

The logo for Macon Connects features a stylized letter 'M' composed of four overlapping, rounded rectangular shapes in red, yellow, blue, and green. To the right of this graphic, the words "MACON" and "CONNECTS" are stacked vertically in a large, bold, black, sans-serif font.

MACON CONNECTS

Findings from the
World's Largest Pop-Up
Bike Network



Report prepared by 8 80 Cities
In support of Macon Connects
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1

Executive Summary



Macon Connects was a bold initiative that set out to change the way Macon residents get around for the better. Building on the recommendations of the 2015 Macon Action Plan (MAP), a comprehensive strategy to guide change and growth in the urban core, Macon Connects zeroed in on the MAP directive to “cultivate connectivity”. We wanted to know:

How can Macon residents better connect to one another and the places that they want to go? What makes Maconites feel connected? What makes them feel disconnected? How can we test out residents’ ideas for improving connectivity in Macon?

The Opportunity

In October 2015, Knight Foundation launched a nationwide competition for the best ideas to improve cities. We assembled a team, led by NewTown Macon in partnership with Macon-Bibb County (including Macon Urban Development Authority and Main Street Macon), and Bike Walk Macon. We also teamed up with 80 Cities and Better Block, who provided community engagement and prototyping services, respectively. We submitted an idea to engage the city in a conversation about improving connectivity in Macon, and then to test out those ideas on the streets of Macon. This included building a pop-up bike

network throughout the urban core, also known as a “minimum grid”. Out of over 4,500 applications, 32 ideas were selected to be funded, including Macon Connects.

The Ideas

In June of 2016, we held a three-day Ideas Festival consisting of 19 events that appealed to a wide range of audiences. With over 1,100 attendees, there were 430 active participants who generated over 3,400 ideas. We heard loud and clear that residents wanted more mobility options in Macon.

Driving is the most convenient mode of transportation in the city. Despite relatively good driving conditions, residents want to rely less on the car and have other means of transportation available to them. As Downtown Macon continues to attract more residents, businesses, and investment, safe biking and walking infrastructure are critical to increasing access to, from, and throughout the urban core.

The Street Makeover

Taking some of the ideas we heard from the Ideas Festival, we developed a plan to link different areas of the urban core to one another using a bike network. We engaged 90 local volunteers to help with the

physical construction of over 5 miles of bike infrastructure, creating the world's largest pop-up bike network to ever be constructed.

The Findings

Macon Connects proved that if you build it (a bike network), they will ride. Bike counts along the pop-up network were 9.5 times (854%) higher during Macon Connects as compared to "normal conditions" when there is no bike infrastructure present.

Along the four corridors where we placed bike counters, bike counts increased from as little as 5.5 times (456%) to as much as 18.6 times (1758%).

We also found out that 71% of respondents support building a protected bike network in Macon. Of those who had the chance to ride the pop-up bike network, 88% agreed that it inspired them to bike more.

In terms of the design of bike lanes, 95% of respondents preferred bike infrastructure with buffers and/or bollards. Sharrows were the least effective type of bicycle infrastructure, with only 4% of respondents feeling "very safe" riding on them.

A positive spillover effect of the bike lanes was that it created new opportunities for residents to enjoy their own city. 68% reported visiting an area that they normally do not go to. 75% reported seeing new shops and/or amenities along the pop-up bike lane network that they had never noticed before.

Looking at the drastic increase in bike counts during Macon Connects Street Makeover, we know for a fact that Macon residents will take advantage of a safe, connective bike network if it is available to them.

The Recommendations

Based on the results of the Macon Connects Street Makeover, we have four areas of recommendations:

1. Start with a downtown minimum grid that connects people to popular destinations
 - At the very minimum, the bike network should encompass a "one-mile radius" from the city

center. This would provide connections between major destinations within the urban core.

- Remove 5th Street from the minimum grid route and include Martin Luther King Boulevard instead.
 - If possible, expand the bike network to encompass a 3-mile radius of the city center. Compared to a bike network that spans a 1-mile radius, the 3-mile radius network would connect ten times the number of residents to biking infrastructure.
2. Prioritize safety and consistency for all road users.
 - Place bike lanes next to the curb.
 - The more protection for cyclists, the better.
 - To maximize the appeal of the minimum grid, consider reducing speed limits and implementing other traffic calming measures on wide, high-volume, high-speed corridors where bike lanes will go.
 - Use parking as protection for cyclists.
 3. Continue to educate and engage the public.
 - Grow ridership among key target groups, including: those who live and work in the urban core, Mercer University students, those who do not own private vehicles, large employers located in the urban core, and existing recreational bike riders.
 - Find businesses that will champion safer, more walkable and bikeable streets.
 4. Develop metrics and set goals for increasing cycling rates.
 - Conduct regular bike counts and attitudinal surveys.
 - Set a mode-share goal.

Conclusion

While Macon Connects has come to an end, the work to build permanent infrastructure to improve connectivity, mobility, and liveability for all Macon residents still remains. We hope that the data and findings from this experiment can help inform the work of decisionmakers, advocates, and other organizations who can push forward cycling and mobility initiatives in Macon.

2

The Evolution of Macon Connects



September 2015

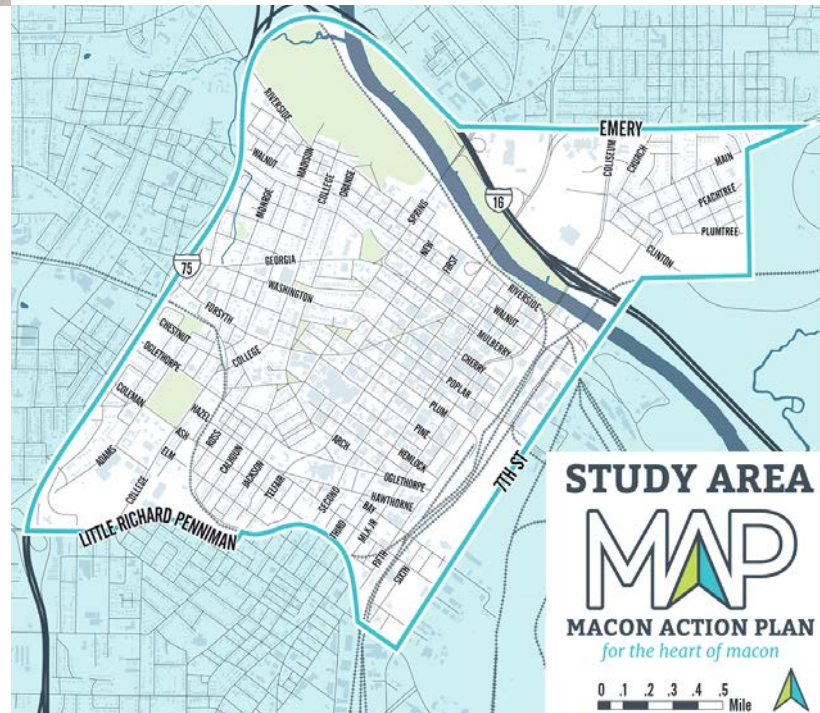
Copenhagen inspires Macon.

Leaders from Macon attend the 2015 Copenhagen Study Tour, hosted by 80 Cities and funded by the Knight Foundation. They spend five days biking, walking, and learning about how Copenhagen's streets and public spaces support vibrant public life. The experience is transformational. How can they replicate this experience of being able to safely walk and bike in Macon? One idea is to build a minimum grid of safe cycling infrastructure in Downtown Macon. The seed for the Macon Connects project is planted.

October 2015

The Macon Action Plan (MAP) is released.

MAP is a comprehensive, community-driven plan that envisions the future of Macon's historic downtown and intown neighborhoods. Spearheaded by the Macon-Bibb Urban Development Authority, Macon-Bibb County, and their partners, MAP is a roadmap to guide change and decision making in coming years. One key priority is to "Cultivate Connectivity", which includes enhancing traffic safety and improving multi-modal transportation options.



**Knight
Cities
Challenge**

October 2015

The Knight Foundation dangles a carrot.

The Knight Foundation launches the 2015 Knight Cities Challenge, an open call for the best ideas to make cities more successful. Building on the directives of the MAP, NewTown Macon submits an idea to test out Macon's appetite for biking by building the world's largest network of pop-up bike lanes on Macon's streets.



March 2016

Macon Connects is a winner.

The Macon Connects project is one of 32 ideas to win a Knight Cities Challenge Grant, edging out over 4,500 other applicants. The local team (NewTown Macon, Macon-Bibb County, Macon Urban Development Authority, Main Street Macon, and Bike Walk Macon) partners with 80 Cities and Better Block to provide community engagement and prototyping services, respectively.

June 2016

Macon Connects kicks off with an Ideas Festival.

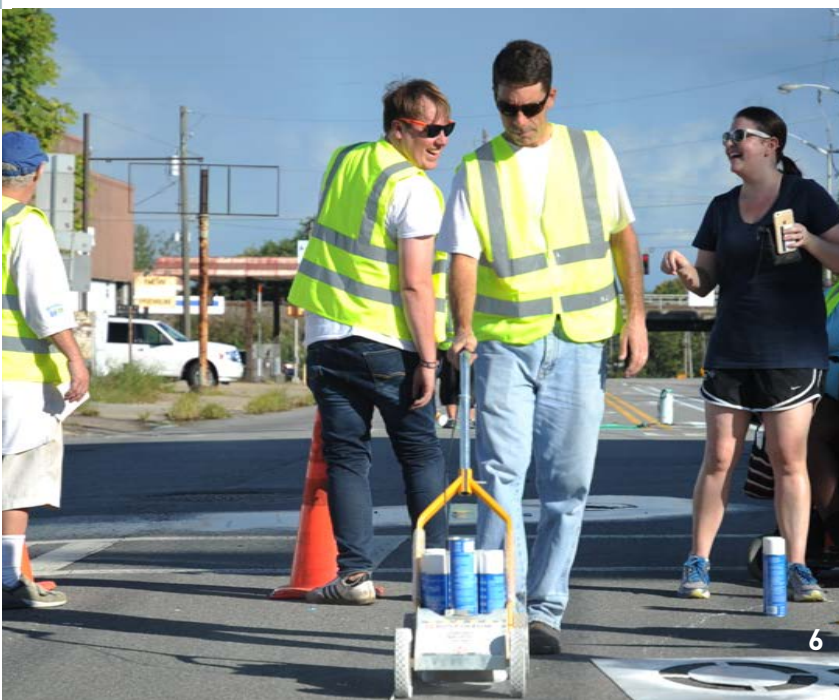
Taking place from Jun 14-16, the Macon Connects Ideas Festival hosts 19 events, attracting over 1,100 people and generating thousands ideas about how to improve connectivity in Macon. From inspiring keynote presentations, to movies in the park, to pop-up engagements across the city, the Ideas Festival succeeded in capturing the ideas of a wide spectrum of Macon residents. The results are compiled in a report called "Macon Connects: The People Have Spoken!" and help inform the next phase of the project, the Street Makeover.



September 2016

We build the world's largest pop-up bike network.

The Macon Connects team, along with 90 local volunteers, construct over five miles of connected bike infrastructure to form the world's largest pop up bike network. The project team hosts a two-day block party to celebrate the occasion. At the launch event, Mayor Robert Reichert declares that the bike network should stay up for a whole week, rather than the initially allotted two days. Daily bike counts in Macon's urban core increases by 854% throughout the duration of the pop-up lanes.



3

The Method to our madness

3.1 The Rationale

3.2 The Plan

3.3 The Design

3.4 The Ingredients

3.5 The Data Collection

3.1

The Rationale

Building a minimum grid of bike lanes is no easy task. What normally takes years of planning, budget approvals, and construction took our team four months of preparation and four days of execution. That said, pop-up infrastructure is very different from permanent infrastructure. Pop-up bike lanes are temporary, constructed primarily by ordinary citizens, and merely resemble “the real thing”. They are meant to function as the prequel to permanent bike lanes, which necessarily require professional planners, engineers, and construction workers.

By prototyping bike lanes, the pop-up method is able to achieve three goals that a conventional bike network planning process cannot:

i) All different types of road users are able to see, touch, and experience their city streets in new ways. Pop-up bike lanes are a public education tool and help build support for investing in a connected

network of safe bike infrastructure in a way that is more tangible than looking at photo renderings.

ii) Pop-up bike infrastructure invites residents to physically test out and provide feedback on what it’s like to ride on safe biking facilities in their own city. Through this exercise, we are able to collect data on how bike lanes differently impact various user groups so that we can fine tune the design before it is implemented permanently.

iii) The Macon Connects pop-up bike network engaged residents in the design and construction of community assets. Over 90 volunteers of all ages and abilities helped us construct the bike network, all of whom are now trained in the pop-up construction process and can execute similar projects on their own. This was a community building exercise, both literally and figuratively.



3.2 The Plan

The design of the pop-up bike network reflected community feedback gathered from both the Macon Action Plan and the Macon Connects Ideas Festival.

We installed bike infrastructure along corridors that connected people to their favorite places in the city, including Tattnall Square Park, Ocmulgee Heritage Trail, and downtown main streets. Informational signs were hung on poles along the corridor demonstrating to all passersby the benefits of the new street configuration.

We also wanted to test out a variety of bike facilities so that we could get user input on what type of bike

infrastructure designs provided them with the most comfortable ride.

Understanding that not everyone in Macon would be able to ride on the bike network, we also hosted a two-day Block Party on 3rd Street, between Cherry and Poplar, where people had an opportunity to engage in the Macon Connects project all the while enjoying local art, music, and vendors.

In total, the pop up bike network spanned over five miles, making it the largest pop-up bike network to ever be constructed.



3.3

The Design

The five types of bike facilities included in our bike network plan range from sharrows, the most basic of bicycle markings, to two-way cycle tracks which provide a physical separation between bike riders and vehicular lanes.

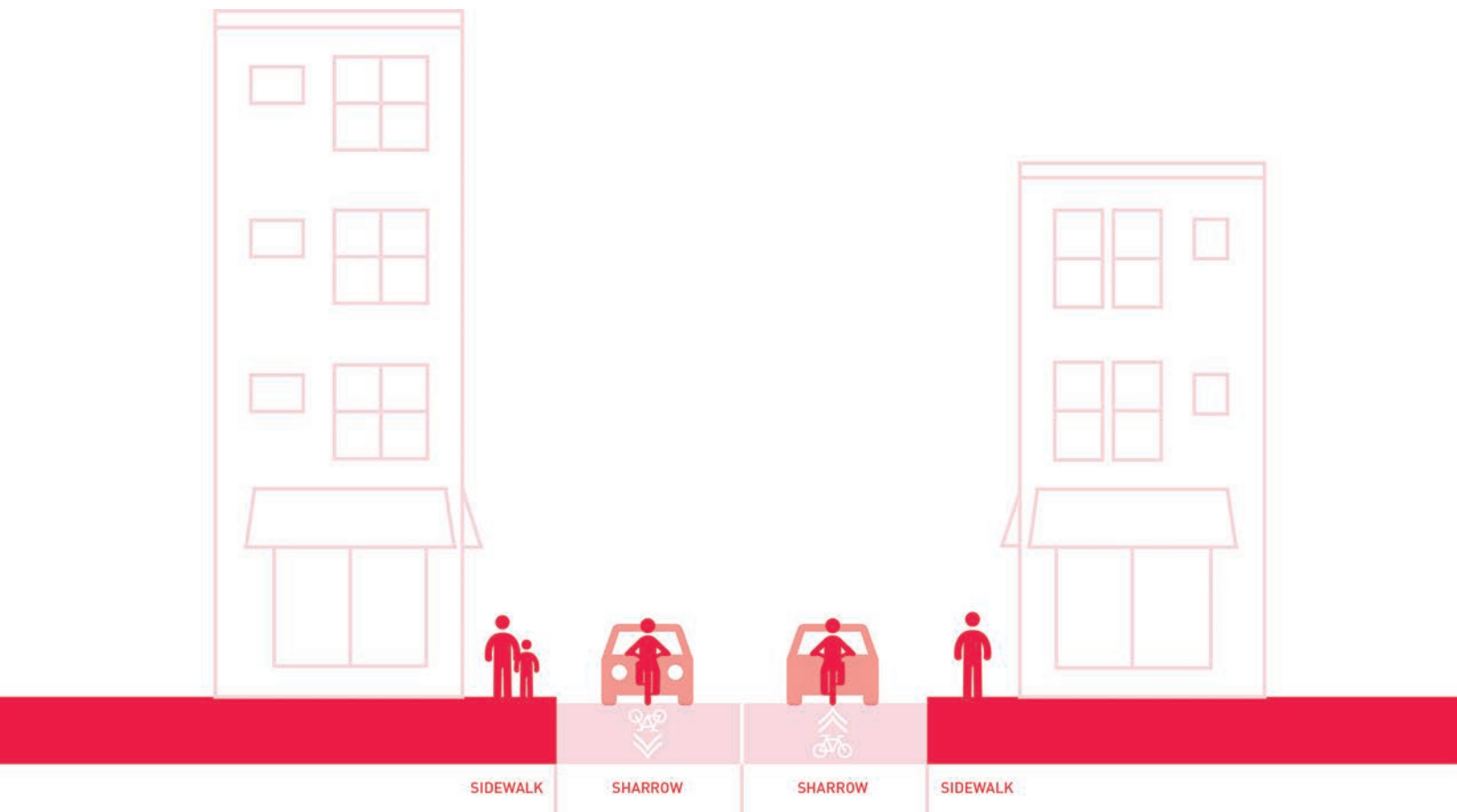
Design A: Sharrow

Installed on the following corridors: College Street, Oglethorpe Street.

A shared-lane marking or sharrow is a street marking placed in the travel lane to indicate where people should preferably cycle.

Benefits:

- alerts drivers to the presence of cyclists
- provides a wayfinding element
- requires no additional street space



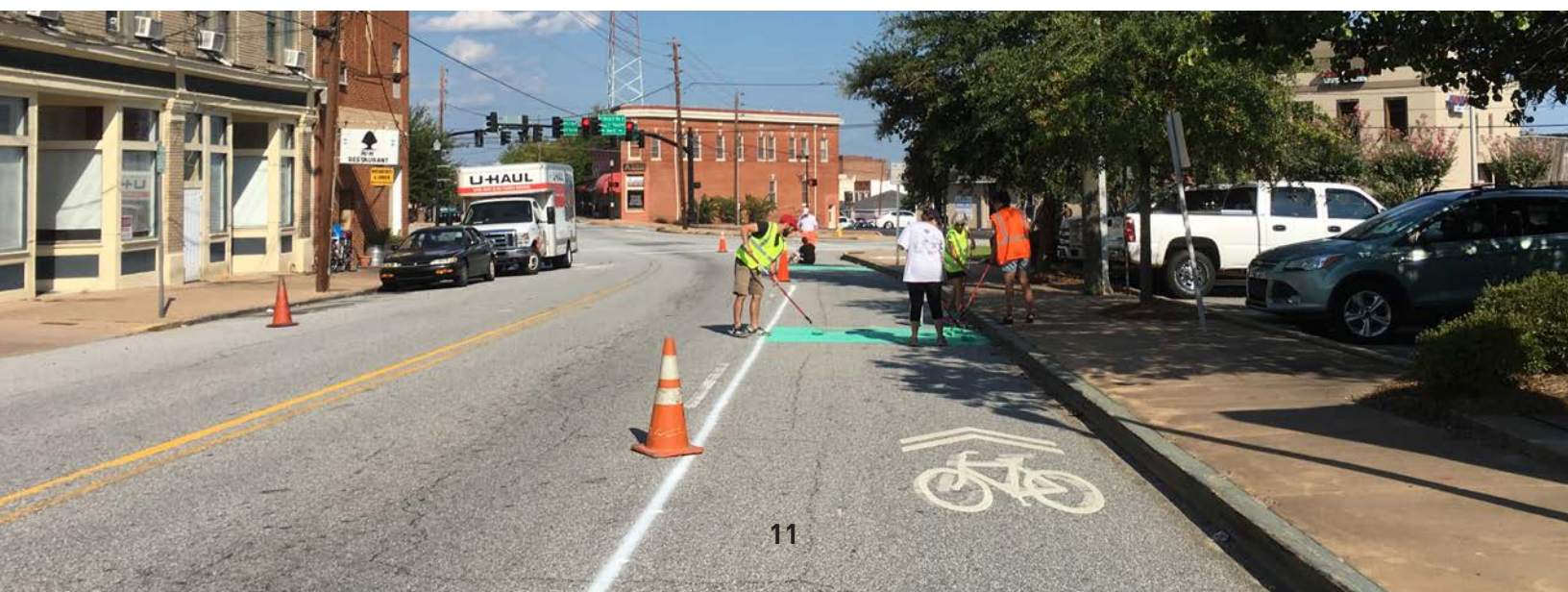
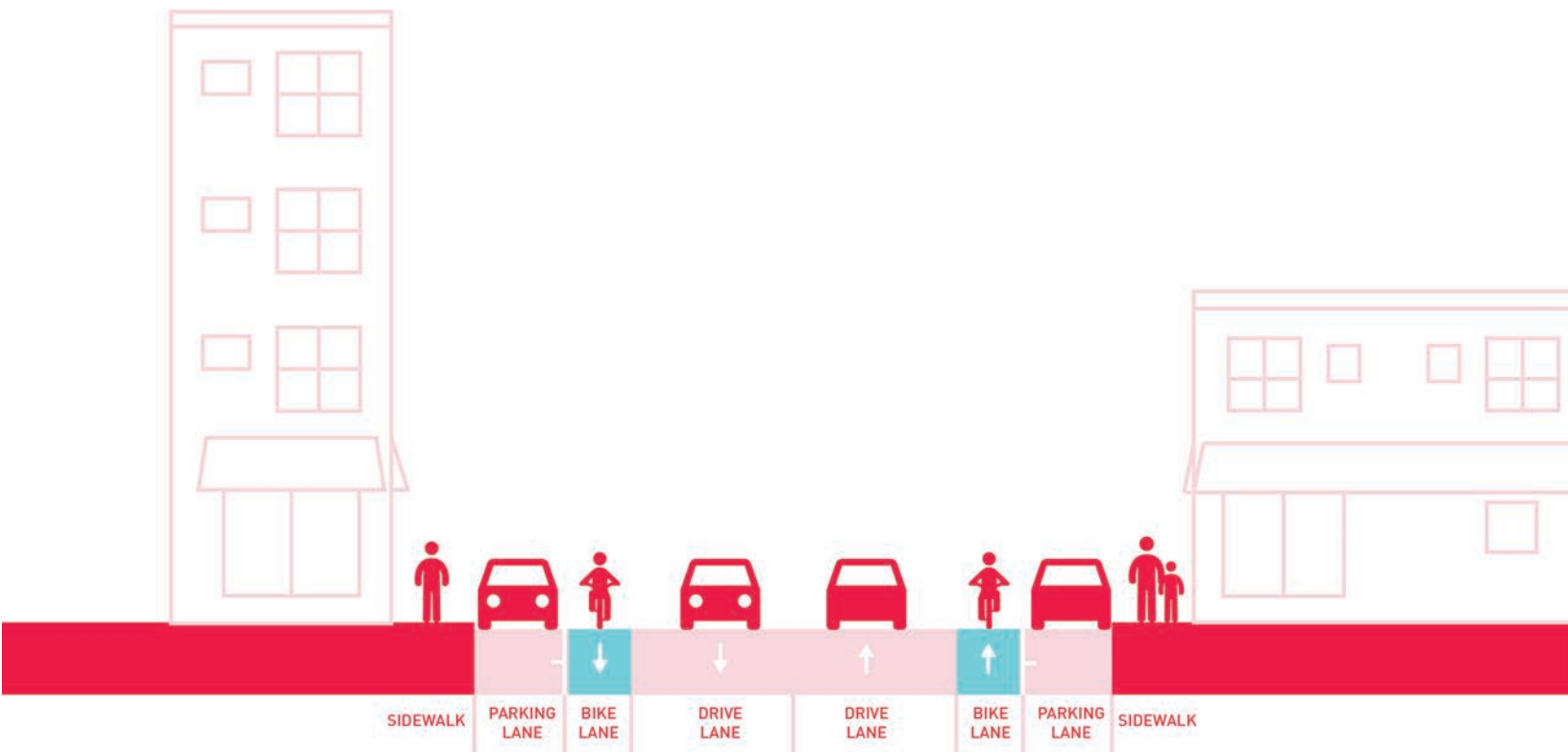
Design B: Conventional Painted Bike Lane

Installed on the following corridors: Cherry Street, 5th Street.

Conventional painted bike lanes are typically marked by a striped line on the right side of the street, between the adjacent travel lane and curb, road edge, or parking lane.

Benefits:

- creates separation between cyclists and vehicles
- drivers can predict position of cyclists
- increases total capacity of the street



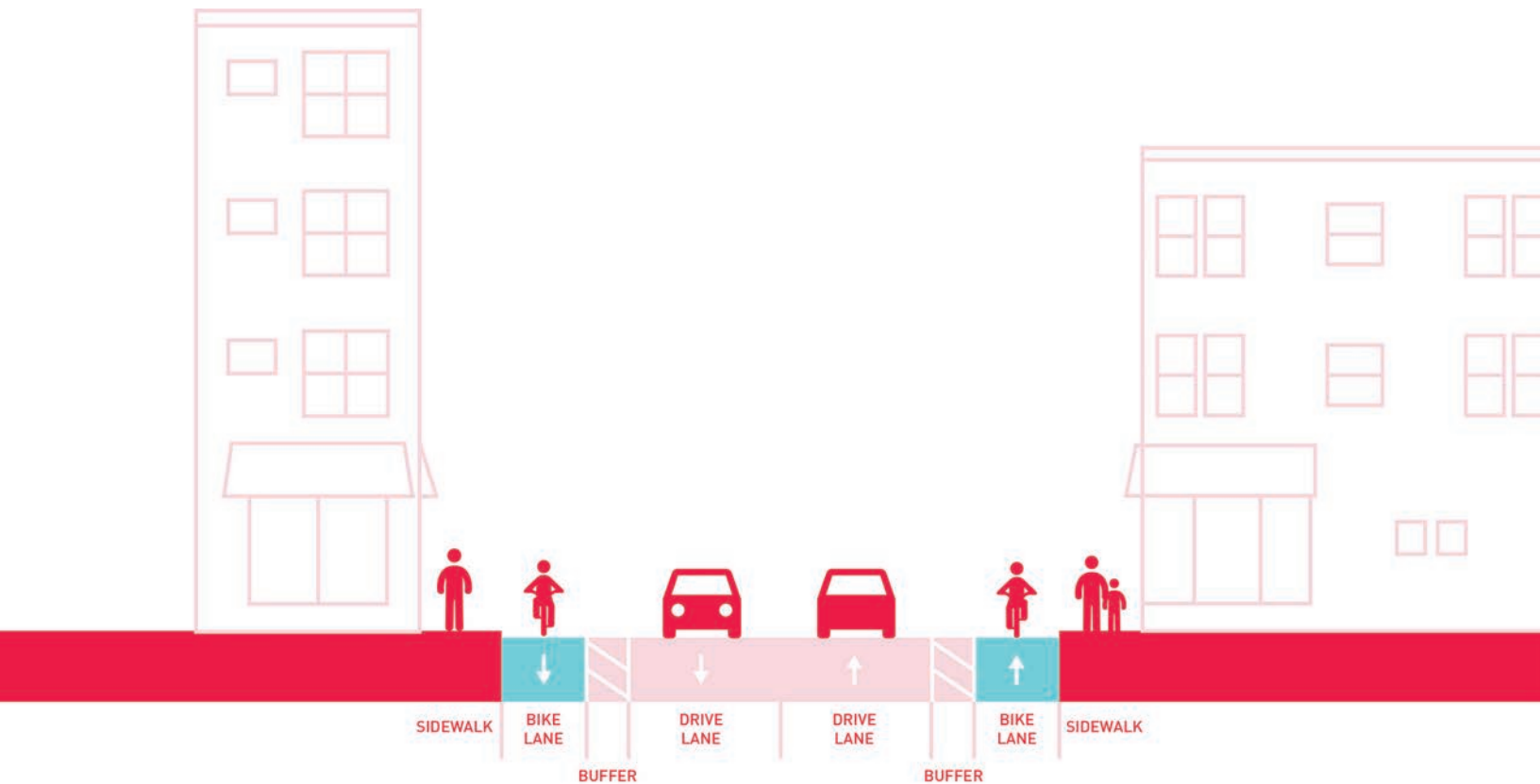
Design C: Buffered Bike Lanes

Installed on the following corridors: Forsyth Street, Poplar Street.

Buffered bike lanes are conventional bike lanes with a designated buffer space separating the bike lane from the adjacent travel lane. For the Macon Connects project, we used a three-foot buffer zone.

Benefits:

- increases distance between vehicles and cyclists
- provides passing space for cyclists
- keeps cyclists outside of the door zone



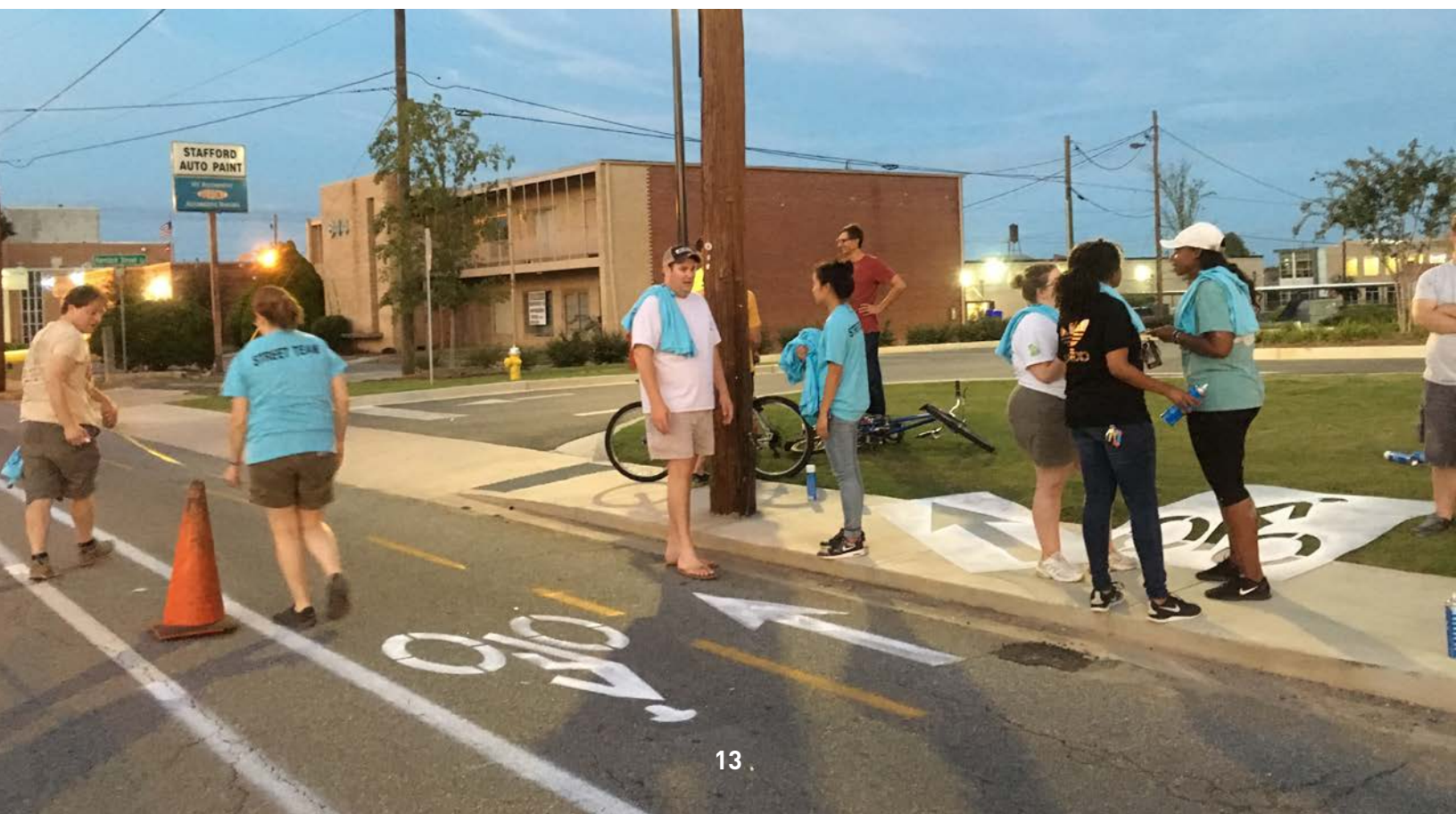
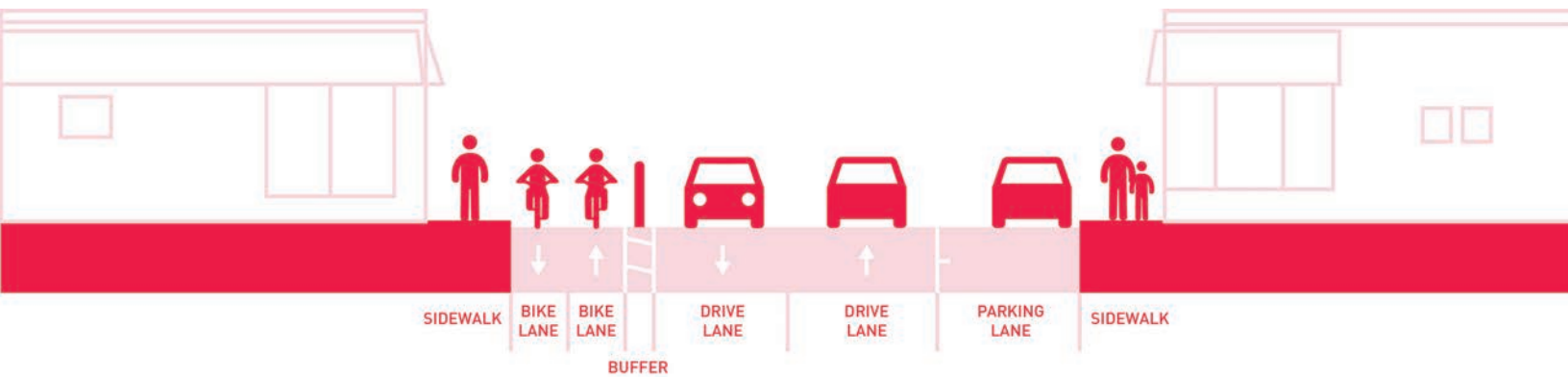
Design D: Two-Way Cycle Track

Installed on the following corridors: Second Street

Two-way cycle tracks are also known as two-way or bidirectional protected bike lanes. They allow bike movement in both directions on one side of the road. Bollards physically separate cyclists from vehicles moving in the travel lane.

Benefits:

- provides contra-flow movement
- prevents dooring
- eliminates risk of collisions with overtaking vehicles



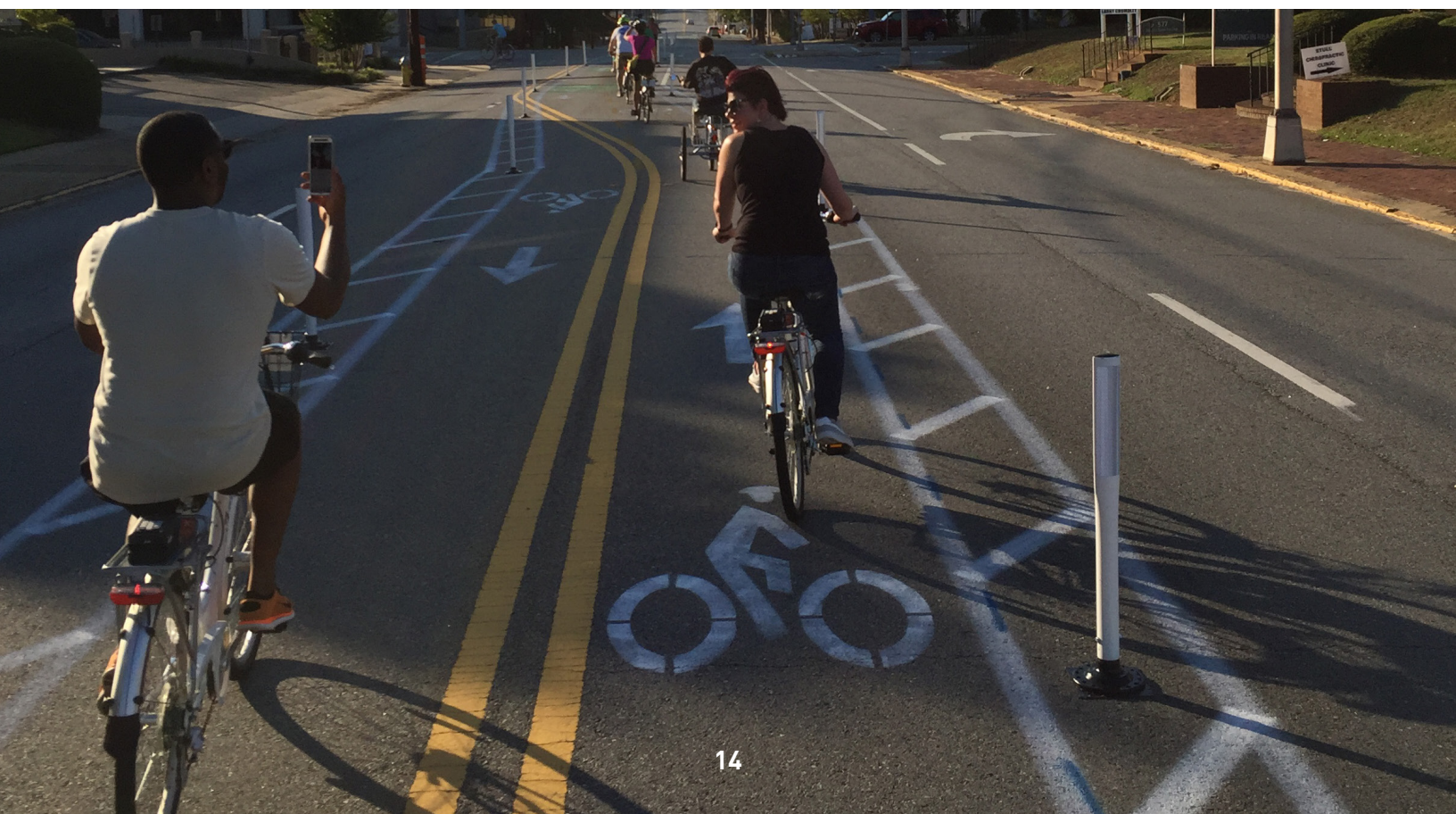
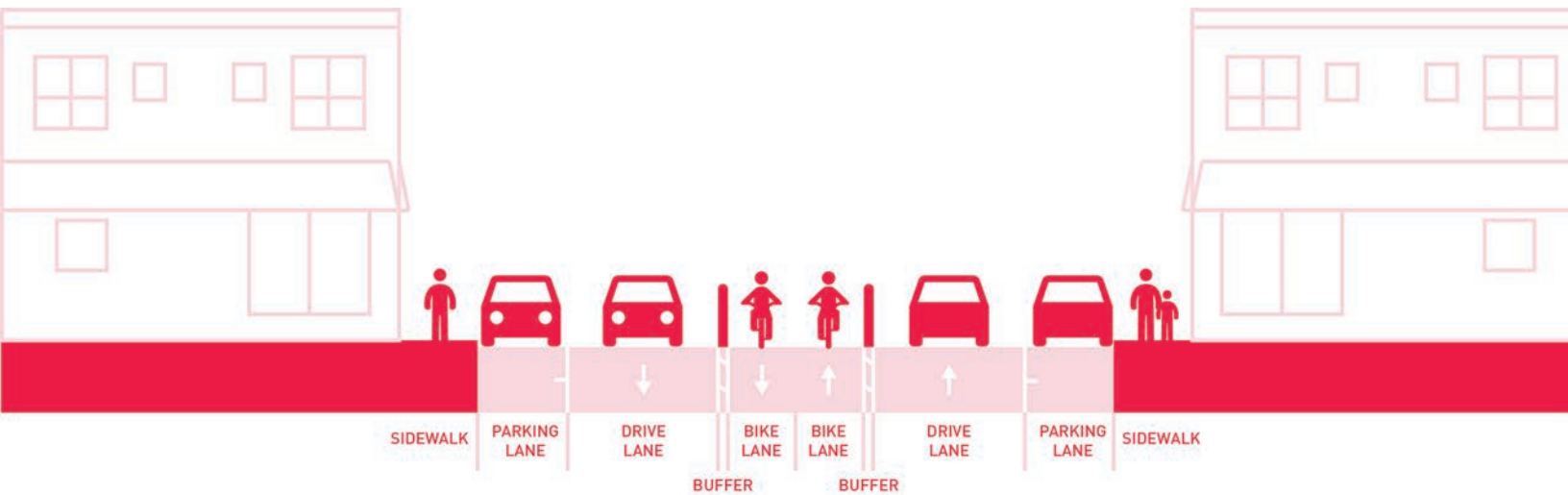
Design E: Two-Way Median Cycle Track

Installed on the following corridors: Walnut Street, Third Street.

Two-way median cycle tracks are similar to two-way cycle tracks, only they are located in the median of a road, with vehicular travel lanes located on both sides of the cycle track. Bollards physically separate cyclists from vehicles in the travel lane.

Benefits:

- provides contra-flow movement
- prevents dooring
- eliminates risk of collisions with overtaking vehicles



3.4

The Ingredients

Check out what went into our recipe for the world's largest pop-up bike network.

90 volunteers

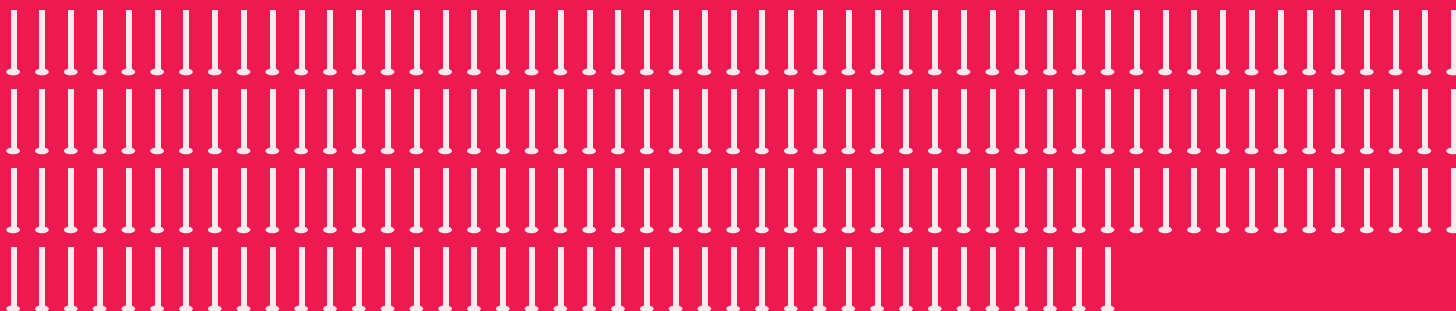


x 280
volunteer hours
over the course
of 4.5 days

5 paint striping machines



188 bollards





x 470
cans of white
athletic striping
paint



x 73
cans of yellow
athletic striping
paint

50 gallons (12.5 cans) of green tempera paint



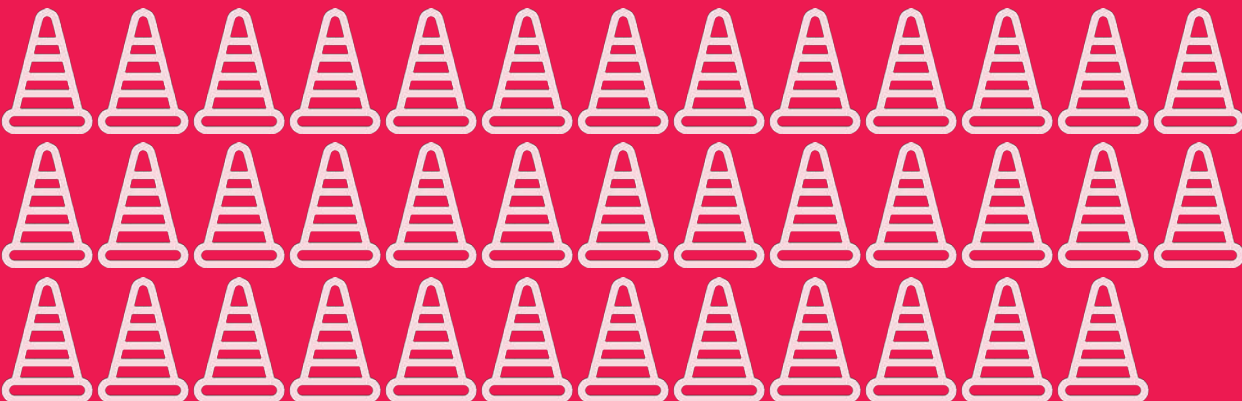
3 golf carts



1 cube van



35 pylons



3.5

The Data Collection

Block Party Engagement Booth

8 80 Cities set up an engagement booth on both days of the Macon Connects block party to gather feedback about the pop-up bike lanes from passersby. We used eye-catching, colorful poster boards and asked surveyees to place sticky dots under their answers and to write ideas on sticky notes. We received survey responses from a total of 68 people.

The block party took place in a one-block section of the 3rd Street median (between Cherry St. and Poplar St.) as well as the adjacent southbound driving lanes. Live music, local vendors, art, games, a pop-up beach, hammocks, and playful street furniture enlivened the area and drew a diverse crowd of nearly 500 people. The block party not only celebrated the pop-up bike lanes but also tested out ideas for activating the 3rd Street median park.

Roving Data Collectors

Three volunteers patrolled the pop-up bike lane network with large-format surveys to interview passersby about their thoughts on the pop-up bike network. They also recorded demographic data of bike lane users, using 15-minute sample intervals at various points along the bike network.

Bike Counters

Our team installed four pneumatic tube bicycle counters at key locations along the route. The bike counters captured two types of data:

- 1) Bike counts for 29 days when there were 0 miles of pop-up bike infrastructure on the street, including the two days prior to the Street Makeover and the 27 days immediately after the Street Makeover.
- 2) Bike counts for the 7 days of Macon Connects Street Makeover, when there were over five miles of pop-up bike infrastructure on the street

Online Survey

Those who did not encounter our team at the Block Party engagement booth were encouraged to fill out an online survey. The survey was promoted by all local partners through their social media networks. In total, we received 115 online responses. The online survey mirrored the content of the large-format survey boards we used at the in-person engagement at the Block Party.





4

Findings

- 4.1 If you build it, they will ride.
- 4.2 There is strong support for investing in a bike network.
- 4.3 KISS: Keep it simple & safe.
- 4.4 Biking creates new opportunities to enjoy the city.

4.1

If you build it, they will ride.

Based on feedback throughout the MAP and Macon Connects community engagement process, there is strong community support for investing in a network of safe bike infrastructure. Looking at the drastic increase in bike counts during Macon Connects Street Makeover, we know for a fact that Macon residents will take advantage of a safe, connective bike network if it's available to them.

A. Average daily bike counts in Downtown Macon during Macon Connects were 854% (9.5 times) higher than “normal levels”.

Avg. daily bike counts **without** pop-up bike network:

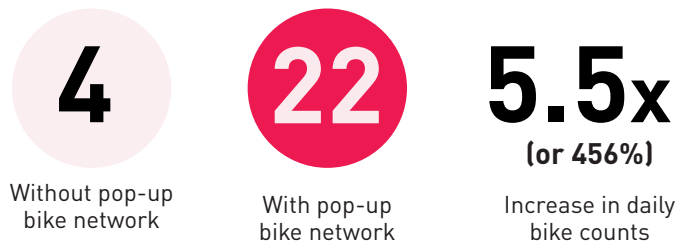


Avg. daily bike counts **with** pop-up bike network:

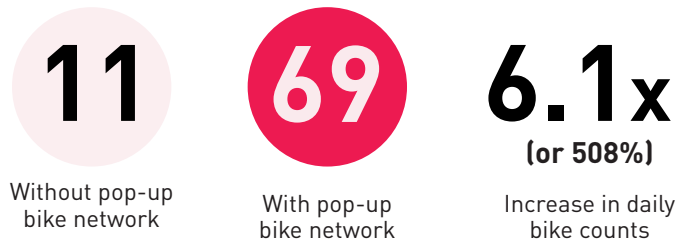


B. Daily bike counts at specific locations increased between 456% (5.5 times) and 1476% (15.5 times).

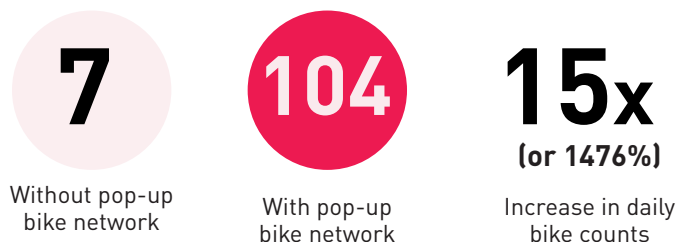
**Average Daily Bike Count
Second Street, at Cherry Street Lane
Treatment: Painted Bike Lane**



**Average Daily Bike Count
Second Street, at Hemlock Street
Treatment: Two-way Cycle Track**



**Average Daily Bike Count
Walnut Street, at Second Street
Treatment: Two-way Median Cycle Track**

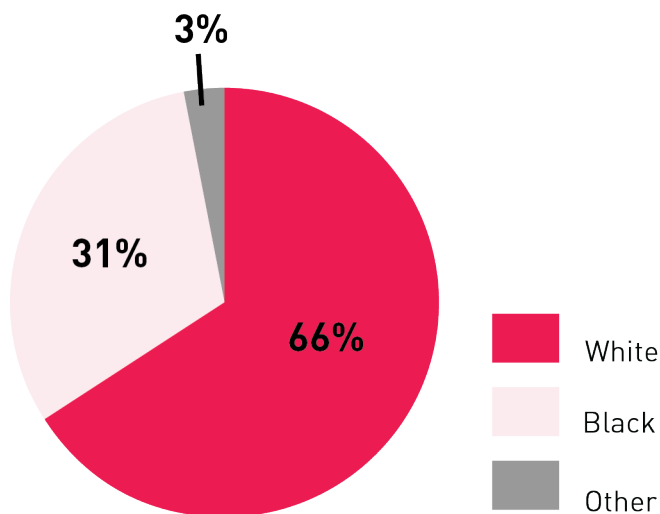


Average Daily Bike Count Forsyth Street, at Spring Treatment: Buffered Bike Lane



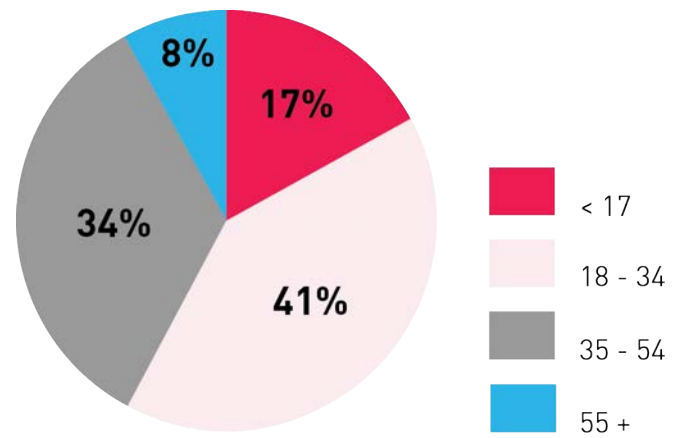
D. Riders who tested out the bike lanes were predominantly white, between the ages of 19-54, and nearly evenly split between genders.

Racial Demographics of Users



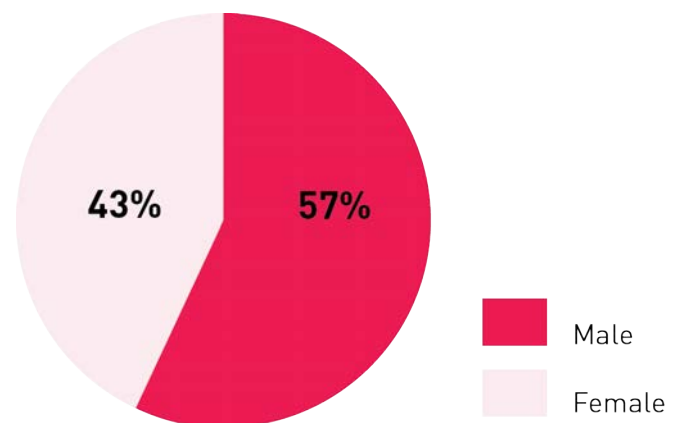
According to the 2010 US Census Data, Macon is 52% black, 43% white, and 5% other. During Macon Connects, white cyclists were therefore over-represented by over 23 percentage points, whereas black cyclists were under-represented by 21 percentage points. This data reveals that there needs to be more effort dedicated to ensuring that bike infrastructure links to different neighborhoods and connects residents of all racial backgrounds.

Age Demographics of Users



Those in the "55+" and "17 and under" age categories are among the two smallest categories of users. While this is not surprising, the ideal bike network should appeal to those across the age spectrum. Given that Macon's cycling culture is in its nascent stages, we can assume that these two groups will increasingly take up biking as safe and connected bike infrastructure gets built.

Gender Demographics of Users



The percentage of females who ride bikes is a key indicator of how safe and comfortable bike infrastructure in a city is. For the Macon Connects Street Makeover, women make up a little less than half of the user group. While there is still room to improve, this is a positive indication for the pilot project.

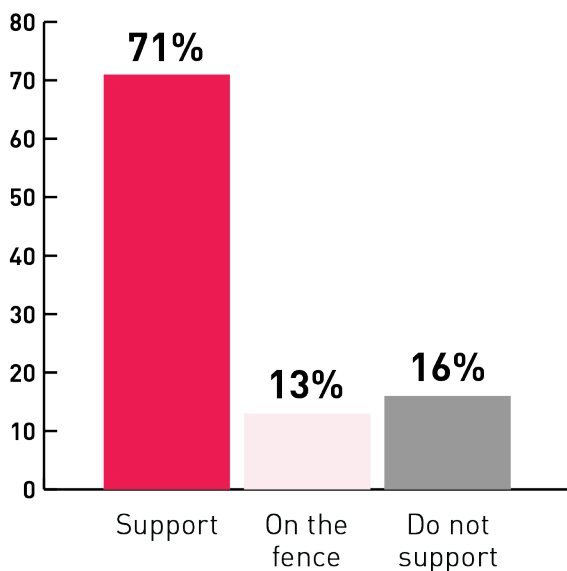
4.2

There is strong support for investing in a bike network.

Throughout the Macon Connects engagement process, residents expressed that they lacked mobility options and that there was little connectivity between Macon's various neighborhoods and destinations. In the "Macon Connects: The People Have Spoken!" report, 75% of all respondents would consider switching transportation modes if those options were made viable and convenient. 84% reported that they support increased public spending on walking and cycling even if it meant spending less on driving infrastructure. When asked about the challenges of commuting in Macon, the number one theme that arose, with 30% of all responses, was poor walking and biking facilities. Traffic-related gripes came in second, with 20%.

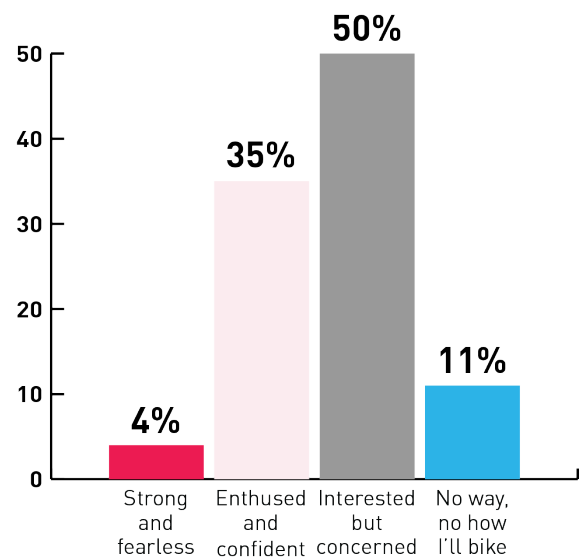
We wanted to revisit attitudes towards biking once residents were able to see the pop-up bike network in action. The results are in and while there is a small but vocal minority who opposes bike infrastructure, a strong majority supports it.

A. 7 in 10 respondents support building a protected bike network in Macon.



B. Half of respondents are interested in biking but are not comfortable riding on the street.

Q. How would you describe your level of comfort with biking on city streets?

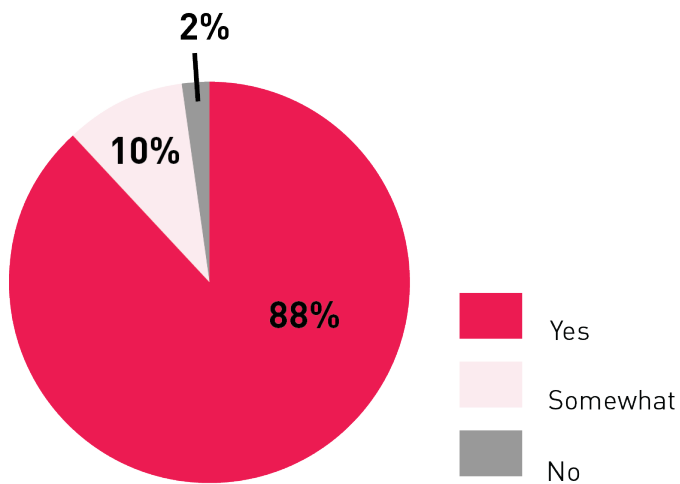


These four categories were first coined by Portland's bike chief Roger Gellar more than a decade ago but is now a common way to think about cycling populations. Those in the "strong and fearless" category are very comfortable riding on city streets without any bike lanes. "Enthusied and confident" folks are comfortable on streets striped for cyclists while those who are "interested but concerned" were less comfortable. "No way, no how" are those who are not interested in biking whatsoever.

Typically, an American city will have one third of people in the "no way no how" category. We can assume that this population is under-represented in our pool of respondents by approximately 20 percentage points.

C. The pop-up bike network got people excited about biking.

Q. Are you inspired to ride more after experiencing the pop-up bike network?



Although the pop-up bike lanes were only up for one week, it was an encouraging event that built enthusiasm for cycling among those who were able to experience it.



4.3

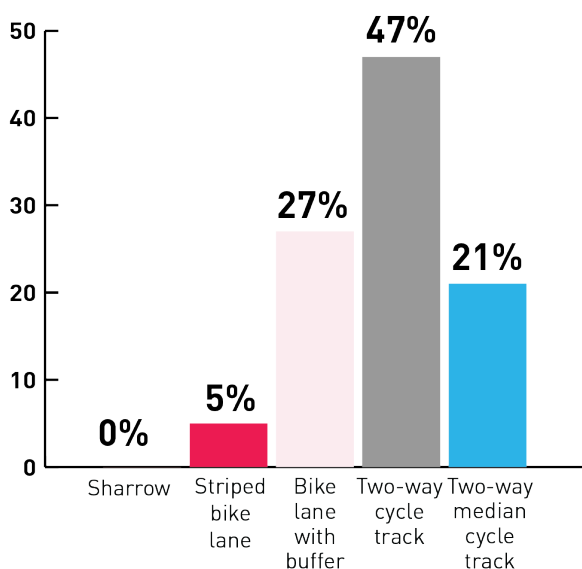
KISS: Keep it simple & safe.

Macon residents have little experience with on-street bike infrastructure. Most cyclists ride recreationally in parks or trails, rather than on the street to get from A to B.

Through Macon Connects, many residents were able to try out on-street bike infrastructure for the first time. Our findings demonstrate that the vast majority of respondents prefer bike lanes with buffer zones and/or bollards that are clearly separated from adjacent vehicular lanes. Given that cycling culture in Macon is still in its nascent stages, both drivers and cyclists prefer more simple and intuitive bike lane designs.

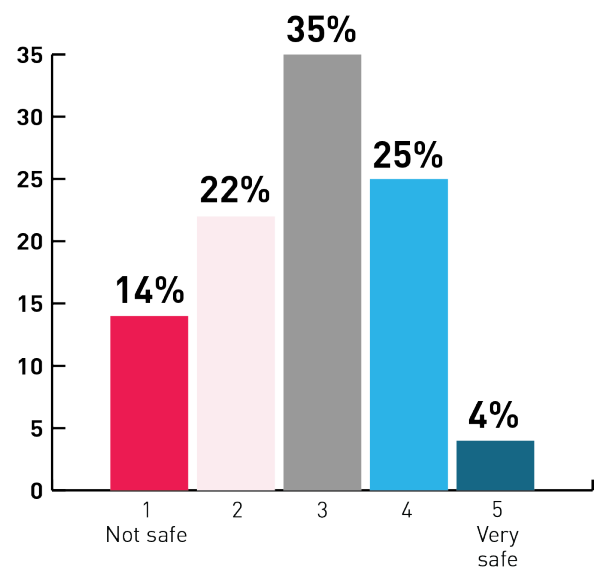
A. 95% of respondents preferred bike infrastructure with buffers and/or bollards.

Q. Which type of bike infrastructure provided you with the safest and most enjoyable cycling experience? Choose one.



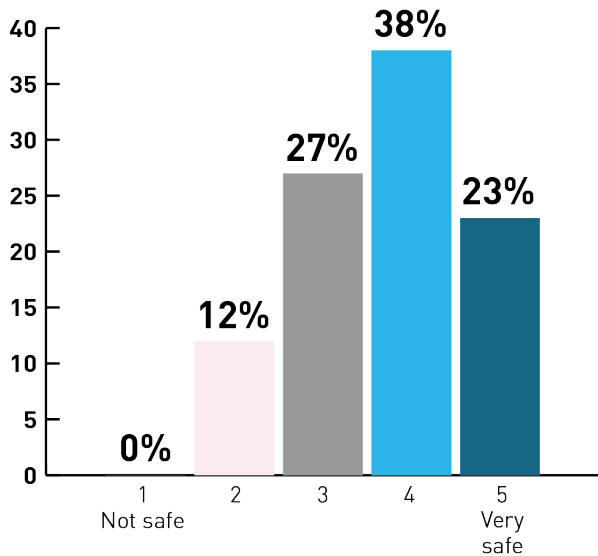
B. Sharrows are the least effective bicycle infrastructure and provide safety and comfort for only a small minority. Buffered bike lanes and cycle tracks located next to the curb are ideal for most.

Q. How safe did you feel while biking on a road with sharrows? (College St., Oglethorpe St.)



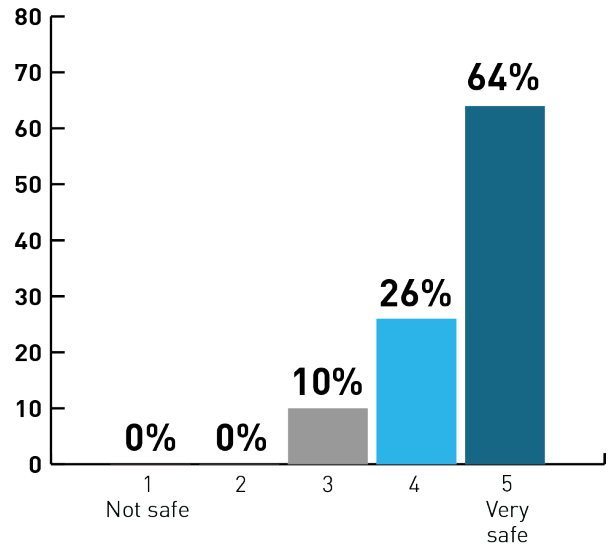
If only 4% of respondents report feeling "very safe" on sharrows. Adding more sharrow's on Macon's roads will do little to increase cycling uptake.

Q. How safe did you feel while biking on a road with painted lanes? (Cherry St., 5th St.)



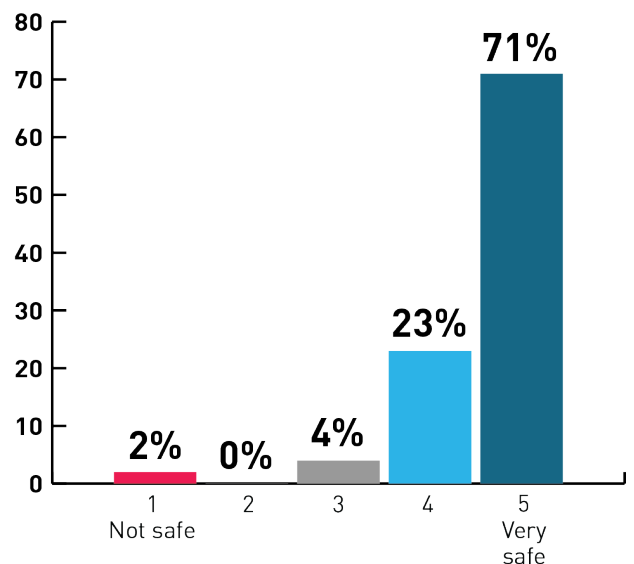
It should be noted that not all painted bike lanes are created equally. For example, the painted lane on Cherry street was located in between the angled parking and the vehicular travel lane. This design ended up being unsafe. Cars backing out of their parking spot were not able to clearly see cyclists approaching in the bike lane. The painted bike lane on 5th Street was safer; it was on the outer edge of the travel lane on a street with no parking. Overall, cyclists felt safest when bike lanes were located directly next to the curb. They felt less safe when the bike lane was located between the parking lane and the travel lane.

Q. How safe did you feel while biking on a road with buffered bike lanes? (Poplar, Forsyth)



Buffered bike lanes provided bike riders with a much greater sense of safety, with the majority of respondents rating it "very safe". One-way buffered bike lanes are relatively easy to navigate for beginner cyclists and allow room for cyclists to safely overtake one another.

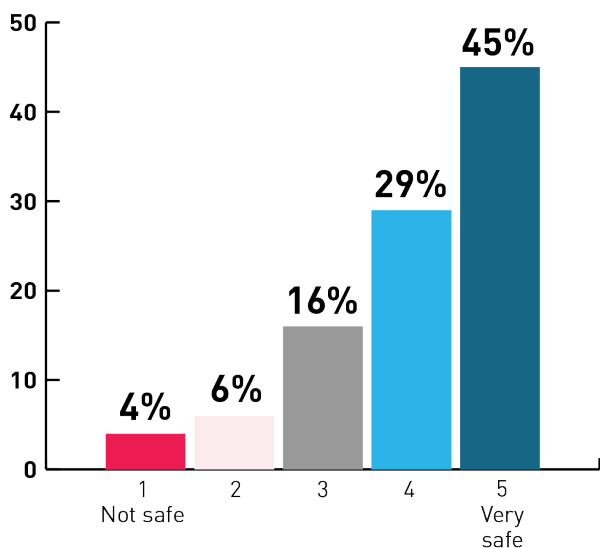
Q. How safe did you feel while biking on a road with a two-way cycle track? (2nd St.)



Buffered bike lane on Poplar St.

Of the five bikeway designs, the two-way cycle track received the highest rating for safety. A total of 94% of respondents rated it as "safe" or "very safe". The width of the cycle track and the use of bollards made cyclists highly visible to all road users.

Q. How safe did you feel while biking on a road with a two-way median cycle track? (Walnut St., 3rd St.)



While 74% of users rated the two-way median cycle track as either "safe" or "very safe", this particular design drew the most complaints from drivers and nearby businesses. Of all the bike lanes we tested out, it was the least intuitive design for drivers and confused those who were trying to make left or U-turns onto the opposite side of the road. So while the majority of cyclists rated this design as safe, it was the most controversial among non-cyclists.

C. Both those who drive and those who bike want the bike lanes to be safer and more consistent.

Q. Do you have any other comments about the pop-up bike lane?

Top 7 Themes from Responses:

"I support it! Make the lanes permanent."
22%

"The lanes are confusing and inconsistent."
22%

"It's bad for Macon. Remove the lanes."
16%

"The lanes should be more visible and protected."
12%

"I support it, but only if it better accomodates all road users."
12%

"Macon drivers and cyclists need more education and awareness."
10%

"Expand the bike network to other areas."
6%

While there was a lot of support for the pop-up bike lane network, we also received valuable constructive criticism about the design of the lanes.

We tested five different types of bike infrastructure to get feedback on which might best suit Macon's streets. At the end of it all, many drivers and cyclists expressed that they would have preferred a more consistent and straightforward design.

"The bike lanes are wonderful. I enjoy riding downtown and if the bike lanes are there I would get my children to go also."

"Downtown has enough traffic congestion. I also do not think adding those bike lanes are going to encourage that many more people to ride a bike downtown. Most of the people working downtown live too far out to ride a bike."

"I was pleasantly surprised that the lanes did not affect my driving while downtown. And biking around town was very convenient. The sharrows did not seem to help at all. Drivers ignored the arrows, but the lanes were very effective. It was a great experience. Thank you."

"So many people were just driving through [the bike lanes] and not aware. I don't think Macon drivers are ready for this. I don't feel it is safe for bikers until drivers are educated more."

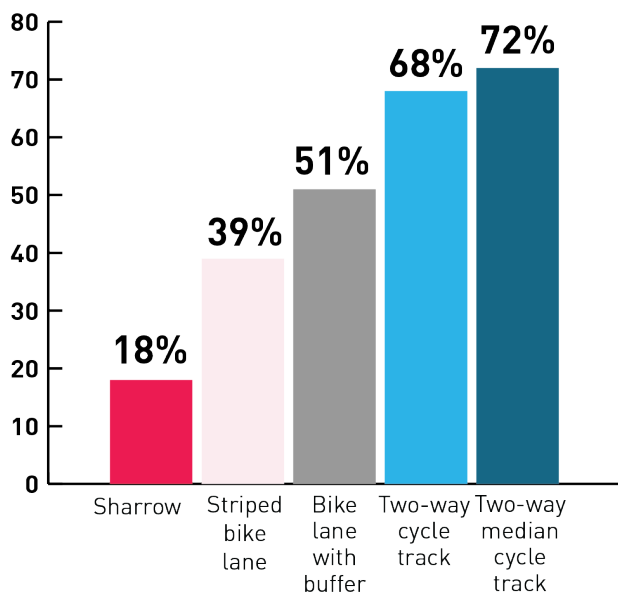
4.4

Biking creates new opportunities to enjoy the city.

Many of those who tested out the bike lanes experienced using on-street bike infrastructure for the first time. The pop-up bike lanes also provided them with an opportunity to slow down and pay closer attention to their surroundings. The majority of cyclists reported that they noticed new businesses and traveled to neighborhoods that they normally do not visit.

A. For many Maconites, the pop-up bike network allowed them to try out on-street bike infrastructure for the first time.

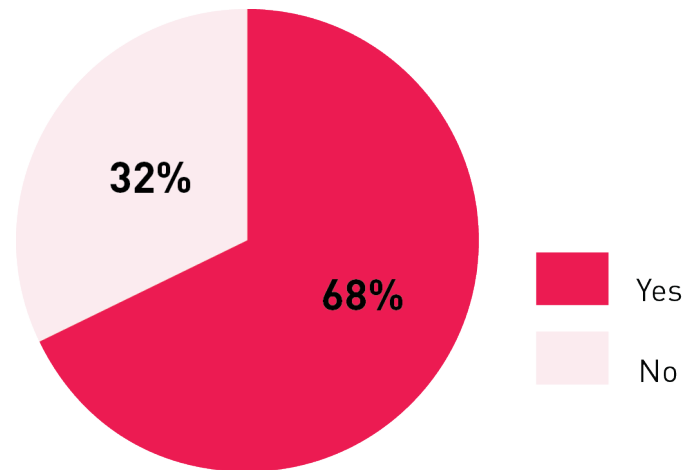
Q. Which bike infrastructure did you try for the first time, thanks to Macon Connects?



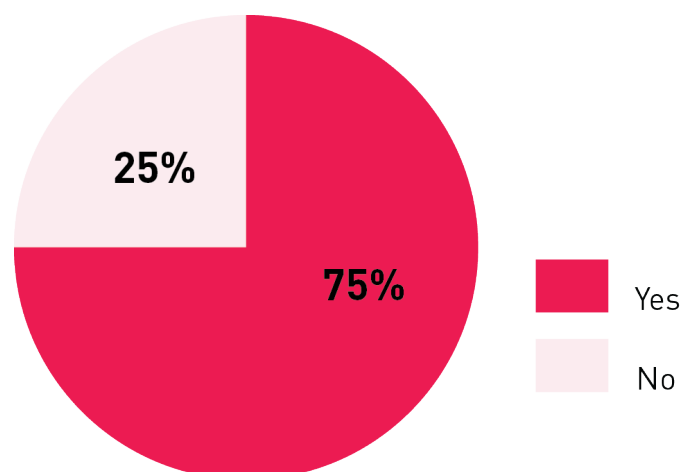
18% and 39% of riders had never rode on streets with sharrows and striped bike lanes respectively, the most basic of all bicycle markings. This suggests that Macon Connects compelled recreational cyclists onto the road to safely experience biking on downtown streets for the first time.

B. A bike network helps connect people to places they normally would not go and highlighted local businesses.

Q. On your bike ride, did you visit or see an area that you don't typically go to?



Q. Did you notice any new shops or amenities on your bike ride along the pop-up bike lane network?



5

Recommendations

- 5.1 Start with a downtown minimum grid.
- 5.2 Prioritize safety and consistency.
- 5.3 Continue to educate and engage the public.
- 5.4 Develop metrics and set goals for cycling in the city.

5.1

Start with a downtown minimum grid that connects people to popular destinations.



After many years of disinvestment and suburbanization, Downtown Macon is in the midst of a resurgence, with residents, businesses, and jobs returning to the urban core. It is now the center of public life where many well-attended events and festivals take place. It is the site of the city's music, restaurant, and bar scene. It is also home to many social service agencies and churches that provide meals, shelter, and programs for those who need it most.

As part of the Macon Connects Ideas Festival, we asked residents "What are your favorite places to visit in Macon?". 70% of responses were places located within the urban core. Given that more and more people are visiting, accessing services, and living in the urban core, it makes the most sense to situate the city's first bike network in the urban core.

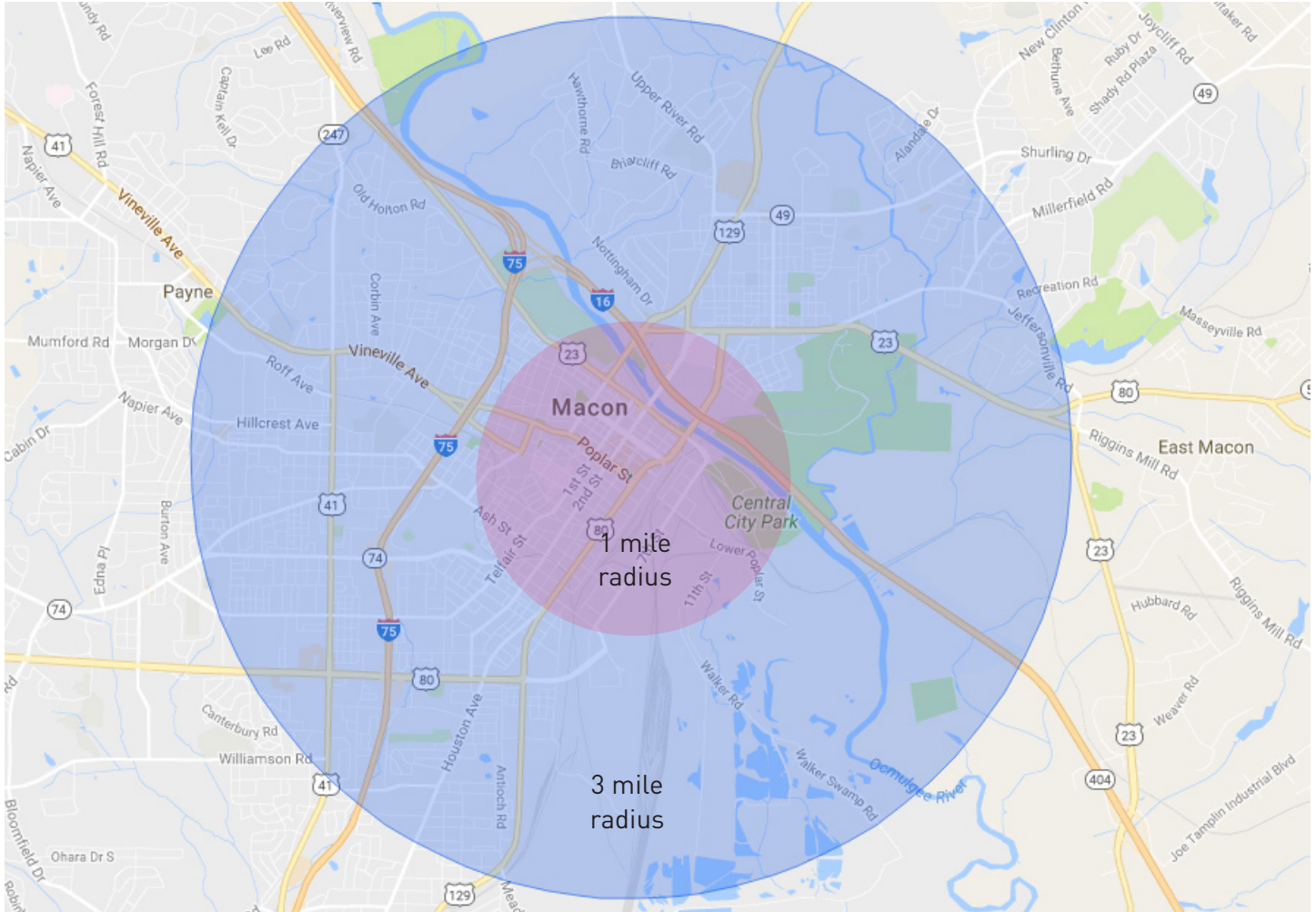
A. At the very minimum, the bike network should encompass a "one-mile radius" around the city center.

The Macon Connects pop-up bike network used a one-mile radius to define the boundaries of our minimum grid. Keep in mind that a one-mile bike ride would take the average person 5-6 minutes to complete.

According to the 2010 US Census, the number of residents living within the one-mile radius of the intersection of 3rd Street & Cherry Street (arguably the heart of Downtown Macon) is just over 4,300.

Also captured in this one-mile radius are popular destinations including: Downtown restaurants, Navicent Health campus, Tattnell Square Park,

**Figure 1. 1 mile and 3 mile radius around Macon city center
(3rd Street & Cherry Street intersection)**



Mercer University, Coleman Hill Park, Washington Memorial Library, and the Ocmulgee Heritage Trail. If the bike network were any smaller, cyclists would lose out on safe connections to key destinations.

B. Remove 5th Street from the minimum grid route and include Martin Luther King Boulevard instead.

Based on the results of Macon Connects, it is recommended that all of the corridors included in the pop-up bike network should be included in the future permanent minimum grid, with the exception of the 5th Street corridor.

5th Street, between Oglethorpe to Walnut, primarily consists of large, open industrial lots. Meanwhile, cyclists typically prefer riding on paths that offer either beautiful natural scenery or a consistent street wall, while 5th Street provides neither.

Unless the land use along this corridor changes, it is much more appropriate to put a protected bike lane on Martin Luther King Boulevard. While it is a state road and would require a much longer bureaucratic process to reconfigure, Martin Luther King Boulevard is better integrated with the urban core, has more destinations, directly links to the Ocmulgee Heritage trail, and would provide cyclists with a much more enjoyable biking experience.

C. Expand the network to encompass a "three-mile radius" and connect to ten times the number of residents.

A bike network that spans roughly over a one-mile radius of the city center is the smallest recommended size of Macon's first bike grid. At this size, it does a good job of connecting destinations within the urban core to one another but fails to reach many residential neighborhoods that lie just outside the urban core.

However, once the radius of the minimum grid expands to three miles, the capture area now includes many more residential areas, including Vineville, College Hill, and parts of East Macon. According to the 2010 US Census, the number of

residents living within a 3-mile radius of the 3rd Street & Cherry Street intersection is over 40,000 people, almost ten times the number of residents who live within a 1-mile radius of the same intersection.

This expanded 3-mile radius also captures popular destinations such as Amerson Waterworks Park, Rosehill Cemetery, and Ocmulgee National Monument Park. Keep in mind that a 3-mile bike ride would take 15-18 minutes to bike, a manageable time and distance for the average cyclist.

It is our recommendation that the minimum grid, at the outset, encompass this three-mile radius in order to reach more residential neighborhoods and increase the likelihood of cycling uptake.

5.2

Prioritize safety and consistency for all road users.

For the sake of experimenting, the Macon Connects team installed five different types of very different bike infrastructure along the pop-up bike network. In reality, this is not a best-practice.

While certain corridors are unique and might require context-specific treatments, for the most part streets in Macon are very similar to one another and would benefit from a more consistent treatment when it comes to bike lanes.

A. Place bike lanes next to the curb.

Given that very little bike infrastructure currently exists on Macon's streets, any new bike infrastructure that is installed should be intuitive for all users, including drivers, cyclists, and pedestrians.

The simplest and safest type of bike lane to install on Macon's streets is the one-way cycle track, located directly next to the sidewalk curb. When the bike lane is located directly next to the curb, cars do not interfere with the bike lane when they are attempting to park.

Due to some last minute logistical issues, the Macon Connects team was not able to test out the one-way cycle track on Macon's streets. However, user feedback tells us that drivers and cyclists were most comfortable when bike traffic flowed in the same direction as vehicular traffic.

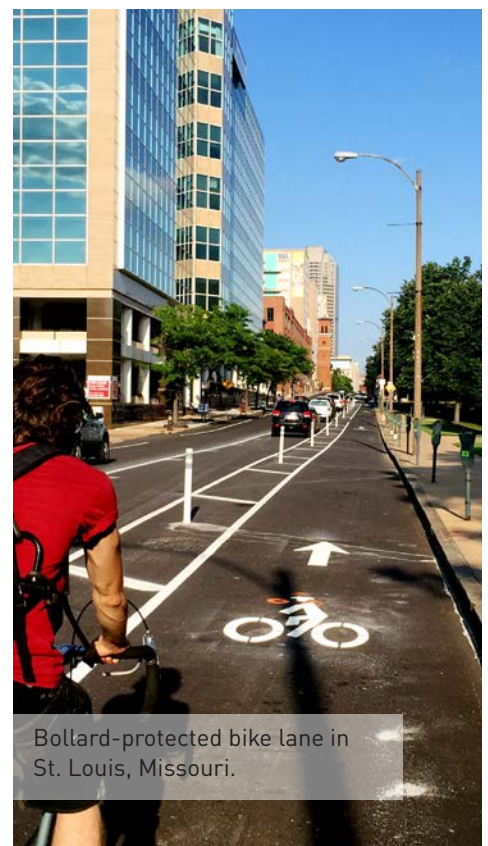
The two-way median cycle track was the most confusing for drivers and was the most unpopular among nearby businesses who claimed that their customers were unable to turn into their parking lots from the opposite side of the street.



Planter-protected bike lane in Vancouver, Canada



Patio-protected bike lane in New York City, New York



Bollard-protected bike lane in St. Louis, Missouri.

B. The more protection, the better.

95% of cyclists preferred bike infrastructure that had either a buffer zone or bollards separating them from vehicular travel lanes.

During Macon Connects, corridors that had bollard-protected bike lanes were the most popular, accounting for 80% of all bike rides.

Moreover, 12% of respondents suggested that there should have been more protection throughout the entire Macon Connects pop-up bike network, such as on College Street and Oglethorpe Streets where there were no delineators.

Having a raised curb, bollards, or planters that physically separate cyclists from vehicular travel lanes increases cyclist visibility on the road. Protected bike infrastructure will more likely entice beginner cyclists onto the road, whereas non-protected infrastructure (such as striped bike lanes) will only serve to reassure the small minority who are already comfortable biking on Macon's streets.

C. To maximize the appeal of the minimum grid, consider reducing speed limits and implementing other traffic calming measures.

Even if a bike lane is protected with delineators, if it is located on a high-volume, high-speed road, with few trees or buildings, cyclists may be deterred from riding on it.

In order to increase the appeal and usage of a bike lane that's located on an expansive corridor, consider other streetscape improvements that would make it a more pleasant bike ride, such as trees for shade, traffic medians, and other traffic-calming designs. These measures, in combination with a reduced speed limit, would greatly increase the appeal and safety of cycling on wide corridors.



Bike lane protected by back-angled parking on Bay Street in San Francisco, California.

SFMTA
Municipal
Transportation
Agency

BAY STREET ROAD DIET AND SEPARATED BIKEWAY

How to use the new and improved
Eastbound Bay Street

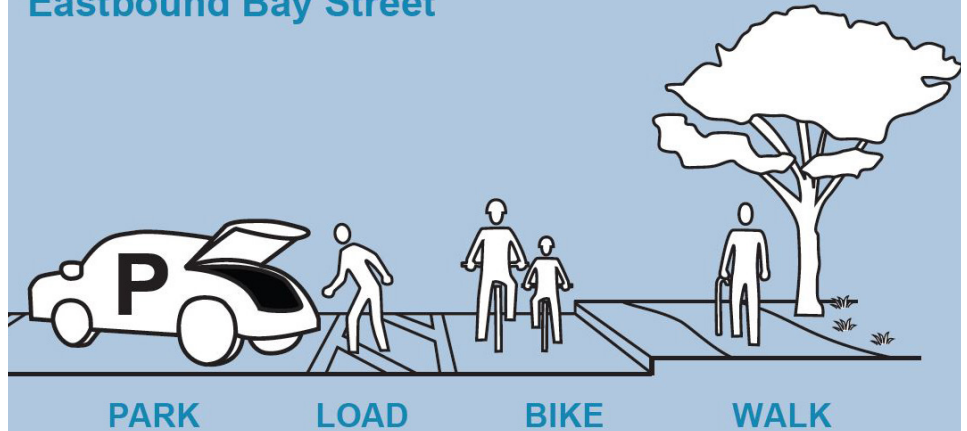


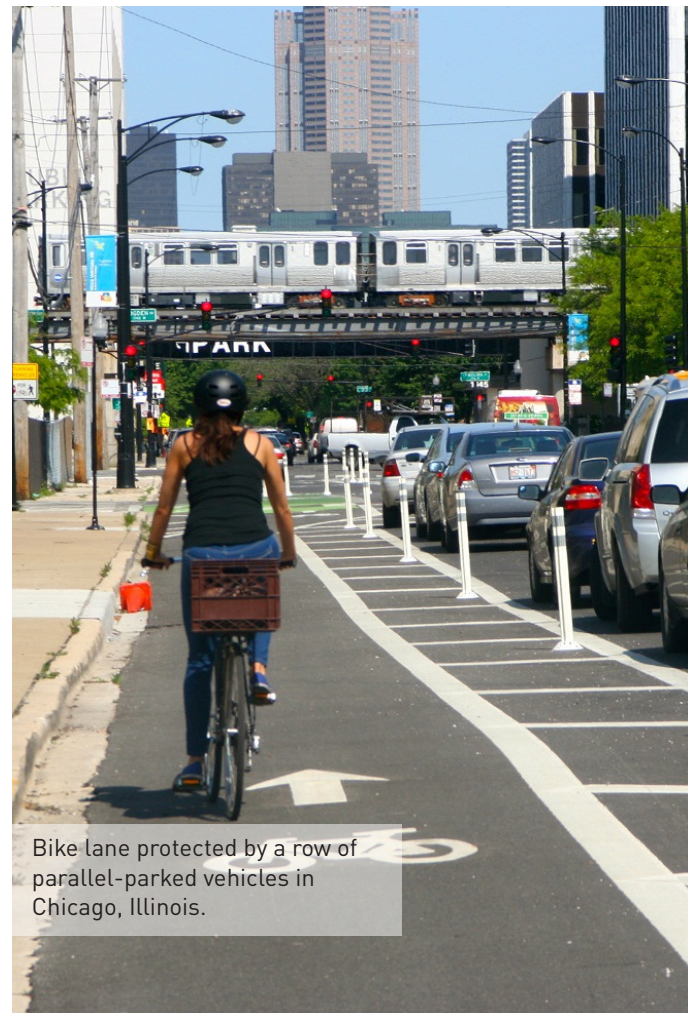
Diagram posted along Bay Street
in San Francisco demonstrating
how to use the new street.

www.sfmta.com/baystreet

D. Use parking as protection.

Many of Macon's streets are overbuilt and could potentially accommodate travel lanes, parking lane(s), and a protected bike lane. Throughout Macon, most of the travel lanes measure 11-13 feet wide. These could be reduced to 10 feet in order to accommodate new bike facilities. According to the National Association of City Transportation Officials (NACTO), 10-foot lanes are appropriate in urban areas and increase safety on a street without negatively impacting traffic operations.

It is best-practice to place the bike lane directly next to the curb, with the row of parked cars serving as a protective barrier between the vehicular travel lane and the bike lane. This can be done with both angled and parallel parking configurations, as seen in the above and adjacent images.



Bike lane protected by a row of
parallel-parked vehicles in
Chicago, Illinois.

5.3

Continue to educate and engage the public.

Even though the MAP and Macon Connects planning process is over, that shouldn't spell the end of engaging and educating the public about improving mobility and connectivity in Macon.

A. Grow ridership among key target groups.

Macon bike ridership is very low. According to the American 2014 American Community Survey, only 45 Macon residents (0.0003% of the population) reported that they commuted to work/school by bike.

In anticipation that a minimum grid will be built, targeting the following groups with incentive programs and educational/promotional materials will help ensure that the bike network will be well-used upon installation.

People who live and work/study in the urban core.

While this group is currently small, they are steadily growing in number. This group has the most potential to adopt biking as a form of commuting. The relative compactness of Macon's urban core makes it easy to traverse by bike.

Mercer University students

Students living on campus can better access downtown entertainment, bars, and restaurants with a safe and connected bike network. The university already operates Bear Bikes, an affordable bike share program for students. During orientation, there should be greater promotion of the benefits of biking for incoming university students.

People who do not own private vehicles.

There is a small percentage of people in Macon who only have the option of walking or taking the bus, both of which are extremely time-consuming in a city as sprawling as Macon. An educational/promotional

campaign by the MTA can focus on how transit users can reduce their travel time by incorporating biking into their commute and taking advantage of the bike racks on the bus.

Large employers located in the urban core.

There is a huge opportunity to improve linkages between large employment centers, such as Coliseum Medical Center and Navicent Health, and downtown. Employee incentive programs to promote biking and healthy living, or travel demand management programs would go a long way to increase the profile of cycling in Macon.

Existing recreational riders

The Ocmulgee Heritage Trail is popular among those going for recreational walks and bike rides. With good wayfinding and on-street bike infrastructure, it would be easy to link this group of cyclists to the rest of downtown Macon so that they could more easily incorporate shopping and dining into their itinerary.

B. Find businesses that will champion safer, more walkable and bikeable streets.

Numerous studies from different cities across North America have proven that bike lanes and businesses have a symbiotic relationship. Main streets that have bike lanes installed on them often experience increased sales.

Local businesses and members of the Macon-Bibb Chamber of Commerce should continually be consulted when it comes to improving mobility in Macon. Having business owners serve as champions for bikeability is an extremely effective way to get other businesses and stakeholders to understand how bike lanes can benefit the local economy.

5.4

Develop metrics and set goals for cycling rates.

The world's best cities for cycling, including Copenhagen, Amsterdam, and Portland, all conduct rigorous measurements and evaluations to better understand how cycling is faring in their respective cities.

In order to make a compelling case for expanding cycling infrastructure in any city, it's necessary to have good data to back it up.

A. Conduct regular bike counts and attitudinal surveys.

For Macon Connects, some of the most compelling data came from the pneumatic tube bike counters that we rented from Ecocounter. The data showed that cycling increased by 854% during the time the pop-up bike network was available to the public, as compared to "normal" levels.

Bike/pedestrian counters can range from \$2,600 to \$20,000 depending on the level of sophistication. The cheapest version, the pneumatic tube counters, can be installed and uninstalled in a location in 15 minutes or less. For a city the size of Macon, having one or two counters that could be moved around to different locations would allow city staff to make better data-informed decisions.

Moreover, conducting annual surveys to track how local attitudes towards cycling and travel behaviors change over time, can also help decisionmakers better serve their constituents.

B. Set a mode-share goal.

Macon-Bibb County is currently developing a Vision Zero plan which seeks to increase the safety of Macon's streets and reduce traffic-related injuries and fatalities. Part of the Vision Zero planning process will set targets for reducing road fatalities.

In the same vein, Macon-Bibb County would also benefit from setting mode-share goals. According to the 2010 US Census, 95% of Macon residents commute to school or work by car. By setting a target, County staff and Macon-Bibb residents can better assess the county's own performance when it comes to improving mobility options for all people.

Mode share is measured in many different ways, including:

- Percentage of travelers using a particular type of transportation
- Percentage of trips made using a particular type of transportation
- Percentage of miles traveled using a particular type of transportation

6

Resources

Interested in replicating this experiment in your own neighborhood or city?

The Better Block website contains step-by-step tutorials on how to conduct pop-up experiments. There, you can access "recipes" for how to build pop-up versions of various types of public infrastructure including bike lanes, public plazas, and much more. Don't forget to check out Wikiblock, an open-source toolkit of designs for benches, chairs, planters, stages, beer garden fences, and kiosks that can be downloaded for free. Wikiblock designs can be taken to a makerspace where a CNC router (a computer-aided machine) can cut them out of a sheet of plywood. Most products can then be assembled without glue or nails, and used instantly to make a block better.

Better Block Recipes and Wikiblock templates can all be downloaded from:

www.betterblock.org

If you are looking for more ideas about how to make tangible changes in your city, check out 880 Cities' online Doable City Reader containing case studies, stories, and useful how-to information for improving the city you live in.

www.880cities.org/doablecity



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