



Existing Conditions Memorandum

Introduction

Take a ride through Iowa City on any given day, and it quickly becomes clear: *Iowa City is a bicycling city*. From the scenic trail system to the busy streets and paths in and around Downtown and the University of Iowa, people of all ages and backgrounds are using the bicycle for transportation and recreation. The culture of bicycling in Iowa City is the result of concerted efforts by city and state governments, local bike shops, citizen advocacy groups, bike clubs, schools, and individual residents, all committed to supporting bicycling as a means of connecting to people and places in Iowa City. This memorandum examines the current state of bicycling in Iowa City, with a focus on relevant plans and policies, existing bicycle facilities and network characteristics, and supporting programs and initiatives offered by Iowa City and its many community partners. These are features that have helped Iowa City earn silver-level Bicycle Friendly Community designation as defined by the League of American Bicyclists.

The Six E's Framework

Building a culture of bicycling that will take Iowa City to the next level takes more than bike lanes and trails. It will require the addition of low stress bikeways that support bicycling by people of all ages and abilities; programs, training, and organized rides to give people the skills and confidence to travel by bike; enforcement programs and laws that create an environment of mutual respect among all road users; and guidelines and policies to guide city staff and elected officials to enable smart, responsible choices. It takes a comprehensive approach, and above all, it takes ambition, will, and perseverance.

Iowa City has many of these assets and characteristics already. In recognition of the city's efforts, the League of American Bicyclists (LAB) designated Iowa City a silver-level Bicycle Friendly Community in 2013, improving on the bronze-level designation awarded in 2009. The LAB's Bicycle Friendly America program acknowledges the efforts of communities, universities, and businesses to institutionalize bicycling as a viable form of transportation. The program measures success using five key indicators, often referred to as the **"Five E's" or the Building Blocks of a Bicycle Friendly Community: Education, Encouragement, Engineering, Enforcement, and Evaluation**. LAB is currently working to incorporate Equity as a sixth key indicator, thereby creating the "Six E's" that will be used for this planning process. These six indicators are used throughout this plan as a framework for evaluating the current state of bicycling and developing recommendations that can help Iowa City reach its goal of becoming a Gold-level Bicycle Friendly Community.

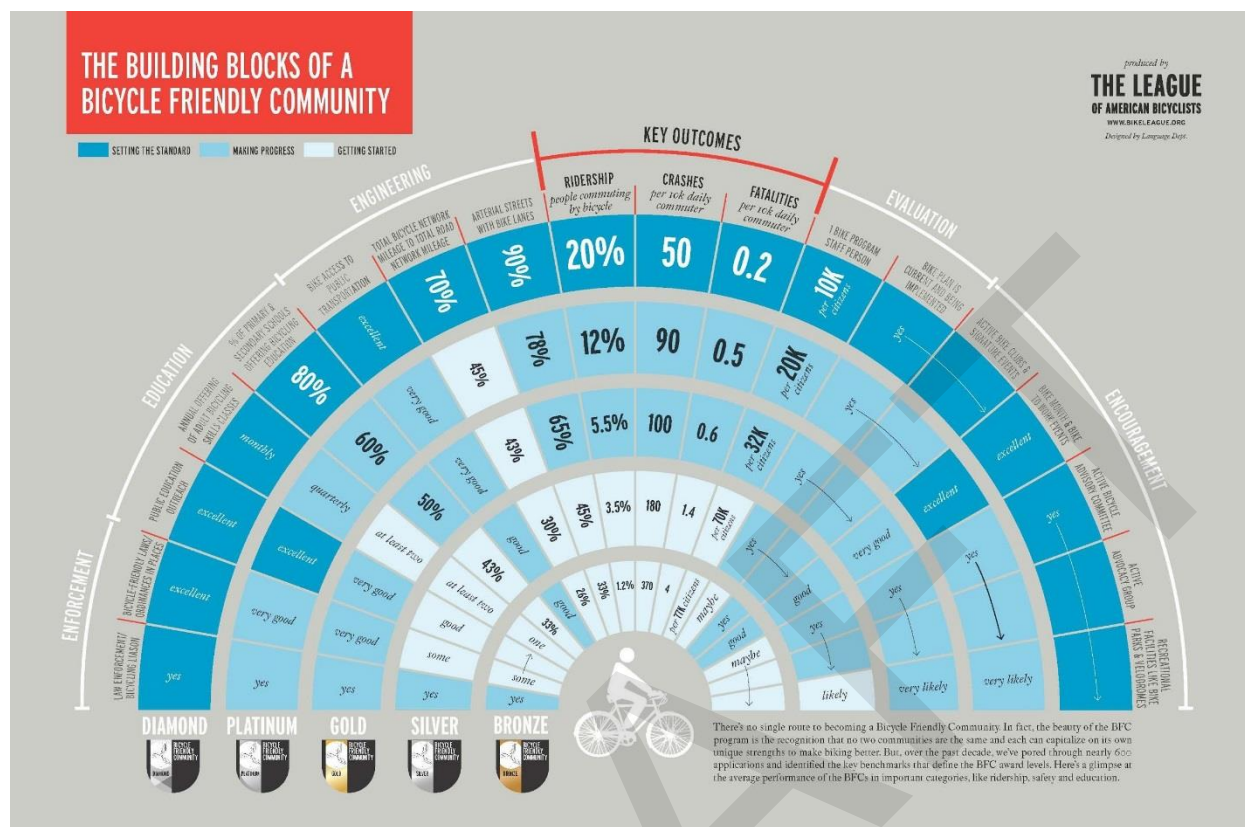


Figure 1: The Building Blocks of a Bicycle Friendly Community

Bicycle Friendly Community Feedback

When awarding a Bicycle Friendly Community designation, the League of American Bicyclists provides applicants with detailed feedback about strengths, weaknesses, and opportunities for improvement. Much of Iowa City's success in achieving Silver-Level BFC was due to the large network of shared-use paths and the thriving bike culture strengthened by community partners like the University of Iowa and Think Bicycles Coalition, and through annual events like Bike to Work Week. One of the major weaknesses was the lack of dedicated on-street bicycle facilities, particularly on arterial and collector roadways. The LAB provided the following recommendations in its feedback report to enhance the bicycling environment:

- **Engineering:** Provide bicycle facilities on arterial and collector roads to help bicyclists of all skill levels reach their destinations quickly and safely. Consider protected infrastructure like cycle tracks and buffered bike lanes on roads with posted speed limits over 35 miles per hour.
- **Education:** Develop public education campaigns to encourage respectful and responsible travel behavior among all road and trail users.
- **Enforcement:** Use targeted information and enforcement to encourage all road users to safely and respectfully share the road and provide information about road users' rights and responsibilities. Make information available in both English and Spanish.
- **Encouragement:** Continue to coordinate with the University of Iowa to promote cycling in and around the campus and educate students on safe cycling practices.

- **Evaluation & Planning:** Have the Bicycle Advisory Committee meet monthly to support plan implementation and build broad public support for bicycle improvements. Encourage law enforcement to participate on the Bicycle Advisory Committee.

Additional recommendations were divided into the Five E's categories and subdivided into "low hanging fruit" (short-term actions) and long-term goals. Early action recommendations ranged from offering more training opportunities for engineering and planning staff on accommodating bicyclists, to hosting a "Summer Streets" or "Sunday Parkway" event in which a major corridor is closed to auto traffic and programmed for bicycling, walking, group exercises, and other outdoor fun and games. The full feedback report is included in the appendix of this plan.

Bicycle Friendly Communities in the Region

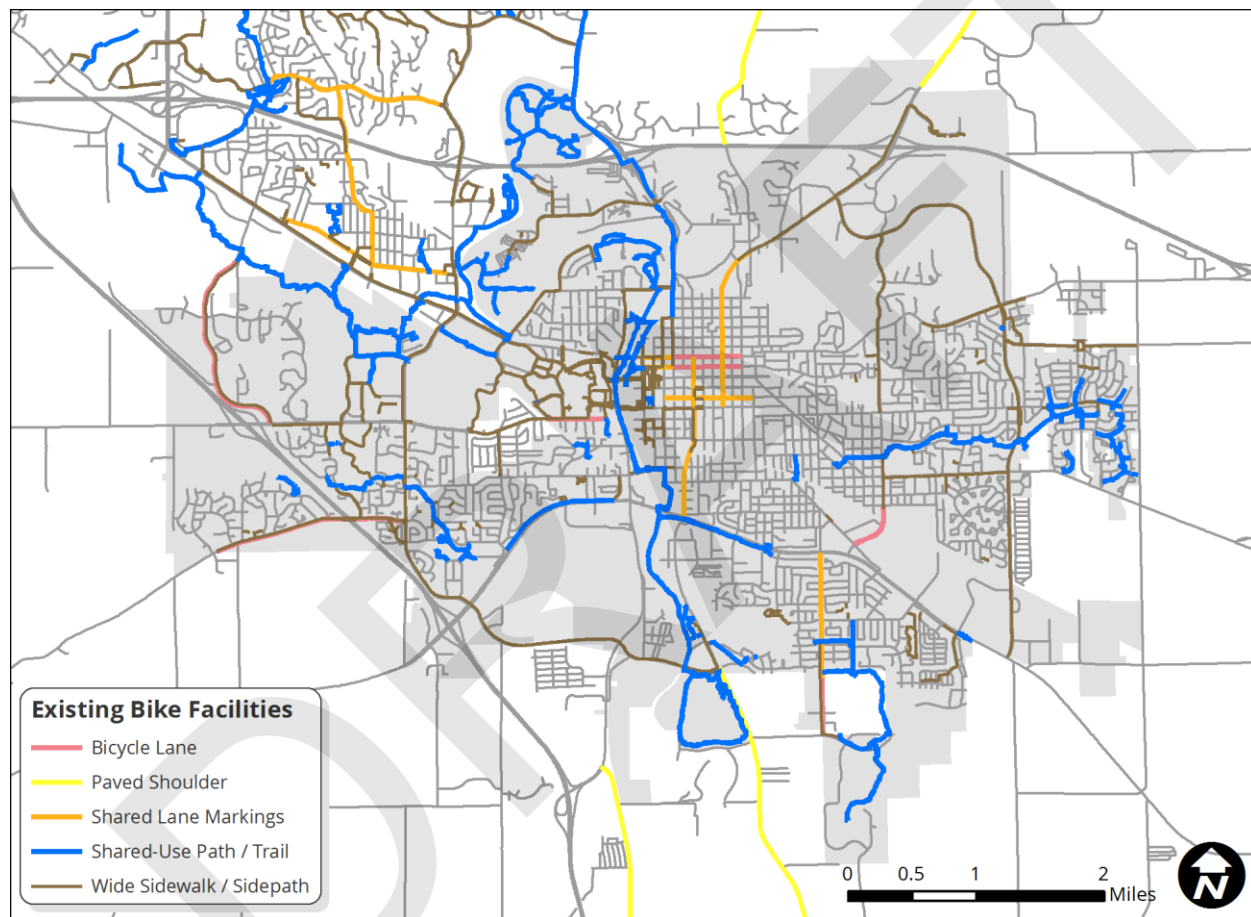
Other municipalities, institutions, and businesses in Iowa City and the surrounding region have also received recognition for their efforts to support bicycling. These community partners are listed in the table below.

Table 1: Bicycle Friendly Communities, Universities, and Businesses in the Region

Bicycle Friendly Communities		
Name	Designation	Year Awarded
City of Coralville	Bronze BFC	2016
City of University Heights	Bronze BFC	2016
City of Iowa City	Silver BFC	2013
Bicycle Friendly Universities		
Name	Designation	Year Awarded
University of Iowa	Silver BFU	2014
Bicycle Friendly Businesses		
Name	Designation	Year Awarded
World of Bikes	Gold BFB	2010
ACT, Inc.	Bronze BFB	2014
Neumann Monson Architects	Bronze BFB	2013
The Broken Spoke	Bronze BFB	2009

The Bike Network

While people in Iowa City are legally permitted to bicycle on all public roadways except interstate highways, most people bicycling prefer to travel on the trails, designated on-street bikeways, and low-speed local streets. This national preference for separated facilities and calm local streets was echoed by Iowa City residents during the initial open house for the planning process. Together, these trails and on-street bikeways comprise the bike network, which is shown in the map below. To better understand how the existing bike network functions in Iowa City, it is important to understand the different types of bicycle facilities.



Map 1: Existing Bike Facilities

Facility Types

For the purposes of establishing the existing network in Iowa City, bicycle facilities are broken into two categories: off-street trails and paths, and on-street bikeways. Off-street trails and paths are generally located along natural features like rivers and streams or along other transportation infrastructure like arterial roads and railroad corridors. On-street bikeways are located on the roadway pavement itself, often in the form of bike lanes, marked shared lanes (also called sharrows), or simply identified as signed bike routes. The following bicycle facility types are present in and around Iowa City.

Shared-Use Paths (Trails)

A shared-use path, also called a multi-use trail, allows for two-way, off-street bicycle use and may be used by pedestrians, skaters, wheelchair users, joggers and other non-motorized users. These facilities are frequently found in parks, along rivers, and in greenbelts or utility corridors where there are few conflicts with motorized vehicles, except at roadway crossings. Because of their separation from motor vehicle traffic, shared-use paths appeal to the widest variety of user types, from families with children to adult recreational riders to everyday commuters. When these linear shared-use paths lead to popular destinations or connect to the on-street bikeway network, their utility expands greatly, offering a comfortable, low-stress bicycling environment for people to use for everyday trips.

Currently, there are over 37 miles of shared-use paths in Iowa City, and over 35 more throughout Johnson County. The signature Iowa River Trail is the backbone of the Iowa City bike network and draws hundreds of recreational riders and bike commuters every day. Other popular shared-use paths include the Clear Creek Trail, the Willow Creek Trail, the Sycamore Greenway Trail, and the Court Hill Trail. While most of these trails are designed to current standards, there are some sections of the trail system that are sub-standard, mostly due to narrow widths in constrained environments. A prime example of this is along Iowa River Trail between Riverside Drive and the Iowa River from Iowa Avenue south to Burlington Street, where widths as narrow as six feet and the presence of utilities in the sidewalk create potential obstacles for trail users.

Wide Sidewalks / Sidepaths

Wide sidewalks along arterial and collector roadways in Iowa City combine the design characteristics of a shared-use path with the directness and convenience of the roadway system. Also referred to as sidepaths, these wide sidewalks are separated from the road by a curb and a planting strip, providing at least a minimum separation from adjacent motor vehicles.

Wide sidewalks (sidepaths) are an integral component of the bike network in Iowa City. Nearly 52 miles of sidepaths provide a comfortable, low-stress bicycling environment for people of all ages and abilities, and expand the off-street trail system into neighborhoods, schools, and other community destinations. Examples of wide sidewalks that support bicycle activity can be found on Mormon Trek Boulevard, McCollister Boulevard, Scott Boulevard, Lower West Branch Road, North Dodge Street, N 1st Ave, Camp Cardinal Boulevard, and Highway 1 and Highway 6 in south Iowa City.

Sidepath widths in Iowa City vary from 6 to 10 feet. Current design guidelines in the Iowa Department of Transportation's *Statewide Urban Design and Specifications Manual* (SUDAS) manual recommend a minimum width of 10 feet. Greater widths should be considered where large volumes of trail users and/or larger maintenance vehicles are anticipated. Consistent with the American Association of State Highway Transportation Officials (AASHTO) *Guide for the Development of Bicycle Facilities, 4th Ed.*, the SUDAS manual does state that path width can be reduced to 8 feet, but only where specific conditions prevail, such as minimal expected bicycle traffic, minimal pedestrian use, or the presence of physical constraints for short distances. Paths with widths below 8 feet should be identified and examined for their potential to be widened to minimum standards or greater if they are to remain a part of the bikeway network.

Bike Lanes

Bicycle lanes designate an exclusive space for bicyclists with pavement markings and signage. The bicycle lane is located adjacent to motor vehicle travel lanes, and bicyclists ride in the same direction as motor vehicle traffic. Bicycle lanes are typically on the right side of the street (on a two-way street) between the adjacent travel lane and

curb, road edge or parking lane. Standard bicycle lanes can be found on Sycamore Street south of Highway 6, Rohret Road from Mormon Trek Boulevard to the western city limits, and on Melrose Avenue from the University of Iowa Campus westward into University Heights. On one-way streets, bicycle lanes may be located on either the right or left side of the street. Left side bicycle lanes are present on both Market and Jefferson Streets. In total, there are approximately six miles of bicycle lanes in Iowa City. Bike lanes can also include travel way or parking side buffers to add a level of comfort for people bicycling. There are no buffered bike lanes in Iowa City.

Signed Routes

Shared streets in Iowa City are where bicyclists and motor vehicles use the same roadway space. Signed shared roadways add wayfinding guide signs as well as warning signs to provide wayfinding information to people riding bicycles and to alert people driving motor vehicles to be aware and respectful of other road users. Typical wayfinding signage in Iowa City includes route destinations, as well as distances and travel times. Signed shared roadways are often installed on streets that have constraints prohibiting a more separated bikeway type, but are essential for addressing a gap in the bikeway network or serving as the final leg of a bicycle route on a low-volume, low-speed roadway. In Iowa City, signed routes comprise a significant portion of the on-street bike network. While many of these signed routes are located on low-speed, low-volume local roadways, they would benefit from additional traffic calming and diversion measures to increase bicycle comfort and prioritize bicycle traffic.

Marked and Signed Routes

A marked and signed shared roadway builds on the basic signed shared roadway described above by incorporating shared lane markings (sharrows). Sharrows are road markings used to indicate a shared lane environment for bicycles and automobiles. Sharrows remind drivers of bicycle traffic on the street and recommend proper bicyclist positioning within the travel lane. Shared lane markings are often accompanied by wayfinding signage to direct people bicycling to both local and cross-town destinations. In Iowa City, shared lane markings are located on a number of streets, mostly in and around the Central District. Key streets with shared lane markings include Gilbert Street, Dodge Street, College Street, Market and Jefferson Streets (west of Dubuque Street). While shared lane markings provide a degree of awareness to motor vehicle drivers and other road users, they do not offer an added degree of safety or separation, and therefore are limited in their impact on bicycle networks beyond assisting in wayfinding.

Paved Shoulders

Paved shoulders on rural roadways can accommodate bicycle travel. Paved shoulders are generally used by commuter and long-distance recreational riders, rather than families with children or less experienced riders. Paved shoulders can incorporate bicycle lane markings and signage to increase visibility and support safe and responsible roadway use by people on bicycles and people driving motor vehicles. In Iowa City, paved shoulders on Prairie Du Chien Road, Highway 1, Sand Road, and Oak Crest Hill Road increase access to numerous regional rural cycling routes that are well used by recreational riders and area cycling clubs.

Network Characteristics

Together, the trails, wide sidewalks, and on-street bicycle facilities described above make up the Iowa City bike network. To better understand how the network currently functions, the Plan examines the key network characteristics of quality, connectivity, comfort, safety, wayfinding, and support facilities.

Quality

The quality of roadway and trail surfaces, pavement markings, wayfinding signage, and bicycle parking facilities is critical to the safety of people bicycling and the functionality of the bicycle transportation system. Network quality varies throughout Iowa City. Shared-use path and wide sidewalk surfaces are in generally good condition and offer smooth, accessible surfaces for bicycling, walking, skateboarding, inline skating, and other trail activity. Pavement quality on the road network and associated on-street bikeways is more variable. Road surfaces in poor condition can deter bicycle activity and create safety hazards. Notable wear on existing shared lane markings and bike lane striping points to the importance of durable marking and striping products and the need for routine scheduled maintenance to extend the life cycle for on-street bikeways.

Connectivity

Strong network connectivity is critical to the success of any bike network. Intersecting trails and low-stress bikeways can extend the distance that people feel comfortable bicycling and can better help people reach nearby destinations. While still growing, the Iowa City bike network has notable linear and area gaps that limit opportunities for bicycling. For example, there are bike lanes present on seven different streets in Iowa City, yet none of these bike lanes intersect. In addition, major barriers like the Iowa River, Highway 6, and the Iowa Interstate Railroad create challenges to bicycle mobility. Major gaps and barriers are described below.

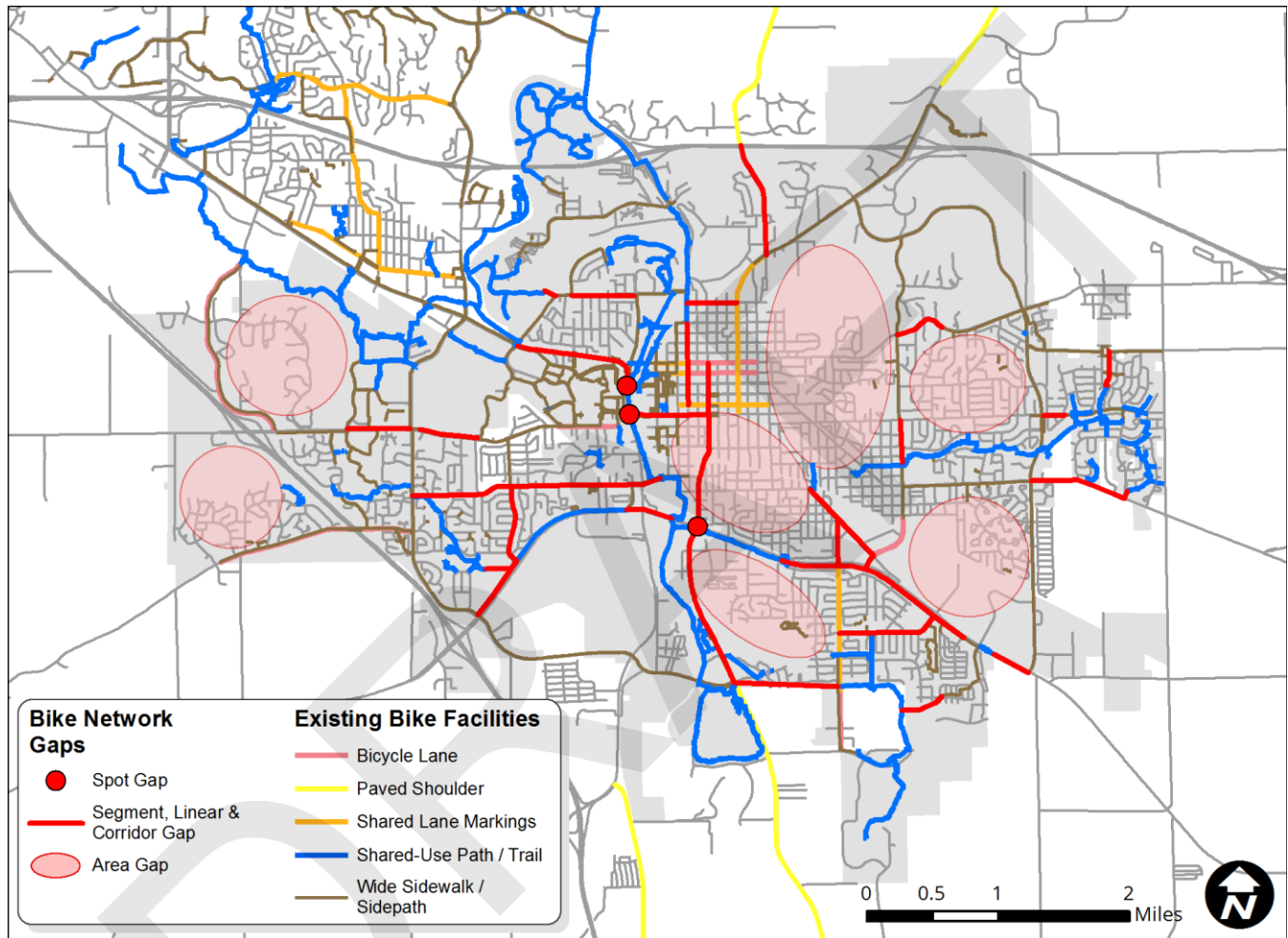
Network Gaps

Bikeway gaps exist in various forms, ranging from short “missing links” on a specific street or path corridor, to larger geographic areas with few or no facilities at all. Gaps are organized based on length and other characteristics and may be classified into five main categories:

- **Spot gaps:** Spot gaps refer to point-specific locations lacking dedicated facilities or other treatments to accommodate safe and comfortable bicycle travel. Spot gaps primarily include intersections and other areas with potential conflicts with motor vehicles. Examples include bicycle lanes on a major street “dropping” to make way for right turn lanes at an intersection without guidance for the bicyclists on how to travel through the intersection.
- **Connection gaps:** Connection gaps are missing segments (one-quarter mile or less) on a clearly defined and otherwise well-connected bikeway. Major barriers standing between destinations and clearly defined routes also represent connection gaps. Examples include bicycle lanes on a major street “dropping” for several blocks to make way for on-street parking, or a freeway standing between a major bicycle route and a school.
- **Linear gaps:** Similar to connection gaps, linear gaps are one-quarter to one-half mile long missing link segments on a clearly defined and otherwise well-connected bikeway.
- **Corridor gaps:** On clearly defined and otherwise well-connected bikeways, corridor gaps are missing links longer than one-half mile. These gaps will sometimes encompass an entire street corridor where bicycle facilities are desired but do not currently exist.
- **System gaps:** Larger geographic areas (e.g., a neighborhood or business district) where few or no bikeways exist would be identified as system gaps. System gaps exist in areas where a minimum of two intersecting bikeways would be required to achieve the target network density.

Gaps typically exist where physical or other constraints impede bikeway network development. Example constraints may include bike lanes “dropping” at an intersection to provide space for vehicle turn lanes, narrow

bridges on existing roadways, severe cross-slopes, or limitations of pavement width due to environmental impacts associated with the roadway. Traffic mobility standards and other policy decisions may also lead to gaps in a network. For instance, a community's strong desire for on-street parking or increased vehicle capacity may hinder efforts to install continuous bicycle lanes along a major street. Map 2 highlights gaps in the Iowa City bike network.



Map 2: Bike Network Gaps

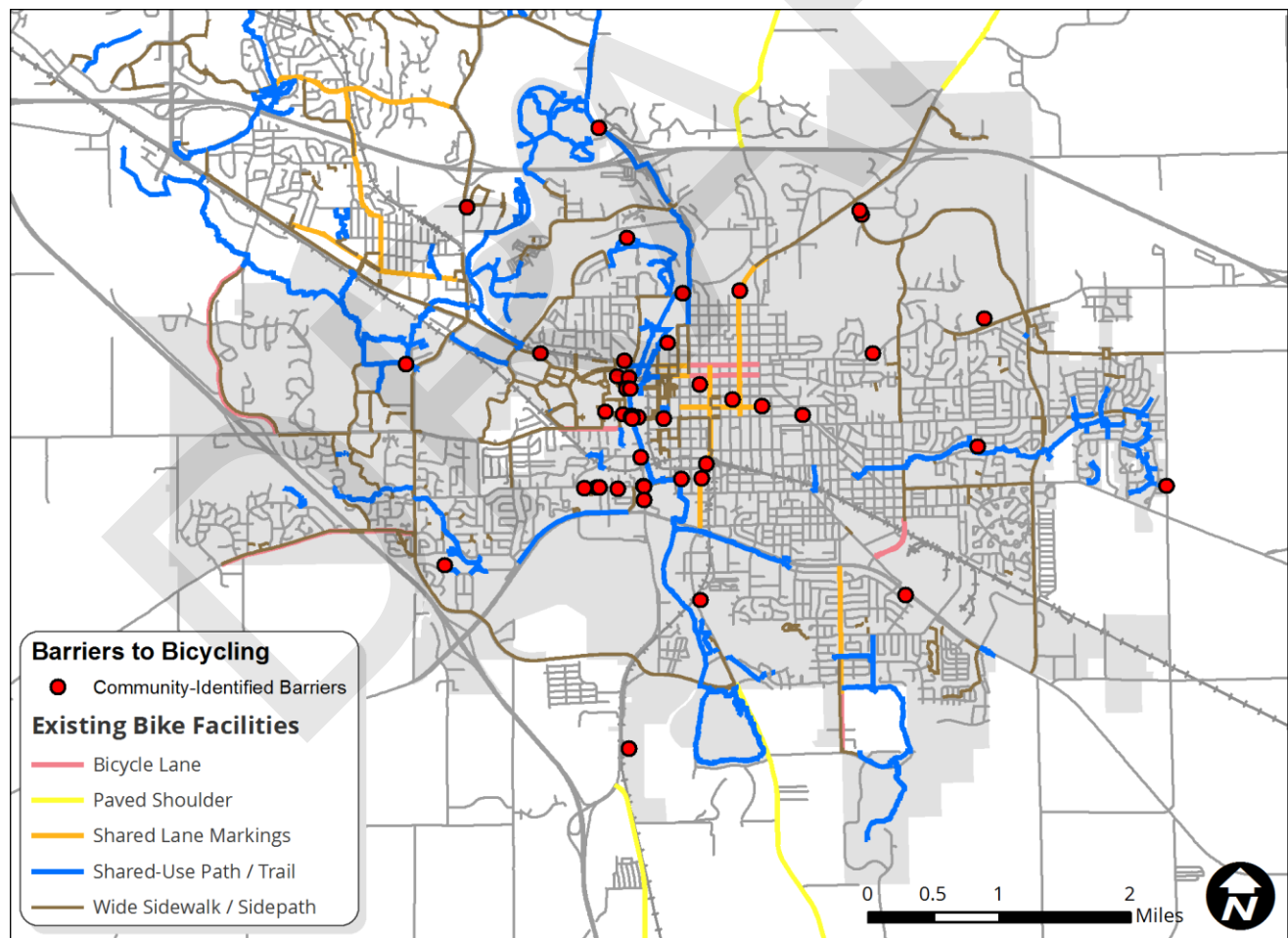
In some cases, a formalized bikeway itself may represent a gap despite its status as part of a designated network. This condition typically occurs when a corridor (often a major street) lacks the type of bicycle facilities to comfortably accommodate a broader usage by a range of bicyclist skill levels, including infrequent or less confident cyclists. Some signed routes that lack dedicated bicycle facilities represent gaps in the bike network, especially for less experienced riders. Other examples include roadway corridors lacking formalized facilities (e.g., bike lanes) where conditions such as higher vehicle speeds and volumes would otherwise justify greater separation between motorists and cyclists.

A network in early stages of development is likely to have more system and linear gaps, indicative of a lack of bikeways. Gaps in a more mature bike network are likely to be spot and linear in nature, a reflection of a more

complete network with short segment gaps, difficult intersections along existing bikeways, and difficult transitions between facility types. Most identified gaps in the Iowa City bike network are linear in nature - segment, linear, and corridor - reflecting the current state of network growth and development. Many segment and linear gaps represent missing links in the trail and wide sidewalk / sidepath system. Addressing these gaps can increase connectivity for less skilled and less confident system users. Many system gaps that cover larger areas are in well-established neighborhoods and industrial developments. In the absence of additional right-of-way for sidepaths or off-street trails, on-street bikeways like dedicated bike lanes, separated bike lanes, and bike boulevards can serve most bicyclist types.

Barriers

Natural barriers, major land uses, and even transportation corridors like interstates and railroads present challenges to bicycling activity in Iowa City. Through input provided at the first open house and online via the online mapping tool, community members shared their concerns about specific barriers they face while bicycling in and around Iowa City. Barriers identified through the online mapping tool are presented in the map below (current as of Friday, February 3rd, 2017). Many of these barriers are located close to the center of the city and along major highways, and point to the challenges to cross-city bicycling.



Map 3: Barriers to Bicycling

Spot barriers are location-specific impediments that deter bicycling activity or create additional hardships for people who bicycle. The following examples of spot barriers were identified by community members through the online mapping tool:

- Difficult to traverse intersections, including
 - Benton Street at Riverside Drive
 - Grand Avenue and Burlington Street at Riverside Drive
 - Newton Road and Iowa Avenue at Riverside Drive
 - Gilbert Street and Benton Street
 - Burlington Street and Muscatine Avenue
- Pinch points and narrow facilities like the Burlington Street Bridge
- Wide sidewalks that terminate abruptly

Linear barriers like the Iowa River and Highway 6 divide the community and isolate residents from even the closest destinations just across the barrier by increasing real and perceived distance. These barriers can also present safety challenges by funneling bicycle travel onto higher-stress roadways like major collector and arterial roads in order to cross from one side to the other. In most cases, these intersecting roads lack dedicated bicycle facilities that can support a wide range of bicycling skill and confidence levels. The Iowa Interstate Railroad functions in much the same way as the major highways, bisecting the street grid as it travels east to west through the heart of the city. Most local roads do not cross the railroad, and as a result, all traffic, including motor vehicles, bicycles, and pedestrians, are funneled onto larger and busier roads in order to cross.

While the linear barriers mentioned above create crossing difficulties for people bicycling, other linear barriers present challenges for those bicycling along the barrier itself. These linear barriers are primarily busy roadways that lack dedicated bicycle facilities to support safe and comfortable travel. Specific corridors identified by community residents include 2nd Ave from Coralville to the Iowa River Trail, Gilbert Street from downtown south to Highway 6, Benton Street west of Riverside Drive, and Burlington Street, which has been noted as one of the most direct east-west routes, yet one of the most difficult and uncomfortable to ride.

Major land uses like the Iowa City Municipal Airport can create long, circuitous routes for bicyclists, which are unavoidable. The University of Iowa, on the other hand, has multiple routes by which riders can travel through campus, yet the lack knowledge of these routes or wayfinding signs to guide people across campus limit east-west bicycle traffic.

Comfort

An analysis of Bicycle Level of Traffic Stress (BLTS) on arterial and collector roadways in the study area reveals the extent to which the current bike network is limited in its accessibility for a wide variety of bicyclist types. Using the Bicycle Level of Traffic Stress methodology established by the Mineta Transportation Institute's (MTI) *Report 11-19: Low-Stress Bicycling and Network Connectivity* published in 2012, the Plan analyzes levels of bicycle traffic stress on arterial and collector roads in Iowa City. While many routes on the existing bike network are located on local roadways, sidepaths, and off-street trails, most people bicycling in Iowa City must travel on or across these major roadways to reach their destinations. The analysis combines individual roadway characteristics, like the presence of dedicated bicycle facilities, number of travel lanes, presence of parking, and posted speed limit, to assign a level of traffic stress to the roadway. Table 2 provides definitions for each of the four levels of traffic stress, as defined in the MTI Report 11-19.

Table 2: Bicycle Level of Traffic Stress Category Definitions

Level of Traffic Stress	Definition
BLTS 1	Presenting little traffic stress and demanding little attention from cyclists, and attractive enough for a relaxing bike ride. Suitable for almost all cyclists, including children trained to safely cross intersections. On links, cyclists are either physically separated from traffic, or are in an exclusive bicycling zone next to a slow traffic stream with no more than one lane per direction, or are on a shared road where they interact with only occasional motor vehicles (as opposed to a stream of traffic) with a low speed differential. Where cyclists ride alongside a parking lane, they have ample operating space outside the zone into which car doors are opened. Intersections are easy to approach and cross.
BLTS 2	Presenting little traffic stress and therefore suitable to most adult cyclists but demanding more attention than might be expected from children. On links, cyclists are either physically separated from traffic, or are in an exclusive bicycling zone next to a well-confined traffic stream with adequate clearance from a parking lane, or are on a shared roadway where they interact with only occasional motor vehicles (as opposed to a stream of traffic) with a low speed differential. Where a bike lane lies between a through lane and a right-turn lane, it is configured to give cyclists unambiguous priority where cars cross the bike lane and to keep car speed in the right-turn lane comparable to bicycling speeds. Crossings are not difficult for most adults.
BLTS 3	More traffic stress than BLTS 2, yet markedly less than the stress of integrating with multilane traffic, and therefore welcome many people currently riding bikes in American cities. Offering cyclists either an exclusive riding zone (lane) next to moderate-speed traffic or shared lanes on streets that are not multilane and have moderately low speed. Crossings may be longer or across higher-speed roads than allowed by BLTS 2, but are still considered acceptably safe to most adult pedestrians.
BLTS 4	A level of stress beyond BLTS 3.

At its core, the BLTS scoring decreases in comfort (1 is the highest comfort level) as the number of lanes, posted speed limit, and traffic volumes increase. Scoring in BLTS is based off of the four basic categories defined in the MTI report. This scoring methodology is summarized in

Table 3.

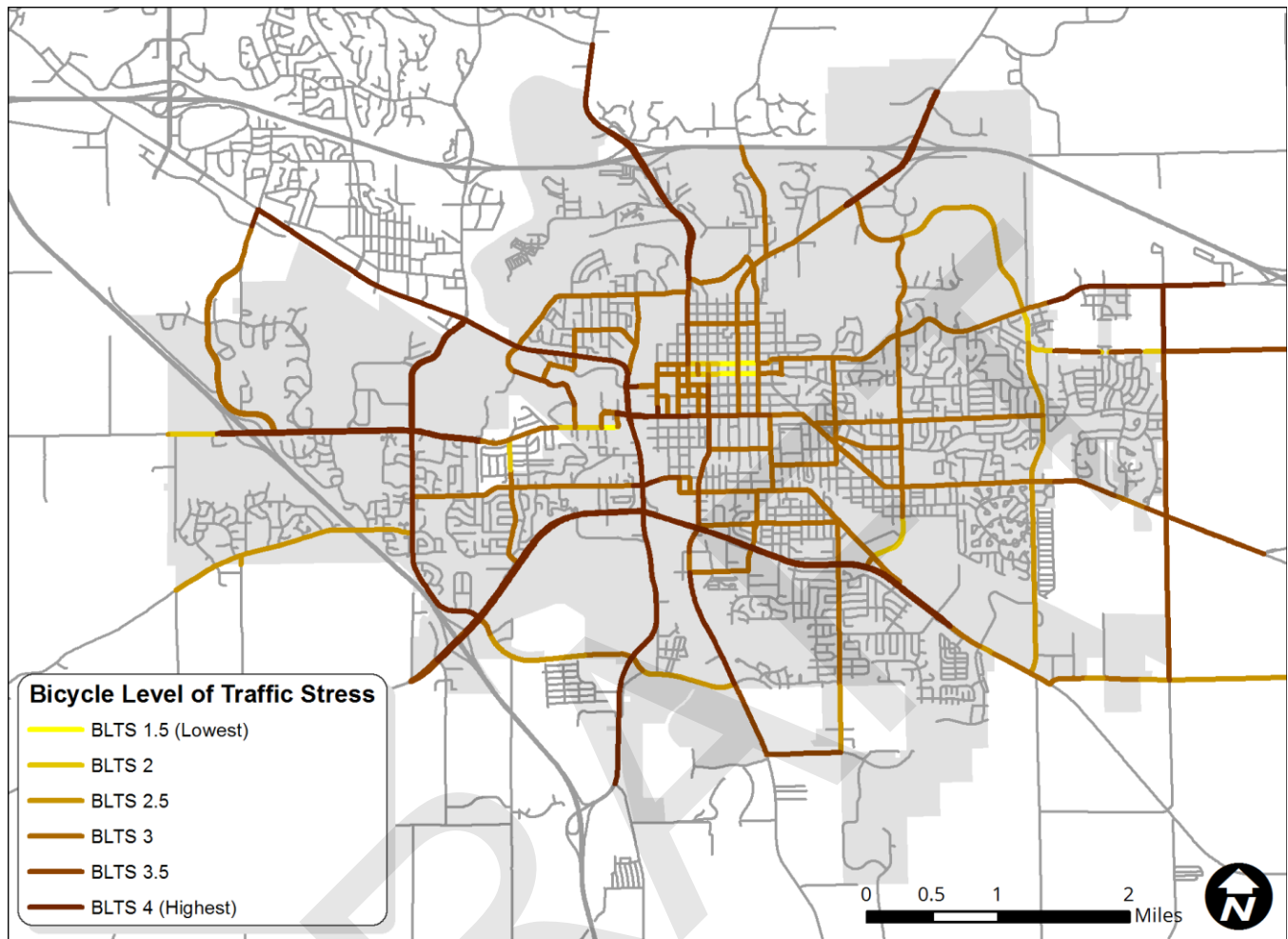
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Table 3: Segment Scoring Matrix for Bicycle Level of Traffic Stress

Number of Lanes	Traffic Volume	Mixed Traffic		Street with Bike Lane		
		<= 30 mph	>= 35 mph	<= 30 mph	35 mph	>= 40 mph
2 - 3 lanes	<=3k	1.5	2.5	1	2	2.5
	3k - 10k	2	3	1.5	2.5	3
	10k - 20k	3	3.5	2	3	3.5
	>20k	3.5	4	2.5	3.5	4
4 Lanes	<=3k	2.5	3.5	1.5	2.5	3
	3k - 10k	3	4	2	3	3.5
	10k - 20k	3.5	4	2.5	3.5	4
	>20k	4	4	3	4	4
6+ Lanes	All volumes	4				

The BLTS scoring decreases comfort (1 is the highest comfort level) as the number of lanes, posted speed limit, and traffic volumes increase. Traffic volumes reduce comfort more where bicyclists share the road with motorized vehicles, but comfort also decreases in bicycle lanes as traffic volumes next to those bicycle lanes increase. It is important to note that the presence of wide sidewalks along arterial and collector roadways was not factored into this analysis in order to represent on-road level of traffic stress for bicycling. Wide sidewalks and shared-use paths along roadways generally earn higher scores than adjacent on-street facilities, but those higher scores are often reduced when the path crosses a busier roadway with a lower BLTS score, reflecting the impact of major roadway crossings on a facility's safety and comfort.

Map 4 displays the level of travel stress scores for arterial and collector roadways in Iowa City. Lowest levels of traffic stress are shown in yellow, while highest levels of traffic stress are shown in dark brown.



Map 4: Bicycle Level of Traffic Stress for Arterial and Collector Streets in Iowa City

The highest levels of traffic stress are located along major highways that bisect the city. Highway 1 and Highway 6 bisect the city north and south, and Riverside Drive bisects the city east and west. Other major arterials and collectors outside the core of the city, like Mormon Trek Boulevard, Melrose Avenue, and North Dubuque Street present significant challenges for bicycling as well. These roads carry larger volumes of motor vehicle traffic at higher speeds than most roadways in Iowa City. Most arterials and collectors in the core of the city and to the east have lower posted speed limits and fewer travel lanes, and carry fewer motor vehicles. However, at a BLTS 3, many of these roads provide a level of comfort only accessible to more confident adults. Numerous BLTS 3 roadways function as signed roadways within the bike network. Roadways characterized by low levels of traffic stress for bicyclists include streets like Market and Jefferson Street, both with dedicated bike lanes, and roadways on the perimeter of the city with relatively low traffic volumes. By addressing level of traffic stress along key corridors and at major intersections, the city can enhance network connectivity and increase bicycling accessibility to a larger, more diverse segment of the population.

Safety

The analysis of reported bicycle and pedestrian related collisions can reveal patterns and potential sources of safety issues, both design and behavior-related. These findings can provide Iowa City with a basis for infrastructure and program improvements to enhance bicycle and pedestrian safety.

Bicycle and pedestrian related collisions and collision locations in Iowa City were analyzed over the most recent five-year period of available data, 2011-2015. It is important to note that the number of collisions reported is likely an underestimate of the actual number of collisions that take place because some parties do not report collisions to law enforcement, particularly collisions not resulting in injury or property damage. Although under-reporting and omissions of “near-misses” are limitations, analyzing the collisions can reveal spatial and behavioral trends or design factors that may contribute to collisions in Iowa City.

Number of Crashes

During the five-year period from 2011 to 2015, there were a total of 138 bicycle-related collisions in within the Iowa City limits. The data shows a significant increase in the number of crashes during this period, growing by 187 percent from 15 crashes in 2011 to 43 crashes in 2015. It is important to note that this increase in crashes corresponds with an estimated 21 percent increase in bicycle commute mode share in the metro area from 2010 to 2015, as well as a 12 percent increase in population for the entire metro area from 2010 to 2014. While the lack of reliable exposure and bicycling activity data limits the ability to draw a direct relationship between the corresponding rises in bicycle commute mode share and bicycle crashes, these corresponding increases highlight the importance of bicycle facilities and bicycle crash countermeasures to support the growing number of bicyclists in Iowa City.

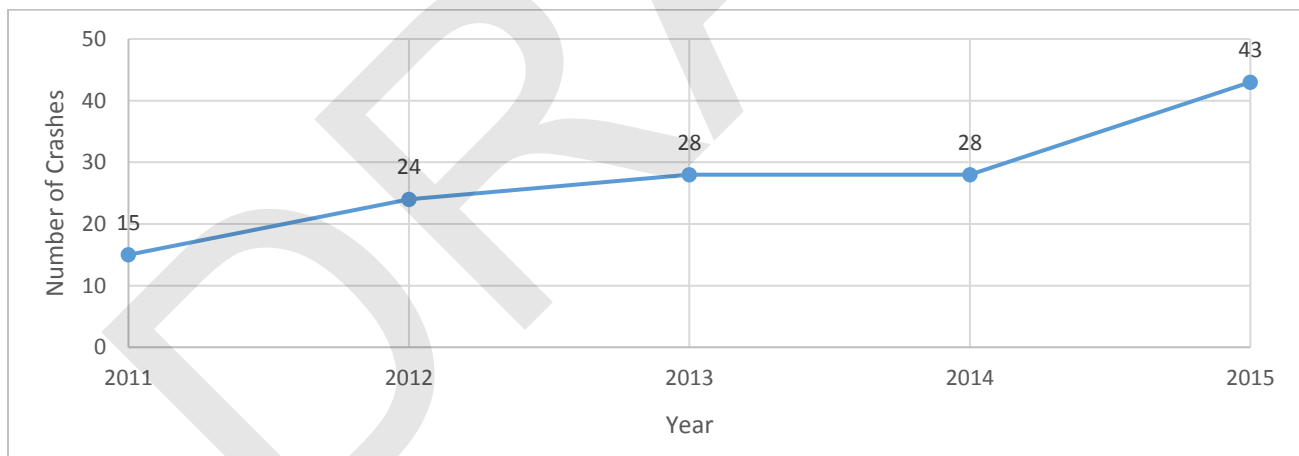


Figure 2: Bicycle Crashes by Year, 2011-2015

Time of Day

Much like motor vehicle crashes, bicycle crashes generally occur during peak travel periods. However, it is important to note that many people bicycling in Iowa City are children, whose afternoon “peak period” corresponds with school dismissal and late afternoon play. The figure below shows crashes by time of day. The greatest number of crashes per hour occurred in the 6pm evening rush hour (20), followed by the 3pm school dismissal hour (16), and the 4pm afternoon hour (10). The evening rush hours (5pm - 8pm) accounted for 28 percent of all crashes, while the school dismissal hours (2pm - 5pm) accounted for 23 percent.

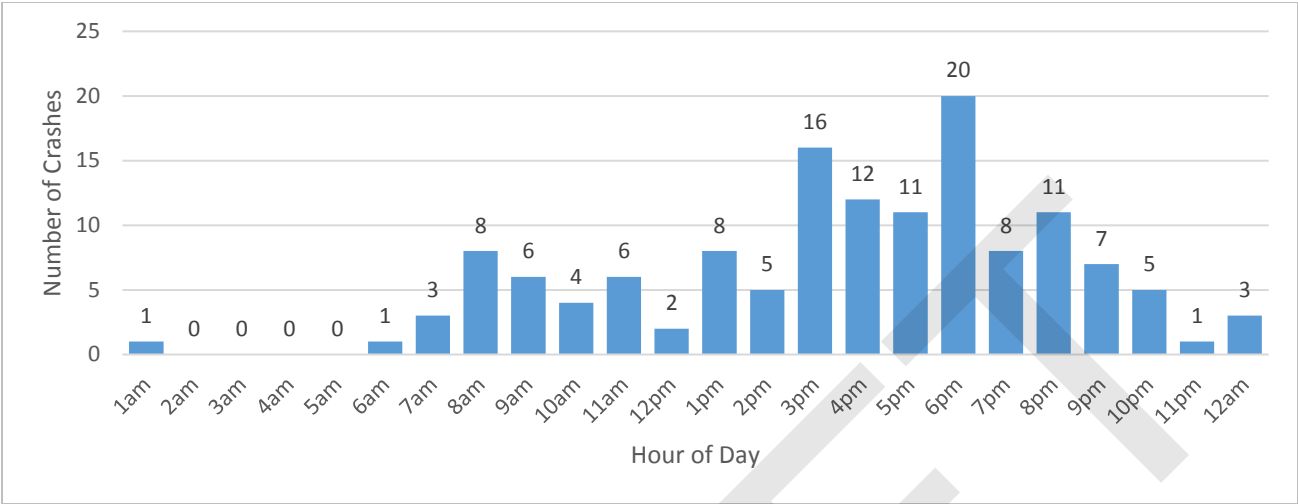


Figure 3: Bicycle Crashes by Time of Day

Time of Year

Bicycle crash data during this five-year period also highlights seasonal variations in bicycling activity corresponding to daylight, presence of college population, and temperature. Month with the highest volumes of crashes generally correspond to favorable weather conditions, average to above average daylight, and spring and fall semesters for college students who represent a significant portion of the city’s population and are more likely to travel by bicycle. Forty-six percent of all crashes occurred in the months of April, September, and October, and an additional 40 percent occurred during the late spring and summer months of May, June, July, and August. Conversely, colder winter months experienced the lowest number of bicycle crashes, with only one crash in February and zero crashes in January.

Figure 4 displays crashes for each month by time of day, as well as sunrise and sunset times for the first day of each month. According to crash report data, 77 percent of all crashes occurred during daylight conditions, while 15 percent occurred under dark conditions. An additional eight percent occurred during dusk, and one percent at dawn.

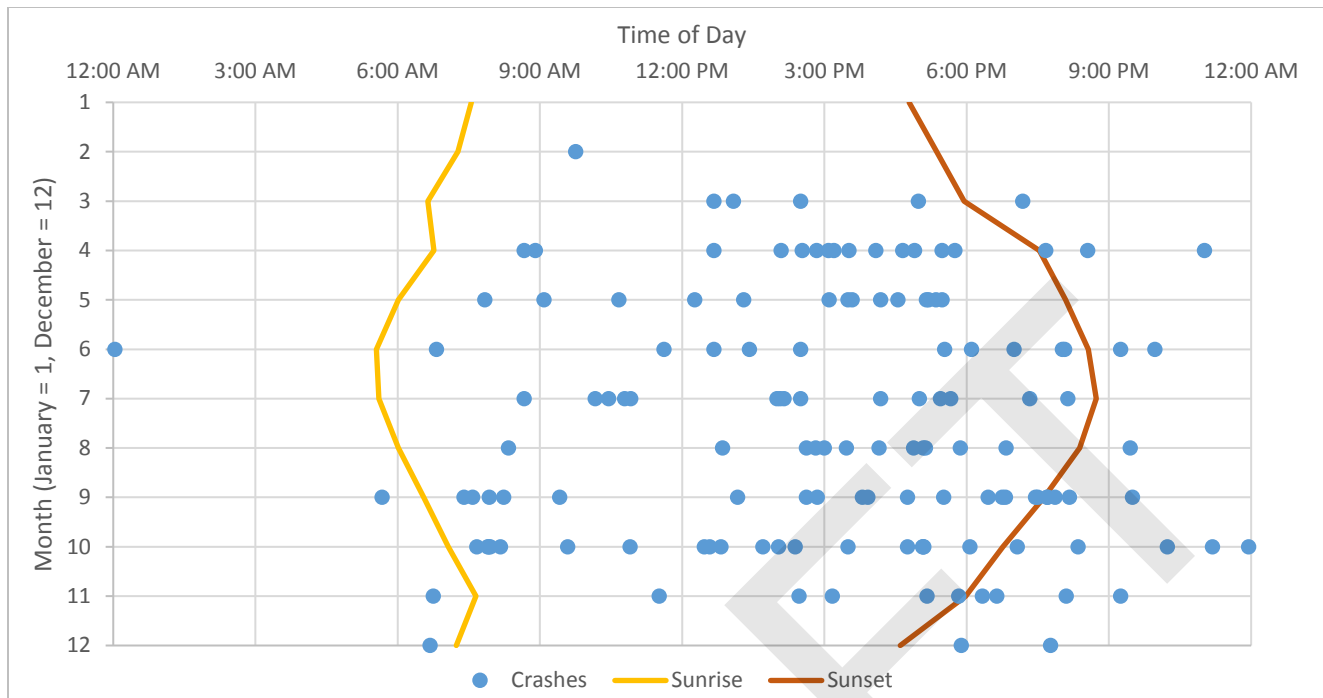
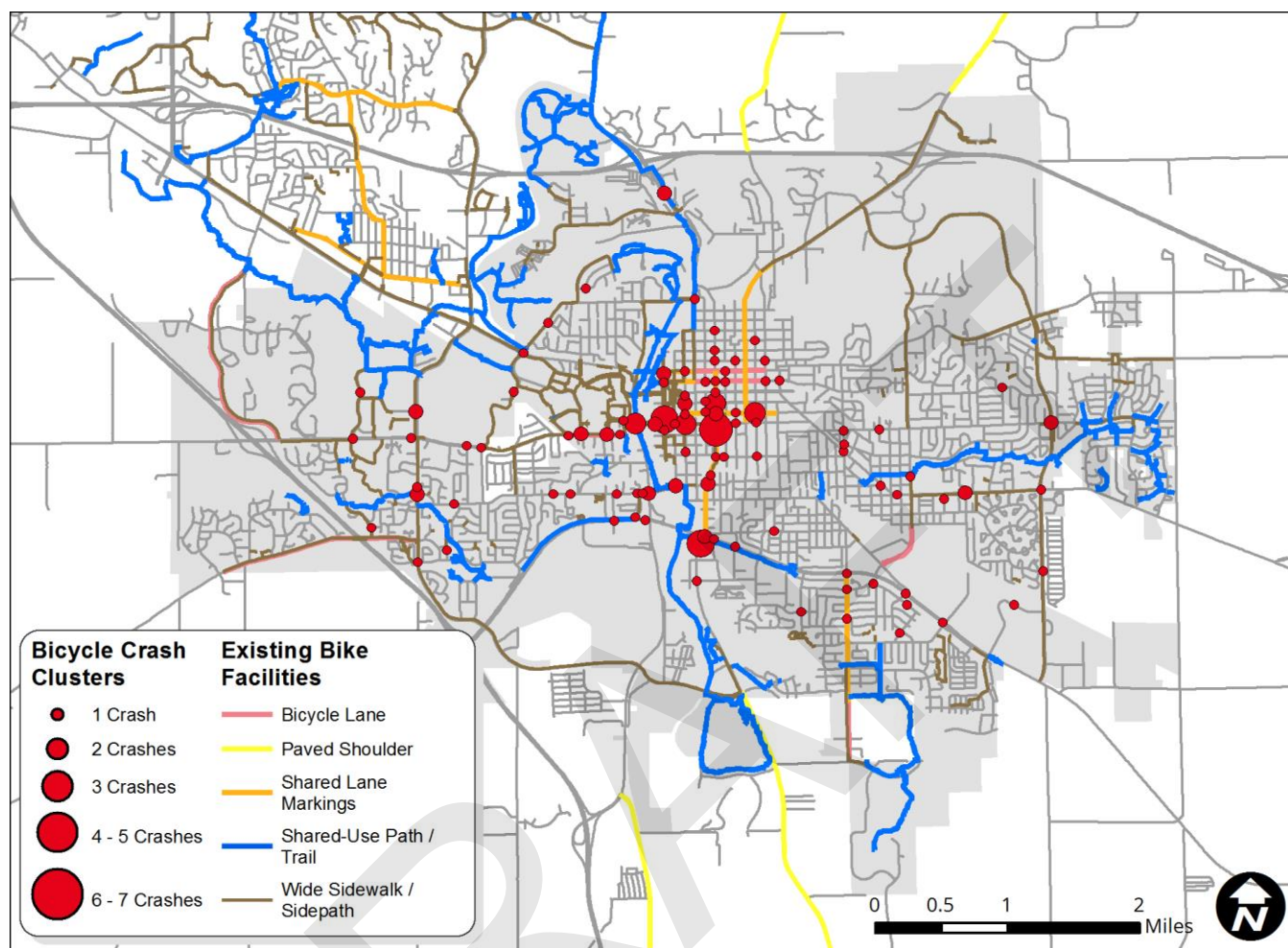


Figure 4: Bicycle Crashes by Month and Time of Day

Crash Location

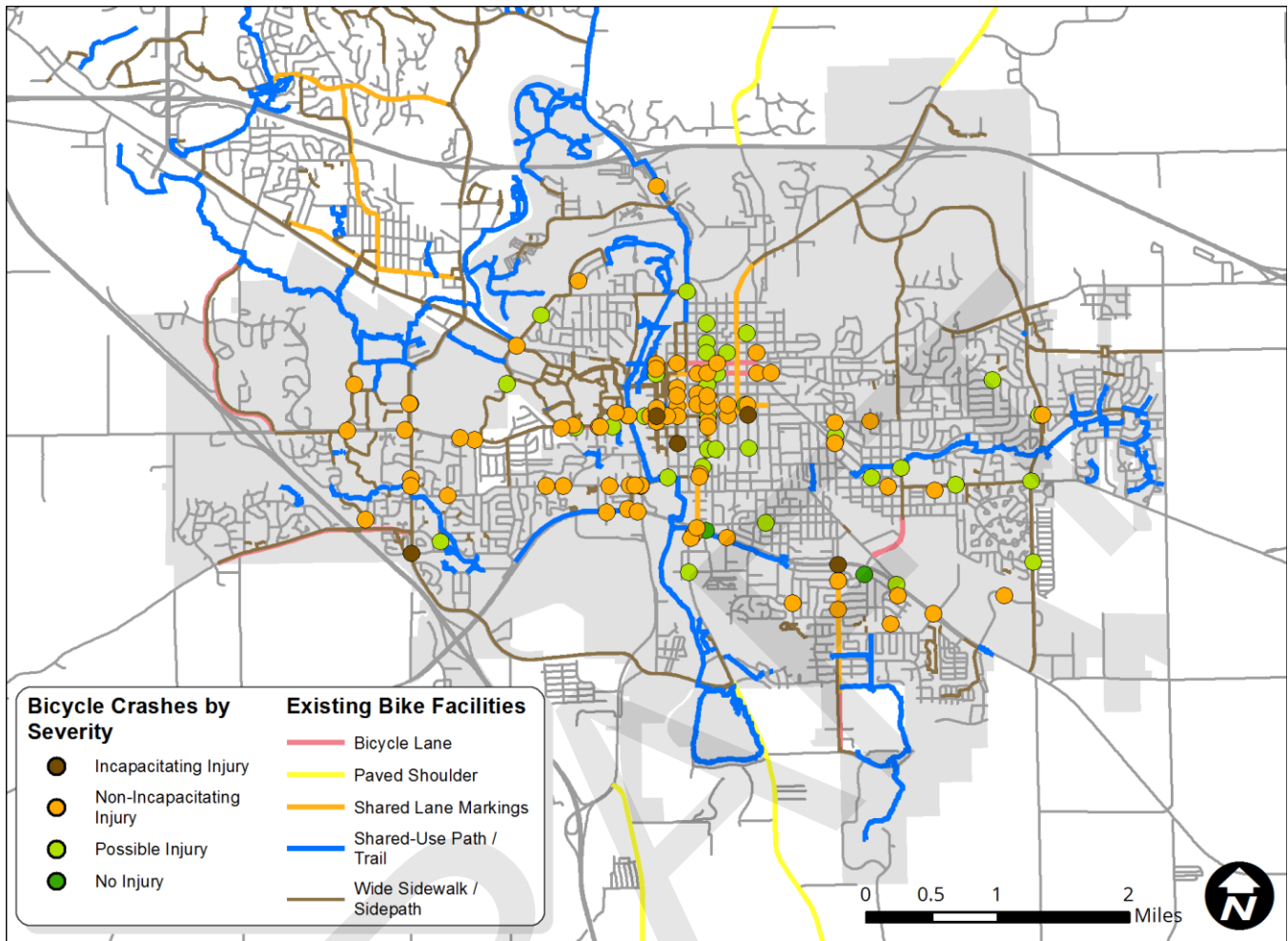
Bicycle collisions were clustered along major thoroughfares and popular bicycling routes, including Gilbert Street, Burlington Street, Madison Street, College Street, Clinton Street, and Highway 6/2nd Street leading into Coralville. As displayed in Map 5 below, which groups collisions that occurred within 100 feet of one another, most clusters are located in Downtown and the Central District where a significant portion of the city's bicycling activity takes place.



Map 5: Bicycle Crash Clusters

Crash Severity

While none of the reported crashes involving people bicycling were fatal, 67 percent resulted in injury, and an additional 32 percent resulted in possible injury. Of the 102 crashes resulting in injury, only seven were incapacitating. The locations of bicycle crashes by severity type are displayed in Map 6. It is important to note six of the seven the crashes resulting in incapacitating injury occurred at intersections along or across major thoroughfares, including Burlington Street (2), 2nd Avenue (2), Highway 6, and Mormon Trek Boulevard. This fact highlights both the existing level of bicycling activity along and across arterial and collector roadways, and the need for dedicated bicycle facilities and intersection treatments to reduce bicycle crashes.

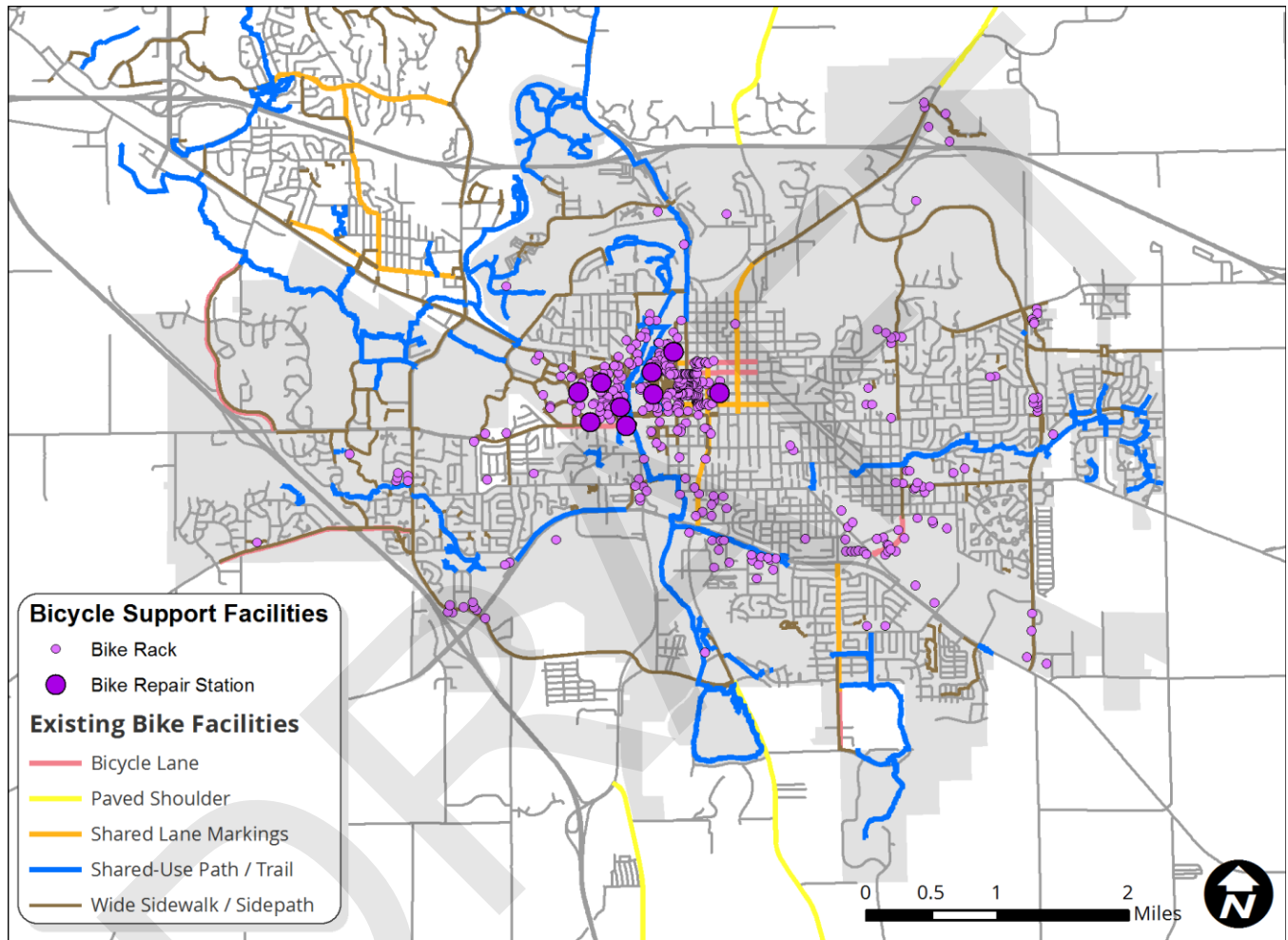


Map 6: Bicycle Crashes by Severity

Support Facilities

End-of-trip facilities like short-term bike racks, bike lockers, and long-term secure bike parking areas are essential to the success of the bike network. A lack of secure parking can deter people from bicycling to destinations, even for short trips. Iowa City and major institutions like the University of Iowa and the Iowa City Community School District provide bicycle parking at popular destinations like the university campus, Downtown Iowa City, and public schools. The city has made a concerted effort in recent years to incorporate additional bicycle parking into streetscape projects and new developments in and around downtown. In addition, the city maintains 10 bike lockers for secure bike storage at the Court Street Transportation Center. Locker rooms and showers are located at many sites across the city as well, but many are located in University buildings and open only to staff, faculty, and students. Bicycle repair stations, or “fix-it” stations, have become an important part of the bicycle landscape in recent years. Each station provides a bike stand, tools, and in most cases tire pumps for people to fix a flat or make other basic adjustments to their bikes. Many bicyclists have noted that ineffective pumps at numerous stations, likely a result of water damage from rain and snow. There are nine bicycle repair stations in Iowa City, eight of which are located on University of Iowa campus.

The map below displays bike parking and repair station locations throughout Iowa City. While the data for bike parking locations (not repair stations) dates from 2011, the relative concentrations of bike parking reveal the extent to which investments in bike parking have focused on high-density destinations, including the University, Downtown, schools, and commercial nodes.



Map 7: Bicycle Parking and Repair Stations

Despite these efforts, many people biking in Iowa City have pointed to a lack of secure parking options throughout the community as a deterrent to bicycling. Bicycle parking ordinances, which are already in place in the city code, and incentive programs can increase the bicycle parking supply and reduce this perceived barrier to bicycling.

Wayfinding

Landmarks, destinations, neighborhood business districts, natural features and other visual cues help bicyclists navigate through Iowa City and reach their destination. However, many of the recommended bicycle routes rely on lower-volume roadways that may not be as familiar to many people, who may typically use an alternate route when

traveling by bus or car. Iowa City has installed wayfinding signs along most on-street bikeways and shared-use paths.

These signs provide critical information to people bicycling, including directional guidance to key destinations and districts, as well as distance and time to reach these locations by traveling the designated route. The addition of travel times to wayfinding signage is more common in cities across the country for its ability to counter the perception of travel times as a significant barrier to bicycling, especially for utilitarian and commuter purposes.

Building a Culture of Bicycling

Creating a bicycle friendly community does not happen overnight. The strong bicycling culture in Iowa City is the result of decades of determination, perseverance, and hard work by community businesses, non-profits, advocates, institutions, civic leaders, and public agencies. That bicycling culture continues each day with every single person who walks out their door, hops on her or his bike, and rides. Whether large or small, the contributions of those who have made bicycling safer, easier, more enjoyable, accessible, and more liberating are meaningful and important. The community partners listed below have been instrumental in building a culture of bicycling and will continue to be so in the years to come.

Community Partners

University of Iowa

The University of Iowa is a Silver-level Bicycle Friendly University, as awarded by the League of American Bicyclists (LAB). The University has a strong online presence for bicycling and organizes a wide array of bicycle-related education and encouragement programming, including the Winter Warrior Bike Challenge. As the name suggests, the Challenge aims to inspire university faculty and students to use bicycles as year-round transportation options. The University's online transportation cost calculator helps students understand the financial costs associated with driving alone by car. Students, faculty, staff, and local bicycle advocates make up the University's Bicycle Advisory Committee. The group advocates for improved bicycling on campus, in the city, and throughout the county.

In May 2016, University students from the College of Public Health led a demonstration project to test temporary bicycle facilities on College Street. The route included a painted bike lane, a protected bike lane, a bike boulevard, and shared lane markings.

More Information:

- University of Iowa Bicycle Transportation: <https://sustainability.uiowa.edu/initiatives/transportation/biking/>
- University of Iowa Drive Alone Cost Calculator: <https://transportation.uiowa.edu/cost-calculator>
- Iowa City Bike Boulevard Project: <https://sustainability.uiowa.edu/news/student-group-tests-iowa-city-bike-boulevard/>

Think Bicycles of Johnson County

Think Bicycles is a non-profit organization that brings bicycle shops and other community organizations together to advocate for improved bicycling in Johnson County. Think Bicycles helps organize Bike Month, held in May, with events throughout the county. The website also offers resources such as links to other organizations' group bicycle rides.

More Information:

- Think Bicycles: <http://www.thinkbicycles.org/>

Iowa City Bike Library

The Iowa City Bike Library began in 2004 by a group of local volunteers. The group continues its mission of encouraging more people to ride bicycles by repairing donated bikes and offering them for six month checkout periods. Community members receive their initial deposit once the bike is returned in good condition within the checkout period. System patrons may choose instead to keep the bicycle for themselves in lieu of obtaining the deposit. Children's bicycles are available for sale.

The Iowa City Bike Library offers a Rent-a-Bench (RAB) program for members of the public to repair their bicycles by gaining access to the shop's tools and repair stands. RAB operates according to a low hourly fee. Patrons who check-out a bicycle from the library have access to repairs during their checkout period. The Iowa City Bike Library covers the cost of minor repairs and adjustments.

More Information:

- Iowa City Bike Library: <http://www.bikelibrary.org/>

Iowa Coalition of Off-Road Riders

Mountain bicycling is an important element of Iowa City's bicycling culture, and the Iowa Coalition of Off-Road Riders is leading the charge to promote, preserve and improve mountain bike trail access. The volunteer-based non-profit organization focuses on maintaining and activating the Sugar Bottom Trails and other mountain biking facilities in the Iowa City area and also hosts numerous rides and events throughout the year in partnership with local bike shops, clubs, and other organizations.

More information:

- <https://www.facebook.com/ICORR-105507021120/>

Bicyclists of Iowa City

With over 450 members from the Iowa City area, Bicyclists of Iowa City (BIC), organizes multiple group recreational bicycle rides per week. Group rides are available at multiple speeds and distances. Shorter, slower rides help people who are new to bicycling gain confidence. Longer rides are available for those training for RAGBRAI (Register's Annual Great Bicycle Ride Across Iowa), the renowned long-distance bicycle event. The group's weekly rides foster camaraderie by ending with a social event, such as dinner or ice cream. BIC also works with organizes bike rodeos each spring at local elementary schools to teach children basic bicycling skills and safety tips.

More information:

- <http://bicyclistsofiowacity.org/>

Iowa City Cycling Club

The Iowa City Cycling Club works to advance the sport of cycling in the region through race promotions, team sponsorship, training, mentoring programs, and women-only rides, clinics, and race series. The organization also promotes cycling through advocacy, safety, and community involvement efforts.

More information:

- <http://iowacitycyclingclub.com>

Goosetown Racing Club

Goosetown Racing is an Iowa City race team that participates and encourages others to enjoy cycling, running, skiing, and triathlons.

More information:

- <https://www.facebook.com/Goosetown-Racing-204841488525/>

Iowa City Womens Cycling

Developed as an initiative of the Iowa City Bicycling Club in 2009, Iowa City Womens Cycling provides a positive environment to encourage women to ride and race. The group hosts numerous events throughout the year, including weekly rides and the popular Chamois Time race series. Other regular activities include social events and racing and maintenance clinics.

More information:

- <https://www.facebook.com/iowacitywomenscycling/>

Iowa City Women on Wheels

Iowa City Women on Wheels (ICA-WOW) was founded by a group of women who work at the local bicycle shop, World of Bikes. ICA-WOW offers no-drop, social rides twice a week during the summer. Women-only bicycle maintenance clinics and social gatherings offer women a chance to learn about basic repairs in hopes that participants are empowered and excited to ride more often. Events and rides use World of Bikes as starting locations and bicycle rentals are available.

More information:

- <https://www.meetup.com/ICA-WOW-Iowa-City-Area-Women-On-Wheels/>

BIKEIOWA

BIKEIOWA has connected community members with resources about bicycling for sixteen years. BIKEIOWA is an online compendium designed to help residents stay knowledgeable about upcoming rides and events including bicycle-friendly city designations, organized rides, new infrastructure updates, advocacy and legislative news, and more. An online user can create a membership to add or update event information and interact with other users' online content. The website was created in 2001 and now has over 70,000 unique visitors per month. Over 4,500 opt-in email addresses receive bi-weekly Ride Reminder emails.

More information:

- <http://www.bikeiowa.com/>

Iowa Bicycle Coalition

The Iowa Bicycle Coalition (IBC) provides statewide advocacy, events, rides, and online resources to further its mission to "build partnerships, educate Iowans, and help to establish safe and enjoyable bicycle transportation and recreation networks throughout Iowa." The organization supports community design, facility design and maintenance, and public policy goals to help make Iowa the most bicycle-friendly state in the country. The Iowa Bicycle Coalition also works to increase youth bicycling by offering bike training to area children through the school district's physical education program and by providing Safe Routes to School assistance. Other events and activities led by the IBC include the annual Iowa Bike Summit, Bike Expo, the RAGBRAI ride announcement party, and numerous group rides throughout the year to encourage all skill levels to get out and ride a bike.

More information:

- <http://iowabicyclecoalition.org/>

Iowa City Community School District

The Iowa City Community School District (ICCSd) supports active transportation and encourages children and families to walk and bike to school. The school district has a Safe Routes to School Coordinator who provides support to individual schools and their PTOs to organize local programs and events. The ICCSD also partners with organizations like the Iowa Bicycle Coalition and BIC to offer bicycle safety and skills training to children.

Safety Village

Located at Grant Wood Elementary School, the safety village is a child-size town that uses pedal-driven cars to teach children about real-life traffic situations and safety measures. Annual camps hosted by Mercy Hospital are available to children who have finished kindergarten. The program regularly attracts over 200 children a year.

More information:

- Safety Village: <http://www.mercyiowacity.org/safety-village>

Neighborhood Centers of Johnson County

The human services agency called Neighborhood Centers of Johnson County serves local schools and neighborhoods including Broadway, Pheasant Ridge, and Breckenridge. The agency is community based and focuses on bringing resources to underserved families by offering programs and activities. The two community centers are located in Iowa City and act as common space for neighbors to gather.

In addition the other services, Neighborhood Centers of Johnson County operates Youth Off-Road Riders Cycling Program (YORR). The program introduces youth to recreational cycling for competition or leisure. Youth receive coaching and meet new friends as they learn new skills. Yellow Velo Bikes and Food is part of Neighborhood Centers of Johnson County's youth employment program. Youth sell healthy food and operate hourly, daily, and weekly bicycle rentals.

More information:

- Yellow Velo Bikes and Food: <http://www.ncjc.org/yellow-velo.html>
- Youth Off-Road Riders: <http://www.ncjc.org/youth-off-road-riders.html>
- Neighborhood Centers of Johnson County: <http://www.ncjc.org/>

Iowa City Blue Zones Project

Sponsored by Wellmark Blue Cross and Blue Shield, the Iowa City Blue Zones Project began in 2011 as a catalyst for healthy and active living through direct interventions and policy changes that support physical activity and healthy eating. The project has impacted more than 67,000 individuals and has helped lower the city's obesity rate from 18.7 percent in 2014 to 15.8 percent in 2015. The project has been supportive of Safe Routes to School programs, complete streets projects, and other initiatives that encourage residents to make physical activity a part of their daily routines.

More information:

- Iowa City Blue Zones Project: <https://www.facebook.com/pg/IowaCityBlueZonesProject>
- Iowa City Blue Zones Project: <http://explore.bluezonesproject.com/iowa-city/>

- Press: <http://www.press-citizen.com/story/news/2016/02/03/iowa-city-earns-blue-zones-certification/79765076/>

Iowa City/Coralville Area Convention & Visitors Bureau (CVB)

The CVB works to increase visitor volume and spending to the region by attracting and operating conventions and events, supporting many of the area's signature events, and providing comprehensive information to visitors. The CVB has been a major proponent of bicycling in Iowa City through both the promotion of bicycling activities, bicycle facilities, local bike shops, and events. The bureau's support of regional events like the granGABLE and international events like Jingle Cross and the 2016 Telenet UCI Cyclo-Cross World Cup have helped to establish Iowa City's reputation as a bicycling destination. The 2016 UCI World Cup event, which was estimated to have brought 10,000 visitors, including professional and amateur racers from across the globe, was so successful that the UCI has announced that Iowa City will open the 2017 UCI World Cup series, and local organizers are expecting more than 15,000 visitors and \$1.2M in local revenue.¹

More information:

- <http://www.iowacitycoralville.org/>

Local Bicycle Shops

Local bicycle shops are essential to bicycling in Iowa City, not just for the products they sell, but for their classes and events that instill confidence in new riders and build relationships around bicycling. Programs offered by Iowa City bicycle shops offer basic bicycle skills and safe maneuvering courses, bicycle repair courses, regularly-scheduled group rides, bicycle rodeos in partnership with local schools and organizations, and bike races.

Existing Plans and Policies

From long-range plans to statewide facility design standards, Iowa City staff and elected leaders rely on many existing plans, policies, and regulations to inform their decisions relating to bicycling infrastructure planning, funding, design, construction, and maintenance. The following list of existing documents and resources were reviewed early in the planning process to better understand the regulatory and policy environments and to identify common themes and goals on which the Bicycle Master Plan can expand or improve. A brief overview of key findings from these documents are described below.

¹ Davis, Andy. "Iowa City selected to host another cyclocross World Cup race." Iowa City Press Citizen, January 27, 2017. <http://www.press-citizen.com/story/news/2017/01/27/iowa-city-uci-cyclo-cross-world-cup-jingle-cross/97141576/> (accessed March 13, 2017).

Table 4: Relevant Plans and Policies

Plan/Policy/Regulation	Agency	Year
IC2030: Iowa City Comprehensive Plan Update	Iowa City	2013
2016-2017 Strategic Plan Update	Iowa City	2016
South District Plan	Iowa City	2015
Central District Plan	Iowa City	2012
Downtown and Riverfront Crossings Master Plan	Iowa City	2013
City Code (including bicycle regulations, parking standards, subdivision design standards, and	Iowa City	Updated 2016
Complete Streets Policy	Iowa City	Updated 2015
Metropolitan Bicycle Master Plan	MPOJC	2009
Future Forward 2045 (Long-Range Transportation Plan)	MPOJC	2017 (Draft)
Complete Streets Policy	MPOJC	2015
Coralville Community Plan	Coralville	2014
Bicycling & Multi-Use Trails Plan	Johnson County	2012
Statewide Urban Design and Specifications (SUDAS)	Iowa DOT	2017 Edition
Iowa in Motion 2040, Iowa In Motion 2045 (Draft)	Iowa DOT	2012, 2017 (Draft)
Iowa Trails 200	Iowa DOT	2000

Plans

Local Plans

Iowa City and other local agencies in the metropolitan area have developed comprehensive plans, sub-area plans, and bicycle and trail plans that have impacted and will continue to impact bicycle facility development and supporting programs. Transportation-focused plans like the Metropolitan Bicycle Master Plan (2009), the Future Forward 2045 Long Range Transportation Plan (2017 draft), and the Johnson County Bicycling & Multi-Use Trails Plan (2012) include recommendations for the installation of bicycle facilities on local roadways, the development of additional trail corridors along riparian and other undeveloped corridors, the evaluation of some roadways for travel lane conversions or road diets, maintenance and sweeping of trails and high-priority bike corridors, bicycle parking ordinances for commercial and multi-family properties, and additional bicycle parking in downtown and other popular destinations. The Metropolitan Bicycle Master Plan provides the most detailed history, analysis, and recommendations pertaining to bicycling in Iowa City and applicable to this bicycle master planning process. Recommendations for on-street bikeways, trails, supporting programs and policies, and plan evaluation create a comprehensive and robust strategy to increase bicycling activity and enhance bicycling safety in Iowa City and

surrounding communities. Like this current bicycle master planning process, the Metropolitan Bicycle Master Plan also utilizes the LAB's Building Blocks of a Bicycle Friendly Community to frame existing conditions inventory and plan recommendations.

Comprehensive and sub-area plans like IC2030: Iowa City Comprehensive Plan Update (2013), the South District Plan (2015), and the Downtown and Riverfront Crossings Master Plan (2013) also stress the importance of bicycling as a desired transportation mode for transportation and recreation and an integral component of future growth and redevelopment. The city's 2016-2017 Strategic Plan Update points to the importance of bicycling as a means of promoting environmental sustainability. The city set an ambitious goal of earning a gold-level Bicycle Friendly Community designation in 2017.

State Plans

At the state level, bicycle transportation and recreation are addressed in both the statewide transportation plan, *Iowa in Motion 2040*, and in the statewide trails plan, *Iowa Trails 2000*. The state also commissioned a statewide bicycle and pedestrian plan which included multiple public meetings across the state in 2013 and an anticipated release of the draft report in 2015. However, no documents are made available on the project website as of February, 2017.

Iowa in Motion 2040's broad scope encompasses active transportation and includes considerable focus on the state's growing trail system. The plan's three broad-based and far-reaching goals of safety, efficiency, and quality of life provide significant latitude for Iowa Department of Transportation to address unique statewide, regional and local challenges and opportunities. With regard to bicycling, key findings include the need for bicycle system funding, complete streets policies, increased coordination to connect local and regional trail systems, and more education and encouragement programs. An update to the plan is currently underway and is expected to be completed in 2017. Draft documents released so far build on these same key findings and include greater focus on the prevalence of bicycle and pedestrian injuries and fatalities.

Iowa Trails 2000 is a resource document developed to assist local governments, non-profits, and other trail developers in achieving a shared vision of an interconnected, multi-modal, easily accessible statewide trails system. The Plan provides the overarching vision for a statewide trails system, guidance for facility planning and design, and enunciates the benefits of trails as valuable recreation, transportation, and quality of life assets. The plan stresses the importance of local agencies as "the primary developers and owners of specific trail projects at the local level.... They are responsible for local coordination, public involvement, and final trail design, including alignment determination. They are also usually responsible for seeking funding through federal, state, local, and private sources; contracting with appropriate consultants; and operation and maintenance of the completed trail."

The diversity of planning documents that address bicycling is a reflection of local, regional, and even state interest to diversify transportation choices, increase safety for road users, utilize bicycling and bicycle infrastructure as a catalytic tool for economic development, support community health and physical activity, and enhance quality of life. The following recommendations emerge from these planning documents for consideration in this planning effort:

- Acknowledge that the needs and abilities of all people bicycling differ and that different strategies and facility types are necessary to support this wide target audience.
- Develop cross-city routes that combine wayfinding, off-street trails, and on-street bikeways to guide people bicycling to key community destinations and adjacent municipalities.

- Raise Iowa City's Bicycle Friendly Community status from silver to gold in 2017 and aspire for platinum in the future.
- Construct additional wide sidewalks along key arterial corridors to extend the off-street network, connect the trail system to nearby destinations, and provide facilities appropriate for younger and less experienced people bicycling.
- Expand bicycle parking in high-demand areas and create policies and ordinances to standardize bicycle parking in future commercial and multi-family residential developments.
- Expand the trail network with extensions to the Iowa River and Willow Creek Trails and additional trails along other riparian corridors, including Ralston Creek from the future Riverfront Park northeast through downtown.
- Apply complete streets principles to all roadway projects to ensure the needs of bicyclists are considered and infrastructure is included in roadway improvement projects and development projects.
- Incorporate bicycle facilities into district and area development and infrastructure projects to better link neighborhoods to key community destinations.
- Encouragement and education programs are critical to the success of bicycling as a viable mode of transportation.

The Metropolitan Planning Organization of Johnson County (MPOJC) maintains a GIS data layer of existing and planned bikeways that includes many (but not all) of the recommendations included in the plans referenced above. These recommended facilities, as well as all recommended facilities referenced in these planning documents, will be screened and analyzed in this planning process for their potential to contribute to the future Iowa City bike network.

Policies and Legislation

Existing policies and legislation have a significant impact on the development of trails and bikeways in Iowa City. State and local regulations determine the design, construction specifications, and safe use of trails, sidewalks and on-street bicycle facilities. The current regulatory environment in Iowa City is similar to other municipalities of similar character in Iowa.

Local Policies and Regulations

Local regulations and policies impact the presence and character of bicycling facilities in new development, provide procedures and design guidance for roadway design and traffic calming additions, and support safe and responsible use and enjoyment of public roadways by all road users. The City Code includes bicycle parking ordinances to integrate bicycle parking into new commercial and multi-family residential developments; subdivision design standards to incorporate trails, bikeways, and traffic calming into new subdivisions; and traffic-related regulations to encourage safe bicycling and restrict motor vehicle use of dedicated bicycle lanes. A summary of some of these regulations and policies is provided below.

Complete Streets Policy

Iowa City has adopted a complete streets ordinance that establishes the city's commitment to designing, building, operating, and maintaining public streets that accommodate people of all ages and abilities, regardless of their mode of travel. The city's complete streets policy stresses the importance of context within the street network and requires that capital projects incorporate complete street facilities like sidewalks and bicycle facilities set forth in

City Council-adopted plans like the comprehensive plan, district plans, and bicycle and pedestrian plans. The ordinance references a number of design manuals to be used for design guidance, ranging from traditional sources like the AASHTO *Green Book* and the Iowa *Statewide Urban Design and Specifications* (SUDAS) manual, to more innovative publications like the NACTO *Urban Street Design Guide* and the NACTO *Urban Bikeway Design Guide*. The ordinance includes exceptions to the use of complete streets principles and performance measures to evaluate its effectiveness and impact. The MPOJC adopted a complete streets policy in 2015 to ensure that projects receiving federal funds through the MPO-administered Surface Transportation Block Grant Program (STBG) and Transportation Alternatives Program (TAP) adhere to complete streets principles and apply context sensitive design.

Traffic Calming Policy

To address the need for traffic calming for streets not programmed for improvements in the near future, the city developed a policy and procedures for traffic calming driven by neighborhood request. The policy, which applies to local and collector streets, establishes a process for neighborhood engagement, corridor study, design considerations, and final approval of the installation. The traffic calming program has resulted in a variety of improvements on local and collector roadways, including Morningside Drive, College and Summit Streets, Shannon Drive, and Kimball Road. These installations create a safer environment for all road users, especially people bicycling and walking.

Bicycle Parking Policy

Bicycle parking codified in the city's zoning ordinance as part of the off street parking and loading standards. Like motor vehicle parking requirements, minimum bicycle parking requirements vary for different land uses. Bicycle parking minimums are calculated as a percentage of motor vehicle parking spaces, usually between five and twenty-five percent, or as a fixed number per dwelling unit. In all cases in which bicycle parking is required, a minimum of four spaces shall be provided. The ordinance also includes general design standards that focus on parking area surface type, rack design, and rack placement. Parking may also be provided in the form of bicycle lockers or secure indoor storage facilities, but does define conditions under which these parking facilities should be used, nor does it require their use.

State Policies and Regulations

The Iowa Code acknowledges and supports trail development as a catalyst for economic development and improved community health. The adoption of sections of the Iowa State Code pertaining to pedestrian, bicycle and motorist movement and operation on public roadways also promotes behavior in conformance with statewide regulations.

The SUDAS manual provides detailed design guidelines and standards for the development of consistent non-motorized transportation facilities. Design guidance is heavily dependent on the AASHTO *Guide for the Development of Bicycle Facilities* (2012 draft) and discusses traditional facility types such as shared-use paths, shared roadways, paved shoulders, bike lanes, and bicycle boulevards. The document does not include design guidance for newer, more innovative bicycle facilities such as separated bike lanes or cycle tracks. The recent inclusion of an entire chapter for complete streets (Chapter 5) expands bicycling-related information beyond design details and establishes a more comprehensive context for the inclusion of bicycling facilities and impact of general geometric design principles on non-motorized transportation.

Key themes and considerations from this review of existing policies and legislation include the following:

- Through numerous ordinances, regulations and policies, Iowa City has established a layered system of safeguards to ensure that bicycle transportation is considered in all transportation investments, land subdivisions, and future developments.
- The city code requires people to park their bicycles at bike racks if they are within 300 feet. While this encourages bike rack usage, it can be difficult to abide by this law when bike racks in dense, high-traffic areas are full and no other bike parking is available, which indicates the need to expand the presence of bike parking.
- Bicycle parking regulations lack the level of design detail necessary to ensure that private developers provide secure and functional bike racks. Additional language regarding design specifications in accordance with the Association of Pedestrian and Bicycle Professionals' *Essentials of Bike Parking* (2015) should be referenced and provided to developers at the initiation of the site planning process.
- Design guidance for bicycle facility development relies heavily on AASHTO design manuals that do not incorporate recent developments and innovations in facility design, such as buffered bike lanes, separated bike lanes, and cycle tracks. This is especially apparent at the state level.