OCARTS REGIONAL ACTIVE TRANSPORTATION PLAN

ASSOCIATION OF CENTRAL OKLAHOMA GOVERNMENTS

4205 N. Lincoln Blvd. | OKC

2021

acog

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INTRODUCTION

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METROPOLITAN PLANNING ORGANIZATION

The Association of Central Oklahoma Governments (ACOG) serves as the Metropolitan Planning Organization (MPO) for the Central Oklahoma region. This is in compliance with the provisions of the Federal Highway and Federal Transit Acts of 1962, as amended by the Fixing America's Surface Transportation (FAST) Act, signed into law December 4, 2015. ACOG is a voluntary association of city, town, and county governments within the Central Oklahoma region. Established in 1966, ACOG's purpose is to aid local governments in planning for common needs, cooperating for mutual benefit, and coordinating for sound regional development. Key functions of the MPO include:

- Establish a setting for effective regional decision-making
- Identify and evaluate alternative transportation improvement options
- Prepare and maintain the Metropolitan Transportation Plan (MTP)
- Prepare and maintain the Transportation Improvement Program (TIP)
- Implement Performance-Based Planning and Programming (PBPP) initiatives in the MTP and TIP
- Involve the public

ACOG is responsible for transportation planning throughout the Oklahoma City Area Regional Transportation Study (OCARTS) area, containing all of Oklahoma County and Cleveland County and portions of Logan County, McClain County, Grady County, and Canadian County. See Figure 1.1 for a map of the ACOG and OCARTS areas.

ACOG supports and manages a variety of missions aimed at improving the lives of Central Oklahomans by serving as the MPO for the region. In this capacity, ACOG's primary role is to lead comprehensive, coordinated, and continuous transportation planning. As such, ACOG works with the Federal Highway Administration (FHWA), Federal Transit Administration (FTA), Oklahoma Department of Transportation (ODOT), area transit providers, local governments, the public, and other stakeholders to prepare the MTP and TIP. The MPO planning process and planning products are prerequisites for Central Oklahoma to receive federal transportation funding. The subsequent sections highlight a few of the major activities ACOG is involved with.

METROPOLITAN TRANSPORTATION PLAN

The MTP is developed at least every five years by ACOG and includes priorities for the next 30 years. The MTP is a fiscally constrained plan that outlines future investment in highway, transit, and multimodal improvements to support regional growth and ACOG goals. The plan includes recommendations for streets and highways, airport access, transit, freight movement, and bicycle and pedestrian facilities. Encompass 2040, the current MTP for the OCARTS area, was adopted by the MPO in October 2016. As of December 20, 2017, the OCARTS area is an air quality attainment area, and therefore the MTP for Central Oklahoma is updated every five years. Encompass 2040 includes over $10 billion in multimodal transportation investment projects, including preservation of the existing system.

TRANSPORTATION IMPROVEMENT PROGRAM

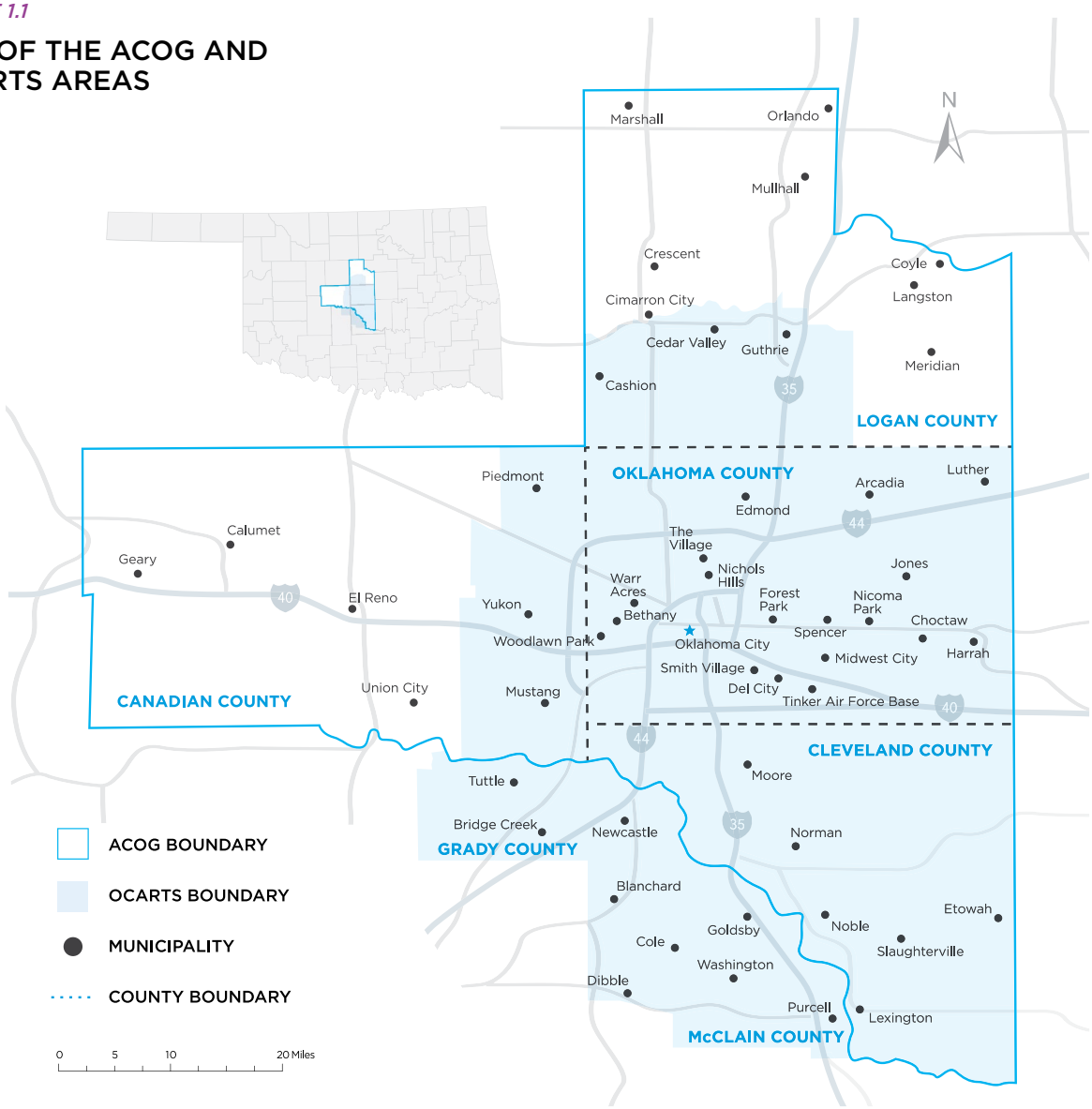
The TIP is a cooperatively developed four-year program outlining multimodal transportation improvements and services to be implemented within the OCARTS area. The improvements and services implemented work towards achieving the goals of the MTP. Selected projects must receive ACOG committee approvals before they are forwarded to ODOT and then to FHWA for approval. The TIP is also responsible for implementing and monitoring PBPP initiatives.

UNIFIED PLANNING WORK PROGRAM

The Unified Planning Work Program (UPWP) is a description of the proposed multimodal transportation planning activities to be conducted in the ACOG region during the fiscal year. The

FIGURE 1.1

MAP OF THE ACOG AND OCARTS AREAS



UPWP is prepared annually and serves as a basis for requesting federal planning funds from the U.S. Department of Transportation, as well as a management tool for scheduling, budgeting, and monitoring the planning activities of the participating entities. The UPWP presents the scope and direction of all transportation planning activities in the region and specifies which work program tasks will be accomplished during the fiscal year.

ACTIVE TRANSPORTATION

Active transportation is defined as any self-propelled, human-powered mode of transportation, such as walking or bicycling.[1] It is important for the region to invest in and plan for active transportation. Numerous studies have shown that active transportation benefits the equity, health, economy, and environmental condition of communities. Through focusing on active means of transportation, ACOG area communities may provide these benefits to their residents.

EQUITY BENEFITS

Investment in active transportation has historically taken place in upper-class communities. *Bridging the Gap Research* found that "lower- and middle-income communities are less likely than higher-income communities to require pedestrian-friendly improvements, active recreation areas, open

space, trails and bike lanes in their local land use laws."[2] Lower- and middle-income communities have the most to gain from active transportation improvements, as people in those communities are less likely to own vehicles and unsafe streets might pose a barrier to using active transportation. It is important to prioritize and include these communities when planning future facilities.

Between the upfront cost of a motor vehicle and reoccurring payments for insurance, gas, and maintenance, many people cannot afford to buy a vehicle, while others simply choose not to buy one. Communities need to build their transportation network to accommodate someone whose only form of transportation is walking, biking, or using public transit. To form a truly equitable transportation system, communities should facilitate access to activity centers for multiple modes of transportation.[3]

HEALTH BENEFITS

Individuals who stay active typically appreciate a great benefit in terms of both physical and mental well-being. A 2015 report from the Surgeon General emphasizes the importance of physical activity and recommends aerobic activity, like walking and biking, as a way to maintain a productive and healthy lifestyle. According to the report, 11% of premature deaths in the United States are related to a lack of physical activity. Those who are physically active have a 30% lower risk of a premature death than those who are inactive.[4]

According to the Center for Disease Control (CDC), the leading cause of death for Oklahomans is heart disease, followed closely by chronic lower respiratory disease and diabetes.[5] Bicycling and walking are inexpensive and accessible ways to mitigate these and other negative health outcomes. Despite the necessity of physical activity and apparent benefits that active transportation options have for individuals, multiple reports reveal that many Americans face obstacles, such as lack of adequate facilities, that keep them from walking or biking in their communities.[6] The responsibility falls on local and state governments to provide safe and convenient facilities for their residents.

ECONOMIC BENEFITS

Walking and biking are affordable forms of transportation that take people out of their cars and into the storefronts of local businesses. Multiple studies have found that people who bike to a business typically make more trips to the business and they spend more money at these businesses per month than those who drive. Furthermore, the *Protected Bike Lanes Mean Business* report explains how biking can improve the physical fitness and mental health of employees, resulting in up to 32% fewer sick days, 55% reduction in health costs, and 52% increase in productivity from employees who bike regularly.[7]

Millennials and Gen-Xers have started gravitating towards urban areas, resulting in more competition to attract residents among the nation's metropolitan areas. This important section of the workforce has been prioritizing communities where they can safely walk and bike to their workplace, the grocery store, or to entertainment.[8] Bicycle facilities and trails are also a benefit to property owners. For example, the Indianapolis Cultural Trail cost the city $62.5 million to build and yielded over a $1 billion increased value to the properties along the trail.[9]

Bicycling has been a significant tourism generator for small towns and large cities across the country. For example, Northwest Arkansas has seen significant investment in bicycle facilities in the last few years, resulting in over $27 million in economic benefits from visitors to the area in 2017.[10] Oklahoma Lieutenant Governor Matt Pinnell has highlighted tourism as a priority for the state. By prioritizing areas like Historic Route 66, Oklahoma has the ability to mimic the economic success of Arkansas and other states.

ENVIRONMENTAL BENEFITS

Active transportation through walking and biking decreases an individual's usage and dependency on motor vehicles and associated nonrenewable resources, thus reducing greenhouse gas emissions and air pollution in an environmentally positive way.[11] Integrating considerations for environmental impacts when planning for pedestrian and bicycle infrastructure can also help reduce stormwater

runoff and mitigate flooding. The *2020 State of the Air* report found that "nearly five in ten people—150 million Americans or approximately 45.8 percent of the population—live in counties with unhealthy ozone or particle pollution." Active modes of transportation can help reduce each individual's emissions, mitigating ozone and particle pollution through fewer single occupancy vehicle trips.[12]

REGIONAL ACTIVE TRANSPORTATION PLAN

The OCARTS Regional Active Transportation Plan (RATP) outlines future investments in bicycle and pedestrian improvements that support regional growth and ACOG goals. This plan is developed every five years by ACOG, although this is the first time the bicycle and pedestrian plans have been combined into one.

The RATP includes a series of long-term goals and objectives that form the basis for recommendations and prioritization. Priority areas and corridors are identified, along with several implementation strategies and recommendations to help the region achieve a robust active transportation network.

REGIONAL AND LOCAL PRIORITIES

The planning process uses regional priorities to identify locations across the area for investment and addresses gaps in the active transportation network. While regional priorities may or may not be the same as local priorities, the RATP is intended to highlight the primary issues that affect the region as a whole. This Plan does not dictate what communities should do or build, but instead acts as a guide for Central Oklahoma communities to use in their own active transportation planning and implementation activities. The data collected and analyzed for this regional plan will be shared with communities and organizations throughout Central Oklahoma, who will be encouraged to adapt the methodology to their own community's needs and to apply their own local priorities to this analytical process.

PLAN SNAPSHOT

The **Plan Summary** provides an overview of the plan document and should be referenced by community decision makers, elected officials, and others who are looking for a brief explanation of the plan and its contents.

The **Introduction** presents the OCARTS RATP and provides context to the plan's importance for local communities and future development.

The **Existing Conditions Chapter** addresses the region's progress since Encompass 2040 as it relates to active transportation.

The **Built Environment Chapter** provides an overview of the existing and planned bicycle and pedestrian network in the region. This section outlines priority areas and barriers the network must overcome.

The **Education and Encouragements Chapter** lists the programs and partnerships that are making Central Oklahoma more friendly for active modes of transportation.

The **Enforcement and Safety Chapter** highlights the laws, regulations, and safety trends of the region as they relate to bicyclists and pedestrians.

The **Evaluation and Planning Chapter** details the goals and objectives of this plan. It also lists the countermeasures and targets to be used going forward and details ACOG's role in achieving these targets.

The **Appendix** contains a compilation of resources and tools that support this plan including Design Guidelines, an overview of the Oklahoma City Metropolitan Area Tree Canopy Study, the Bicycle and Pedestrian Counts, and other useful resources.

EXISTING CONDITIONS

Since the inception of Encompass 2040 and associated plans, the OCARTS area has made strides to invest in and develop active transportation options. This section highlights major steps taken by ACOG and member communities to advance active transportation for area residents and visitors alike.

TABLE 2.1: PROGRESS SINCE PREVIOUS PLANS

2015 TARGET	2015 BASELINE	2020 DATA (or most current data)	OUTCOME
Increase the number of bicycle riders by 50% in 5 years	0.3% of commuters travel by bicycle (ACS, 2014, 5-year average)	0.3% of commuters travel by bicycle (ACS, 2019, 5-year average)	No Change
Increase the number of pedestrians by 100% in 5 years	1.6% of commuters travel by walking (ACS, 2014, 5-year average)	1.6% of commuters travel by walking (ACS, 2019, 5-year average)	No Change
Increase the number of low-stress bicycle facilities by 50% in 5 years	155 miles of low-stress bicycle facilities[13]	206 miles of low-stress bicycle facilities[14]	Increase of 33%
Increase the number of low-stress pedestrian facilities by 100% in 5 years	3,400 miles of sidewalk[15]	4,154 miles of sidewalk[16]	Increase of 22%
Decrease bicycle and pedestrian crash rate by 50% with zero fatalities	Total bicycle and pedestrian Injury Crashes – 1,603 Total bicycle and pedestrian Fatalities – 65 (SAFE-T, 2007-2011)	Total bicycle and pedestrian Injury Crashes – 1,163 Total bicycle and pedestrian Fatalities – 156 (SAFE-T, 2013-2017)	27% decrease in total bicycle and pedestrian injury crashes 140% increase in total bicycle and pedestrian fatalities

PROGRESS SINCE ENCOMPASS 2040

Developed at least every five years, Encompass 2040 serves as the most recent long-range MTP for the OCARTS area. Encompass 2040 set priorities for Central Oklahoma's transportation system over the next 30 years and includes both policy recommendations and specific projects that guide expenditure of the region's limited transportation dollars. ACOG's previous Regional Bicycle Master Plan and Regional Pedestrian Master Plan supported this MTP.

Encompass 2040 and the accompanying bicycle and pedestrian plans set goals and targets for the region's active transportation network. These goals and targets were determined through ACOG's Bicycle and Pedestrian Advisory Committee (BPAC) and approved by the Intermodal Transportation Policy Committee (ITPC). Using 2015 data as the baseline compared to updated 2020 data, it's possible to measure the region's progress since these plans' implementation. Table 2.1 indicates the previous plan's targets and the resulting outcomes.

DAILY COMMUTE BY MODE OF TRANSPORTATION IN THE OCARTS AREA

As Table 2.2 indicates, there has not been a significant change in active transportation commuting in the OCARTS area over the past few years. Around 0.3 percent of all residents commute by bicycle, about 1.6 percent commute by walking, and around 0.5 percent commute by using public transportation. Driving or riding in a car, van, or truck remains the largest category, with around 93.2 percent of all commuters. The percentage of people choosing to work from home has been slightly increasing over this five-year period.

MAJOR BICYCLE AND PEDESTRIAN FUNDING PROGRAMS

Through ACOG sponsored programs, over 33 million dollars have been invested in regional bicycle and pedestrian related projects since 2014. Key programs for funding include the Transportation Alternatives Program, the Air

TABLE 2.2: *DAILY COMMUTE BY MODE*

COMMUTE BY MODE	2015	2016	2017	2018	2019
Car, truck, or van (Drove alone)	83.1%	83.3%	83.3%	82.9%	83.9%
Car, truck, or van (Carpool)	10.2%	9.9%	10%	8.8%	8.5%
Public transportation (excluding taxicab)	0.5%	0.4%	0.4%	0.6%	0.5%
Bicycle	0.3%	0.3%	0.3%	0.2%	0.2%
Walked	1.6%	1.6%	1.5%	2.1%	1.3%
Taxicab, motorcycle, or other means	1%	1%	0.9%	1.2%	1.2%
Worked at home	3.3%	3.5%	3.7%	4.2%	4.4%

source: American Community Survey (ACS), 2019[17]

FIGURE 2.1: DAILY COMMUTE BY MODE: 5-YEAR AVERAGE

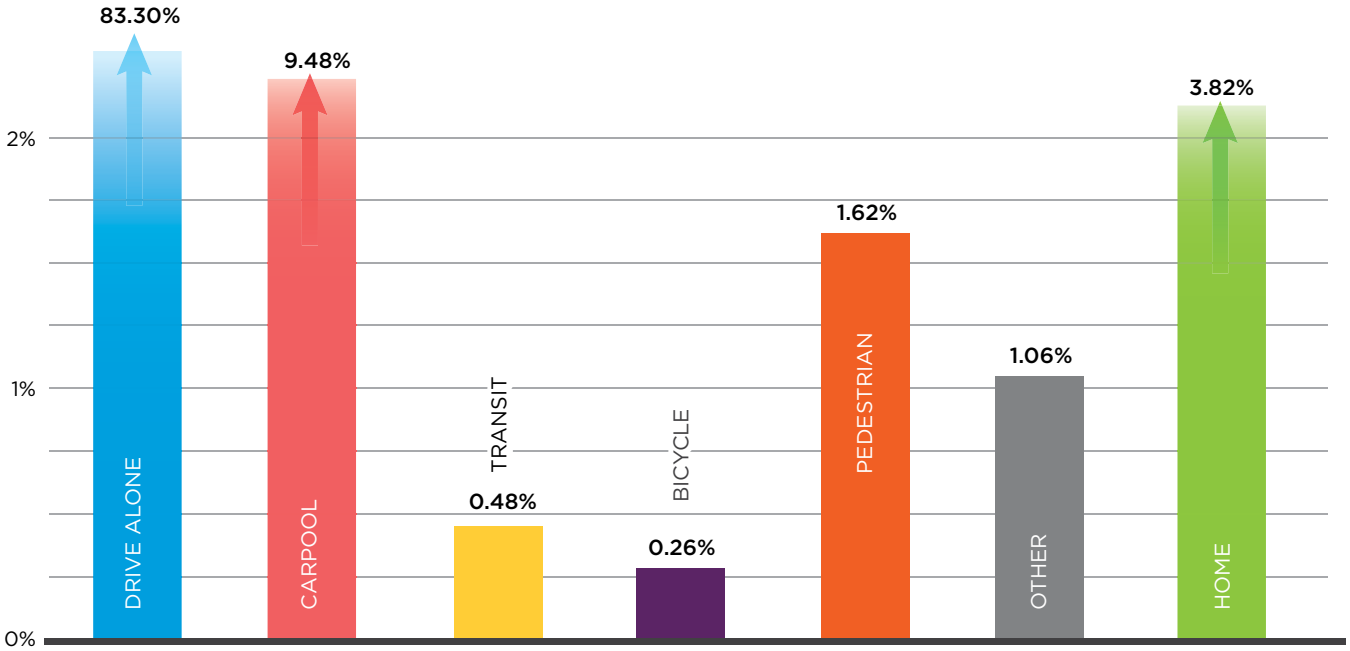


TABLE 2.3 : TRANSPORTATION ALTERNATIVES PROGRAM PROJECTS

SPONSOR AGENCY	PROJECT DESCRIPTION	FUNDING YEAR	TOTAL PROJECT COST
Midwest City	W Palmer Loop Trail	2014 TAP	$665,000
Midwest City	Midwest City Elementary School Connector	2014 TAP	$121,000
Oklahoma City	W. Overholser Bike Route/ Sidewalk	2014 TAP	$377,071
Oklahoma City	Envision 240 Pedestrian Improvements	2014 TAP	$538,400
CART	Expansion of Bike Share Program	2018 TAP	$17,142
Choctaw	23rd Street Sidewalk (Clarke - Henney)	2018 TAP	$619,200
COTPA/Spokies	Bike Share Service Area Expansion	2018 TAP	$121,622
Del City	Kerr/Vickie Sidewalk	2018 TAP	$288,000
Edmond	Creek Bend Trail	2018 TAP	$1,392,000
Midwest City	Rail with Trail Phase 2	2018 TAP	$380,000
Midwest City	Rail with Trail Phase 3	2018 TAP	$750,000
Norman	State Highway 9 Multimodal Path Phase 2	2018 TAP	$1,130,000
Norman	Constitution Street Multimodal Path	2018 TAP	$2,350,000

CONTINUED

Quality Small Grant program, and the Surface Transportation Block Grant (STBG) program. Member communities have also invested heavily in bicycle and pedestrian facilities through local bond and sales tax projects.

TRANSPORTATION ALTERNATIVES PROGRAM

The Transportation Alternatives Program (TAP) is a program that started under the Moving Ahead for Progress in the 21st Century Act (MAP-21), signed into law July 6, 2012. The Fixing America's Surface Transportation (FAST) Act, signed into law December 4, 2015, eliminated the MAP-21 TAP and replaced it with a set-aside of the STBG program funding. These set-asides include all projects that were previously eligible under TAP, such as pedestrian and bicycle facilities, recreational trails, safe routes to school projects, community improvements, and environmental mitigation related to stormwater and habitat connectivity.

The first time ACOG conducted a TAP call for projects was in 2014, awarding funds from years 2013 and 2014. ACOG awarded approximately $2.8 million for projects in this cycle. In 2018, ACOG awarded TAP funding for FY 2015-2020. In these six years of funding, ACOG granted approximately $8.4 million for projects in the Oklahoma City Urbanized Area (UZA). Projects that have been awarded TAP funding through ACOG can be viewed in Table 2.3.

AIR QUALITY SMALL GRANT PROGRAM

ACOG's Air Quality Small Grant Program (formerly known as the Congestion Mitigation and Air Quality Small Grant Program) funds small transportation infrastructure projects and congestion relief efforts

TABLE 2.3: CONTINUED

SPONSOR AGENCY	PROJECT DESCRIPTION	FUNDING YEAR	TOTAL PROJECT COST
Norman	Flood Avenue Multimodal Path	2018 TAP	$2,350,000
Oklahoma City	4th Street Bike/Ped/Transit Improvements	2018 TAP	$606,612
Oklahoma City	Robinson Avenue Road Diet	2018 TAP	$72,165
Oklahoma City	Grand Boulevard (N and S combined)	2018 TAP	$1,088,150
Oklahoma City	Will Rogers and West River Trail Amenities	2018 TAP	$204,465
Oklahoma City	Shartel Sidewalks	2018 TAP	$242,945
Oklahoma City	Deep Fork Trail	2018 TAP	$1,200,000
Oklahoma City	Grand Blvd Intersections Improvements	2018 TAP	$400,000
Oklahoma City	Eagle Lake Trail	2018 TAP	$1,395,000
Oklahoma City	4th Street Bridges	2018 TAP	$2,857,000
Warr Acres	Pedestrian Improvements	2018 TAP	$706,000
Yukon	Garth Brooks Trail	2018 TAP	$720,000

TABLE 2.4 : AIR QUALITY SMALL GRANT PROJECTS

SPONSOR AGENCY	PROJECT DESCRIPTION	FUNDING YEAR	FEDERAL FUNDS
Oklahoma City	Improvements for Commercial Districts and Schools	2014	$39,807.00
CART/University of Oklahoma	Bike and Bus Program	2014	$10,123.00
Norman	Bicycling Safety Program	2014	$6,575.00
Yukon	Bike Racks for Yukon	2014	$21,000.00
COTPA/Spokies	Spokies Smart Bike Expansion	2018	$69,998.24
Oklahoma City - Planning Department	OKC Bus Shelters	2018	$52,875.00
Edmond	Ayers Lane Reapportionment and Dedicated Bicycle Lanes	2019	$155,000.00
Oklahoma City - Office of Sustainability	Downtown OKC Bike Racks and Repair Stations	2019	$27,600.00

TABLE 2.5 : SURFACE TRANSPORTATION BLOCK GRANT BICYCLE AND PEDESTRIAN PROJECTS

SPONSOR AGENCY	PROJECT DESCRIPTION	FUNDING YEAR	FEDERAL FUNDS
Norman	Sidewalks at McGee Dr., SH-9 to Cherry Stone St.	2014	$ 204,000.00
Edmond	Share-the-Road Signage/Stripe	2014	$ 86,700.00
Midwest City	Upgrades to Multiple Pedestrian Signals	2014	$417,305.46
Oklahoma City	Pedestrian Hybrid Beacon at NW 23 St. Ross Ave to Miller Blvd.	2017	$ 96,891.63
Norman	Upgrades to Multiple Pedestrian Signals	2018	$533,540.00
Midwest City	Upgrades to Multiple Pedestrian Signals	2018	$ 738,070.30

CONTINUED

that strive towards the betterment of regional air quality. Awards are made available to eligible applicants through a competitive grant process. A variety of projects are eligible, including bicycle and pedestrian improvements, and all serve to address long-term reduction in transportation-related emissions that contribute to the formation of ground-level ozone. Projects that have been selected in the past five years can be seen in Table 2.4.

SURFACE TRANSPORTATION BLOCK GRANT URBANIZED AREA PROGRAM

When signed into law, the FAST Act retained the Surface Transportation Program, renaming it the Surface Transportation Block Grant Program (STBG-UZA, formerly STP-UZA). The term STBG-UZA refers to the Surface Transportation Block Grant Program funds sub allocated to the Oklahoma City Urbanized Area called for by the FAST Act. Projects that can be funded through STBG-UZA include road widenings, new construction, resurfacing, bridges, transit projects, park and ride facilities, HOV lanes, carpool administration, safety projects, and independent bicycle and pedestrian facilities/projects. Historically, bicycle and pedestrian projects scored low compared to other project types, but with scoring revisions in 2018, these projects have been more competitive and now consistently score in the top tier of projects. Other recent changes have dictated that bicycle and pedestrian projects can take up no more than 10 percent of all STBG-UZA funds. Bicycle and pedestrian STBG-UZA projects from the past five years can be viewed in Table 2.5.

METROPOLITAN AREA PROJECTS (MAPS)

The Oklahoma City MAPS programs are capital investment initiatives to improve quality of life, funded by a series of temporary penny sales taxes. The first MAPS program began with the original MAPS vote in December 1993. Every time someone makes a purchase in Oklahoma City, one penny of every dollar spent goes to the MAPS program. Each

TABLE 2.5: CONTINUED

SPONSOR AGENCY	PROJECT DESCRIPTION	FUNDING YEAR	FEDERAL FUNDS
Oklahoma City	Pedestrian Hybrid Beacon at Meridian Ave between NW 52 and NW 53	2018	$51,996.16
Oklahoma City	S Walker Ave, SW 44th St, & S Robinson Ave	2020	$2,088,407.40
Oklahoma City	N Portland Ave and NW 50th St	2020	$1,354,997.96
Oklahoma City	S Pennsylvania Ave and SW 59th St	2020	$1,122,846.26
Oklahoma City	S Blackwater Ave & S Western Ave: SW 36th Ave to SW 59th	2020	$1,597,397.13
Oklahoma City	N Classen Blvd: NW 50th to Classen Curve	2020	$433,952.39
Oklahoma City	S Western Ave, S. Walker Ave, and S. Robinson Ave	2020	$1,569,852.87
Oklahoma City	N Pennsylvania Ave: NW 36th St to Park Pl	2020	$1,049,836.77
Midwest City	Signal Pedestrian Project	2020	$853,372.51

program has been overseen by a volunteer board, which makes recommendations to the Oklahoma City Council. Passed by popular vote in 2009, MAPS 3 funded $39.5 million for trails and $18.1 million for sidewalks in OKC. Voters approved the next iteration of MAPS, MAPS 4, on December 10, 2019.

MAPS 4 is expected towards bring in just under $1 billion to go towards capital projects in Oklahoma City. $87 million has been designated to transform the environment in neighborhoods across Oklahoma City by providing funding for sidewalks, bike lanes, trails, and streetlights.

Of the $87 million going to active transportation, $55 million of this is for the construction of sidewalks, sidewalk amenities, and placemaking. The amenities may include trees, sustainable infrastructure, landscaping, drainage, and public art. These projects will be prioritized by the Pedestrian Priority Areas and schools identified by the bikewalkokc plan[18], as well as other districts and community assets. 20 million dollars will be dedicated to the construction of bicycle lanes and related bicycle facilities, taking into consideration the guidance of the bikewalkokc plan. Another $8 million will be dedicated to trail connectivity to Lake Stanley Draper and the Oklahoma River in south Oklahoma City, as well as trail amenities, potentially including bathrooms, water fountains, and signage throughout the Oklahoma City trail system. Finally, $4 million is designated for the placement of 1,000 new streetlights in areas that lack them.

REGIONAL PARTNERS

LOCAL GOVERNMENTS

Communities across the OCARTS region are actively improving conditions for bicycling and walking by planning for and implementing active transportation infrastructure, programs, and policies. ACOG member governments are responsible for providing local facilities and improving bicycling and walking conditions for all residents and visitors. These efforts are critical to creating a more connected, safe, and livable region.

Member communities and stakeholders participate in regional active transportation planning through ACOG's BPAC. This committee monitors bicycle and pedestrian infrastructure, policy, and activities in the region and advises the ACOG ITPC on matters related to active transportation.

OKLAHOMA DEPARTMENT OF TRANSPORTATION

The Oklahoma Department of Transportation (ODOT) influences bicycling and walking in the OCARTS region and in communities across the state. ODOT sets the stage for active transportation planning in Oklahoma as it works with communities and MPOs on multimodal transportation projects.

ACOG works closely with ODOT when administering federal funding, particularly through the TAP and STBG-UZA programs. Through this partnership, ACOG provides millions of dollars to communities for active transportation projects.

LOCAL ORGANIZATIONS

Organizations that advocate for bicycling and walking infrastructure, and for better policies and practices related to active transportation, are important partners in the overall effort to improve conditions throughout the region. There are several active bicycling and walking organizations in the region, such as BikeOklahoma, The Oklahoma Bicycle Society, and the Oklahoma City Land Runners. Through advocacy and community involvement, these groups can address issues that go beyond the scope of ACOG and member communities.

SHARED MICROMOBILITY

SPOKIES: OKLAHOMA CITY

The City of Oklahoma City launched its Spokies bike share program in 2012, at which time it was managed by Downtown Oklahoma City, Inc. Spokies was established to promote energy efficiency, including alternative methods of transportation. Management of Spokies has since shifted to the Central Oklahoma Transportation and Parking Authority (COTPA). In June 2019, Spokies launched their dockless DASH bikes with funding from ACOG's Air Quality Small Grant program and assistance from Downtown OKC, Colony Partners, and Uptown 23rd. Spokies has a network of 66 bikes available in the central Oklahoma City area.

BUM-A-BIKE:
UNIVERSITY OF CENTRAL OKLAHOMA, EDMOND

The Bum-A-Bike program allows students, faculty, and staff at the University of Central Oklahoma to check out bikes free-of-charge for up to two weeks at a time. This program is free to anyone with a UCO ID. The university currently has a fleet of approximately 70 bicycles, in various styles available to ride on and off campus.

CRIMSON CRUISER:
UNIVERSITY OF OKLAHOMA, NORMAN

The Crimson Cruisers launched in April 2017 with the OU Student Government Association in collaboration with The Gotcha Group, an organization that partners with universities and cities to create bike share systems. The program began with 75 bikes and has since expanded to 100 bikes. Students and faculty get one hour of free bike usage a day, and community members on campus may use the bikes for $5 an hour. Bikes are available to use on and off campus.

DOCKLESS ELECTRIC SCOOTERS

Shared dockless electric scooters are a mobility device run on battery power that do not have to be docked at a designated location. These forms of mobility have seen a boom in popularity over the past few years. Starting as an alternative to bike share, scooters have proved to be more accessible and convenient than their bicycle counterparts. Companies like Lime and Bird have placed scooters in several Central Oklahoma communities.

Lime and Bird entered the region in mid-2018. They quickly expanded operation across Oklahoma City, Moore, Norman, and Edmond, becoming a

TABLE 2.6 : OCARTS COMMUNITIES' ACTIVE TRANSPORTATION PLANS

COMMUNITY	PLAN	YEAR
Edmond	Edmond Bicycle Master Plan	2012
Guthrie	Comprehensive Plan	2002
Harrah	Comprehensive Plan	2018
Jones	Comprehensive Plan	2018
Luther	Comprehensive Plan	2018
Midwest City	Midwest City Trails Master Plan	2009
Moore	Moore Trails Master Plan	2008
Nicoma Park	Comprehensive Plan	2018
Norman	Comprehensive Transportation Plan	2014
Oklahoma City	bikewalkokc	2018
Piedmont	Trails Master Plan	2018
Yukon	Trails Master Plan	2014

common vehicle on the road and sidewalk. The scooters have primarily been used as a means of recreation and transportation for trips 2 miles or less. There are many benefits of having this mode of transportation in the region. Dockless scooters can reduce the number of motor vehicle trips in the area, they allow residents to travel downtown areas quickly and affordably, and they work well as a first and last mile connector for transit users.

As scooters have been introduced and their popularity increased, the safety of scooter users has become a major concern. A study of injuries in the Los Angeles area, published in the medical journal JAMA Network Open, found that more people are injured through use of dockless electric scooters than from bicycling or walking. Common injuries from crashes include fractured or broken bones, contusions, sprains, and in extreme cases, death. ADA concerns are also raised over parked scooters being an obstruction on sidewalks and users riding at high speeds on sidewalks, consequently endangering pedestrians.

OCARTS COMMUNITIES WITH CURRENT BIKE AND/OR PEDESTRIAN PLANS

It is important for governments in the region to prioritize active transportation within their respective communities. Dedicated bicycle and pedestrian master plans support safe and well-connected transportation networks. So far, in the OCARTS area, the communities noted in Table 2.6 have plans that relate to active transportation or contain specific bicycle and pedestrian information within their current comprehensive plans.

3 BUILT ENVIRONMENT

This section of the plan identifies the existing and planned bicycle and pedestrian facilities, physical barriers, priority corridors, and composite index analyses in the OCARTS area.

BICYCLE FACILITIES

ACOG collects bicycle network information from local governments and organizations in the area. This data was compiled and categorized by facility type. Categories include paved shoulders, sign-on-road bike routes, bike lanes, shared use paths, and protected bike lanes. The data collected is a resource available to assist local governments with their future planning efforts.

TABLE 3.1: MILEAGE OF EXISTING AND PLANNED BICYCLE NETWORK IN THE OCARTS AREA

NETWORK	MILES	PERCENTAGE OF TOTAL CENTERLINE STREET MILES
Total Centerline Street Miles	10,750	100%
Existing Bicycle Network	550	5%
Planned and Proposed Bicycle Network	1,186	11%
Future Bicycle Network (existing and planned/proposed)	1,596	15%

TABLE 3.2: TOTAL MILES BY TYPE OF FACILITY

BICYCLE FACILITY TYPE	EXISTING MILES	PLANNED AND PROPOSED MILES	FUTURE TOTAL MILES
Paved Shoulder	24	15	39
Sign-on-Road Bike Route	320	272	447
Bike Lane (no protection)	24	234	258
Shared Use Path	182	535	722
Protected Bike Lane	0	131	131

TABLE 3.3: MILES OF BICYCLE NETWORK BY CITY IN THE OCARTS AREA

CITY	EXISTING MILES	PLANNED OR PROPOSED MILES
Bethany	7.11	---
Choctaw	1.60	25.36
Del City	3.68	1.86
Edmond	47.7	189.32
Guthrie	0.80	25.96
Harrah	1.94	5.93
Luther	9.99	11.84
Midwest City	16.68	58.37
Moore	14.76	42.19
Mustang	1.64	---
Newcastle	0.46	---
Nichols Hills	1.75	0.17
Noble	0.36	---
Norman	156.32	291.71
Oklahoma City	261.16	429.82
Tuttle	---	0.66
Purcell	0.88	---
Slaughterville	9.88	---
Yukon	8.13	42.01

ONLINE MAP: http://arcg.is/LKuqC

FIGURE 3.1

EXISTING BICYCLE NETWORK

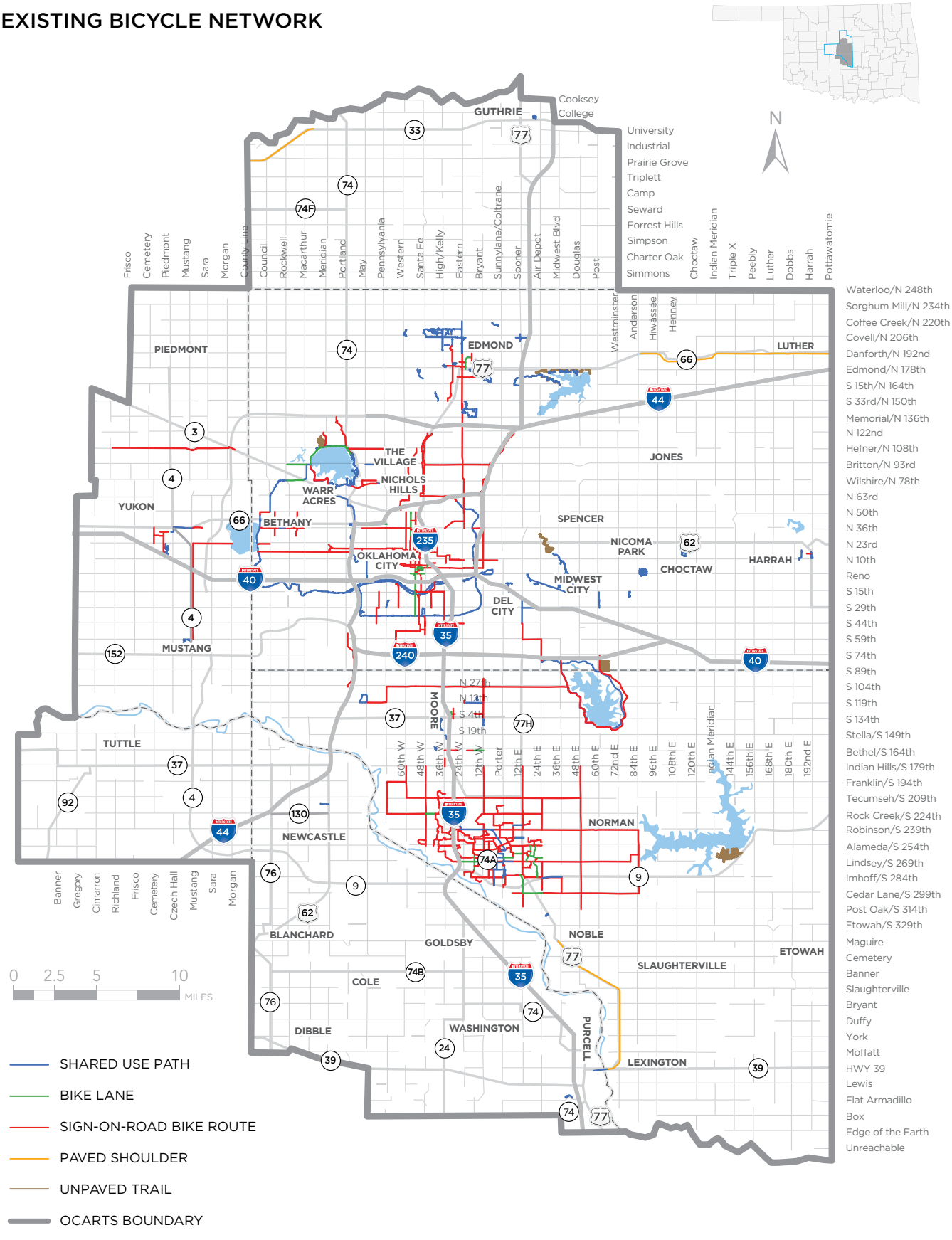


FIGURE 3.2

PLANNED AND PROPOSED BIKE NETWORK

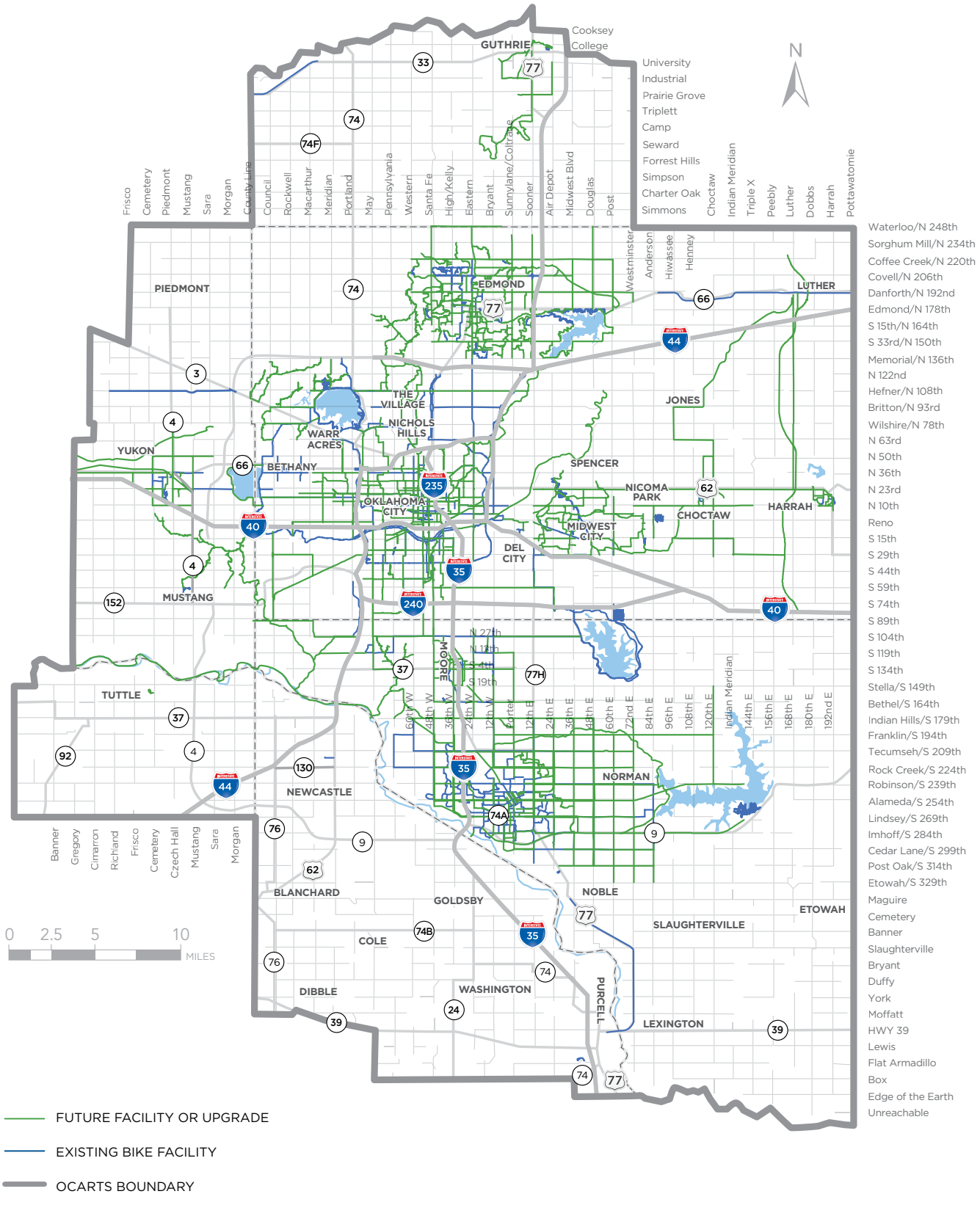


FIGURE 3.3: MILES OF BICYCLE NETWORK IN THE OCARTS REGION BY YEAR

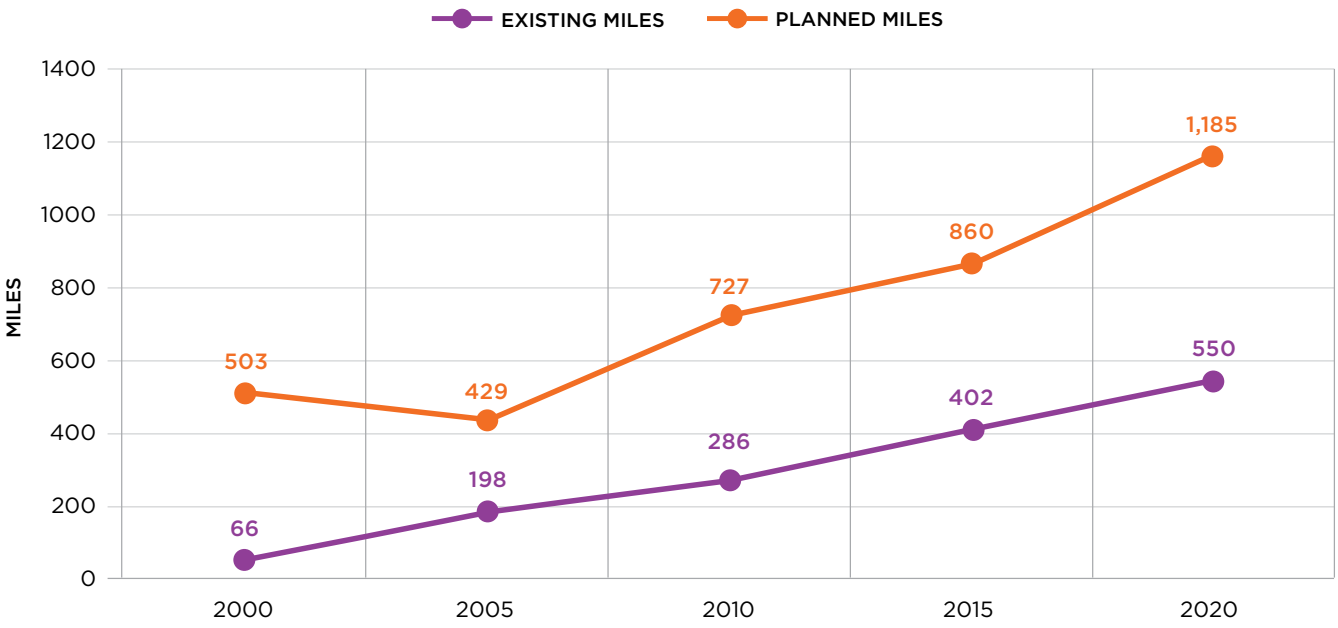


TABLE 3.4: MILES OF OCARTS SIDEWALK

FACILITY	MILES
Total Centerline Street Miles	10,750
Existing Sidewalks	4,154

PLANNING FOR BICYCLE FACILITIES

BICYCLE COMPOSITE INDEX

The Bicycle Composite Index (BCI) identifies areas of regional priority for bicycle facility improvements. The index is adapted from the Pedestrian Composite Index developed by the Mid-Region Council of Governments[19] in New Mexico. The index considers locations that generate bicycle activity and those that deter bicycle activity. These two factors are combined to determine areas of high, medium, and low priority. The BCI Map can be seen on Figure 3.4 and the methodology can be viewed in Appendix D.

PRIORITY BICYCLE CORRIDORS

ACOG's BPAC committee met several times during the planning process to alter and finalize the priority bicycle corridors. The committee used existing bicycle facilities and planned facilities to identify key routes that connect the various bike networks and high demand locations (parks, lakes, and population centers) in the region. This network is designed to get bicyclists around these areas of the region safely and quickly. Existing bicycle facilities on these routes are ideal for expansion or improvement. It should be noted these are suggestions only. This is a long-term vision for the region and cities have the freedom to adapt this to their individual needs as circumstances change. The Priority Bicycle Corridor map can be seen on Figure 3.5.

PEDESTRIAN FACILITIES

For decades, the majority of Central Oklahoma communities had failed to require sidewalks be built alongside new commercial, industrial, and residential

development. Although these requirements have recently changed, the region has a lot of ground to make up. A strong network of sidewalks is vital to achieve a connected and safe transportation system for all users.

Figure 3.6 displays the location of sidewalks and Table 3.4 contains the total amount of sidewalks in the OCARTS area. ACOG collected sidewalk data from local governments and planimetric data from aerial photographs.

PLANNING FOR PEDESTRIAN FACILITIES

PEDESTRIAN COMPOSITE INDEX

The Pedestrian Composite Index (PCI) identifies areas of regional priority for pedestrian facility improvements. The index is adapted from the PCI developed by the Mid-Region Council of Governments in New Mexico. The map considers locations that generate pedestrian activity and those that deter pedestrian activity. These two factors are combined to determine areas of high, medium, and low priority. The PCI Map can be seen on Figure 3.7 and the methodology can be viewed in Appendix D.

BARRIERS IN THE ACTIVE TRANSPORTATION NETWORK

The Mineta Transportation Institute's report Low-Stress Bicycling and Network Connectivity[20] identifies three common types of barriers for bicyclists and pedestrians:

- Natural and constructed barriers such as rivers and freeways that require grade-separated crossings
- Arterial streets without safe crossings
- Breaks in the neighborhood street grid, such as those between developments in suburban and exurban areas

These barriers are difficult for the active traveler to overcome and difficult for a city or state to fix due to the high cost of construction. Area governments should prioritize projects that connect across these barriers and plan for bicycle and pedestrian demand when constructing new bridges and underpasses in the region.

A map of these barriers in the OCARTS area can be seen on Figure 3.8.

FIGURE 3.4

BICYCLE COMPOSITE INDEX

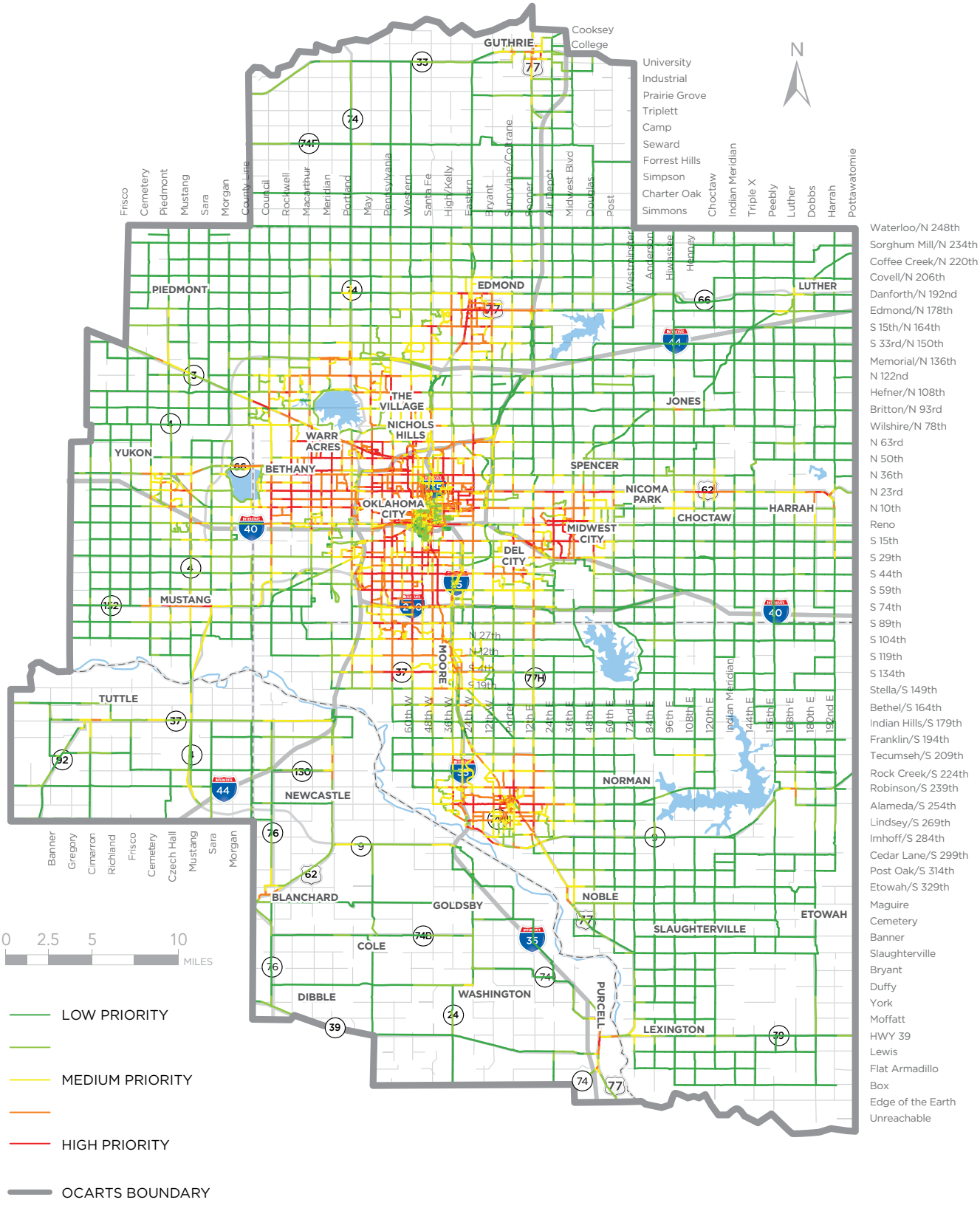


FIGURE 3.5

PRIORITY BICYCLE CORRIDORS

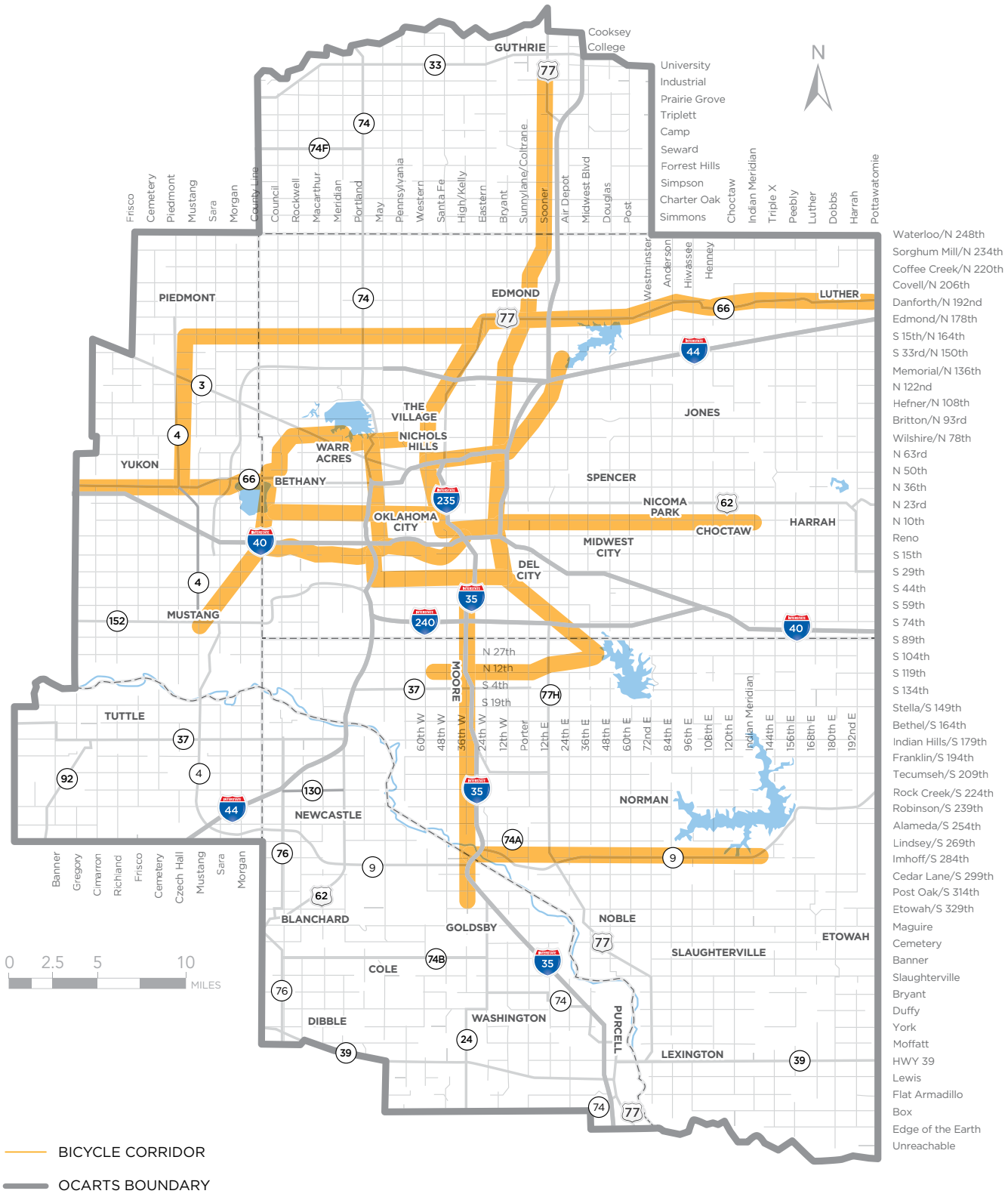


FIGURE 3.6

EXISITING SIDEWALK NETWORK

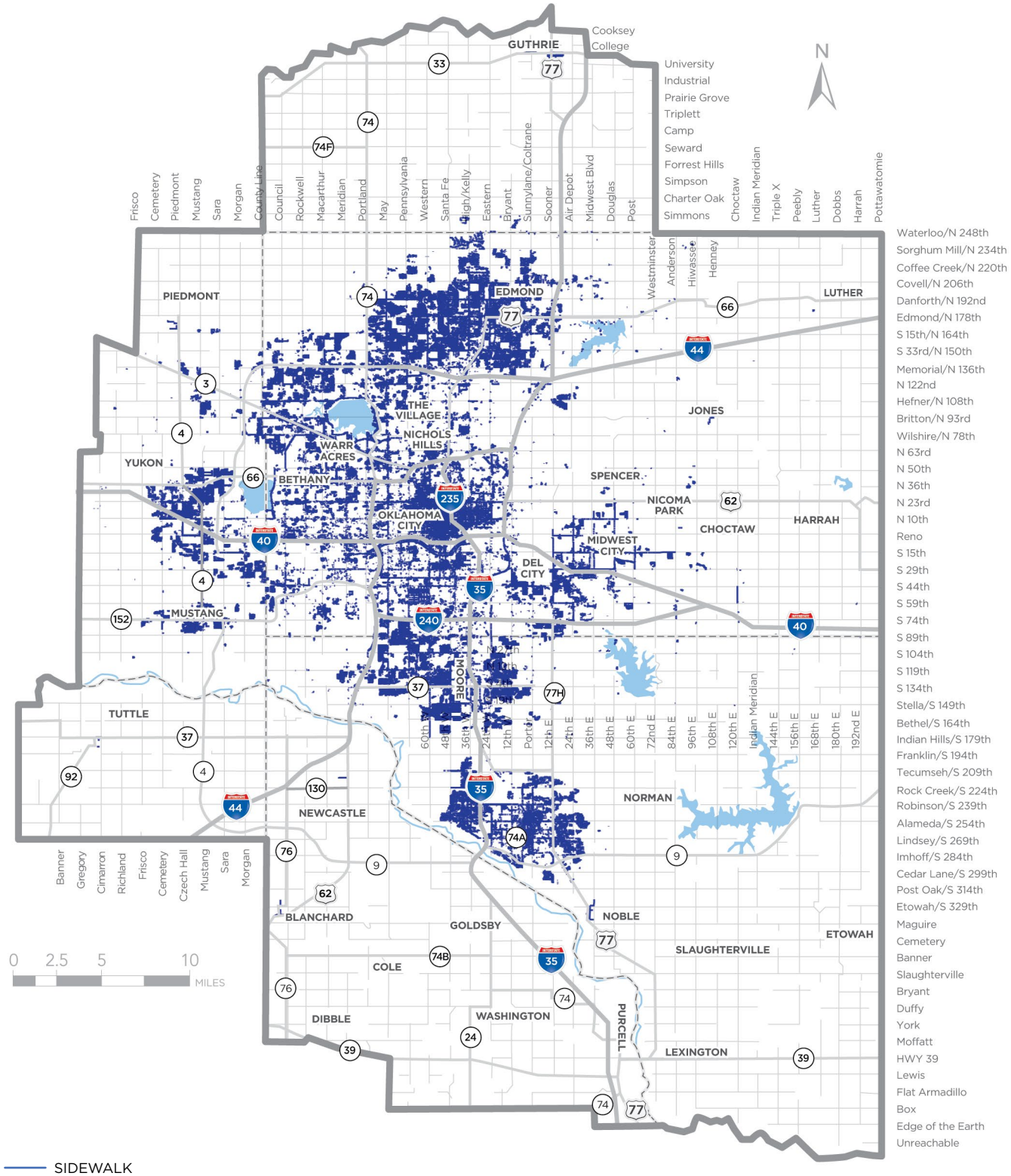


FIGURE 3.7

PEDESTRIAN COMPOSITE INDEX

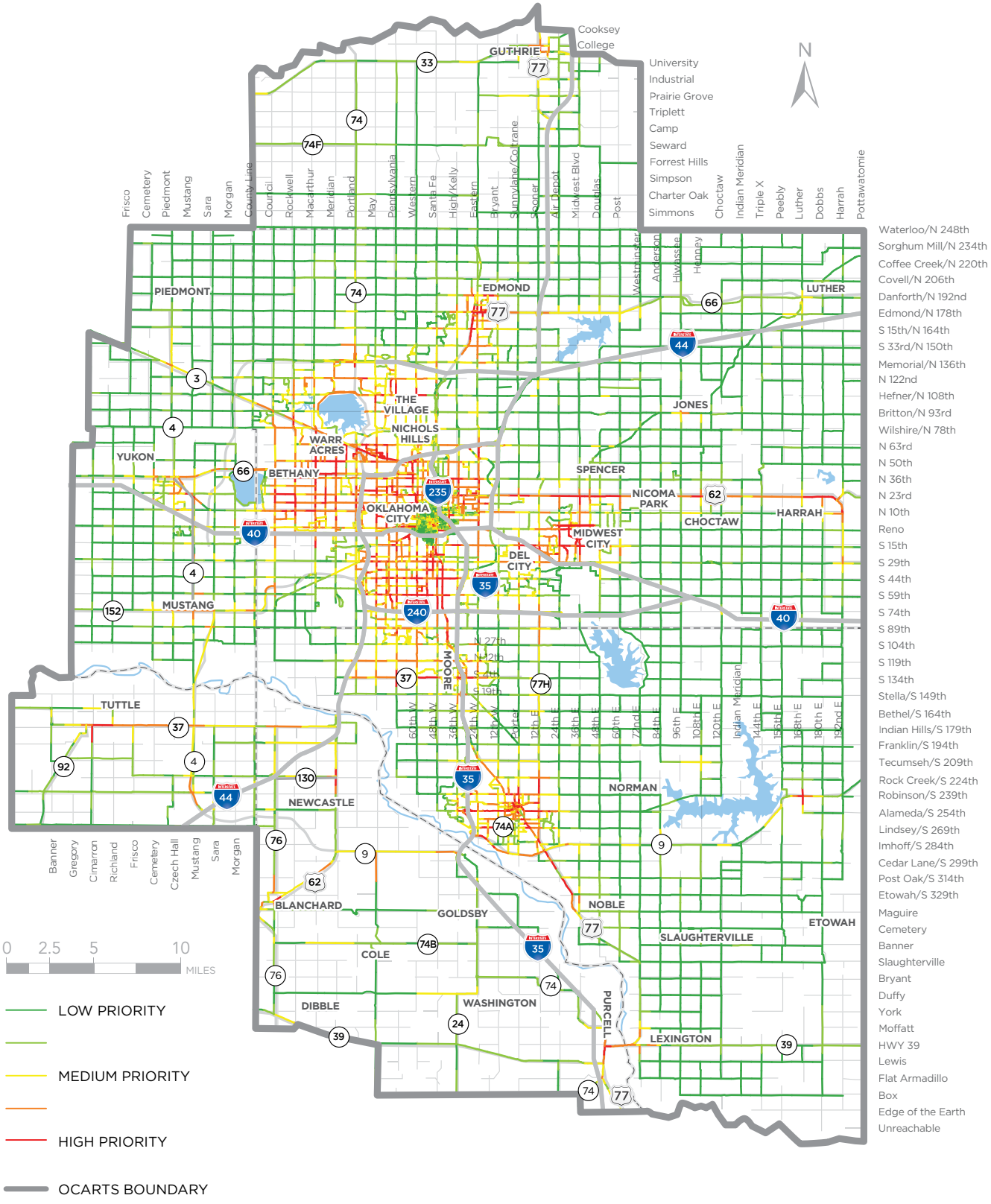
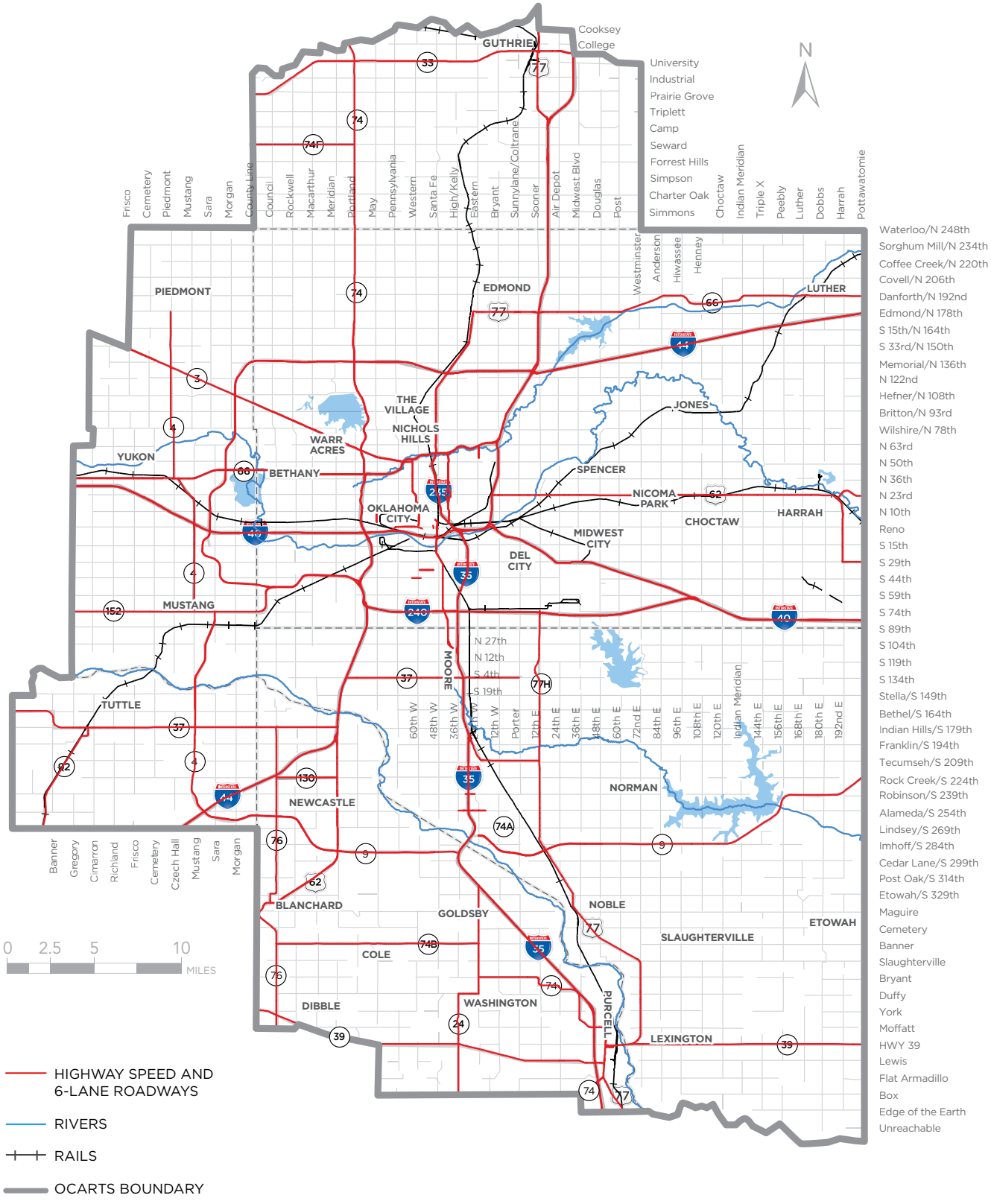


FIGURE 3.8

PHYSICAL BARRIERS TO BICYCLISTS AND PEDESTRIANS



EDUCATION AND ENCOURAGEMENTS

4

To increase bicycle and pedestrian activity in the region, various programs and initiatives are needed to support safe, sustainable, and equitable transportation. This section describes several ongoing educational programs and encouragements that relate to the promotion of bicycling and walking in the OCARTS region.

WATCH FOR ME

Watch for Me is a program that aims to help teach pedestrians, cyclists, drivers, and police officers how to reduce the risk of serious injuries and death from collisions on area roadways. The program includes components related to safety, education, encouragement, enforcement, and demonstration. Watch for Me is a multifaceted approach to reach and impact all groups of people in Central Oklahoma.

The program includes marketing through radio, bus advertising, flyers, brochures, sidewalk decals, and videos. Additionally, Oklahoma City staff present at multiple health fairs and various other events to educate individuals on how to be safe as a cyclist or pedestrian, and how drivers should respect other modes of travel.

The OKC Planning Department worked with the Oklahoma City Police Department on Watch for Me. Brochures had been provided to OKCPD to distribute to cyclists and drivers that they come across.

In Fall of 2020, ACOG and the City of Oklahoma City received funds from the Oklahoma Highway Safety Office to revamp the Watch for Me brand and promote the campaign across the OCARTS area.

EDMOND SHIFT

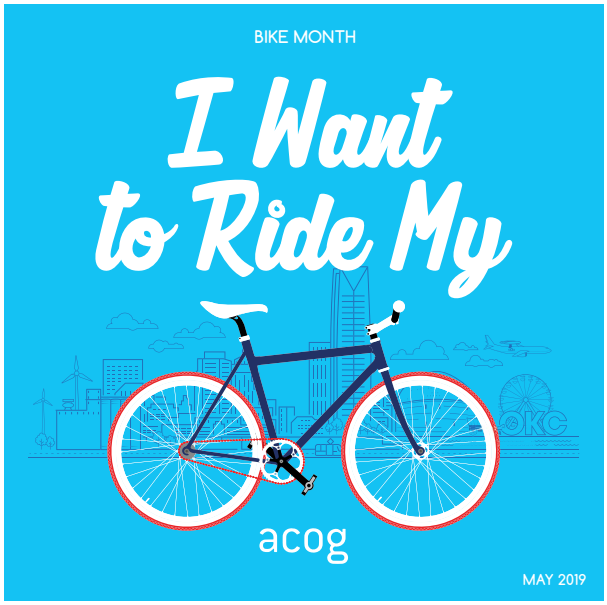
Edmond Shift is a policy that encourages, promotes, plans, and creates active transportation alternatives to improve how people can conveniently and safely travel. Through this policy, the City of Edmond creates and promotes educational material and videos to inform the public about road improvements, transit options offered through Citylink, and announcements from the Edmond Bicycle Committee.

BICYCLE AND PEDESTRIAN DOCUMENTATION

ACOG has been participating in the National Bike and Pedestrian Documentation Project since the fall of 2014. This project, co-sponsored by Alta Planning and Design and the Institute of Transportation Engineers Pedestrian and Bicycle Council, is a nationwide effort to provide a consistent model of data collection for use by planners, governments, and bicycle and pedestrian professionals. This project came about due to the challenges facing the bicycle and pedestrian field caused by the lack of documentation on usage and demand. Without accurate and consistent demand and usage figures, it is difficult to measure the positive benefits of investments in these modes, especially when compared to other transportation modes, such as the private automobile. ACOG provides financial reimbursement to perform these counts to many cities in the OCARTS area. As automated counting technology becomes more common, the practice of manual counts is expected to focus on emerging areas. See Appendix B for more information.

BIKE TO WORK DAY

Central Oklahoma Bike to Work Day is part of a national campaign to promote bicycling as a healthy and efficient transportation alternative. The League of American Bicyclists has recognized the month of May as National Bike Month since 1956. National Bike to Work Day offers metropolitan areas the opportunity to call attention to the benefits of bicycling and to increase safety awareness among bicyclists and motorists.



ACOG, Central Oklahoma Transportation and Parking Authority (COTPA), ODOT, several communities in the OCARTS area, and regional bicycling advocates coordinate the various Bike to Work Day events. Hundreds of people annually participate in the Central Oklahoma Bike to Work Day rides and activities.

ACOG SAFETY INFORMATION

ACOG manages the *Bike Central Oklahoma* Facebook page. This page is used to communicate information with the public regarding events, news stories, laws, and best practices, as it relates to bicycling. ACOG has also created a *Safety Tips for Cyclists* flyer to distribute at community events. The flyer highlights best practices for cyclists when traveling, including hand signaling, proper helmet usage, safe night riding, and crossing at crosswalks.

OPEN STREETS

Open Streets is a local health and wellness project that is supported and sponsored by ACOG and other community organizations. The purpose of Open Streets is to get members of the community to reclaim a portion of a busy street for a few hours for non-motorized activity. Everyone attending is invited to walk, bike, or skate while they meet local business owners and celebrate the unique charm of historic neighborhoods. There are typically several Open Streets events within the region each year, with thousands of participants annually.

RIDE OKC

Ride OKC provides immersive bicycle tours highlighting local architecture, food and drink, and Oklahoma history led by knowledgeable local guides. This tourism organization uses the bicycle as their form of transportation to provide unobstructed panoramic views, set at a speed which allows participants to take in their surroundings. Tours begin by going over the anatomy of the bike and how to operate it. They then discuss what to expect on the predetermined routes, including the distance, safety, hand signals, and the rules of the road. They accommodate a wide array of ages and ability levels, from beginners to experts. These tours put more cyclists on the road, making them a more common sight in downtown Oklahoma City and educating those who may not typically ride bicycles about a bicyclist's rights on the road.

THE WHEELS PROJECT

The Wheels Projects is a nonprofit organization focused on wheels as a symbol for change. This organization provides bikes as a solution for those in the homeless population who are actively working to improve their situation. They accomplish this by supplying new bikes for homeless individuals, removing the transportation barrier as those individuals work towards fixing their homeless situation.

BIKE CLUB

Bike Club is an after-school club for girls and boys that meets once weekly, at the end of the school day. The club starts each year in late September and runs for approximately 20-25 weeks, finishing in early May. Students who complete the program receive a bicycle and helmet at the end of the year. Each club is made up of roughly 20 students and five volunteers.

During the fall semester, students and adult volunteers meet weekly after school to ride bikes and work on cycling skills, life skills, and other activities (for instance, STEM learning). The spring semester is focused more on off-campus rides and experiences — for example, students may ride to a fire station, museum, park, restaurant, or other nearby place of interest.

OKLAHOMA CITY AREA TRAILS INFORMATION GUIDE

ACOG and the Oklahoma Bicycle Society (OBS) collaborate to provide a guide for area bicyclists. This guide includes maps of bicycle facilities in Edmond, Midwest City, Norman, and Oklahoma City. The guide also displays a list of local bike shops, the location of the Spokies Bike Share stations, and trail etiquette tips. This brochure is updated as needed and is distributed by members of OBS.

BICYCLE FRIENDLY STATUS

The League of American Bicyclists' Bicycle Friendly America (BFA) program provides a roadmap, hands-on assistance, and recognition for states, communities, universities, and businesses to improve and celebrate their efforts to impact conditions for bicyclists. The BFA program is a tool designed to make bicycling a real transportation and recreation option for all people. As of 2020, the state of Oklahoma is ranked 41 for bicycle friendliness.

BUSINESS

The "Bicycle Friendly Business" (BFB) Program is based on the belief that bikes are good for businesses, employees, and the community. BFBs are recognized for their efforts through an award system based on four essential elements to being bicycle friendly: Engineering, Education, Encouragement, and Evaluation & Planning. As of 2020, there is one business in the OCARTS area that has been recognized for its level of bicycle friendliness: Allegiance Credit Union in Oklahoma City at the Bronze level.

UNIVERSITY

Colleges and university campuses are unique environments due to their high density, stimulating atmosphere, and their defined boundaries. These factors make them ideal places to incorporate bikes. Many colleges and universities have built upon these good conditions and have embraced the enthusiasm for more bicycle-friendly campuses by incorporating bike share programs, bike co-ops, clubs, bicycling education classes, and policies that promote bicycling as a preferred means of transportation. With the goal to build on this momentum and inspire more action to build healthy, sustainable, and livable institutions of higher education, The League of American Bicyclists created the "Bicycle Friendly University" program.

As of 2020, two universities in the OCARTS area are recognized by the League of American Bicyclists. The University of Oklahoma in Norman has received the Silver award and the University of Central Oklahoma in Edmond has received the Bronze award.

COMMUNITIES

The "Bicycle Friendly Community" program provides a roadmap to improving conditions for bicycling and guidance to help make a community's vision for a better, bikeable community a reality. As of 2020, the City of Norman is the only OCARTS area community to have received this designation, at the Bronze level.

5 ENFORCEMENT AND SAFETY

A primary goal for ACOG, ODOT, FHWA, and local communities is to reduce the total number of traffic crashes and fatalities on roadways.

Local and state laws are in place to govern bicycling and the rules of the road, ensuring safety for all road users. With a good set of laws and regulations in place that treat bicyclists and pedestrians equitably within the transportation system, the next key issue is enforcement. Law enforcement officers must understand these laws, know how to enforce them, and apply them impartially to ensure public safety. A good relationship between the community and law enforcement is essential. Having law enforcement partners and effective policies in place is essential to promoting bicycling and walking in the region.

OKLAHOMA BICYCLE TRAFFIC LAWS

SUMMARIZED[21]

- A bicyclist on a roadway shall have all the same rights and responsibilities of a vehicle operator, unless specifically regulated otherwise. Yet, some regulations may not apply to bicycles because of their nature (Title 47 § 11-1202).
- Bicyclists must obey all traffic control devices and signs, as a motor vehicle operator would, unless specifically regulated otherwise (Title 47 § 11-201).
- The driver of a bicycle facing any steady red light may cautiously proceed through the intersection if:
  - The bicycle has been brought to a full stop;
  - The traffic control signal is programmed or engineered to change to a green light only after detecting the approach of a motor vehicle and has failed to detect the arrival of the bicycle because of its size or weight; and
  - No motor vehicle or person is approaching on the roadway to be crossed or entered, or the motor vehicle or person is at a distance from the intersection that does not present an immediate hazard (47 O.S., Section11-202).
- Local laws or ordinances may require a bicyclist to use a bike path adjacent to a roadway, instead of the roadway (Title 47 § 11-1205).
- A bicyclist upon a roadway shall ride as near to the right side of the roadway as practical. Bicyclists should use caution when passing a standing vehicle or one proceeding in the same direction (Title 47 § 11-1205).
- No vehicle (including bicycles) may pass another vehicle on the right unless the other vehicle is making a left turn or there is a separate lane for travel in the same direction. This may be done only if there is enough room on the normally traveled portion of the roadway and if such movement is safe (Title 47 § 11-304).
- A bicyclist shall not ride beside more than one other bicyclist on a roadway, except in those areas designated as exclusive for bicycle use (Title 47 § 11-1205).
- A bicyclist must signal intention to turn, slow, or stop. When turning, the cyclists must signal continuously at least 100 feet before the turn and while stopped, waiting to turn, unless use of the hand is needed to control the bicycle (Title 47 § 11-604).
  - Left turn: Left hand and arm extended horizontally
  - Right turn: Left hand and arm extended upward
  - Stop or decrease speed: Left hand and arm extended downward (Title 47 § 11-606)
- The parent or guardian of a child shall not knowingly permit a child to violate any laws while riding a bicycle (Title 47 § 11-1201).
- A person riding a bicycle must ride upon, or astride, a permanent and regular seat. No more people may ride upon the bicycle than for which it is designed and equipped (Title 47 § 11-1203).
- A bicyclist shall not carry anything that prevents them from keeping at least one hand upon the handlebars (Title 47 § 111206).
- No bicyclist shall attach themselves, or the bicycle, to any other vehicle (Title 47 § 111204).
- A bicycle used at nighttime must be equipped with a headlamp and rear red reflector. The headlamp must be visible at least five hundred feet. The rear red reflector must be visible at all points between fifty feet and three hundred feet when directly in front of the "upper" headlamps of a motor vehicle. A lamp emitting a red light may be used to supplement the

rear reflector, if the light is visible at a distance of five hundred feet (Title 47 § 11-1207).

- A bicycle must be equipped with appropriate brakes (Title 47 § 11-1207).
- No bicycle or man-powered vehicle may be operated on a turnpike (Title 47 § 11-1401).
- A bicyclist arrested for a misdemeanor violation of state traffic laws, only, shall be released by the arresting officer upon personal recognizance if the bicyclist can prove his or her identity to the satisfaction of the officer, and signs a written promise to appear as ordered (Title 22 § 1115).
- Local authorities may regulate the operation of bicycles in their jurisdiction. They may also require registration and licensing of bicycles (Title 47 § 15102).

47 O.S., Section 11-1208

3-FOOT LAW AND MANDATORY LANE CHANGING

In 2006, the Oklahoma State Legislature passed a bill requiring motorists to yield at least three feet from a bicyclist when passing on a roadway. To ensure compliance at the local law enforcement level, Oklahoma City, Edmond, and Norman adopted city ordinances in support of the state law. In 2019, the Oklahoma State Legislature passed a law stating that if there is more than one lane for traffic proceeding in the same direction, a motorist must fully move to the lane left of the bicyclists and, if available and reasonably safe, to pass the bicyclist. The motorist shall not move back into the travel lane until the vehicle is safely clear of the bicyclist.

47 O.S., Section 1-104

ELECTRIC ASSIST BICYCLES (E-BIKES):

Paraphrased and non-inclusive

1. An E-Bike is a bicycle with 2 or 3 wheels, fully operative pedals for human propulsion, and an electric motor with a power output of not more than 750 watts that meets one of the following three classes:
   a. Class One – an electric-assisted bike equipped with a motor that provides assistance only when the rider is pedaling and that ceases to provide assistance when the bike reaches a speed of 20 mph. They may be ridden on bicycle lanes or multi-use paths where bikes are allowed.
   b. Class Two – an electric-assisted bike equipped with a motor that may be used exclusively to propel the bike but cannot provide assistance after bike reaches 20 mph. They may be ridden on bicycle lanes or multi-use paths where bikes are allowed.

      Both Class One and Two E-Bikes are subject to prohibition by a local or state agency having jurisdiction over a bicycle lane or multi-use path.
   c. Class Three – an electric assisted bicycle equipped with a motor that provides assistance only when the rider is pedaling, and that stops assisting when the bike reaches the speed of 28 mph. Class Three E-Bikes cannot be ridden on a bicycle lane or multi-use path unless it is within or adjacent to the road, unless the local authority or state agency having jurisdiction allows it. It also must be equipped with a speedometer.
2. If the operator is under the age of 16, they cannot carry a passenger.
3. No licensing or insurance is required.
4. An electric assisted bicycle or operator shall be given all rights and privileges while following the law.

COMPLETE STREETS

Complete Streets is a policy intended to ensure all streets are designed and operated to enable safe use and mobility for all users. The concept of Complete Streets started when the state of Oregon passed a law known as *Routine Accommodation* in 1971, which required all new and rebuilt roads to accommodate bicyclists and pedestrians. The idea caught on and more states and cities are building their transportation network for all users. This includes people of all ages and abilities, regardless of whether they are travelling as drivers, pedestrians, bicyclists, or public transportation riders. The concept of Complete Streets encompasses many approaches to planning, designing, and operating roadways and rights-of-way with all users in mind to make the transportation network safer and more efficient.[23] Complete Streets policies are set at the state, regional, and/or local levels and are frequently supported by roadway design guidelines. In total, over 1,600 Complete Streets policies have been enacted in the United States.[22]

Complete Streets approaches vary based on community context. They may address a wide range of elements, such as sidewalks, bicycle lanes, bus lanes, transit stops, pedestrian crossing

opportunities, median islands, accessible pedestrian signals, curb extensions, modified vehicle travel lanes, streetscapes, and landscape treatments. Complete Streets reduce motor vehicle-related crashes and pedestrian risk, as well as bicyclist risk when the policies are well-designed, bicycle-specific, and when plans for infrastructure are included. They can promote walking and bicycling by providing safer places to achieve physical activity through transportation.[23] In the OCARTS area, only two communities have adopted a Complete Streets policy: The City of Edmond and the City of Oklahoma City. **ACOG encourages all area communities to adopt a Complete Streets policy**.

SAFETY AND CRASH DATA

The Oklahoma Department of Public Safety (DPS) and ODOT provide statewide information on safety, gathered from the traffic crash reports that law enforcement submits to them. This data is made

TABLE 5.1: TOTAL REPORTED TRAFFIC CRASHES BY COUNTY

	2013		2014		2015		2016		2017	
	FATAL	NON FATAL	FATAL	NON FATAL	FATAL	NON FATAL	FATAL	NON FATAL	FATAL	NON FATAL
Canadian	11	239	14	249	11	224	15	225	22	218
Cleveland	20	674	14	639	26	590	11	579	26	510
Grady	19	154	13	171	15	139	14	136	14	136
Logan	5	62	8	82	7	81	5	70	2	58
McClain	9	101	7	88	6	101	13	94	11	125
Oklahoma	74	2,259	65	2,213	82	2,334	86	2,192	85	2,042

TABLE 5.2: REPORTED BICYCLE INVOLVED CRASHES BY COUNTY

	2013		2014		2015		2016		2017	
	FATAL	NON FATAL	FATAL	NON FATAL	FATAL	NON FATAL	FATAL	NON FATAL	FATAL	NON FATAL
Canadian	0	4	0	3	0	1	0	4	0	2
Cleveland	0	20	0	31	0	11	0	17	2	8
Grady	0	1	0	1	0	1	0	0	0	1
Logan	0	0	0	0	0	0	0	1	0	2
McClain	0	1	0	0	1	0	0	0	0	0
Oklahoma	6	44	3	43	0	59	3	49	3	47

TABLE 5.1 - 5.4 & FIGURE 5.1 SOURCE: ODOT SAFE-T, 2013-2017

available through ODOT's Statewide Analysis for Engineering and Technology (SAFE-T) website. The data contains reported motor vehicle crashes involving bicycles and pedestrians, although not every crash is reported. Reported crashes by year can be seen in Tables 5.1, 5.2, 5.3, and 5.4.

Figure 5.2 is a heat map of reported bicycle and pedestrian crashes by density within the OCARTS boundary (2013-17). Crashes are primarily located around residential and employment centers. Figure 5.3 is a map noting fatal crashes within the OCARTS boundary.

TABLE 5.3: REPORTED PEDESTRIAN INVOLVED CRASHES BY COUNTY

	2013		2014		2015		2016		2017	
	FATAL	NON FATAL	FATAL	NON FATAL	FATAL	NON FATAL	FATAL	NON FATAL	FATAL	NON FATAL
Canadian	1	6	2	6	2	8	4	10	4	7
Cleveland	1	22	2	24	4	32	0	28	6	24
Grady	0	2	4	3	2	3	3	1	1	3
Logan	2	2	0	1	0	1	0	5	1	4
McClain	0	3	0	2	0	1	1	2	2	5
Oklahoma	17	123	11	108	13	151	27	105	28	120

TABLE 5.4: REPORTED BICYCLE AND PEDESTRIAN INVOLVED CRASHES IN THE OCARTS AREA

	FATAL	NON-FATAL
5-Year Total (2013-2017)	156	1,163

FIGURE 5.1: OCARTS BICYCLE AND PEDESTRIAN CRASHES BY SEVERITY

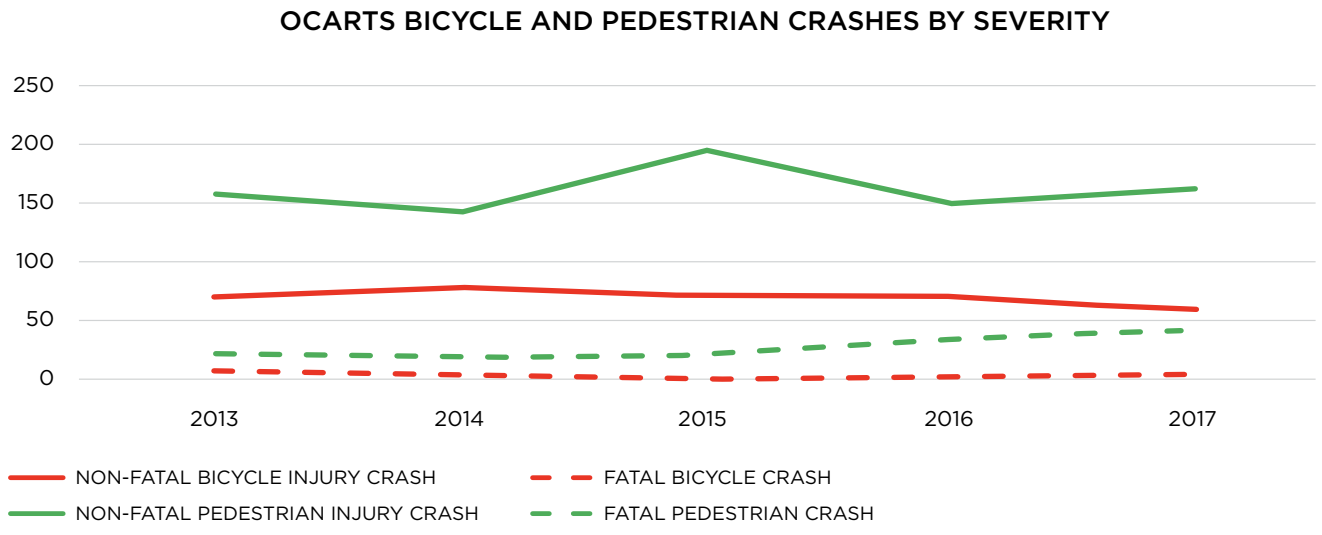


FIGURE 5.2

BICYCLE AND PEDESTRIAN CRASHES

(2013 - 2017)

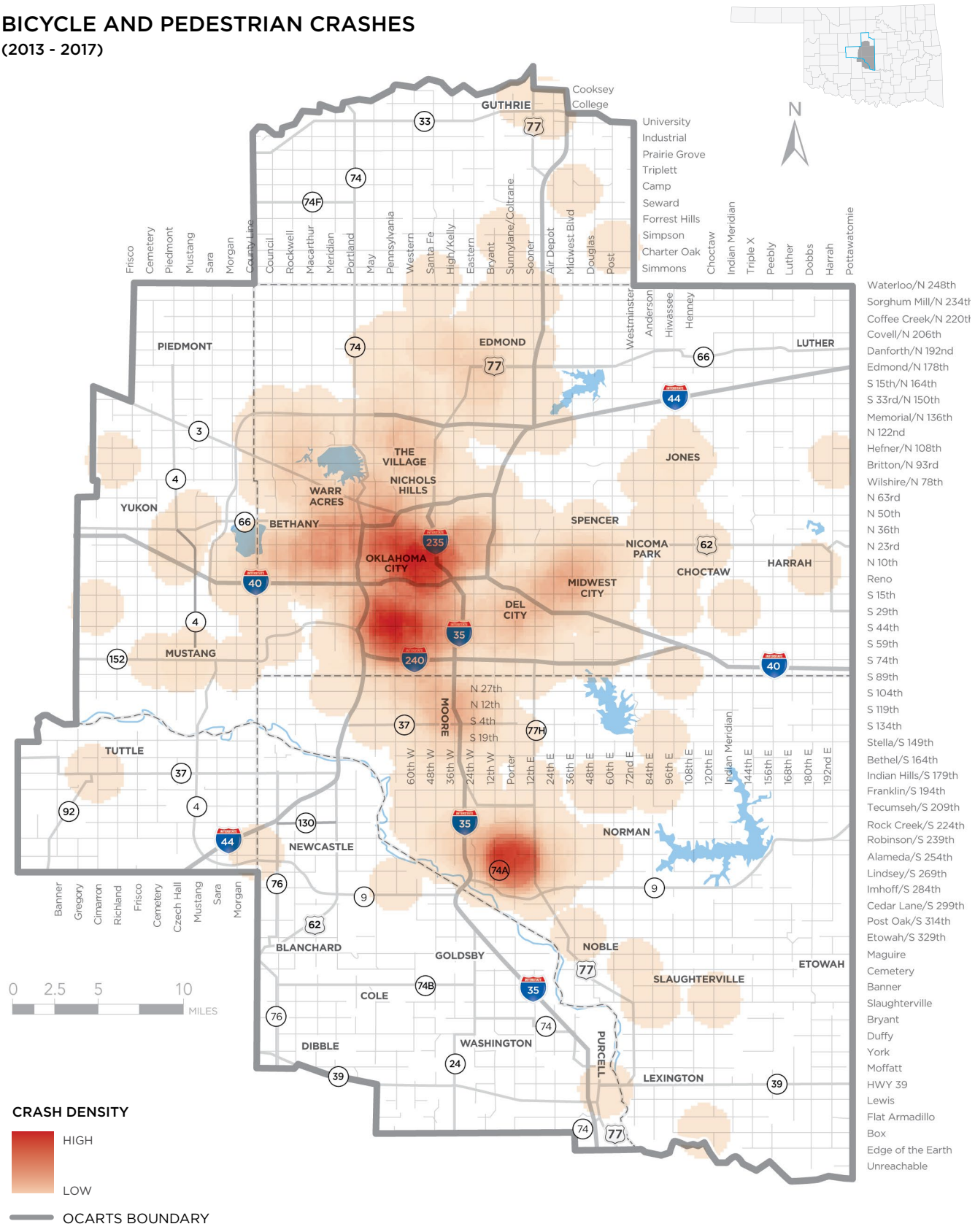
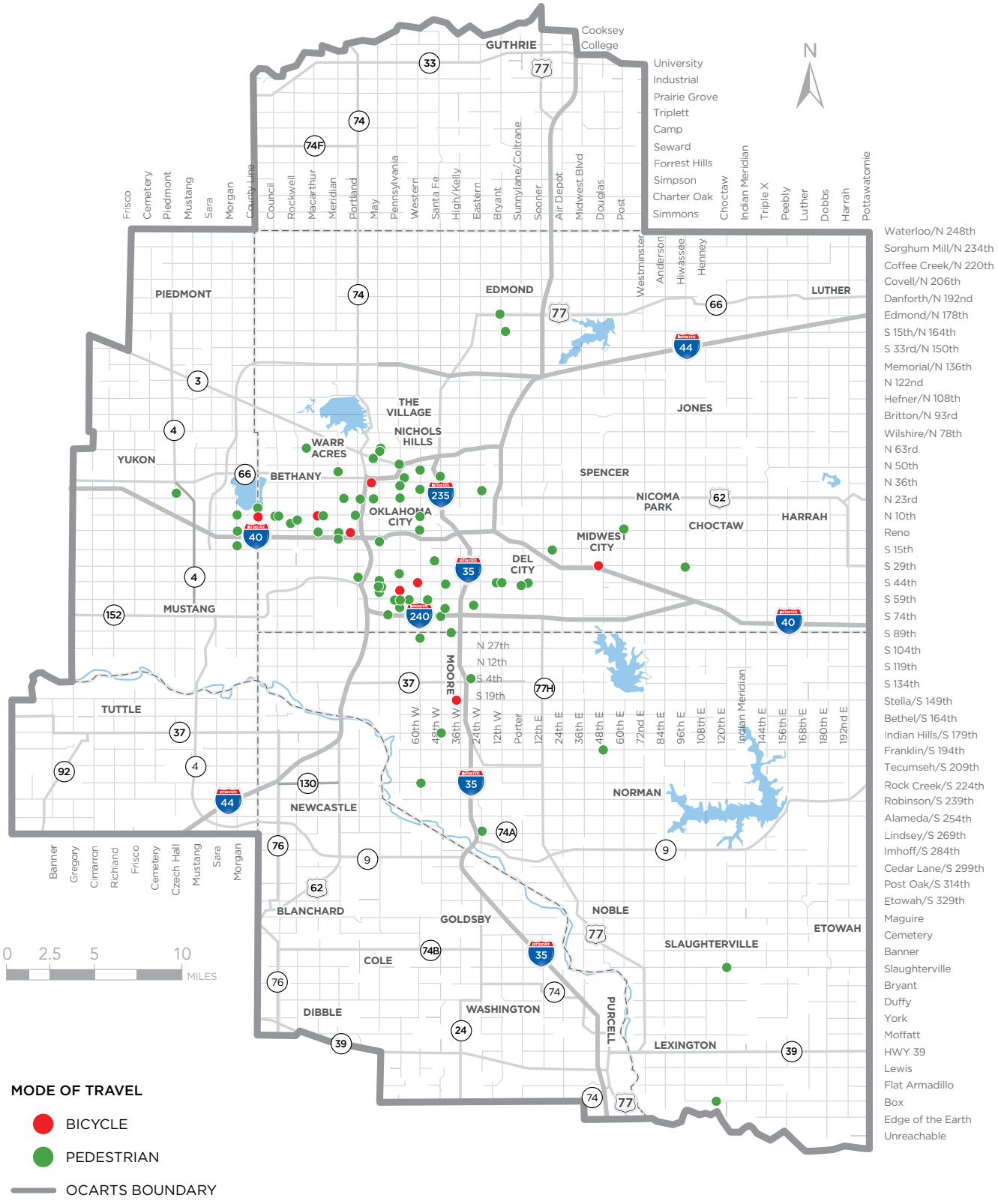


FIGURE 5.3

BICYCLE AND PEDESTRIAN FATALITIES

(2013 - 2017)



6 EVALUATION AND PLANNING

Beginning with MAP-21 and continued under the FAST Act, MPOs are required to incorporate performance management strategies into their planning processes. Through this process, ACOG and BPAC has selected goals that the region should strive to achieve. Each goal contains a defined set of objectives that are measured using performance measures. Performance measures are defined for each objective, and then monitored in order to track the progress and effectiveness of the implemented strategies. This section of the RATP is dedicated to defining these measures and how they fit within the broader goals for the region.

Table 6.1 contains a list of ACOG's goals, objectives, and performance measures for active transportation in the OCARTS region.

TABLE 6.1: GOALS, OBJECTIVES, AND PERFORMANCE MEASURES

GOALS	OBJECTIVES	PERFORMANCE MEASURES
CONNECTIVITY Implement and maintain a connected network of pedestrian and bicycle facilities	• Increase the miles of bicycle and pedestrian facilities • Connect existing bicycle and pedestrian facilities to create a cohesive network • Allow people of all ages and abilities to safely and conveniently get where they want to go	• Total miles of bicycle facilities • Total miles of sidewalks
ENVIRONMENT Promote the creation of and maintenance of a transportation system that minimizes and/or mitigates impacts to the natural environment	• Reduce harmful vehicle emissions by encouraging alternative means of transportation	• Mode share for commuter trips as collected through the ACS • Bike/Ped counts collected through manual and automatic counters
EQUITY & OPTIONS Mitigate the disparate costs and impacts of transportation decisions on populations of different income levels, ability, or circumstance	• Expand and maintain accessible and quality bicycle and pedestrian facilities for areas of Environmental Justice (EJ) concern • Expand and maintain a safe, secure, and accessible public transit system	• Miles of sidewalks and bike facilities within a 1/4 mile of transit stops • Percentage of sidewalks, bike facilities, and transit stops within areas of Environmental Justice concern

CONTINUED

TABLE 6.1: CONTINUED

GOALS	OBJECTIVES	PERFORMANCE MEASURES
HEALTHY COMMUNITIES Improve connection between land use and transportation to enable citizens to live healthier lives	• Increase the amount of tree canopy along area recreational trails, bike facilities, and sidewalks • Encourage communities to adopt a Complete Streets or comparable policy	• Percentage of trails, bike facilities, and sidewalks covered by tree canopy • Number of member governments with an adopted Complete Streets or comparable policy
SAFETY Provide a safe and comfortable transportation system for bicyclists and pedestrians	• Encourage the improved design, construction, and maintenance of pedestrian and bike facilities to reduce the number of pedestrian- and bike-related crashes • Increase public awareness of bike/pedestrian-related safety issues • Promote the proper adherence to traffic laws by all road users	• Number of bicycle and pedestrian fatalities and serious injuries • Number of bicycle and pedestrian related crashes

TABLE 6.2: PERFORMANCE MEASURES AND TARGETS FOR THE REGION

GOAL	PERFORMANCE MEASURE	BASELINE	BASELINE YEAR	TARGET	TARGET YEAR
CONNECTIVITY	Total miles of bicycle facilities	550 miles[24]	2020	Increase by 50% to 825 miles	2025
				Build out the planned/ proposed bicycle network to 1,596 miles	2045
	Total miles of sidewalks	4,154 miles[25]	2020	Increase by 50% to 6,231 miles	2025
				Increase by 300% to 12,462 miles	2045

CONTINUED

TABLE 6.2: CONTINUED

GOAL	PERFORMANCE MEASURE	BASELINE	BASELINE YEAR	TARGET	TARGET YEAR
ENVIRONMENT	Commuter Mode Share as collected through the ACS[26]	Car, Truck or Van Drove Alone (83.2%) Car, Truck or Van: Carpooled (9.4%) Public Transportation (0.4%) Bicycle (0.3%) Pedestrian (1.6%)	2019 (5-year average)	Increase the number of bicycle commuters to 0.6% and pedestrians to 2%	2025
				Increase the number of bicycle commuters to 2% and pedestrians to 6%	2045
	Number of bicycle and pedestrian count locations using manual or automatic counters	22[27]	2019	Increase number of counting locations to 40	2025
				Increase number of counting locations to 100	2045

CONTINUED

Critical to the success of these regional goals is the establishment of baseline data related to the performance measures. Baseline measurements of key data, such as miles of facilities, location of facilities, bicycling and walking activity, crash rates, and mode share provide a point of comparison to determine the impact of infrastructure projects and supporting programs. Using this data, ACOG can further measure where the region stands on achieving the set targets. Targets are set for the years 2025 and 2045. This allows ACOG and member communities to focus on long range objectives but also provides a short-term goal to measure progress. Targets will be monitored regularly and reevaluated upon the creation of the next RATP. Table 6.2 notes the baseline data and targets for the region.

ACOG ACTIONS

Table 6.3 lists the actions ACOG will take to ensure the region reaches the set targets. While ACOG will work to achieve the goals listed, it is ultimately a collaborative effort between all communities within the region. Each community must do their part to ensure the region achieves these goals.

TABLE 6.2: CONTINUED

GOAL	PERFORMANCE MEASURE	BASELINE	BASELINE YEAR	TARGET	TARGET YEAR
EQUITY & OPTIONS	Miles of sidewalks and bike facilities within a 1/4 mile of transit stops	836 miles of sidewalks 224 miles of bike facilities	2018	Increase by 50% to 1,254 miles of sidewalk and 336 miles of bike facilities	2025
				Increase by 300% to 2,508 miles of sidewalk and 672 miles of bike facilities	2045
	Percentage of sidewalks, bike facilities, and transit stops within areas of Environmental Justice concern	Sidewalks 1,570 miles | 38% Bike Facilities 344 miles | 62% Transit Stops 1,207 | 76%	2020	Maintain or increase to 50% for each category	2025 and 2045
HEALTHY COMMUNITIES	Tree canopy percentage near recreational trails and bike facilities	13%[28]	2020	Increase to and maintain 16% coverage	2025 and 2045
	Tree canopy percentage near sidewalks	12%	2020	Increase to and maintain 15% coverage	2025 and 2045
	Member governments with an adopted Complete Streets or comparable policy	2[29]	2020	Increase to 4	2025
				All communities have a Complete Streets Policy	2045
SAFETY	Number of bicycle and pedestrian fatalities and serious injuries	75.6 annually[30] (based on 5-year average)	2013-2017 (5-year average)	Reduce by 2% annually	2025 and 2045
	Number of bicycle and pedestrian related crashes	293.2 annually[31] (based on 5-year average)	2013-2017	Reduce by 2% annually	2025 and 2045

TABLE 6.3: ACOG ACTIONS

CONNECTIVITY	
1	Adopt a set of design guidelines for bicycle and pedestrian facilities.
2	Use GIS to record and maintain location of existing and planned facilities.
3	Present best practices to help communities write and use comprehensive plans that address land use, transportation, and linkages.
4	Facilitate and coordinate conversations and workshops for regional partners.
5	Gather and present information regarding grants and other funding opportunities from ACOG and external sources.
6	Support the development of local wayfinding networks and work to implement a regional wayfinding system.
ENVIRONMENT	
1	Gather, analyze, and maintain ACS information.
2	Gather, analyze, and maintain record of bicycle and pedestrian counts.
3	Offer incentives to communities that conduct bicycle and pedestrian counts or buy automatic counters.
4	Share information and collaborate with ODOT to ensure records are used at the state level.
5	Select projects and distribute funds for the Air Quality Small Grant Program and Transportation Alternatives Program.
EQUITY & OPTIONS	
1	Prioritize connection between activity centers and areas within EJ zones.
2	Maintain current data regarding the location of transit stops and prioritize sidewalks and bike lanes within 1/4 mile of them.
3	Ensure the public has a voice in regional transportation plans through the Public Participation Process.
HEALTHY COMMUNITIES	
1	Support transportation alternatives, health, and community through assisting with the promotion and organization of activities like Open Streets.
2	Support bicycle and pedestrian commuting through the promotion and organization of Bike to Work, Bike to School, and Walk to School events.
3	Support, maintain, and provide data regarding the area Tree Canopy Assessment study.
5	Provide and promote a Complete Streets Policy for area governments to adopt.
SAFETY	
1	Support and expand the Watch for Me bike and pedestrian safety initiative.
2	Provide training and technical support for the Americans with Disabilities Act.
3	Gather, analyze, and maintain crash data and traffic counts.

CLOSING

7

Central Oklahoma's active transportation network is expected to see significant growth over the next 30 years. The recognition of walking and biking as a growing form of transportation is pushing lawmakers, planners, and engineers to create better networks on area roads.

While the OCARTS area has historically lagged behind in building for active transportation, area communities have the benefit of learning from the mistakes and best practices from communities that have built out their networks. The vision and strategies highlighted in this plan should be used in conjunction with community transportation and comprehensive planning efforts.

The RATP will continuously be monitored and built upon until the next iteration is created. As new trends and data emerge, ACOG and member communities will adapt this plan to work for the new circumstances.

A APPENDIX: FACILITY AND DESIGN GUIDANCE

A regional network of bicycle and pedestrian facilities is dependent on the quality of the segments that each municipality contributes. A good network can be described as consistent, continuous, recognizable, and safe. Because each member government may define these differently, confusion may occur while traveling the regional network. To overcome this challenge, ACOG has adopted design guidelines that will apply to all segments of the regional bike and pedestrian network funded by ACOG through STBG-UZA, TAP, and the Air Quality Small Grant Program.

ACOG's design guidelines seek to address two questions: what sort of facility is suitable for a given road condition; and what engineering specifications should be followed. The guidance below references to several national organizations' published guidelines. These include the Federal Highway Administration (FHWA), the National Association of City Transportation Officials (NACTO), the American Association of State Highway Transportation Officials (AASHTO), and the Manual on Uniform Traffic Control Devices (MUTCD).

BICYCLE FACILITIES

ACOG recommends using the *NACTO Urban Bikeway Design Guide*, the AASHTO Guide for Development of Bicycle Facilities, and the *FHWA Bikeway Selection Guide* when selecting, designing, and constructing bicycle facilities in the region. For intersections, it is recommended local communities use the NACTO guide *Don't Give Up at the Intersections*. These guides are based on the experience of the top cycling cities in the world. The designs below are examples of common roadway treatments that promote safety and usability for cyclists. While these designs have proven effective in many cities around the world, it is important for local officials to tailor the treatment to fit each individual situation.

SHARED LANE MARKINGS

Bikeway Signage and Markings encompass any treatment or piece of infrastructure whose primary purpose is either to indicate the presence of a bicycle facility or to distinguish that the facility is designed for bicyclists, motorists, or pedestrians.

Bicycle signage includes several sub-categories. These include wayfinding and route signage, regulatory signage, and warning signage. Some bicycle specific signage exists to provide motorized traffic with information and instruction.

Shared Lane Markings, or "sharrows," are road markings used to indicate a shared lane environment for bicycles and automobiles. Among other benefits, shared lane markings reinforce the legitimacy of bicycle traffic on the street, recommend proper bicyclist positioning, and may be constructed to offer directional and wayfinding guidance. The shared lane marking is a pavement marking with a variety of uses to support a complete bicycle network, though it is not a true bicycle facility and should **not** be considered a

SHARED LANE MARKINGS

substitute for bike lanes, cycle tracks, or other separation treatments where these types of facilities are otherwise warranted or space permits. **ACOG suggests this treatment be used on roads with low traffic counts and speeds of less than 25 mph**. The MUTCD outlines guidance for shared lane markings in section 9C.07.[32]

TREATMENT	RECOMMENDED GUIDANCE
Signs	NACTO
Sharrows	AASHTO
Paved Shoulders	AASHTO
Bike Lanes	NACTO
Buffered Bike Lanes	NACTO
Protected Bike Lane/ Cycle Track	NACTO
Shared Use Path	AASHTO
Bicycle Boulevard	NACTO
Intersections	NACTO

BICYCLE WAYFINDING CONCEPTS

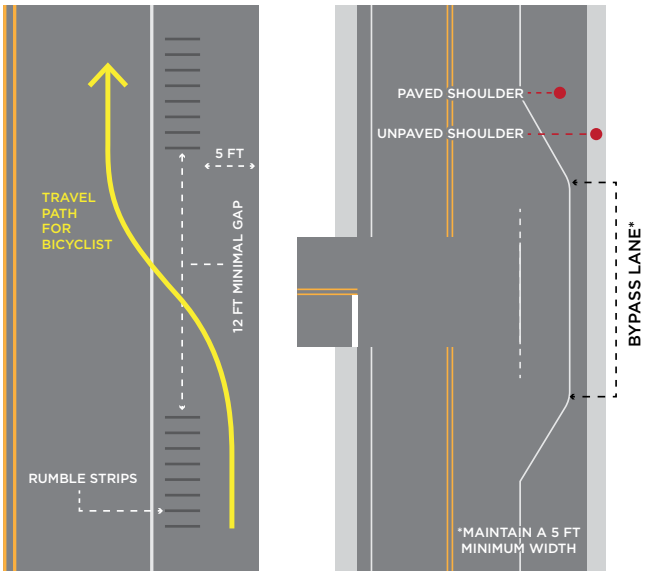
BICYCLE WAYFINDING

A *bicycle wayfinding system* consists of comprehensive signage and/or pavement markings to guide bicyclists to their destinations along preferred bicycle routes. Signs are typically placed at decision points along bicycle routes – usually at the intersection of two or more bikeways and at other key locations. National guidance for bicycle wayfinding signage is found in Chapter 9 of the MUTCD. Cities and regions may develop alternate bicycle wayfinding signage designs as needed.

ACOG also encourages communities to develop signage that attracts drivers' and bicyclists' attention. This may be through using a unique color or design for the signs that makes them more noticeable.

PAVED SHOULDERS

Paved shoulders are found on the edge of rural roads that typically don't see high numbers of cyclists. These may be enhanced to serve as a functional space for bicyclists and pedestrians to travel in the absence of other facilities with more separation. Paved shoulders also extend the life of the road by reducing deterioration of the road's edges and provides a safe location for vehicle to pull over when needed. **ACOG encourages communities to follow the AASHTO guidelines when designing and constructing paved shoulders**



EXAMPLES OF PAVED SHOULDERS

for bicycle use. This involves properly spaced rumble strips and paved shoulders that are at the minimum of 5 feet in width.[33]

BIKE LANES AND SHARED USE PATHS

A conventional bicycle lane is defined as a portion of the roadway that has been designated for bicycles through striping, signage, and pavement markings. Bike lanes allow bicyclists to ride at their preferred speed and they facilitate predictable behavior between bicyclists and motorists. A conventional bike lane is distinguished from a cycle track, or protected bike lane, in that it has no physical barrier (bollards, medians, raised curbs, etc.) that keeps motorized traffic from driving in the lane. Conventional bike lanes are located on the curbside when no parking is present. Bike lanes typically run in the same direction of traffic, though they may be configured in the contra-flow direction on low-traffic corridors. **ACOG suggest bike lanes be 6 feet wide. Bike lanes should be level and free of potholes and broken asphalt or concrete. It is recommended that green paint is also used at all conflict points**. Lane markings and requirements can be found in the MUTCD section 9C-3.

Buffered bike lanes are conventional bicycle lanes paired with a designated buffer space, separating the bicycle lane from the adjacent motor vehicle travel lane. The buffered bike lane provides more comfort than a conventional bike lane, but less security than a protected bike lane. Buffered bike lanes shall have 2 solid white stripes with 3 feet between them. **ACOG recommends crosshatched white lines in this buffered space. Green paint should be used where the lane starts and ends at each intersection. It is recommended that green paint is also used at all conflict points.** A buffered bike lane is allowed as per MUTCD guidelines for buffered preferential lanes (section 3D-01).[34]

Contra-flow bicycle lanes are bicycle lanes designed to allow bicyclists to ride in the opposite direction of motor vehicle traffic. They convert a one-way traffic street into a two-way street: one direction for motor vehicles and bikes, and the other for bikes only. Contra-flow lanes are separated with yellow center lane striping. Combining both direction bicycle travel on one side of the street to accommodate contra-flow movement results in a two-way cycle track, these are especially useful for the connectivity of an existing bicycle route. Look to NACTO for design guidance when constructing a contra-flow bike lane.[35]

CONVENTIONAL BICYCLE LANE

BUFFERED BIKE LANES

CONTRA-FLOW BICYCLE LANES

SOURCE: NACTO URBAN BIKEWAY DESIGN GUIDE

A *protected bike lane*, or *cycle track*, is an exclusive bike facility that combines the user experience of a separated path with the on-street infrastructure of a conventional bike lane. A protected bike lane is physically separated from motor traffic and distinct from the sidewalk. Protected bike lanes come in different forms but share similar qualities—they provide secure space that is intended to be used exclusively for bicycles and other forms of micromobility. In situations where on-street parking is allowed, bike lanes can become protected by being located to the curbside of the parking. **ACOG recommends communities use physical barriers that reject a motor vehicle from entering the protected bike lane. This includes, but is not limited to, paved curbs, planter boxes, parked vehicles, and bollards. It is recommended that green paint is also used at all conflict points.** *Look to NACTO* for design guidance.

A *shared use path* is a bikeway physically separated from motorized vehicular traffic by an open space or barrier and either within the road right-of-way or within an independent right-of-way. Shared use paths may also be used by pedestrians, skaters, wheelchair users, joggers, and other non-motorized users. This treatment may be used on relatively high speed or high trafficked roadways where active users do not feel comfortable riding with traffic. Look to AASHTO's guidance when designing a shared use path.[36]

INTERSECTIONS

Intersections are the place where the most vehicle-bike conflicts occur. In 2017, 43%[37] of urban bicyclist fatalities occurred at intersections. On many streets, large turn radii and wide lanes encourage drivers to make sweeping, fast turns. These design decisions increase exposure and risk for people walking and biking, reduce the safety and comfort of the bike network, and discourage cycling. As cities work to make streets safer and more welcoming for bicyclists of all ages and abilities, intersection design is key.

ACOG encourages communities to follow the guidance provided by NACTO's guide Don't Give Up at the Intersection when designing bicycle facilities at these locations.

PROTECTED BIKE LANE

SHARED USE PATH

LEVEL OF STRESS ANALYSIS AND FACILITY SELECTION

It is ACOG's goal to provide a safe and convenient network of bicycle facilities for the average, inexperienced bicycle rider. ACOG recommends shared use paths, protected bike lanes, and cycle tracks when possible, but the circumstances of each community do not always allow for these facilities. Table A.2 represents ACOG's guidance for what type of bicycle facility to use on area roads, based on speed and volume of motor vehicle traffic.

The Level of Stress Analysis table was developed through the ACOG BPAC, with guidance from FHWA, to assist communities in deciding which type of facility is appropriate for the road in which it's located. Streets will range from "Low Stress" to "High Stress" based on the posted speed limit and Average Daily Traffic (ADT) counts.

TABLE A.2: LEVEL OF STRESS ANALYSIS

	AVERAGE DAILY TRAFFIC VOLUME		
AVERAGE MOTOR VEHICLE OPERATING SPEED	LESS THAN 2,000 VEHICLES PER DAY	2,000-10,000	OVER 10,000
LESS THAN 30 MPH	Sign-on-road bike route, sharrows, bike boulevard or no treatment	Striped/buffered bike lanes; wide paved shoulder in rural areas	Striped or buffered bike lanes
30-40 MPH	Striped/buffered bike lanes; wide paved shoulder in rural areas	Striped or buffered bike lanes	Buffered bike lanes or cycle tracks
41-50 MPH	Striped/buffered bike lanes; wide paved shoulder in rural areas	Buffered bike lanes or cycle tracks	Shared use path or cycle tracks
OVER 50 MPH	Striped or buffered bike lanes	Buffered bike lanes or cycle tracks	Shared use path or cycle tracks

LOW MEDIUM-LOW MEDIUM MEDIUM-HIGH HIGH

FOUR TYPES OF BICYCLISTS

When using the Level of Stress Analysis to select facilities, there is a balance that must be struck between built environment and perceived safety. While a facility may not generate many bike crashes, the perceived safety of the facility ultimately determines who is willing to ride there. Bikeways with more protection or total separation from moving vehicles will be considered safer than facilities with little to no protection from traffic. However, the perceived safety may not be as important as connectivity for other riders. To better understand the different types of bicyclists, researcher from McGill University developed the Four Types of Cyclists.[38] These categories include:

1. **Strong and fearless:** People willing to bicycle with limited or no bicycle-specific infrastructure
2. **Enthusiastic and confident:** People willing to bicycle if some bicycle-specific infrastructure is in place
3. **Interested but concerned:** People willing to bicycle if high-quality bicycle infrastructure is in place
4. **No way no how**: People unwilling to bicycle even if high-quality bicycle infrastructure is in place

The research suggests that designing bike routes and facilities for the Interested but Concerned cyclists, encourages bicycling for the largest group of people. High comfort and low-stress facilities are vital to developing a fully functioning network that accommodates cyclists of all ages and abilities.

PEDESTRIAN FACILITIES

Communities must prioritize building sidewalks to address the overall deficiency experienced in the OCARTS region. Not all sidewalks provide the same level of comfort or ease of access. General design standards for sidewalks is difficult, given that their construction is based on amount and location of right-of-way (ROW), however it is important

to ensure all sidewalks are adequate given their situation. Below in Table A.3 are the standards as set by FHWA and adopted by ACOG.

FHWA Designing Sidewalks and Trails for Access guidelines set sidewalk requirements by roadway classification and land use. A 60-inch minimum sidewalk is required for each roadway classification below.

SAFE TRANSPORTATION FOR EVERY PEDESTRIAN (STEP)

FHWA promotes the Safe Transportation for Every Pedestrian (STEP) program, which recommends several countermeasures to ensure pedestrians have safe facilities to travel. These improvements primarily focus on conflict points, such as marked and unmarked crossings. Table A.4, on page 48, displays countermeasures included within

***TABLE A.3**: SIDEWALK DESIGN GUIDELINES*

ROADWAY CLASSIFICATION AND LAND USE	SIDEWALK REQUIREMENTS	FUTURE PHASES
Highway Rural	Minimum of 60-inch shoulders required	Secure/preserve ROW for future sidewalks
Highway Rural/suburban- less than 1 dwelling unit/acre	One side preferred. Minimum of 60-inch shoulders required	Secure/preserve ROW for future sidewalks
Suburban Highway 1-4 dwelling units/acre	Both sides preferred, one side required	Second side required if density becomes greater than 4 dwelling units/acre
Major Arterial Residential	Both sides required	
Collector and Minor Arterial Residential	Both sides required	60-inch minimum
Local Street Residential- less than 1 dwelling unit/acre	One side preferred, minimum of 60-inch shoulders required	Secure/preserve ROW for future sidewalks
Local Street Residential- 1 to 4 dwelling units/acre	Both sides preferred, one side required	Second side required if density becomes greater than 4 dwelling units/acre
Local Street Residential- more than 4 dwelling units/acre	Both sides required	
All Streets Commercial areas	Both sides required	
All Streets Industrial areas	Both sides preferred, one side required	

the STEP program. While these improvements are recommended by the FHWA and ACOG, communities are encouraged to adjust based on their unique circumstances. With the introduction of new facilities, additional local education and enforcement is required.

Crosswalk Visibility Enhancements may be used to indicate preferred locations for people to cross, to increase visibility of the crossing location, and to help reinforce the driver's requirement to yield the right-of-way to pedestrians at crossing locations. These countermeasures help address the issues of drivers not yielding to pedestrians, inadequate crossing options for the pedestrian, and recognized conflict areas. Below are enhancements to consider:

- High-visibility crosswalk markings
- Parking restriction on crosswalk approach
- Overhead lighting
- Advance Yield Here To (Stop Here For) Pedestrians sign and stop or yield line
- In-Street Pedestrian Crossing sign
- Curb extension

CROSSWALK VISIBILITY ENHANCEMENTS

SOURCE: FHWA Safe Transportation for Every Pedestrian

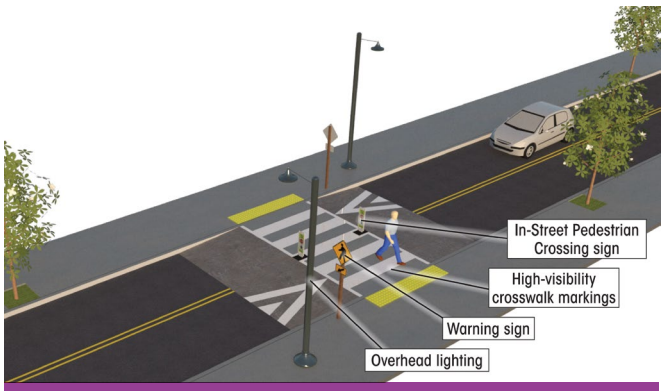
Raised crosswalks are ramped crossings spanning the entire width of the roadway, often placed at midblock crossing locations. **This treatment is ideal for roadways of less than 9,000 AADT and where speeds are less than 30 mph**. This helps address lack of pedestrian visibility and excessive vehicle speed. See MUTCD Section 3B.25 for information about Speed Hump Markings and other markings that can be used with raised crosswalks.

A *pedestrian refuge island* is a median with a refuge area that is intended to help protect pedestrians who are crossing the road. This countermeasure is sometimes referred to as a crossing island or pedestrian island. This countermeasure is effective on roads with established crossings that do not already have a raised median and roads that have 4 or more travel lanes. See MUTCD section 3D for more information.[39]

Pedestrian Hybrid Beacons are used to control traffic and remains off until a pedestrian activates it via pushbutton or other form of detection. When activated, the beacon displays a sequence of flashing and/or solid lights that indicate when pedestrians should cross and when it is safe for drivers to proceed. The beacons help bring attention to pedestrians as they cross heavily trafficked areas. **These beacons may also be replaced by standard traffic lights that are pedestrian actuated. These should be used in conjunction with signs and pavement markings. This treatment is recommended for mid-block crossings that have high levels of pedestrian activity.** For more information, view part 4F in the MUTCD.[40]

PEDESTRIAN HYBRID BEACONS

SOURCE: FHWA Safe Transportation for Every Pedestrian



RAISED CROSSWALKS

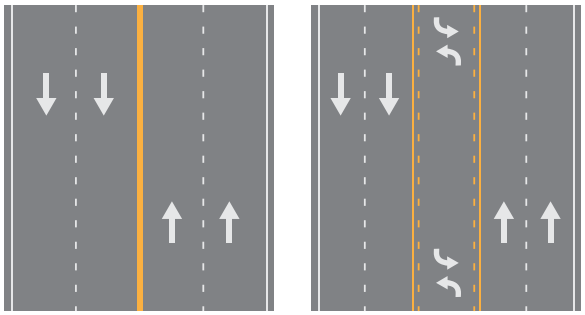
SOURCE: FHWA Safe Transportation for Every Pedestrian

Road Diets are a strategy that result in a reduction in the number of travel lanes, which is usually achieved by converting a four-lane, undivided road to a three-lane road. The space gained by eliminating lanes is typically reserved for other uses and travel modes, such as bike lanes and sidewalks. This is often used on roadways with lower levels of traffic than the existing roadway was built to accommodate.

The FHWA advises that 4-lane roadways with an ADT of 20,000 vehicles per day or less may be good candidates for a Road Diet and should be evaluated for feasibility. In addition to the FHWA's advice, **ACOG recommends roadways near parks, schools, and activity centers be given more consideration for a road diet. Also, a roadway's bicyclist and pedestrian activity and number of crashes should be considered when evaluating for feasibility**.

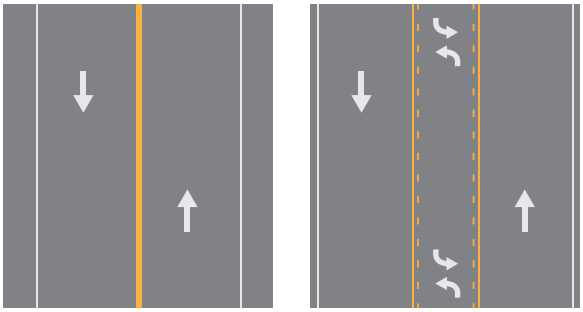
PEDESTRIAN HYBRID BEACONS

ROAD DIETS



SOURCE: FHWA Safe Transportation for Every Pedestrian

4-lane to 5-lane: In some cases it is necessary to keep two lanes in each direction for capacity purposes. Narrowing lane width to provide a two-way left-turn lane introduces the benefits of separating turning vehicles and reducing operating speeds.

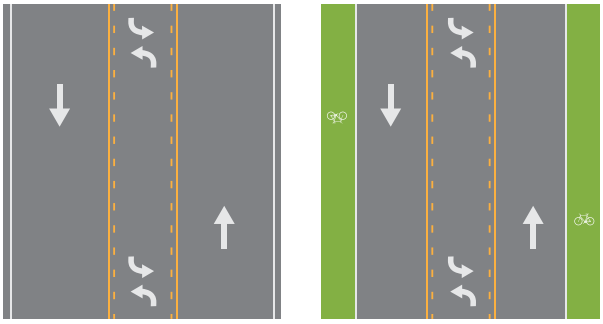


SOURCE: FHWA Safe Transportation for Every Pedestrian

2-lane to 3 lane: If a capacity expansion of an existing two-lane road is desired, in some cases a three-lane cross section can provide similar operational benefits to a four-lane cross section while maintaining the safety benefits of the three-lane configuration.

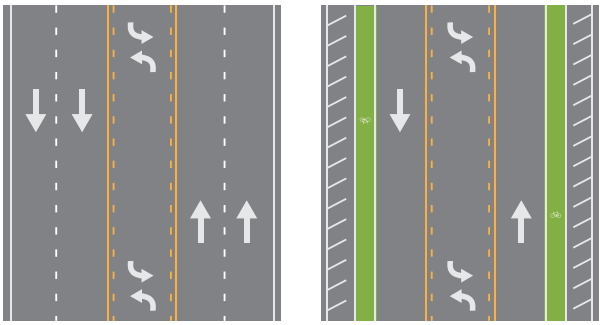
PEDESTRIAN REFUGE ISLAND

SOURCE: NACTO Urban Bikeway Design Guide



SOURCE: FHWA Safe Transportation for Every Pedestrian

3-lane to 3-lane: In some cases practitioners could reduce the width of each lane instead of reducing the number of lanes. Configuring an existing three-lane roadway to a three-lane cross section with narrowed lanes can accommodate bicycle lanes or parking, and provide some traffic calming benefits.



SOURCE: FHWA Safe Transportation for Every Pedestrian

5-lane to 3-lane: In some cases jurisdictions have reconfigured five-lane sections to three-lanes, adding features such as diagonal parking and protected bicycles lanes with the extra cross section width.

TABLE A.4: STEP COUNTERMEASURES AND SAFETY ISSUES ADDRESSED

	SAFETY ISSUES ADDRESSED				
PEDESTRIAN CRASH COUNTERMEASURES FOR UNCONTROLLED CROSSINGS	CONFLICTS AT CROSSING LOCATIONS	EXCESSIVE VEHICLE SPEED	INADEQUATE CONSPICUITY/ VISIBILITY	DRIVERS NOT YIELDING TO PEDESTRIANS IN CROSSWALKS	INSUFFICIENT SEPARATION FROM TRAFFIC
CROSSWALK VISIBILITY ENHANCEMENT	●	●	●	●	●
HIGH-VISIBILITY CROSSWALK MARKINGS*	●		●	●	
PARKING RESTRICTION ON CROSSWALK APPROACH*	●		●	●	
IMPROVED NIGHT TIME LIGHTING*	●		●		
ADVANCE YIELD HERE TO (STOP HERE FOR) PEDESTRIANS SIGN AND YIELD (STOP) LINE*	●		●	●	●
IN-STREET PEDESTRIAN CROSSING SIGN*	●	●	●	●	
CURB EXTENSION*	●	●	●		●
RAISED CROSSWALK	●	●	●	●	
PEDESTRIAN REFUGE ISLAND	●	●	●		●
PEDESTRIAN HYBRID BEACON	●	●	●	●	
ROAD DIET	●	●	●		●
RECTANGULAR RAPID-FLASHING BEACON	●		●	●	●

*These countermeasures make up the STEP countermeasure "crosswalk visibility enhancements." Multiple countermeasures may be implemented at a location as part of crosswalk visibility enhancements.

SOURCE: FHWA Field Guide for Selecting Countermeasures at Uncontrolled Pedestrian Crossing Locations

Rectangular Rapid-Flashing Beacon (RRFB) is a pedestrian-actuated safety enhancement used in combination with a pedestrian, school, or trail crossing warning sign to improve safety at uncontrolled, marked crosswalks. The device includes two rectangular-shaped yellow indicators, each with an LED-array-based light source that flashes with high frequency when activated. The RRFB is not currently included in the MUTCD. FHWA has issued interim approval for the optional use of the RRFB (Interim Approval 21 or IA-21).[41]

Table A.4 identifies which countermeasure is appropriate for various pedestrian safety issues. Use this table when evaluating potential solutions to pedestrian safety issues in the community.

RECTANGULAR RAPID-FLASHING BEACON

B APPENDIX: BICYCLE AND PEDESTRIAN COUNTS

To support and measure use of area bicycle and pedestrian facilities, there must be quantitative data to analyze. This data has historically been difficult to obtain as the number of bicyclists and pedestrians on a roadway is not as easy to collect as vehicle data. In light of this problem, Alta Planning and Design and the Institute of Transportation Engineers Pedestrian and Bicycle Council created the National Bicycle & Pedestrian Documentation Project.

This nationwide effort provides a consistent model of data collection for use by planners, governments, and bicycle and pedestrian professionals. The model recommends a two (2) hour count to be conducted on a weekday and a Saturday. These counts are used in an algorithm to estimate the daily, weekly, monthly, and yearly estimate for that location. Because the count estimates can vary widely on any given day, this method should only be used when automatic counters are not available. Automatic counters monitor the number of bicyclists and pedestrians that are using a trail or roadway, without needing an individual to continually monitor it. This provides planners and engineers with more accurate data. The communities that do not have automatic counters can borrow one from ACOG. The communities that use a counter are required to report the numbers back to ACOG, which are in turn reported to ODOT.

ACOG and area communities have been participating in the National Bicycle & Pedestrian Documentation Program effort since 2014. ACOG records, analyzes, and shares data for member communities throughout this effort. ACOG has contracts with various cities to reimburse time worked conducting these counts.

FIGURE B.1: PERCENTAGE OF MEN & WOMEN AND BICYCLISTS & PEDESTRIANS

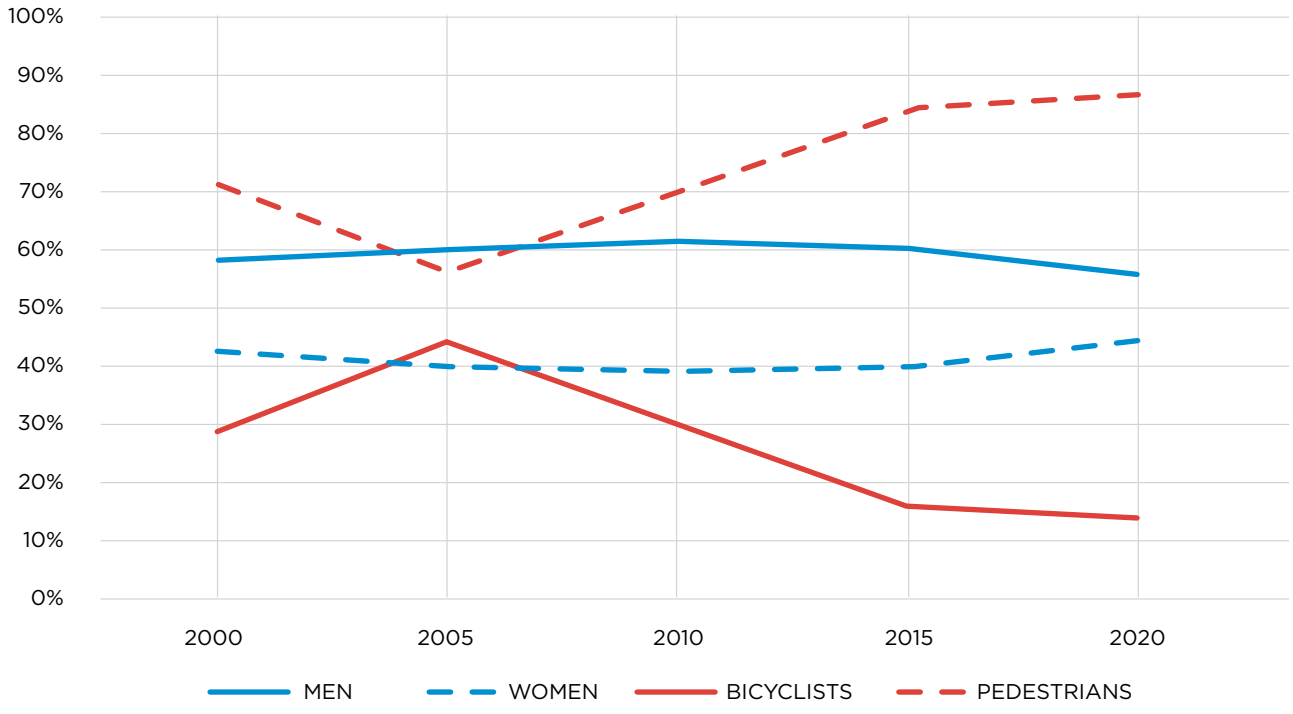
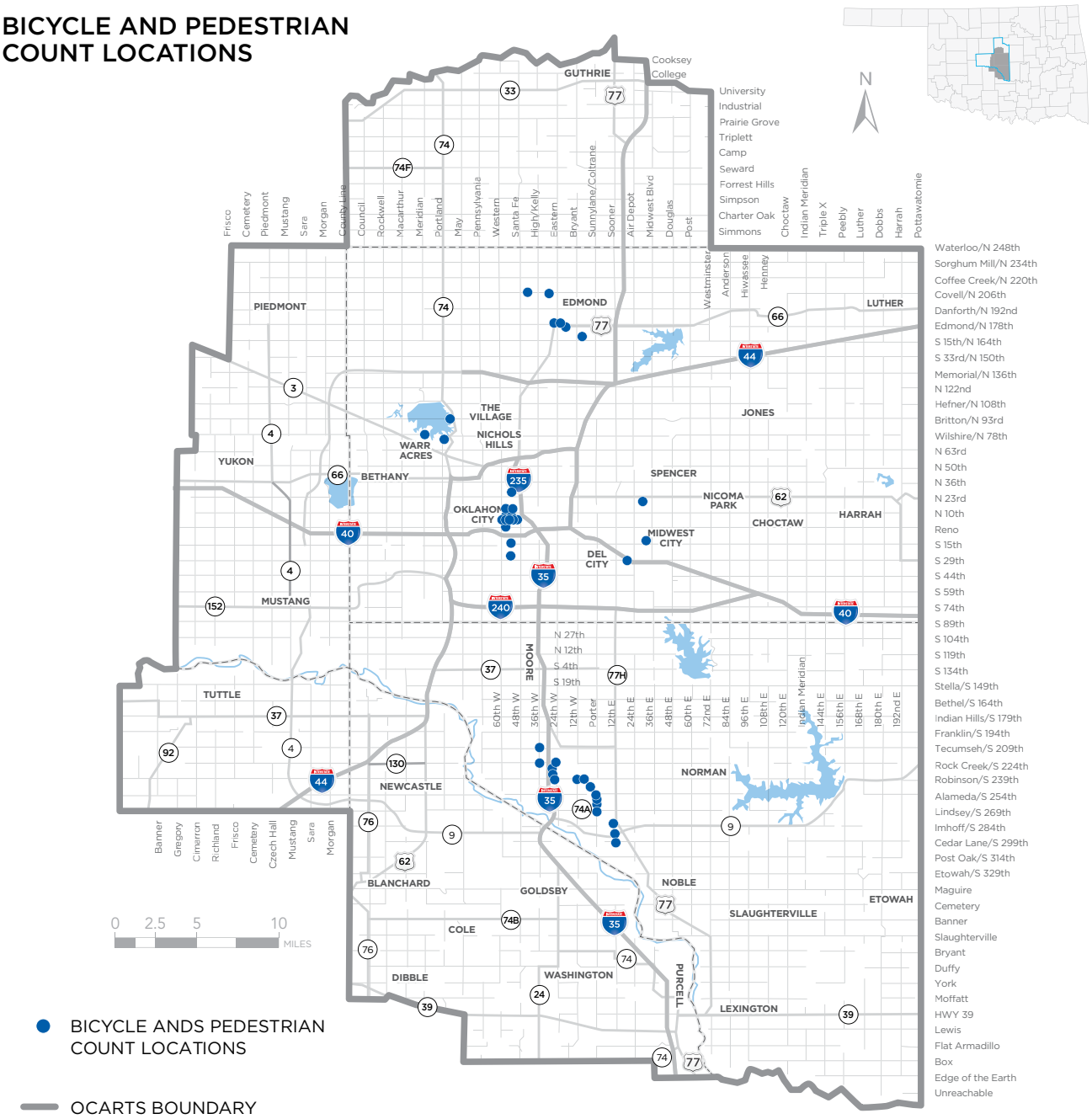


FIGURE B.2

BICYCLE AND PEDESTRIAN COUNT LOCATIONS



Several OCARTS area communities consistently report either in-person counts or automatic counts. The counts are typically conducted on shared use paths or areas that attract recreational and commuter cyclists. In 2019, 22 locations were observed for bicyclist and pedestrian activity. Figure B.2 displays common count locations in the area.

Since 2015, over 10,000 users have been counted through this process. Of those using the facilities, roughly 59 percent are men and 41 percent are women. Around 27 percent of those observed were on bicycles while the other 73 percent were pedestrians. The yearly averages are represented in Figure B.1.

C APPENDIX: OKLAHOMA CITY METROPOLITAN AREA TREE CANOPY ASSESSMENT

ACOG, in partnership with Oklahoma City Community Foundation (OCCF) and Oklahoma Forestry Services, contracted with Davey Resource Group Inc. to conduct the 2019 Oklahoma City Metropolitan Area Tree Canopy Assessment. This was the first assessment of its kind in the region and included a study area of approximately 536 square miles in the OKC metropolitan area. While this study does not include the whole OCARTS area, it does represent a large portion of the urban area within its boundaries.

This comprehensive assessment identified and quantified the area's land cover, forest structure, and the numerous environmental benefits that trees provide. These benefits include energy savings, air and water quality improvements, stormwater interception, quality of life, and other socioeconomic benefits. Trees also provide additional aesthetics and beautification benefits back to neighborhoods and the community at large. Through this analysis, it was determined that the study area has an estimated 65 million trees, providing as much as $150 million dollars in environmental benefits to the study area annually.

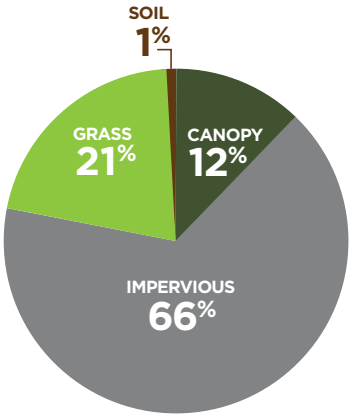
Part of the assessment included using high resolution satellite imagery to provide a birds-eye view of the entire forest within the study area, showing the land cover types and the distribution of existing tree canopy. To better understand the structure, composition, and value of the benefits provided from trees' vegetation and forest, a sample inventory of public and private trees combined with the i-Tree Eco modeling formula was conducted. Five types of land cover were assessed: Open water, impervious surfaces (buildings, parking lots, roads, etc.), bare soil, grass/low-lying vegetation, and tree canopy. An example of the land cover mapping can be seen on figure C.4.

For area cyclists and pedestrians, trees are especially important in terms of their protection from the sun and wind along with their benefit to air quality. To experience their full benefit, trees must be planted along or near area recreational trails, bicycle facilities, and sidewalks. The ideal location of the tree depends on the tree type. Larger, more expansive trees can be planted further from the facilities and still provide all of the benefits, while smaller trees will need to be planted closer to the facility.

Using Geographic Information Systems (GIS), ACOG was able to calculate the percentage of sidewalks and bicycle facilities that have tree coverage, or canopy, within a 20-foot buffer from the centerline. Based on this analysis, there is an average of 12 percent tree canopy coverage around sidewalks, 7 percent around bicycle facilities, and 20 percent for area trails and shared use paths. This is represented in Figures C.1, C.2, and C.3.

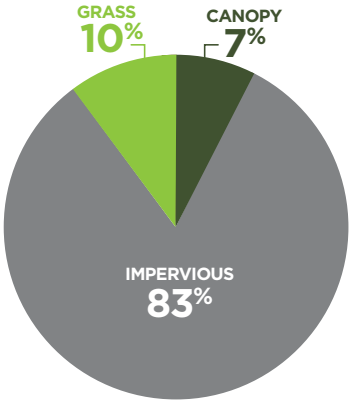
In addition to quantifying existing urban tree canopy, this assessment illustrates the potential for increasing tree canopy across the study area. The potential future tree canopy is estimated by comparing the areas of existing canopy to the areas that were determined to have planting priority potential, which primarily includes areas of low-lying vegetation This analysis excluded sports fields, cemeteries, and other sites not suitable for trees. Using this calculation, the potential maximum tree canopy within a 20-foot buffer of area sidewalks is 32 percent, 16 percent for on-street bicycle facilities, and 57 percent for trails and shared use paths.

FIGURE C.1



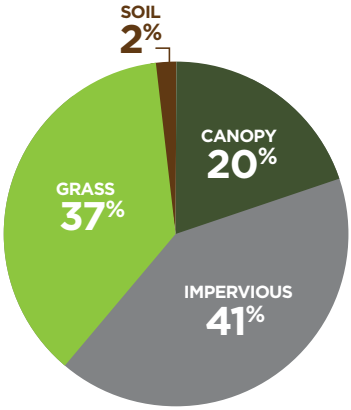
LAND COVER AROUND SIDEWALKS
20 FT BUFFER FROM CENTERLINE

FIGURE C.2



LAND COVER AROUND BIKE FACILITIES
20 FT BUFFER FROM CENTERLINE

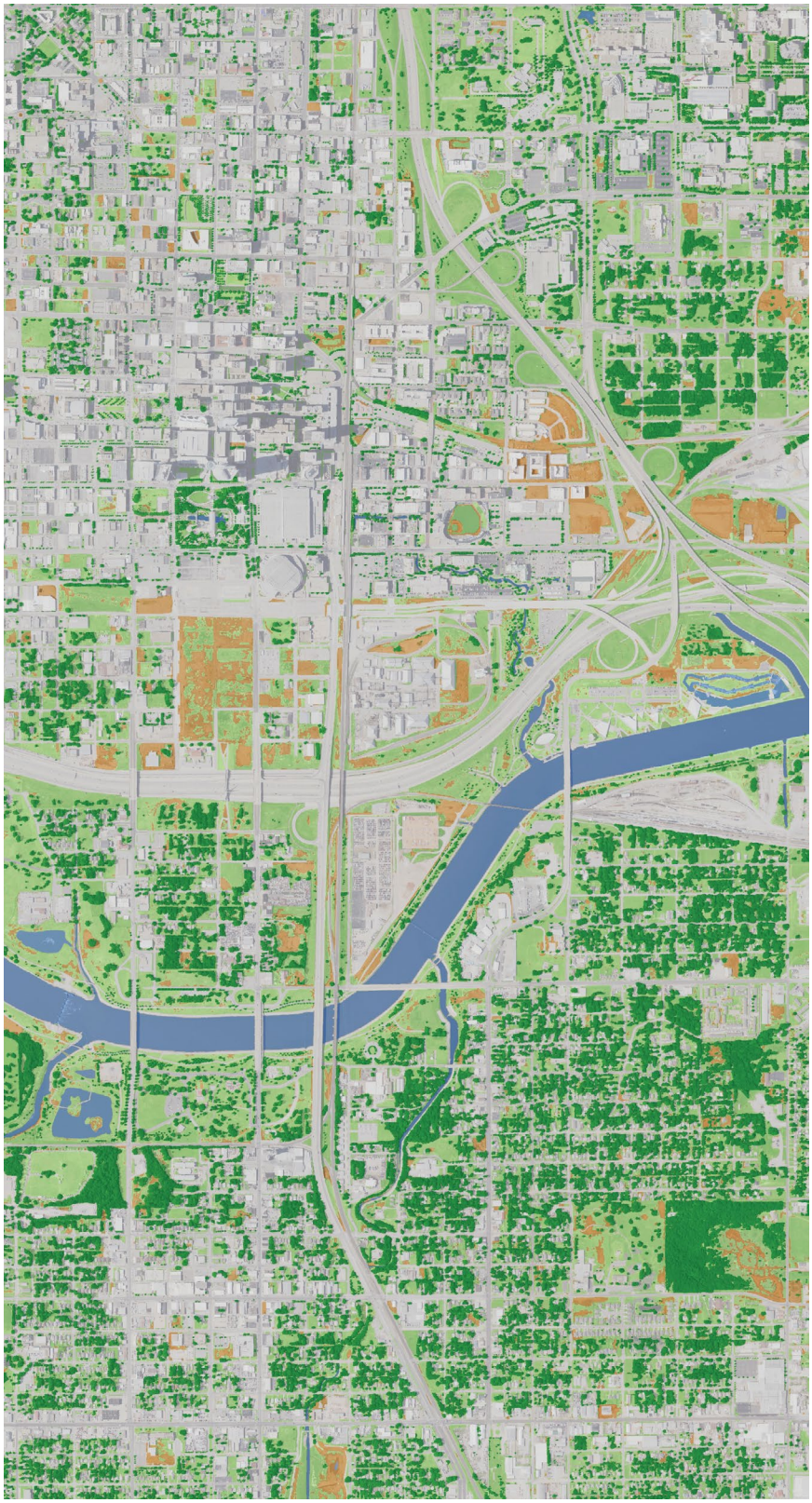
FIGURE C.3



LAND COVER AROUND TRAILS
20 FT BUFFER FROM CENTERLINE

FIGURE C.4

LAND COVER MAPPING



D APPENDIX: BICYCLE AND PEDESTRIAN COMPOSITE INDEX

The Bicycle Composite Index (BCI) and Pedestrian Composite Index (PCI) are models adapted from the PCI developed by the Mid-Region Council of Governments (MRCOG). ACOG adapted this for the OCARTS area because it can apply a standard measure across different contexts in the region. While the data varies slightly from MRCOG's, the end result is relatively similar.

ACOG staff gathered as much relevant data as was available and used it to analyze where sidewalks, bike lanes, and trails would have the greatest impact. This is the first version of the BCI and second PCI for the OCARTS area.

The BCI process required gathering GIS data pertaining to areas that are most likely to generate bicycle activity and those that deter bicycle activity. The two datasets were then combined into a single composite index. The data and scoring methodology are depicted in table D.1.

The PCI process required gathering GIS data pertaining to areas that generate pedestrian activity and those that deter pedestrian activity. The two datasets were combined into a single composite index. The data and scoring methodology are depicted on page 61 .

***TABLE D.1**: BICYCLE ACTIVITY GENERATOR SCORING*

BICYCLE ACTIVITY GENERATORS	CRITERIA	SCORE
Transit Stop	Area within 1/2 Mile of a High-Volume* Stop	1
	Area within 1 Mile of a High-Volume Stop	0.5
	Area within 1/2 Mile of a Low-Volume	0.25
Park	Area within 1/2 Mile of a City Park	1
Public Library	Area within 1/2 Mile of a Public Library	1
Shared Use Path / Trail	Area within 1/2 Mile of a Shared Use Path	1
	Area within 2 Miles of a Shared Use Path	0.5

CONTINUED

***TABLE D.1**: CONTINUED*

BICYCLE ACTIVITY GENERATORS	CRITERIA	SCORE
Elementary School	Area within 1/2 Mile of an Elementary School	1
	Area within 1 Mile of an Elementary School	0.5
Middle School	Area within 1/2 Mile of a Middle School	1
	Area within 2 Miles of a Middle School	0.5
High School	Area within 1/2 Mile of a High School	1
	Area within 2 Miles of a High School	0.5
College or University	Area within 1/2 Mile of a College or University	1
	Area within 2 Miles of a College or University	0.5
Bikeable Business	High Density of Bikeable Businesses in a TAZ	1
	Medium Density of Bikeable Businesses in a TAZ	0.75
	Low Density of Bikeable Businesses in a TAZ	0.5
EJ Communities of Concern	High Density in Block Group	1
	Medium-High Density in Block Group	0.75
	Medium-Low Density in Block Group	0.5
	Low Density in Block Group	0.25
Generator Score	**Total Possible Score**	**9**

* High-Volume stops are those that average at least 10 boarding per day

***TABLE D.2**: BICYCLE ACTIVITY DETERRENT SCORING*

BICYCLE DETERRENTS	CRITERIA	SCORE
Crashes	High Density in TAZ	1
	Medium-High Density in TAZ	0.75
	Medium-Low Density in TAZ	0.5
	Low Density in TAZ	0.25
Traffic Volume	Roads with ADT Greater than 15,000	1
	Roads with ADT Between 5,000 and 14,999	0.5
	Roads with ADT Less than 4,999	0
Major Barrier	Road intersects with a Major Barrier	1
	Road does not intersect with a Major Barrier	0
Number of Lanes	Road with 5+ Lanes	1
	Road with 3 or 4 Lanes	0.5
	Road with 1 or 2 Lanes	0
Bike Facilities	Road with no Bike Facilities within .25 miles	1
	Road with Bike Lanes within .25 miles	0.5
	Road with Buffered/Protected Bike Lanes or Shared Use Paths within .25 miles	0
Deterrent Score	**Total Possible Deterrent Score**	**5**

***TABLE D.3**: PEDESTRIAN ACTIVITY GENERATOR SCORING*

PEDESTRIAN GENERATOR	CRITERIA	SCORE
Transit Stop	Area within 1/4 Mile of a High-Volume* Stop	1
	Area within 1/2 Mile of a High-Volume Stop	0.5
	Area within 1/4 Mile of a Low-Volume Stop	0.25
Park	Area within 1/4 Mile of a City Park	1
Public Library	Area within 1/4 Mile of a Public Library	1
Elementary School	Area within 1/4 Mile of an Elementary School	1
	Area within 1/2 Mile of an Elementary School	0.5
Middle School	Area within 1/4 Mile of a Middle School	1
	Area within 1 Mile of a Middle School	0.5
High School	Area within 1/4 Mile of a High School	1
	Area within 1 Mile of a High School	0.5
College or University	Area within 1 Mile of a College or University	1
	Area within 1 Mile of a College or University	0.5
Walkable Business	High Density of Walkable Businesses in a TAZ	1
	Medium Density of Walkable Businesses in a TAZ	0.75
	Low Density of Walkable Businesses in a TAZ	0.5

* High-Volume Stops are those that average at least 10 boarding per day

CONTINUED

TABLE D.3: CONTINUED

PEDESTRIAN GENERATOR	CRITERIA	SCORE
Communities of Concern	High Density in Block Group	1
	Medium-High Density in Block Group	0.75
	Medium-Low Density in Block Group	0.5
	Low Density in Block Group	0.25
Generator Score	**Total Possible Score**	**9**

TABLE D.4: PEDESTRIAN ACTIVITY DETERRENT SCORING

PEDESTRIAN DETERRENT	CRITERIA	SCORE
Crashes	High Density in TAZ	1
	Medium-High Density in TAZ	0.75
	Medium-Low Density in TAZ	.5
	Low Density in TAZ	0.25
Traffic Volume	Roads with AADT Greater than 15,000	1
	Roads with AADT Between 5,000 and 14,999	0.5
	Roads with AADT Less than 4,999	0
Major Barrier	Road intersects with a Major Barrier	1
	Road Does Not Intersect with a Major Barrier	0

CONTINUED

TABLE D.4: CONTINUED

BICYCLE DETERRENTS	CRITERIA	SCORE
Number of Lanes	Road with 5+ Lanes	1
	Road with 3 or 4 Lanes	0.5
	Road with 1 or 2 Lanes	0
Sidewalk	Road with Low Sidewalk Coverage	1
	Road with Partial Sidewalk Coverage	0.5
	Road with Full Sidewalk Coverage	0
Deterrent Score	**Total Possible Deterrent Score**	**5**

DETERMINING GENERATOR SCORE

Staff used GIS to determine the spatial relationship of the data above. For specific locations like transit stops, parks, libraries, sidewalks, shared use paths, and all schools, a buffer was put around the point/line as a way to measure which roads received each score. For example, in the BCI, a half-mile buffer was placed around the elementary schools layer, then an additional half-mile buffer around the first buffer to generate the secondary zone. This ensured there would not be duplicate information. The appropriate score was added as a field to each buffer, then joined to the road segments that intersect the layer using the spatial join tool.

For the **Parks** and **Public Libraries**, staff scored the area within a half-mile of the facility.

The **School** scores were based on geographic proximity to the main building of the school campus. For the BCI, it was decided to give a half mile around the school full points while a mile around elementary schools received half points. Because elementary schools are often located at the neighborhood level, it was believed that the secondary buffer would not need to be as expansive as the other school buffers. For the PCI, the streets a quarter mile from the school building were given full points while half points were given to the roads within a half mile of the school. The secondary distance was increased for middle school, high schools, and colleges and universities because these schools are often spaced further out and the students are more likely to walk further to attend.

Shared use paths were added in the BCI because of their draw for recreational cyclists. The half mile area around these paths was given full points with the secondary zone of two miles out receiving half points.

Bikeable and Walkable Businesses included categories such as restaurants, retail, convenience, fun, grocery, information, food, pharmacy, liquor, and personal care. The PCI only included those that were within a quarter mile of a sidewalk. These were joined to the Traffic Analysis Zone (TAZ) which they fell into. The number of business per square mile

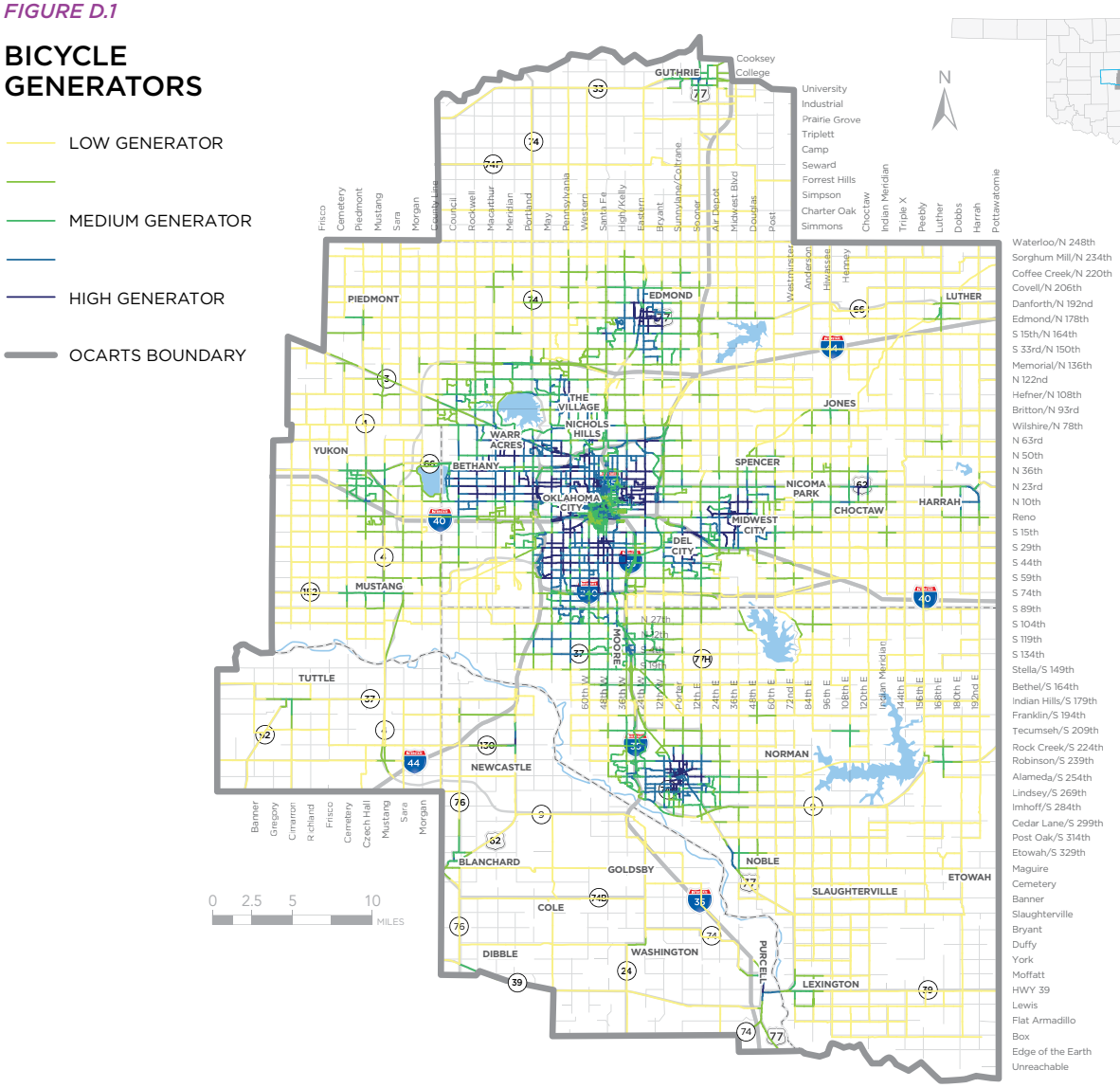
was calculated to determine the density. Zero to 20 businesses per square mile was considered low density, 21 to 60 per square mile was considered medium density, and 61 or more businesses per square mile was considered high density. Each TAZ was assigned the appropriate score, then spatially joined to the road network.

The **EJ Communities of Concern** were determined using census data by block group. This study included areas with populations of Limited English Proficiency, elderly (65 and over), youth (17 and under), zero vehicle households, and low-income households. Block groups were scored based on high percentages of these populations. If the block group had a high percentage of all five populations, it received the full 1 point. If it had a high percentage of 4 populations then it received 0.75 points, a high percentage of 3 populations received 0.5, a high percentage of 2 populations received 0.25, and an area with high percentage of 1 or less did not receive points. This layer was then spatially joined to the road network.

Once all scores were joined to a single road network layer, the total score was added and then averaged. The Bicycle Generator Map is depicted in Figure D.1. The Pedestrian Generator Map is depicted in Figure D.2

FIGURE D.1

BICYCLE GENERATORS



DETERMINING DETERRENT SCORE

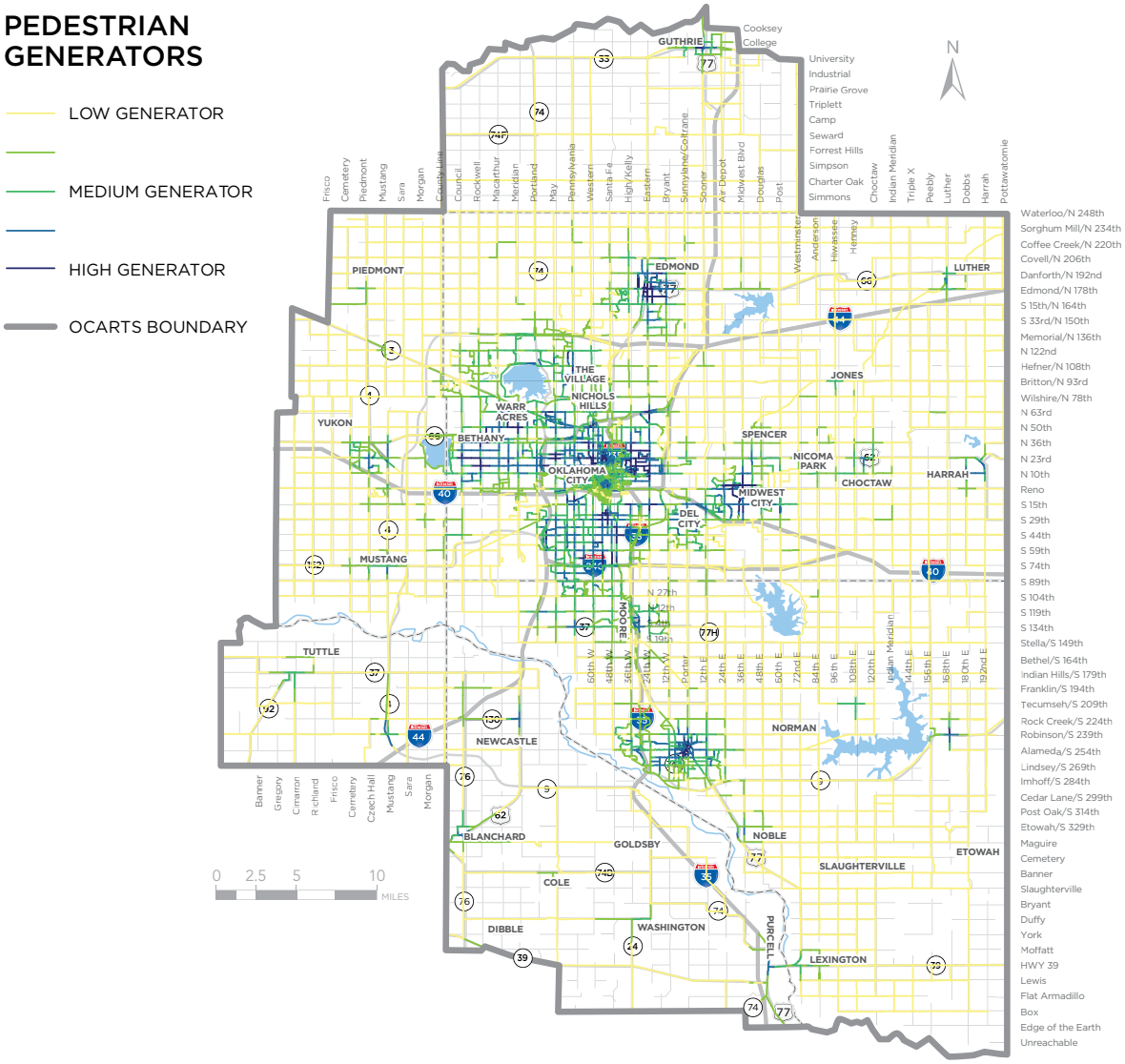
To determine the **Crash score**, recorded crash locations from 2013-2017 were added as points on the map. The density of points per TAZ was calculated by number of crashes per square mile. 100 crashes per square mile was considered a high-density area, high-medium density area was between 10 and 100 crashes per square mile, medium-low density area included TAZs with 5 to 10 crashes per square mile, and low density was between zero and 5 crashes per square mile. The score was assigned to the appropriate TAZ then spatially joined to the road network.

The **Average Daily Traffic** (ADT) score was determined by using traffic count data. Road segments with an ADT above 15,000 received the highest score, ADT's between 5,000 and 14,999 received half points, and anything less than 4,999 was not considered a deterrent, thus received no points.

The **Lack of Bicycle Facilities** score was determined based on proximity to dedicated bicycle infrastructure used for transportation. Areas not near bicycle facilities received full points, as these areas are more likely to deter bicyclists. Areas within a quarter mile of a bike lane received half

FIGURE D.2

PEDESTRIAN GENERATORS



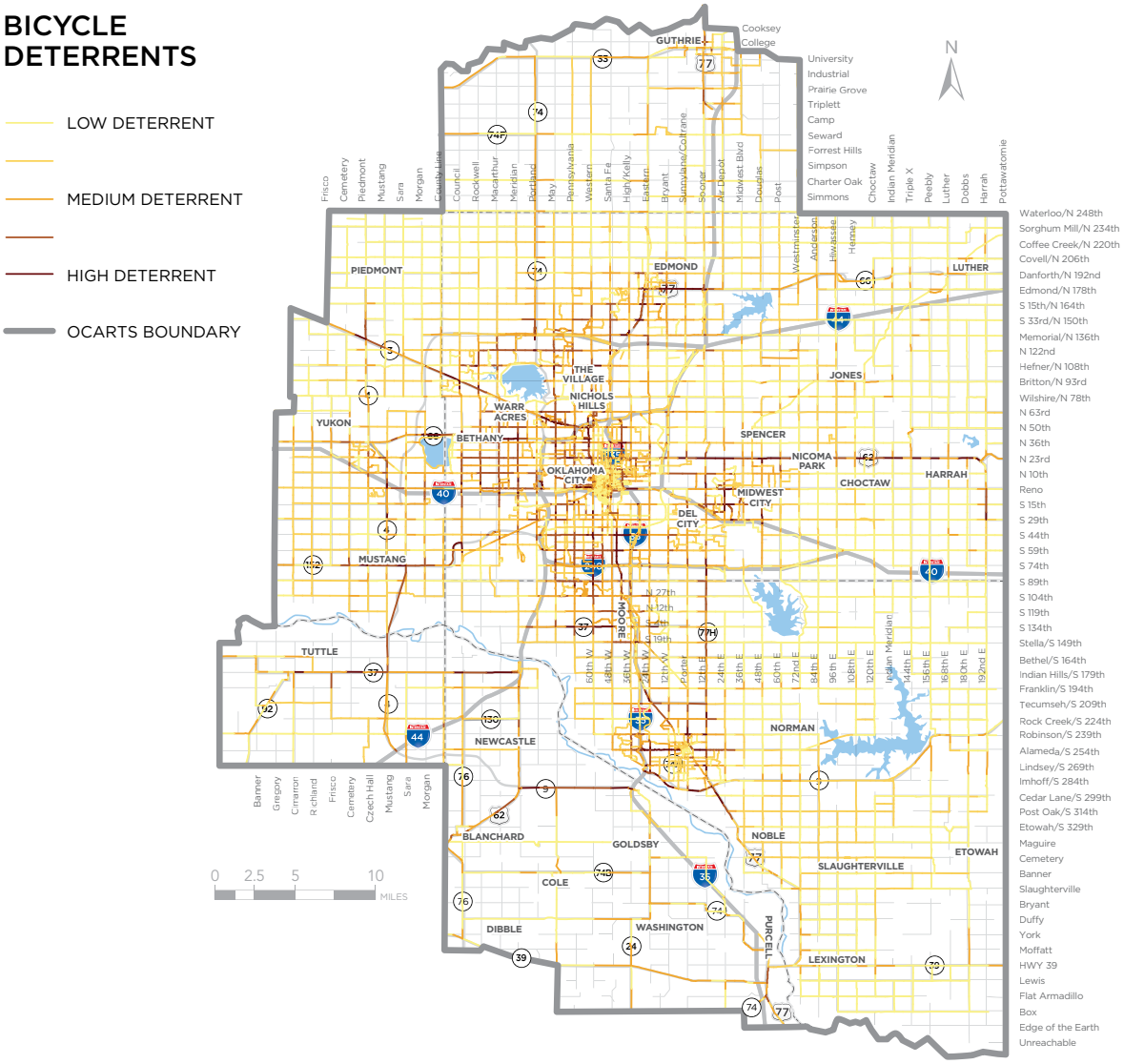
points. This was decided because of the lack of physical protection they offer cyclists, when compared to protected or separated facilities. Roads within a quarter mile of shared use paths or protected/buffered bike lanes received no points, as roads with these facilities are less likely to deter bicyclists. The quarter mile distance was decided because this is the distance where cyclist can easily reach to ride safely.

To determine the **Sidewalk** coverage score, a 60ft buffer was placed around the road layer, then the Intersect tool was used to split the sidewalk layer into segments that fit within the 60ft buffer. The new sidewalk layer was then joined to the buffer and the sidewalk length was summed. The total length of sidewalk was divided by the total length of the corresponding road segment to determine whether the road segment had low coverage, partial coverage, or full coverage. Roads with less than 25% coverage were considered low sidewalk coverage, roads with between 25% and 125% coverage were considered partial coverage, and roads with 125% to 200% coverage were considered full coverage.

The **Barrier** score was determined using natural and man-made barriers in the region. This includes rivers, major roadways and highways, and railroad

FIGURE D.3

BICYCLE DETERRENTS



tracks. If a roadway was one of these barriers or crossed one of these barriers, it was given full points.

The **Number of Lanes** score was found using data on the roadway layer. Roadways with 5 or more lanes received a full point, if a road had 3 or 4 lanes it received half points, and any road with 1 or 2 lanes was not considered a deterrent.

Once all scores were joined to one road network layer, the total score was added and then averaged. The Bicycle Deterrent Map is depicted in Figure D.3. The Pedestrian Deterrent Map is depicted in Figure D.4

DETERMINING COMPOSITE SCORES

To determine the final BCI and PCI, the generator scores and deterrent scores for each road section were combined and averaged together, ensuring they hold the same weight. The final BCI map is displayed in Figure D.5 and the PCI map is displayed in Figure D.6.

FIGURE D.4

PEDESTRIAN DETERRENTS

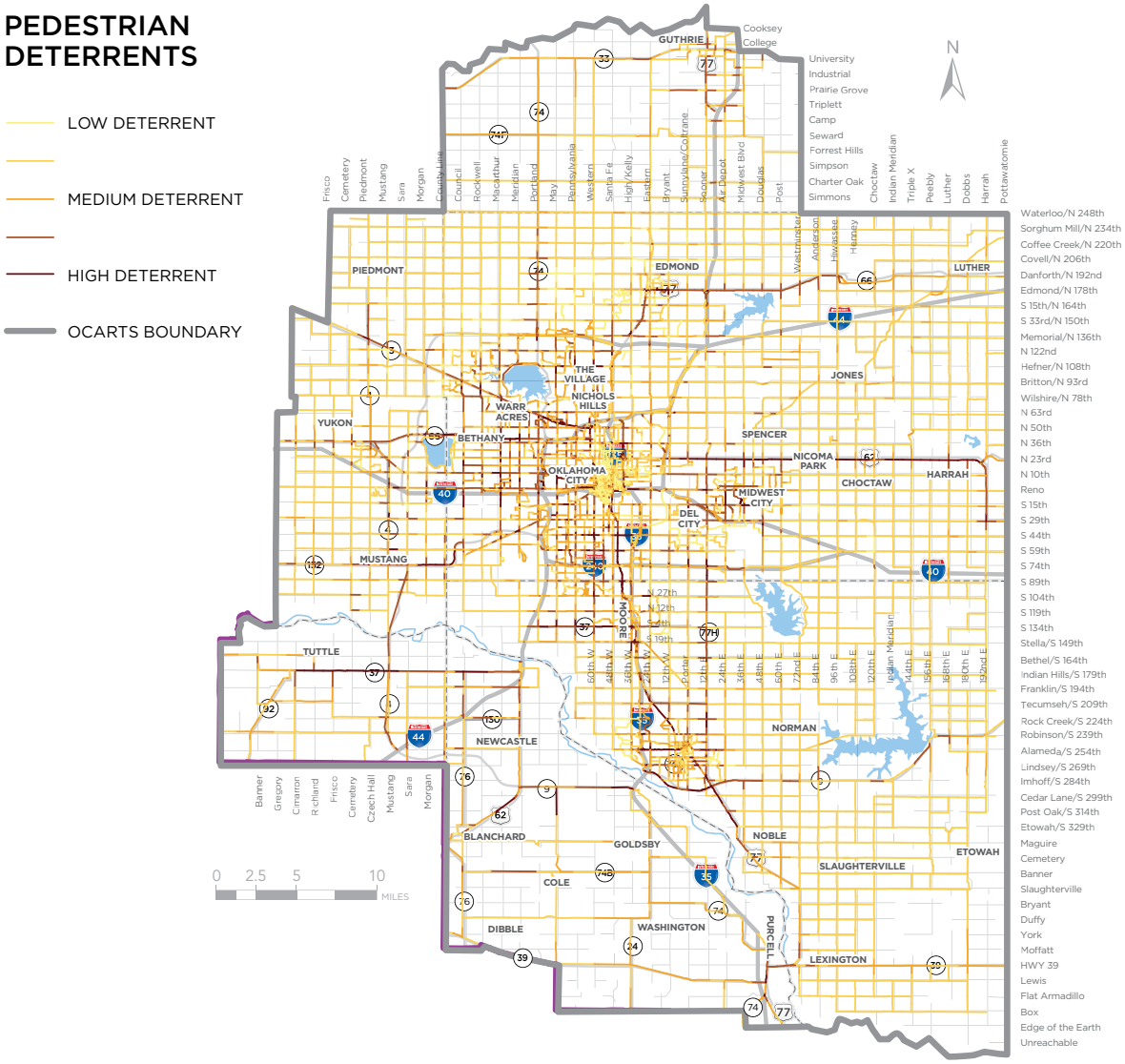


FIGURE D.5

BICYCLE COMPOSITE INDEX (BCI)

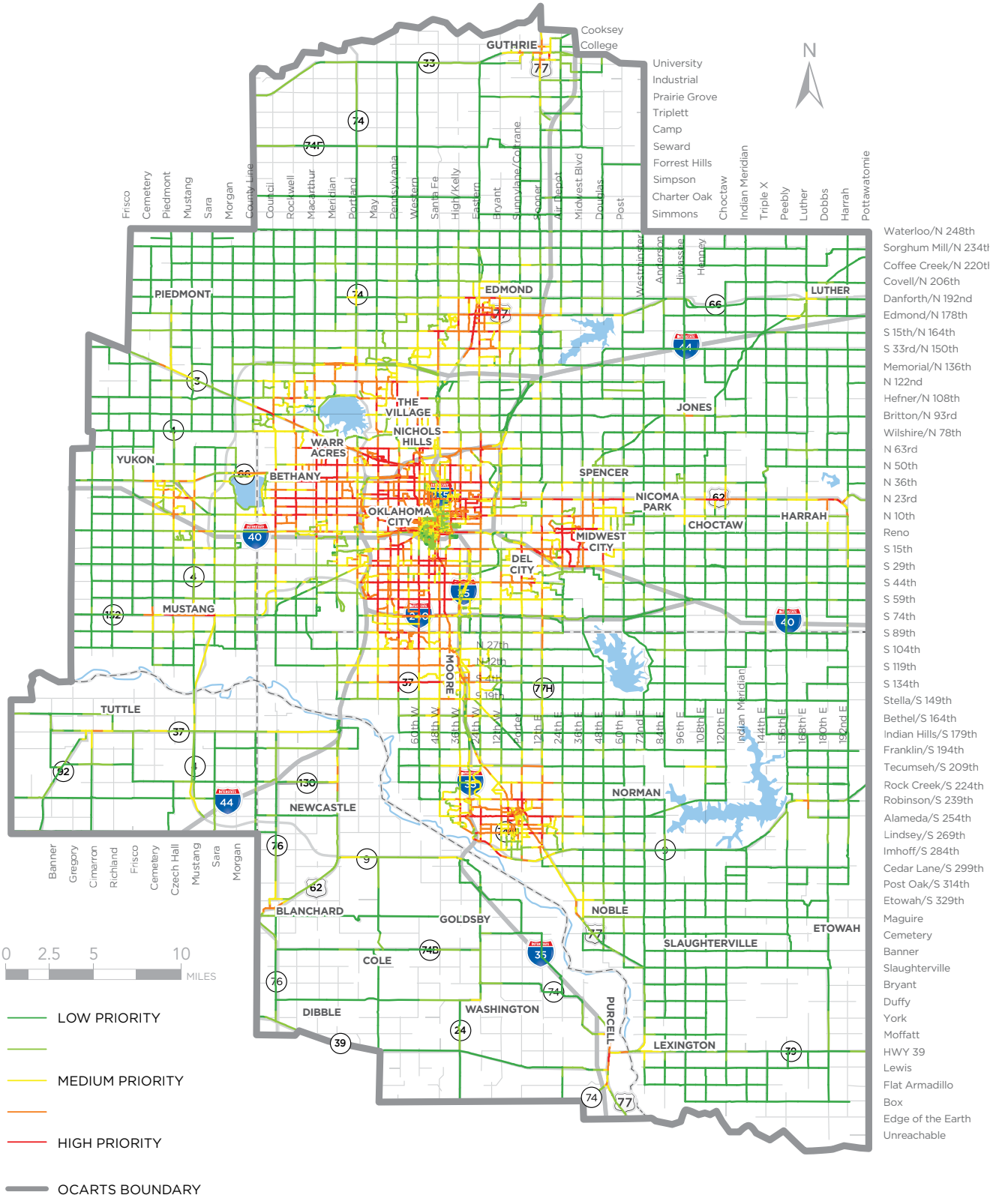
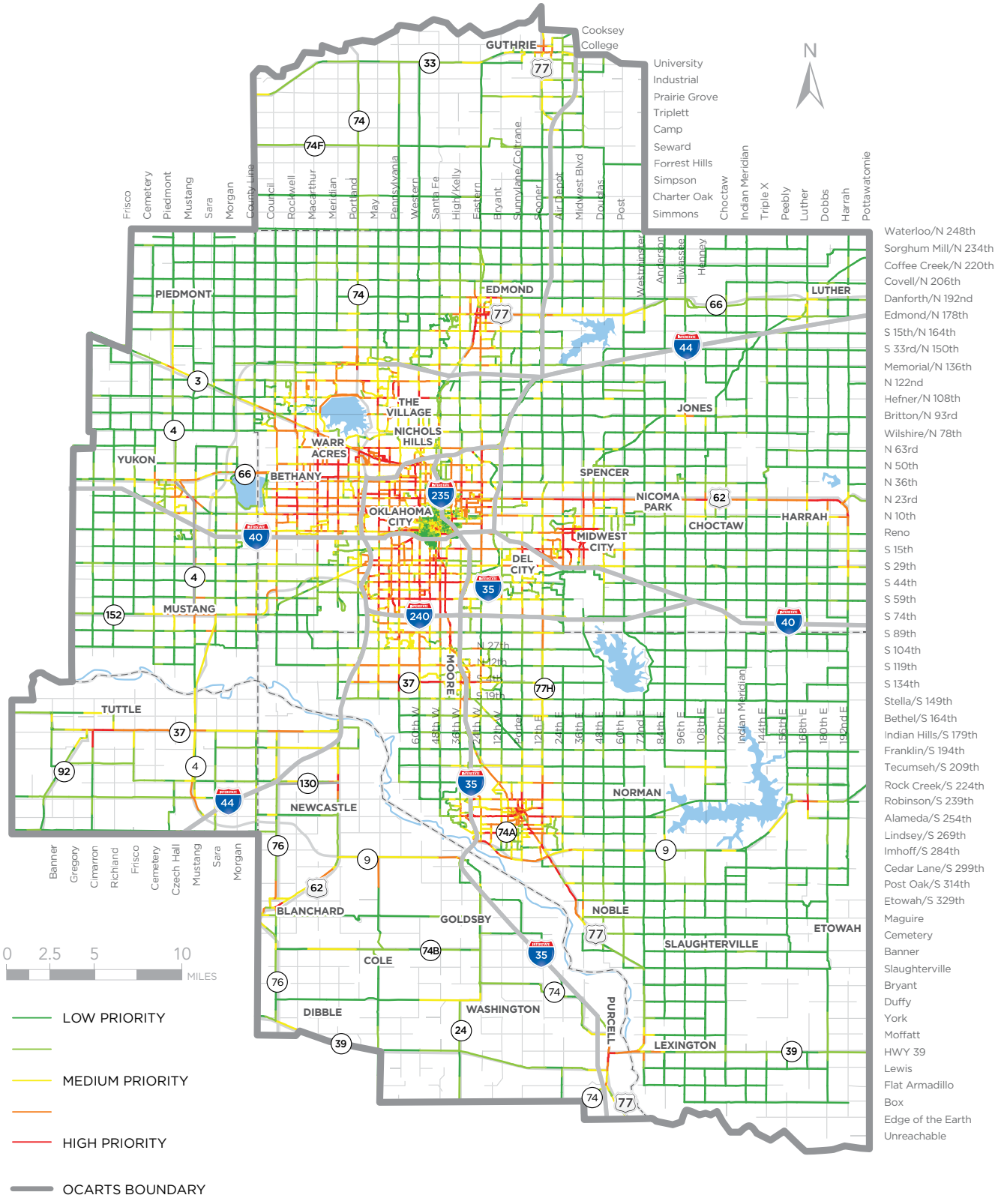


FIGURE D.6

PEDESTRIAN COMPOSITE INDEX (PCI)



FIGURES AND TABLES

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GLOSSARY

Active Transportation: Any self-propelled, human-powered mode of transportation, such as walking or bicycling.

Automated Counters: A device that counts bicyclists and/or pedestrians without the need for human monitoring. These may be placed on trails, sidewalks, or streets and may use camera, infrared, or motion detection technology.

Average Daily Traffic (ADT): The average number of vehicles that pass a specified point during a 24-hour period.

Bicycle/Bike Lane: A portion of the roadway that has been designated for bicycles through striping, signage, or pavement markings.

Buffered Bicycle Lane: A conventional bicycle lane paired with a designated buffer space, separating the bicycle lane from the adjacent motor vehicle travel lane.

Conflict point: An area where a bicyclist or pedestrian may interact with vehicular traffic.

Confirmation Sign: A sign along a bike route that marks a certain location, such as a library, entertainment center, city hall, etc.

Contra-flow Bicycle Lane: A bicycle lane designed to allow bicyclists to ride in the opposite direction of motor vehicle traffic.

Decision Sign: A sign along a bike route that indicates the direction and/or distance of prominent destinations.

E-Bike: Is a bicycle with 2 or 3 wheels, fully operative pedals for human propulsion, and an electric motor with a power output of not more than 750 watts.

Environmental Justice (EJ): the fair treatment and meaningful involvement of all people regardless of race, color, ethnicity, national origin, or income with regards to the development, implementation, and enforcement of laws, regulations, and policies.

Exurban: A district outside a city, especially a prosperous area beyond the suburbs.

FAST, Fixing America's Surface Transportation, Act: The long-term, federal transportation bill that provides funding for FFY 2016 through FFY 2020. This bill was signed into law by President Obama on December 4, 2015 and authorizes $305 billion for highway, highway and motor vehicle safety, public transportation, motor carrier safety, hazardous materials safety, rail, research, technology, and statistics programs.

Federal Highway Administration (FHWA)**:** A component of the U.S. Department of Transportation, established to ensure development of an effective national road and highway transportation system. It assists states and local governments in constructing highways and roads.

Goal: A broad statement of direction in which planning, or action is aimed; a general value statement representing an ideal end that the community or area wishes to attain.

Low-Stress Bicycle Facility: A facility that separates bicyclists from motor vehicle traffic. This includes bike lanes and shared use paths.

Low-Stress Pedestrian Facility: A facility that separates pedestrians from motor vehicle traffic. This includes sidewalks.

MAP-21, Moving Ahead for Progress in the 21st Century Act: Provided federal funds for FFY 2013 and FFY 2014 and was signed into law by President Obama on July 6, 2012. This was the first federal transportation bill to establish a new program to provide for a variety of alternative transportation projects that were previously funded through separate programs.

Marked Crosswalk: A specially paved or marked path for pedestrians crossing a street or roadway.

Manual Count: A count of bicyclists and pedestrians conducted by a volunteer or paid employee. These counts are typically done in person at the site or via video recording.

Micromobility: A range of small, lightweight devices operating at speeds typically below 20 mph and either owned or borrowed by the user. Micromobility devices include bicycles, E-bikes, electric scooters, electric skateboards, shared bicycles, and electric pedal assisted (pedelec) bicycles.

Objective: A specific, measurable statement related to the attainment of a goal.

Paved Shoulder: The paved edge of a roadway that may be used as a functional space for bicyclists and pedestrians to travel in the absence of other facilities.

Pedestrian: A person who travels by walking, running, or using a wheelchair/related device.

Pedestrian Hybrid Beacon: A highly visible traffic signal used to indicate a pedestrian is entering the roadway. These remain off until a pedestrian activates it via pushbutton or other form of detection.

Pedestrian Refuge Island: A median with a refuge area that is intended to help protect pedestrians who are crossing the road.

Performance Measure: A process of assessing progress toward achieving goals using data.

Protected Bicycle Lane: A bike lane with a physical barrier, such as a bollard or curb, separating it from motor vehicle traffic.

Raised Crosswalks: A ramped crossing spanning the entire width of the roadway, often placed at midblock crossing locations.

Rectangular Rapid-Flashing Beacon: A pedestrian-actuated safety enhancement used in combination with a pedestrian, school, or trail crossing warning sign to improve safety at uncontrolled, marked crosswalks.

Road Diet: A reduction in the number of travel lanes, which is usually achieved by converting a four-lane, undivided road to a three-lane road.

Shared Lane Markings: Also known as "sharrows," these are road markings used to indicate a shared lane environment for bicycles and automobiles.

Shared Use Path: A bikeway or trail to be used by bicyclists and/or pedestrians. This path is physically separated from motorized vehicular traffic by an open space or barrier and is either within the highway right-of-way or within an independent right-of-way.

Target: A specific level of performance that is desired to be achieved within a certain timeframe.

Tree Canopy: The layer of leaves, branches, and stems that cover the ground when viewed from above.

Turn Sign: A sign along a bike route that provides guidance on how to stay on the designated route.

Uncontrolled Crosswalk: A street crossing for pedestrians that does not indicate when to cross via traffic/pedestrian signal.

Unmarked Crosswalk: An area at any intersection where there is no paint to indicate that a pedestrian may cross the street.

ACRONYMS AND ABBREVIATIONS

AASHTO: American Association of State Highway Transportation Officials

ACOG: Association of Central Oklahoma Governments

ACS: American Community Survey

ADT: Average Daily Traffic

BCI: Bicycle Composite Index

BPAC: Bicycle and Pedestrian Advisory Committee

COTPA: Central Oklahoma Transportation and Parking Authority

EJ: Environmental Justice

FAST: Fixing America's Surface Transportation Act

FHWA: Federal Highway Administration

GIS: Geographic Information Systems

ITPC: Intermodal Transportation Policy Committee

MAP-21: Moving Ahead for Progress in the 21st Century Act

MPO: Metropolitan Planning Organization

MTP: Metropolitan Transportation Plan

MUTCD: Manual on Uniform Traffic Control Devices

NACTO: National Association of City Transportation Officials

OCARTS: Oklahoma City Area Regional Transportation Study

OCCF: Oklahoma City Community Foundation

ODOT: Oklahoma Department of Transportation

OKC: Oklahoma City

PBPP: Performance-Based Planning and Programming

PCI: Pedestrian Composite Index

RATP: Regional Active Transportation Plan

RRFB: Rectangular Rapid-Flashing Beacon

SAFE-T: Statewide Analysis for Engineering & Technology

STBG-UZA: Surface Transportation Block Grant Program Urbanized Area

STEP: Safe Transportation for Every Pedestrian

TAP: Transportation Alternatives Program

TAZ: Traffic Analysis Zone

TIP: Transportation Improvement Program

UPWP: Unified Planning Work Program

REFERENCES AND ENDNOTES

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[25] See Chapter 3. Built Environment

[26] See Chapter 2. Existing Conditions

[27] See Appendix B.

[28] Includes a 20ft buffer of the recreational trail or bike facility. See Appendix C.

[29] See Chapter 5. Enforcement and Safety

[30] Data from SAFE-T. See Chapter 5. Enforcement and Safety

[31] Data from SAFE-T. See Chapter 5. Enforcement and Safety

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