



Existing Conditions Memo

June 26, 2024



JEFFERSON
COUNTY, MISSOURI

CMT
Engineers and Consultants

SWT DESIGN

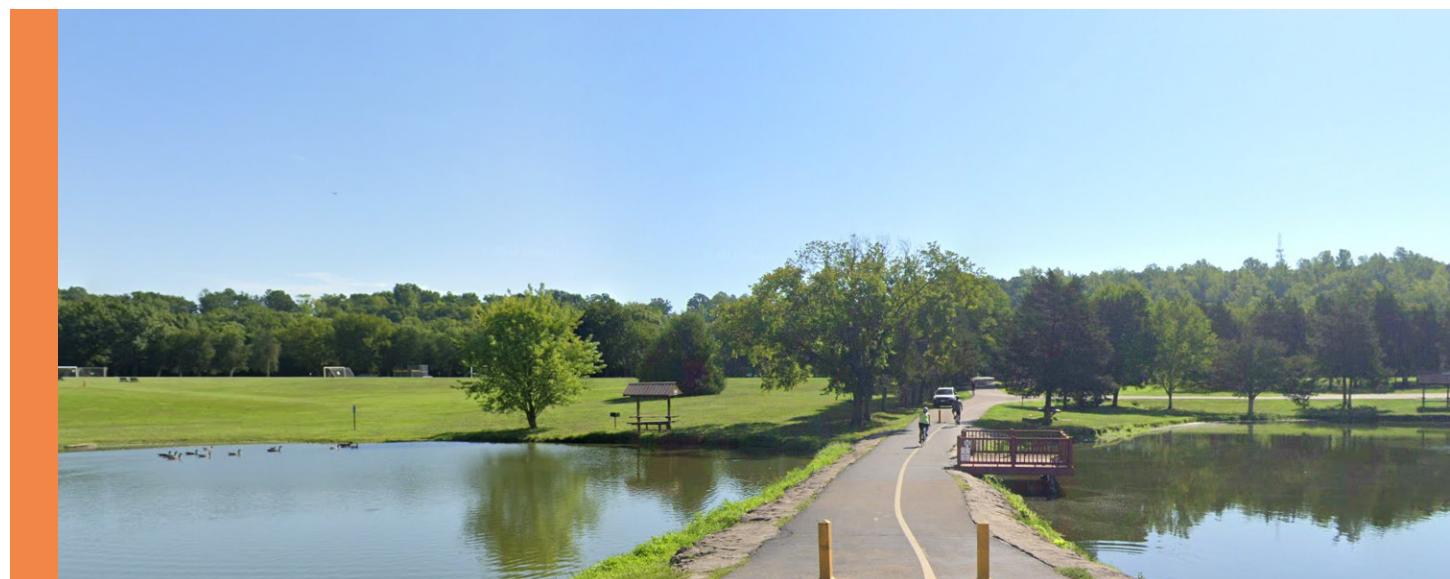
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01

Project Summary

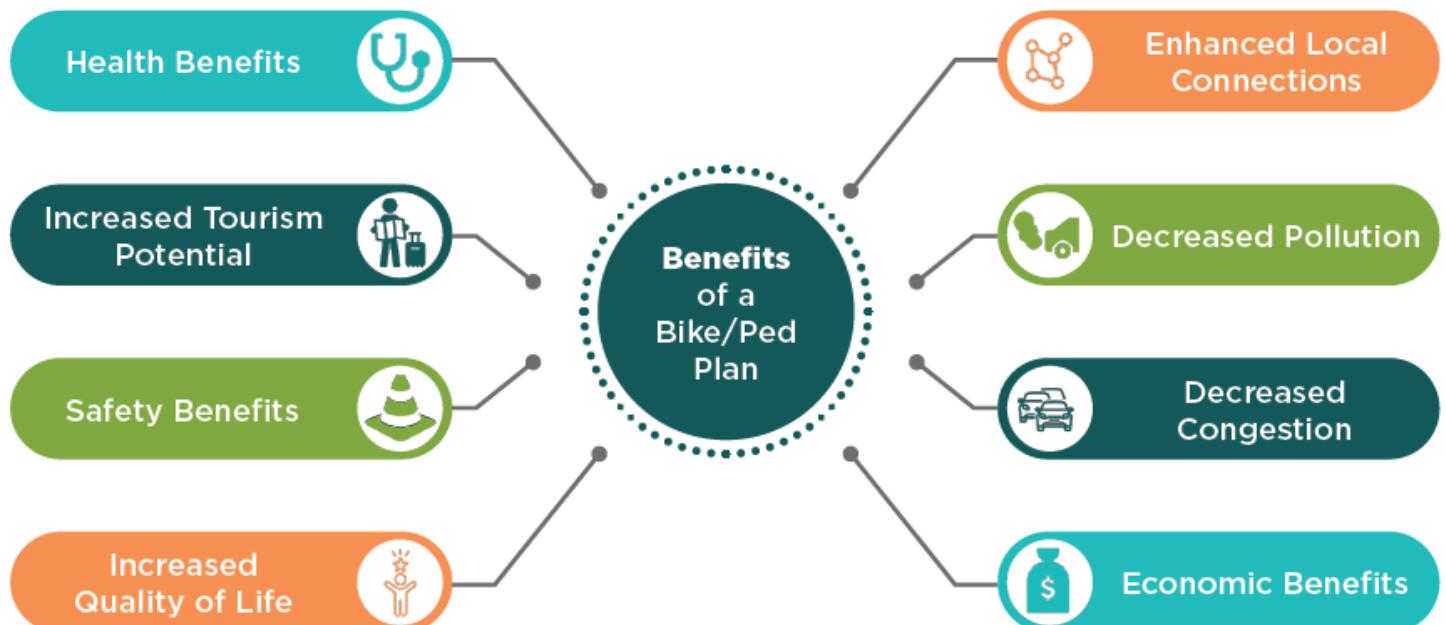
Jefferson County is completing its first County-wide Plan for walking and biking. The goal of this plan is to identify important routes for walking and biking, coordinate city level planning for walking and biking, and prioritize future projects for implementation to support all transportation modes. A more walkable and bikeable community supports a higher quality of life for all residents.

The ongoing comprehensive plan update has identified several priorities for increasing walking and biking opportunities in Jefferson County, both for recreation and for daily transportation trips, especially commuting to work or school. This more detailed plan will prioritize missing critical connections for more informed project decisions for years to come.



Plan Benefits

A wide range of benefits can be outcomes of the Walk Bike Jefferson County Plan. By following a plan and promoting walking and biking in Jefferson County, residents can experience a range of health benefits, including physical health from increased exercise and better air quality, and mental health through an increased quality of life. Enhancing local connections to more destinations can spur economic development and make it easier for residents to get to where they need to go without a car, which also decreases traffic congestion. An expansive walking and biking network can lead to increased tourism in Jefferson County, especially considering the natural beauty and scenery in the county. Improved walking and biking infrastructure improves safety for everyone who uses roadways in Jefferson County.



Plan Goals

The Walk Bike Jefferson County Plan aims to create a succinct resource for the county to continuously improve and identify pedestrian and cycling focused projects for the Jefferson County area. This plan aims to achieve the following goals:

- 1** Link together community assets
- 2** Create a network for walking
- 3** Create a network for biking
- 4** Prioritize projects for implementation based on a phased approach
- 5** Improve safety, comfort and accessibility
- 6** Encourage more walking and biking in Jefferson County

This project is funded by the Jefferson County Department of Public Works. As a county-funded plan, the primary focus is county-owned arterial and major collector roadways. However, connectivity does not stop at jurisdictional boundaries. State owned (Missouri Department of Transportation, MoDOT) and local agency owned arterials and collectors are also included in this analysis. While ownership will impact project prioritization, it is the goal of this planning effort to build significant collaboration with partner planning agencies for future implementation.

Project Timeline

Project Overview

Jefferson County is completing its first ever County-wide Plan for walking and biking. The goal of this plan is to identify important routes for walking and biking in Jefferson County, and identify future projects for implementation to support all transportation modes.

The ongoing comprehensive plan update has identified several priorities for increasing walking and biking opportunities in Jefferson County, both for recreation and commute. A detailed plan will prioritize missing critical connections for more informed project decisions for years to come. A more walkable and bikeable community supports a higher quality of life for all residents.

Many communities have recently completed bike and pedestrian plans, in part due to increased bicycling and an increased interest in bicycling after the pandemic. Communities have also recognized the need to address the trend of increasing pedestrian fatalities through planning for safety, accessibility, and expanded walking and biking infrastructure.



EXISTING CONDITIONS

Compile existing conditions information. Review relevant plans, programmed projects, and existing facilities. Analyze existing level of traffic stress and level of service for people on bike and on foot. Map important community destinations and land uses. **(THIS DOCUMENT)**

COMMUNITY ENGAGEMENT

Public launch of community engagement effort with an initial open house in summer 2024. Complete walk & bike audits, attend community events, and host focus group meetings through fall 2024.

DRAFT PLAN & OPEN HOUSE/POP-UP DEMONSTRATION

Share draft plan recommendations with the public at a second open house and a pop-up demonstration. A pop-up demonstration is a temporary build, using tactical materials, to showcase potential walking & biking facilities. Anticipated late fall 2024.

IMPLEMENTATION

With a formally adopted plan for walking and biking, Jefferson County staff can make informed decisions about infrastructure priorities. The plan can aid in leveraging federal funding opportunities for project support.

NETWORK MAPPING & PRIORITY ROUTE SCORING

Identify networks for walking and biking. Using existing conditions information, and a matrix to score routes, assign route prioritization for walking and biking projects implementation. Present networks to Jefferson County & advisory team members.

FINAL PLAN & ADOPTION

Refine plan recommendations (network & project prioritization) and deliver plan to Jefferson County Staff. Assist with necessary presentations and meetings to get plan through the county adoption process.



02

Existing Plans for Jefferson County

The Walk Bike Jefferson County Plan builds on the efforts of many prior plans. These plans have paved the way for roadway project prioritization and completion, as well as land revitalization and planning. Improving accessibility and transforming communities, these plans have been essential to the continued growth and development of the county.

In the past five years, planning activity in Jefferson County has increased substantially; there is significant recent and high quality guidance on transportation improvements. This chapter reviews these plans and their relevance to the recommendations of our work, an important first step to understanding the existing conditions of walking and biking in Jefferson County.



Ongoing Plans



Visualize Jefferson County Master Plan (est. Fall 2024)

The Visualize Jefferson County Master Plan is a comprehensive plan with a full range of topics, including land use, housing, transportation, economic development, and natural resources. It emphasizes the need to coordinate with MoDOT for many transportation improvements. Recommendations include traffic calming, adding pedestrian infrastructure, providing safe routes to school, and a well-connected pedestrian and bicycle network.

Visualize Jefferson County has defined a Growth Framework which aims to guide future development while accounting for each place's current context and preserving important natural resources. Under this framework, land in the county is categorized as Urban Growth Area, Suburban Growth Area, or Natural Rural Area.

Importantly, Urban Growth Areas emphasize connectivity and high-density development. The Walk Bike Jefferson County Plan will consider these locations in special detail, as the emphasis in these locations dovetails with a need for improved bicycle and pedestrian transportation infrastructure.

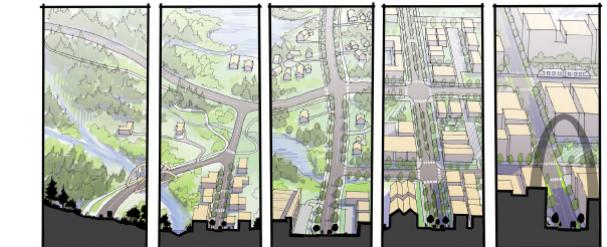
Each of these categories comes with an emphasis on the type of growth and development that is appropriate. The Framework also defines corresponding Nodes (Urban, Suburban, and Natural Rural). In the case of Urban Nodes, high-density mixed-use development is the key focus, and multimodal transportation improvements should be considered in kind.

This project is currently in draft phase.

Ongoing Plans (continued)

MoDOT Arterial Study (est. 2024)

The MoDOT Arterial Study is intended to provide a process and set of guidelines to aid in the design of arterial corridors. The guidelines emphasize a context-sensitive approach, with many considerations ranging from urban or rural contexts, surrounding land uses, and bike and pedestrian activity.



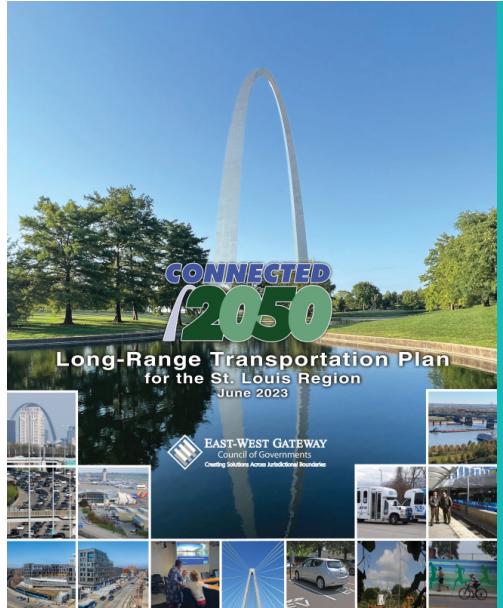
**THE BLUEPRINT
FOR ARTERIALS**

Gateway to Safer Roadways (est. Summer 2024)

Gateway to Safer Roadways is the St. Louis Regional Safety Action Plan led by East-West Gateway Council of Governments. This plan seeks to identify transportation safety issues and enable jurisdictions in the St. Louis region to apply for federal Safe Streets and Roads for All implementation grants to fund initiatives that reduce fatalities and major crashes. This plan is in final draft and adoption phase.

 **EAST-WEST GATEWAY
Council of Governments**

Recently Completed Plans



St. Louis Region Connected 2050 LRTP (2023)

This is a long-term plan for the broader St. Louis region's transportation system for the next 30 years. This plan identifies needs and provides a road map for infrastructure priorities within the East West Gateway Council of Governments Metropolitan Planning Organization Region, which includes Jefferson County. Focusing on County-owned roads, identified in the LRTP can guide the work of this bicycle and pedestrian plan.

JEFFERSON COUNTY BICYCLE & PEDESTRIAN PRIORITIZATION PLAN

- 01 Introduction
- 02 Existing Conditions
- 03 Community Engagement
- 04 Priority Projects
- 05 Next Steps

Bicycle & Pedestrian Prioritization Plan (2022)

The Jefferson County Bike and Pedestrian Prioritization Plan was led by Trailnet and completed in 2022. The plan focuses on intersections, disconnected bike and pedestrian networks and future bike and pedestrian expansion projects. Three priority projects were identified:

- Mill Street and the Veterans/Highway A intersection;
- Bailey Road and US 61/67 sidewalks, and;
- Railroad/Levy Trail.

Further coordination and feasibility discussion would need to be had with MoDOT and other local stakeholders.

Recently Completed Plans (continued)

Arnold Bicycle and Pedestrian Master Plan (2022)

This plan evaluates several regional, municipal, and local connections, and three priority corridors are identified: Missouri State/Church Road to Pomme Creek Park, Arnold City Park to Telegraph Road, and Tenbrook to Arnold Tenbrook. Out of these corridors, these priority projects emerged:

- Missouri State/Church Road Shared Use Path
- Old Lemay Ferry Road Sidewalk Addition
- Manufacturers Drive Shared Use Path
- Arnold Tenbrook Road Shared Use Path
- Tenbrook Road Shared Use Path
- Arnold Tenbrook Sidewalk Addition

City of Arnold, Missouri Bicycle and Pedestrian Master Plan

MARCH 2022



M2M Great Streets Plan - Festus & Crystal City (2022)

This plan sought to connect the downtowns of Festus and Crystal City by making Main Street and Bailey Road into Great Streets: improving safety, spurring economic development in the study area, and creating a vibrant corridor with improved quality of life. Connections by foot and bike to this location within Jefferson County should be considered as a future regional tourism destination when the M2M plan is fully implemented.



Recently Completed Plans (continued)



Roadway Master Plan (2021)

The Jefferson County Roadway Master Plan identifies future short and long-term roadway needs and certain improvement projects. The plan discusses specific pedestrian and traffic safety needs. Other sections include primary growth areas, functional classification of roadways, future transportation infrastructure needs and funding opportunities.



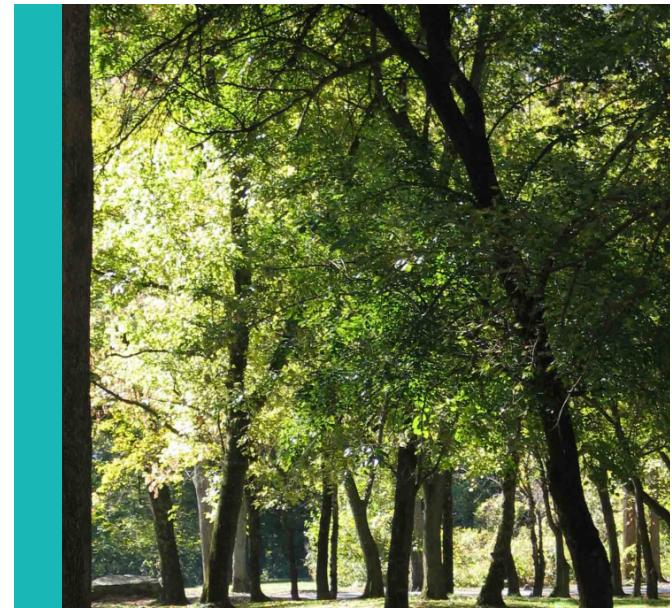
Jefferson County Road Safety Plan (2021)

The County Road Safety Plan reviews crash patterns at key locations county-wide and provides strategies to address those safety issues. It includes project-specific safety solutions, with detailed information at specific sites and includes county-wide safety solutions. The bicycle and pedestrian plan will incorporate safety needs for all users, and understanding roadways with identified safety concerns is important as networks are prioritized.

Plans Completed Over 5 Years Ago

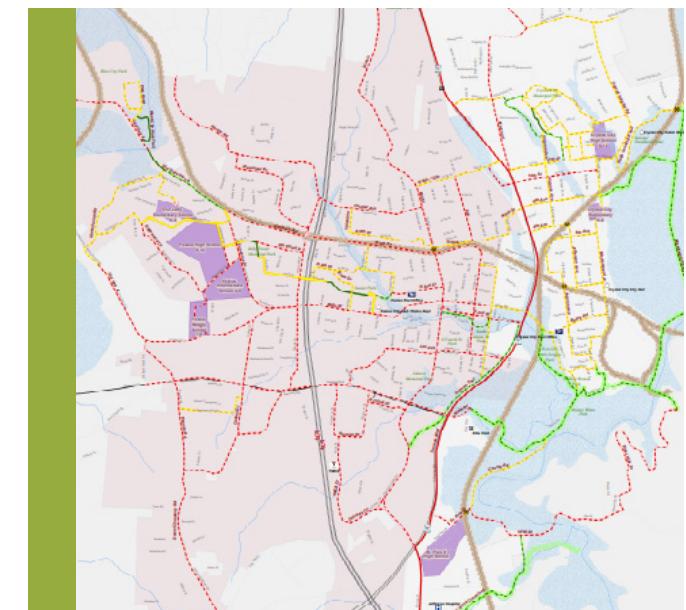
Parks Master Plan (2013)

The Parks Master Plan was completed in 2013. This plan includes a vision for the north and south county parks. The north parks are envisioned to be highly-developed with an interconnected trail system with various community assets. Southern parks are oriented towards uses like fishing, hiking, boating, hunting and camping. In the northern, more densely populated areas of the county, the plan notes a need for walkable and bikeable access to parks.



Festus Accessibility Plan (2007)

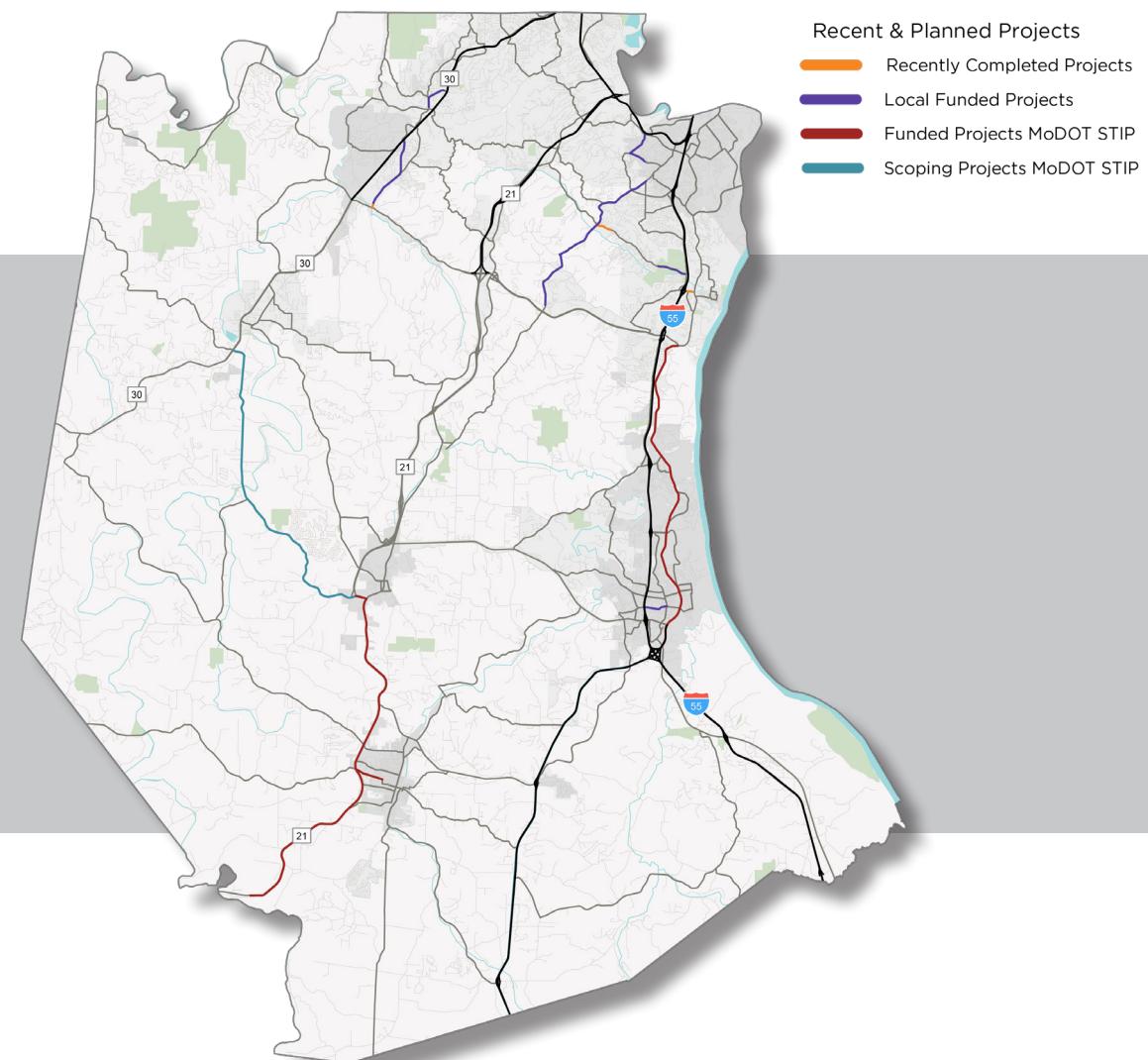
This plan was completed in 2007 and includes a map that notes existing, in progress, planned, and potential bike routes, trails, and accommodations to connect focus destinations in the community like parks, schools, and other amenities.



RECENTLY COMPLETED AND FUNDED PROJECTS

MoDOT has several planned projects that are funded in their Statewide Transportation Improvement Plan (STIP) that include upgrading pedestrian facilities and complying with their ADA transition plan. This includes US 61 from Barnhart to Festus, Hwy 21 in Hillsboro and De Soto, and Hwy N in De Soto. While pedestrian facilities may not be included along the entire project corridors for these MoDOT projects, some segments do include pedestrian facilities.

There are also various planned local projects, either by Jefferson County or municipalities.



RECENTLY COMPLETED AND FUNDED PROJECTS

Funded Local Projects

Festus Main Street from Mill to I-55. (City of Festus)

Improvements include sidewalks, lighting, street resurfacing.

Phase 1 Mill to park, phase 2 park to 55. Phase 1 approval (funded) Aug 2023.

Pomme Rd from Lonedell to Rockview (City of Arnold)

Reconstruct and add sidewalks, funded; expected completion 2026.

Lonedell Rd from Pomme to MO St Rd. (City of Arnold)

Add curb, shoulders, sidewalk. Funded 2023, unknown construction date.

Gravois from Hwy 30 to Indian Springs (Jefferson County)

Planned 10-foot shared use path at the elementary and middle schools.

Recently Completed Local Projects

High Ridge Blvd from Crossroads to Park Rd (Jefferson County)

Add 10-ft shared use path.

Seckman Rd from Remington to Old Lemay Ferry (Jefferson County)

Add 6-ft sidewalks on both sides of street, signals at school entrance, and intersection improvement (roundabout) at Old Lemay Ferry.

Imperial Main St from Old State Rd to 1st St (Jefferson County)

Add 5-foot sidewalks on both sides of the street.

Main from bridge to Hwy MM near House Spring (Jefferson County)

Add 5-foot sidewalks on both sides of the street.

Key Takeaways

No coordinated county-wide effort for walking and biking exists today - Jefferson County is taking an important step in a more connected county by developing this first-ever plan for walking and biking. Many other counties in the St. Louis region have similar plans (St. Charles, St. Louis, St. Louis City, Madison County), and the completion, and following adoption of this plan will enable Jefferson County to receive dedicated funding for implementation. Under the current Bipartisan Infrastructure Law, several programs have expanded funding for such projects and once complete, the County will be in a competitive position to obtain funding.

There has been substantial recent planning activity at the local level - While there have been multiple county-wide planning efforts, there have been more walking- and biking-specific planning efforts done by municipalities in Jefferson County. Arnold completed its walking and biking Plan in 2022, Festus created an accessibility plan in 2007 that examined walking and biking connections city-wide, and in 2022, through a joint effort with Crystal City, created a plan that took a detailed approach on the Main Street and Bailey Road corridors. There is an opportunity to connect these plans at the county level to envision one network.

Recently completed and funded projects at the local level that include walking and biking improvements have been segmented - The county and cities within the county have several recent and planned projects to improve walking and biking conditions, but these projects generally involve a specific, limited area. Broader coordination is needed to ensure that local infrastructure investments are well-connected and effective in serving residents, and this coordination is what this plan seeks to accomplish.

Past plans completed at the county level have had limited focus on walking and biking - Completed plans explained in this report all touch on walking and biking at some level, but the scope at which they examine walking and biking is narrow. This may have contributed to the county's current lack of a cohesive network.



03

Engagement

Early forms of community engagement have already taken place. The first advisory team meeting engaged key community stakeholders to identify trends and needs before reaching out to the public. The first of several community intercept events occurred at the Kimmswick Strawberry Festival, where attendees stopped by the booth to learn more about the project, share feedback, and ask questions. The first public open house was held at Antonia Middle School, where attendees learned more about the project, participated in interactive mapping, filled out comment cards, and ask questions in a more formal setting. Engagement will continue throughout the project at various stages.





ADVISORY TEAM KICKOFF MEETING

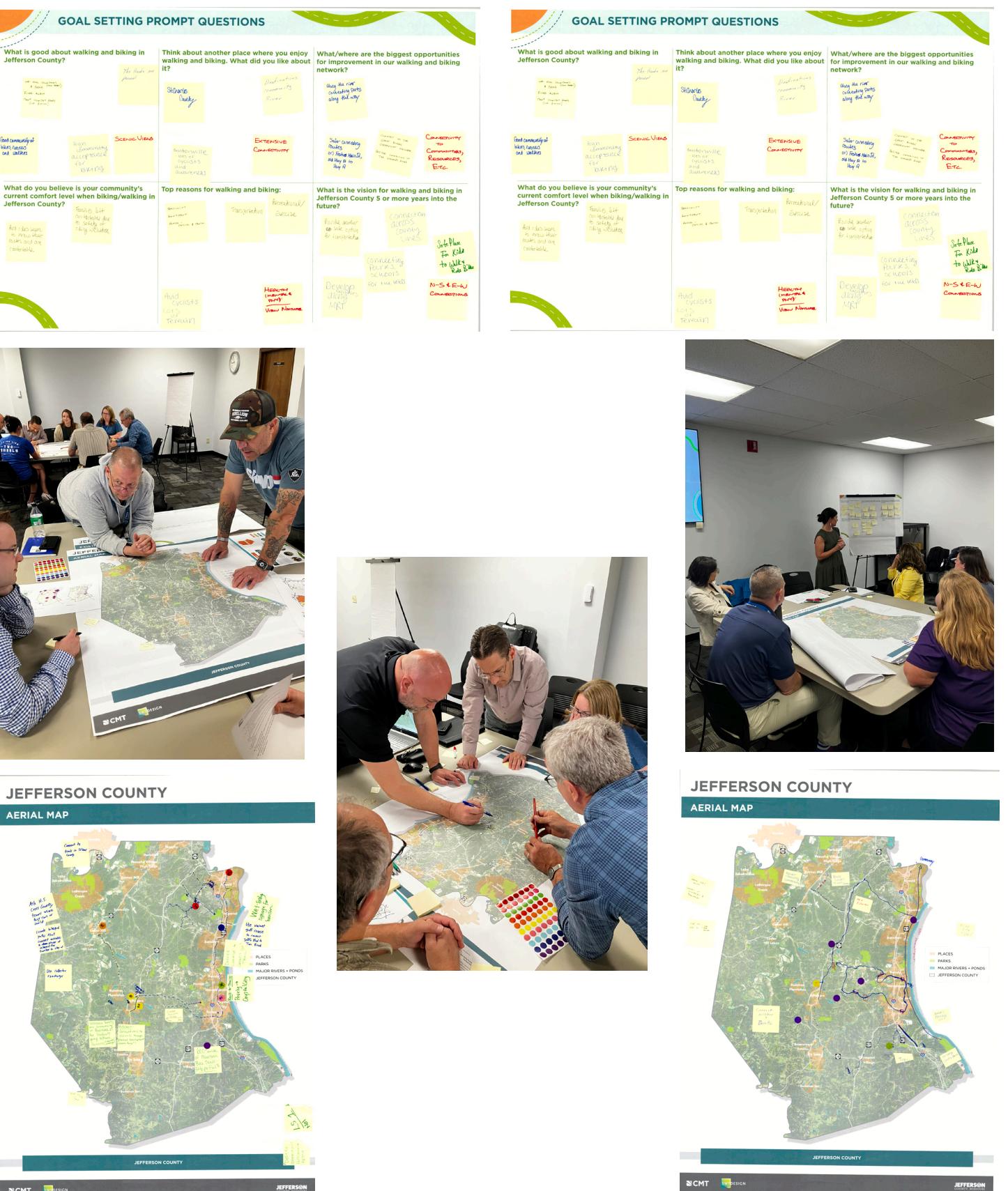
The purpose of this advisory group meeting was to convene a group of Jefferson County officials and regional leaders to hear an overview of the Walk Bike Planning process and to identify walking and biking trends and needs in the county prior to broader public engagement. The key outcome of this meeting is to set general principles to follow during the planning and engagement process.

During the presentation, Advisory Committee members were polled on their impressions of walking and biking in Jefferson County. Half of the group indicated that they rarely walk or bike, 25% indicated that they walk or bike daily, and the other 25% either weekly or monthly.

Attendees were also polled on the top outcomes of a walkable and bikeable community. The group's top three outcomes were safety benefits, improved quality of life, and enhanced local connectivity.

The committee discussed current positives and negatives of walking and biking in Jefferson County, as well as the future of walking and biking in the County. Connectivity was a major desire among attendees, both to specific sites like schools and community destinations, and more generally, like between population centers and connecting to St. Louis County and the rest of the region.

Multiple advisory team members are active bike enthusiasts and were able to share the existing momentum around biking in Jefferson County. Specific organizations devoted to advancing cycling are Living Life on Two Wheels, and the Tuesday Night Ride. Energized participants for both of these groups are active on the advisory team, providing significant insight to specific routes and biking needs.



MODAL SECTIONS

Example walking and biking sections were shown in the first public open house for attendees to get a general understanding of what some sample walking and biking infrastructure may look like in different contexts and built environments.

Example walking sections can vary based on the urban/downtown, suburban, and rural surrounding land use contexts along a corridor. In a downtown area, there may be a concentration of businesses and other amenities that makes walking between and among them short and easy. In this downtown context, wider sidewalks with a buffer from the street are often appropriate to accommodate more people walking and to provide gathering spaces for people, such as benches or outdoor dining. Buffers can take on many forms, including landscaped buffers such as planting strips and street trees.

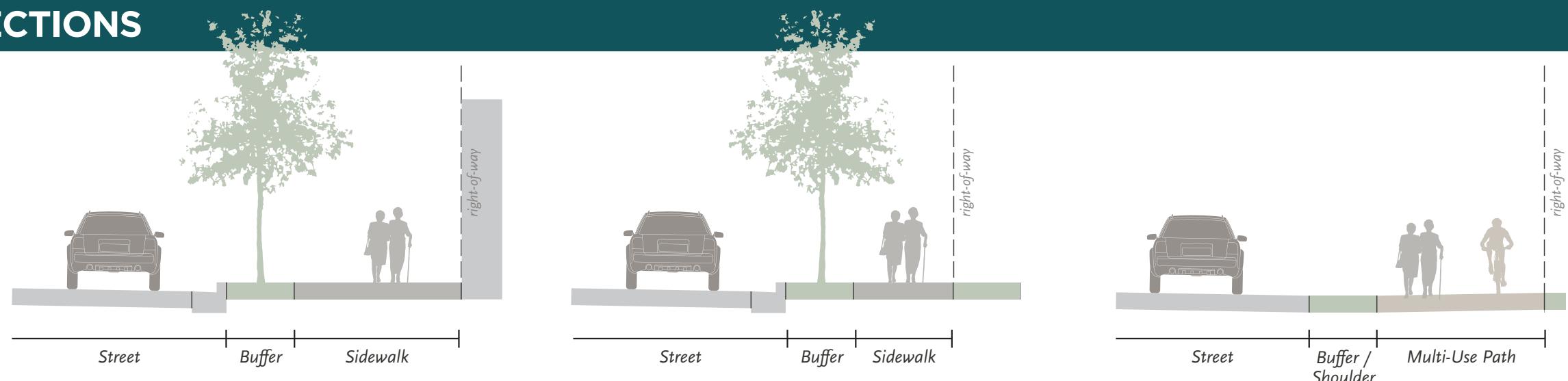
In suburban contexts, there may still be numerous businesses and homes along a corridor, but they may be set back further from the street and spaced farther apart. In a suburban context, a buffered sidewalk is still appropriate but may not be as wide as in an urban area;

there may be no need for more gathering spaces like benches and outdoor dining.

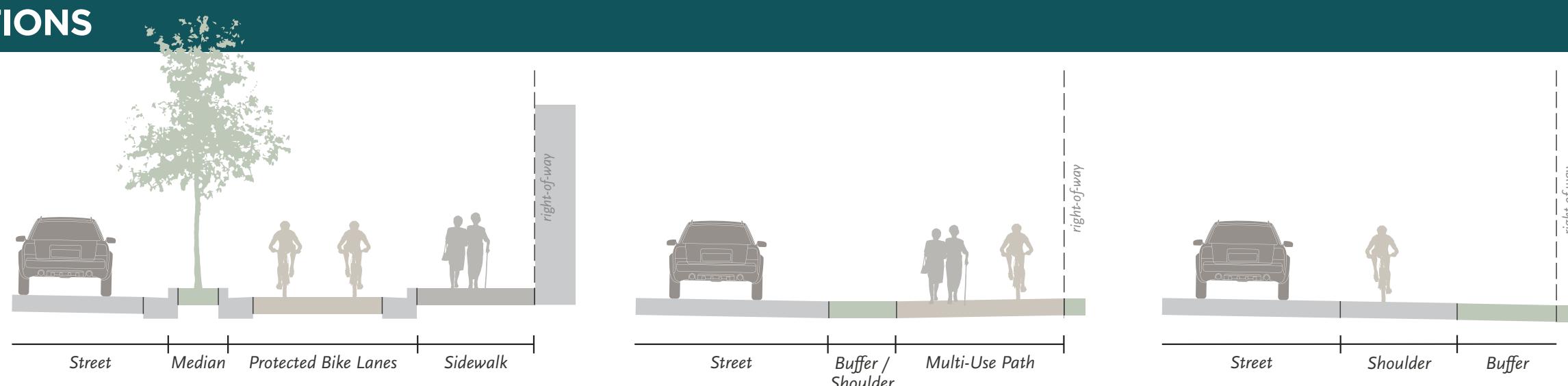
In rural contexts, a multi-use path along a street may be appropriate, to accommodate both people walking and people riding a bike, as rural streets may experience higher vehicle speeds where it is more appropriate to provide a space for bicyclists that is separated from traffic while also accommodating people walking in the same space. As there may be fewer destinations within a close proximity in a rural setting, fewer people may be walking and biking along the corridor at any one time, so a shared-use path is adequate to accommodate both people walking and biking.

Biking sections include protected bike lanes, which are in the street corridor but physically separated from car traffic. These may be one-way or two-way separated bike lanes or cycle tracks. An off-street multi-use path similar to the one discussed above in the rural walking context is a second sample option. A third sample option for low-traveled rural streets is to include a wide shoulder along the street that can be used for people biking. While not an adequate accommodation in many contexts with high volumes of car traffic and high vehicle speeds, this can be a low-cost option for areas that experience fewer people biking.

WALKING SECTIONS



BIKING SECTIONS





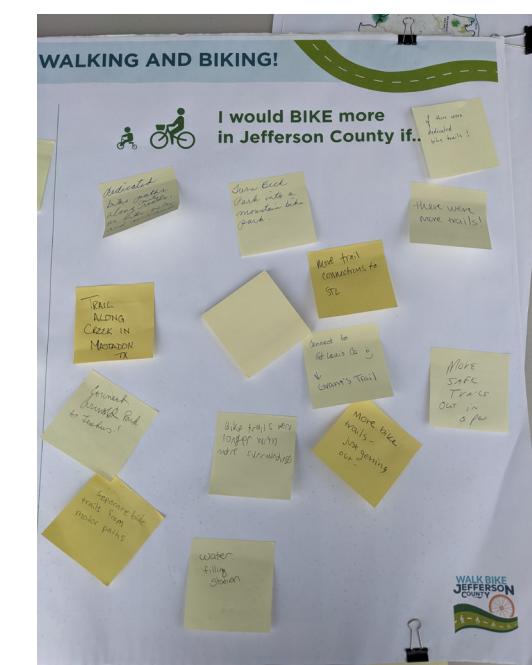
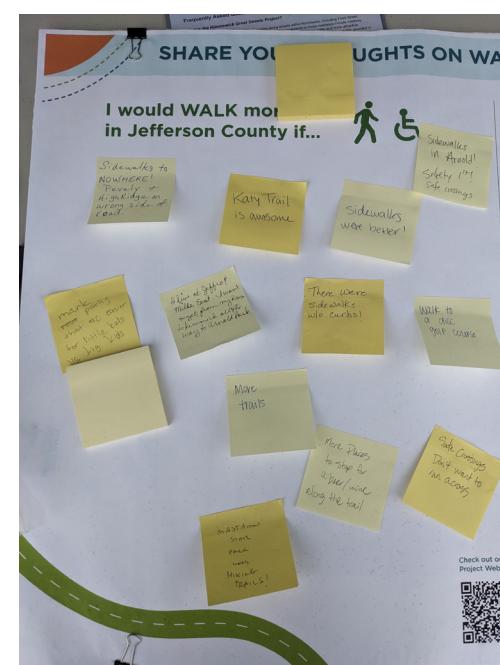
STRAWBERRY FESTIVAL ENGAGEMENT

The project team hosted a table at the Kimmswick Strawberry Festival on June 1st, 2024, a large open streets summer festival with more than 40,000 attendees from across the region. This was the first public event for Walk Bike Jefferson County.

The main goal was to raise awareness for the project and publicize the project website. Additionally, the project team sought to sought low-touch feedback as attendees walked the festival grounds.

Popping up within the community is a key component of this plan's engagement strategy. This strategy focuses on meeting people where they are in addition to hosting traditional open house meetings and focus groups. Future community tabling events will occur at Pevely Days and an event to be determined in Fall 2024.

Additionally, the project team is dedicated to experiencing issues and opportunities for walking and biking in Jefferson County with advisory team members (who are resident experts in mobility in their own community). Following the first public open house, field audit reviews were completed on foot and bike to gain a better understanding of needs, challenges, and strengths.

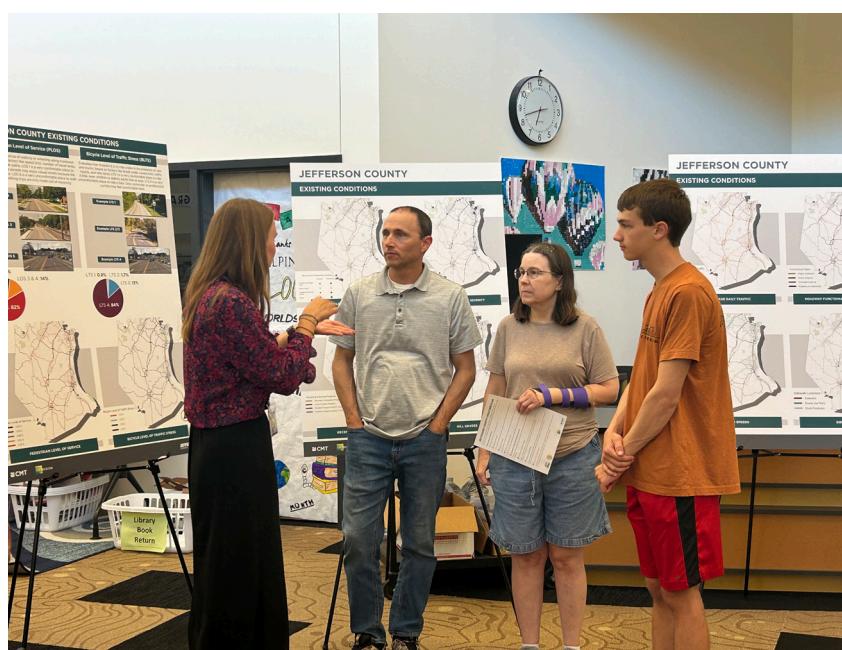




OPEN HOUSE

The first Walk Bike Jefferson County Open House was held on June 6th, 2024 at Antonia Middle School. The self-guided presentation focused on introducing the project and outlining the existing condition. Attendees were also encouraged to provide their feedback by sketching this ideas on map details and filling out a comment form.

There were 40 attendees, representing a variety of ages and experiences, from all over Jefferson County. Most attendees expressed a positive interest in developing Jefferson County's walking and biking network and shared their experiences on the street. Several contributed their ideas for on-street and off-street connections they would like to see.



Key Takeaways

Stakeholders and the public have overwhelmingly expressed support for developing the walking and biking network in Jefferson County - Making space on roadways for walking and biking is sometimes contentious, so nearly uniform positive response to this project is a sign of public interest and potential support for walking and biking infrastructure projects that follow this plan.

Jefferson County has a strong community of road bicyclists who want to keep engaging - These members of the community attended the Open House in force and represent a strong community asset to further biking in the County. However, special attention should be paid to balancing their needs with the pent-up demand for walking and for biking from “interested but concerned” segments of the population.

Areas where people feel safe walking and running are currently limited and isolated - A common message from the public is the need to drive to specific locations to walk and run for safe recreation. Lack of safe infrastructure impedes these people from the freedom of leaving their homes on foot.

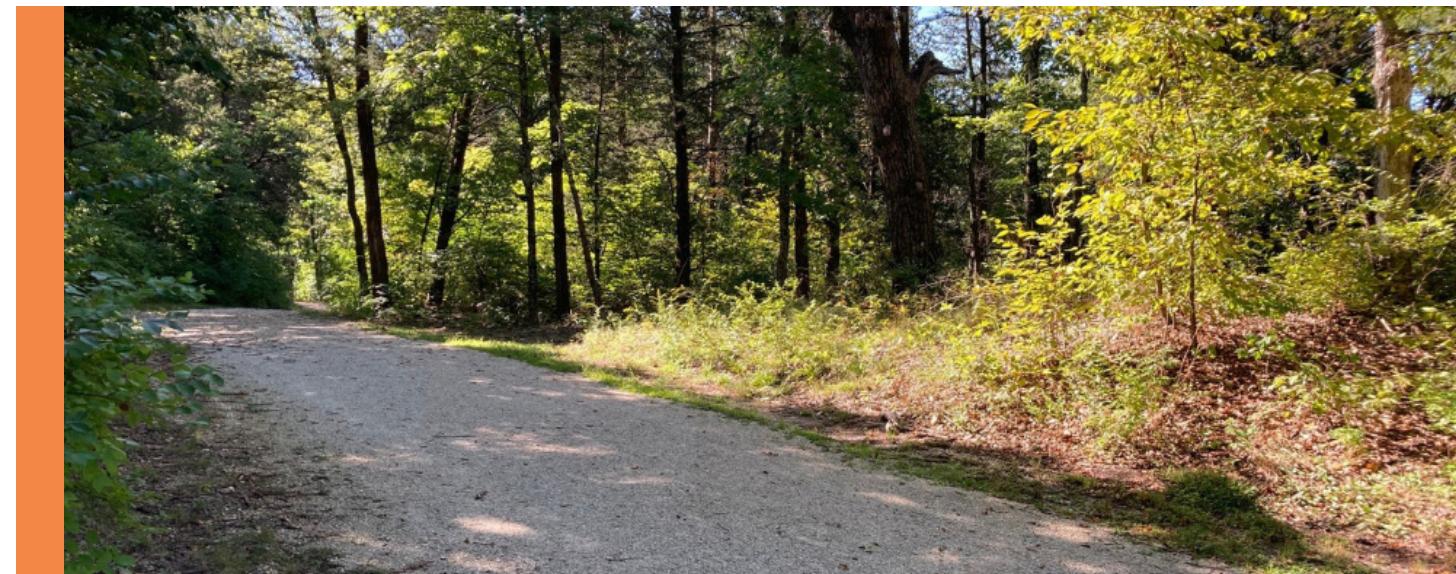
Interest in connecting to St Louis County's trail system - Connecting to the quality existing trail network in St. Louis County and beyond could greatly expand accessible miles of safe biking and walking infrastructure in Jefferson County.



04

Roadway & Safety Data

Analyzing numerous aspects of current roadway and safety data in the current state of the transportation network is crucial to identifying key problem areas, limiting factors, and ideal areas to develop and expand a future walking and biking network. Without a comprehensive understanding of areas with a history of crashes and safety issues, a targeted approach in improving safety for people walking and biking cannot be successful. Additionally, understanding existing roadway characteristics like speed limits, traffic counts, functional classification, and location of sidewalks helps to create a comprehensive overview of the experience walking and biking in Jefferson County.



FUNCTIONAL CLASS

Functional Class is a roadway design framework that establishes how a road serves automobiles and situates a roadway's purpose within a network of automobile transportation.

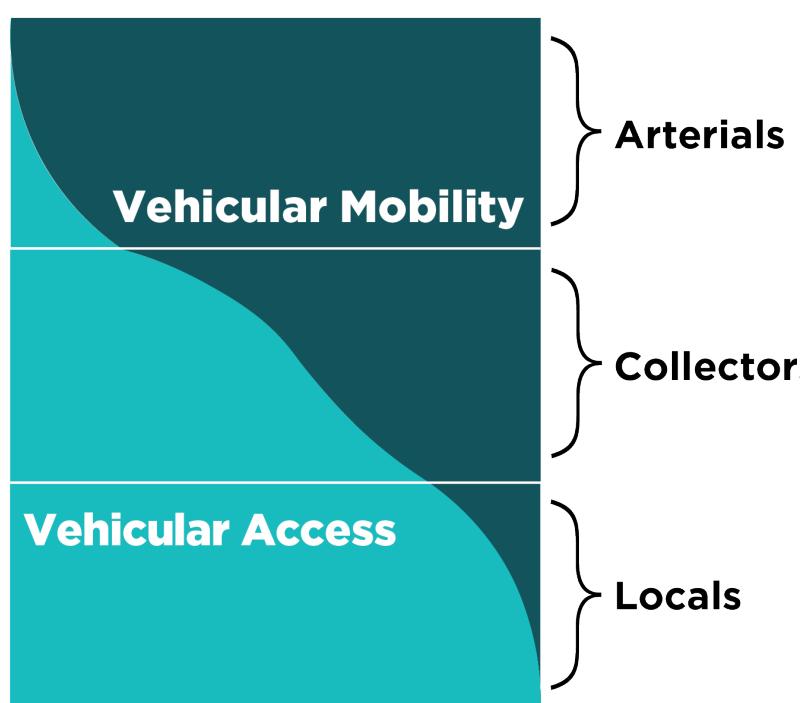
This plan focuses on the major collector and arterial roadways of Jefferson County. Arterial roadways are usually designed for higher vehicle speeds, higher traffic volumes, and longer travel distances. There is lower accessibility from neighboring streets and roadways, and the intention is for these roadways to carry a large volume of traffic between larger, primary destinations, like between two cities.

Collector roadways are intended to serve as a connection between arterials and local streets. As such, Collectors are generally designed for vehicle speeds and traffic volumes that are lower arterials, but higher than local streets. While arterials are focused more on mobility and less on accessibility, Collectors strike a balance between the two.

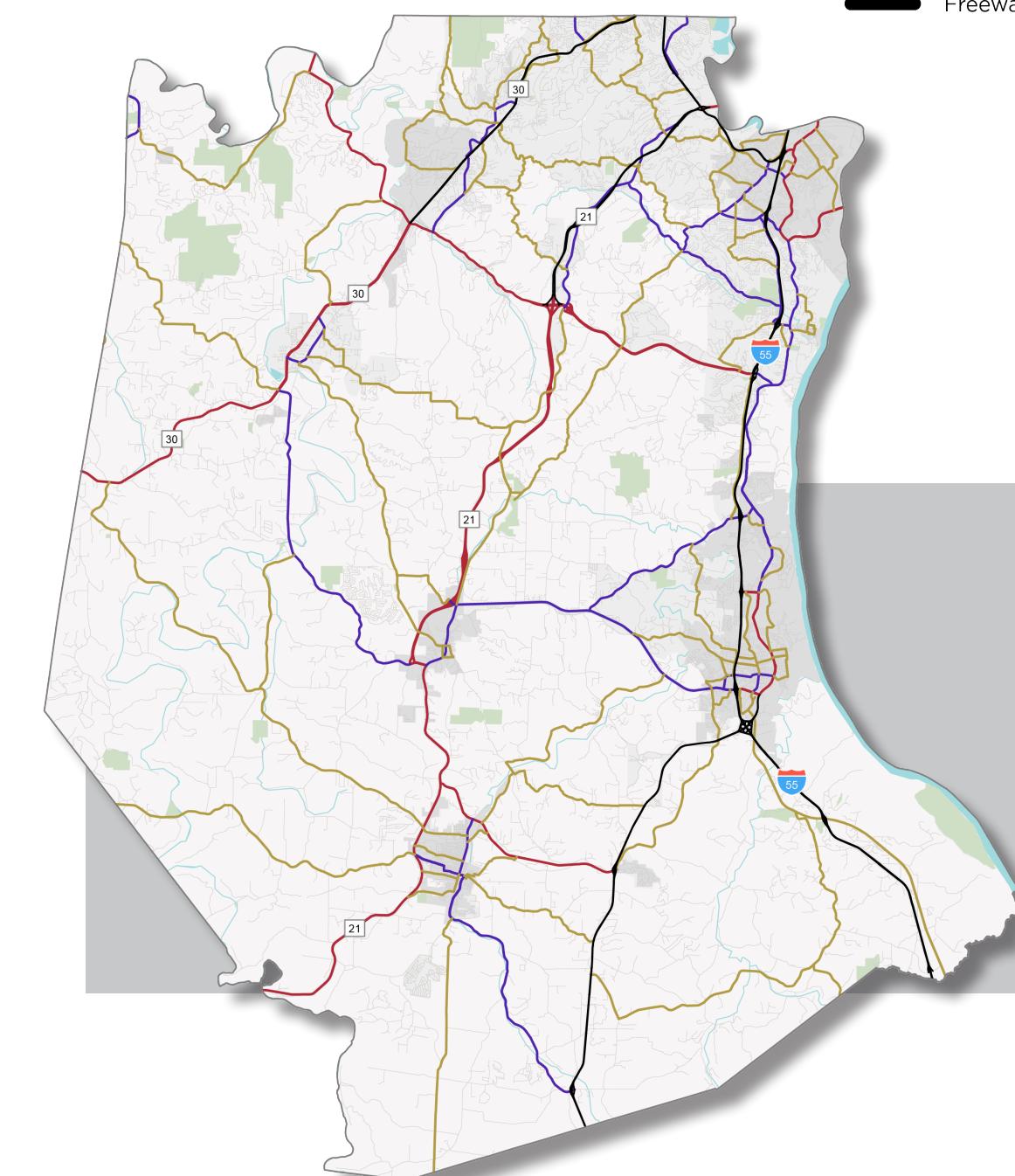
Local streets focus on accessibility. They usually include many access points like driveways and are designed for preventing through traffic and low vehicle speeds and volumes.

In an example travel route, a driver begins on a local street from home, uses the local street to travel to a collector roadway, uses a collector to access an arterial, which takes them to the general area of their destination, and then uses a collector to connect from the arterial to a local street to access their destination.

These roads are owned and maintained by Jefferson County, MoDOT and cities within the area. As roadway projects are identified and maintenance schedules are set, this plan can guide what people of the county want. This will also serve as a helpful guide to help these entities program and coordinate future projects.



| Functional Class |
|-----------------------|
| Major Collector |
| Minor Arterial |
| Principal Arterial |
| Freeway or Interstate |



This map focuses on study roadways (Arterials and Major Collectors) with Freeways and Interstates shown for reference. Minor Collectors and Local Roads are not considered for this plan and are not highlighted here.

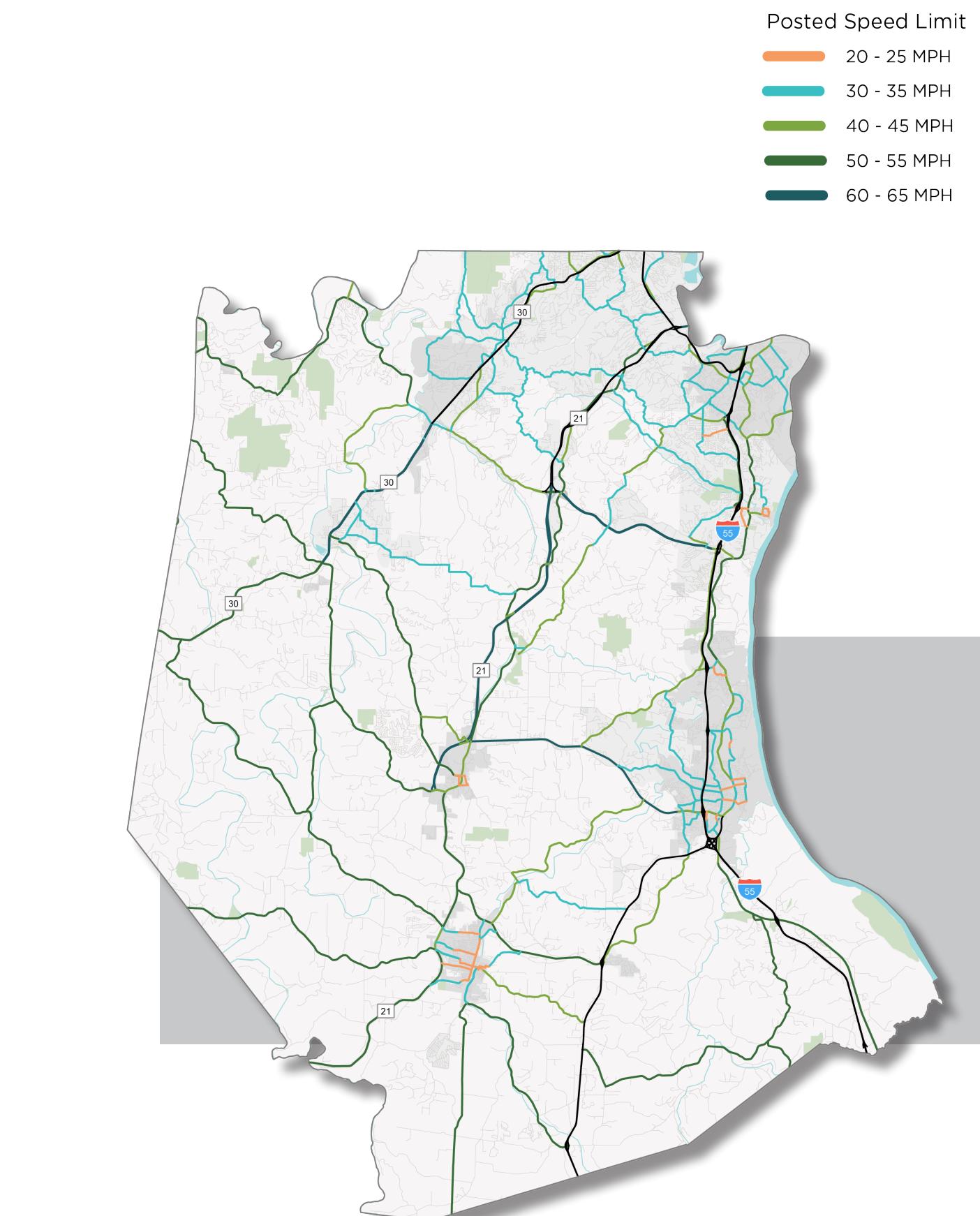
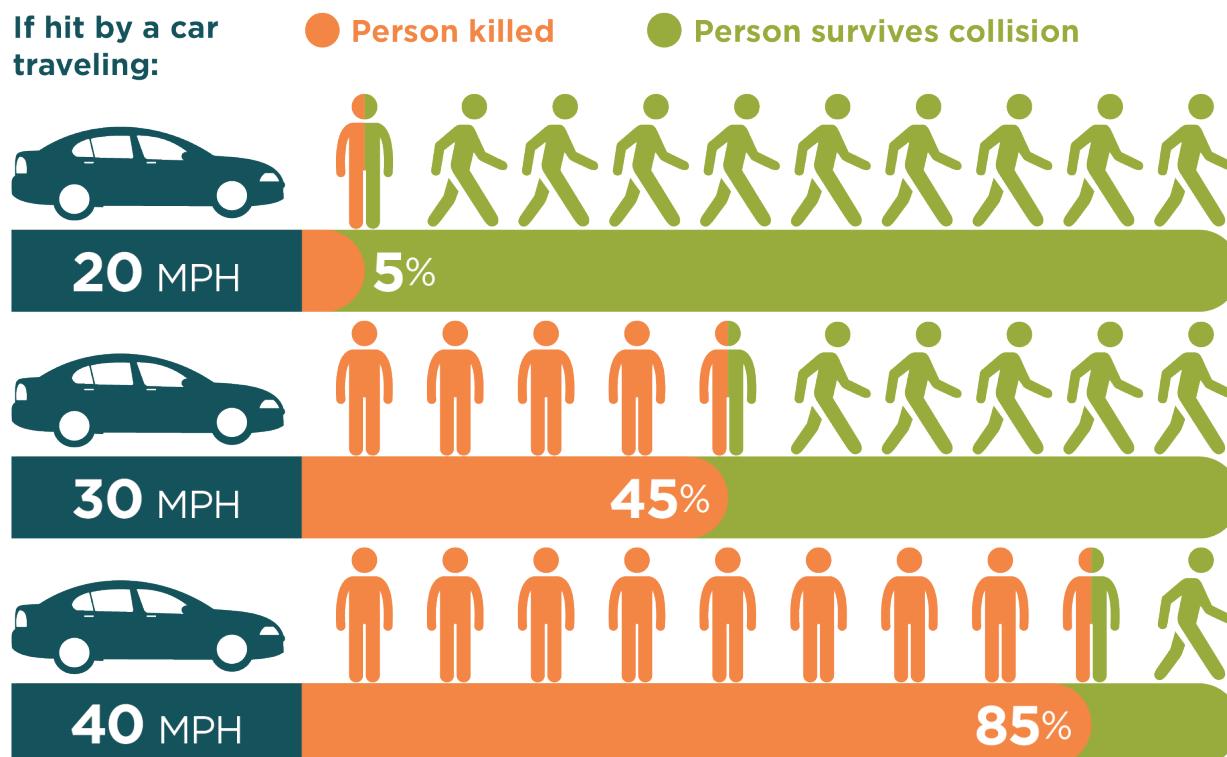
POSTED SPEEDS

Speed limits determine how quickly vehicles are allowed to travel on a roadway and can affect the safety and comfort of vulnerable road users. Speeds on study roadways in Jefferson County range from 20 to 65 MPH, with streets within urban cores of cities in Jefferson County generally falling between 20 and 35 MPH.

Posted speeds do not indicate exactly how fast people are driving on roadways. The design speed of roadways can be a major contributing factor to how fast people drive. If a roadway is designed to support high vehicle speeds, through design aspects like wider travel lanes or clear zones along roadways with few nearby visual obstacles like trees or buildings, drivers may feel comfortable driving much higher than the posted speed limit.

Speed evaluation is important not only to determine how comfortable people feel walking or biking along a road, it is also a major factor in determining safety. Crashes involving higher vehicle speeds are much more likely to result in serious injury or death for those involved, and the rate of serious injury or death is even higher when involving people walking or biking, given the lack of physical protection that people walking and biking have in a crash compared to occupants inside a vehicle.

A 2017 study by the National Traffic Safety Board (NTSB) found that if the driver of a car strikes a person walking while driving at 20 MPH, the person walking has a 5% chance of being killed. This risk of death increases exponentially to 45% at 30 MPH and 85% at 40 MPH. This rate of fatality is likely even higher today, since vehicle sizes have increased since 2017. Speed is a primary contributing factor to the safety of our roadways for all users.

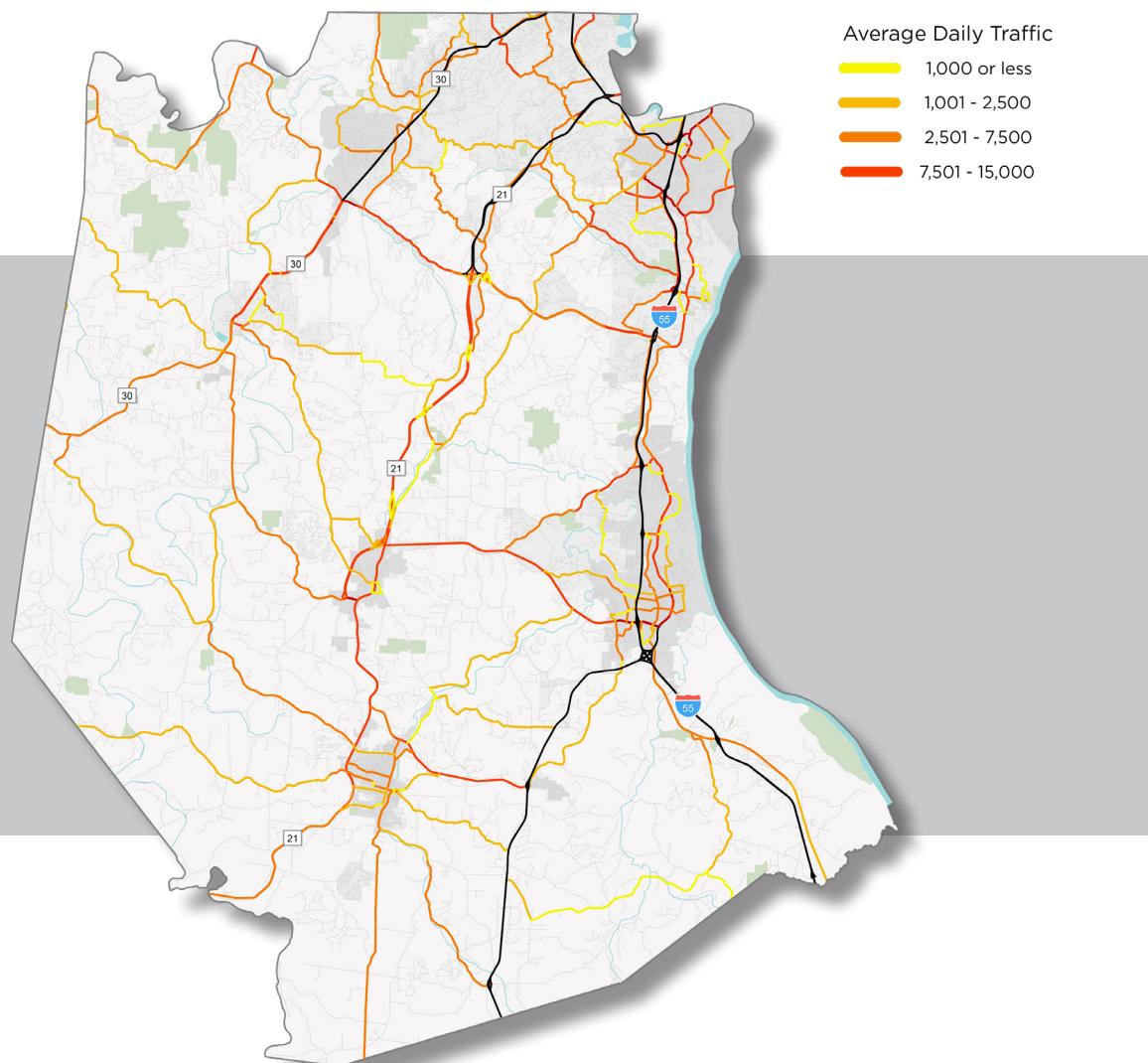


AVERAGE DAILY TRAFFIC

The average daily traffic (ADT) is a 24-hour volume of vehicle traffic on a highway or road. This data was collected using MoDOT and Jefferson County data; it helps determine what roadways are used the most by automobiles.

ADT is also important when determining how a person walking or biking might perceive their safety on the road. Higher volumes of vehicles in a day and the types of facilities available for people walking or biking influence people's choice to walk or bike.

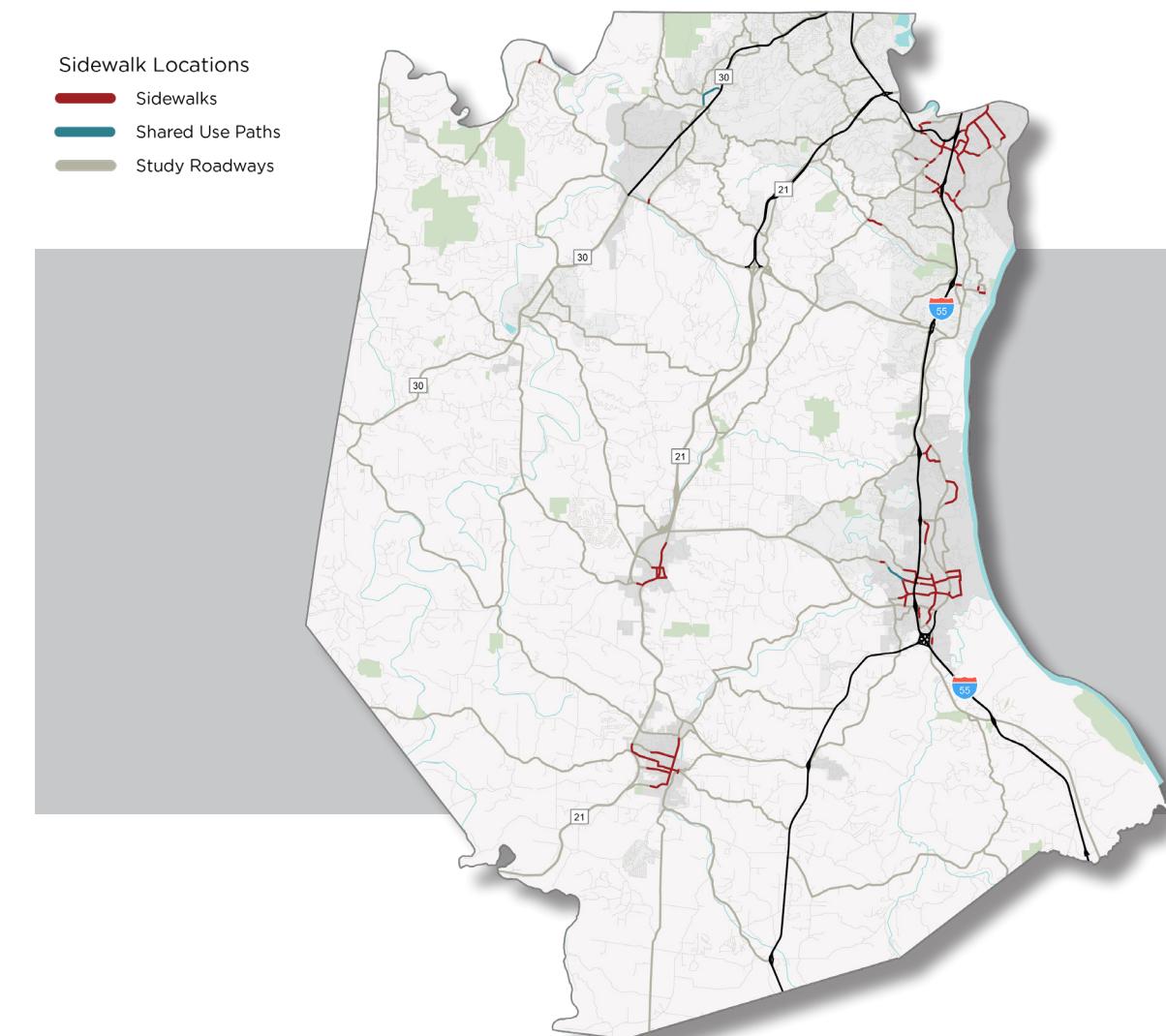
There is significant variation of vehicle traffic volumes on different roadways in Jefferson County, with numerous roadways having lower traffic volumes and numerous roadways having higher traffic volumes.



SIDEWALKS AND SHARED USE PATHS

Safe and complete sidewalks, bike facilities, or shared use paths allow people to have choice in their transportation needs throughout a community. When these facilities are omitted, choices no longer become relevant, and people will do what they need to do to remain safe and feel comfortable.

Sidewalks are currently very limited in Jefferson County. Most of the existing sidewalks and shared use paths are located in urban areas. Even then, there are many missing links and disconnected sidewalks that do not create a cohesive, connected sidewalk network. There are almost no sidewalk and shared use path connections between different cities. This essentially segments the county's sidewalk network into separate, smaller networks for each city in the county.



BICYCLE LEVEL OF TRAFFIC STRESS

Bicycle level of traffic stress (BLTS) is a screening tool used to evaluate how it feels to ride a bike on a particular roadway. BLTS is based on important factors like street width, posted speed limit, ADT, and presence and characteristics of bike lanes. LTS ranges from 1 to 4. LTS 1 is a very comfortable place to ride a bike, even for children or elderly adults. LTS 4 is a very stressful place to ride a bike; only commuters or seasoned road cyclists may feel comfortable here.

BLTS can also describe a user's stress tolerance and what facilities they would or would not use. See the graphic below for general proportions of the population and their LTS tolerance. In Jefferson County, major collectors and arterials are mostly (84%) evaluated as LTS 4 (high stress). These roadways are only tolerable for 1% of the population, the "strong and fearless". 97% of the study roadways are considered high stress (LTS 3 and 4), with an average of 93% of the population refusing to ride on these high-stress roadways.

This plan seeks to envision a network of low stress roadways (LTS 1 and 2), a network that the majority of the population would feel comfortable using.

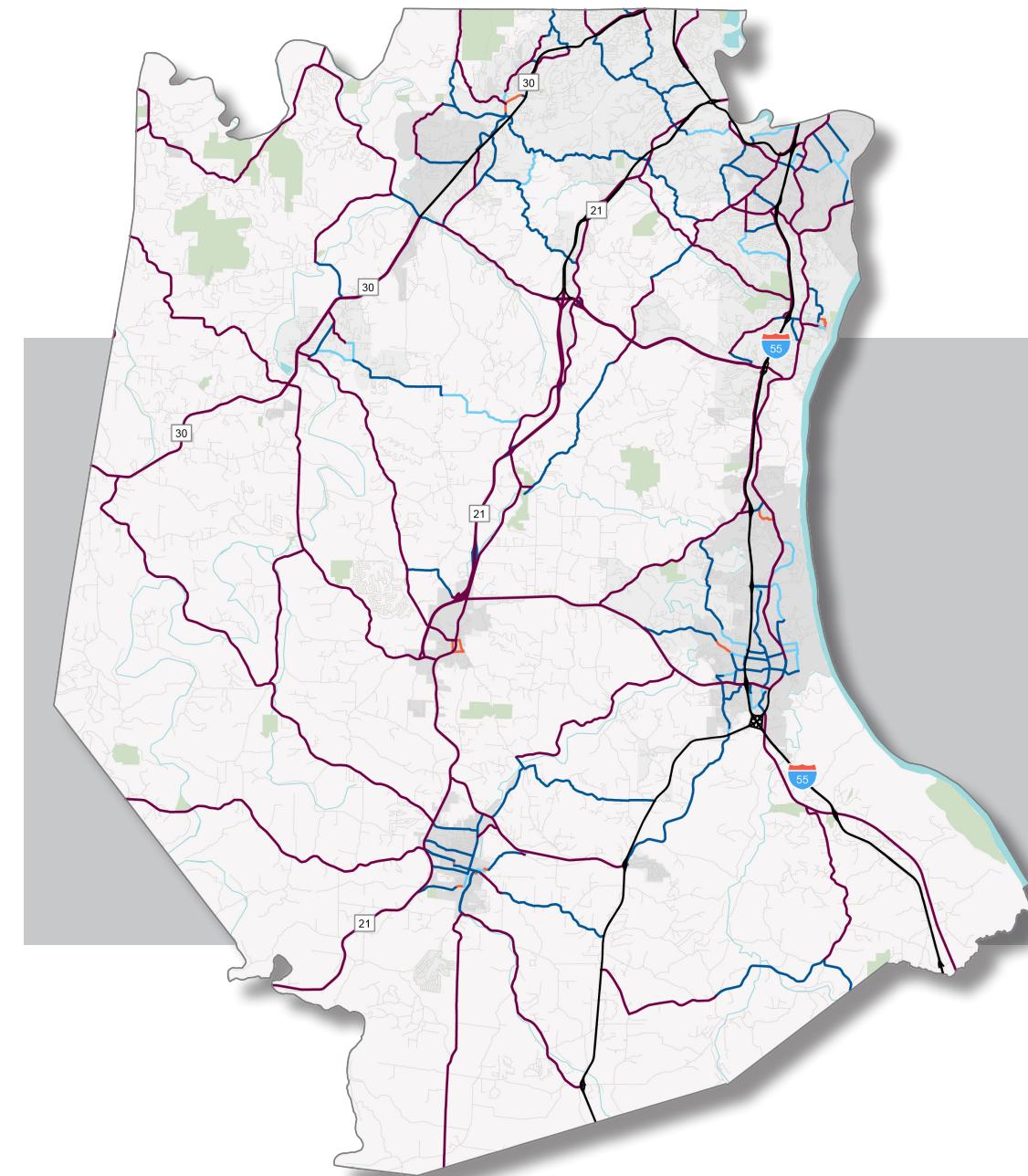
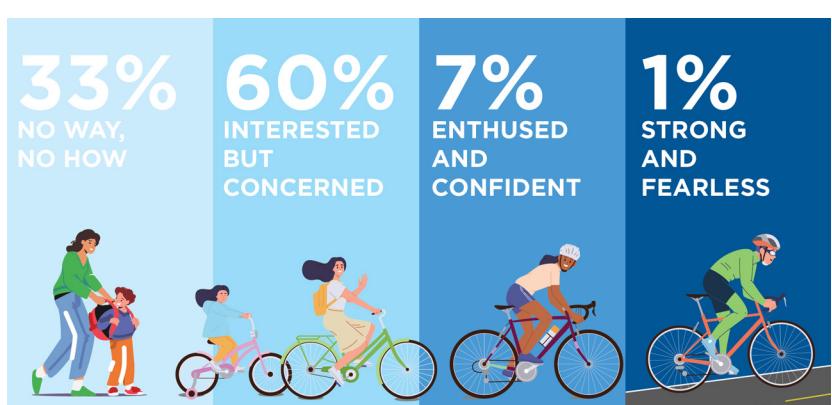
Example LTS 1 (0.8%)



Example LTS 2/3 (15%)



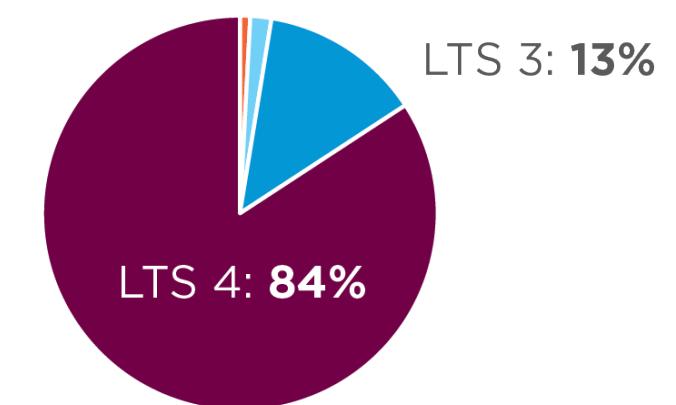
Example LTS 4 (84%)



LTS 1: 0.8% LTS 2: 1.7%

Bicycle Level of Traffic Stress

- LTS 1
- LTS 2
- LTS 3
- LTS 4



PEDESTRIAN LEVEL OF SERVICE

Pedestrian level of service (PLOS) quantifies the experience of walking along the road network by scoring roadways based on important factors like posted speed limit, number of travel lanes, and presence of sidewalks or side paths.

PLOS ranges from 1 to 5. LOS 1 is a very comfortable place to walk or wheel, where people may enjoy casual strolls because in a nice environment. LOS 5 is a very uncomfortable place to walk or wheel where walking trips are only made out of necessity. Currently, the majority (82%) of major collectors and arterials are at LOS 5, making most major collectors and arterials very uncomfortable for pedestrians to travel along them.

This plan seeks to envision a network of comfortable places to walk or wheel (LOS 1 and 2), which would be a network that the majority of the population would feel comfortable using.

Example LOS 1/2 (4%)



Example LOS 3/4 (14%)

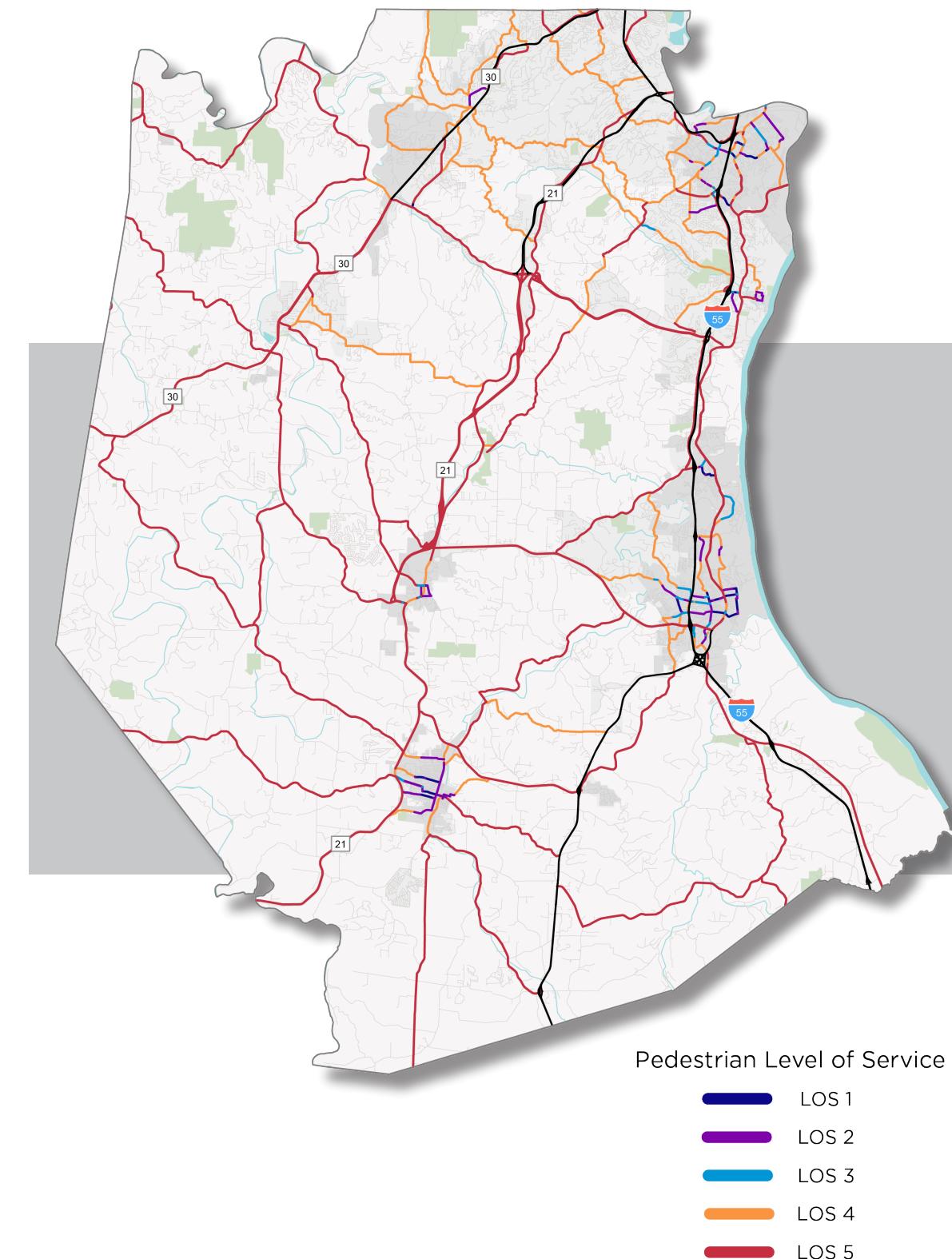
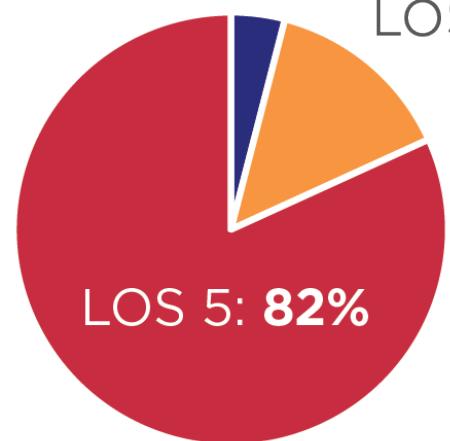


Example LOS 5 (82%)



LOS 1 & 2: 4%

LOS 3 & 4: 14%



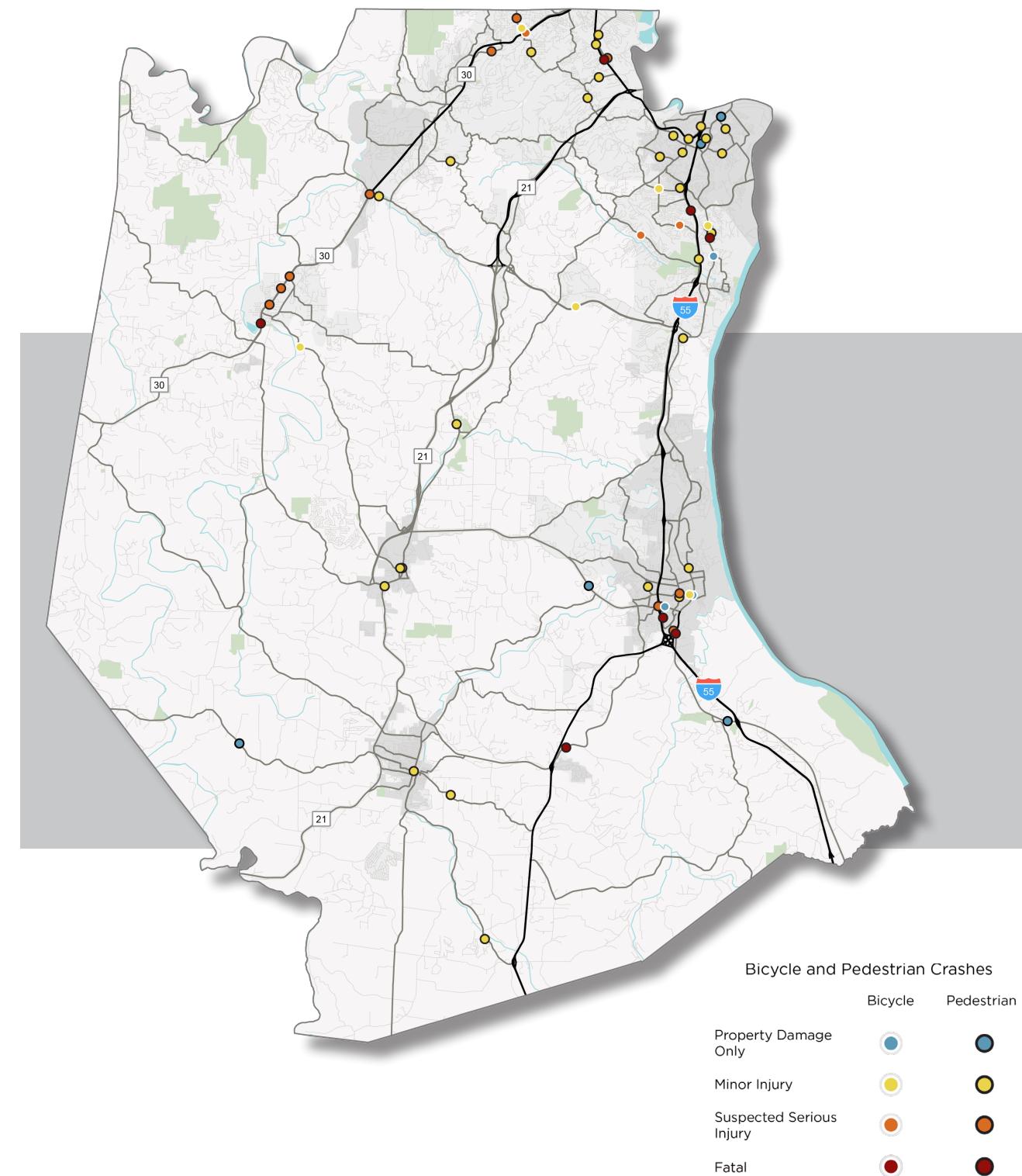
BICYCLE AND PEDESTRIAN CRASHES

The map to the right shows the bicycle and pedestrian crash locations that were logged by police from 2019-2023. Crashes involving people walking or biking tend to have much higher rates of serious injury and death when compared to crashes that only involve automobiles, due to the lack of physical protection that exist for people walking or biking.

Accounting for bicycle and pedestrian crash locations is critically important for planning safe and valuable active transportation infrastructure, but these crash locations do not paint a complete picture of safety issues for people walking and biking. Important underlying factors exist, especially near misses and lower severity crashes that frequently go unreported, and the large number of bicycle and walking trips that are prevented by an unsafe transportation environment.

| Crashes by Severity | Pedestrian | Bicycle |
|--------------------------|------------|-----------|
| Property Damage Only | 6 | 3 |
| Minor Injury | 31 | 6 |
| Suspected Serious Injury | 10 | 3 |
| Fatal | 7 | - |
| Total | 54 | 12 |

Crashes near study roadways 2019 - 2023



CRASH LOCATIONS BY SEVERITY

Reviewing the overall safety picture of Jefferson County is an important step in preparing to design a walking and biking network. Examining the full spectrum of crashes may reveal patterns that would affect the safety of vulnerable road users. Areas with especially damaging crash histories for all users are likely also places that are dangerous for vulnerable road users, even if few or no biking and pedestrian crashes have occurred; the overall safety picture may have deterred walking and biking activity in the first place.

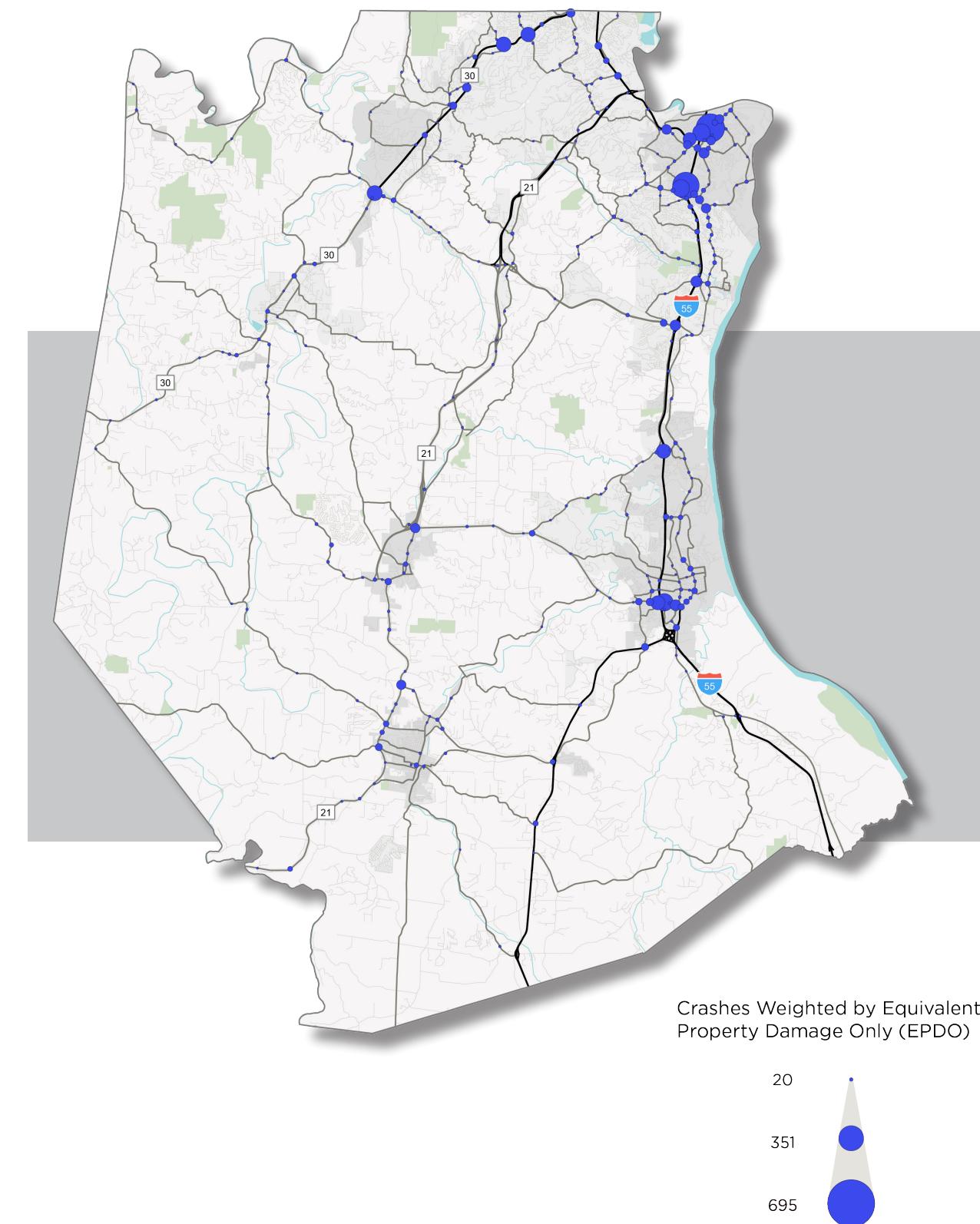
The map to the right shows crash locations for all crashes near study roadways from 2019 - 2023. Larger circles indicate sites with the most severe crash histories.

Included crashes within 300 feet were collected to one location. For each location, crashes were totaled by their Equivalent Property Damage Only (EPDO) value. For this total, property damage only crashes count for 1, crashes with an injury count for 5, and crashes with a fatality count for 10. For example, a location with three property damage only crashes and one fatal crash would have an EPDO value of 13. This weighting method is consistent with Jefferson County's 2021 Safety Action Plan methodology. The map shows only locations with an EPDO value of at least 20.

East West Gateway is nearing completion of a review of the region's highest injury streets and roadways, including in Jefferson County, as part of a Safe Streets for All grant. This plan will incorporate findings from East West Gateway's study when available.

| Crashes by Severity | EPDO Value | Total Crashes |
|--------------------------|------------|---------------|
| Property Damage Only | 1 | 10,730 |
| Minor Injury | 5 | 2,662 |
| Suspected Serious Injury | 5 | 428 |
| Fatal | 10 | 108 |
| Total | - | 13,928 |

Crashes near study roadways 2019 - 2023



Key Takeaways

The vast majority of roads within our study area are high stress for people traveling on foot or bike - most major collectors and arterials are very stressful, uncomfortable, and unsafe for people walking and biking along them, exemplified by a high percentage of LTS 4 and LOS 5 roadways.

There are very few sidewalks and thus a very disconnected sidewalk network in Jefferson County - most major collectors and arterials do not have sidewalks or shared use paths in the right of way, and most sidewalks in the county are limited to clusters of populated areas. Cities within Jefferson County are not connected by sidewalks or shared use paths, and within these cities, the sidewalk networks still have many gaps.

Crashes involving people walking and biking are more concentrated along roadways that have poorer pedestrian levels of service and bicycle levels of traffic stress - roadways that support higher vehicle speeds and do not have sidewalks experience more crashes involving bicyclists and pedestrians. Additionally, crashes in these areas with poor PLOS and BTLS can be more severe than crashes occurring on streets with slower traffic and better bike and pedestrian infrastructure.

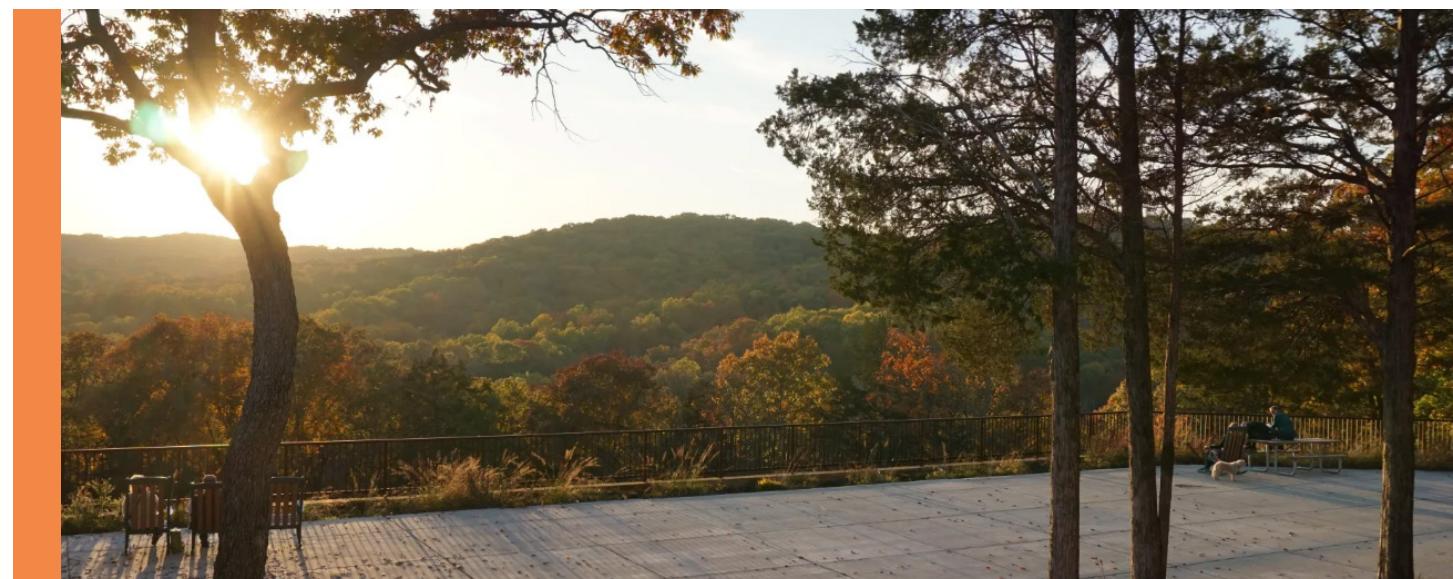
The locations with the most severe crash histories are found in urbanized area with high traffic volumes, especially near freeway access - Special attention should be paid to safe freeway crossings and interchanges as priority bicycle and pedestrian infrastructure is planned and completed. These crossing will prove essential for creating a complete, connected network.



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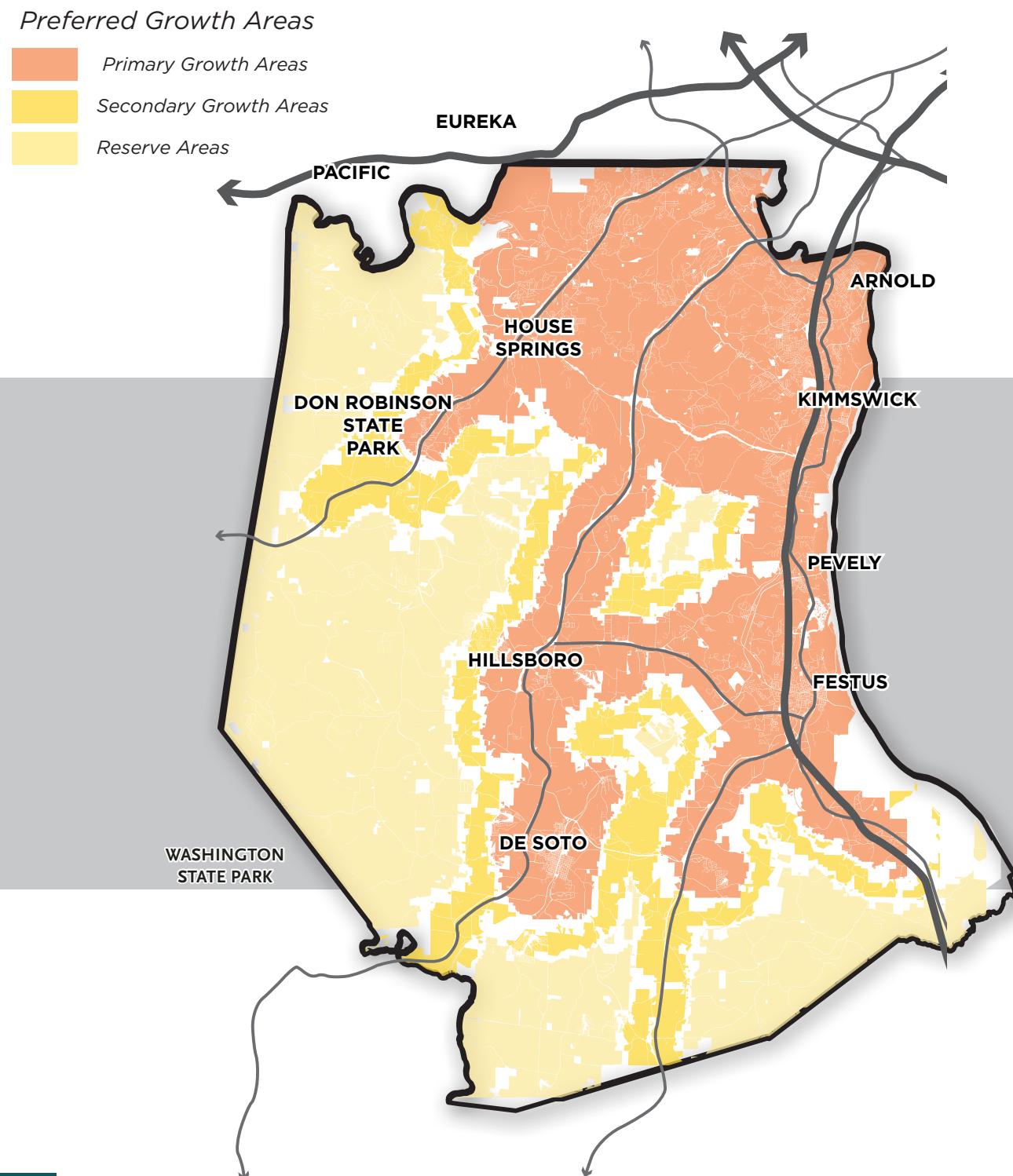
Land Uses, Natural Resources & Tourism

The Jefferson County Tourism Commission boasts a large menu of adventures, day trips, lodging, shopping, dining, and many more indoor and outdoor activities in the area. These areas range from traditional urban cores to rural development and trails. Context is extremely important for the development of pedestrian and bicycle infrastructure. Will people use it? What places are we connecting? What purpose is it serving? Is there a need? These are all questions that taking a context sensitive approach and diving into land use can help us determine.



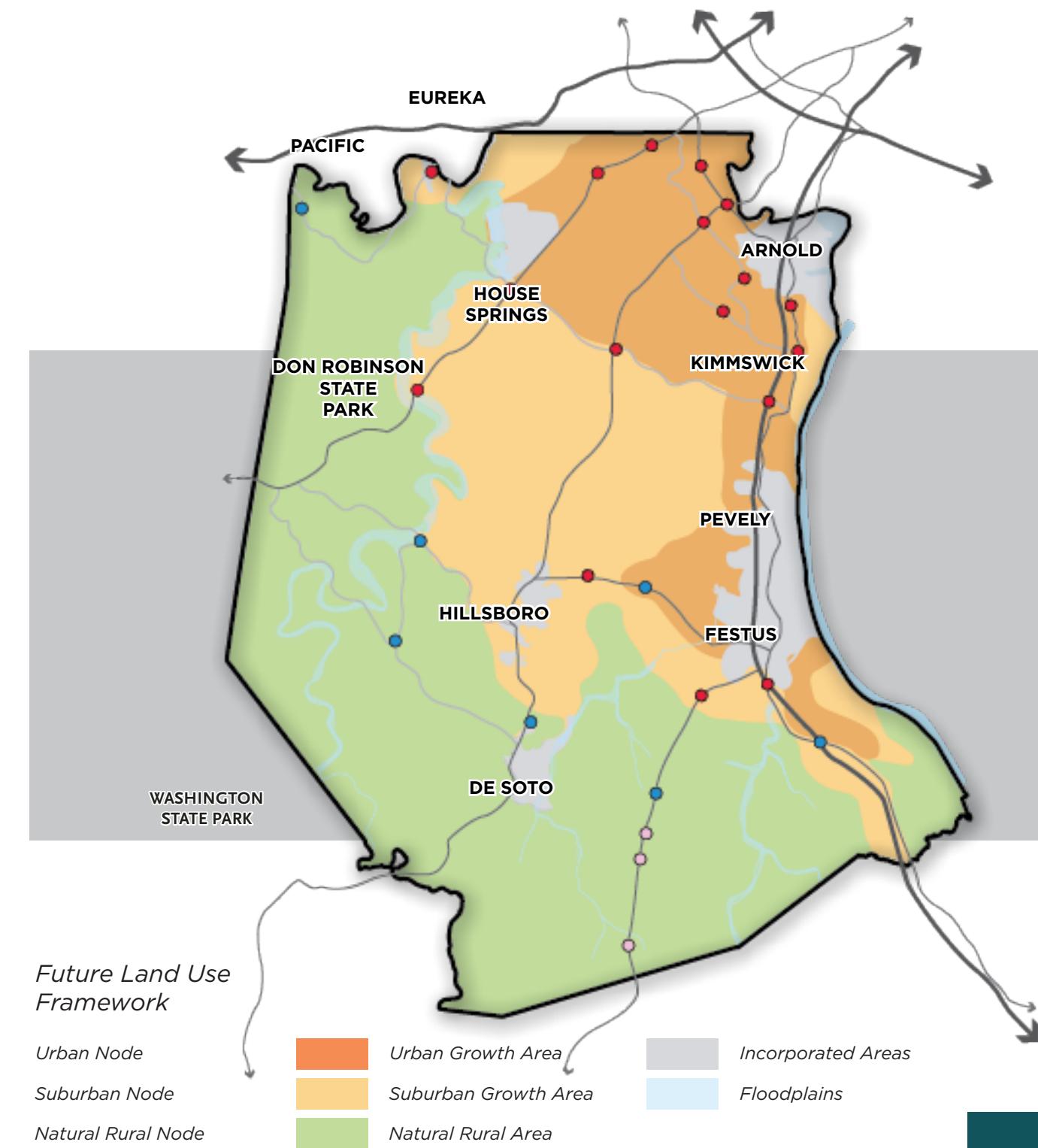
PREFERRED GROWTH AREAS

Jefferson County's identified preferred growth areas include a combination of the northern part of the county and along key corridors that run throughout the county, such as I-55, Hwy 21, and Hwy 30. Prioritizing growth in the primary growth areas helps to protect natural resources and reduce potential trip distances between origins and destinations, which offers an environment conducive to increased walking and biking, and shorter car trips.



FUTURE LAND USE FRAMEWORK

This is a draft framework outlined in the ongoing Visualize Jefferson County Master Plan. **Urban Growth Area:** Prioritized for development, encouraging connectivity, mix of medium to higher density residential, and mixed-use developments. **Suburban Growth Area** promotes suburban-style growth and community focused commercial areas. **Natural Rural Area** focuses on preserving rural charm and natural landscapes. **Nodes** are focal points for development, including urban, suburban and natural rural centers.

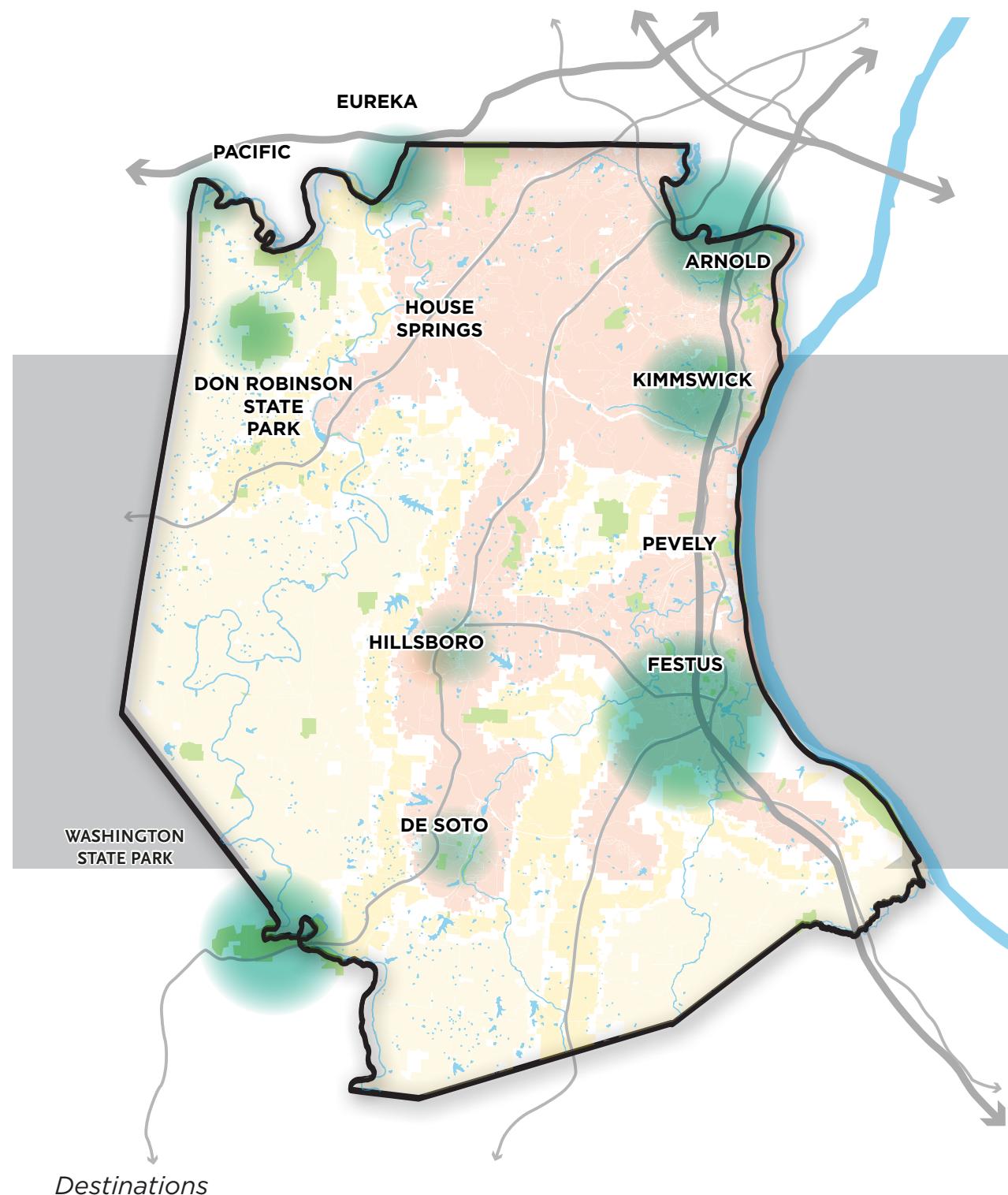


DESTINATIONS

Jefferson County's population growth has increased by 10.4% between 2000 and 2010, which has mainly been along the main transportation corridors. Along with the growth of communities along these corridors, destinations for sports, retail and entertainment have also developed. Some of these well known community destinations include: Arnold, Kimmswick, Pevely, and Festus along I 55, and Hillsboro and De Soto along the Hwy 21 corridor. Many of these communities have annual festivals, gatherings, or sports complexes that have become a draw to those in the surrounding communities and region.

The natural landscape and park lands are major destinations not only for county residents, but also for visitors from St. Louis and neighboring counties.

Identifying destinations and their concentration suggests where potential walking and biking connections could be most valuable. While popular destinations are not the only indication of where connections should be prioritized, they help to paint a picture of where people may want and need to travel. Overlaid with the county's prioritized growth areas, this also helps to show where future development in the county should focus, as development far from these destination areas results in longer trip distances, which can increase car-dependency and decrease the viability of making trips on foot or by bike. This is especially impactful for those who cannot drive.



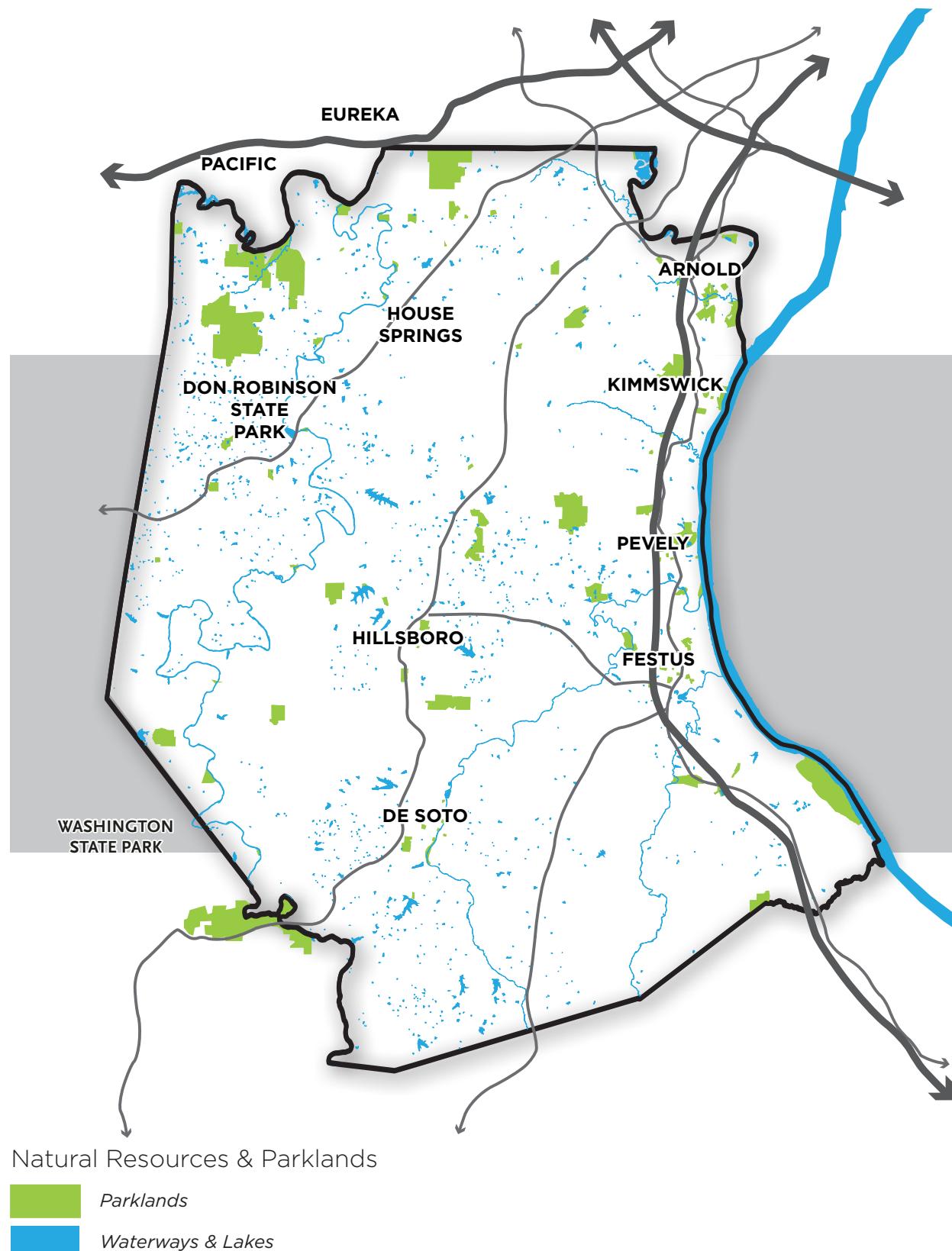
NATURAL RESOURCES & PARKLANDS

Jefferson County hosts numerous parkland spaces and bodies of water. Parks range from smaller community parks in urban areas to larger conservation areas and state parks in the more rural areas of the county. These natural resources, coupled with the natural scenery in Jefferson County, provides a high potential to provide more and better walking and biking connections to these areas so both residents and tourists can better access these spaces to enjoy. Capitalizing on Jefferson County's natural beauty can significantly improve quality of life and support increased tourism to the county, with visitors having a desire to enjoy the scenery on foot and bike as well.

Jefferson County provides approximately 145 acres of parks and recreation space for public use. This is represented in 11 County parks that provide recreation services including hiking trails, passive recreation space, meeting rooms, fishing and boating opportunities. Based on the current Missouri Statewide Outdoor Recreation Plan (2018-2020 Show Me the Great Outdoors Plan, published by The Department of Natural Resources, Division of State Parks, Missouri,) the provision of opportunities for outdoor activities, parks and recreation space is very limited to encourage outdoor activities and support health and wellbeing for the population of the county.

Other park and recreation spaces are provided by the Missouri Department of Conservation, the Missouri Department of Natural Resources, private and quasi-public organizations, cities and school districts.

There are currently limited walking and biking connections to these parklands from the population centers both within and surrounding the county, as well as limited access and few trails along bodies of water. Given the distribution of parklands throughout the county and near certain population centers, many people in the county currently live near parkland but have limited options to walk or bike to these parklands safely and comfortably.

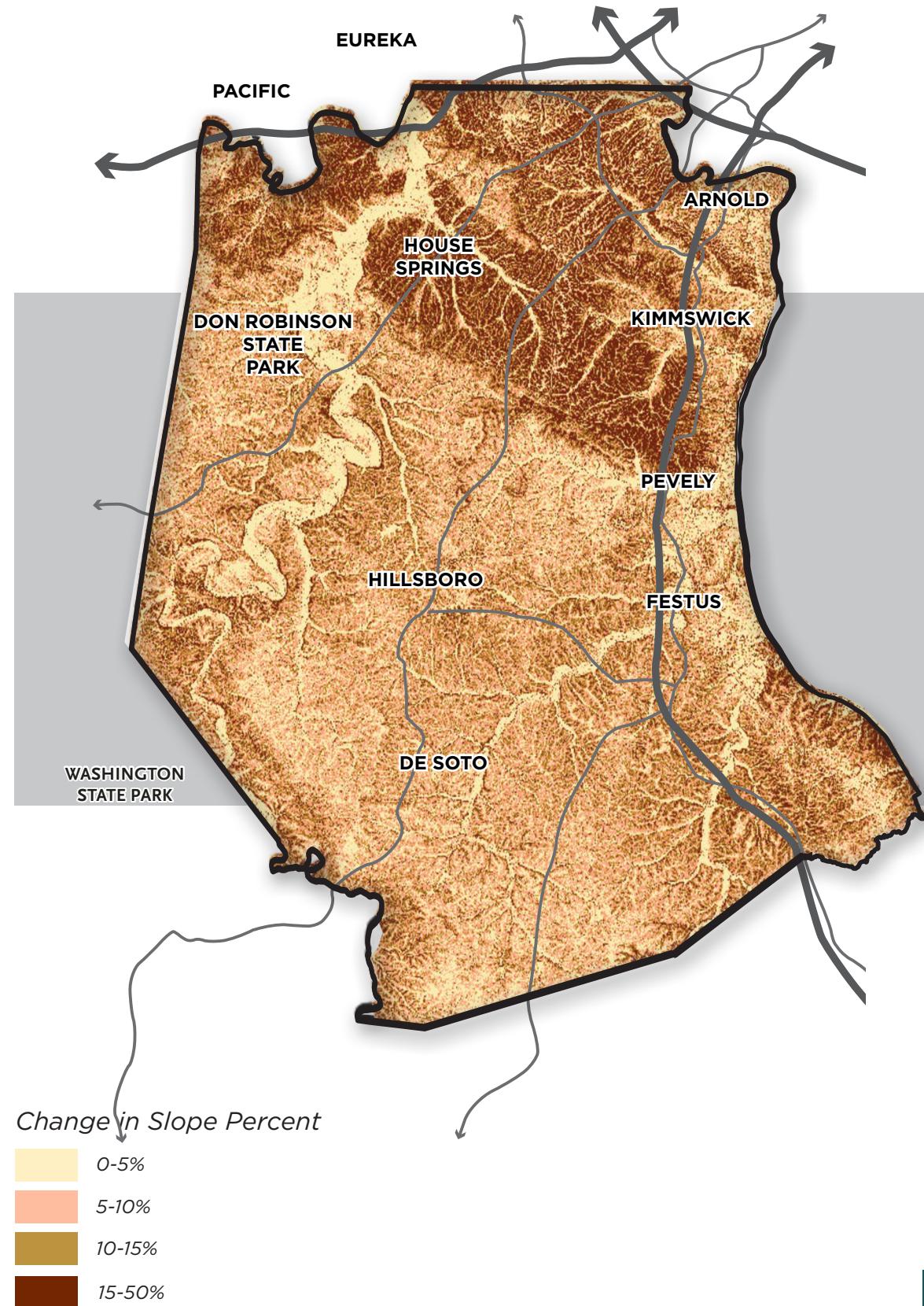


TOPOGRAPHY

Topography is both an asset and a challenge in Jefferson County. The beautiful natural landscape of the region is characterized by forested rolling hills and wandering waterways. This landscape attracts nature lovers from around the St. Louis region and beyond. However, the hilly topography can also add barriers to active transportation, making each distance harder to cross and providing a particular challenge for disabled users.

The map shown here illustrates where changes in elevation are located. Broadly, the north-central section of the county has some of the highest concentration of steep elevation change. Slopes between 0-10% can be found in the flatter valleys in the center of the county: around Hillsboro, west of De Soto, some along the I-55 corridor between Arnold and Kimmswick, and between Pevely and Festus.

Many collector and arterial roadways run along valleys or ridges with little extra right-of-way available. This conditions provides few off-street pathway options that would comply with the Americans with Disabilities Act (ADA). Grades of even 5% can prove a barrier to walking and biking by adding substantial extra effort to traversing the distance between origin and destination. Navigating topography to the extent possible will be a key consideration of walk and bike network infrastructure recommendations.



Key Takeaways

Jefferson County's topography is both an asset and a challenge to increase walking and biking

- rolling hills add the natural draw of Jefferson County. However, many study roadways have steep grades that prevent effective walking and biking, except for workout enthusiasts. Roadways that navigate hills often also have limited right-of-way available for additions like shoulders and sidepaths. Options for completing the walking and biking network may be limited by topography.

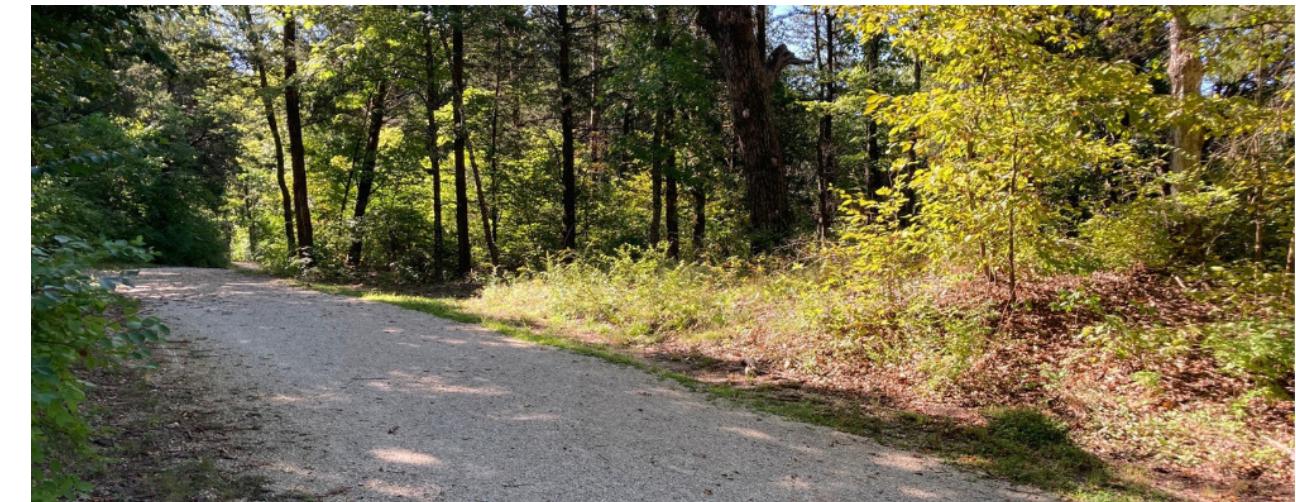
Parks and destinations in Jefferson County are distributed well among population centers -

parks are well-distributed throughout the county, and the variety of destination locations offers a prime opportunity to connect many residents to a park and/or destination that is nearby.

Parks, destinations, and natural scenery all have the ability to support a vibrant tourism industry

when connected with walking and biking networks - parks, bodies of water, and regional destinations can all increase tourism, but when visitors and residents have the ability to seamlessly connect between different community assets, and at the same time, be immersed in Jefferson County's topographical beauty, there is a significant potential to support vibrant tourism activity.

Walking and biking networks should follow primary growth areas - Prioritizing walking and biking networks in established primary growth areas will help to provide the most people practical access to walking and biking facilities, and help facilitate connections between destinations within close proximity of each other.



06

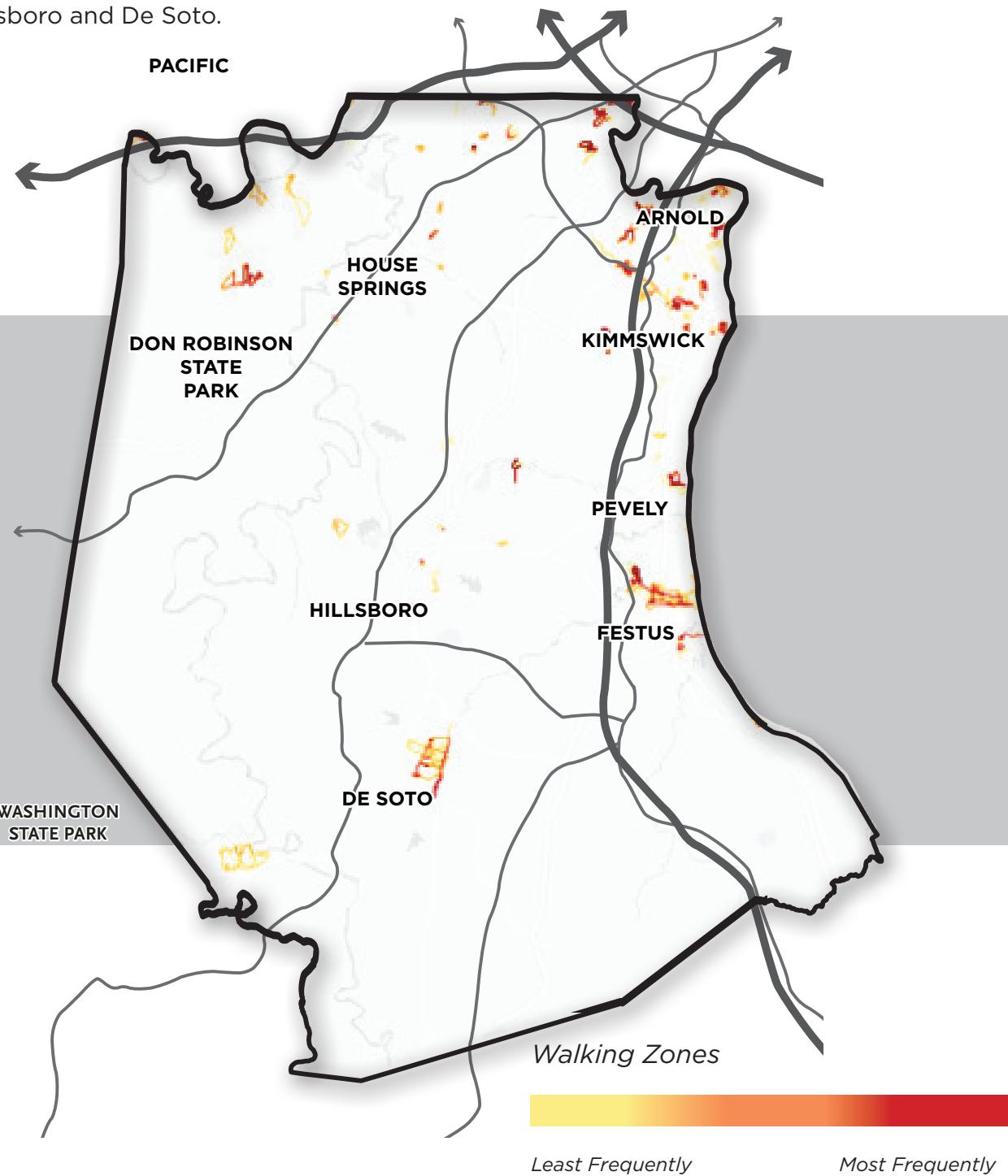
Indicators of Walking and Biking Activity

Understanding where current walking and biking activity occurs identifies where people are traveling now, pent-up demand for walking and biking, and potential gaps in the walking and biking transportation networks. This chapter shows actual user data from Strava, modeled walking and short driving trips from Replica, and census data indicating where there are populations with barriers to driving. While each of these data sets come with caveats, taken together they show clear patterns on demand for walking and biking.

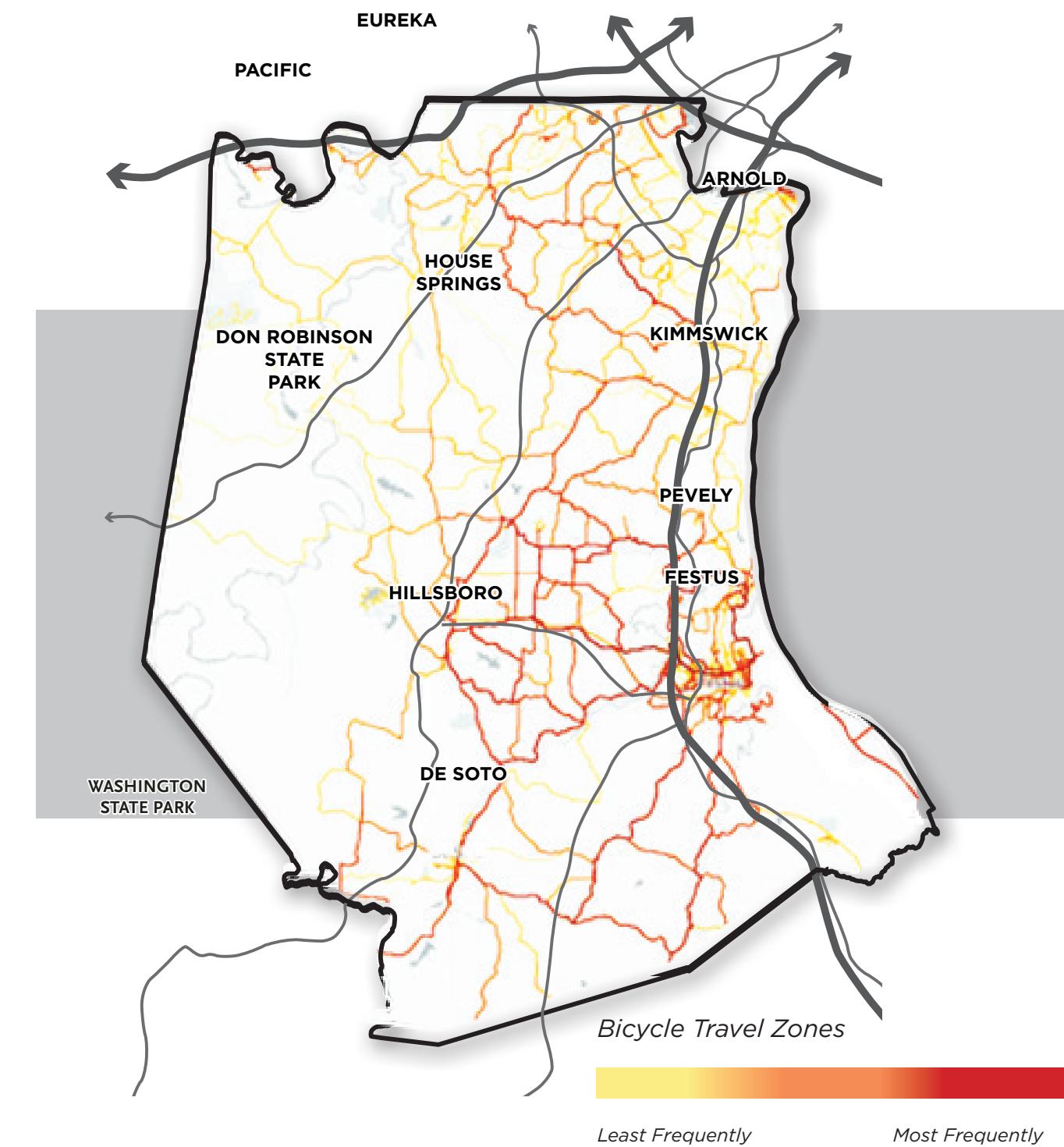


STRAVA WALKING AND BIKING

The data shown on the following maps comes from Strava, a fitness tracking app. Users track their paths while walking, running, hiking and biking. These data provide some indication of where walking and biking activity is happening today. The data shows that walking, running and hiking are happening in residential areas and in parks and nature reserves. People are biking in the eastern half of the county, especially around Festus, east of Hillsboro and De Soto.

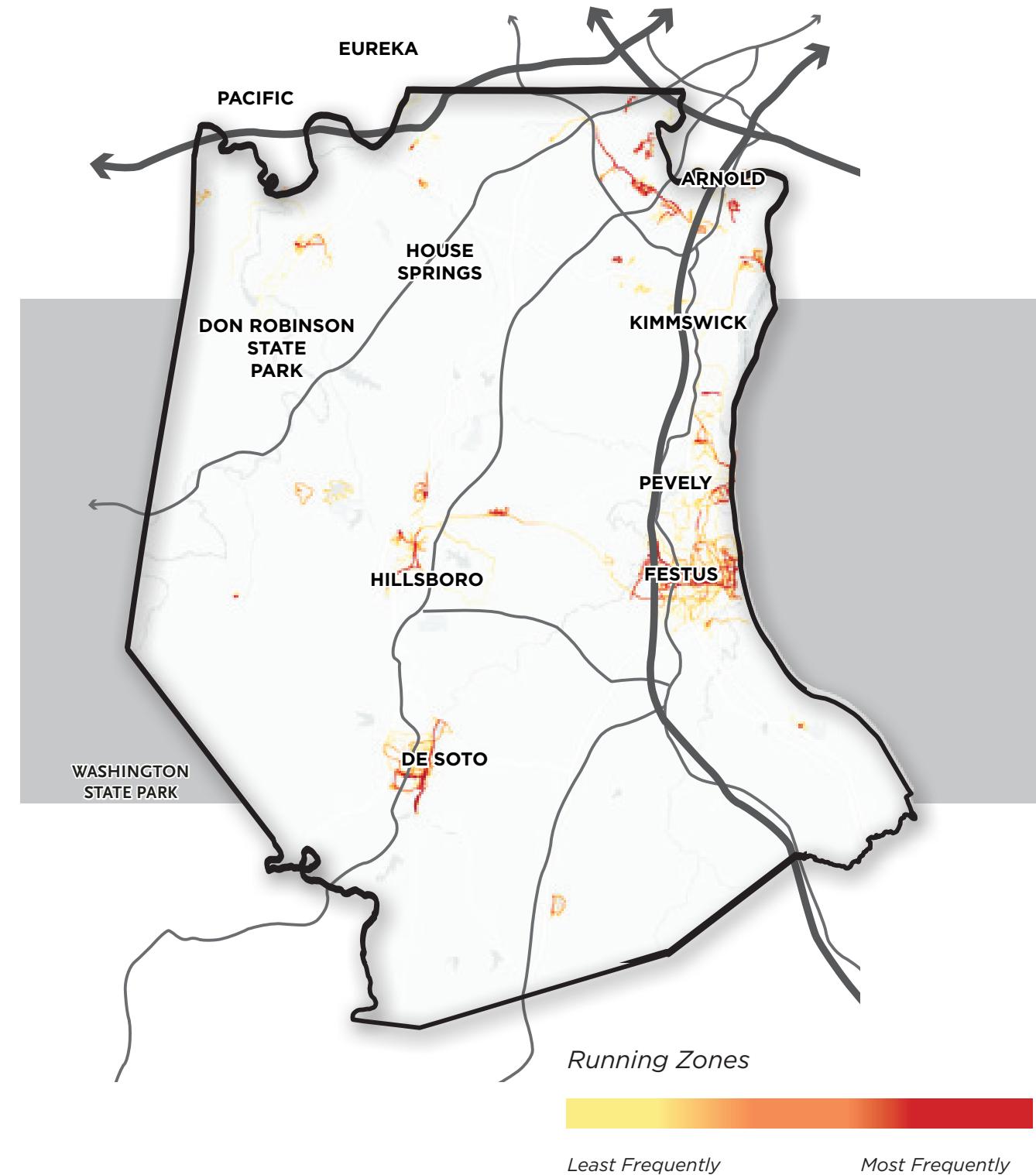
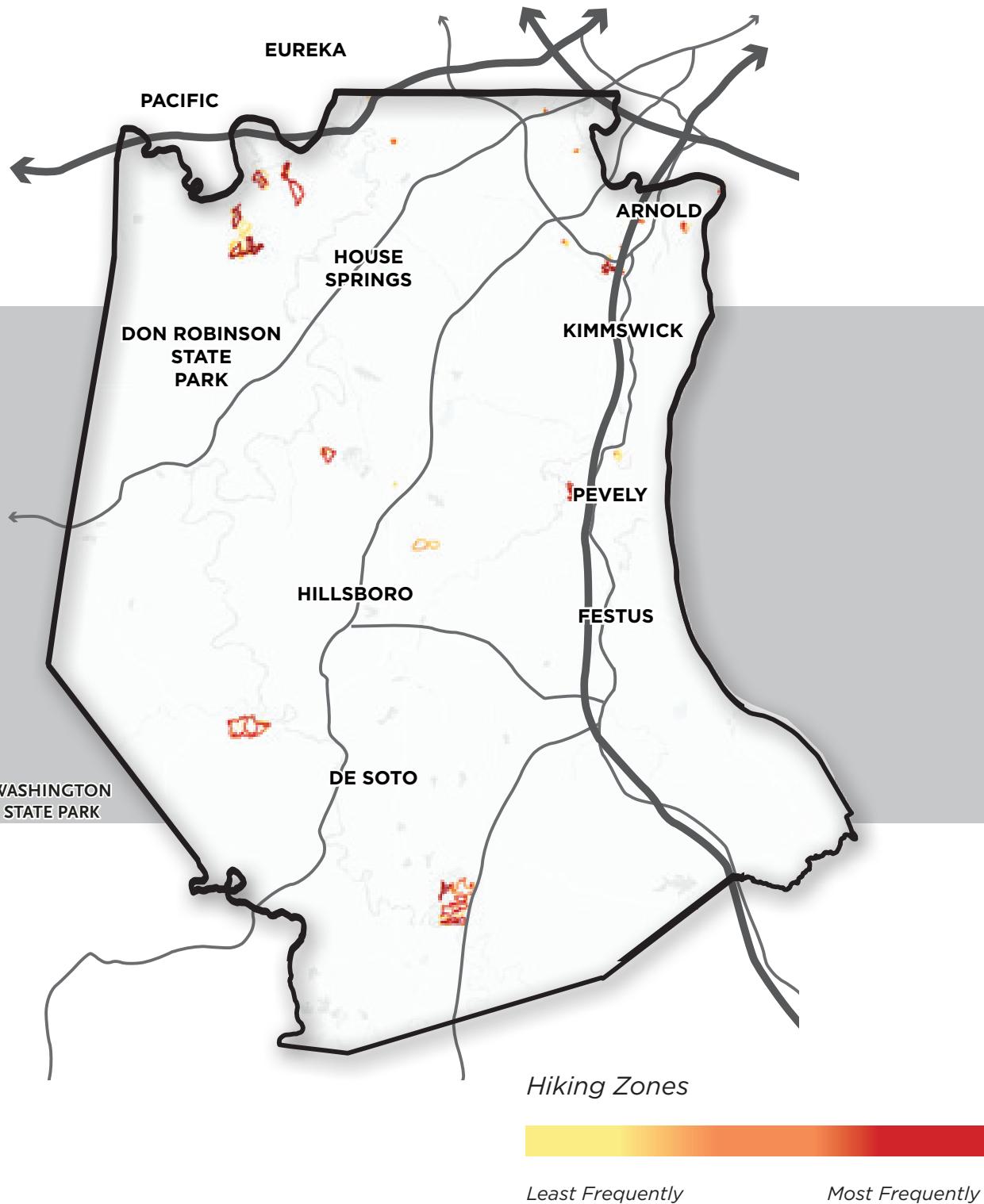


Importantly, Strava provides only a partial view of walking and biking activity. Users generally track their recreation and exercise rather than daily trips for transportation. Additionally, Strava users may be wealthier and more tech savvy than the general population. These data should be used in conjunction with other indications of walking and biking activity.



Note: Strava is a subscription fitness tracking app. These trips are only representative of people using the app. App users are likely to be more confident while walking and biking, and may choose to walk and bike along roads that may feel uncomfortable for the broader public.

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POPULATION WITH BARRIERS TO DRIVING

This index uses data from the American Community Survey to estimate the share of population that has substantial barriers to transportation by car. About 30% of the U.S. population does not have a driver's license. These people must rely on others for auto transportation, find alternatives to driving, or defer trips altogether.

The index was created based on the assumption that 29% of the population has a barrier to driving. The lowest index scores indicate that 5-10% of the population has some barrier to driving, while the highest index scores indicate as much as 65% or more.

The following population demographics were used to generate the index shown here, with the weight applied to that group included:

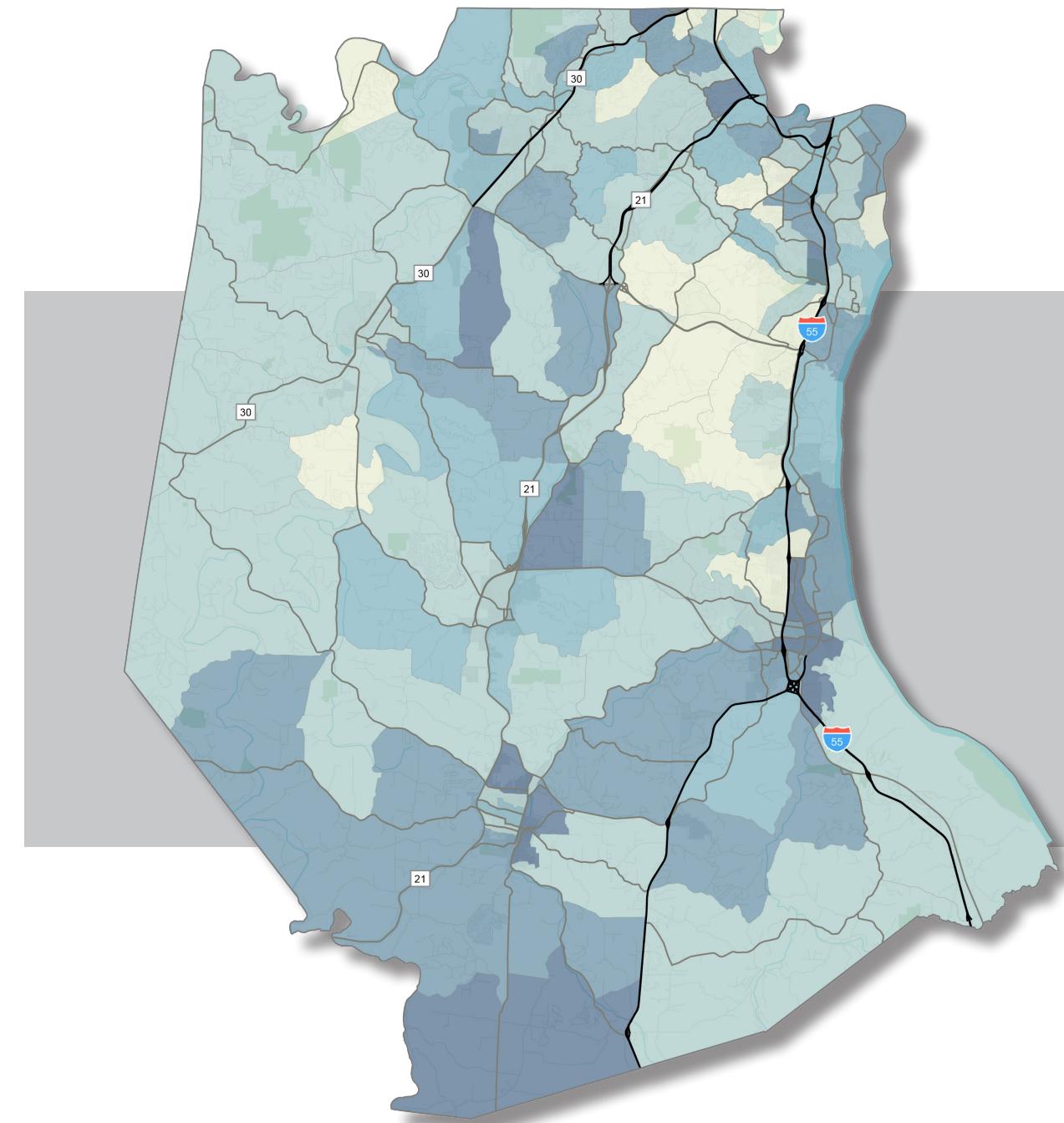
Estimated population in zero car households (Very High) – This subpopulation lives in a household that does not own a car. These people have no vehicle access that is not given by another household or service. In each census block group, the number of zero car households was multiplied by the average persons per household.

Population with a disability (High) – This group of people stated that they have a disability. In many cases, a disability creates difficulty driving or prevents driving altogether.

Low English Proficiency (High) – This group reports that they speak English “less than very well”. This metric is a proxy for immigrant status, which is related to a lower likelihood of having a driver's license. It also directly indicates difficulty reading English road signs.

Young population, age 24 or younger (Low) – The minimum age to receive a driver's license in Missouri is 16. All these young people must rely on family and friends for private vehicle mobility. Nationally, rates of car ownership are lower for those age 16-24. Even though this demographic may represent a large share of the population without direct auto access, it is weighted low here because many households regularly provide their young members with auto trips or access to a family car when old enough.

Senior population, age 65 or older (Low) – Nationally, seniors have lower rates of car ownership and driver licenses than the general population. Many seniors choose not to drive or must stop driving because of a normal decline in physical faculties like vision, upper body mobility and reaction time. This group is weighted low because of suspected high overlap with the population with a disability.



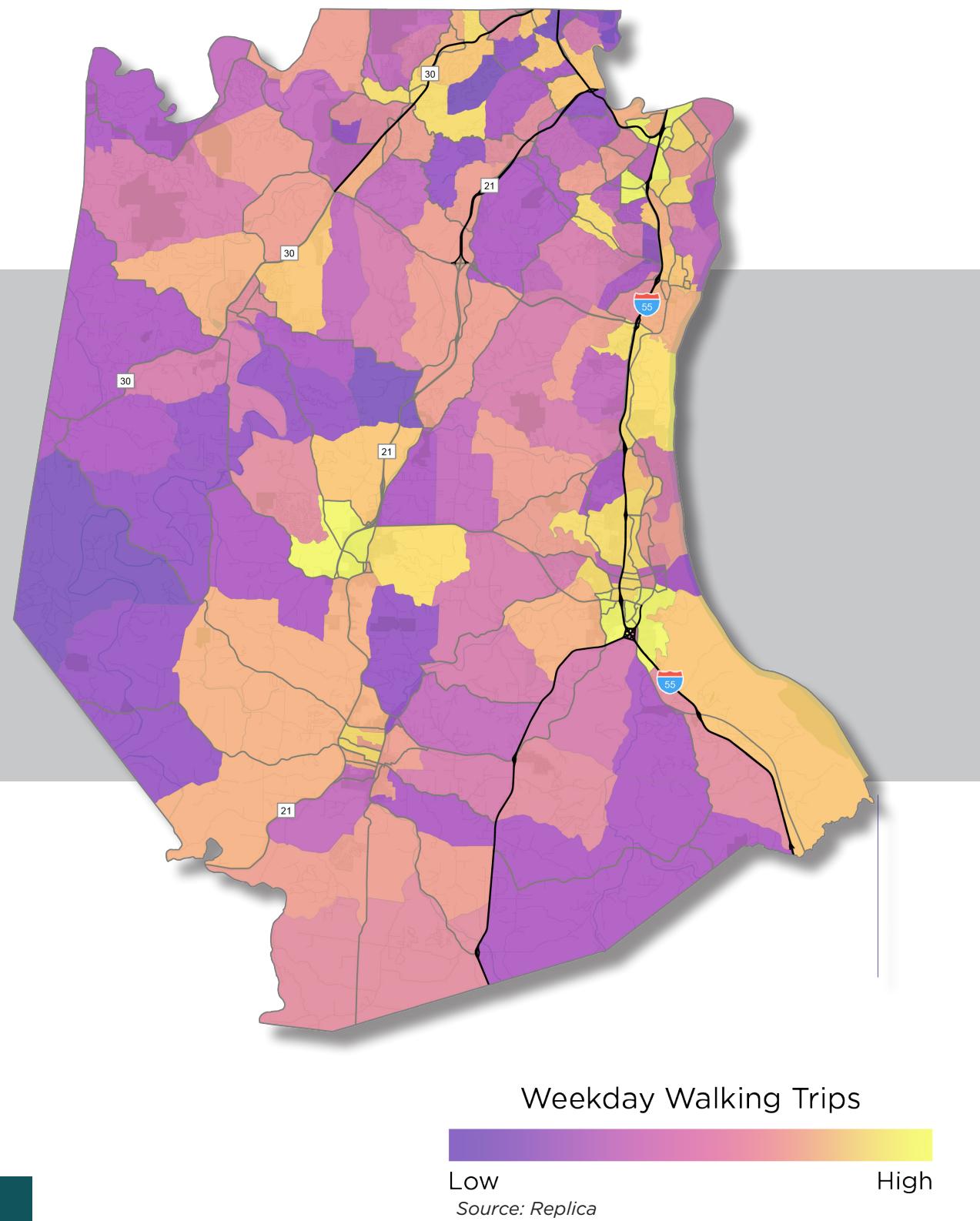
Share of Population with
Barriers to Driving

Low High

Source: ACS 5 year estimates, 2018-2022

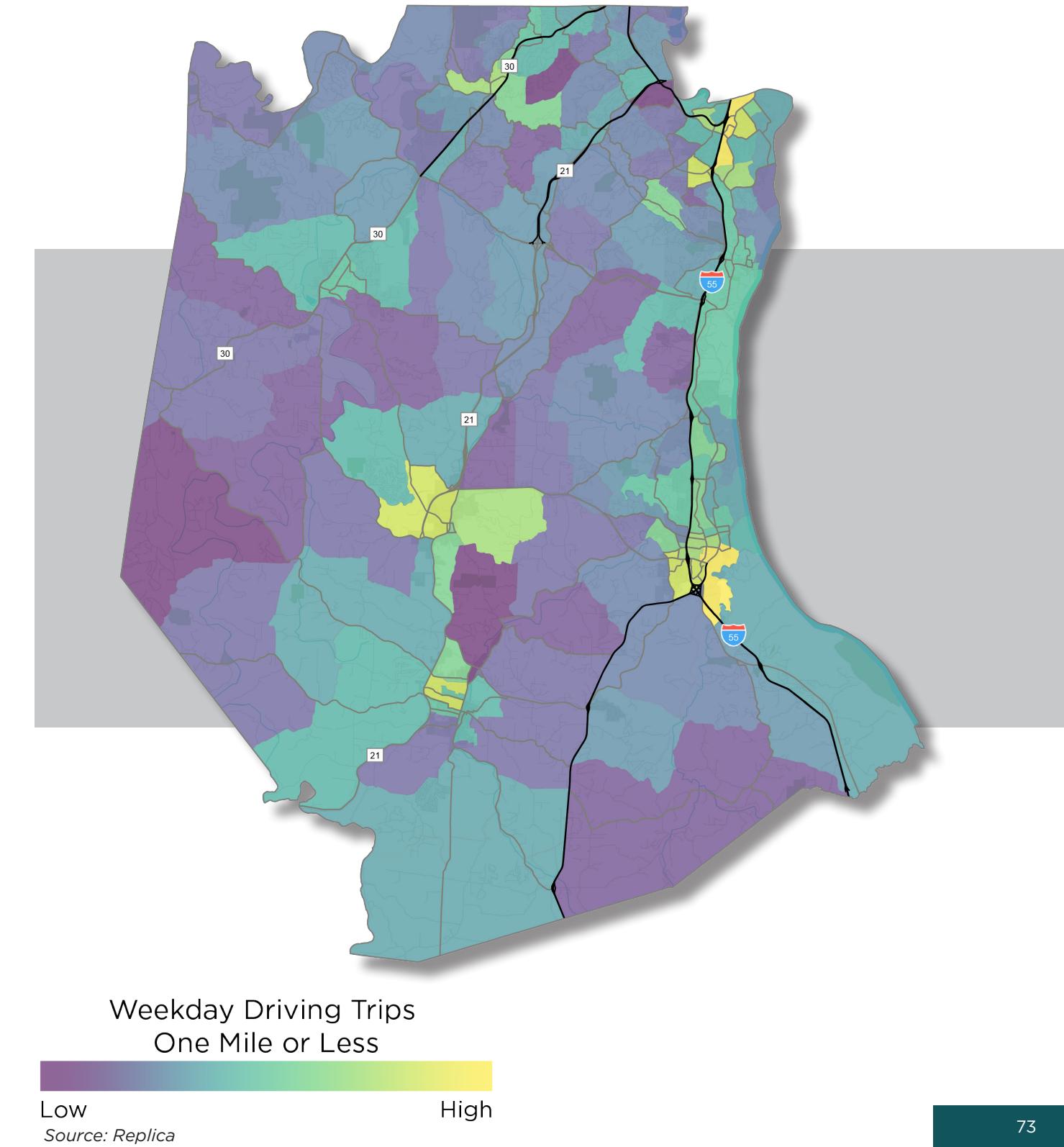
WEEKDAY WALKING TRIPS

The map shown here estimates the number of walking trips completed on a typical weekday in Fall 2023. These trips are made for a purpose; they exclude trips like walking the dog or jogging for exercise. The data comes from Replica, which estimates travel demand activity using the census, data from mobile devices, and other sources. Replica estimates roughly 58,000 daily walking trips on a typical weekday in Jefferson County.



SHORT DRIVING TRIPS - WEEKDAYS

The map shown here estimates the number of driving trips with a total distance of one mile or less completed on a typical weekday in Fall 2023. The data comes from Replica. These trips are short enough to be completed by walking, and they may represent high potential for a shift to walking trips, given the right circumstances. Replica estimates roughly 29,000 daily short driving trips on a typical weekday in Jefferson County.



Key Takeaways

There is significant biking activity in the rural areas of the county and between various cities

- Since there are already people biking on many streets and roads in the county over a broad geographic range, this further supports the need for a biking network throughout even the sparsely-populated areas of the county. This need is further emphasized since almost no roads currently being used by bicyclists have any dedicated bike infrastructure and are generally not considered to be comfortable roads to bike on by the vast majority of the public.

Most existing tracked walking and running activity is occurring within cities and other more densely-populated areas within Jefferson County - Most of Jefferson County's existing sidewalks are located within these more densely-populated areas. Even so, most of the local sidewalk networks within the various municipalities are disconnected among themselves, with significant gaps in the sidewalk networks. With fragmented local sidewalk networks, this may prohibit more people from walking.**There is hiking activity centered around several parks and nature preserves** - The lack of current walking and biking connections to these hiking areas is potentially limiting the amount of tourists who choose or are able to visit Jefferson County.

Substantial walking for transportation is already occurring - Replica data suggest that almost 60,000 daily walking trips are already taking place in Jefferson County. This is less than 10% of the total trip-taking activity, but dispels the notion that nobody walks for transportation. The County's walking infrastructure can better serve those who walk for transportation today.

Walking trips and short driving trips occur in similar locations - Cities and areas with higher population and destination density currently experience more walking trips, as well as more driving trips that are less than one mile in length, when compared to other parts of the county. This demonstrates a potential to convert current driving trips under one mile in length to walking or biking trips instead, and supports the idea that if residences and destinations are all closer to each other, this creates an environment that is more supportive of walking and biking, if sufficient walking and biking infrastructure is available.

Current data shows very little biking for transportation purposes - Replica estimates only about 1,700 biking trips on a typical weekday in Fall 2023.

