Dade County Missouri: Exploring Rural Mobility and Bicycle Tourism

Connecting Rural Transportation with Economic Opportunity

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SMCOG Southwest Missouri
COUNCIL OF GOVERNMENTS

Photo credit: Ozark Prairie Trail/Chad Boehne, Frisco Highline Trail Iron Horse Gravel Grind Bicyclists

About the Western Transportation Institute

The Western Transportation Institute (WTI) was founded in 1994 by the Montana and California Departments of Transportation, in cooperation with Montana State University (MSU). WTI concentrates on rural transportation research; as stewards and champions of rural America, WTI also has a strong interest in sustainability. WTI research groups create solutions that work for clients, sponsors, and rural transportation research partners. WTI Research Centers include the Montana Local Technical Assistance Program, the National Center for Rural Road Safety, the Small Urban, Rural and Tribal Center on Mobility, the Federal-Public Lands Transportation Institute, and the West Region Transportation Workforce Center.

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1   PROJECT OVERVIEW

The purpose of this project is to provide the Southwest Missouri Council of Governments (SMCOG) with technical assistance to support its multimodal transportation and economic development planning efforts. It will offer recommendations and training to support access to opportunities (including economic participation as well as recreation and tourism) via active transportation (primarily in the form of bicycling) in Dade County, MO.

This project is an opportunity to share resources on the connections between the rural wealth-creation framework, active transportation and bicycle tourism, which may be helpful for rural communities throughout the U.S.

The primary motivation for this project was a growing interest in active transportation improvements in Dade County, MO. This project was also motivated by SMCOG's Comprehensive Economic Development Strategy (SMCOG, 2017), including goals to:

- Market/attract new businesses to the SMCOG region
- Support existing business growth and expansion of businesses
- Assist new business creation and entrepreneurship in the SMCOG region
- Improve the connectedness and maintenance of the region's multi-modal transportation network

Over the course of this study, the project team evaluated planning documents and existing conditions, conducted a site visit, met with community leaders and interested citizens, and collected information from peer communities and researchers. This final report documents technical assistance conducted to date. Figure 1 summarizes the timeline for this project, from the kickoff in January 2022 to the anticipated completion in spring 2024.
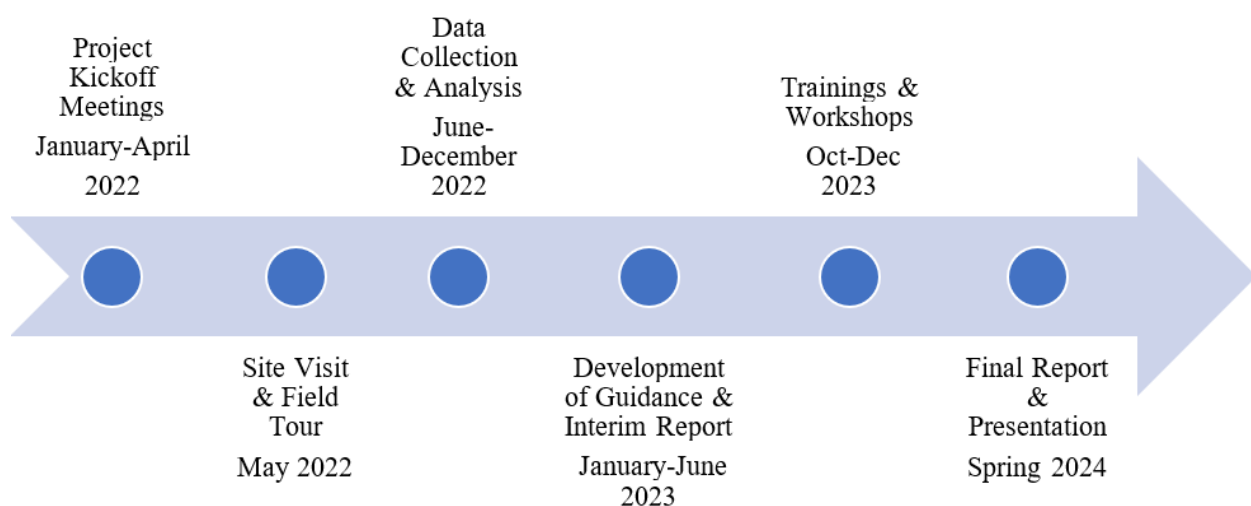
Figure 1: Project timeline

2   EXISTING CONDITIONS

This section compiles baseline data of existing conditions related to bicycling in Dade County. It includes existing bicycle routes and trails, bicycling events in the region, and trails/bicycle related groups.

"Dade County is located in Southwest Missouri. It is bordered by Barton, Cedar, Polk, Greene, Lawrence, and Jasper Counties. Incorporated municipalities include the Cities of Dadeville, Greenfield, and Lockwood, as well as the Villages of South Greenfield and Arcola.

According to the 2020 US Census, the population of Dade County is 7,569. This is a 4% decrease compared to 2010 US Census, which was 7,883.

Dade County was part of the area claimed by France until purchased by the United States in 1803 as part of the Louisiana Purchase. The area was first inhabited by the Sac, Delaware and Osage Indians; the Osage ceded the territory in 1808. Dade County was created on January 29, 1841, from Barry County territory and was named after Major Francis L. Dade, who was killed in the Seminole Wars. Greenfield was named the county seat. Growth of the cities was stimulated by railroad construction in 1881.

Dade County's landscape changed significantly in the early 1960s with the construction of Stockton Dam on the Sac River in Cedar County and the creation of Stockton Lake. Nearly 26,000 acres of land in Cedar, Dade and Polk counties were inundated with the formation of Stockton Lake." (SMCOG, 2024)

2.1   Existing Bicycle Routes and Trails

Figure 2 shows existing bicycle routes in the Dade County area. The U.S. Bicycle Route System is a developing national network of bicycle routes that connects urban and rural communities via signed roads and trails and is led by the Adventure Cycling Association. Over 18,000 miles of U.S. Bicycle Routes (USBR), which typically consist of paved surfaces, are currently established in 33 states and Washington DC. Two U.S. Bicycle Routes exist, and one is proposed in the vicinity of Dade County as described below.

- USBR 76 (also called the TransAmerica Route; shown in red in Figure 2) runs through the southern portion of Dade County, approximately 6 miles south of Greenfield. It connects Illinois in the east to Kansas in the west.
- USBR 66 (shown in blue) is located further south and runs through Springfield.
- Proposed USBR 51 (not shown in Figure 2) is under development with plans to extend from New Orleans to Minnesota. According to The Missouri Bicycle & Pedestrian Federation, the route through Missouri will be (mostly) on-road from Fayetteville, Arkansas to the Iowa border, along with an off-road "Butterfield Stage Off-Road Experience" route connecting Fort Smith, Arkansas with Jefferson City, Missouri. It is anticipated that this route will be located east of Dade County.

Figure 2 also shows other bicycle routes in the area, including:

- The Frisco Highline Trail (shown in green), which extends 35 miles and connects Springfield to Bolivar. It is a scenic Rail-Trail owned by Ozark Greenways. It was designated a National Recreation Trail by the National Park Service and American Trails in 2004.
- An informal collection of routes (the multi-colored lines) around Stockton reservoir consisting of various paved and gravel roads (and some trails). These routes were found online on a website called Ride with GPS (http://www.ridewithgps.com) and were published by the Missouri Bicycle & Pedestrian Federation. The collection of routes referenced is linked here: Missouri Stockton Local Lake Bicycle Route System. Ride with GPS is a website and accompanying app that allows users to create, map, and share their own cycling routes. While these are not formal routes, their existence suggests there is a culture of bicycling in the area.
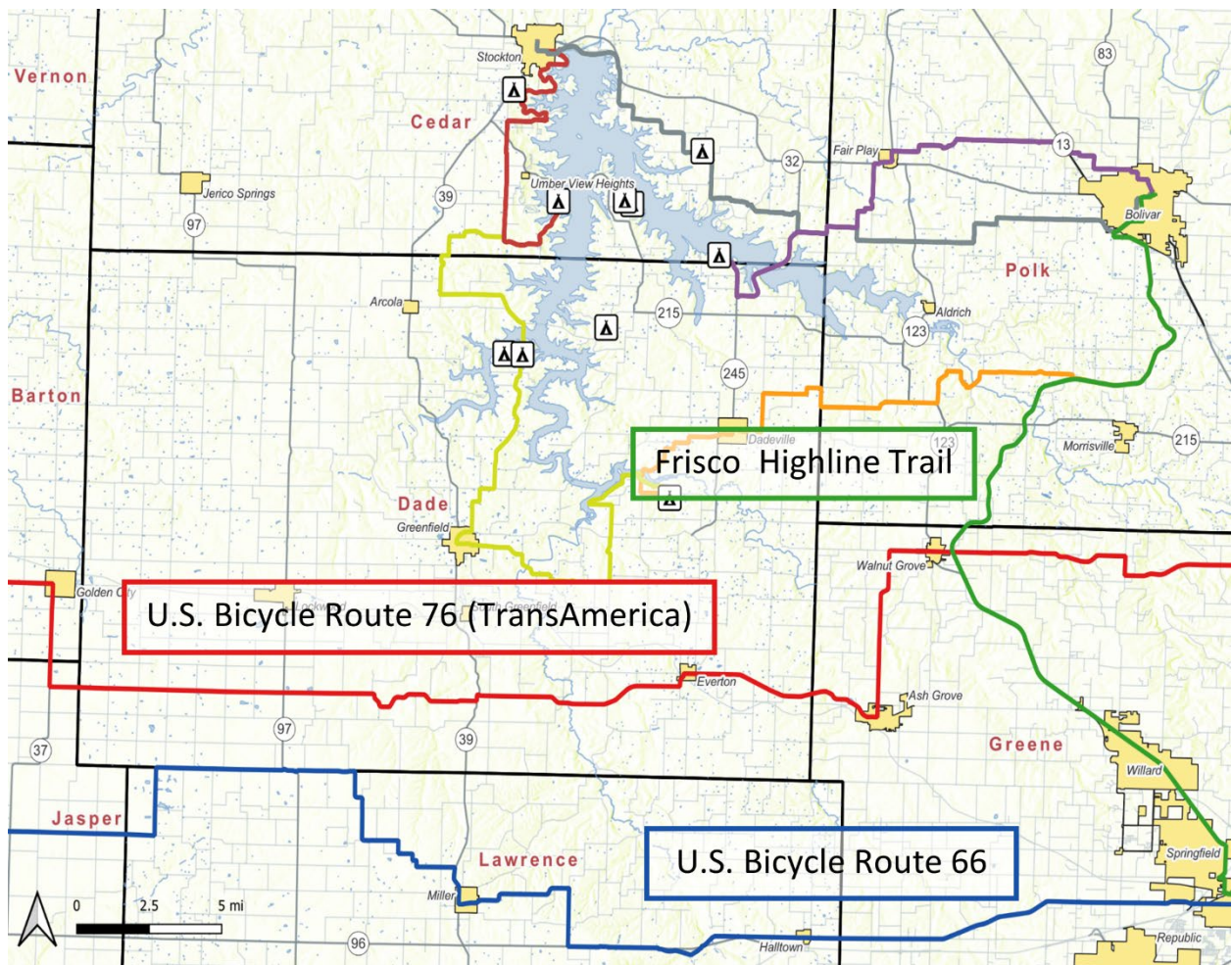
Figure 2: Bicycle routes in Dade County and southwest Missouri

The Missouri Trails Alliance, an association of state and local recreation and trail advocacy organizations, created a repository of statewide trail information.

Figure 3 shows trails in Dade County, as well as just north in Cedar County, on the Alliance map as of June 2023. The northernmost trails (in red) are in Stockton State Park and include the 7-mile-long Lakeview Trail, managed by the Missouri Department of Natural Resources. The trail to the south (in orange) is a 4-mile-long hike/bike/equestrian trail near the Hulston Mill Camp, run by the Dade County Historical Society.

Figure 3: Stockton Lake Trails. Source: Missouri Trails Alliance

The Hulston Mill Camp trail has two parts: 1) the lakeshore trail, along the shoreline, and 2) a trail running almost parallel with the shore trail, but further inland. These trails are also used by hikers, mountain bike riders, and hunters. Figure 4 shows a closer view of the Hulston Mill Trail and profile from hikingproject.com, which states it is a 5.4-mile-long horse trail.
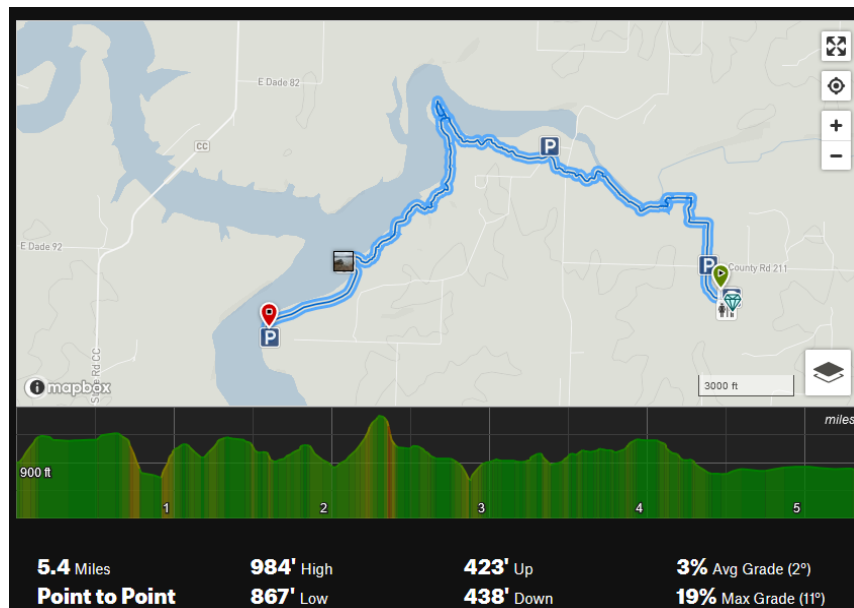
Figure 4: Hulston Mill Horse Trail. Source: hikingproject.com

Figure 5 is Strava's Global Heatmap; it shows where people were riding bicycles in Dade County as of September 2023. 'Heat' is generated by aggregating public bicycling activity in the form of open-source geographical data collected over the last year (updated monthly). Areas with very little activity may not show any 'heat.' People are already biking in Dade County, as shown by the darker red lines (which indicate more riders) and lighter purple/blue lines (which indicate fewer riders). The Frankenreide route, created by Dade County leaders in 2022, which connects Greenfield and Lockwood can be seen on Figure 5.
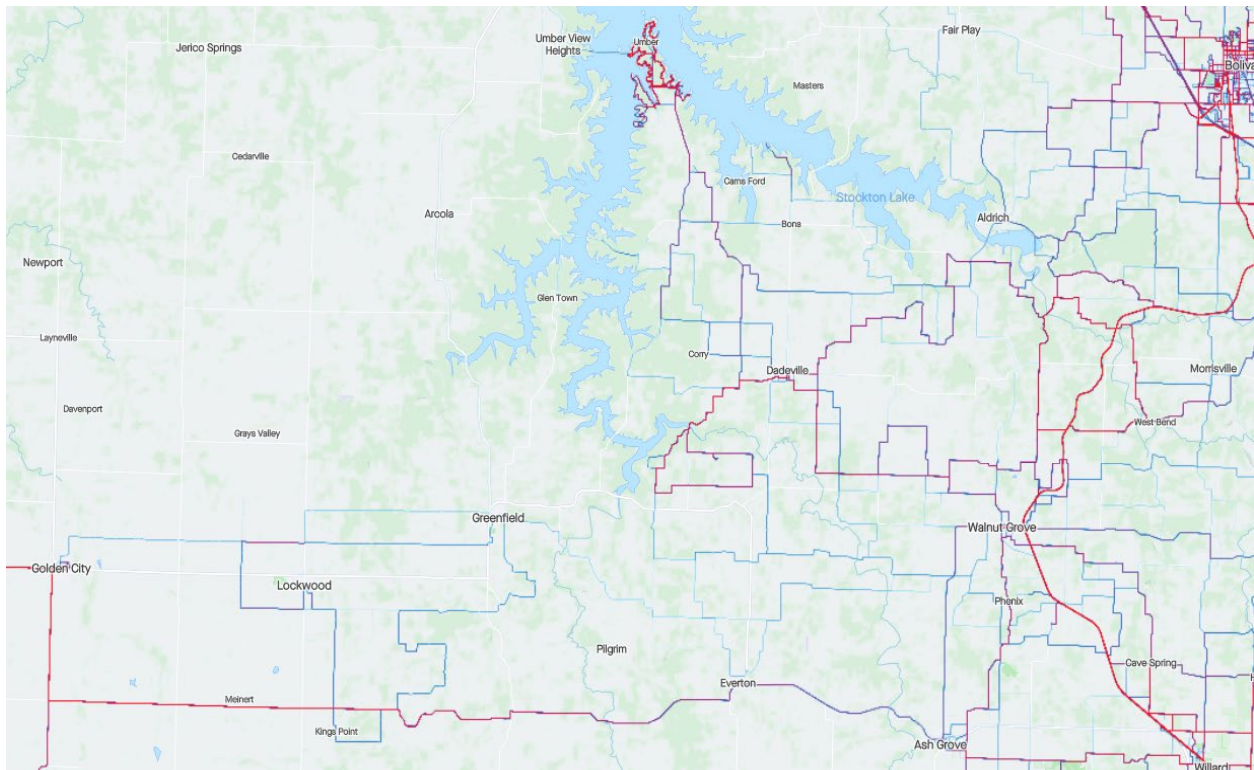
Figure 5: Strava heat map of Dade County. (source: Strava link**)**

Bikepacking.com includes links to routes aimed at people that want to camp out or "bikepack" rather than hike and "backpack." These routes are vetted by the Adventure Cycling Association (ACA). In June 2022, there was one Missouri ride on bikepacking.com called Cormac Berry's Tasty Lolli. This is a lollipop-shaped ride starting and ending in downtown Springfield, with recommended stops for views, food, drinks, and camping (at Cedar Ridge Campground) from Springfield to Stockton Lake as shown in Figure 6.

This 96-mile route is recommended as a 2-day ride. It has 55% unpaved roads, 4,310 feet of vertical ascent with a high point of 1,350 feet. Bikepacking.com rates it relatively low in difficulty with a 2 out of 10. This route is part of the Local Overnighter Project, which was created to expand a growing list of worldwide bikepacking routes at https://bikepacking.com/overnighters/.

37 North Expeditions (out of Bentonville) and the local parks department organize bike packing trips as well.
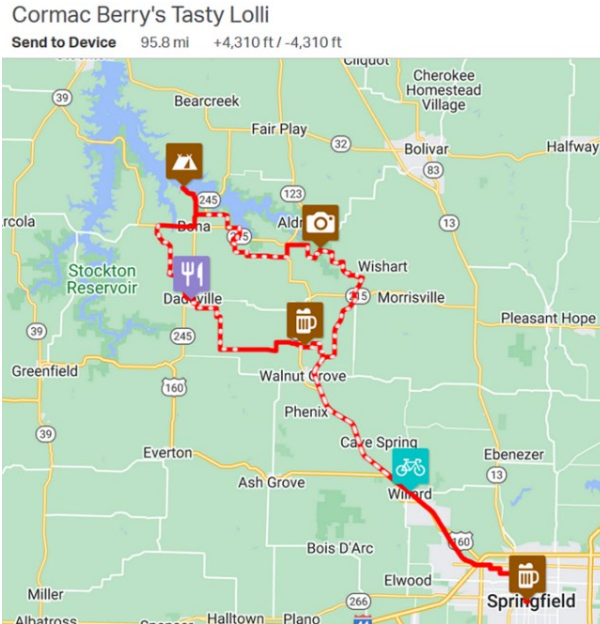
Figure 6: Bikepacking route: Springfield to Dade County

Gravel map is a planning tool that shows gravel and dirt roads and paths that are posted by people who ride them. Figure 7 shows rides posted on www.gravelmap.com as of August 2023 in the Dade County vicinity. Segments are shorter stretches that start and end in different places (shown in yellow). Routes tend to be longer stretches that start and end near the same location (shown in blue). The dashed lines indicate paved surfaces and the solid lines indicate unpaved (gravel or dirt).
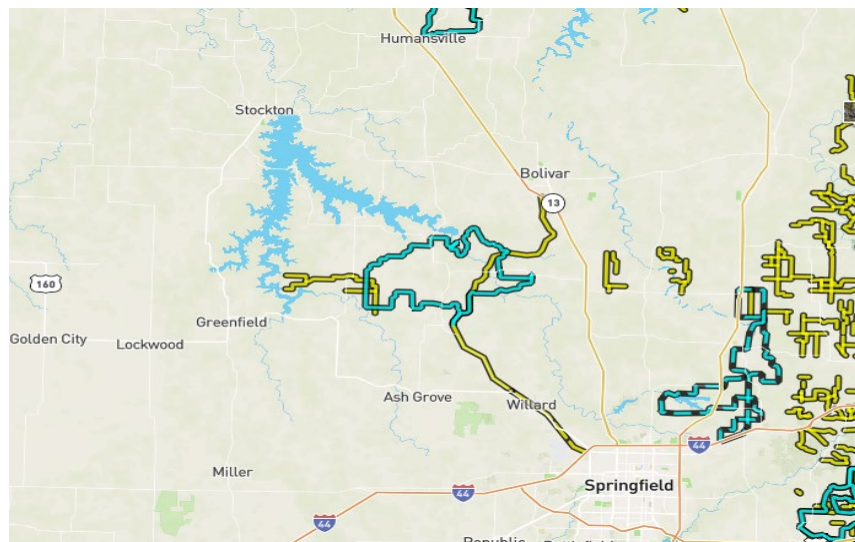
Figure 7: Gravel map routes in Dade County vicinity (source: http://www.gravelmap.com)

2.2 Ozark Prairie Trail, Frankenreide, and other Bicycling Events in Region

Through the course of this study, Dade County leaders from Greenfield and Lockwood developed the first annual "Spooky Sprocket Frankenreide Gravel Challenge," a 37.5-mile ride held on October 29, 2022, in conjunction with their annual fall festival (https://www.ozarkprairietrail.com/#RaceInfo).

This ride is intended to bring people into the area and showcase their newly developed Ozark Prairie Trail routes. The Ozark Prairie Trail is a collection of paved and unpaved rural roads that highlight the unique scenery, towns, and quiet countryside in Dade County.

- The inaugural event had 11 participants, which leaders felt was a good turnout given just 3 weeks' notice. Feedback from participants was generally positive; people felt safe and there were no dogs or car issues (riders saw only 3 cars in 27 miles). Participants were all bike enthusiasts—people that go on gravel rides. Leaders heard that it was the right level of difficulty.
- Most riders who attended the event traveled from outside Dade County and were from Barton County and Springfield/Ozark areas. One rider commented it was nice to have someplace closer than NW Arkansas to ride gravel.
- Strava posts were positive on the ride. In particular, participants thought that the swag bags and t-shirts were great!
- One suggestion for future rides is to have a short, medium, and long option because the more serious riders want longer and more elevation to climb.
- The only negative feedback was that turnout would have been higher if the event was in the morning. It was held at 1:30 in the afternoon to tie it into other community events that day.
- At least one rider reported that they did return after the race to try out the new Ozark Prairie Trail routes.

A fall 2023 Frankenreide event was planned but was cancelled the week before the event due to low registration.

Other gravel-related bike rides/events in the region include:

- Frisco Highline Trail Iron Horse Gravel Grind (fundraiser for Frisco Highline Trail) is typically held in May and has 3 routes: 84 miles, 43 miles, and 26 miles (https://www.bikereg.com/fht-ironhorse-gravel-grind/).
- The yearly UNBOUND Gravel race that takes place in the Flint Hills of Kansas (https://www.unboundgravel.com/).

Table 1 shows other 2023 fall bicycle events in the region, which were found on the Springbike ride calendar (https://springbike.org/rides/regional-rides/) though it is not a comprehensive list. Springbike would be a good place to promote Dade County events like Frankenreide.

Table 1: Fall bicycle events in the region (source: springbike.org/rides/regional-rides/)

2023 Dates	Event Name	Start Location	Website
Sept 1-4	Midwest Tandem Rally	Fort Wayne, IN	https://mtr2023.org
Sept 1-4	STL Gateway Cup	Richmond Heights, MO	https://gatewaycup.com
Sept 9	Wellness for Warriors Bike Ride	Willard, MO - Willard Middle School	https://runsignup.com/Race/MO/Willard/WellnessforWarriorsBikeRide
Sept 15-17	Urich Bike Fest	Urich, MO	https://urichbikefest.com
Sept 30	SGF's Tour de Brew	Springfield Brewing Company	https://sbcathletics.com
Oct 7	Fall Metric Ride	South St Christian Church	https://springbike.org
Oct 14	Maple Leaf Bicycle Ride	Kellogg Lake Carthage, MO	https://joplintrailscoalition.org
Oct 14	Rockin' Roll Bike and Music Festival	Mother's Brewing Company	https://musictherapyoftheozarks.org
Oct 14	BT Epic	Bass River Resort - Steeleville, MO	

2.3　Missouri Trail- and Bicycle-Related Groups

The following organizations may be helpful partners in developing and/or promoting bicycle tourism in Dade County.

2.3.1　Bicycle and Pedestrian

Missouri Bicycle and Pedestrian Federation

MoBikeFed is a statewide non-profit organization aimed at making Missouri a better, safer place for bicycling, walking, and trails. This page provides links to bike routes and trails across the state. The Federation seeks agencies, clubs, groups, and others who would like to partner with MoBikeFed to create, maintain, and promote top-quality bicycle tours and routes. Brent Hugh, Director (director@mobikefed.org), has been enthusiastic about bicycle tourism opportunities in Dade County.

Springfield area bike shops

A&B Cycle

[Adventure Bicycle Company](#)

[Bicycle Outlet](#)

[Howler Bike Company](#)

[Sunshine Bike Shop](#)

[Trail Labs LLC](#)

417 Magazine

[417 Magazine](#) has a list of bicycle clubs in Springfield, MO.

Springbike

[Springbike](#) is a cycling club in Springfield, MO whose purpose is to promote enjoyable, safe cycling for its members and community. Their site includes a ride calendar that lists annual rides in the area, which could be helpful promoting Dade County rides as well as scheduling ride dates that don't conflict with other rides.

2.3.2 Trails, Recreation, and Tourism

Ozark Greenways

[Ozark Greenways](#) was formed in 1991 with a mission to build a trail system that connects and enhances the Springfield Missouri–area community. It is also a land trust that works with public and private landowners to conserve the special qualities of their land. While not focused on Dade County, Mary Kromrey, the Executive Director of Ozark Greenways, expressed enthusiasm about bicycle tourism in Dade County. [Ozark Greenways bicycle tourism](#) may serve as a good example that highlights local scenery, historic sites, and other attractions.

Missouri Department of Natural Resources

[MoDNR](#) manages lands around Stockton Lake including grasslands, timbered areas, glades, and old fields. Activities allowed in MoDNR managed lands include hunting, bird watching, and a recreating on the multi-use trail for horses, bicycles, and hikers on the Big Sac Arm of the lake. MoDNR has a statewide [Park and Site Status Viewer,](#) as well as a site showing details of the lands they manage around [Stockton Lake](#), including the multi-use trail.

Missouri Department of Conservation

[MDC](#) has approximately 1,100 conservation areas and [Places to Go](#) is MDC's online conservation atlas. Users can discover which areas allow bicycle use as well as check for road closures and information on closures during hunting seasons. [Lead Mine Conservation Area](#) is located in nearby northeastern Dallas County, 40 miles south of Lake of the Ozarks, 12 miles north of Bennett Springs, five miles east of Tunas, and 21 miles northeast of Buffalo. The area

provides about two miles of Niangua River frontage and has a 3.5-mile stretch of Jakes Creek running through it. A brochure can be shared at several tourist spots to attract bikers.

Stockton Lake Trails Initiative Coalition

STIC is a volunteer group dedicated to maintaining and building trails around Stockton Lake and Stockton, Missouri.

Missouri Division of Tourism

MDT is a marketing agency aimed at getting people to travel 50 miles or more from their home to visit Missouri's attractions. According to Director Stephen Foutes, MDT could post bicycle tourism events on their website and add links for people to register, and place flyers at the two visitors centers near Dade County (in Joplin and Conway). It is a relatively simple process to add a link to their website. To initiate a review process to place materials at the visitors centers, individuals can email a pdf brochure to Director Stephen Foutes. MDT also offers marketing tools that include a social-media guide that can be found here. As events such as Frankenreide become more established, MDT could send a videographer to Dade County and post videos from the event to their social media sites, which goes out to a relatively large audience.

Missouri Life Magazine

A 2020 issue of Missouri Life Magazine featured a Missouri Biking Trails guide showcasing various biking experiences around Missouri, including a write-up on the Frisco Highline Trail.

2.4   Site Visit: Summary of May 2022 Dade County Tour

Carrie Kissel (NADO) and Rebecca Gleason (WTI) spent three days visiting Dade County and meeting stakeholders from May 11–13, 2022. Aishwarya Shrestha (SMCOG) joined many of the meetings. NADO/WTI presented a project overview at the SMCOG Transportation Advisory Committee (TAC) meeting in Springfield on May 11th and met with the following stakeholders over the next several days.

2.4.1 Community Meetings

Wednesday May 11th in Springfield

- Meeting 1: Mary Kromrey, Executive Director, Ozark Greenways
- Meeting 2: Brent Hugh, Executive Director, Missouri Bicycle and Pedestrian Federation (MBFP) and David Hutchinson, avid cyclist

Thursday May 12 in Greenfield

There was one morning meeting with the following attendees:

- Kim Kinder, Dade County Emergency Services/Chamber of Commerce
- Lori Sneed, Director Dade County Emergency Services

- Tim Ward, Hulston Mill Manager/Caretaker
- Kenny Snider, Lockwood Mayor and citizen
- Randy Daniel, Dade County Commissioner
- Trey Friar, Lockwood resident

After the Greenfield meeting, Tim gave a tour of Hulston Mill historic site and campground, which already attracts some bicyclists. After the tour, Carrie and Rebecca drove to Lockwood to get a sense of the community and pick up a to-go lunch from a local restaurant that they ate in the city park.

Thursday May 12 in Stockton (in Cedar County to the north)

There was one afternoon meeting with the following attendees:

- Teresa Heckenlively, St. Clair County Economic Development Director
- Patty Cantrell, Chief Community Development Officer, New Growth CDC (Osceola)
- Robin Fischer, Stockton
- Willard, (last name and title not recorded)

After the meeting, NADO/WTI staff drove around to get a sense of roads and trails, visited the Stockton Dam, Expo Center, Stockton State Park, and Mutton Creek Marina.

Friday May 13 in Bolivar—one morning meeting with following attendees:

- Tim Declue-retired Professor Emeritus, Southwest Baptist University and avid road cyclist.
- Todd Schrader-works at YMCA, mentioned working to develop cyclist camp near Bolivar YMCA

2.4.2 Key Takeaways from Site Visits and Stakeholder Meetings

Stakeholder Questions

Stakeholders were asked to share their knowledge by answering a series of questions, including**:**

1. What are key attractions and destinations in Dade County?
2. What bike/pedestrian facilities/connections would you like to see?
3. What type of businesses do cyclists want?
4. Who else needs to be involved?

Key takeaways from site visit and stakeholder meetings:

- Key attractions are the rural setting, the lack of traffic lights, the rolling hills, and historical features such as cemeteries and Hulston Mill
- Stakeholders would like to see bicycle/pedestrian connections, including:
  - A connection between Hulston Mill Historical Park and a trail network.

- o A map of the network of gravel routes connecting communities and destinations in the area that is available to local & visiting cyclists
  - o A link between all three lakes (Stockton, Pomme de Terre and Truman) using trails, creating a sort of "Appalachian Trail of western Missouri."
  - o Bike routes that follow historic trails—from Native American trails to active or abandoned rail lines—to create a high level of interest for both residents and visiting cyclists.
- A culture of bicycling already exists in Dade County and nearby areas (as demonstrated by Strava and Ride w/ GPS routes, Springfield cycling clubs, gravel events, etc.)
- There is a lot of interest around bicycling and recognition that Dade County's existing rural roads (paved and unpaved) are appealing for their low traffic volumes and rural character.
  - o Figure 8 shows images taken on one stakeholder's paved road ride into Dade County, where he reported that the ride was hilly, beautiful, and had very little traffic (early on a Sunday morning). He enjoyed riding about 10 miles on the Frisco-Highline Trail on his return and noted the Dadeville to Walnut Grove section was especially nice (with a lot of turtles on the road).

Figure 8: A Sunday road ride through Dadeville, MO (source: Tim Declue)

- Dade County's large network of gravel roads is attractive to gravel riders for its rural character, low traffic, rolling hills and green landscapes
- Bikepacking (where people carry camping gear on bike) is an up-and-coming trend, which Dade County may be well suited to accommodate
- Evening social rides are popular May through October around Springfield, with more riders gathering on weekends (and more opportunities to attract Springfield riders).
- Riders are looking for authentic experiences, such as food that is unique (e.g. Amish stores, restaurants)
- Dade County historical sites, such as Hulston Mill, old cemeteries, civil war related sites, could be combined into a bicycle route
- Many bicyclists try to avoid the Transamerica route (due to higher traffic)
- Hulston Mill amenities (camping, water, showers, bathrooms) are not well advertised. Some cyclists use them but there could be more. Figure 9 shows part of the Hulston Mill and grounds which are owned and managed by the Dade County Historical Society, operated by a handful of dedicated, non-paid volunteers.

Figure 9: Hulston Mill historic site has camping, filtered water, a serene setting (left) and an opportunity to look the historic interior (right; source: WTI).

3   ROADWAY ANALYSIS AND RECOMMENDED BICYCLE ROUTES

This section analyzes Dade County roads for their potential use as bike routes, considering both paved and gravel routes. Given that the county roads in Greene County have been paved; Springfield-area riders may look to Dade County for a nearby gravel adventure. Gravel roads work well for people riding gravel bikes that have wider tires, which can also be used on paved roads. People riding more traditional road bikes with skinny tires, such as some cross-country touring cyclists, may have challenges riding on gravel or dirt roads.

To aid in the understanding of current conditions, in 3.1, NADO staff estimated the Level of Traffic Stress (LTS) for people biking on Dade County roads, which are both paved and dirt. Following this is a brief exercise outlining existing and potential cycling routes near and around Stockton Lake, as well as potential locations for further examination.

3.2 explores potential bike routes using lower volume (lower stress) roads, linking together towns and attractions, using a combination of paved and gravel/dirt routes.

3.3 explores potential paved bike routes for USBRS 76 so cyclists can access Lockwood and Greenfield.

Most Dade County rural roads described in this section do not have a separate space for people on bicycles, thus riders must share a lane with motor vehicles. While many roads may be considered "low stress" by most people on bikes, due to their low traffic volumes, they may not be considered low stress, safe, or suitable for people of all ages and abilities (children for example).

3.1   Bicycle Level of Traffic Stress Analysis for Dade County Roads

The concept of Bicycle Level of Traffic Stress (LTS) has been in practice among planning and engineering professionals since the early 1990's. This concept allows observable conditions related to road segments and their immediate vicinity to be used to estimate the level of traffic stress and road suitability for bicycle riders of various skill levels.

NADO staff utilized GIS data provided by the Missouri Department of Transportation (MoDOT) to estimate LTS for all road segments in Dade County, as shown in Figure 10. This analysis considered the following factors:

- Posted speed limit
- Average annual Daily Traffic (AADT)
- Number of lanes
- Lane width
- Shoulder width
- Surface material

This analysis method was based on similar classification processes used across the country. Upon analyzing these factors, a general observation for what type of bicycle rider might best utilize the road segment was created in a range from 1 to 4. LTS 1 is suitable for most riders

while LTS 4 is suitable for skilled and confident riders. In Figure 10, green indicates LTS 1, yellow is LTS 2, and orange is LTS 3.
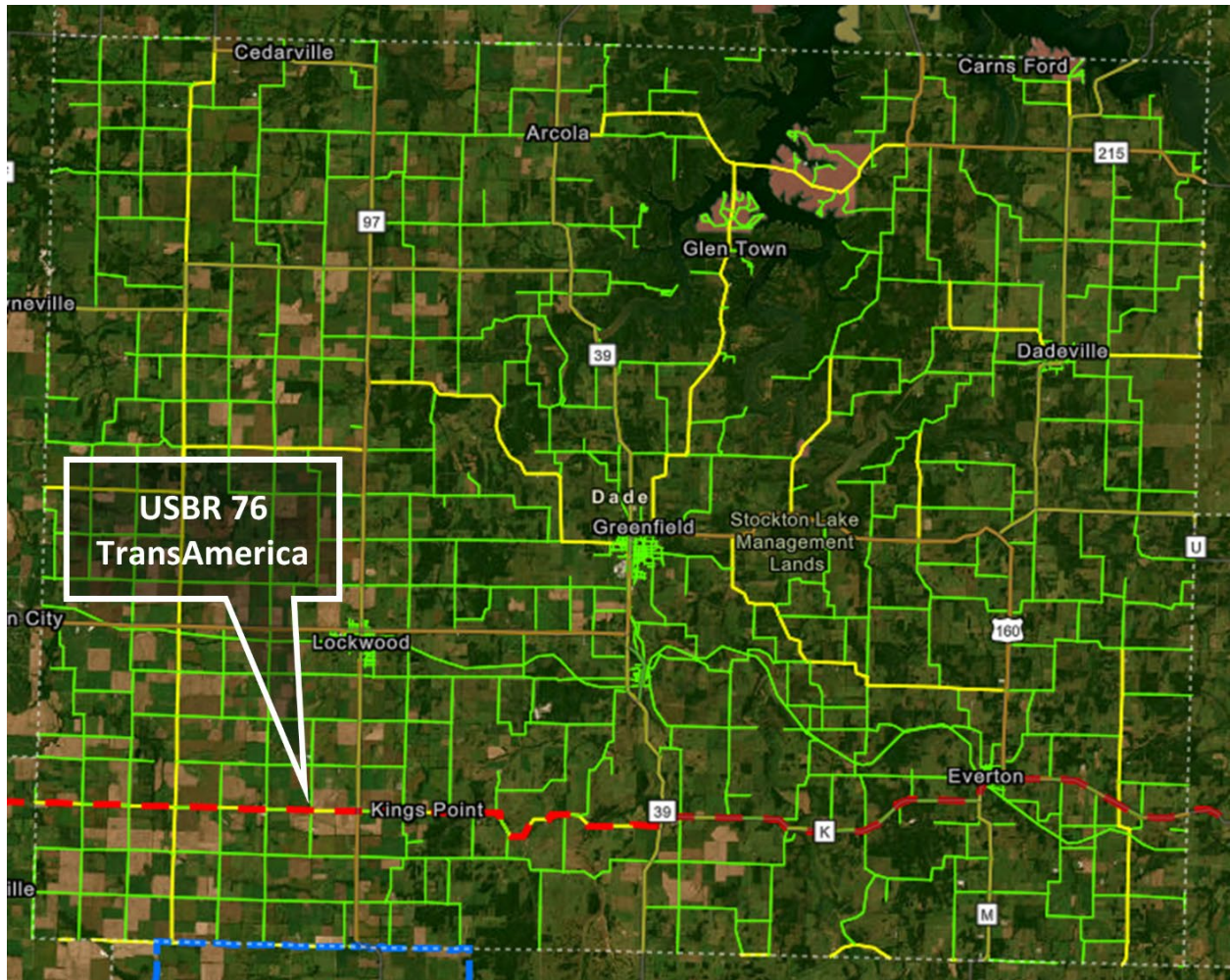
Figure 10: Dade County roads suitability ranked by the Bicycle Level of Traffic Stress.

Table 2 shows the approximate mileage of LTS categories in Dade County based on available data and a desktop level GIS review.

Table 2: Approximate mileage for Bicycle Level of Traffic Stress in Dade County

LTS Category	Line color	Description	Appr. Mileage	Percent
1	green	Suitable for cyclists of all skill levels.	1,300	73.3%
2	yellow	Suitable for most cyclists.	345	19.5%
3	orange	Suitable for experienced cyclists.	128	7.3%

For reference, there were approximately 1,773 miles of Dade County Road centerlines in the GIS data utilized to complete this analysis. There were no road segments classified as LTS 4 based on the mathematical ranges that were constructed from the data scoring and the attribute data available at the time of this report.

This analysis suggests that almost three quarters of Dade County roads (shown in green) may be relatively low stress for most bicyclists; they tend to be dirt roads with low traffic volumes. Almost 20% of roads (shown in yellow) may be higher stress, though still suitable for many bicyclists, and tend to be paved—including sections of USBR 76. About 7% of roads (shown in orange) were estimated to be higher stress for many bicyclists. They are paved and have higher speed and volume traffic.

The interactive web mapping application for this analysis can be found here. More information can also be found by clicking the "LTS Methodology" link at the top of the map viewer. This analysis was based on available GIS data, rather than the true experience of people bicycling.

Bicycle LTS ratings will vary based on rider perception, traffic speed/volume when riders are present, pavement condition (potholes, debris on roadway) and other factors. **This analysis is intended to provide a high-level view of which roads may be more attractive for bicycling at a planning level.** These road segments and their actual conditions should be vetted with riders of varying abilities who have direct experience riding these roads. This dataset could be calibrated to reflect real-world conditions and be maintained for future use by SMCOG or other interested partners who may have GIS capabilities more closely.

3.2   Stockton Lake Cycling Suitability, Conditions, and Potential for Further Analysis

In this section, the research team will work to identify physical changes that may improve the experience of bicyclists recreating in the Dade County Missouri area, specifically around Stockton Lake. Specific improvements will be focused on facilities and locations in Dade County, but the routes and conditions outlined here will include areas in Cedar County to the north and Polk County to the east. The goal of this assessment is to identify changes that could improve the experience of bicyclists utilizing on-road facilities. The long-term goal is to build outdoor and bicycle recreation tourism into a sustainable economic sector that will benefit Dade County.

Several assumptions were made in this analysis, and we encourage the reader to keep these items in mind as they consider the information presented.

- All bike and or vehicle routes illustrated here were generated using Open Route Services[1] and created by the research team for the purposes of this report. These routes have been generated for analysis and discussion purposes. Routes have been created with limited feedback gathered from local stakeholders.

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[1] https://openrouteservice.org/

- All routes generated by the research team for consideration here will begin and end near the Dade County Courthouse in Greenfield, Missouri unless otherwise noted.
- Routes illustrated here but attributed to the Missouri Bike and Pedestrian Federation (MoBikeFed) have been included in the report and posted on the website ridewithgps.com with no modifications.
- All routes illustrated here will utilize on-road facilities on existing road segments as indicated.
- Specific improvements will be limited to areas and locations found within Dade County Missouri, as they are the beneficiary of this USDA-funded technical-assistance project. Additional and complementing improvements may be needed in the immediate vicinity of Stockton Lake in Cedar and Polk Counties; however, those improvements are not included in this analysis.
- Level of Traffic Stress (LTS) information generated by the research team has been utilized to identify road segments of concern that will be highlighted in later sections. Further information on the LTS data developed by the research team can be found at [2]https://tinyurl.com/ycf9y42h[3].

3.2.1 Existing Conditions

Community leaders and stakeholders have expressed a desire to increase the number of outdoor recreation activities taking place within Dade County, with specific focus being given to bicycling and bicycling-related activities. The proximity of Stockton Lake to northern Dade County presents opportunities to draw and capture visitors who wish to engage in a number of outdoor recreation activities. Significant national and regional bike routes already cross Dade County. The most notable are United States Bike Routes 66 and 76, which cross the southern portion of the county as indicated on Figure 11.

While these major national bike routes are a significant asset to the region, they do not necessarily facilitate significant ongoing tourism or economic development benefits for Dade County, as riders are often traversing the county and not necessarily stopping or lodging. It has been noted by local stakeholders familiar with the U.S. Bike Route 76 corridor in particular that the experience can be less than optimal due to narrow road shoulders and heavy/high speed truck traffic and may only appeal to riders willing to tolerate higher levels of traffic stress or higher risk in other words. For these reasons and others, developing alternatives to these major routes and locations is of high interest.

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[2] https://nado.maps.arcgis.com/apps/webappviewer/index.html?id=2c1cd67648bb46e29ecaf60f54f7f323

[3] https://nado.maps.arcgis.com/apps/webappviewer/index.html?id=2c1cd67648bb46e29ecaf60f54f7f323
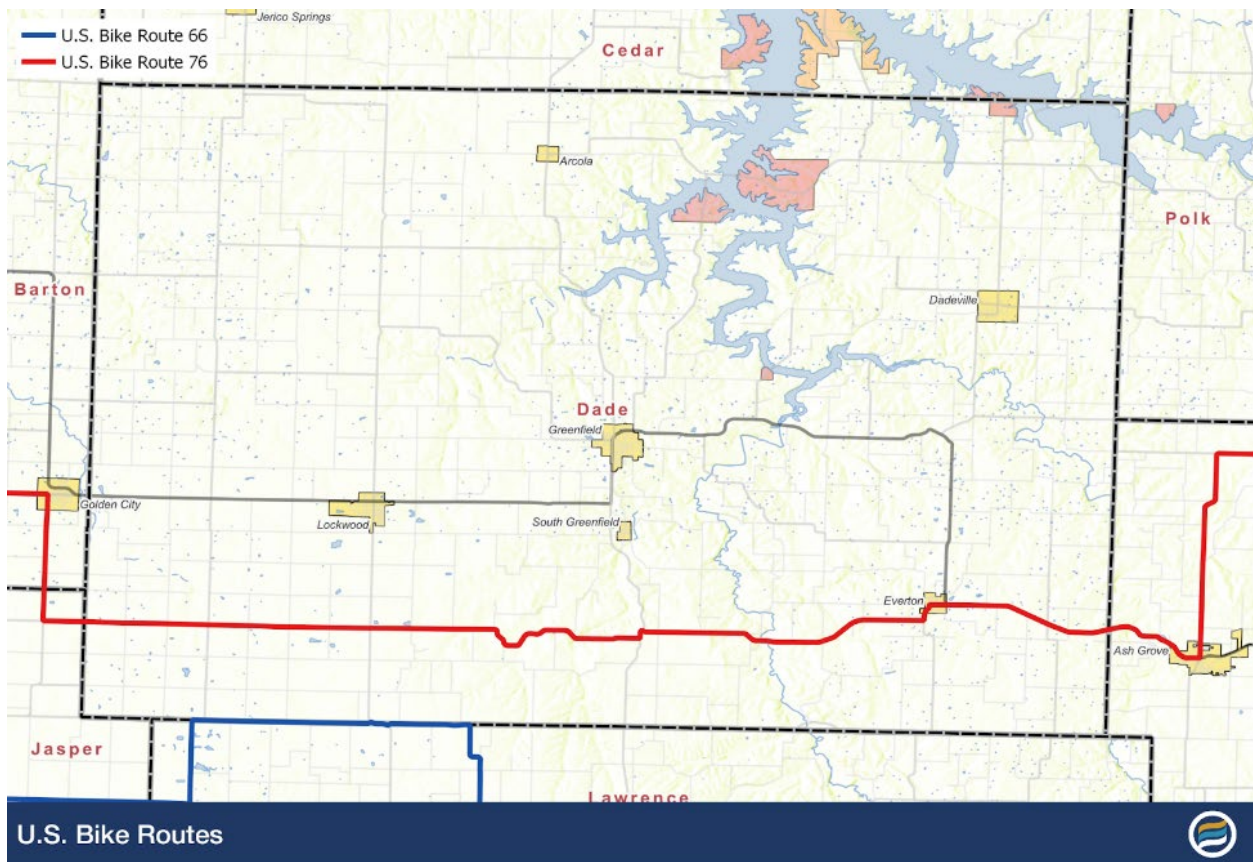
Figure 11: Proximity of U.S. Bicycle Routes 76 (red) and 66 (blue) to Dade County

Parallel investigation is being undertaken by the research team to understand more about what amenities exist in Dade County that may support or bolster bicycle related tourism, and what gaps may exist. This effort should also yield ideas about possible opportunities for local businesses to provide additional resources that will expand the outdoor recreation portfolio. Optimally an assessment of existing amenities, as well as an understanding of best practices from communities who have experienced success in this endeavor, will prove beneficial.

3.2.2 Existing Cycling Routes

Initial conversations with local stakeholders revealed an interest in generating bike routes near and around Stockton Lake that would attract riders to the area.

Missouri Bicycle and Pedestrian Federation (MBPF) has created fourteen bike routes near or around Stockton Lake and made these routes available for users to access on the website Ride With GPS. These routes, shown in Figure 12, may be downloaded to a smartphone or compatible cycling GPS unit for use navigating and providing routing information while riding.

Figure 12 route names and descriptions are gathered from ridewithgps.com and listed in : Stockton Lake Local Bicycle Route System (ridewithgps.com)
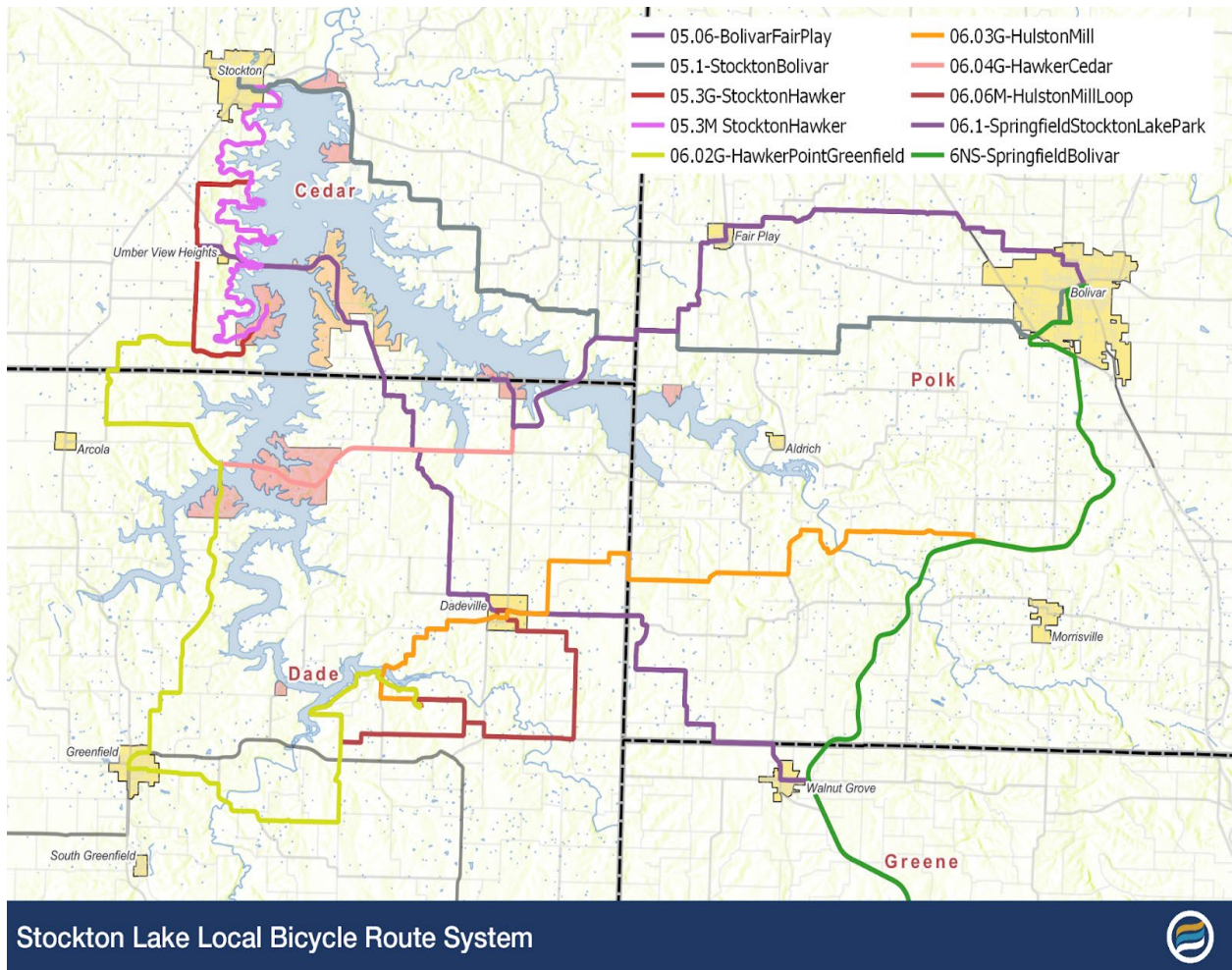
Figure 12: Stockton Lake Local Bicycle Route System (ridewithgps.com)

Table 3: Name, distance, and elevation change for Stockton Lake Ride with GPS bicycle routes

Name	Distance	Elevation Gain/Loss
BSEC-05.06. Bolivar-Fair Play-Cedar Ridge Park	23.1 Miles	+3,498 ft / -3,500 ft
BSEC-05.1. Stockton-Bolivar: Butterfield Stage Connector	31 Miles	+3,524 ft / -3,529 ft
BSEC 05.3G – Stockton-Hawker Point Campground	15 Miles	+1,491 ft / -1,508 ft
BSEC 05.3M – Stockton-Hawker Point Campground	13.7 Miles	+684 ft / -676 ft
BSEC 05.4. Cedar Ridge-Crabtree Cove-Stockton	21.7 Miles	+1,241 ft / -1,246 ft

Name	Distance	Elevation Gain/Loss
BSEC 06.02G - Hawker Point-Greenfield-Hulston Mill	35.8 Miles	+2,021 ft / -2,077 ft
BSEC 06.03G - Hulston Mill-Dadeville-Bolivar	35.5 Miles	+2,103 ft / -1,950 ft
BSEC 06.04G - Hawker Point-Cedar Ridge Park	21.8 Miles	+1,378 ft / -1,384 ft
BSEC 06.1. Springfield-Stockton Lake State Park	48 Miles	+4,204 ft / -4,203 ft
BSE-6N/S - Springfield-Bolivar	43.8 Miles	+1,137 ft / -1,405 ft

Please note, some routes are provided in opposing directions on the website (North/South routes, East/West routes) so only one instance of each ride is provided here for informational purposes. Ten individual routes are presented in Table 3 with one-way distances. Time durations are not listed, as many of these routes utilize non-road segments that could not be modeled accurately in the mapping environment. Elevation gain/loss information is presented as listed on ridewithgps.com.

The research team has examined these routes in a GIS environment to understand if there are route locations within Dade County that coincide with road segments that have been classified as LTS 2, 3, or 4. The goal is to identify known bicycling routes and/or elevated bicycle traffic stress locations where conditions may not be optimal for cycling. Then, if they exist, to investigate whether improvements could be recommended to increase rideability for users of all skill and risk levels. Based on this review, ten locations of concern have been identified for the Stockton Lake Local Bicycle Route System, as illustrated in Figure 13 and described in Table 4.

Table 4: Bicycle routes of concern around Stockton Lake

Number	Description
1	Route Y from County Road 121 to MO 245
2	Route H from U.S. 160 to Route Y
3	U.S. 160 from Meng St. to Route H (Greenfield)
4	Route O from CR 114 to CR 126
5	Route W from CR 205 to Polk County Line
6	Catalpa St. from MO 245 to Penn Ave. (Dadeville)
7	Route U from MO 245 to Polk County Line

Number	Description
8	MO 245 from CR 96 to Route U
9	Route RA from Cedar Ridge Rec. Area to MO 245
10	MO 245 from Route RA to Cedar County Line
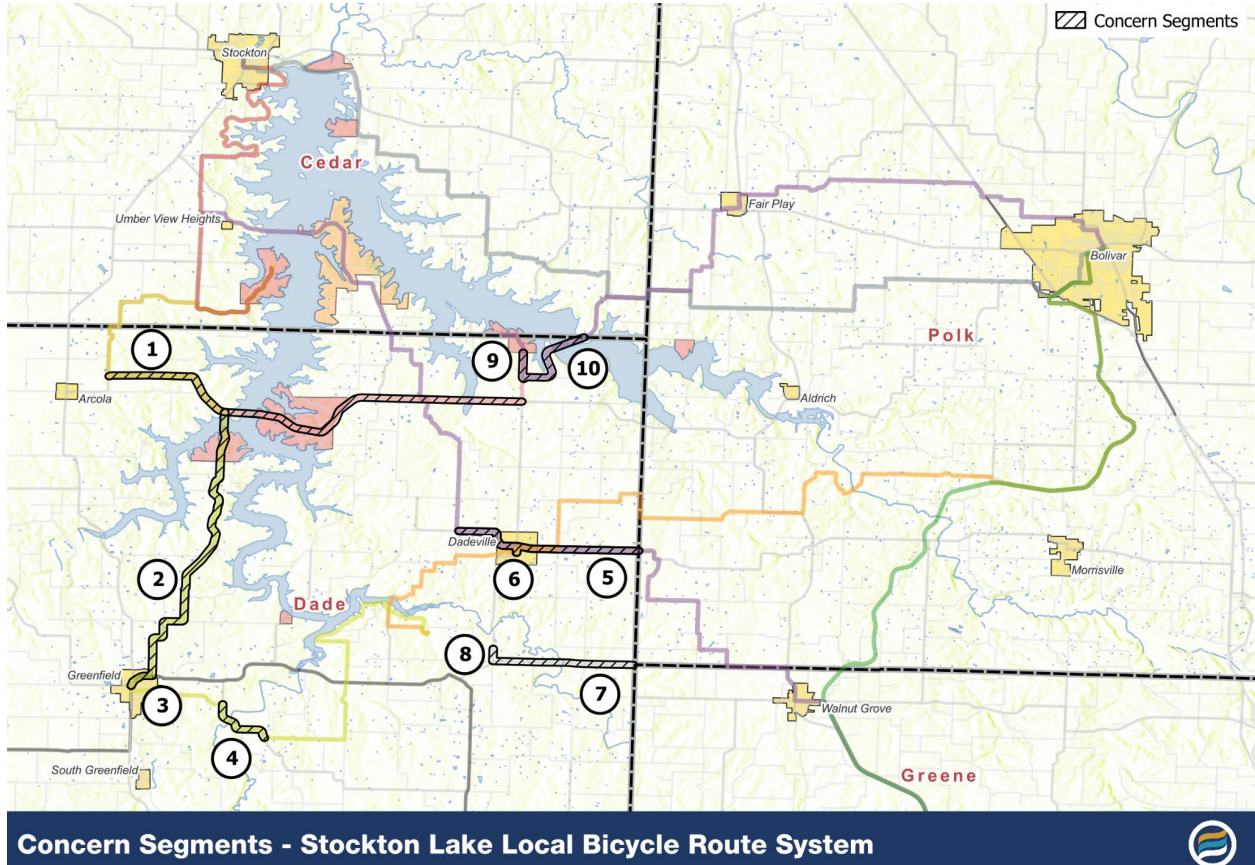
Figure 13: Road segments of concern in the Stockton Lake Local Bicycle Route System

3.2.3 Conceptual Routes

To augment the existing routes provided by MoBikeFed, the research team modeled five additional routes for consideration, focused on circumnavigating Stockton Lake or portions of the lake. All of these routes originate and terminate near the Dade County Courthouse in Greenfield. This location was selected for its central location related to local businesses and the general availability of parking.

Currently, Stockton Lake has eleven crossing points; these modeled routes were designed to utilize these crossings wherever possible to maximize the scenic value of the crossing locations. A map of the crossing locations as observed in available data is provided Figure 14.
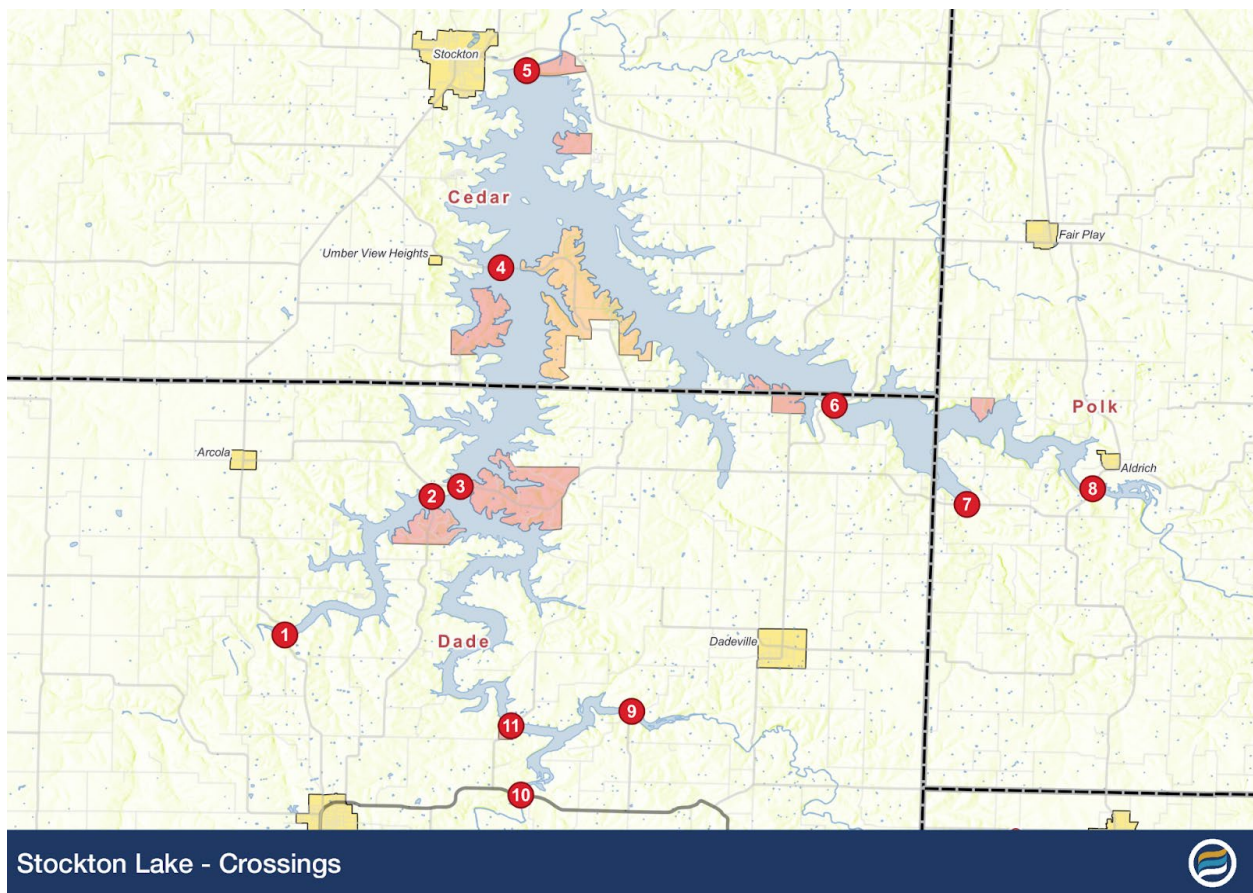
Figure 14: Stockton Lake road crossings

The conceptualized routes range from a 77.9-mile, 7.1-hour full loop around Stockton Lake to a shorter 28.4-mile 2.6-hour route through Ruark Bluff, Mutton Creek Marina, and the Greenfield Access areas. The routes are presented on Figure 15. Please note that many of the routes use the same road segments due to each route starting and ending in the same location. All routes presented utilize on-road facilities only, with no single-track trail or connector segments included.

Stockton Lake Conceptual Routes
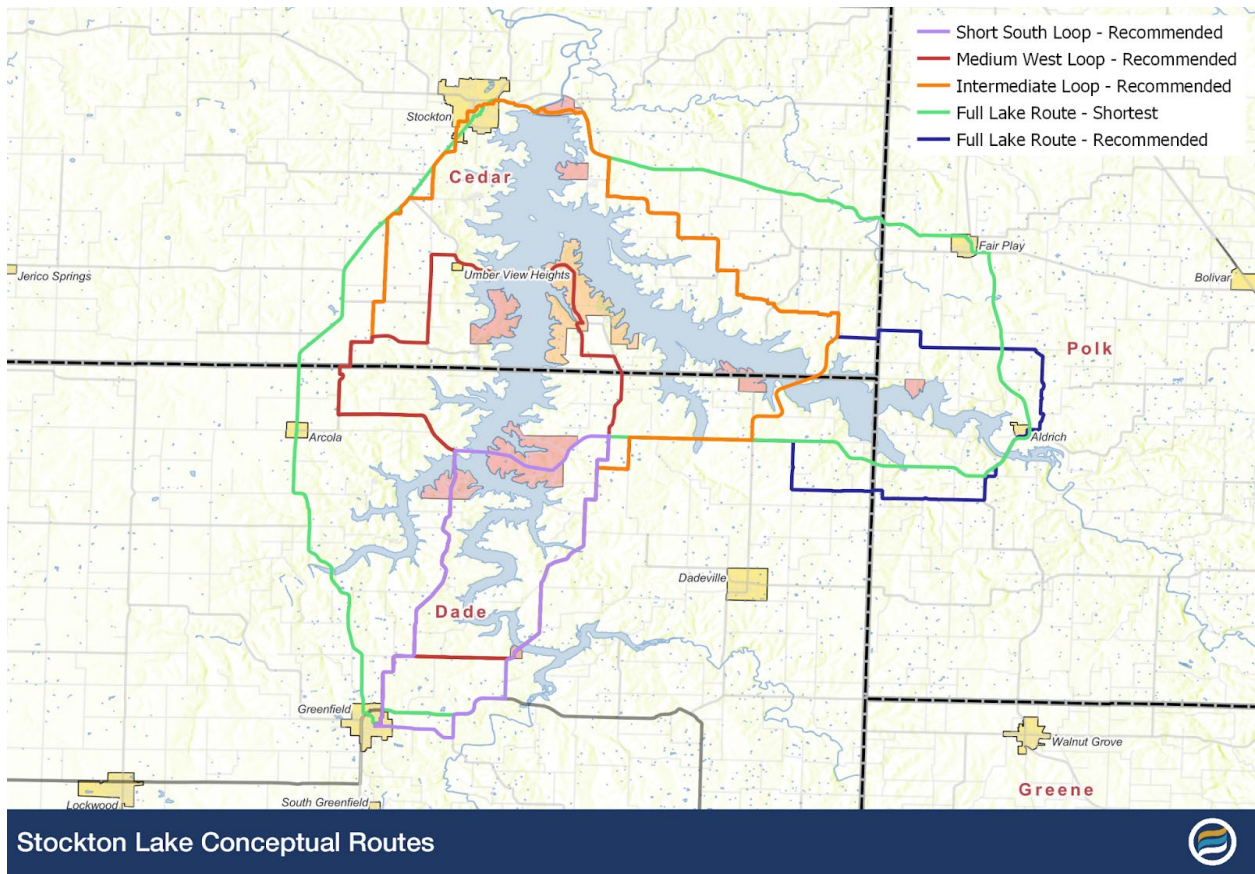
Figure 15: Stockton Lake conceptual bike routes starting and ending in Greenfield

Road segments that were classified as LTS 2, 3, or 4 and were identified as locations where these conceptual bike routes may travel have been highlighted in the map image below. Again, these are segments of concern where improvements may be targeted to them more suitable and accessible for riders of all skill types. While specific treatments are not recommended as part of this report, any efforts related to widening (lanes or shoulders), improving surface materials, reducing speeds, or reducing traffic volumes could improve conditions for bicycling.

Six segments were identified for further review as part of this analysis and are presented in Figure 16 and described in Table 5.
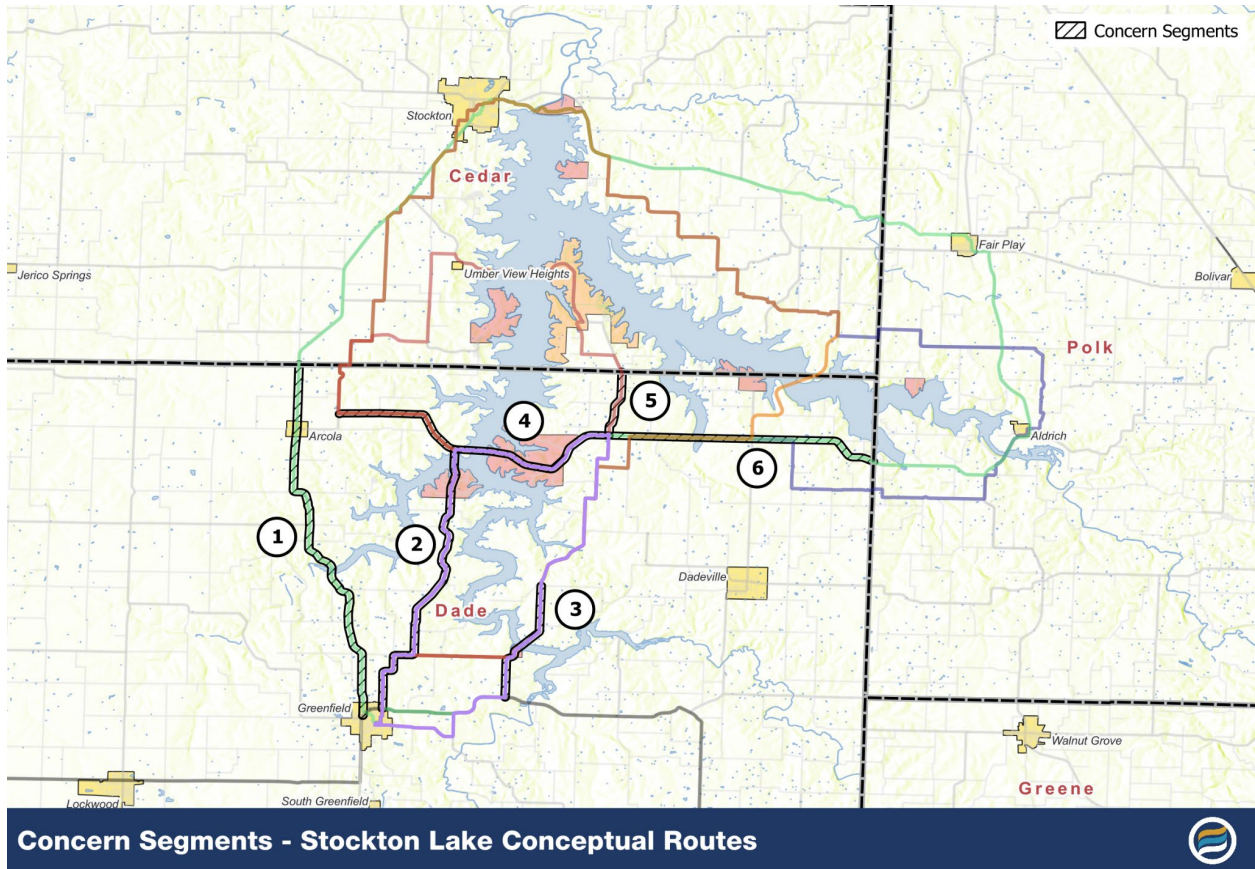
Figure 16: Segments of concern for conceptual Stockton Lake bicycle routes

Table 5: Descriptions for segments of concern in the conceptual Stockton Lake route system

Number	Description
1	MO 39 from Greenfield to Cedar County Line
2	Route H from U.S. 160 to Route Y
3	Route CC from U.S. 160 to CR 68
4	Route Y from CR 121 to MO 215
5	MO 215 from Route Y to Cedar County Line
6	MO 215 from Route Y to Polk County Line

3.2.4 Existing Project Listings

The research team examined available transportation project listings generated by SMCOG as part of their regional transportation efforts in partnership with MoDOT. In total, seven bike/pedestrian projects were identified in the 2023 Dade County needs document[4]. One bike/pedestrian project lacked a specific location (#5 or the 'Walking Trail Around Greenfield') so it was removed, and an additional project (shoulder improvements on Rt. 39 from Lawrence to Cedar County) from the general project listing in the non-bike/ped category was added based on its description. This yielded a total of seven projects; they are shown in Figure 17. The non-bike/ped project is listed as project 2a in the map legend.
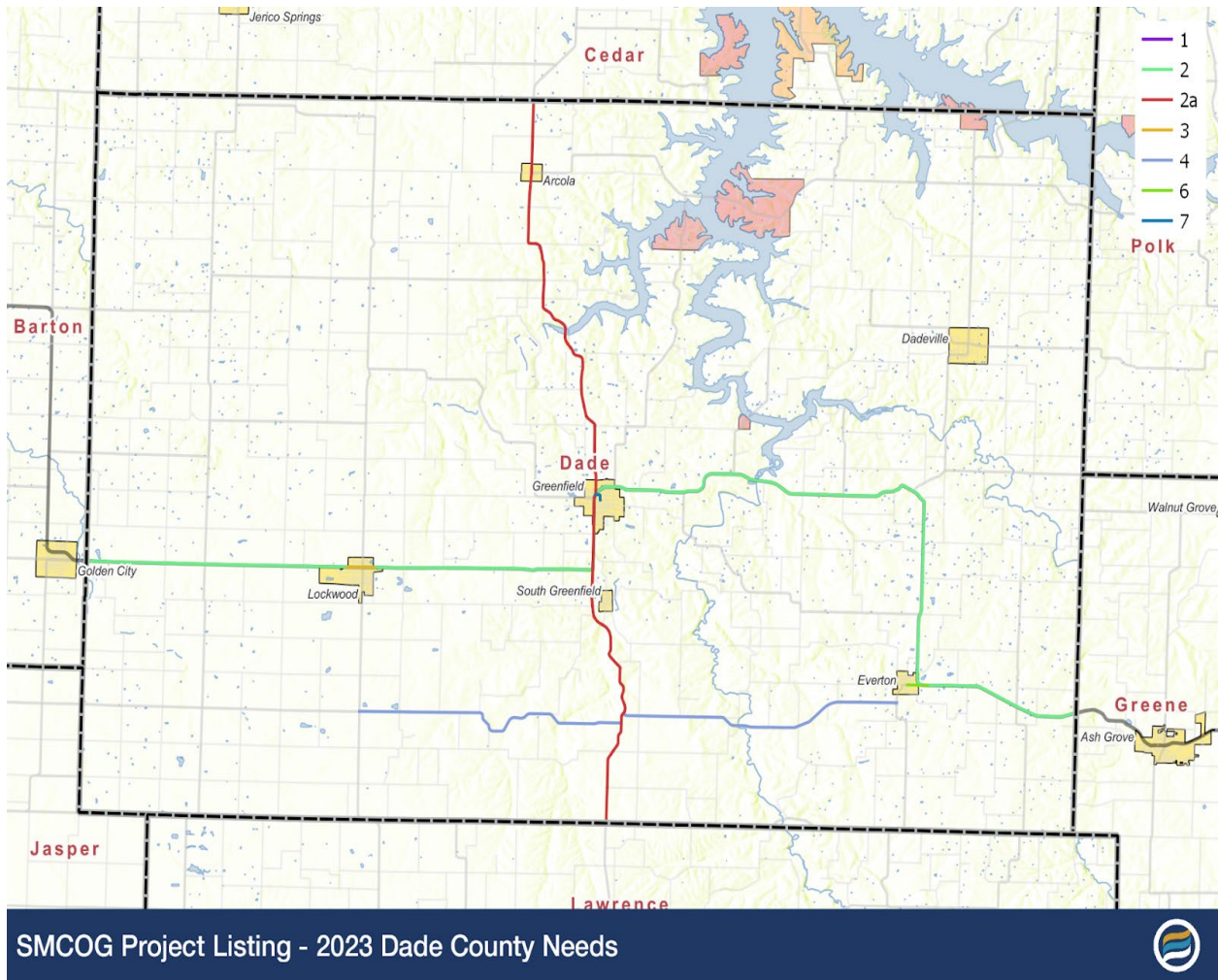
Figure 17: SMCOG bicycle/pedestrian-related projects identified in Dade County

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3.2.5 Recommendations

Based on the information presented in this brief analysis, there are additional locations that could be considered for improvements or treatments that may benefit bicycling conditions in Dade County. All of the road segments of concern identified from both the existing cycling routes, as well as the conceptual routes generated by NADO, are illustrated in Figure 18. These are shown alongside the identified projects provided by SMCOG. In total, these represent areas that could be included in future project-development efforts or on future iterations of project-need listings. Efforts to accomplish any of these project activities could benefit the general on-road bicycling environment in Dade County.
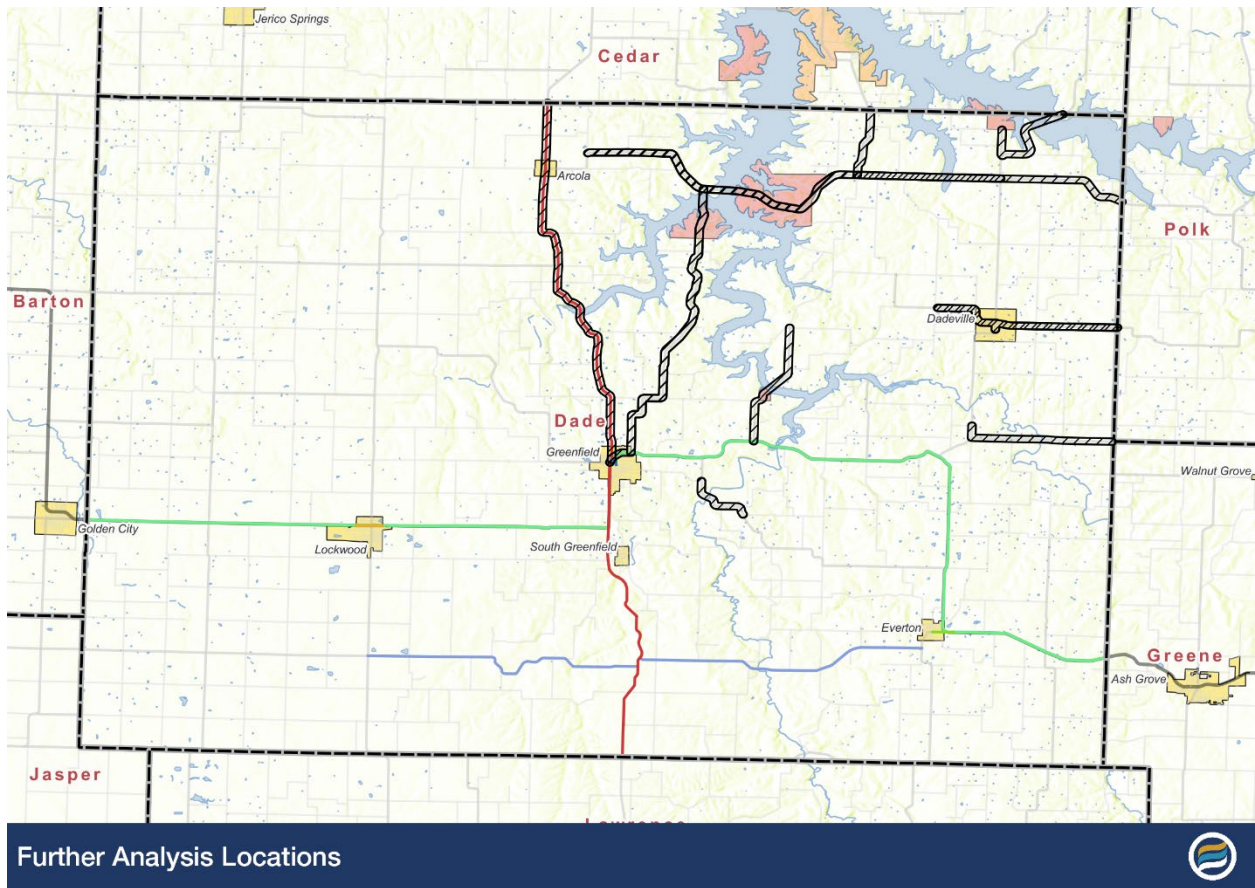
Figure 18: SMCOG bicycle/pedestrian projects and the conceptual Stockton Lake bicycle route segments of concern

3.3   Potential USBR 76 Connections to Lockwood and Greenfield

The blue lines in Figure 19 show paved roads in the vicinity of Lockwood and Greenfield.
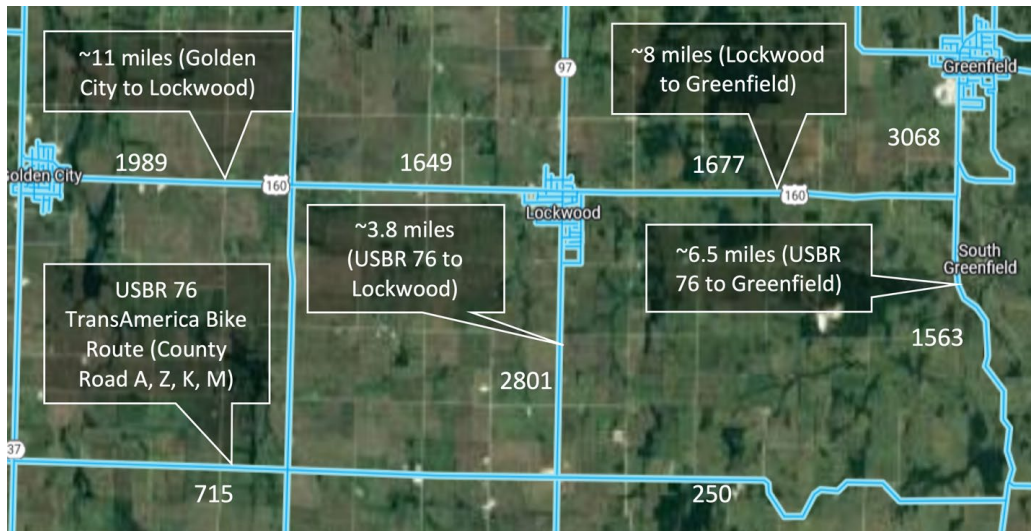
Figure 19: Traffic volumes for paved roads in Lockwood and Greenfield (Google Maps, 2023)

Bicyclists heading east on USBR 76 ride through Golden City turn south on Hwy 37 then east on County Roads A, Z, K and M through southern Dade County. The most direct route from Golden City to Lockwood is due east 11 miles on Hwy 160, which has higher volume traffic and lacks shoulders. This creates a high-stress environment for cyclists.

From USBR 76, bicyclists could ride about 3.8 miles north on Route 97 to Lockwood or about 6.5 miles north on Route 39 to Greenfield. These routes also have higher volume traffic and lack shoulders. Average Annual Daily Traffic (AADT) for paved roads connecting USBR 76 to Lockwood and Greenfield are shown in Table 6.

Table 6: Traffic volumes for paved roads connecting USBR 76 and towns in Dade County (source: Missouri Department of Transportation data, 2022)

Roads to Lockwood/ Greenfield from USBR 76	AADT	AADT	Total AADT
Hwy 160: Golden City to Road N	977 eastbound	1012 westbound	1989
Hwy 160: Road N to Lockwood	727 eastbound	922 westbound	1649
Hwy 160: Lockwood to T intersection South of Greenfield	826 eastbound	851 westbound	1677
Hwy 160: T intersection S. of Greenfield north into Greenfield	1519 northbound	1549 southbound	3068
Route 39: USBR 76 North to T intersection south of Greenfield	781 northbound	782 southbound	1563
MO 97: County Road A/Z (from USBR 76 to Lockwood)	1412 northbound	1389 southbound	2801

Appendix B provides guidance on accessing traffic volume data using MoDOT's online Data Zone system.

Table 7 shows traffic volumes for the existing USBR 76 through Dade County, which are significantly lower than on other paved roads through Lockwood and Greenfield. Until lower-stress routes exist (such as those with a wide paved shoulder or separated path), it will likely be challenging to encourage USBR 76 riders to go out of their way to bike into these towns.

Table 7: Traffic volumes for the existing USBR 76 through Dade County

Existing USBR 76 roads	AADT	AADT	Total AADT
MO 37: Golden City to Road A	226-256 northbound	225-248 southbound	504
USBR 76/RT A: MO 37 to MO 97	259- 346 eastbound	263 to 369 westbound	715
USBR 76/RT A: MO 97 to MO 39	124 eastbound	126 westbound	250

Whether a rural road is considered safe enough for bicyclists depends on factors such as traffic volumes, percent large vehicles, operating speed, road and shoulder width, pavement conditions, sight lines and crash data. Because safety depends on many factors, including human behavior, there is no simple formula to determine what is considered safe enough for biking on rural roads (Designating Scenic Bikeways: A Framework for Rural Road Owners, 2019, page 26).

Figure 20 shows preferred shoulder widths for rural roads with various traffic speed and volumes. It suggests that shared lanes (where bicyclists and motorists share a lane) may be appropriate for rural roads up to approximately 1,000 vehicles per day. Based on available data, most Dade County roads, except Hwy 160, Route 39 and Route 97, fall within this range.
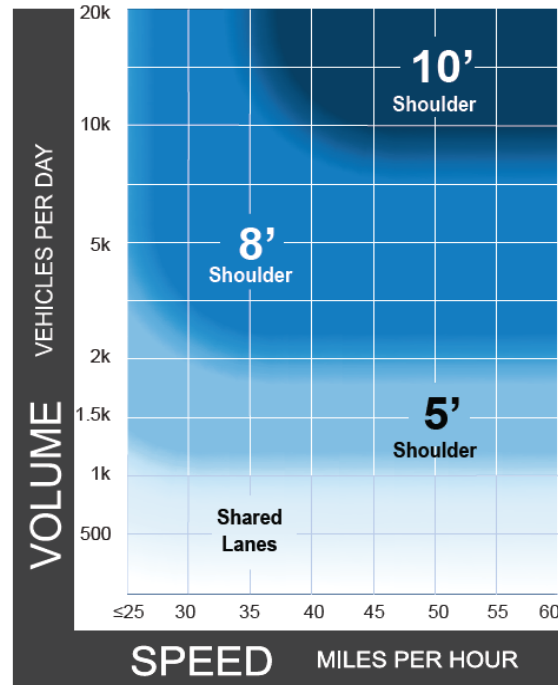
Figure 20: Preferred shoulder widths for rural roadways (FHWA, 2019)

When reconstructing or retrofitting a road shared by bikes and vehicles, consider the following.

1. Figure 20 assumes the project involves reconstruction or retrofit in constrained conditions. For new construction, follow recommended shoulder widths in the AASHTO Green Book.
2. A separated shared use pathway is a suitable alternative to providing paved shoulders.
3. The chart assumes that operating speeds are similar to posted speeds. If they differ, use operating speed.
4. If the percentage of heavy vehicles is greater than 5%, consider providing a wider shoulder or a separated pathway.

4   BICYCLE TOURISM RESOURCES

Rural communities are benefiting from approaches to community and economic development that focus on community wealth and strategies to increase quality of life. A study commissioned by the Walton Family Foundation estimated that the bicycling ecosystem in Northwest Arkansas generates an economic impact of $159 million per year (Center for Business and Economic Research, 2023). This section presents an overview of a few key bicycle tourism resources aimed at rural communities that may provide guidance and inspire action in Dade County and other rural areas.

4.1   Best Practices in Bicycle Tourism (2021) by The Path Less Pedaled

In 2009, Russ Roca and Laura Crawford sold everything they owned and spent three years pedaling across the US and New Zealand. One of the many things they discovered was that cycling can bring economic development to rural areas. They share their expertise through their work as consultants at the Path Less Pedaled and they provide many useful resources online. The information that follows is taken directly from their Best Practices in Bicycle Tourism case study, which provides a framework for developing a bicycle tourism destination.

Bicycle tourism is about attracting people to an area for the purpose of economic development. In rural communities, it can result in slow and steady additional income over time, where small increases in visitation can have a big impact on economic viability. In northwest Arkansas, a close neighbor to southwest Missouri, one study found that bicycling contributes $137 million to the region annually. The study also found that 55% of trail users traveled into northwest Arkansas from outside the region, indicating that their investment in mountain biking trails was a key driver of tourism (BBC Research & Consulting, 2018). This framework could help southwest Missouri follow a similar path and attract more bicycle tourism.

4.1.1   Bicycle Tourism Categories

The Path Less Pedaled segments bicycle tourism into four categories:

- Self -Supported
- Destination-based
- Events
- Family/Casual

Self-Supported

Self-supported bicycle travel is also known as bike touring or bike packing, where people carry their gear on their bike. People biking through southern Dade County on the USBR TransAmerica route and USBR 66 fall into this category. Self-supported cyclists typically move from place to place each day; most spend one night (maybe two) in a place then move on. Self-supported bike travelers typically follow routes mapped by organizations like Adventure Cycling, Bikepacking Roots or Bikepacking Overnighters

Self-supported bike travel is sought out by people on a budget, as well as luxury travelers, from the US and abroad. By limiting the costs of camping and by preparing one's own meals, it can be very inexpensive. People with more resources may stay in a hotel or eat at restaurants more often. A 2013 study found that multi-day cyclists in Montana spend $75–$103 per day and stay an average of eight or more nights (Nickerson, N.; Jorgenson, J.; Berry, M.; and Kwenye, J. 2013).

Self-supported bike travelers seek good road infrastructure and safe shoulders. Most will follow direct routes that connect to services at reasonable intervals.

Destination-Based

Destination-based bicycle travel is a base-camp model, where bike travelers stay in one place for several days and participate in day rides. This allows people to spend time and get to know a place. Travelers may be road, mountain bike, or gravel riders. It is important that the host location has name recognition and enough activities to keep people engaged for several days. "The key to success with the destination model is to either a) be already successful as a general tourism destination and then add cycling as one of the offerings, or b) develop routes and riding opportunities that are destinations in themselves because of the buzz they have within a certain segment of cyclists." (Path Less Pedaled, 2021).

Bicycle Events

"Bike travelers who participate in events are drawn to the social aspect of being part of a large group for a set amount of time and having all logistics handled by the event promoter. Events can range from cyclocross races, criteriums, and gran fondos—to week-long cross-state rides like Cycle Oregon or RAGBRAI (Register's Annual Great Bicycle Ride Across Iowa).

Events are great for communities because they provide a large influx of cash in a short period of time. In many cases, communities can work with public safety officers to close roads to car traffic, eliminating the need to have the kind of infrastructure that might draw that many people in a longer timeframe. For this reason, events are appealing to a lot of communities, especially small communities." (Path Less Pedaled, 2021).

One complication with events is lodging capacity. Events have the biggest financial impact when there is an overnight stay, though small towns often have limited overnight options.

Family/Casual

People that bike on their vacation, even though biking is not the main motivation, are considered casual bike tourists. This includes families that rent bikes for a day or people who take a guided tour by bike. It is important to have low-stress facilities like separated paths or trails and shorter routes for people that don't ride often. Smaller communities without a lot of other activities will find it difficult to attract casual bike travelers.

4.1.2 Bicycle Tourism Strategies

Next, the Path Less Pedaled recommends three success strategies for developing a bicycle tourism destination.

1. Focus on the visitor experience
2. Engage the Community
3. Tell the world

Focus on the visitor experience

The quality of a visitor's experience is critical for the success of bicycle tourism. It is important to view a community through a visitor's eyes. "By identifying the ideal visitor(s), a community can best capitalize on their existing amenities and character, rather than having to change to accommodate a new kind of tourist." Rural communities often fear that nobody will visit if the community represents itself too honestly. For example, if it has camping options but no B&Bs, or if its roads are flat rather than hilly. "But the truth today is that bike travelers come in all varieties, seeking all kinds of experiences: and by representing itself honestly and positively, a community can find its right visitors." In addition to defining the ideal visitor, their visitor experience section contains details on the following:

- Identify a variety of great bike routes that speak to the ideal visitor
- Identify a variety of great off-the-bike options that pair well with cycling and also speak to the ideal visitor
- Ideas to simplify logistics in advance
- Consider access by the region's residents

Engage the Community

Generating buy-in from the community ensures greater sustainability over time and allows a community to benefit from the expertise of its residents. In this section, The Path Less Pedaled provides more details on each of the following topics.

- Build a coalition of stakeholders
- Think regionally
- Outreach to hotels and businesses
- Simplify regulations for events, biking camping, etc.

Tell the world

Marketing is critical to let people know about a region and what it has to offer. The Path Less Pedaled offers more detail on the following topics.

1. Brand it first (bike tourism marketing should be an integral part of the process from the beginning)
2. Tell your story (every community has a unique story)
3. Set realistic expectations
4. Editorialize the experience

5. Tap into existing mechanisms (tourism agencies, visitor bureaus, and chambers of commerce)
6. Put everything online
7. Include bike imagery everywhere

Dade County should build on their existing Ozark Prairie Trail brand to spread the word about their assets more widely.

In summary, the Path Less Pedaled Best Practices in Bicycle Tourism case study is a great resource (and a relatively brief 18 pages) that provides a framework for developing a bicycle tourism destination in rural areas.

4.2 Bicycle Tourism as a Rural Economic Development Vehicle (2011) by Heidi Beierle

Heidi Beierle took a solo, self-supported, 3500-mile bicycling trip across the United States and wrote "Bicycle Tourism as a Rural Economic Development Vehicle" based on her experience and interviews with people in small towns along the way. In this document, she explores characteristics, behaviors, needs and preferences of self-supported bicycle travelers, such as people riding through Dade County on the Transamerica bicycle route. Assessing communities and routes is important in matching market demand with infrastructure and services. Evaluating communities, routes, and cyclists can maximize the economic benefits bicycle tourists bring to rural economies. This document addresses the applicability of bicycle tourism in rural areas by:

BICYCLE PATHS
Paved, off-street pathways for non-motorized use.

BICYCLE-ONLY ROADS
Open seasonally with periods of bicycle-only access.

ROADS WITHOUT SHOULDERS
Any roadway with fewer than twelve inches between the white fog line and the roadway edge.

ROADS WITH SHOULDERS
Any roadway with more than twelve inches of roadway between the white fog line and the rideable pavement edge.

Figure 21: Four types of roads for touring cyclists (Beierle, 2011)

1. Providing an overview of field research, planning strategies, history of road building and bicycle transportation in America, and options for adaptively using roadways;
2. Detailing a typology of self-supported riders (shoestring, economy, and comfort);
3. Characterizing preferred route characteristics;
4. Discussing different types of destinations for cyclists;

5. Presenting an overview of the economic benefits of bicycle tourism in rural communities along with assessment strategies and examples to help communities identify bicycle tourism potential; and

6. Providing a bicycle-friendly top-ten list for states, regions, and communities.

Figure 21 shows the four road types for touring cyclists and Figure 22 shows an example of bike friendly visitor services from Cooky's café in Golden City, MO (Beierle, 2011, page 19).

Visitor Services

Visitor services for touring cyclists include **refueling establishments** such as restaurants, cafes, grocery stores, and convenience stores. **Accommodations** are a needed service and include homestays, camping, hostels, motels, hotels, and bed and breakfasts. **Other services** of note include water, restrooms, wifi, cell service, showers, laundry, bike shops, emergency services, and visitor information.

All cyclists must refuel. Cyclists can be particular about where they eat and what they eat. At the same time, the imperative to eat can often override particularities.

Cooky's Cafe comes highly recommended via cyclists' word-of-mouth interactions. "Anyone who's anyone stops at Cooky's in Golden City, MO, and has some pie." If a cyclist only has one piece, the wait staff know better, "All cyclists have at least two pieces." To reinforce this point, the cyclist log book details other cyclists' journeys and their joy of being well-treated and well-fed at Cooky's.

Fairplay-Valiton Hotel welcomes weary cyclists who have traveled over 75 miles of unpopulated CO landscapes before climbing Hoosier Pass. For proud riders descended from the big climb, the hotel offers fluffy pillows, hot showers, and wifi.

19 Beierle June 2011

Figure 22: Visitor services for touring cyclists

In the economic development section, Ms. Beierle proposes four steps to guide bicycle tourism program development that may serve as a framework for Dade County: 1) assess the potential; 2) plan and organize; 3) prepare, protect, and manage; and 4) market for success.

1. **Assess potential**
    a. **Evaluate the cycling assets** in the area including ACA routes, scenic byways, recreational bike paths or trails, state cycling organization routes, and local race routes or notable rides.
    b. **Identify what is unique** about your community or region. A few unique items in Dade County are the rural character (no traffic lights in Lockwood and Greenfield), friendly people, rolling hills, green landscape, turtles on the roadway, etc. A future workshop could help identify what else is unique about the people, culture, or history of Dade County.
    c. **Evaluate off season and other assets** that synergistically pair with cycling to support investments. Arts and cultural festivals or celebrations also support off-season visitation and draw upon lodging and restaurant services developed to serve summer demand.
2. **Plan and organize**
    a. **Space lodging** approximately 50 miles apart for linear routes. Other visitor services 10–25 miles apart.
    b. **Cultivate relationships** among businesses, cycling organizations or clubs, land management agencies, departments of transportation, community and county governments (including emergency response and enforcement departments), local chambers of commerce, and other interest-based groups related to community assets.
    c. **Research and participate in economic development programs for rural areas**. Explore microenterprise and small-business development and support programs. For example, rural business development grants help communities write management plans and fill visitor service gaps, such as lodging. Incentives are also available for women and minority entrepreneurs.
    d. **Use historic resources in business development strategies whenever possible**. Rehabilitation is often thriftier than building new, and historic and cultural sites attract visitors.
3. **Prepare, protect and manage**
    a. **Manage, measure, and evaluate**. Keep visitation sustainable for a community by understanding where and how resources may be under or overused.
    b. **Create Americans with Disability Act (ADA) accessible destinations**. ADA compliance ensures bicycles can easily reach destinations, allows for family-friendly and all-abilities access, and sends a message that the community is friendly to everyone.
    c. **Evaluate surface conditions and infrastructure** along the bicycle-touring route and plan for signage, regular maintenance, and improvements, if needed. The community of Guffey, CO, installed a bicycle sign on the highway to direct cyclists to the community. Guffey is situated 30 miles from any town or services

in either direction on the cycling route, but it is one mile off the highway behind a hill and invisible from the road. Until the sign was installed, needy cyclists passed by Guffey without knowing a bike-friendly stop was nearby.

    d. **Evaluate spacing of visitor services** and work with local businesses and entrepreneurs to fill service gaps.

    e. **Interpret and educate.** Interpretation and education are key to bringing a community's history, culture, or scenery to visitors.

4. **Market for success**

    a. **Market destinations and attractions** to target markets. Consider community assets as a whole and in context with existing markets to determine who is the most likely audience for the particular bicycle tourism product. (The marketing section has more tips based on Heidi's insights.)

The document has two brief case studies discussing strengths and opportunities for two rural towns and wraps up with a top ten list for what communities, regions and states can do to create more bicycle-friendly places. The following list shows ten ways a **community** can welcome cyclists.

1. Use "Cyclists Welcome" or "Bikers Welcome" signage at community gateways and at key visitor services such as restaurants or motels.

2. In the absence of public restrooms, ensure that at least one business that offers free water and restroom access is always available. Best choices are restaurants, stores that serve ice cream or cold drinks, or business ambassador/visitor information centers that also direct cyclists to the community's best cyclist destinations.

3. Provide inexpensive lodging options—such as camping or hostel—along with motel accommodations.

4. Keep key destinations open at convenient times. Remember that bicycle tourists travel every day of the week and usually begin riding early in the morning.

5. Ensure that restaurants and lodging either have Wi-Fi or know where cyclists may access it. If the area has poor cell coverage, know the best locations to find a signal.

6. Encourage locals to develop a rapport with visitors—particularly cyclists—within the community and on the road. Every cyclist is a potential customer, and residents can have a significant effect on whether that cyclist spends $0 or $100 in a community.

7. Keep dogs on leashes or contained in their yards. Injuries from dog attacks are not uncommon for bicycle tourists.

8. Provide visible bike parking outside of restaurants, coffee shops, and cafes and understand that cyclists may want to sit within the business where they can see their bikes.

9. Allow cyclists to bring bicycles inside their room at lodging establishments. Provide rags for use on bikes or other dirty items. Let cyclists know what time services (such as food, laundry, or entertainment) close for the evening and open in the morning.

10. Have cyclist log books available at key community destinations and encourage cyclists to sign in. For example, a sign-in sheet at Hulston Mill could help track how many bikers

visit and gather their contact info for future communications about bike routes and events.

In addition to communities, Ms. Beierle has a top ten list for regions and states to be more bicycle friendly. For example, at a state level, coordinating with the state DOT to ensure that cycling routes are maintained (free of debris, potholes, cracks, rumble strips, chip seal, and obstructions). At a regional level, collaborate with other communities along bicycle tourism corridors to create visitor resources including branded signs, regional cycling service maps, and business ambassadors.

These ideas can help bicycle tourists find their way through a region and to destinations and the services within it. In summary, [Bicycle Tourism as a Rural Economic Development Vehicle](#) provides insights that can help rural communities attract bicycle travelers.

4.3   Why is bicycling good for the economy?

People who ride bikes buy bikes. This puts people to work in bicycle shops and apparel stores. People who ride bikes buy other things too. Bike-accessible places benefit by catering to these customers. People on bikes are also more likely to make repeat trips to local stores.

All this spending means jobs—and tax revenue—for communities. But people who ride bikes also save money because of their low travel costs, which could mean more to spend on local businesses. Bicycling manufacturing is a $6 billion national industry, but the economic benefits associated with riding extend far beyond that number. The Nation's 60 million annual recreational bicyclists spend $46.9 billion on meals, transportation, lodging, gifts, and entertainment. One study estimated that the spill-over effects of all bicycling-related activities could be as large as $133 billion per year, supporting 1.1 million jobs and generating $17.7 billion in federal, state, and local taxes (Flusche, 2012).

4.3.1 Trail User Spending

Three categories accurately reflect spending relevant to both the bicycle trail and user:

1. **Hard goods** are defined as bikes, bike equipment, running/walking shoes, and other nonperishable equipment that is used for a trail visit.
2. **Soft goods** are defined as water, soda, snacks, ice cream, lunches, and other perishable items that were purchased while using the trail.
   a. The resulting data would provide a snapshot of these purchases, as well as an estimated spend on a trail visit. Understanding the value of these "soft" and "hard goods" items along the trail is important for determining the economic impact of trail use in communities.
3. **Overnight accommodations** are trail activities related to a hotel, motel, B&B, or campground stay.
   (Rails to Trails Conservancy, 2005)

4.3.2 Calculating Average Expenditures

To calculate the average expenditure, a survey of people who bike in and to a community should be conducted. For hard goods, the survey should request information on purchases made over the past twelve months. For soft goods, the survey should request expenditures during the most recent trail visit. Whether overnight accommodations were used during the most recent trail visit, and the associated expenditures, should also be requested on the survey form. Assuming that the total annual user visits for a trail has been determined, the average soft good expenditure can then be multiplied by the number of user visits to estimate the economic impact of that category of spending (Rails to Trails Conservancy, 2005).

4.3.3 The Importance of Conducting a Bike User Survey

Management

A bike user survey is a management tool to provide feedback from bike users on what they are doing on the trails, when they are doing it, and what they think about the maintenance, cleanliness, and security on the trail. This information can inform communities of desired amenities and where to place them. A broad sample of people reached with a bike user survey provides feedback from more than a few vocal, self-selecting users.

Economic Analysis

Gathering information on how much money bike users will spend, and on what goods, leads to an assessment of the economic impact a trail has on the communities through which it passes. The economic focus of a bike user survey is on non-durable (consumable goods, such as food) spending. Bike-user spending can provide the impetus for revitalization and/or the establishment of local businesses that provide services bike users need.

Fundraising

Economic data from bike users can provide powerful support for funding applications. With increased competition for grant program and foundation funding, the applicant who can back up a proposal with quantifiable facts has a much better chance of securing money. For bike-user studies and economic impact analyses to be most effective the information must be gathered at the local level (Rails to Trails Conservancy, 2005).

A sample of a bicyclist spending survey is included in Appendix D: Sample Bicyclist Spending Questionnaire.

4.4 Bicyclists Bring Business: A Guide for Attracting Bicyclists to New York's Canal Communities (2021)

The *Bicyclists Bring Business: A Guide for Attracting Bicyclists to New York's Canal Communities* (2021) is a helpful overview for those interested in supporting bicycle tourism. The Guide speaks to attracting bicyclists to a community, understanding and meeting the needs of bicycle

tourists, and helping bicycle tourists have positive experiences. As highlighted in the Guide, bicycle tourists select destinations based on:

- Riding Experiences
- Support Services (including food and lodging)
- Nearby Attractions

This 2021 Guide includes tips for creating a positive experience for cyclists for communities and steps businesses can take to become more bicycle friendly.

In addition, the League of American Bicyclists has many resources available through its [Bicycle Friendly Community Program](#)

4.5   Springfield Area Bicycle Shop Information

The bike shops located in Springfield, Missouri, were contacted to gauge the demand for biking in the area. Springfield has a large bicycling community, and this might serve as a regional market for cycling in Dade County. The bicycle shop employees noted that with proximity to Northwest Arkansas, which is famous for its mountain biking, and with the presence of bike trails and local trails in the area Dade County and surrounding areas are considered strong biking communities. The bike shops have a large customer base in the immediate Springfield area as well as from across the nation. They offer repairs and free tune ups, they strongly promote local events, and they are very actively participating in social media. All of the bike shops are willing to promote biking events in the area.

4.5.1 Customer Activities

The bike shops mentioned that their customers like local activities. Springfield is known for several entertainment, food, nature, biking, and hiking places. Some of the activities that the cyclists enjoy include touring the Birthplace of Route 66, Original Bass Pro Shops, Dogwood Canyon Nature Park, and Johnny Morris' Wonders of Wildlife National Museum & Aquarium. There are also several scheduled events in which cyclists participate, such as Ozarks beer fest, arts fest, Pickwick Street fair, Ozark Empire fair, Birthplace of Route 66 festival, Japanese fall festival, Ozark craft fair, Republic pumpkin daze, Apple butter makin' days, MO food truck fest, and Cider days.

The Howler Bike Company in Springfield has a [mountain bike park](#) located just north of Branson on Highway 65. This is a gravity-focused park and is a five-minute ride to the top with shuttle service. There are glamping and camping sites with a coffee shop, a restaurant, restroom, and parking facilities.

The Springfield area visitor guide, which includes a list of activities, is shown in Figure 23. Future Springfield area guides could include activities in Dade County because it's easily accessible and provides different/more rural scenery and roads to cycle. In addition, this type of guide could serve as a model for Dade County to develop marketing for just its own assets, separate from other regional attractions.

Other resources to find activities in the area include:

- https://springbike.org/resources/local-cycling/
- https://www.springfieldmo.org/blog/post/100-things-to-do-on-your-trip-to-springfield-missouri/

Figure 23: Springfield area activity checklist (source: Springfield Visitors Guide, page 21)

There are surrounding cities with several attractions listed in these activity guides. Ozark and Nixa are located within 12 miles, Bolivar is located within 30 miles, and Branson is located within 40 miles of Springfield.

4.6   Lodging Resources

Rural communities are finding creative ways to offer bike-friendly lodging. Here are a few examples that may provide inspiration for Dade County communities. For individuals who wish to provide traditional camping or short-term rental accommodations, it is advised to check with local land-use and zoning regulations to ensure these uses are permitted. Each community regulates these differently.

4.6.1 Hosted Lodging and Short-Term Rentals

Warm Showers

Warm Showers is a membership site that assists cyclists interested in staying with fellow cycling enthusiasts and hosting other bike travelers in return. Members pay a one-time fee to join the Warm Showers network, host travelers, and find potential hosts for their trips. Hosts and guests communicate in advance to arrange details of stays. For communities that have cyclists interested in hosting, this network could be a way to house visitors without developing new infrastructure.

Hipcamp

Hipcamp is a popular website for travelers seeking a camping experience. They can search Hipcamp for privately owned tent, RV, cabin, treehouse, glamping, or other lodging options. Hosts can create a listing for free for a range of properties, from open lots, cabins, to formal campgrounds or RV park businesses with amenities. Hipcamp charges a commission and credit card processing fee once reservations are booked.

Couchsurfing

Couchsurfing and similar services offer an alternative for low-budget wanderlust or hosting.

Airbnb/VRBO

Airbnb/VRBO offers short term rentals of private real estate, which have become increasingly popular in recent years. What started as a niche alternative to traditional lodging options, or as an option when no traditional lodging facilities were available, has become a major industry. Short-term-rental listings from companies like Airbnb and VRBO are available nationwide. Listings vary from single rooms to whole homes.

Short-term rentals also create challenges in local communities, including pressure on the existing housing market. Using underutilized spaces to develop short-term rental properties, such as vacant spaces above ground-level businesses or outbuildings rather than whole homes,

can provide lodging options without as much housing pressure. More information on lodging options and challenges around short-term rentals is available from this [NADO Tourism Accommodation brief](#).

4.6.2 Camping and Hostels

Montana Bike Camp—Montana

This [Twin Bridges, Montana (population ~400) bike camp](#) was built in 2009 to provide a welcoming place for bicyclists to spend the night, take a hot shower, or refuel. This 6-minute [video](#)from the Path Less Pedaled is an interview with bike camp founder Mike White. Mr. White describes watching cyclists pass and realizing it was like "watching gold flow down the river."

Pintler's Portal Hostel—Montana

[Pintler's Portal Hostel](#) is located in Anaconda, Montana (population ~9600) and was built in 2021. This hostel offers bunk beds, rooms, or the entire hostel, which sleeps up to 38 people. It was designed for outdoor enthusiasts who value adventure, affordability, and community.

Lander City Park Public Campground—Wyoming

[Lander, Wyoming City Park Public Campground](#) provides up to three free days of camping for campers in tents, trucks, cars, and vans in Lander's (population ~7600) beautiful city park. Facilities include restrooms, drinking water, shade trees, and a playground.

Dolores Bike Hostel—Colorado

[Dolores, Colorado bike hostel](#) was opened in fall 2023 in Dolores (population ~ 900), and offers shared bunk rooms, a private room or suit, as well as a coffee bar, co-working space, lounge area, modern kitchen, outdoor patio space, and sauna. See the case study in Dolores Bike Hostel—Dolores, Colorado to learn more about this bike-themed hostel.

5   CASE STUDIES, TRAININGS, AND RURAL WEALTH-CREATION RESOURCES

The first part of this chapter contains case studies from small towns that are working to attract more bicycle tourism. The next describes bicycle tourism training opportunities followed by resources on rural placemaking and rural traffic calming. This chapter wraps up with an overview of the rural-wealth-creation approach to economic development and other resources that may be useful to rural towns seeking to build on existing community assets and promote bicycle tourism.

5.1   Small Town Bicycle Tourism Case Studies

This section contains case studies on the different ways small towns are encouraging bicycle tourism.

5.1.1 Dolores Bike Hostel—Dolores, Colorado

Jake Carloni moved to Dolores, Colorado in 2019 and wanted to create an asset that locals would be proud of. A carpenter by trade, he used his skills to open a bike-themed hostel in fall 2023, envisioning an affordable, cool place where people could stay and enjoy the community. He renovated an old, downtown medical building (the cheapest per square foot commercial building in Montezuma County, according to Carloni).

Dolores Bike Hostel (Photo: WTI)

He worked closely with locals and asked what they valued, rather than making assumptions or trying to change the community. For example, many residents advised him to save the long-time Trumpet Vine growing on the property, thus he worked around the much-loved flowering plant to maintain that part of Dolores history. He is currently working with a couple of partners on financing, and he touts the small business development center in Durango as instrumental in helping him develop a business plan.

Building community

Carloni's focus on building community led him to include a coworking space (with coffee, tea, and snacks) in the front, along with a high-end kitchen and wellness space in the back for a massage therapist, sauna, cold pool and, someday, a hot tub. Efforts are ongoing to develop the commercial kitchen so that local food and baking entrepreneurs are in close proximity to farmers markets and catering events.

A tour of the hostel revealed Jake's talent as a carpenter and his creativity in incorporating reclaimed materials, including wood from past tenant Doc Merrit's desk, old doors, wood flooring, and skylights. This old building is now a clean, bright, welcoming space with beautiful, tiled showers, bunkrooms with lockers, and a couple of private rooms. Its proximity to a brewery and restaurant across the street, another local gathering space, makes it even more appealing, as does the opening of the nearby Kokopelli Bike and Board shop in 2021. The hostel's entryway bulletin board highlights local events, trails, and bicycle activities, like the nearby Zuma Bike Ranch. This is also a newer bicycle-related business aimed at creating a unique space for mountain bike enthusiasts to gather and enhance their riding.

Trails and Events

A developing network of mountain bike trails, in Boggy Draw on nearby Forest Service lands and at Phil's World on Bureau of Land Management lands in Cortez, are an asset for locals and draw bicycle tourists from near and far. Mountain biking enthusiasts and local entrepreneurs Shawn and Dani Gregory have been instrumental in growing these local trail networks and the bicycling culture. They have worked closely with the Southwest Colorado Cycling Association (SWCCA) and public land managers to develop and expand trail systems in the area. Shawn has volunteered countless hours designing and building trails and has created maps to let people know them (Big Loop Trails and Maps).

Dolores Bike Hostel founder Jake Carloni November 2023 (Photo: WTI)

Dani is one of the founders of the 12 Hours of Mesa Verde Mountain bike race, which now draws nearly 900 riders from around the country to southwest Colorado each May. She spearheaded the effort to make it a 12-hour event and served as the race director for many years. The race mission statement states, "The 12 Hours of Mesa Verde is a premier cycling event organized by volunteers dedicated to improving the lives of youth in Southwest Colorado." The event began 2003, but developed into its current 12 hour endurance race in 2007. (12 Hours of Mesa Verde, 2024). According to Dani, since its inception in 2003, the race has donated more than $800,000 to local youth organizations and programs with a focus on at-risk youth and/or youth empowerment.

In summary, the Dolores Bike Hostel is a community asset that will help grow the bicycle culture and tourism opportunities in this rural area of southwest Colorado.

5.1.2 Palisade, Colorado Bicycle Tourism Case Study

The Town of Palisade, known for its peaches, wine, and distilleries, has been developing its bicycle tourism options. In fall 2020, Palisade partnered with the Colorado Tourism Office

through the Colorado Rural Academy for Tourism (CRAFT) Recovery Mentor program to develop an inventory of priority bicycle routes and digital planning tools. This work included compiling an inventory of road, gravel, and mountain bike routes as well as scenic drives, hiking trails, and historical tours. This information was uploaded into a tourism account within the _Ride with GPS_ platform. The content was then published on visitpalisade.com so visitors had a single location to learn about different bicycle tourism experiences. See Appendix C: Bicycle Tourism Case Studies for the full case study on Palisades bicycle tourism from CRAFT (CRAFT, 2023).

5.1.3 Bentonville, Arkansas Bicycle Tourism Case Study

Home to the Walmart headquarters, Bentonville began leveraging mountain biking amenities as a workforce recruitment tool in 2006. Tom and Steuart Walton, avid bicyclists, and grandchildren of Walmart founder Sam Walton, recognized there was a need to attract and retain employees in Bentonville and donated the first piece of land to develop mountain bike trails. Over the next ten years the Walton Family Foundation generously donated $74 million to build 163 miles of paved and unpaved bike trails. While the Walton Family Foundation has played an integral role in developing the trail system, community partners and volunteers are critical to the strong biking culture. See Appendix C: Bicycle Tourism Case Studies for the full case study on Bentonville bicycle tourism from CRAFT. (CRAFT, 2023)

5.1.4 Frisco-Highline Trailhead in Willard, Missouri

Ozark Greenways manages the Frisco-Highline Trail and encourages businesses along the trail and at the trailhead. The Willard Trailhead hosts a farmers market every Friday in the warmer season and there is a business that offers snow cones in summer and hot drinks in colder months. Ozarks Greenway advises businesses on details, such as required insurance and the minimum-use fee. With their support, the Frisco Bicycle Rental and Sales shop operated at the trailhead from 2018 to 2022. It was built using a temporary structure consisting of two 20-foot-long shipping containers and featured a rooftop deck. While the shop closed after four years (the family became too busy to continue running it; (Springfield Business Journal, 2022), it offers a good example of a creative way to contribute to the area's bicycling culture.

5.1.5 Bicycle Tourism along US Bicycle Route 76 in Cassoday, Kansas

Business leaders in Cassoday, Kansas (population ~113) see bicycle tourism-oriented development as a viable strategy for community revitalization. After a market study, leaders there are working to fill a void for cyclists by creating more lodging and restaurant options in the community to serve people riding on the US Bicycle Route 76, which runs right through town. The scenic Flint Hills have become a Kansas destination that hosts a gravel ride nearby.

5.2 Bicycle Tourism Trainings

The Colorado Tourism Office and Colorado Rural Academy for Tourism have created a free self-paced on-demand training on bicycle tourism. The training takes 30-60 minutes to complete

and is accompanied by a comprehensive package of resources, including case studies, a checklist, complete presentation slides and notes, and a resource guide. The training is divided into four chapters: 1) Understanding Bicycle Tourism; 2) Cycling in Colorado; 3) Product Development; and 4) Marketing & Promotion.

For those looking for more extensive training, the Adventure Travel Trade Association offers a self-paced on-demand training on Developing Self-Guided Tours. The training is fee-based and divided into nine courses.

5.3   Traffic Calming and Rural Placemaking

Traffic calming refers to physical design and other measures put in place on existing streets to reduce motor vehicle speeds and improve safety for people walking and biking. Many communities are implementing low cost, short term "pop-up" traffic calming projects, which allow residents to try new ideas before installing costly infrastructure.   Figure 24 shows a pop-up neighborhood traffic circle in Hamilton, Montana (population 5,165).

Figure 24: Pop-up traffic circle in Hamilton, MT (Photo: City of Hamilton)

Figure 25 shows pop-up curb extensions on a busy road in Big Sky Montana (population 3,054). More information on the Big Sky project and a traffic calming toolkit for rural communities can be found here.

Figure 25: Pop-up curb extensions in Big Sky, MT (Photo: WTI)

Traffic calming is one way to help create streets that are safe for people of all ages and abilities. Resources include Montana's Pop-up Traffic Calming Guide, which can be found here and Burlington, Vermont's quick build design and material standards that can be found here.

Placemaking features such as public art and planters can be incorporated into traffic calming projects. Project for Public Spaces has more resources on placemaking. The Rural America Placemaking Toolkit can be found here.

The [Small Town and Rural Multimodal Networks](#) contains guidance for creating walkable and bikeable places for people of all ages and abilities. The guide is focused on connected networks of walk/bike facilities and provides design information on a variety of facility types such as the bicycle boulevard that combines road markings, traffic-calming and crossing improvements to enhance bicyclist comfort and priority as shown in Figure 26. It provides case studies from small towns across the country that may inspire ideas for communities in Dade County.
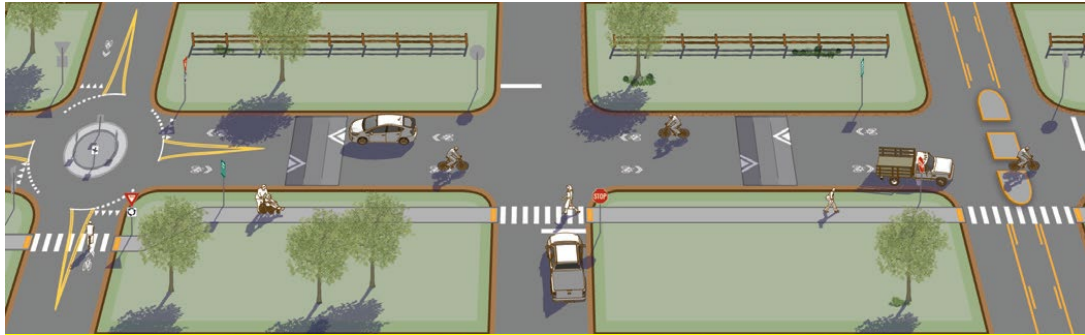

Figure 26: Bicycle boulevards (Source: Small Town and Rural Multimodal Networks, 2016)

5.4   Rural Wealth Creation Approach to Economic Development

Rural wealth creation is an approach to rural economic development that is focused on building upon existing assets in communities and regions, developing strategies that support local ownership and control of economic assets, and being intentionally inclusive in the outreach process.

This approach involves building multiple forms of community assets at one time, without doing harm to other forms of community assets. The types of assets identified in the rural wealth creation framework are referred to as Community Capitals (Figure 27). To learn more, see [Rural Wealth Creation article](#) (Levy, 2021) and [NADO Wealth Creation](#).

The capital		The definition
	Individual	The existing stock of skills, understanding, physical health and mental wellness in a region's people.
	Intellectual	The existing stock of knowledge, resourcefulness, creativity and innovation in a region's people, institutions, organizations and sectors.
	Social	The existing stock of trust, relationships and networks in a region's population.
	Cultural	The existing stock of traditions, customs, ways of doing, and world views in a region's population.
	Natural	The existing stock of natural resources—for example, water, land, air, plants and animals—in a region's places.
	Built	The existing stock of constructed infrastructure—for example, buildings, sewer systems, broadband, roads—in a region's places.
	Political	The existing stock of goodwill, influence and power that people, organizations and institutions in the region can exercise in decision-making.
	Financial	The existing stock of monetary resources available in the region for investment in the region.

Figure 27: Community Capitals and definitions

6   RECOMMENDATIONS

Dade County attractions include its rural setting, its lack of traffic lights, and the rolling hills and historical features such as cemeteries and Hulston Mill. The following recommendations may be used to jumpstart Dade County's journey to attract more bicycle tourism.

- Install Ozark Prairie Trail wayfinding signage.
- Map a network of gravel routes connecting communities and destinations in the area and make it available to local and visiting cyclists. Consider targeting the self-supported gravel rider market; they appear to be a good match for local assets.
- Start and end routes in Greenfield or Lockwood, have them vetted by local riders, and then mapped by organizations like Adventure Cycling, Bikepacking Roots or Bikepacking Overnighters See sample itinerary worksheet in Appendix D.
- Use the Bicycle Level of Traffic Stress analysis in 3.1 and 3.2 when talking with area bicyclists about developing and promoting their assets in Dade County, including the Ozark Prairie Trail and other routes.
- Build on the existing Ozark Prairie Trail brand to more widely spread the word about Dade County's bicycling assets. Start with strategies from the Path Less Pedaled (Section 4.1.2).
- Use "Cyclists Welcome" or "Bicyclists Welcome" signage at community gateways and key visitor services such as restaurants and other suggestions per Heidi Beierle's top 10 ways a community can welcome cyclists (Section 4.2).
- Get the word out about bicycle opportunities in Dade County, such as Ozark Prairie Trail, which is available to ride at any time, and specific events like Frankenreide. For help spreading the word, see contacts listed in Section 2.3 Missouri Trail- and Bicycle-Related Groups.
- Use the following strategies for future gravel ride events:
    - Give a deadline for registration that is at least a week before the event to give riders some urgency and help organizers know how many people to plan for.
    - Have a lower price for early registration and a higher price for later registration to give riders incentive to sign up early and do not allow event day registration.
- Develop a guide that extolls Dade County assets and is separate from other regional attractions. See an example in Figure 23 (Section 4.5.1). See Travel with a Wiseguy's 2-part Exploring Dade County, Missouri videos for more ideas.
- Research and participate in economic development programs for rural areas. Explore microenterprise and small-business development and support programs. Local leaders in Dade County should refer existing small businesses to SMCOG for their Revolving Loan Fund (RLF) and new start-ups to New Growth for entrepreneurship support. Business should also be referred to the Women's Business Center (which also supports men).
- Market existing lodging first (camping at Hulston Mill, informal camping spots where property owners allow it) then develop lower cost lodging options, such as adding new sites to Hipcamp. Over time, it may be possible to develop more complex options like a bike-oriented hostel or other properties.

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APPENDIX A: LOCAL, STATE AND REGIONAL PLANNING OVERVIEW

This section reviews existing plans for the Southwest Missouri Council of Governments (SMCOG) ten county area. It is intended to provide an understanding of this area's economic, transportation and community needs, with a focus on Dade County. Figure 22 shows the ten county SMCOG region and Ozarks Transportation Planning Organization (OTO), located in portions of Green and Christian Counties (SMCOG, 2022). Dade County is rural with a population of 7,584 based on 2021 American Community Survey 5-year estimates.
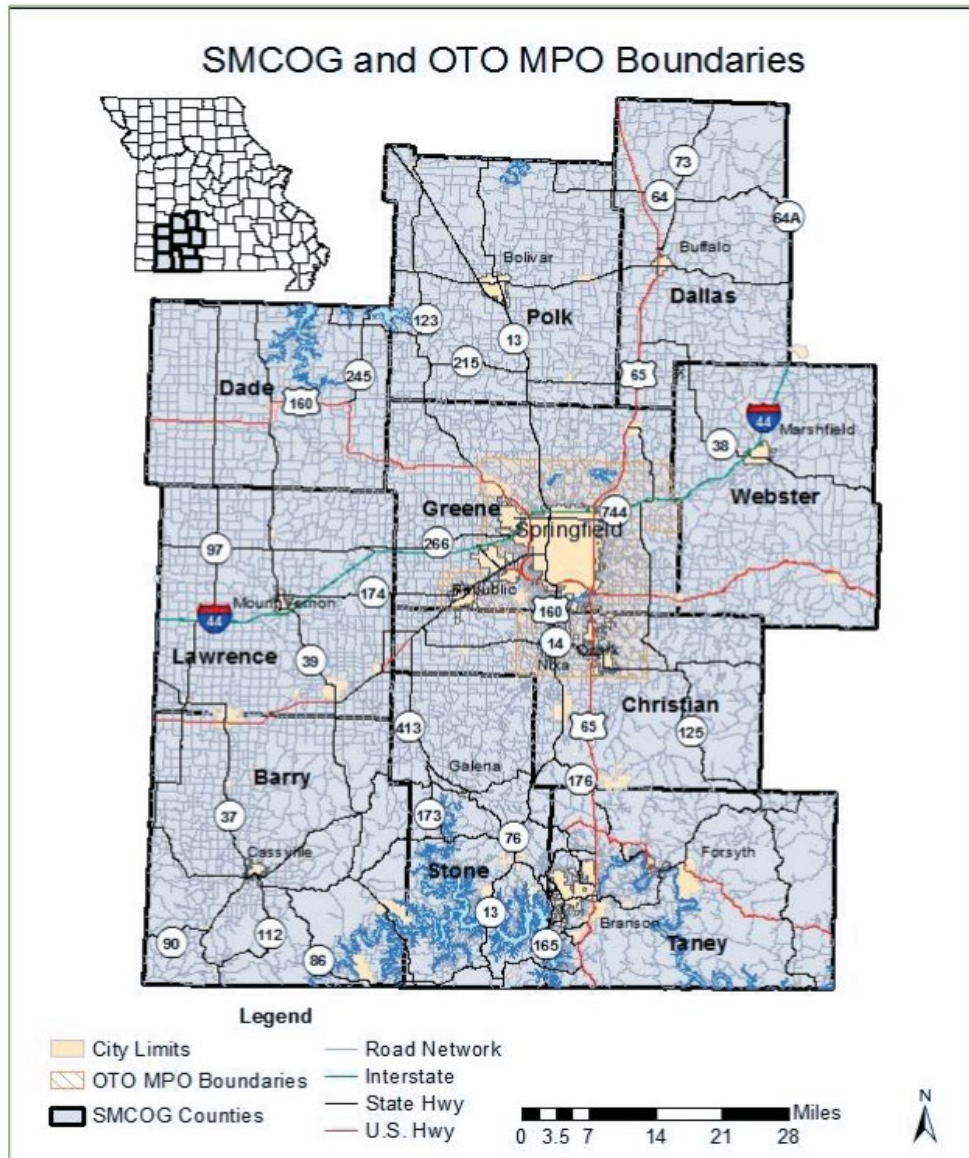

Figure 1.1 SMCOG and OTO Boundaries

Figure 22: SMCOG and OTO Boundaries (SMCOG, 2021)

Relevant local planning documents are summarized in the following sections.

SMCOG Regional Transportation Plan 2022

The purpose of the [SMCOG Regional Transportation Plan](#) is to submit the transportation needs for this region to MoDOT for inclusion in the State Transportation Improvement Program (STIP) and the State's Long Range Transportation Plan (LRTP). The STIP includes near term projects while the LRTP deals with projects scheduled over 7-10 years. Chapter 5 identifies and prioritizes the top 15 regional needs for road and bridge projects and the top 10 regional needs for bike and pedestrian projects, with Dade County projects listed below.

- The 2022 SMCOG Road and Bridge Needs Table (page 34), priority #10 calls for alignment and safety improvements in Dade County on Route 160 and 39. Improvements are needed on 160 from the Barton County line to Routes MM/FF, and at the intersection at Route 39 in Greenfield. There are safety concerns with commercial truck traffic and narrow, winding roads. Installation of shoulders is needed with 8 feet wide shoulders preferred. Route 160 is a freight route and the curve between Route 245 and 203 has seen trucks turning over. In Greenfield, from Route 39 south, drivers must look back to see oncoming traffic on 160. To leave Route 160 North and travel onto Route 39 North, drivers have to cross oncoming traffic.

- The 2022 SMCOG Bike and Pedestrian Needs Table (page 36), priority #6 calls for sidewalk along route 39 and 160, from Pennington Seed to address people walking on the highway to reach the Dollar General.

An updated list of regional priorities by year can be found at https://www.smcog.org/programs-transportation. Scroll down to the transportation section to see SMCOG's top 15 Road and Bridge Priorities and Top 10 Bicycle and Pedestrian Priorities by year. The MoDOT 2024 Construction Guide did not list any projects in Dade County in 2024.

SMCOG Coordinated Public Transit-Human Services Transportation Coordination Plan 2023

[This plan](#) presents an evaluation of the ten-county region's transportation needs of senior citizens, individuals with disabilities, and low-income individuals while identifying and prioritizing strategies for addressing these needs. OATS is the primary transit provider for much of rural Missouri and currently operates in all of SMCOG's ten counties. OATS is a not-for-profit 501(c)3 corporation that provides transportation to 87 counties in Missouri. It provides transportation for the rural public, senior citizens, and people with disabilities.

SMCOG Comprehensive Economic Development Strategy 2016 /2023 Update

This document presents an evaluation of the ten counties' opportunities, resources and constraints to economic development, and identifies a strategic plan of action to achieve greater economic diversity and growth, as well as employment opportunities within the region. The SMCOG region provides a range of industry, evolving from a mainly agricultural area in the 1700s and 1800s to a major healthcare, educational, and manufacturing capital of Missouri. While a skilled workforce exists, there are more jobs than employees available who are able and qualified to work. In addition, the area has been experiencing an aging population and an outflow of younger citizens to other areas.

With a lot of untapped potential, Dade County has just recently begun to see renewed investment. Some municipalities, such as Lockwood, have begun to invest in their infrastructure, from a sidewalk grant issued through MoDOT to the implementation of LED lights for the city. Lockwood also has a community foundation organized to help fund city projects with matched funds. Lockwood adopted a new comprehensive plan in 2022. In addition, interest is growing in financing retail development on Greenfield's square. The area also has a lot of untapped potential in Stockton Lake, which attracts over 1 million people each year for its hiking, fishing, swimming, and hunting opportunities. A committee of key economic development partners developed the following goals as a guide for economic growth throughout the region:

- Improve the quality of life throughout the region in terms of culture, health and safety
- Expand the stock of affordable housing across the SMCOG region.
- Increase employer-specific skills and training opportunities.
- Attract and retain a skilled workforce who will be qualified candidates for hire.
- Improve marketing of employment opportunities or careers for skilled workers.
- Market/attract new businesses to SMCOG region.
- Support existing business growth and expansion of businesses
- Assist new business creation and entrepreneurship in the SMCOG region.
- Improve the connectedness and maintenance of the region's multi-modal transportation network
- Improve urban and rural access to faster Internet/broadband speeds.
- Revitalize downtowns and neighborhoods in urban and rural communities
- Mitigate impacts of potential disasters and natural hazards

2018-2022 Show me the Missouri Outdoors SCORP

The Statewide Comprehensive Outdoor Recreation Plan(SCORP) identifies outdoor recreation issues of statewide significance and evaluates the supply and demand of public outdoor recreation resources in Missouri. Public land in Missouri totals approximately three million acres, which accounts for about 6.6% of its 44,248,320 total acres. Missouri is distinctive

among many states in that it has two state agencies responsible for managing the state's outdoor recreation resources.

a. The Missouri Department of Conservation (MDC) manages the state's fish, forest and wildlife resources,

b. Missouri State Parks (MSP), a division of the Missouri Department of Natural Resources (MoDNR), preserves the state's outstanding natural landscapes and cultural landmarks. Both agencies are funded by sales taxes.

More than 500 miles of National Recreation Trails designated by the U.S. Department of Interior traverse the state. The SCORP mentions Stockton Lake, which has several campgrounds and boat access as well as Stockton State Park, located just north of Dade County. The state park provides a marina with a sailing school, boat launches, fishing sites, a swimming beach, a campground, lodging cabins, and hiking and mountain biking trails. Additionally, the 20- acre Bona Glade Natural Area is located within the Stockton Lake project area.

The SCORP identified seven goals and subsequent objectives for meeting future recreation needs of Missourians (page 73). Goals 2 and 5 appear most relevant to bicycle tourism and trail opportunities and are shown below (SCORP page 75).

Goal 2. Expand Missouri's trail system and promote trails as a critical component to engaging in an active and healthy lifestyle. Expansion should be encouraged where fiscally reasonable, recognizing that trail managers have finite resources for development, maintenance, operation, and liabilities.

Goal 5. Promote the health and community benefits of the outdoors through partnerships, messaging, and programming.

In summary, the review of planning documents demonstrates support for active transportation, trail connections and bicycle tourism in Dade County and surrounding areas.

APPENDIX B: MISSOURI DEPARTMENT OF TRANSPORTATION TRAFFIC DATA

MoDOT's online Data Zone system shows traffic volume data. The screenshot below shows a sample of available data, showing an average of 733 westbound vehicles per day and 736 eastbound on State Route 160 east of Greenfield. This section of road is highlighted in green on the Figure below, which also shows traffic volumes for roadways connecting to Greenfield.

State Route 160 east of Greenfield

Westbound	Eastbound
US 160 W (Year: 2021)	US 160 E (Year: 2021)

Name	Quantity
AADT	733
AAWDT	765
MOTORCYCLE VOLUME	3
PASSENGER CAR VOLUME	502
PU/PANEL TRUCK VOLUME	194
BUS VOLUME	2
SINGLE UNIT TRUCK VOLUME	22
COMB SEMI TRAILER VOLUME	9
PEAK HOUR VOLUME AM	93
PEAK HOUR VOLUME PM	64

Show Traffic Daily Volume
Note:Volumes represent one direction only. Select other direction to see opposing volumes.

Name	Quantity
AADT	736
AAWDT	768
MOTORCYCLE VOLUME	4
PASSENGER CAR VOLUME	502
PU/PANEL TRUCK VOLUME	197
BUS VOLUME	2
SINGLE UNIT TRUCK VOLUME	22
COMB SEMI TRAILER VOLUME	9
PEAK HOUR VOLUME AM	57
PEAK HOUR VOLUME PM	99

Show Traffic Daily Volume
Note:Volumes represent one direction only. Select other direction to see opposing volumes.
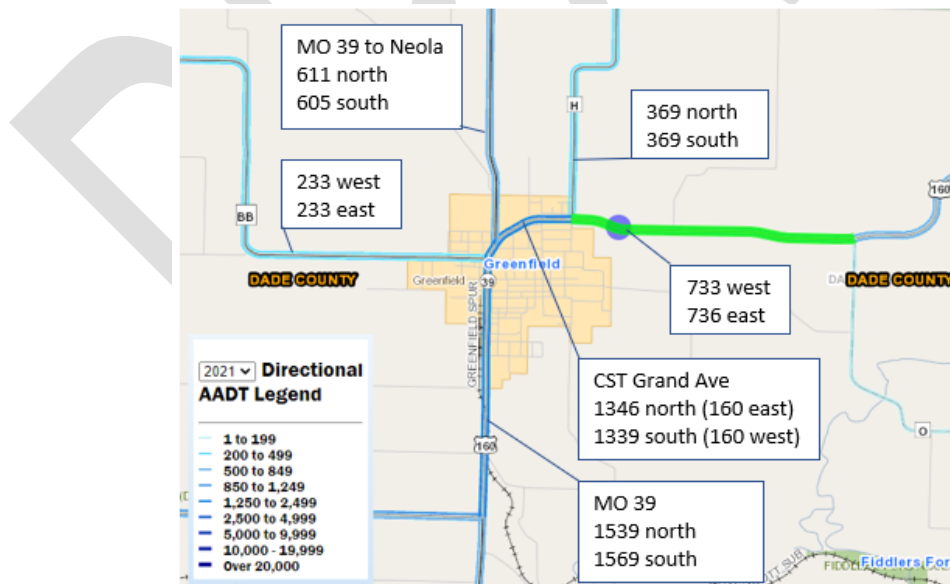
Average Annual Daily Traffic (AADT) on roads around Greenfield

Photos of the roads may be viewed by clicking on MoDOT's truck icon (in upper left corner). The photos below shows that Route 160 and County Road H both lack shoulders.

	Route 160 traveling west into Greenfield near junction at County Road H
	County Road H traveling south into Greenfield

Traffic volumes are available for State and County roads shown in blue below. The lighter blue shows lower volume roads which are typically more attractive to people riding bicycles.
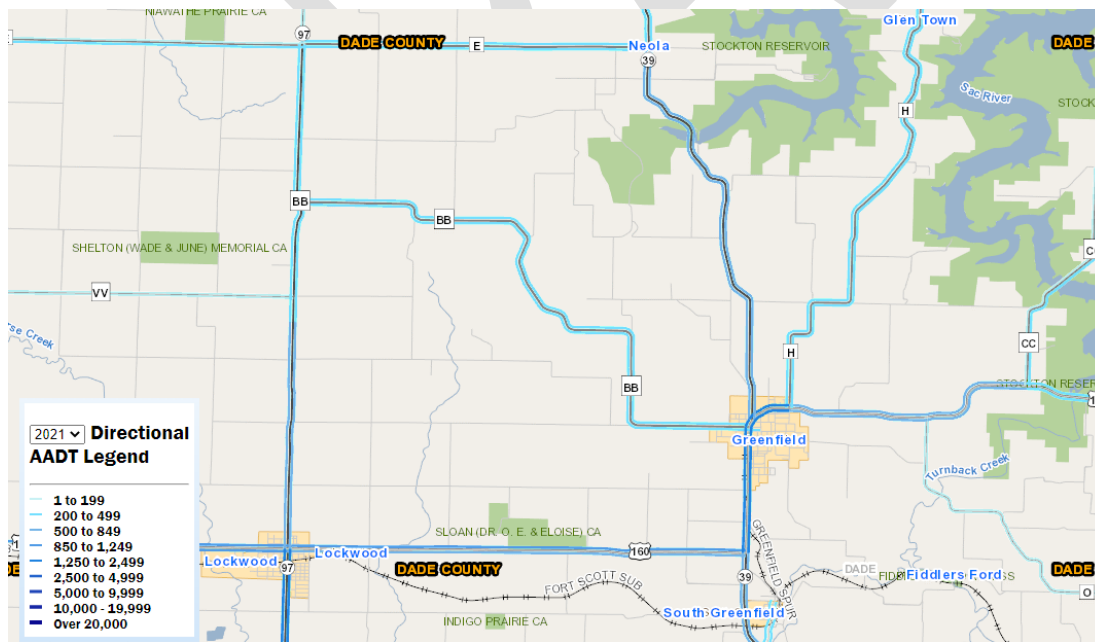
MoDOT Traffic Volume Map near Greenfield

APPENDIX C: BICYCLE TOURISM CASE STUDIES

The bicycle tourism case studies on Palisades Colorado and Bentonville Arkansas that follow were developed by the Colorado Rural Academy for Tourism (CRAFT) and are replicated here with the intent of helping other rural communities. The Colorado Rural Academy For Tourism (CRAFT) was a series of programs that helped communities integrate tourism into their economic development strategies. CRAFT is no longer active and was only available from 2014 to 2021. Follow this link to learn more about active Colorado Tourism Office Destination Development programs.

Colorado Rural Academy for Tourism (CRAFT, 2023)

https://oedit.colorado.gov/colorado-rural-academy-for-tourism

Bicycle Tourism Case Study
Town of Palisade

Summary

The Town of Palisade, located in the Mountains and Mesas travel region, has been quietly building its reputation as a haven for cyclists. More commonly known among agritourists for its peaches, wine, and distilleries, this Western Slope destination has an increasingly diverse set of experiences to offer for visitors looking for bicycle tourism options.

In fall 2020, the Town of Palisade partnered with the Colorado Tourism Office through the CRAFT Recovery Mentor program to develop an inventory of priority bicycle routes and digital planning tools to inspire visitation throughout the year and increase visitor spending at Palisade businesses.

Strategies

Develop an Asset Inventory
The Town of Palisade worked with their CRAFT Mentor to compile an inventory of road, gravel, and mountain bike routes as well as scenic drives, hiking trails and historical tours. A

point of interest library was also compiled that included bicycle friendly businesses along the routes.

All of this information was uploaded into a tourism account within the *Ride with GPS* platform the Town of Palisade had recently started using. The content was then published on visitpalisade.com to provide visitors with a single location to learn about different bicycle tourism experiences and plan the stops they would make along the way. Visitors can also download the GPS files of the route onto their phone so they can follow turn by turn instructions while they travel within the destination and spend money at businesses along the way.

Garner Support and Promotional Assistance
Once the content was published on *Ride with GPS and visitpalisade.com*, the Town of Palisade began promoting the new content and building awareness of the experiences. The Town also contracted with local photographers to produce high-quality photo assets and compile a robust catalogue of images to enhance the promotion of the experiences.

The Town then convened local partners to build awareness of their work and invite input on additional routes, the points of interest, and additional creative assets. The Town also shared the success of their work with the Palisade Chamber of Commerce, local Rotary Club, and Colorado Plateau Mountain Bike Trail Association and other organizations to further garner support and make the case for future investments in bicycle tourism.

1

Key Takeaways

The Town of Palisade had an existing number of bicycle routes, but a lack of planning information related to them created a barrier for visitors to experience them. By leveraging an existing digital platform like Ride With GPS, the Town of Palisade was able to compile robust information about its routes online and increase engagement with local stakeholders around bicycle tourism opportunities.

Key Partners
- Town of Palisade Tourism Advisory Board
- Ride with GPS
- Slate Communications
- Colorado Plateau Mountain Bike Trail Association

Source: This case study was developed by the Colorado Rural Academy for Tourism

Bicycle Tourism Case
Study
Bentonville, Arkansas as "Mountain Bike Capital of the World"

Summary

Home to the Walmart corporate headquarters, Bentonville, Arkansas began leveraging mountain biking amenities as a workforce recruitment tool in 2006. Passionate cyclists themselves, Tom and Steuart Walton, grandchildren of Walmart founder Sam Walton, recognized there was a need to attract and retain employees in Bentonville and donated the first piece of land to develop mountain bike trails.

Over the next ten years the Walton Family Foundation generously donated $74 million to build 163 miles of paved and unpaved bike trails. And while the Walton Family Foundation has played an integral role in building Bentonville's reputation as the "mountain biking capital of the world," it is the community partners and volunteers who are the heart and soul of the destination's mountain bike culture.

While Bentonville is easily accessible for business travelers doing business at the Walmart headquarters, there had previously not been a concerted effort to drive leisure visitors to the area. Because of the infrastructure in place for business travelers, such as daily direct flights from major markets and a range of accommodations, the destination identified an opportunity to fill flights and hotel rooms on weekends with tourists.

Strategies

Nonprofits Work Together

The Walton Family Foundation offers grants for trail building within Bentonville and throughout the state of Arkansas. The Foundation also works closely with International Mountain Bicycling Association (IMBA) to support trail maintenance, and actively partners with organizations like People for Bikes and local educators and numerous others.

Examples of the Walton Family Foundation's cycling related philanthropy include:

- $1 million grant to a local community college allowing the school to launch an accredited two-semester Bicycle Assembly and Repair Technician program, with classes planned to start in fall 2021.
- The Foundation partnered with Visit Bentonville and IMBA to host three Trail Labs in Bentonville, where attendees learn what it takes to create a model trail community. Classroom-style workshops and field-based tours in key Ozark (Oz) Trails locations will highlight best practices in one of Northwest Arkansas' IMBA Ride Centers.

- Supported by a grant from the Walton Family Foundation at the recommendation of Steuart and Tom Walton, PeopleForBikes announced a five-year program to help Benton County, Arkansas businesses become national leaders in bicycling, realize the return on investment from an active workforce that embraces bicycling, both for transportation and recreation, and position Northwest Arkansas as the national model for getting more people riding bikes through broad-scale cultural change. While the region is already well known for its world-class mountain biking and growing network of nearly 500 miles of trails and paved paths, this collaborative effort aims to help Benton County businesses, both large and small, realize the benefits of bicycling as a whole to create a better, healthier community.

*See a list of Walton Family Foundation grant

recipients.

Design for Inclusivity

Bentonville adopted a holistic approach for designing bike infrastructure for all abilities. All new trails and terrain parks are designed with rider progression in mind, with the goal of creating cyclists rather than just attracting them. Bike Bentonville and trail advocates seek the perfect mix of trail difficulty for all ages and abilities. Trails are located close to residential neighborhoods and connect to downtown, and bike parks are purposely built near schools. The city has 130 miles of biking trails, including a vast paved network,

connected to downtown and has direct access to the more than 250 miles of trails within the Oz (Ozark) Trail System.

Incorporate Off-Trail Experiences

The cycling-centric atmosphere has informed development in the city's downtown center as well, with bike-themed public art, bike-centric wayfinding signs, the Phat Tire bike shop that occupies a large corner of real estate downtown, bike friendly hotels, a plethora of craft breweries, and even a life-size diorama of the Oz Trails at the airport. Bike rentals and demos are abundant, offering everything from full-suspension mountain bikes, to gravel and road bikes, to e-bikes for visitors and business commuters, to kids bikes and bike trailers.

Key Takeaways

The $74 million investment in trails has been a boon to economic growth in northwest Arkansas. In 2017, bicycling provided a $137 million boost to the region, in part because proximity to bicycle infrastructure has encouraged relocation to the area.

Bentonville's reputation as a bike-friendly community has led to a notable increase in cyclists and families on all types of bikes rolling through downtown, stopping to dine and take in the arts and culture scene before and after hitting the trails.

With generous support from the Walton Family Foundation, Bentonville and the surrounding area have succeeded in creating an internationally-acclaimed cycling community and destination, nearly from scratch. The Walton family and community leaders recognized the numerous economic, quality of life, and health and well-being benefits of cycling and inspired the community to embrace cycling as a way of life. This holistic approach to incorporating cycling into the community's DNA, as well as positioning the area as a cycling destination, has paid off for the destination. The resulting bicycling tourism product is authentic and fully supported by the community.

Key Partners
- Walton Family Foundation
- Bike Bentonville
- Visit Bentonville
- IMBA
- Local Trail Groups
- Volunteer

APPENDIX D: SAMPLE BICYCLIST SPENDING QUESTIONNAIRE AND ITINERARY WORKSHEET

What is your Zip Code?

How often, on average, do you use the Trail? (Check one)

Daily, 3-5 times/week, 1-2 times/week, once a week, a couple times a month, once a month, few times a year, first time

Please identify your age group

Under 15, 16-25, 26-35, 36-45, 46-55, 56-65, 66-75, 76 and older

Were any children 15 years of age or younger with you on your trail experience?

What is your gender?

What is your primary activity on the trail?

Biking, walking/hiking, horseback riding, nature study, wildlife viewing, fishing, visiting a trail town, other

Has the trail had an influence on the type / frequency of activity you participate in?

Yes, No

Generally, when do you use the Trail? (Check one)

Weekdays, weekends, both

How much time do you generally spend on the Trail on each visit?

Less than 30 minutes, 30 minutes-1 hour, 1-2 hours, 2 hours or longer

During your visit did you:

Bird watch, watch wildlife, geocache, visit museums, visit a trail town, dine at a restaurant or a café, shop, other

How did you find out about the Trail?

Word of mouth, roadside signage, drive past, newspaper, bike shop, tourist information center, Social media, internet, other

Has your use of the Trail influenced your purchase of the following?

Bike, ebike, bike supplies, auto accessories, clothing, nothing, other

How much did you spend (in total $) on these items in the past year?

In conjunction with your most recent trip to the Trail, did you purchase any of the following? (Select all that apply.)

Bottled water/soft drinks, candy/snack foods, sandwiches, ice cream, meals at a restaurant along the trail, attractions, retail, bike rental, film, none of these, other

How much did you spend (in total $) on these items during your most recent trip?

Has your use of the Trail influenced your purchase of the following?

Bike, ebike, bike supplies, auto accessories, running/walking/hiking shoes, clothing, nothing, other

Did your visit to the Trail involve an overnight stay in one of the following types of accommodations?

Motel/hotel, bed & breakfast, friend/relative home, air b&b, campground, other

Approximately how much did you spend on overnight accommodations per night?

Survey information from Rails to Trails Conservancy, 2005.

Additional Bicycling Impact Resources:

https://www.railstotrails.org/build-trails/trail-building-toolbox/management-and-maintenance/trail-user-surveys-and-counting/

https://tandemsoftheozarks.com/

https://www.bicycleretailer.com/

https://nbda.com/programs/

https://bikeleague.org/bfa/

Sample Itinerary Worksheet: Target audience: Backpackers from Springfield

Activity	Location/Destination	Supplies and Services Needed	Transportation or Route to Next Step
eating	Greenfield: That Place Restaurant, Beatnik Coffee House, Off the Square Donuts… Lockwood: Prairie Station…	Water, drinks, food options -restaurants, bakeries/coffee shops, grocery stores…	Add destinations to map. Add bicyclists welcome signs and install bike parking at destinations.
gravel riding	Ozark Prairie Trail routes: Phantoms Pass 49.6 miles, Kings Loop 37.5 miles, Crybaby Loop 20.1 miles. Identify bike routes from Springfield to Dade County destinations on low speed/volume roads.	Route maps/signage. For routes that start/end in Greenfield, identify parking areas. See Palisade, CO Fruit and Wine byway map and Cormac Berry's Tasty Lolly for bike route map examples.	Vet routes w/ Springfield area bikepackers and Adventure Cycling Association. Then share on sites such as www.Bikpacking.com/over nighters/ , www.gravelmap.com www.ridewithgps.com
lodging	Camping at Hulston Mill. Identify other lodging options along route	Lodging may range from camping to Airbnb's to Warm Showers where locals host cyclists.	Add Hulston Mill to route maps. Add bicyclist sign in/logbook at Hulston Mill.
History themed attractions	Hulston Mill, Greenfield Opera house, historic cemeteries… See Travel with a Wise Guy videos for ideas.	Map showing Dade County attractions /points of interest for curious bike travelers.	Highlight history, nature, local folklore… reasons for people to linger and come back.

Target audience:

Activity	Location/Destination	Supplies and Services Needed	Transportation or Route to Next Step