- Based on each change in direct labor income per unit, the labor income multiplier calculates the overall change in labor income across the entire economy. The multiplier connects shifts in direct labor income to shifts in overall labor income in the economy under study.
- The output multiplier calculates how much more production is produced per unit of output than the final demand by adding the total of all direct and indirect economic effects from all sectors. The multiplier connects shifts in final demand

and sales within one industry to overall shifts in output across all sectors of a local economy.

Remote Sensing Methodology

In order to analyze the economic impact of trail usage, we must first attempt to quantify the number of users during a specified time. The next step would be to then estimate tourism spending and lastly, model the economic contribution analysis that increased tourism spending will have on the local economy.

Quantifying usage of an outdoor recreation commodity, such as a trail, by local and non-local visitors can be difficult. If there is not an event where tickets are being sold or there is not some activity where a quantity of some sort of transaction can be counted, alternative methodologies must be used.

Passive Infrared Trail Counters

One common methodology in measuring trail usage is passive infrared trail counters (Abildso et al., 2021). Passive infrared trail counters are devices used to track the movement of people or animals in a specific area. They use passive infrared technology to detect the presence of heat emitted by moving objects, such as people or animals, and count the number of times the heat signature crosses a defined line or trail.

The device consists of two components: a sensor and a counter. The sensor is usually placed on a tree or pole in a position that allows it to detect the movement of people or animals along a specific path or trail. The counter is connected to the sensor and is programmed to record the number of times the sensor is triggered by the heat signature of a moving object.

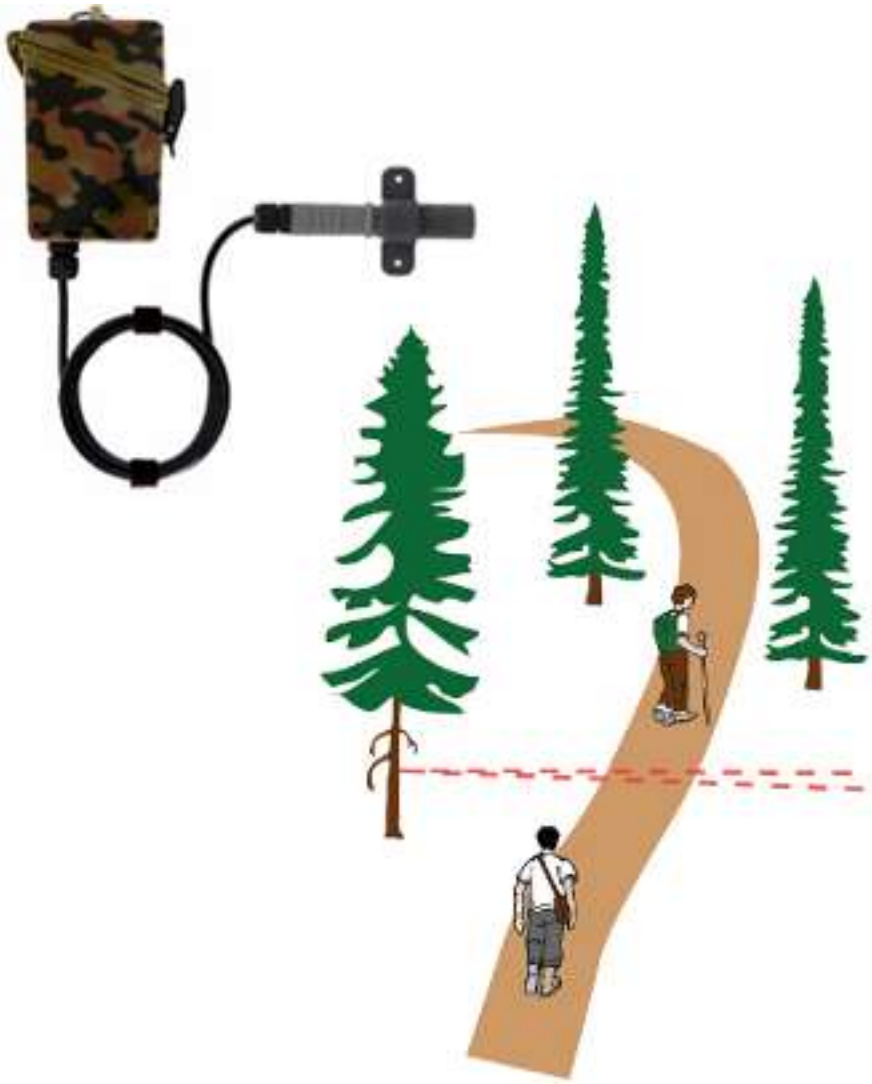
Passive infrared trail counters are commonly used in ecological and conservation studies to track the movement and behavior of animals in their natural habitats. They can also be used in outdoor recreational areas to monitor visitor traffic and help with trail management and maintenance.

In addition to tracking movement, passive infrared trail counters can provide data on the time of day and more advanced counters can provide data on speed of travel and direction of movement. This information can be used to create detailed reports and visualizations that help researchers and managers make more informed decisions about resource allocation, habitat management, and visitor use planning.

A total of four infrared counters manufactured by a Canadian company, TRAFx, were strategically deployed along the Chief Ladiga Trail within Calhoun and Cleburne counties. The TRAFx Infrared Trail Counter, as shown in Figure 1, is designed to tally individuals utilizing trails, paths, and sidewalks, including but not limited to walkers, hikers, joggers, inline skaters, horseback riders, and cyclists. The counter operates by detecting and responding to the infrared wavelength that people emit.

Figure 1

TRAFx Infrared Counter



The four locations of the trail counters were strategically chosen for their proximity from the trail to a widely used public space (i.e. Michael Tucker Park) but not in an area where there would be a lot of "mulling around" activity possibly picked up by the counters. Figure 3 depicts a map of the trail counter locations (p. 15) and the geocoordinates of each counter detailed in Table 1 (p. 16).

Figure 2

Map of the Chief Ladiga Trail

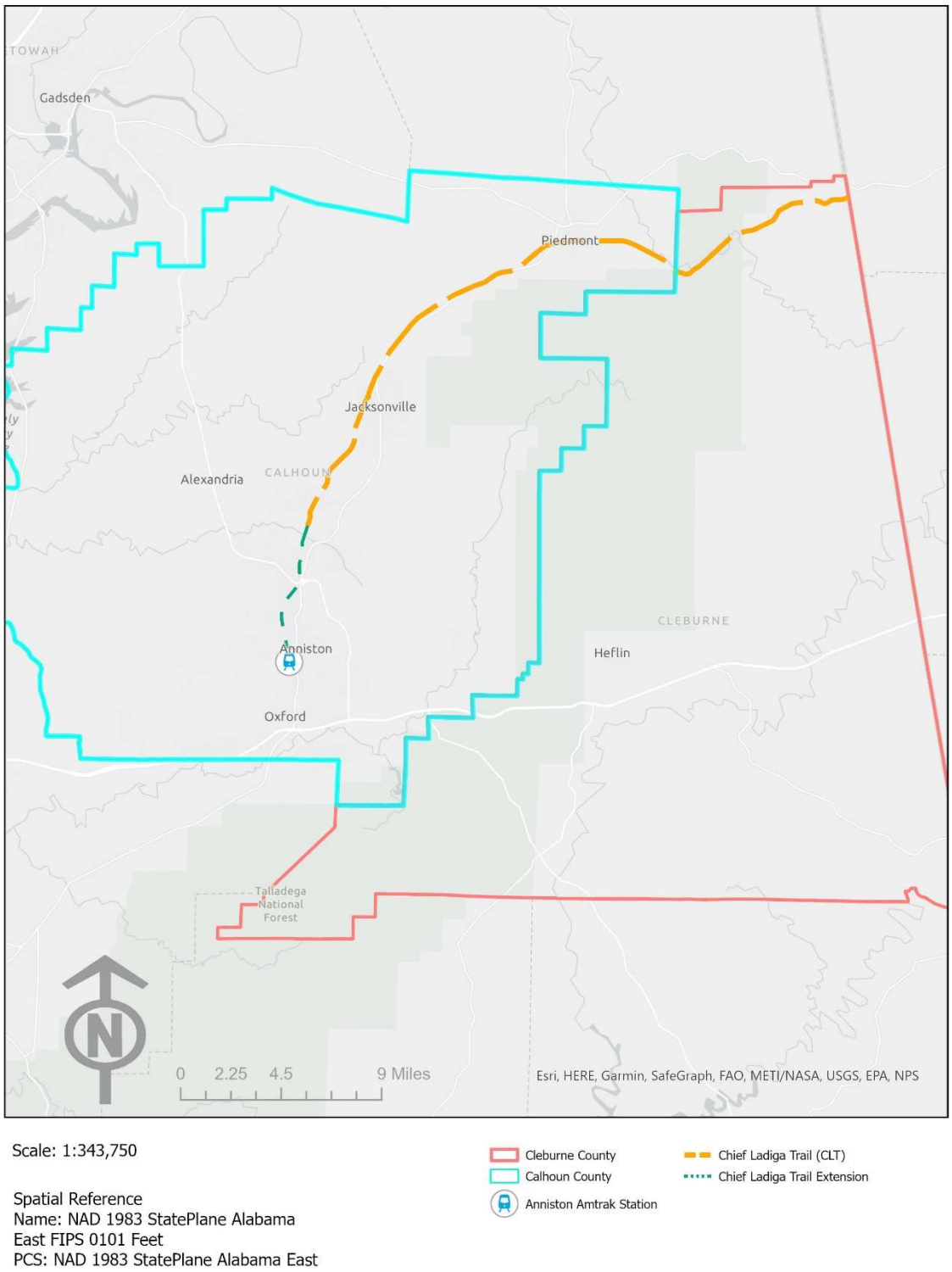
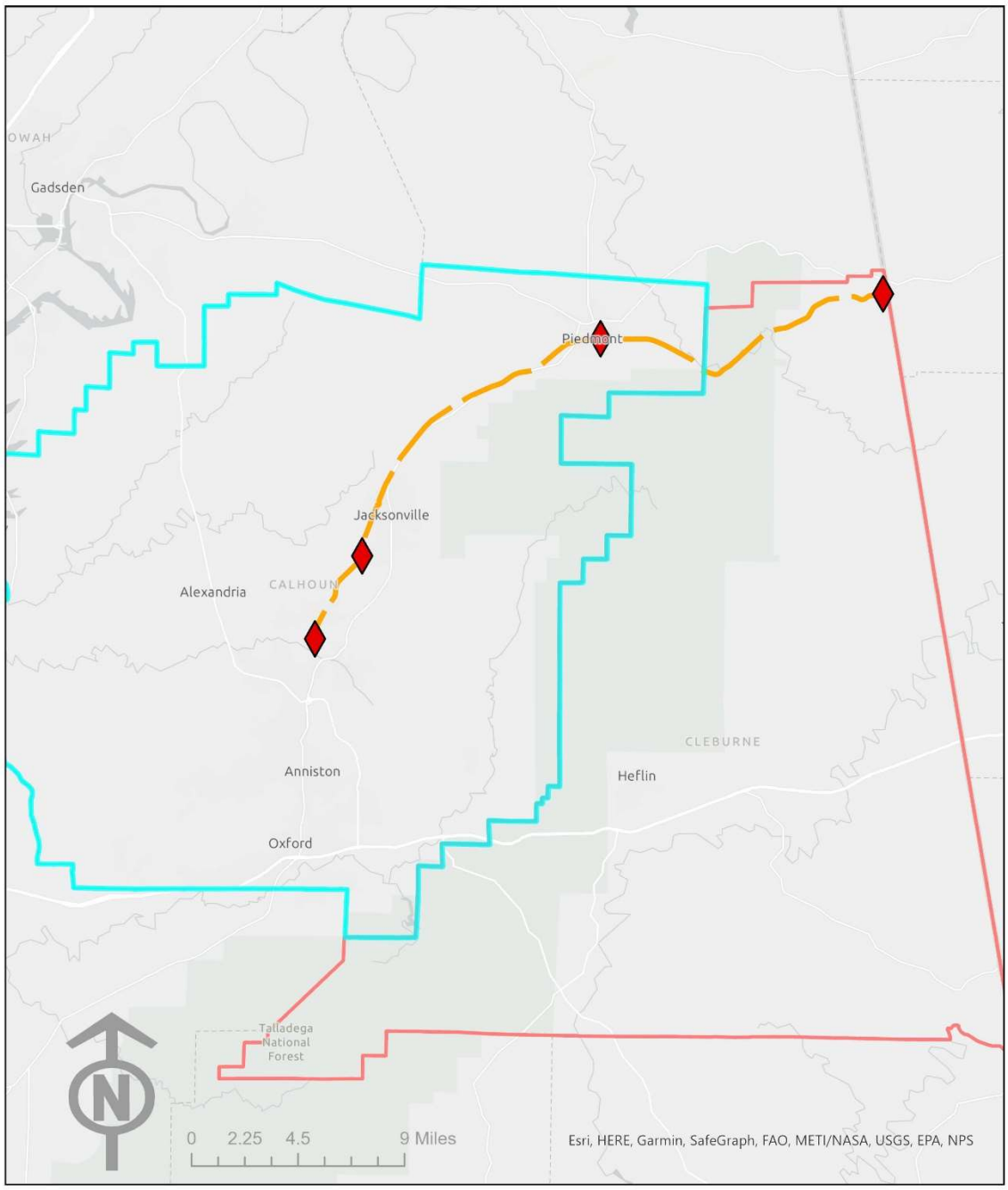


Figure 2 is a map showing the route of the currently developed Chief Ladiga Trail (CLT) in a dashed bright orange that runs through portions of Calhoun and Cleburne Counties. The current southern terminus of the CLT is located at the Michael Tucker Park Trail Head which is considered to be in Weaver but is included in Anniston's geographical boundaries. The extension of the CLT that is slated to begin in 2024 is shown on the map in a dashed bright green, extending from Michael Tucker Park routing south further into Anniston to terminate at the Amtrak Train Station located on 4th Street in downtown Anniston. The train station is also depicted on this map as well as the county boundaries of both Calhoun and Cleburne Counties. Cleburne County borders the Alabama/Georgia state line. The Chief Ladiga Trail continues as the Silver Comet Trail (not depicted on this map) once it crosses the state line. The Silver Comet continues for approximately 61.5 miles paralleling Georgia Hwy 278 all the way to Smyrna, GA, just outside the Atlanta Metro Area (Alta/Greenways, 2013).

Figure 3

Map of Current Chief Ladiga Trail Counter Locations



The map depicted in Figure 3 gives a closer look at the existing Chief Ladiga Trail and shows the location for four passive infrared trail counters discussed earlier. The four locations of the trail counters were strategically chosen for their proximity from the trail to a widely used public space (i.e. Michael Tucker Park) but not in an area where there would be a lot of "mulling around" activity possibly picked up by the counters. Three of the counters are located in Calhoun County; first at the current southern terminus of the CLT at Michael Tucker Park, second counter located within the city boundaries of Jacksonville and the third located within the city boundaries of Piedmont. The fourth trail counter is located in Cleburne County in an unincorporated area called Borden Springs near the Alabama/Georgia state line. Listed in Table 1 below are the geocoordinates of the trail counters mapped in Figure 3.

Table 1

Current Trail Counter Locations

Counter Location	Latitude	Longitude
CLT - AL/GA Stateline	33.94943057	-85.39929808
CLT – Piedmont	33.92275246	-85.60737584
CLT – Jacksonville	33.78909508	-85.78328313
CLT – Weaver	33.73894219	-85.81751884

The four deployed infrared counters provided us with the following raw data trail count information:

Table 2

2022 TRAFx Infrared Trail Counter Data Output

Site	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	ADT	Days with data
CLT Jacksonville Site #2	1,433	1,586	2,652	2,025	3,704	1,501	104	775	1,125	3,075	1,743	800	56.227	365
CLT Piedmont Site	No data - This counter was not placed until October 2022									6,366	4,421	3,094	147.081	86
Cty Rd 239.CLT Crossing	162	164	282	461	369	304	382	404	398	861	446	264	12.321	365
Tucker Park Bridge	1,040	1,465	2,174	2,293	No data - Counter was stolen					2,128	2,520	1,146	59.916	191

Without intercept survey data, we do not know where the trail-users are from which is a very important part of trying to estimate tourism spending as the spending levels are different for local users vs. non-local users. We also do not know the average distance traveled per user.

We have the raw data counts from the trail counters, but further analyzation is necessary in order to determine a more accurate estimation of unique users. This research will not go into the details of that analysis but will outline the general steps necessary to analyze raw counter data.

Analyzing passive infrared counter data to determine the number of unique visitors requires a few steps:

1. Remove duplicate counts: Since passive infrared trail counters detect heat signatures, they may register multiple counts for the same person or animal as they pass back and forth in front of the sensor. To determine the number of unique visitors, duplicate counts should be removed. This can be done

manually or with software for more advanced trail counters that can identify and eliminate duplicate counts.

2. Determine the time interval: To count unique visitors, it's important to define the time interval during which visitors are considered "unique". This could be daily, weekly, or monthly, depending on the goals of the analysis.
3. Filter out repeat visitors: To determine the number of unique visitors within the defined interval, repeat visitors need to be filtered out. This can be done by setting a threshold for the number of times a visitor must pass the sensor before they are considered a repeat visitor. For example, a visitor who passes the sensor five times in a day may be considered a repeat visitor, while a visitor who passes the sensor once is considered unique.
4. Review and refine the data: After filtering out repeat visitors, it's important to review the data and make any necessary refinements. This could include adjusting the threshold for repeat visitors or removing any outliers or anomalies that may skew the results.
5. Calculate the number of unique visitors: Finally, calculate the number of unique visitors within the defined time interval based on the filtered data. This number can be used to make informed decisions about resource allocation, visitor management, and other aspect of site management.

Geofencing

Without primary survey data, geofencing was used as a methodology to validate trail counter data and estimate increased visitors to the downtown Anniston Mainstreet District. Geofencing technology is a location-based service that uses GPS, cellular data,

or Wi-Fi signals to create a virtual boundary around a geographic area. This boundary is known as a geofence, and when a mobile device or any other object equipped with geofencing technology enters or exits this boundary, it triggers a predefined action.

Geofencing technology has a wide range of applications, including fleet and asset management, retail applications, marketing, security, law enforcement, human resources and compliance management (Suganya, 2022). For example, a retailer could use geofencing technology to send special offers or promotions to customers who enter a specific store or area, or a company could use geofencing to track the location of its assets and vehicles.

The technology can be implemented using various approaches, such as creating a polygonal geofence by defining a series of geographic points or creating a circular geofence with a central point and radius. The size and shape of the geofence can be customized to meet specific needs and requirements.

Overall, geofencing technology provides businesses and organizations with a powerful tool to improve their operations and engage with their customers in a more targeted and personalized way.

The Estimated Visits Report, which is the output of the Near geofencing analysis, provides a summary of the number of estimated visits to a business or location based on location data from mobile devices. This report provides an estimate of foot traffic to a location and can be used by businesses to better understand their customers and target marketing efforts. The report typically includes information such as the total number of estimated visits, the number of unique visitors, the average duration of visits, and the

most popular days and times for visits. The report is generated using data from location-based services and mobile advertising platforms and may be subject to certain limitations and caveats. (Near Estimated Visits Report, 2022).

Figure 4

Geofencing Map of Section of Chief Ladiga Trail

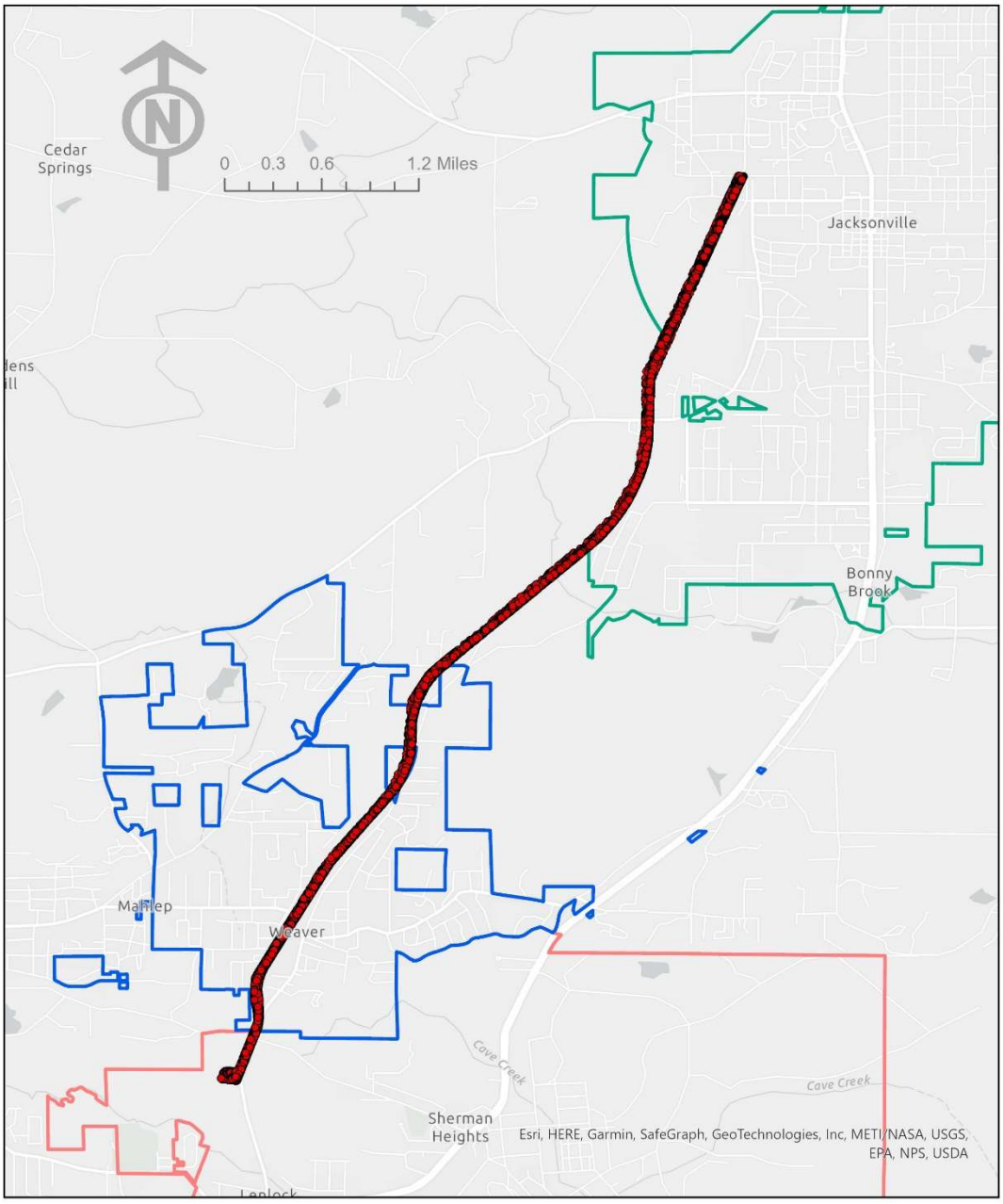
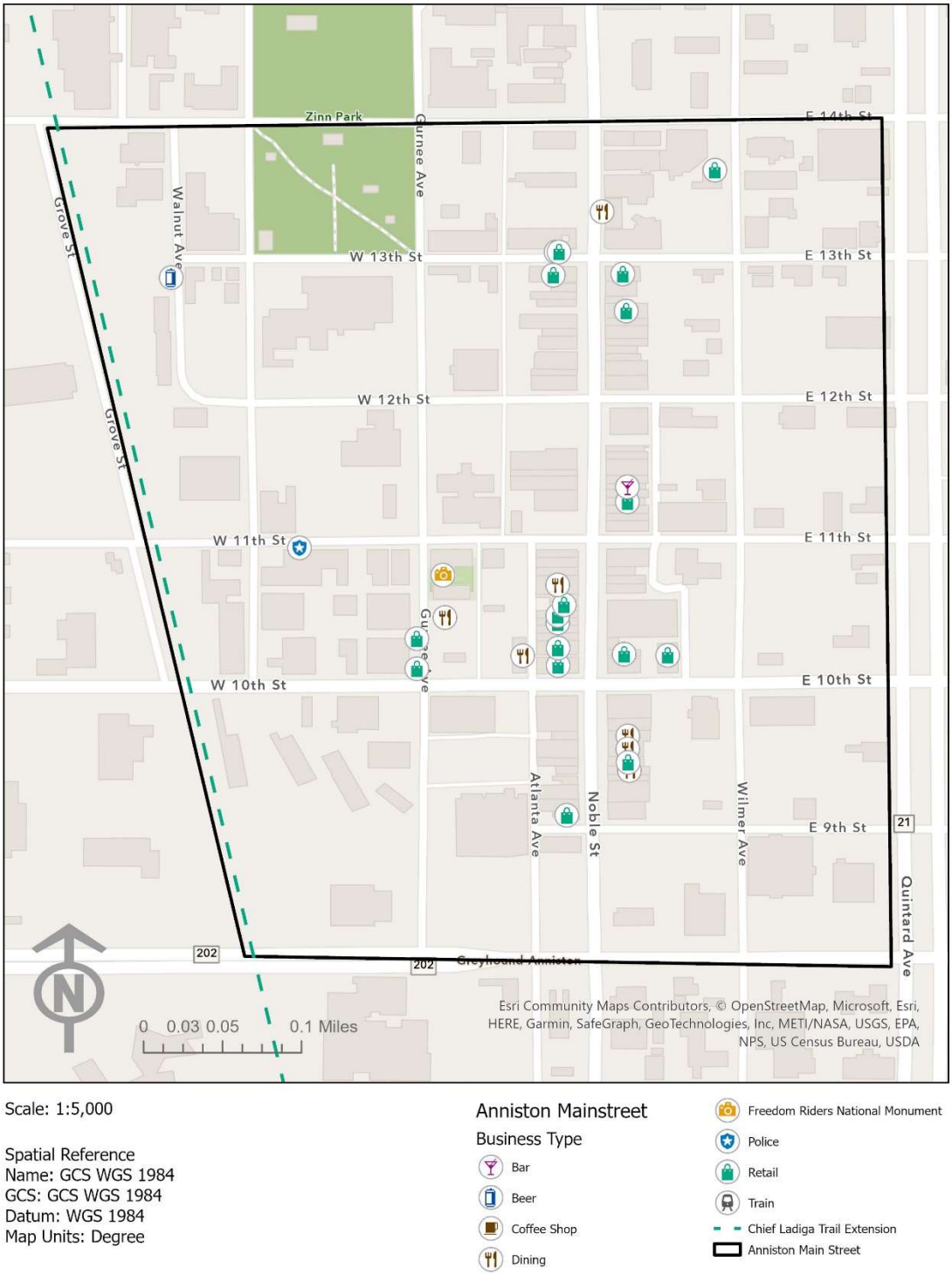


Figure 4 is a map showing the section of the Chief Ladiga Trail that was chosen to Geofence for the purposes of attempting to validate the raw data collected from our passive infrared trail counters. This section of the CLT is a commonly used stretch and we felt it would provide the most accurate usage to estimate the possible usage of the remaining seven miles of the CLT into Anniston once it is completed. The city boundary of Jacksonville is shown in a green outline, the city of Weaver in blue and the City of Anniston in a coral outline color. The small red dots labeled as the Chief Ladiga Geofence are all the data points were reported from our geofence analysis using Near.com.

Based on the data I obtained from the trail counters and geofencing analysis, I found a large discrepancy in the "count" data and find the need for further research in utilizing both methodologies as an accurate way to determine a strong analysis to quantify unique trail users.

Figure 5

Map of Downtown Anniston MainStreet District



Being able to visualize the proximity of downtown Anniston Mainstreet district to the Chief Ladiga Trail is important. Figure 5 is a map of the downtown Anniston Mainstreet District and depicts all of the local retail, dining and cultural asset locations, transportation, and government services.

From this map, we can see the proximity of the expanded Chief Ladiga Trail to the downtown area. It is my premise that by strategically cross-marketing each asset, there is a positive correlation to increasing visitor spending within the City of Anniston.

Ideas for this strategic cross-marketing is to create informative kiosks at viable locations along the newly expanded Chief Ladiga Trail to inform trail users of their proximity to the many amenities of downtown Anniston that are nearby to them and directions on the route to best travel to get to the downtown area once leaving the Chief Ladiga Trail. The kiosk is proposed to contain a site map of the Chief Ladiga Trail and downtown area depicting the different businesses and amenities and illustrating bike repair stations, bike rack locations, parks, public restrooms, etc.

Another proposed strategy is to create a professionally graphic designed tourism downtown main street map that all retail and eating establishments can have visible and have the ability to be given to visitors that show the trail and amenities within the downtown Anniston Mainstreet District. By providing the maps within the retail establishments and restaurants, visitors not aware of the trail may be given the opportunity to learn of its existence, which may spur a visitor to come back with their family or cycling club, etc.

The last premise is to make sure there is adequate way-finding signage between the trail and the downtown Anniston Mainstreet district. Once someone leaves the Chief

Ladiga Trail, the easiest traveled route for cycle traffic into downtown needs to be well marked so visitors don't experience the frustration of getting lost between point A and point B.

Discussion

Tourism Spending

What is a tourist? In order to make the argument for needed tourism infrastructure funding, a local government or organization must be able to quantify the number of current and estimated visitors. We have discussed the methodologies deployed in this research on attempting to count visitors to the trail. Now we must try to identify how many of those users are local days users and which are considered "tourists" who are traveling from a distance to use the trail.

Economic impact is greater when "new money" is brought into the local economy. Tourists who live in other cities, but come to Calhoun County to use the trail and end up spending a portion of their disposable income in the Calhoun County local economy rather than the economy of where they live.

For this research we are defining a "tourist" as anyone who travels 50 miles are more to visit the Chief Ladiga Trail. Without primary survey data to further analyze raw trail count data to estimate local users vs. non-local users, we used the metadata provided by the geofencing analysis from near.com.

In setting up our geofencing report, we geofenced a commonly used section of the Chief Ladiga Trail between Weaver and Jacksonville. To make our counts even more conservative, we set an estimated "dwell-time" setting of thirty (30) minutes or more to attempt to eliminate persons who might just be casually passing through the geofenced

polygon. Using the "Common Evening Distance from Polygon Centroid" value, we calculated the number of visitors based on the values in this column of 50 or greater.

Based on the data output from these input parameters, there were approximately 17,455 unique "hashed-device-ids" with 1,685 having a "Common Evening Distance from Polygon Centroid" value greater than 50. That is almost 10 percent of the total users being qualified as "tourists." To estimate economic impact to Calhoun County, we want to estimate the number of visitors visiting the trail that live external to the county. To make that estimation, we created a mapped site in Esri Business Analyst with mile ring radius of 20-30-40 miles. The twenty mile radius covered most of Calhoun County with the median location being the median centroid spot along the geofenced portion of the Chief Ladiga Trail. The number of trail users that traveled between 20 and 50 miles to use the trail was approximately an additional 1,370 persons.

According to the 2013 Economic Impact Study of the Silver Comet conducted by Alta Planning average daily spending per trail user was estimated to be $50. Accounting for inflation, today that value would be closer to $64. In assessing this value from multiple studies, the range can vary from $18 to $120 per day but that is highly dependent on the trail activity and the geographic location of the trail. (Alta/Greenways, 2013)

Economic Contribution Analysis

To estimate potential increased economic impact to do the downtown Anniston Mainstreet District, we will estimate a possible increase of 3,055 (1,685 living greater than 50 miles away plus 1,370 living between 20 and up to 50 miles away.

Average annual "out-of-county" trail users = 3,170

3,170 x $64 estimated daily spending = $202,880

Table 3

Economic Contribution from Increased Out-of-County Visitor Spending

Impact	Employment	Labor Income	Value Added	Output
1 - Direct	2.6	$63,345	$103,496	$202,880
2 - Indirect	0.3	$14,397	$23,122	$50,171
3 - Induced	0.2	$8,002	$16,447	$28,774
TOTAL	**3.1**	**$85,744**	**$143,065**	**$281,824**

Dollars are expressed in 2024 dollar-values.

Table 4

Top Five Industries Impacted by Economic Growth Percentage

IMPLAN Sector	Industry Total Output	Impact Output	Estimated Growth Percentage
Hotels and motels, including casino hotels	$25,667,267	$60,864	0.24%
Full-service restaurants	$105,175,501	$111,584	0.11%
Retail - General merchandise stores	$143,056,026	$30,432	0.02%
Management of companies and enterprises	$34,614,138	$3,242	0.01%
Radio and television broadcasting	$14,726,129	$1,207	0.01%

The above potential visitor spending in the downtown Anniston MainStreet District once the Chief Ladiga expansion is completed would have an annual economic contribution analysis on total output of $281,824. The top five industries within Calhoun County most greatly affected by this economic contribution are hotels/motels, restaurants,

general merchandise retail, management of companies and enterprises, and radio and television broadcasting.

In order to realize this potential increased spending, further efforts need to be made to effectively market the downtown Anniston Mainstreet district from the trail, especially to the non-local users who may not be aware of their proximity to the amenities that the downtown Anniston area provides.

It is also important that downtown establishments market the existence of the trail in an effort to draw visitors back to the area for possible repeat business. The more informed tourists are about all the amenities a locale offers, the more likely they are to return.

Not only does the trail market outdoor recreation to tourists, but it also serves as a recruiting tool for economic developers within the region to use as a quality-of-life asset. The region boasts when trying to recruit industries and businesses as well as a way to retain and grow population.

Future Considerations

Future considerations will include further examination and analysis of passive infrared trail counter data paired with primary survey data vs. geofencing data analysis. In this research, I found a great discrepancy between the two data sources warranting further examination.

A User Intercept Survey needs to be deployed at multiple locations along the trail (Weaver, Jacksonville, Piedmont, AL/GA state line). This research will entail utilizing ESRI Survey 123 to conduct in-person intercept surveys as well as provide a Q.R. code to the survey to put on marketing displays along the trail so that users may fill out a survey on their mobile device at a time convenient for them.

Modeling impacts using a dynamic I/O model such as REMI is an additional consideration. This will allow for the analysis of long-term economic impact that the expansion of the Chief Ladiga Trail will have on the City of Anniston and Calhoun County.

Examining the benefits to the residents of the City of Anniston as a result of the trail expansion, such as public health improvements and increased transportation alternatives and connectivity, are also potential topics to expand this research. There are benefits to the local Anniston Community beyond the estimated economic contributions measured in this analysis.

Lastly, creating web maps as well as printed map promotional materials is needed. The development of a “downtown map” that all merchants can have readily available for

shoppers and displayed in a weatherproof kiosk at strategic locations along the trail will promote the cross-marketing efforts of the two assets.

Conclusions

When the federal government appropriates grant dollars for economic development projects relating to outdoor recreation, business, transportation, etc. it is crucial to be able to quantify the impact a potential project may have on the local economy once a locality decides to seek those federal funds. State and federal agencies receive more grant applications for projects than their allocated funding, making grant-writing a very competitive endeavor. Providing validated methodology on a project's economic contribution analysis is paramount in competing for this funding.

By combining economic analysis and GIS technical expertise, researchers can more accurately assess valid usage data, create maps and marketing materials and thus analyze economic impact/contribution. Combining these studies provides policy makers an effective foundation to make important decisions based on the available resources.

The research provided in this article makes it possible for the City of Anniston to more accurately know the number of daily users they may have once the Chief Ladiga Trail is expanded and what the economic contribution analysis of that expansion may look like. Utilizing mapping visualizations, local government leaders can decide where best to locate open green spaces, possibly develop entertainment districts, place way-finding signage both to and from the trail connecting the trail and downtown Anniston.

The discrepancies realized in the raw trail counter data vs. geofencing data support additional research and analysis between these two methodologies in an effort to better, and more accurately quantify, not only trail users, but patrons of all sorts of outdoor recreation venues. Geofencing is a technology which is most commonly used in business retail and marketing sectors. There has not been extensive research performed

for its use in outdoor recreation. The continuance of research in how this newer technology may be effectively used for analysis is paramount.

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