

Researching Bike Accessibility on the UNC Asheville Campus and in the Community of Asheville, NC

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Abstract

The United States has a major issue with car dependency. Since the middle of the 20th century, the majority of infrastructure in the US has been specifically designed to focus on cars. However, there is a growing movement to provide more options for mobility, and cities like Asheville, NC are part of this movement. This paper specifically looks at the bicycle as an alternative to the car, its benefits, and which cities around the world have embraced biking. I researched the current state of “bikeability” in Asheville, as well as on the UNC Asheville campus, and offer recommendations for both locations. My research was completed using a mixed-methods approach, involving a review of previous literature on the subject of bikeability, interviews with local experts, analysis of best practices and industry standards, and surveys of students and residents of Asheville. The results found that both UNC Asheville and the Asheville community have a long way to go to fully accommodate cyclists. UNC Asheville has several strong points, such as the Campus Recreation Bike Shop and connection to city greenways, but still struggles in comparison to other schools in North Carolina. The city of Asheville is slowly improving with the help of the bike advocacy organization “Asheville on Bikes,” yet still lacks the ridership and infrastructure of a truly bicycle friendly city. Some key recommendations for UNC Asheville include incentives to students, faculty, and staff to bike, and also improved education such as including sustainable transportation material in the curriculum. For the community of Asheville, a major issue is bike network connectivity, building more bike lanes that connect, as well as improving high-quality bike parking in all areas of the city.

1.0 Introduction/Background

In the past 25 years, cycling has increased in many large cities around the world. In cities that did not have an established cycling culture until recently, such as Portland, Oregon, the percentage of bicycle trips increased sixfold between 1990-2015.¹ Still, Portland is nowhere near cities like Amsterdam and Copenhagen, where cycling has been a bigger part of their culture since the 1970s, and where close to 35% of trips are made by bicycle.¹

Safety is an important factor to consider when building cycling infrastructure. Having bike paths or protected cycle tracks where there is separation from car traffic on the street and the path for bikes, as opposed to bike lanes can have a significant impact on cyclist safety. In cities where a major emphasis was put on cycling such as Minneapolis, “cyclist fatalities and serious injuries (requiring overnight hospitalization) per 100,000 bike trips fell from 2000 to 2015 by 79%”.² There are also many things that can be done to increase cyclist safety other than bike paths. Some strategies include cycle superhighways, essentially high-traffic bicycle roadways, the perfect setup for bike commuters, allowing them to travel long distances in a safe, car-free environment. Another important strategy

is comprehensive traffic calming, instituting all kinds of techniques such as speed bumps, tables, and limits, as well as thinner lanes, and more windy streets. There are countless other important strategies that cities can implement that all effectively increase safety, often resulting in slowing down the speed of the car, which is especially important in residential neighborhoods.

Finally, it is important to note that the future of cycling is bright, especially because of two technological advances. The first major factor is the growth of the electric bicycle (e-bike), where global E-bike sales rose from “290,000 in 2000 to 9.9 million in 2005, 30.7 million in 2010, and 35.3 million in 2016”.³ Electric bikes have the power to replace the automobile in a lot of instances, given that they can help with carrying larger and heavier loads, assist cyclists in hilly terrain and they also have a greater appeal to senior citizens. Secondly, bike-share programs are becoming more and more popular, mainly because of their ability to increase the availability of bicycles in a certain area, especially when in proximity to public transportation.

1.1 Health, Safety, and Equity Issues Related to Cycling

It is very important to note that an improvement in cycling infrastructure is a major step forward in solving equity-related issues. While cycling isn’t necessarily accessible to everybody, neither is driving a car. A few populations who are most affected by improved cycling infrastructure include the elderly (65 years and up) who make up 17% of the population, people with disabilities (12%), kids under 16 years of age (15%), women (51%) and importantly, those who cannot afford a car (8%).⁴ Cycling has a great capacity to bring about feelings of freedom and independence, allowing individuals to have more choices over their mobility.

In the United States, the percentage of children who walk or bike to school decreased significantly between 1969 and 1999; the percentage of children who lived within a mile of their school who walked or biked to school fell from 90% to 30%.⁵ This results in children with fewer freedoms, and arguably more dangerous roads, a society that has been “rebalanced” to favor the motorist. Improved bicycle infrastructure also has a very strong correlation with more women riding their bikes. In the United States, the vast majority of cyclists are men, with women making up just 28% of commuters despite being about half of the population.⁶ However, in places where there is significant bicycling infrastructure such as the Netherlands, there are slightly more women on the road than men.¹

In an interview with Troels Anderson, the head of a Dutch cycling organization, Anderson cited data from a 2008 study that found that the average elderly Danish person is 30 times more likely to cycle than their American counterparts. Levels of ridership only start to decrease at age 70, and still for 80-year-olds, 20% of all trips are made by bicycle.⁷ Similarly, people with disabilities who may not be able to drive a car can often have bicycles that are adaptive to meet their mobility needs. With electric assistive technology, hand-powered tricycles, and a wide range of other adaptive bicycles, people with disabilities can get around on their own. We just need the infrastructure to support them.

Additionally, cycling is a far more accessible form of transit for those with low incomes. Bicycle riding is nearly the cheapest form of transport there is, second only to walking. In a 2008 study by the Center for Transit-Oriented Development, they found that the average American spends 19% of their budget on transportation. In especially car-dependent areas, this number increases to 25%.⁸

In Asheville, North Carolina, the average car owner spends \$700 per month on vehicle-related expenses, or \$8,400 a year.⁹ This contributes to the high cost of living, with the average rent being \$1,148 a month. This leads to more Asheville workers being forced outside the city, in search of more affordable housing, and therefore higher transportation expenses, and less transit and bike accessibility. According to 2018 data on the job market in Asheville, 70,569 workers lived outside Asheville and commuted in, while only 21,830 workers lived within the city limits. This is a growing trend, as data from 2002 shows that 46,421 people commuted from outside the city.⁹

The number of individuals who have been killed while walking has reached a 40-year high, with deaths increasing each year.¹⁰ This is a result of our roads being dangerous by design, as Smart Growth America puts it, our roads are: “designed primarily to move cars quickly at the expense of keeping everyone safe”. Although everybody is affected by dangerous street design, the effects are not felt equally. Those with low-income levels as well as Black and Indigenous people feel this more than others. Black people in America are killed while walking twice as much as white people, while American Indian and Alaskan Native people die more than three times the amount of white people. Black, Indigenous, and people of color (BIPOC) die while walking at much higher rates than white people.¹¹ As for low-income Americans, those with a median income below \$43,000/year are 3.3 times more likely to be killed while walking than somebody with an income above \$93,000/year.¹¹

1.2 Economic Benefits of Cycling

The economic benefits of cycling have been widely researched. The results from many studies show a large increase in economic gains in local areas where cities invest in proper bike infrastructure. One example of this came through a 2013 study in New York City, following a wave of new bike infrastructure, the NYC Department of Transportation commissioned a series of studies analyzing the economic impact of the new bike lanes. The findings showed that in places where there were protected bike lanes, business revenues repeatedly increased far more than in comparable streets without bike lanes. For instance, on 9th Avenue, after 3 years of protected bike lanes, revenue increased by 49%, compared to three nearby streets without bike lanes, which saw increased revenue of 26%.¹²

On a national level, the League of American Bicyclists conducted a study that found that bicycle-related activities contribute \$133 billion to the national economy, support over a million jobs, and bring in close to \$18 billion in tax revenue. This study also cited several other studies, both on a state and local level, that all show a similar result.¹³

But despite these proven economic gains, there are still many groups claiming the opposite, that biking is bad for business. One of the biggest critics of improved bike infrastructure is small business owners. This effect is seen locally in Asheville, with the recent Biltmore Avenue bike lane project coming to a halt due to business owners on the street expressing concerns.¹⁴ Even though it is almost guaranteed that these changes would benefit the adjacent small businesses, there seems to be this false narrative that removing on-street car parking results in a decrease in business sales.

1.3 Bicycle friendly designation for university campuses and communities

In 1880, the League of American Wheelmen was created, which was a group of over 100,000 members advocating for better street design to further accommodate cyclists, which at the time meant paving roads. Interestingly, the success of their advocating efforts eventually led to what would later become the first national highway system.¹⁵ Decades later, the organization rebranded itself as the League of American Bicyclists and has remained the largest and most influential cycling organization through its bike education, promotion and advocacy. One of their most effective programs is Bicycle Friendly America which grants communities, businesses, and universities designations to set standards for what a great cycling culture and environment looks like and inspires action to improve cycling conditions. As of May 2022, there are currently 496 bicycle friendly communities, 1,496 businesses, and 222 universities. Thanks to the efforts of the Asheville Bicycle and Pedestrian Task Force, a group of locals who work closely with city staff to give input on the needs of bikers and pedestrians, Asheville received the bronze designation for a bicycle friendly community in 2012. In North Carolina alone there are currently 10 universities that have been awarded the designation.

2.0 Methods

In the summer and fall of 2022, I investigated the following research questions using a mixed methods approach:¹⁶

1. What is the status of bikeability on the UNC Asheville campus?
2. What is the status of bikeability in the city of Asheville, and how does it compare with other cities in the United States and globally?
3. What steps should be taken to support cycling on the UNC Asheville campus?
4. What steps should be taken to support cycling in the city of Asheville?

To measure how Asheville compares to other cities in the world in terms of bikeability, I mostly relied on data from the League of American Bicyclists, through their benchmarking program, a collaborative effort with the Center for Disease Control's "Active Healthy Nation" initiative.¹⁷ For more international data, I relied on research from Ralph Bueler and John Pucher, prolific researchers and professors from Virginia Tech and Rutgers who have provided substantial academic research in the field of sustainable transportation.^{1 2} I also reviewed relevant literature

on the subject of bicycle advocacy, educating myself about effective strategies to design areas for cyclists and the importance of this type of work.

To research bikeability in the city of Asheville, I reviewed previous literature on the subject. A few groups, in particular, included the Asheville Bike and Pedestrian Task Force ¹⁸, and Asheville on Bikes, a local non-profit that has been advocating to make Asheville a better city for cyclists since 2006.¹⁹ I also attended bicycle-related events such as the Tour de Fat on October 8, 2022, and spoke with Asheville residents who had a passion for riding bikes, and working towards making it easier to do so in Asheville. I also attended “Get There AVL” on October 19, 2022, and learned about relevant political issues regarding biking in Asheville. This event is a yearly candidate forum hosted by Asheville on Bikes, to pressure city council candidates to support a policy that will advance active transportation. Lastly, I participated in the annual bike and pedestrian counts on September 14, 2022. This event provides important data to the city of Asheville on the activity at various intersections throughout the city. This data is used as a reference for where future infrastructure should be built to accommodate bicycles and pedestrians.

To answer the question of bikeability on the UNC Asheville campus, I helped to research and complete the Bicycle Friendly University Application for UNC Asheville, which provides an outside opinion and brings up important questions to consider when thinking about bikeability. With the help of UNC Asheville faculty, staff, and students, in the summer of 2022, we applied to put UNC Asheville on the list.

The Bike Friendly University review board awards universities that especially prioritize the five E’s: equity and accessibility, engineering, education, encouragement, and evaluation and planning. In order to submit the application, we had to assess how our school is doing in each of these categories. For equity and accessibility, we noted information such as how many adaptive bicycles we had on hand (zero) and how often was our bike shop open to students. For engineering we took measurements of existing bike infrastructure, such as tracking exactly how many miles of bike lanes we have on campus, how many bike parking spots we offer students, and how many of them are covered and in line with the Association of Bicycle and Pedestrian Professionals (APBP) standards. For education, we looked at factors like how many classes incorporate themes of sustainable transportation and urban design. To measure how well we encourage biking on campus, we looked at how many bike-related events we have on campus, or what incentives we give to students who ride bikes. And finally, for evaluation and planning, we included information about our bike master plan and the budget for bike-related activity on campus. To answer some of these questions, we collaborated with faculty and staff at UNC Asheville from various departments, especially from campus recreation, but also from the library, atmospheric science, the sustainability office, residential education, and transportation services. We began working on this in June 2022 and submitted the application in August 2022.

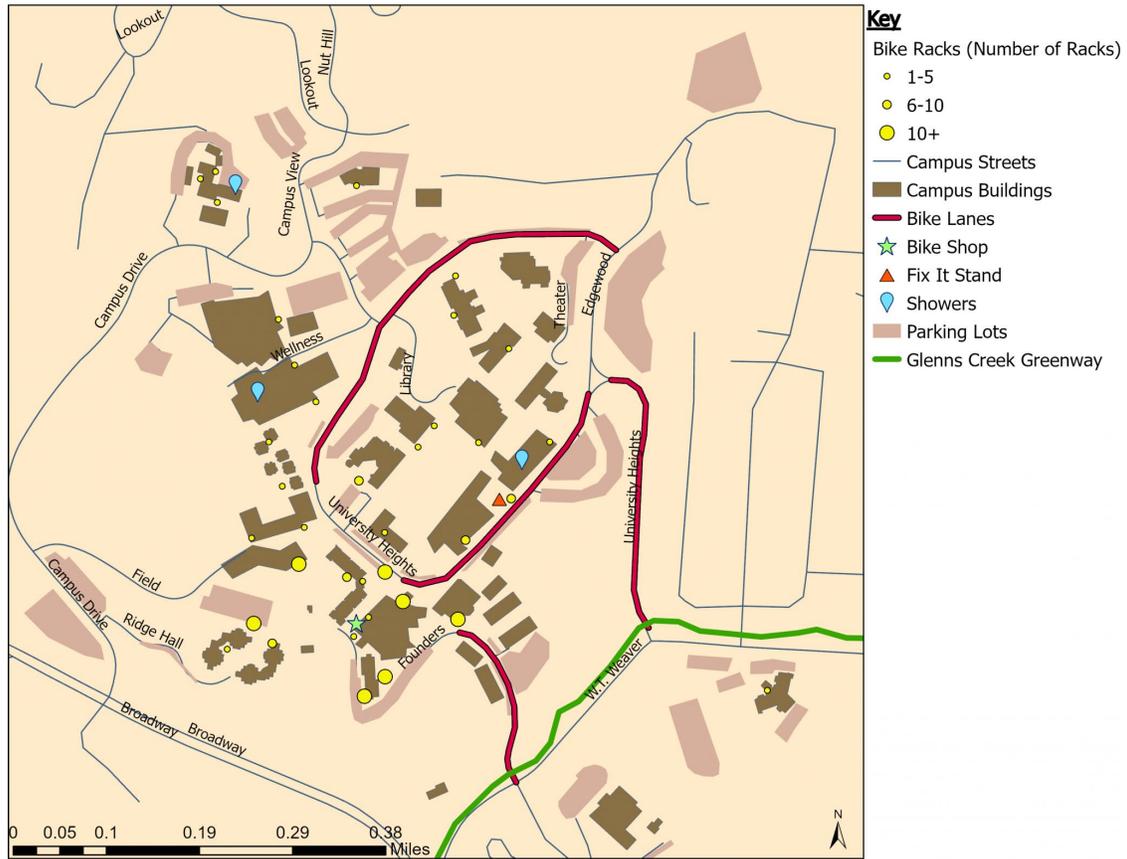
During the Fall of 2022, I helped raise awareness on the UNC Asheville campus about multi-modal transportation, especially bicycling as an alternative to driving a car. One of the ways that I did this was through tabling in Mills Plaza during the Greenfest sustainability fair on September 20, 2022. I shared what our campus already offers students, such as the passport sticker which provides free fares on the ART bus system, and the Campus Recreation Bike Shop, which provides students with free bike rentals and repairs. I also provided students with information about proper bicycle storage and locking techniques, including directing students to campus police who helped students register their bikes. At this event, I also distributed the survey for the Bicycle Friendly University application, collecting student opinions about the status of bikeability on campus. I also collected data on bike use on campus by going to all of the bike rack locations on campus on October 20th and noting how many bicycles were locked up in the racks.

I also collaborated and learned from local interest groups that have a hand in improving cycling conditions in Asheville. These groups and individuals included the Asheville Bike and Pedestrian Task Force and its liaison Anna Sexton, the non-profit Asheville on Bikes and its executive director Mike Sule, the UNC Asheville Campus Recreation Bike Shop and its managers Rowan Stuart and Leah Belt, as well as the UNC Asheville Sustainability Council.

3.0 UNC Asheville Campus Biking Results

UNC Asheville has numerous existing facilities and features to support bike riders. A previous UNCA student developed a map of bike resources and facilities on campus, shown in Figure 1 (credit: Lyndsey Nystrom).

Figure 1: Map of Bike Services on the UNC Asheville Campus



I completed a survey of bike rack use on campus on October 20, 2022, between 1:30 to 3:15 pm. I documented how many bikes I saw at each, the type of rack and lock and if it was a Campus Recreation Bike Shop bike. The results are shown in Table 1.

Table 1: Bike Rack Use on the UNC Asheville Campus

Location	Number of Bike Spots	Type of Rack (inverted U, schoolyard, or wave)	Number of Bikes Observed
Sam Millar main entrance	4	Inverted U	0
Sam Millar back entrance	3	Inverted U	0
Sam Millar east breezeway	2	Inverted U	0
Ridges parking deck	19	11 Inverted U, 8 schoolyard	0
South Ridge (near botans)	3	Wave	1
South ridge (main entrance)	2	Inverted U	2

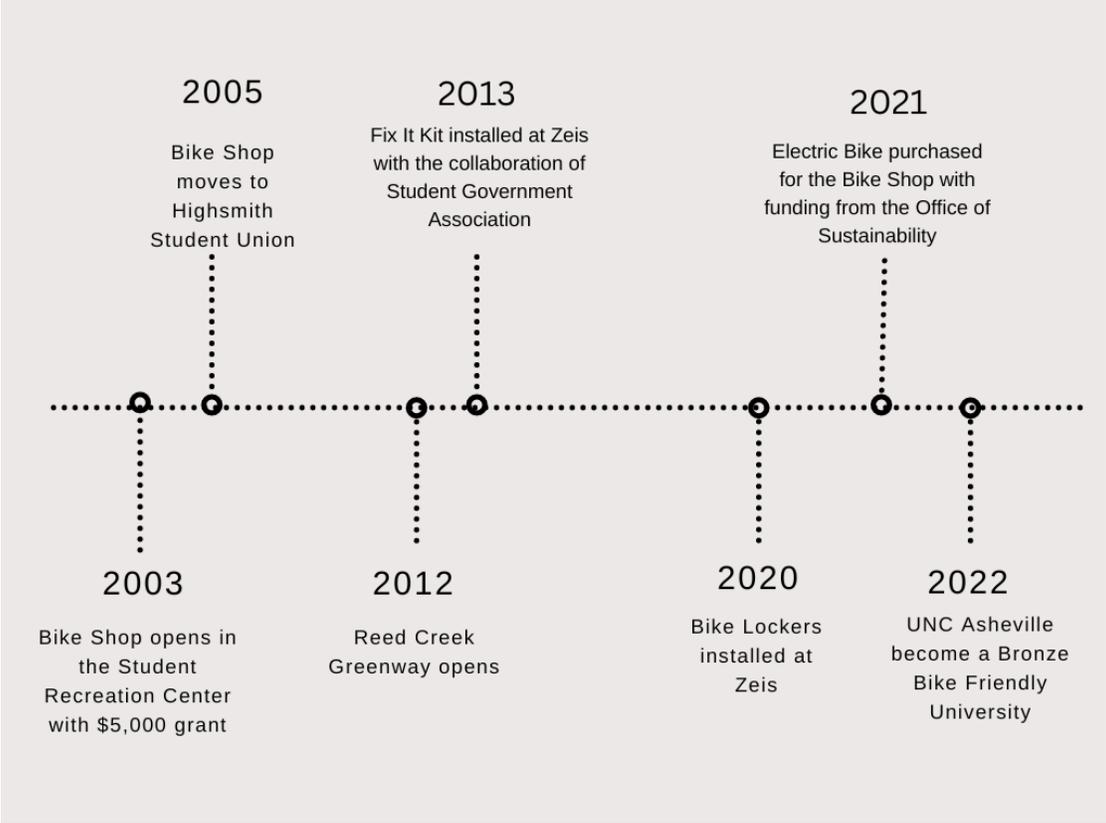
South ridge (close to west ridge)	3	Wave	0
West Ridge	5	2 Inverted U, 3 Wave	3
West Ridge (near parking deck)	3	Wave	3
Ponder/ The Down Under (covered)	9	Inverted U	10
Ponder down under	9	Inverted U	1
Mills (near volleyball court)	11	Wave	0
HSU (near Bike Shop)	5	2 Inverted U, 3 Wave	3
Founders Hall	31	12 wave, 19 schoolyard	3
Brown Parking Garage	28	Wheel Well secure	6
118 WT Weaver (Health Services)	5	Schoolyard	0
Zageir (north side)	1	Inverted U	0
Reuter Center (lower level)	3	Wave	0
Zageir (main entrance)	6	3 Inverted U, 3 wave	0
Whitesides (main entrance)	2	Inverted U	0
Zeis (northeast side)	4	Inverted U	3
Ramsey (east side)	4	Wave	1
Justice Center	3	Wave	0
Rhoades Robinson (across from Chestnut)	8	Inverted U	0
Zeis (across from bus stop)	8	Inverted U	0
Hoey Hall	2	Inverted U	2
Vance Hall (west side)	2	Inverted U	1
Karpen (facing P17)	6	Wave	3
Lipinsky (south)	3	Wave	1
Lipinsky (north)	1	Inverted U	0
HSU at crosswalk	14	Schoolyard	1
Mills main entrance	5	Inverted U	4
HSU (west entrance)	2	Inverted U	0
HSU (under bridge)	6	Inverted U	6
Phillips Hall	2	Inverted U	0
Governors Hall (southeast side)	2	Inverted U	6
Governors Hall (at top of field drive)	4	Inverted U	1

Student Recreation Center	4	Wave	0
Kimmel Arena	5	Wave	0
Beech Hall (Woods complex)	2	Inverted U	1
Illegally parked	N/A	Railings	2
Total	241		64

UNC Asheville currently has 241 bike rack spots for students to lock their bikes. An important part of bicycle parking is cover from the elements. Currently, only one-third of the spots are covered. The results also show that of the 241 spots, 64 were in use; 27 used a U-lock, and eight were from the UNC Asheville Campus Recreation Bike Shop.

A timeline of highlights of bike-related activities at UNC Asheville is shown in Figure 2. Leah Belt, Director of Campus Recreation, was interviewed to provide insight into the history of biking on campus (Belt, pers. comm. 7 Nov. 2022).

Figure 2: Timeline of Bike-Related Activities at UNC Asheville



I tabled at the UNC Asheville Greenfest sustainability fair in September 2022 and shared an infographic that I created about biking on campus, which was also published in the Student Environmental Center (SEC) newsletter (Figure 3). This infographic was created to inform UNC Asheville students, faculty, and staff about the existing bike facilities and to encourage people to take the survey to give feedback to the League of American Bicyclists.

Figure 3: Infographic about Biking on Campus

BIKE AT UNCA

- There is a bike fix-it kit, lockers, and showers for bikers to use at Zeis!
- There are over 200 spaces to park your bike on campus

Link to survey!

Did you know?

- **UNCA has a bike shop! You can rent or repair a bike for FREE!**
- **Our campus connects to the Reed Creek greenway that you can use to easily bike downtown**
- **All students, faculty, and staff can get a free sticker to ride Asheville buses, many of which have a bike rack**

In November 2022, the results of the Bicycle Friendly University Application for UNC Asheville were received and the campus was awarded the Bronze level. Among the 17 Universities in the UNC school system, eight of them have already received the Bike Friendly University designation from the League of American Bicyclists. UNC Asheville now joins this group of universities shown in Table 2.

Table 2: Bicycle Friendly UNC System Schools

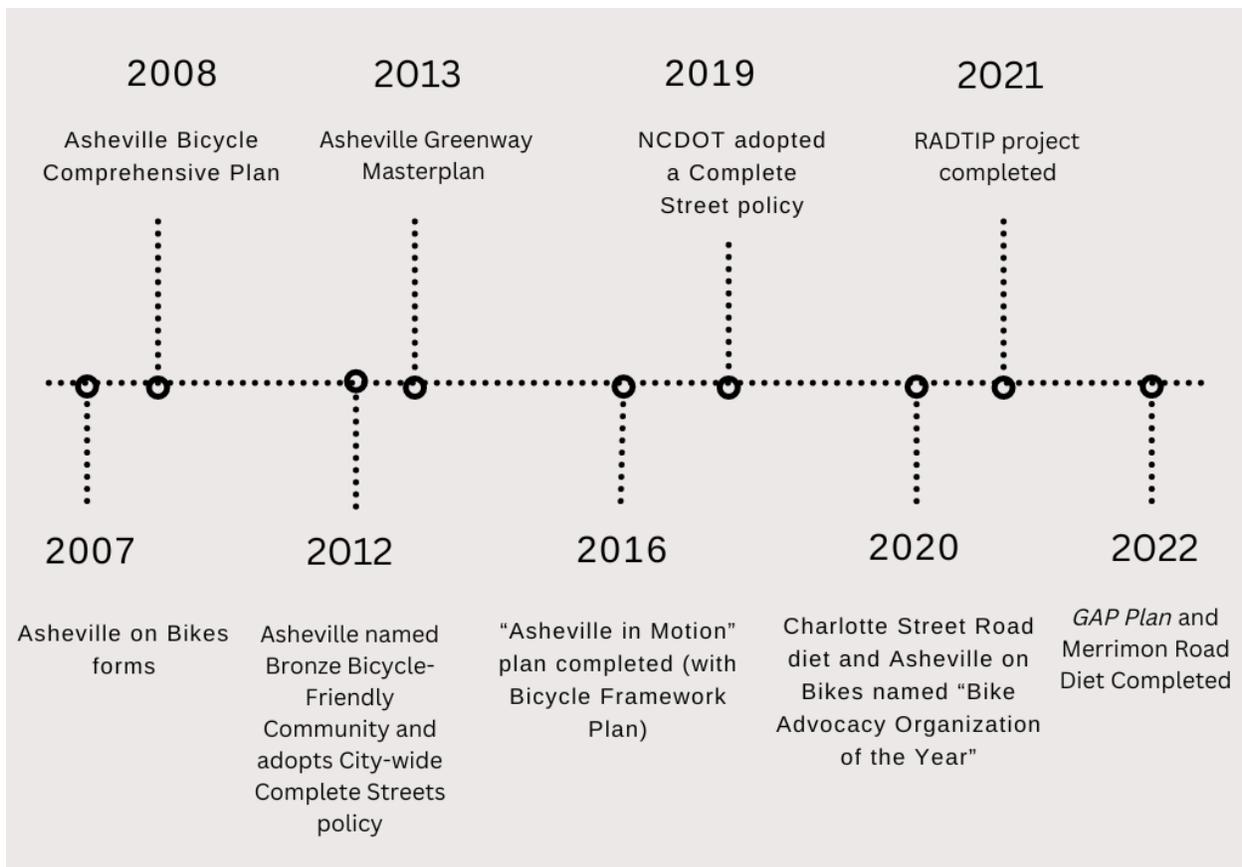
UNC System Schools	Designation	Year Awarded
UNC Greensboro	Bronze	2011
UNC Wilmington	Silver	2011
NC State University	Silver	2012
East Carolina University	Silver	2014
UNC Chapel Hill	Silver	2014
Appalachian State University	Bronze	2016
UNC Charlotte	Bronze	2017

North Carolina Central University	Bronze	2018
UNC Asheville	Bronze	2022

3.2 Results of Biking in Asheville

Despite still having a long way to go to develop a substantial and established culture of cycling in Asheville, the city of Asheville has been busy improving active transportation for the past 15 years. As seen in the Figure 4 timeline, Asheville has been making clear progress and may be on track to receive the silver designation for Bicycle Friendly Community. The River Arts District Transportation Improvement Project (RADTIP), which includes the Wilma Dykeman Greenway, the largest continuous separated bike path with over five miles of connectivity was completed in July 2021. This was a win for multi-modal transportation and a major step forward to building a more bicycle friendly city. More recently, the Merrimon Avenue Road Diet received a vote of approval in May 2022, and the approved section was finished in November 2022. The road diet can be an effective way of converting roads to be more accessible to cyclists and pedestrians. They typically involve a 4-3 conversion, reducing four-lane roads to three, with a turning lane in the middle, and bike lanes on both sides. The results are slower traffic speeds and increased accessibility for all road users.²⁰ A similar road diet conversion took place on Charlotte Street in 2020, with great success.²¹

Figure 4: Timeline of Bike-Related Activities in Asheville, NC

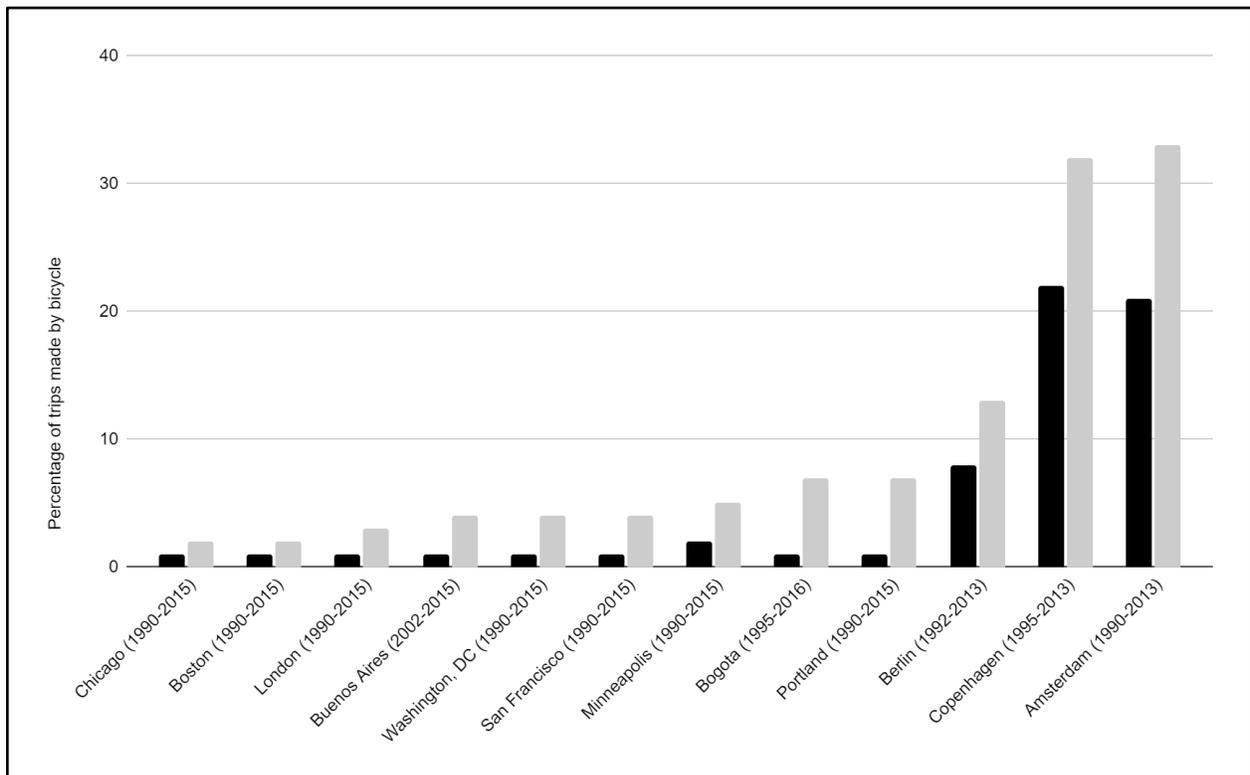


In September 2022, the city of Asheville released the final draft of the *Close the GAP* plan, a plan to replace the city's current plans for the following areas: greenways, ADA transition, and pedestrian accessibility. Consisting of 254 pages, with 10 goals, and 56 action items, the plan ultimately seeks to build a much bigger, and more connected, multimodal network throughout the city, giving residents more reasons to not get in their cars.

In a survey of 1,570 Asheville residents, the number one priority for 75% of respondents was to connect the major greenway systems so that it allowed for seamless travel throughout the city. Also, a majority of respondents shared that they were very likely to use a buffered bike path, more than without a buffer, and far more than sharing the street with cars without a bike path. Additionally, 81% of respondents said that high speeds of traffic are the main reason they have difficulty crossing streets. Using feedback from surveys as well as from collaboration with the Asheville Think Tank Team, ADA Advisory Group, Citizens Advisory Committee, and the Asheville Unpaved Alliance, a substantial network was proposed to build a cohesive multimodal network connecting neighborhoods throughout Asheville.

Figure 5 gives a visual representation of various cities around the world that have mostly embraced cycling infrastructure, and have built a culture of dedicated cyclists. As of 2013, in cities like Copenhagen and Amsterdam, over a third of all trips are made by bicycle, a figure that has significantly increased from just over 20% in the 1990s, and has only continued to grow. An important takeaway from this figure is that in general cities all around the world are improving their bike infrastructure, and more and more people are cycling (Figure 5). While Asheville is progressing, it has a long way to go in comparison to some of these other cycling cities. Currently, 74% of city workers in Asheville drive alone to work, while only 0.7% bike to work.⁹

Figure 5: Change in Bicycle Use Across Cities Globally (adapted from Pucher and Buehler, 2017)



4.0 Discussion, Conclusion and Recommendations

Both UNC Asheville and the city of Asheville have achieved bronze status with the League of American Bicyclists. However, there are opportunities to advance biking in both locations to make improvements and achieve a higher

ranking (silver, gold, or even platinum) status. Universities are a perfect place to invest in cycling infrastructure, in part because of their density, with thousands of able-bodied students living in close proximity to each other, and with a majority of their daily needs within cycling distance.²² A lack of cycling infrastructure, especially bike lanes, is often perceived as the biggest barrier to getting more people on their bikes, while the second most is the abundance of car travel, and the risk they pose to cyclists.²³ UNC Asheville should look at the efforts and accomplishments of other universities with gold, or platinum status in order to inform its decision making. Universities such as Colorado State, University of Wisconsin-Madison and Stanford University have achieved platinum status because they excel in every category assessed by the League of American Bicyclists, also known as the “5 E’s for a Bicycle Friendly America”.²⁴ For example Stanford has 17 miles of lanes, 19,000 bike parking spaces and have encouragement and safety programs such as giving away 3,500 bike lights annually, all with a student population of 20,000.²⁵ An example of a gold bike friendly university with a similar enrollment as UNC Asheville is Dartmouth College in Hanover, New Hampshire. With a student population of just over 6,000, Dartmouth offers students bike rentals and repairs, abundant safe, climate controlled bike parking, seminars on bike safety and maintenance as well as a class focused heavily on sustainable transportation.²⁶

For the city of Asheville, compared to other cities around the country, the network and ridership is still quite slim. Asheville is still quite far from the infrastructure or volume of riders that make a truly bike friendly community, a culture where all kinds of cyclists feel comfortable riding (Pucher & Buehler, 2017). Asheville needs to fully embrace traffic calming, to significantly lower speeds, to embrace complete streets (Davis, 2022). Asheville needs to show that success should not be measured by the number of cars moved through an area, but instead by the number of people, and the value of their transportation experience. In order to increase ridership and improve safety, the best thing both Asheville and UNC Asheville can do is expand its cycling infrastructure network. In a 2016 study by Ralph Bueler and John Pucher, they found a correlation between growing the bicycle network, more people riding, and fewer crashes with less severe injuries or fatalities.¹ For example, in Washington DC, between 2000 and 2015, the city grew its network by 101%, and with that, it had an increase in bicycle trips of 384%. This follows the principle “build it and they will come” as discussed in “How Cycling Can Save the World ” by Peter Walker.⁷ Even if the city does not have an established culture of biking, if there is adequate infrastructure, the ridership will increase.⁷ But the benefits do not end there; with more people riding bikes on more lanes, safety also increases. In Washington DC during that same time period, the city saw a decrease in bike crashes per 100,000 trips by 46% and a decrease in fatalities or serious injuries by 50%. A similar result can be found in countless cities around the world, including Minneapolis, San Francisco, Chicago, and especially Seville, Spain. Asheville currently has a large number of bike friendly corridors scattered throughout the city, whether it be a neighborhood or a greenway, but the biggest issue is building connections between them, to allow for the bicycle to fully be the ideal mode of transport.

Addressing equity and accessibility concerns on the UNC Asheville campus is key to progress. A few ways to do this are by making the campus more ADA compliant, as well as making the Campus Recreation Bike Shop more accessible. Currently, the Campus Recreation Bike Shop only has one electric bike, which can remove barriers to cycling for many students. In a 2020 survey of the student body through the Student Environmental Center, 19% of respondents reported that the biggest problem caused by campus infrastructure was that it was too hilly. With the help of electric assistive technology, that no longer becomes a factor. Moreover, adding some adaptive bicycles to the campus fleet would allow a larger amount of the population to participate and grow the culture of cycling on campus.

On the UNC Asheville campus, one major gap in our capability to grow our bicycle accessibility is evaluation and planning. If UNC Asheville could have a dedicated bicycle program on campus with an annual budget, a master plan or 10 year plan, and a specific employee to manage the program, the university could seriously level up. Within this bicycle program, there could be an incentive system where students, faculty and staff who ride their bike get some form of incentive. Currently, the university struggles with a shortage of car parking, so if more people rode their bikes, there would be more spots available. Until 2022, there was specific first year parking that slightly disincentivized first year students to bring their cars to campus, given that they had to walk a longer distance to their cars. If we brought back this system, and then paired it with a robust bicycle encouragement program, especially designed for first-year students, this type of system would help develop a culture of cycling on campus. Also, UNC Asheville could officially adopt bike parking design standards, where all new buildings are required to have an adequate amount of high quality bicycle parking. Additionally, the community of Asheville and UNC Asheville need to focus on data collection, to track how many people ride their bikes and where they ride, and where they get into crashes, all in order to provide more valuable information for future projects and areas of need. Setting a target percentage of trips made by bicycle and ensuring proper data collection would be a great way to track progress.

UNC Asheville could also improve in terms of more education about cycling, and sustainable transportation. From workshops and training about bicycle maintenance, and safety, to beginner lessons such as “How to Ride a Bike”, to destigmatize the inability to ride a bike, and get more students, faculty and staff riding on campus. Also the course curriculum offerings could greatly improve with more classes that cover active and sustainable transportation, affordable housing, or just the broader field of urban planning.

The community of Asheville still has a long way to go toward building a truly successful culture of cycling among the general public. In the coming years, Asheville needs to fully address equity, to allow for everybody to experience the benefits of cycling. As it stands there are a lot of people who are left out of active transportation, so improving education and safety are the two biggest factors to improve equity related issues. Asheville needs to embrace youth cycling education such as the after-school bike programs run by Asheville on Bikes¹⁹. Additionally, there are certain areas of Asheville that have a greater need for improved accessibility. Income, race, age, disability, and English proficiency are all referred to as “equity indicators,” and there are areas in the city that have high equity scores⁹. On top of that, there are areas that need to be accessed more; destinations such as grocery stores, schools, restaurants etc. Improving bicycling and multimodal access in those areas is of the utmost importance in building a city that is accessible to all. As Mike Sule of Asheville on Bikes says: “We need to remember that it is not just about bike lanes, it is about building great streets for a great city”.

5.0 References

1. Pucher, J., & Buehler, R. (2017). Cycling towards a more sustainable transport future. *Transport Reviews*, 37(6), 689–694. <https://doi.org/10.1080/01441647.2017.1340234>
2. Pucher, J., & Buehler, R. (2016). Safer Cycling Through Improved Infrastructure. *American Journal of Public Health*, 106(12), 2089–2091. <https://doi.org/10.2105/AJPH.2016.303507>
3. Campbell, A. A., Cherry, C. R., Ryerson, M. S., & Yang, X. (2016). Factors influencing the choice of shared bicycles and shared electric bikes in Beijing. *Transportation Research Part C: Emerging Technologies*, 67, 399–414. <https://doi.org/10.1016/j.trc.2016.03.004>
4. U.S. Census. (2021, July). *U.S. Census Bureau QuickFacts: United States*. <https://www.census.gov/quickfacts/fact/table/US/PST045221>
5. National Center for Safe Routes to School. (2011). *SRTS Guide: The Decline of Walking and Bicycling*. http://guide.saferoutesinfo.org/introduction/the_decline_of_walking_and_bicycling.cfm
6. League of American Bicyclists. Demographics of Active Transportation. *Benchmarking Report By the League of American Bicyclists*. <https://data.bikeleague.org/show-your-data/national-data/demographics-of-active-transportation/>
7. Walker, P. (2017). *How Cycling Can Save the World* (1st ed.). TarcherPerigee.
8. Center for Transit-Oriented Development. (2008). *Capturing the Value of Transit-Oriented Development* (p. 34). <http://ctod.org/pdfs/2008ValueCapture.pdf>
9. City of Asheville. (2022). *Close the Gap Plan* (p. 36). <https://www.ashevillenc.gov/projects/close-the-gap-planning-process/>
10. GHSA. (2021). *Pedestrian Traffic Fatalities by State: 2021 Preliminary Data* | GHSA. <https://www.ghsa.org/resources/Pedestrians22>
11. Smart Growth America. (2022). *Dangerous by Design 2022*. Smart Growth America. <https://smartgrowthamerica.org/dangerous-by-design/>
12. New York City Department of Transportation. (2016). *The Economic Benefits of Sustainable Streets* (p. 43). <https://www.nyc.gov/html/dot/downloads/pdf/dot-economic-benefits-of-sustainable-streets.pdf>
13. Flusche, D. (2012). *Bicycling Means Business: The Economic Benefits of Bicycle Infrastructure*. League of American Bicyclists. https://bikeleague.org/sites/default/files/Bicycling_and_the_Economy-Econ_Impact_Studies_web.pdf
14. Honosky, S. (2022, August 18). *No bicycle lanes on Biltmore Avenue: Asheville plans for downtown will not move forward*. The Asheville Citizen Times. <https://www.citizen-times.com/story/news/local/2022/08/18/asheville-not-move-forward-bike-lanes-biltmore-ave/7832863001/>

15. Guroff, M. (2016, September 12). *American Drivers Have Bicyclists to Thank for a Smooth Ride to Work*. Smithsonian Magazine. <https://www.smithsonianmag.com/travel/american-drivers-thank-bicyclists-180960399/>
16. Creswell, J. W. (2009). Mapping the Field of Mixed Methods Research. *Journal of Mixed Methods Research*, 3(2).
17. League of American Bicyclists. (2022). Benchmarking. *Benchmarking Report By the League of American Bicyclists*. <https://data.bikeleague.org/>
18. Asheville Bicycle and Pedestrian Task Force. (n.d.). *Asheville Bicycle and Pedestrian Task Force*. <http://abptaskforce.org/index.htm>
19. Asheville on Bikes. *Asheville on Bikes | Bicycle & Multimodal Advocacy, Events & Education*. <https://ashevilleonbikes.com/>
20. U.S. Department of Transportation. (2022, October 25). *Road Diets (Roadway Reconfiguration) | FHWA*. <https://highways.dot.gov/safety/other/road-diets>
21. Miller, K. (2022, March 18). *Charlotte Street “Road Diet” analysis shows continued improvements*. The City of Asheville. <https://www.ashevillenc.gov/news/charlotte-street-road-diet-analysis-shows-continued-improvements/>
22. Mota, J. C., Sá, F. M. e, Isidoro, C., & Pereira, B. C. (2019). Bike-Friendly Campus, new paths towards sustainable development. In *Higher Education and Sustainability*. CRC Press.
23. Akar, G., & Clifton, K. J. (2009). Influence of Individual Perceptions and Bicycle Infrastructure on Decision to Bike. *Transportation Research Record*, 2140(1), 165–172. <https://doi.org/10.3141/2140-18>
24. Balsas, C. J. L. (2003). Sustainable transportation planning on college campuses. *Transport Policy*, 10(1), 35–49. [https://doi.org/10.1016/S0967-070X\(02\)00028-8](https://doi.org/10.1016/S0967-070X(02)00028-8)
25. Stanford Transportation. (n.d.). *Stanford receives its third Platinum Bicycle Friendly University award (2019–2023) | Stanford Transportation*. <https://transportation.stanford.edu/bike-platinum>
26. Dartmouth Bikes. (n.d.). *Dartmouth Bikes | Home*. Dartmouth Bikes. <https://www.dartmouthbikes.com>