The University of Chicago

Taking the Long Way Home: Public Transportation in Small US Cities

By Samuel Fried

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Abstract

Public transportation in the United States is not known for its effectiveness, and this issue is often worse in small urban settings than in large cities. In two small settings — Greenville, South Carolina and Chapel Hill, North Carolina — the quality of the public transportation seems to differ widely, with Chapel Hill having a relatively robust bus system while Greenville's is much less useful to the general public. Through an investigation of the two systems, their respective services, and their respective roles in their communities, I seek to determine why this discrepancy exists. Ultimately, the most important difference appears to be the presence of the University of North Carolina and a comparatively greater public willingness to fund transportation in Chapel Hill. Despite various barriers, Greenville's buses have improved significantly and will likely continue to do so. These systems demonstrate the wide range of goals, priorities, and areas for improvement that are emblematic of public transportation in the United States as a whole, and they could serve as models for other small cities seeking to improve or begin service for their residents.

Acknowledgements

I would like to thank Professors Eric A. Morris and Barry Nocks at Clemson University for their time, enthusiasm, and thoughtful answers to my questions on transportation in Greenville and in the broader world. I would also like to thank Professor Chad Broughton and Saliem Shehadeh for their guidance and feedback, and my family for their unfailing moral support.

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Introduction

If you have ever found yourself in a small city in the United States without access to a car, you have likely noticed one of two things: either there is no public transit at all, or the transit that exists is difficult to use. Public transportation is not the norm in many small cities and towns in the United States. In fact, it is likely something of a rarity. These systems, even when they are in place, often leave a lot to be desired. My personal experience with and knowledge of public transportation in small cities is mostly informed by two places: Greenville, South Carolina's Greenlink system and Chapel Hill Transit, in North Carolina.

As much as I think highly of my hometown, I have always felt that the transit in Greenville has been a bit lacking. The buses are rather infrequent and not all that convenient to use, at least in my personal experience. I imagine that for most people in the city, except for those who are conveniently located near bus stops, whose destinations happen to be on the same bus route as their origin, and whose schedules happen to align with the sporadic arrivals of the buses, a car is generally a much faster way to get around, provided they have access to one.

In contrast, the bus system in Chapel Hill, where most of my extended family lives, seems more expansive and easier to use. As a child, while staying with my grandparents, my brothers, grandfather, and I used to board one of the buses that came up his street and arrive at his office on the campus of the University of North Carolina in a matter of minutes. Could we have driven? Sure. Sometimes, we did drive. While the frequency of the Chapel Hill buses was better, the service near my grandparents' house was still a little too infrequent to rely on blindly.

The purpose of this paper is to investigate several questions. First, what encourages ridership on public transportation? Which community needs is public transit intended to meet, and can either of these systems successfully meet them? In other words, is either of these a

“good” system? And regardless of the answer to that question, is Chapel Hill Transit actually delivering a better public transportation service than Greenlink? Second, what are the differences between the systems, and how might their surrounding environments, through politics, demographics, and general attitude towards transit, be responsible for a difference? Third, how could these systems better meet the needs of their communities?

By the Numbers

According to most statistics that I could find, Chapel Hill Transit seems to be of much more use to its surrounding community than Greenlink, at least in terms of its ridership numbers. The following table provides some information on these systems and their surrounding areas.

	Greenlink (Greenville, SC)	Chapel Hill Transit (Chapel Hill, NC)
Primary city population	~73,000	~62,000
County population	~550,000	~150,000
Yearly ridership	~769,700	~3,855,400
Revenue vehicles	33	118
Vehicle revenue miles	1,075,212	1,994,220

Figure 1: By the Numbers (“U.S. Census Bureau Quickfacts: Greenville City, South Carolina”, “U.S. Census Bureau Quickfacts: Chapel Hill Town, North Carolina”, “U.S. Census Bureau Quickfacts: Greenville County, South Carolina”, “U.S. Census Bureau Quickfacts: Orange County, North Carolina”, Bonina 2024, “2023 Annual Agency Profile - Greenville Transit Authority”, “2023 Annual Agency Profile - Town of Chapel Hill”)

Both of these systems primarily serve one city: Greenville, SC for Greenlink and Chapel Hill, NC for Chapel Hill Transit. However, neither is limited to the city, and both have routes that serve surrounding towns. Despite a larger city and county population, Greenlink’s ridership is far below that of Chapel Hill Transit, and it only has roughly a quarter of the vehicles. Greenlink also operates slightly over half as many yearly miles, called vehicle revenue miles, as Chapel

Hill Transit. Despite this, Greenlink has around one fifth of the annual ridership, meaning that it carries far fewer passengers per mile driven than Chapel Hill Transit.

Encouraging Ridership

In order for much of a city's population to ride transit, a system has to be able to meet a number of standards that facilitate its use. According to Steven Higashide (2019, 17), a public transportation expert, there are seven criteria that are important in determining public transportation use. A service must: 1) go where you want it to go, 2) run frequently enough that you don't have to think about it, 3) be reasonably fast, 4) be reliable and relatively free from delays, 5) be near enough to your final destination that you can comfortably walk to it, 6) be comfortable and safe-feeling, and 7) be affordable.

We are now going to play a little game, evaluating whether the two systems meet Higashide's seven criteria. For each criterion a system meets, it will receive a point, or a half point for a criterion that is partially met. This is not a scientific evaluation—a journey through this rubric is pretty arbitrary—but it should help to identify a "winner" between the two and identify some areas for improvement. However, while this game will provide a good starting place for determining the quality of these systems, it will not give us the full picture.

Criterion 1: Where does it go?

In order for a system to be useful to its city, it needs to get people from where they are to where they want to go and back again. Greenlink has a bit of an issue with this criterion. It does go to many places within Greenville, as well as some places in surrounding municipalities. However, the system is set up in a somewhat radial pattern, with most routes beginning at the

downtown bus station. This means that the further out from downtown you get, the further apart the bus services are, leaving large swaths of the outer city and county, which bleed together to some extent, unserved. It does go to a number of useful areas, such as the Woodruff Road, where many stores are located, and the Haywood Mall. Both of these areas, as well as the downtown itself, are places where many people work.

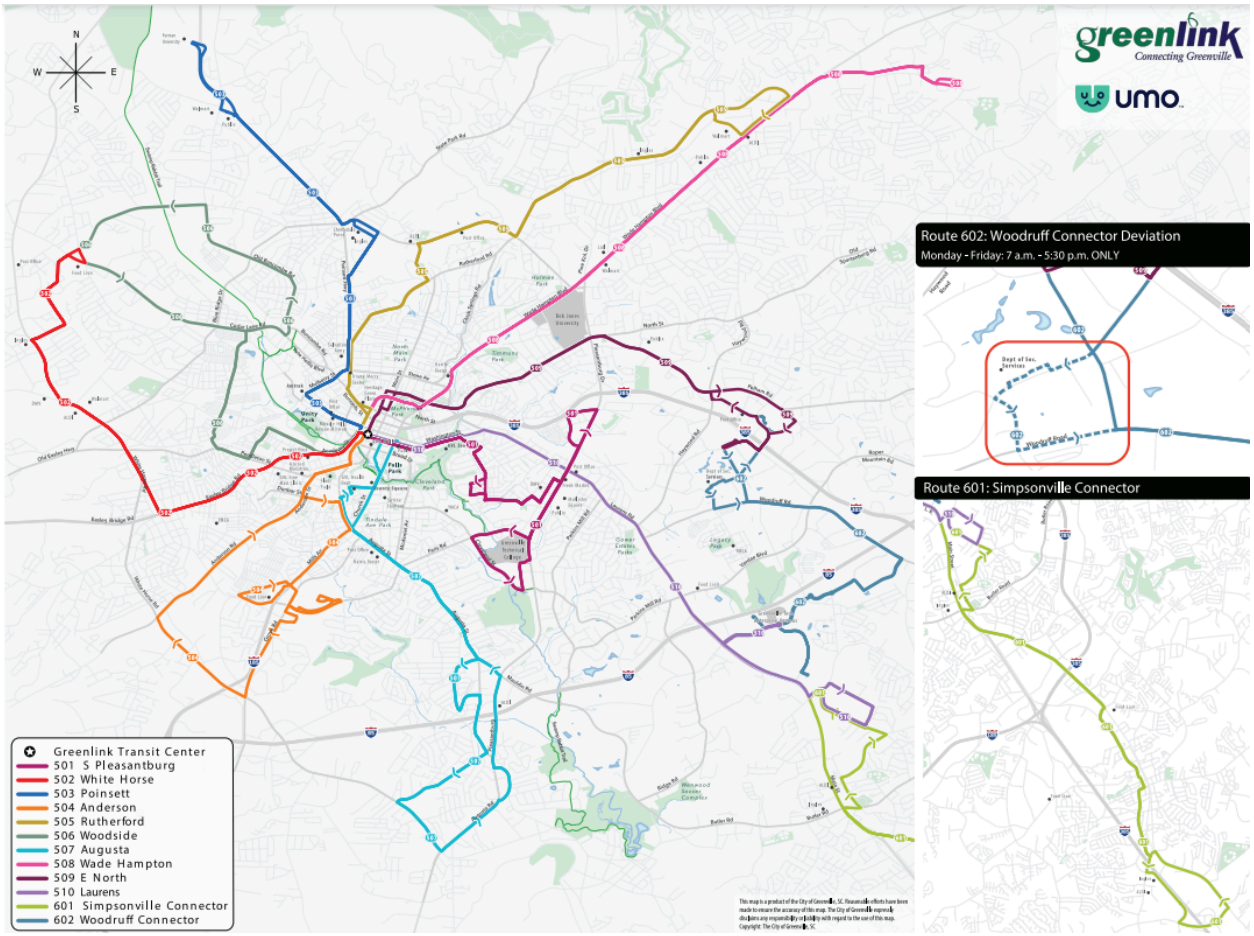


Figure 2: the Greenlink route map ("Fixed Route Map and Timetable")

As is apparent from Figure 2, the downtown and central parts of the city are served by large numbers of routes, but as you go out further, the coverage becomes less effective. Many of the areas not served are residential, meaning that while the bus may stop near your job, it may not go by your house. Despite this shortcoming, Greenlink earns half a point on this criterion, as its routes have good coverage of central and commercial areas.

Chapel Hill Transit also goes most places you would want within Chapel Hill and Carrboro, its western neighbor. The primary destination for most people is the University of North Carolina, which is served by pretty much every one of the roughly 20 routes in the network, making the map so dense that the downtown requires its own cutout. The map below in Figure 3, the most recent published to the Chapel Hill Transit website, depicts every route that runs on weekdays.

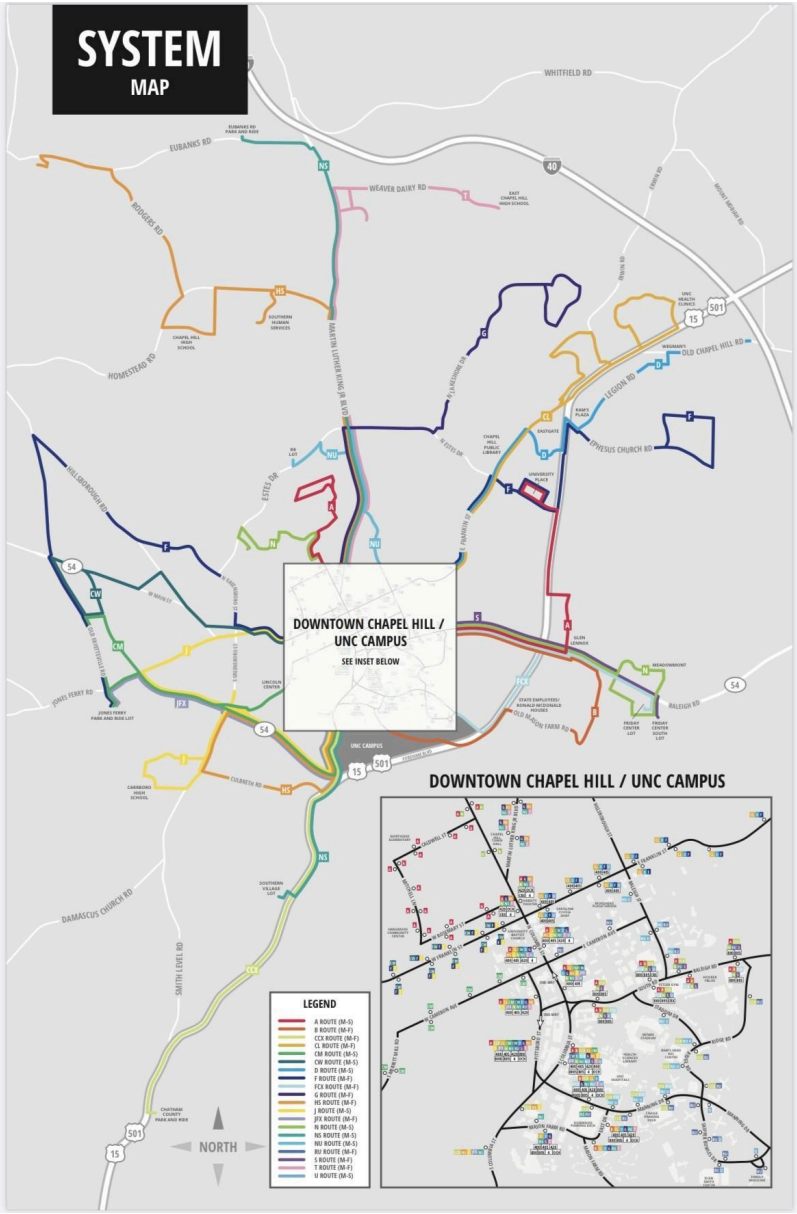


Figure 3: the Chapel Hill Transit weekday route map ("System Map")

The weekend route map is slightly more limited, as presumably most people do not need to get to the campus of the university. However, Chapel Hill Transit still operates routes that serve most places that people would want to go: several retail areas, various movie theaters, the downtown and university areas.

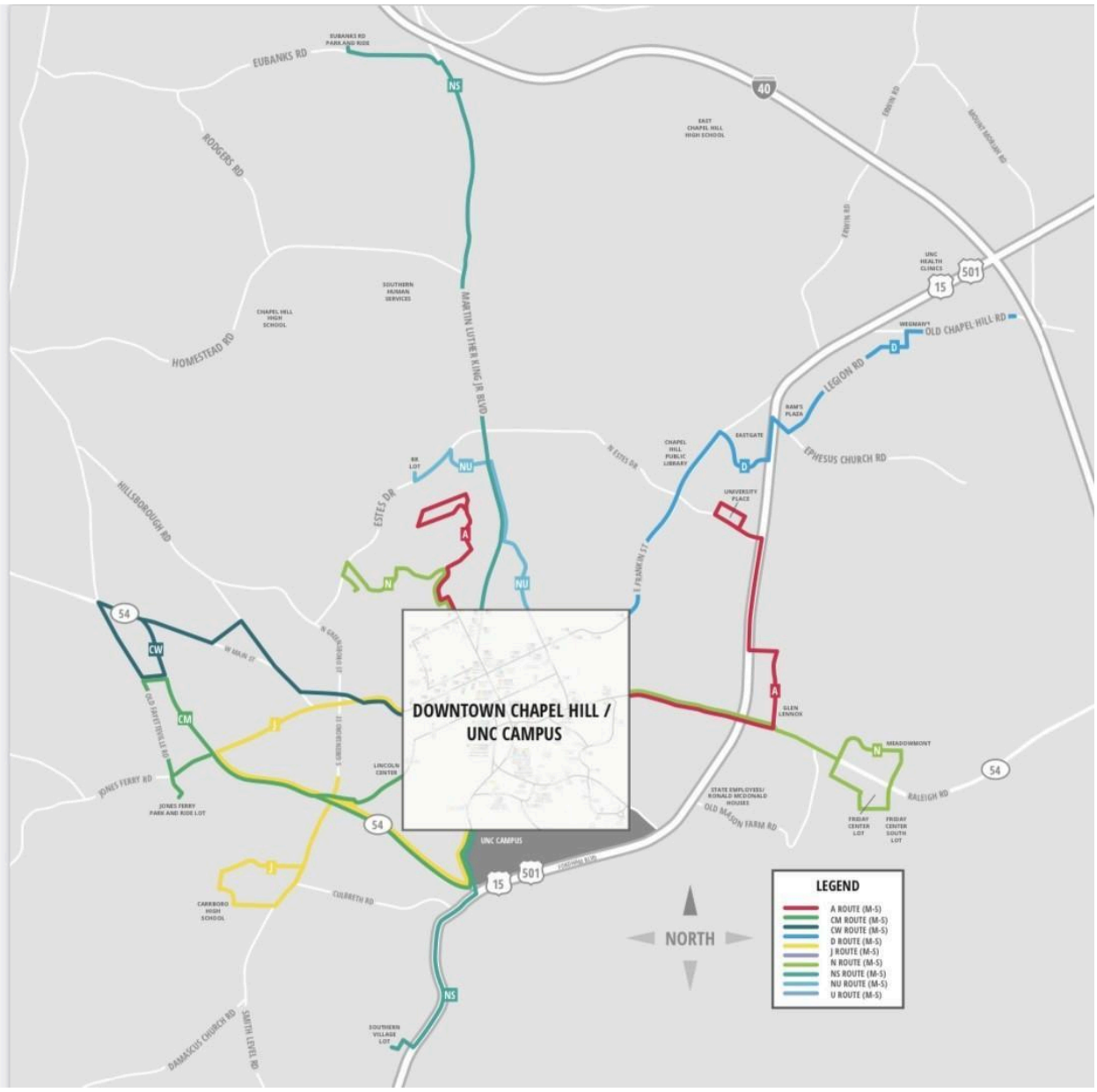


Figure 4: the Chapel Hill Transit weekend route map ("System Map")

The route map, somewhat sneakily, pretty much only includes roads that the buses run on but excludes many of the roads between them, which makes the coverage look great, at least on weekdays. The coverage is quite good, providing service to most destinations, but it leaves a few areas, especially those further from the UNC campus, underserved. Chapel Hill Transit still receives a full point for this criterion, as the system covers all but a handful of relatively far-out roads.

Score: Chapel Hill Transit 1, Greenlink 0.5

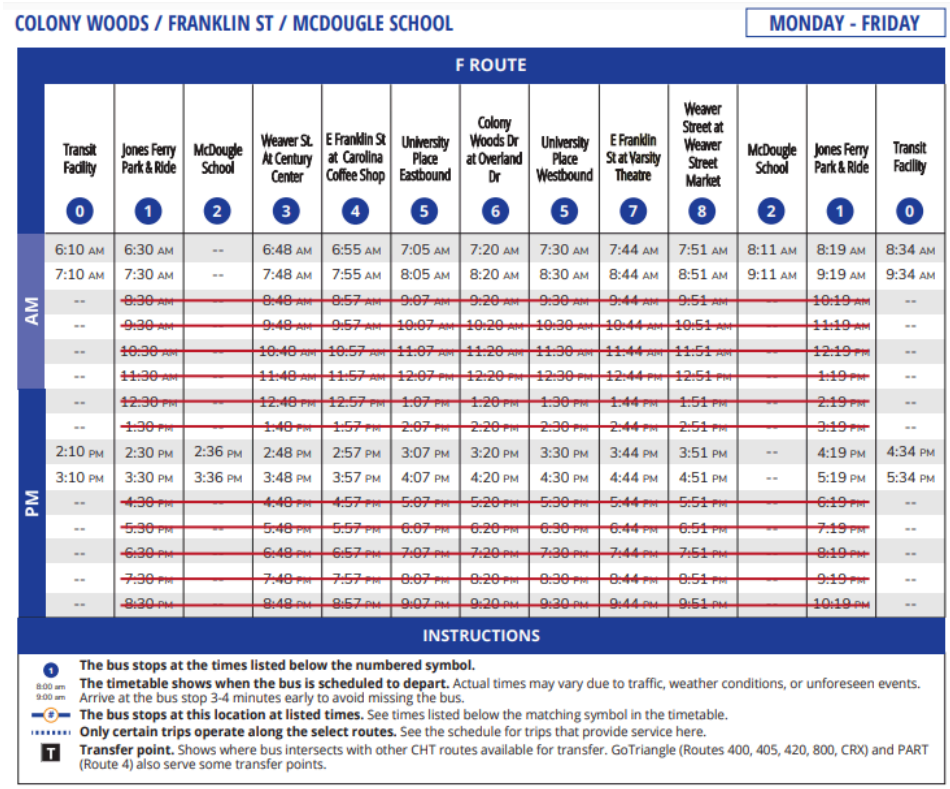
Criterion 2: Is it frequent?

Greenlink cannot be awarded any points for its frequency. Its schedule is very easy to follow: on weekdays, one bus per hour starting at either 5:30 or 6 for 11 of its 12 routes, and going until either 11:30 or 12 at night ("Schedules and Routes"). The one remaining route, covering an area with many businesses, has two buses per hour from the beginning of the day until 8 at night, when it too reduces to one bus per hour. On Saturdays, all buses run once per hour, and they do not run at all on Sundays.

Chapel Hill Transit has great frequency and service hours on some of its routes, but not on others. It seems to be a bit of a case-by-case basis. This seems to have been partially due to the pandemic ("Chapel Hill Transit Announces Service Changes"), but it also may have to do with the University. For instance, the U route, which serves the UNC campus and would most likely be the route of choice for students living on campus, has headways, which are the time gaps between buses, of 15 minutes on weekdays and 25 minutes on weekends ("U Route").

One route, the FCX route, operates with low headways between the Friday Center, a conference center, and the campus. The actual headway depends on the time of day, but it mostly ranges between five minutes and 15 minutes ("FCX Route"). Other routes, such as the C, operate with 30-minute headways Monday through Friday but do not operate on weekends ("C Route"). Still more, such as the A, operate roughly every hour Monday through Sunday ("A Route").

Lastly, there are the routes that appear to have been hit by the pandemic ("Chapel Hill Transit Announces Service Changes"). Some of these services are in the process of returning, with several routes, including the aforementioned A route, having already returned to "full service" ("Chapel Hill Transit Announces Service Changes"). Others have not been so lucky, still showing timetables that are mostly crossed out. One such example is the F route, which appears to only run four services a day during the week at the moment, but has many others listed as cancelled on its schedule ("F Route").



COLONY WOODS / FRANKLIN ST / MCDOUGLE SCHOOL — MONDAY - FRIDAY

F ROUTE

	Transit Facility 0	Jones Ferry Park & Ride 1	McDougle School 2	Weaver St. At Century Center 3	E Franklin St at Carolina Coffee Shop 4	University Place Eastbound 5	Colony Woods Dr at Overland Dr 6	University Place Westbound 5	E Franklin St at Varsity Theatre 7	Weaver Street at Weaver Street Market 8	McDougle School 2	Jones Ferry Park & Ride 1	Transit Facility 0
AM	6:10 AM	6:30 AM	--	6:48 AM	6:55 AM	7:05 AM	7:20 AM	7:30 AM	7:44 AM	7:51 AM	8:11 AM	8:19 AM	8:34 AM
AM	7:10 AM	7:30 AM	--	7:48 AM	7:55 AM	8:05 AM	8:20 AM	8:30 AM	8:44 AM	8:51 AM	9:11 AM	9:19 AM	9:34 AM
AM	--	~~8:30 AM~~	--	~~8:48 AM~~	~~8:57 AM~~	~~9:07 AM~~	~~9:20 AM~~	~~9:30 AM~~	~~9:44 AM~~	~~9:51 AM~~	--	~~10:19 AM~~	--
AM	--	~~9:30 AM~~	--	~~9:48 AM~~	~~9:57 AM~~	~~10:07 AM~~	~~10:20 AM~~	~~10:30 AM~~	~~10:44 AM~~	~~10:51 AM~~	--	~~11:19 AM~~	--
AM	--	~~10:30 AM~~	--	~~10:48 AM~~	~~10:57 AM~~	~~11:07 AM~~	~~11:20 AM~~	~~11:30 AM~~	~~11:44 AM~~	~~11:51 AM~~	--	~~12:19 PM~~	--
AM	--	~~11:30 AM~~	--	~~11:48 AM~~	~~11:57 AM~~	~~12:07 PM~~	~~12:20 PM~~	~~12:30 PM~~	~~12:44 PM~~	~~12:51 PM~~	--	~~1:19 PM~~	--
PM	--	~~12:30 PM~~	--	~~12:48 PM~~	~~12:57 PM~~	~~1:07 PM~~	~~1:20 PM~~	~~1:30 PM~~	~~1:44 PM~~	~~1:51 PM~~	--	~~2:19 PM~~	--
PM	--	~~1:30 PM~~	--	~~1:48 PM~~	~~1:57 PM~~	~~2:07 PM~~	~~2:20 PM~~	~~2:30 PM~~	~~2:44 PM~~	~~2:51 PM~~	--	~~3:19 PM~~	--
PM	2:10 PM	2:30 PM	2:36 PM	2:48 PM	2:57 PM	3:07 PM	3:20 PM	3:30 PM	3:44 PM	3:51 PM	--	4:19 PM	4:34 PM
PM	3:10 PM	3:30 PM	3:36 PM	3:48 PM	3:57 PM	4:07 PM	4:20 PM	4:30 PM	4:44 PM	4:51 PM	--	5:19 PM	5:34 PM
PM	--	~~4:30 PM~~	--	~~4:48 PM~~	~~4:57 PM~~	~~5:07 PM~~	~~5:20 PM~~	~~5:30 PM~~	~~5:44 PM~~	~~5:51 PM~~	--	~~6:19 PM~~	--
PM	--	~~5:30 PM~~	--	~~5:48 PM~~	~~5:57 PM~~	~~6:07 PM~~	~~6:20 PM~~	~~6:30 PM~~	~~6:44 PM~~	~~6:51 PM~~	--	~~7:19 PM~~	--
PM	--	~~6:30 PM~~	--	~~6:48 PM~~	~~6:57 PM~~	~~7:07 PM~~	~~7:20 PM~~	~~7:30 PM~~	~~7:44 PM~~	~~7:51 PM~~	--	~~8:19 PM~~	--
PM	--	~~7:30 PM~~	--	~~7:48 PM~~	~~7:57 PM~~	~~8:07 PM~~	~~8:20 PM~~	~~8:30 PM~~	~~8:44 PM~~	~~8:51 PM~~	--	~~9:19 PM~~	--
PM	--	~~8:30 PM~~	--	~~8:48 PM~~	~~8:57 PM~~	~~9:07 PM~~	~~9:20 PM~~	~~9:30 PM~~	~~9:44 PM~~	~~9:51 PM~~	--	~~10:19 PM~~	--

INSTRUCTIONS

- **The bus stops at the times listed below the numbered symbol.**
- **The timetable shows when the bus is scheduled to depart.** Actual times may vary due to traffic, weather conditions, or unforeseen events. Arrive at the bus stop 3-4 minutes early to avoid missing the bus.
- **The bus stops at this location at listed times.** See times listed below the matching symbol in the timetable.
- **Only certain trips operate along the select routes.** See the schedule for trips that provide service here.
- **Transfer point.** Shows where bus intersects with other CHT routes available for transfer. GoTriangle (Routes 400, 405, 420, 800, CRX) and PART (Route 4) also serve some transfer points.

Figure 5: the Chapel Hill Transit F Route time schedule, displaying several cancelled services ("F Route")

The frequency of bus service in Chapel Hill seems to be quite variable. The services that are likely the most trafficked, such as those around the campus, have very frequent service and weekend coverage. Others have less consistent service and larger headways, and some services, presumably the least used or important by some metric, operate very infrequently. Half a point seems reasonable for Chapel Hill Transit here.

Score: Chapel Hill Transit 1.5, Greenlink 0.5

Criterion 3: Is it fast?

Greenlink effectively functions as a hub and spoke model. Similar to how some airlines will funnel passengers from several airports to one airport, have them change planes, and then reach their final destination on a second flight instead of just flying them directly from their origin to their destination, Greenlink does the same with its buses. On one hand, this is great, as it means that changing buses twice is likely relatively uncommon. On the other hand, this is a disaster, as it means, at least for some trips, going all the way into downtown Greenville on one bus service and then coming back out at a slightly different angle on another ("Fixed Route Map and Timetable"). This could also be problematic if any buses are delayed, as passengers transferring will then have to wait an hour for the next service.

Due to the hub-and-spoke nature of Greenlink's routes, taking the bus, especially if it requires a transfer, is not very fast. For instance, while the bus goes to the Haywood Mall, one of the largest shopping locations in Greenville, actually getting there can be quite an ordeal. Butler Road, in Mauldin, which is a nearby town, is relatively underserved by Greenlink, but it has a number of residential areas. Getting from Butler Road to the mall typically takes around 10

minutes in a car, but riding the bus requires over 20 minutes of walking, plus a bus transfer, resulting in a 90-minute trip. Ultimately, this is not a very fast way to get around, so no points can be awarded.

Chapel Hill Transit faces some similar issues to Greenlink in terms of routes converging in central areas before shooting people off in other directions. However, due to the often-better frequencies that the system offers, this is not as much of a time-drain. Additionally, judging by Chapel Hill Transit's ridership, which is mostly composed of students, the main destination for bus riders is probably the University of North Carolina campus ("2023 Customer and Resident Survey"). According to a 2023 survey, only 6% of riders transferred, making this not too large of an issue ("2023 Customer and Resident Survey"). However, the high headways on some routes could stretch out the wait for those who do need to transfer, so it seems like another half a point is warranted in this case.

Score: Chapel Hill Transit 2, Greenlink 0.5

Criterion 4: Is it reliable?

Greenlink's reliability is somewhat questionable. Greenlink has set itself a goal of 85% of services running on time, which it defines as "no earlier than three minutes before the scheduled time stop and no later than five minutes after the scheduled time stop", but it has only hit that goal in one singular month between August of 2019 and December of 2024: 88% April of 2020 ("Greenlink Performance"), when presumably most people were at home due to the pandemic. Within this timeframe, Greenlink hit an abysmal 40% reliability in October of 2019, but since

then, it has ranged from approximately 60% to 80% (“Greenlink Performance”). This seems worthy of half a point.

Chapel Hill Transit does not provide information on whether or not their buses arrive on time. According to a 2023 survey, most people were happy with the service (“2023 Customer and Resident Survey”), which would likely imply that it does run mostly on time, but I cannot award anything without knowing for sure.

Score: Chapel Hill Transit 2, Greenlink 1

Criterion 5: Is it safe and comfortable?

In terms of comfortability and safety, it is somewhat difficult to judge Greenlink due to a lack of accessible information on crime occurring on buses or at bus stops. However, it appears that the system’s drivers have at times been made to feel unsafe, which could be contributing not only to low ridership but also to difficulties recruiting the necessary number of bus drivers (Fitzgerald 2024).

Greenlink does publish information regarding its accident rate, which can be seen in Figure 6 below, containing data from between August 2019 and December 2024. The most recent information at a national level on this topic is from 2018, where the rate was 420.1 events per 100 million miles (“Bus Safety Data Report”). This national rate converts to about 0.42 accidents per 100,000 miles traveled, the unit that Greenlink uses. While I could not find data on specific incidents for Greenlink, I think that numbers hovering around 1.2 incidents per 100,000 vehicle revenue miles traveled signify one accident in a month, as there is nothing between this

number and zero. As a result, presumably whenever any accident occurred on Greenlink, it immediately increased that month's accident rate to three times the national average rate. Since late 2021, the accident rate appears to have somewhat increased, although there are still many months in which no accidents occurred. The average monthly rate over all 65 months included is 0.66 accidents per 100,000 miles ("Greenlink Performance"). This is nearly 50% higher than the average rate, indicating a somewhat less safe than average system.

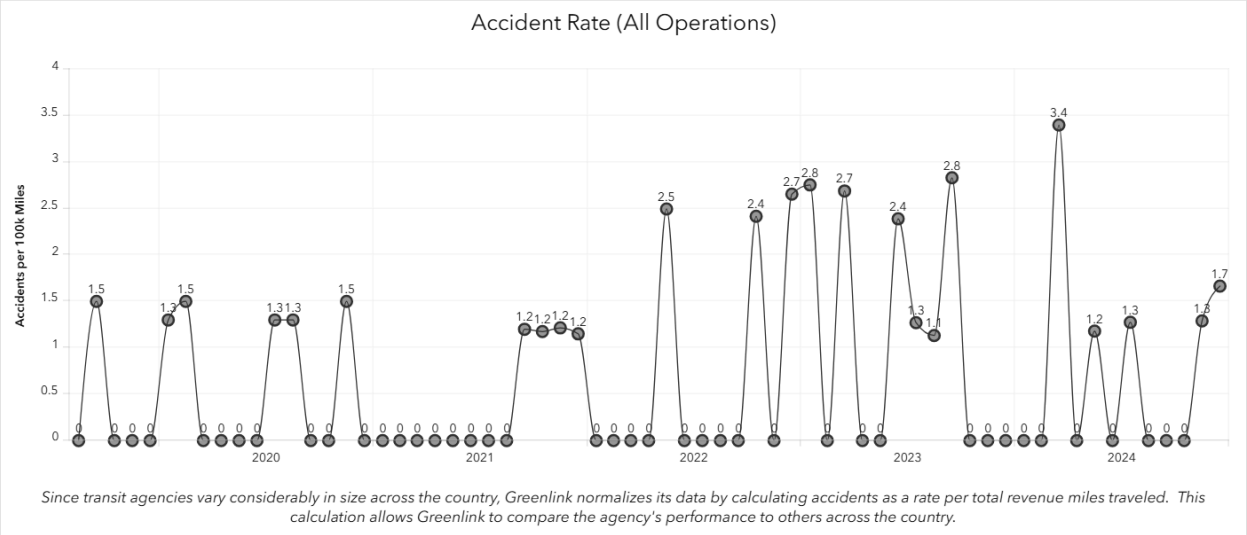


Figure 6: the Greenlink chart of Accidents per 100,000 Miles, between August 2019 and December 2024 ("Greenlink Performance")

The design of bus stops may also be a safety and comfortability factor discouraging higher ridership. I often drive by two bus stops along Cleveland Street, and each time I wonder how people are supposed to use them. One is just a sign along the side of the road, with no sidewalk leading up to it. Presumably, it is meant to serve a nearby apartment complex, pictured in the background of the Street View screen capture below. Accessing the stop means either walking along the road, where cars routinely fly down the hill in excess of 40 miles per hour, or climbing through the ditch located just behind the stop. People living on the other side of the street have no option but to jaywalk, as there are no pedestrian crossings along the street.

Figure 7: a Google Street View image of a Greenlink bus stop on Cleveland Street ("898 Cleveland St")

Another stop, further down Cleveland Street, is at least slightly better. It has a full-fledged shelter, but accessing it requires either walking along the road, since this stretch does not have a sidewalk, crossing the road from the side that does have a pedestrian path, or clambering through the brush behind the shelter.

Figure 8: a Google Street View image of a Greenlink bus shelter on Cleveland Street ("1392 Cleveland St")

Between bus drivers feeling unsafe, a higher-than-average accident rate, and the relative inaccessibility of some stops, Greenlink does not receive a point for safety and comfortability.

Chapel Hill Transit also lacks specific data on crime statistics, but in terms of accidents and injuries, it appears to be doing well. In 2024, the system won a state-wide award for having the lowest number of accidents per mile driven, an award which it has won in the past as well (Wong 2024). Somewhat strangely, the article announcing the award did not include the actual rate, nor did it include a source, and Chapel Hill Transit does not publish its data in the same way that Greenlink does. While the system does better than others in North Carolina, it is unclear how it compares on the national level.

In terms of its stops, Chapel Hill Transit has similar types to those of Greenlink. However, these stops are often much more accessible. For instance, Figure 9 depicts a shelter along a two-lane road in Carrboro, a neighboring town served by Chapel Hill Transit. From the image, you can see that both sides of the street have sidewalks, and that there is a crosswalk somewhat near the shelter. This should make the stop easy to access.

Figure 9: a Google Street View image of a Chapel Hill Transit bus shelter on North Greensboro Street, Carrboro ("504 N Greensboro St")

Not all Chapel Hill Transit stops are shelters. Several on the campus of the University of North Carolina are just signposts, such as the one depicted below. However, as it is on a

relatively busy street at the heart of the campus, both sides of its street have sidewalks. On smaller, more residential streets, this is not always the case. However, those streets often do not get much traffic, and the traffic that is there is relatively slow-moving.

Figure 10: a Google Street View image of a Chapel Hill Transit bus stop on the UNC campus, Chapel Hill ("601 Raleigh St")

Despite the lack of specific accident information, Chapel Hill Transit's safety award and the apparent safety and accessibility of its bus stops mean that it will be awarded a point.

Score: Chapel Hill Transit 3, Greenlink 1

Criterion 6: Can you walk to your destination?

This issue has been sort of touched on in previous sections, but to address it head-on, it depends. As seen in Figure 2, Greenlink covers most of the places that people likely want as their destinations: retail areas and the downtown. In many cases, it is possible to walk pretty easily to your destination, especially in the downtown, which is relatively pedestrian friendly and has good sidewalk coverage. In other areas, especially where the bus routes typically follow larger roads, this is less the case. Many of these roads do have sidewalks, but they tend to be thin and exposed, with mere inches separating vehicle traffic from pedestrians. The larger issue seems to

be with getting to the bus in the first place. Greenlink does not cover the areas outside of central Greenville quite as well, meaning that while you may be able to walk to your destination, you may struggle to make it to a bus stop near your house. Besides the transfer taking a long time, this was one of the more significant issues in the Butler Road to Haywood Mall example in the *Is it fast?* section. Overall, Greenlink will receive half a point, as the city is well-designed for walking in some areas but less so in others.

Chapel Hill Transit, as you saw in the previous section, often has better sidewalk access to its bus stops, at least where this is necessary. Downtown Chapel Hill, where UNC is, is quite walkable, and destinations are not very far from the multitude of bus stops located there. Like Greenville, a larger issue may be walking to the bus stop from your home, but the streets that I am familiar with in Chapel Hill, as well as those that seem to be used by several bus routes, are pretty walkable. Additionally, bus stops on busy roads have sidewalks, even if the sidewalks do not continue beyond the stop. I'll give Chapel Hill the point.

Score: Chapel Hill Transit 4, Greenlink 1.5

Criterion 7: Is it affordable?

Greenlink has a number of fare options, ranging from single ride tickets to unlimited, month-long passes. For frequent users of the bus, those who take more than about 40 trips in a month, the most cost-effective option is the month-long pass, which costs $50 ("Passes & Fares"). Considering the minimum wage in South Carolina is $7.25 per hour and presumably most people riding the bus are doing so out of necessity, since it frequently takes considerably

longer than the same trip in a car, transportation expenses for frequent riders likely stack up quite quickly. Greenlink does offer 50% discounts on fares to those 65 years of age and older, those with disabilities, veterans, and those on Medicare ("Passes & Fares"). However, this probably does not cover many Greenlink riders, as it excludes most working-age people. No point for Greenlink here.

Chapel Hill Transit, on the other hand, requires much less evaluation. It has been completely fare-free on its fixed-route services since 2002 ("50th Anniversary"). This makes it affordable for everyone who may want or need to use it. Point awarded.

Score: Chapel Hill Transit 5, Greenlink 1.5

Judging by these seven criteria, Chapel Hill Transit does seem to serve its community better than Greenlink. However, there are many factors at play, and it is important to draw contextual distinctions between these two cities and systems.

One Size Does Not Fit All

While Higashide's seven criteria for effective transit systems are intuitive, they may not be entirely relevant in these two settings. According to Dr. Eric A. Morris, a Clemson University professor of city and regional planning with whom I spoke on the matter, transportation is not always meant to attract the highest number of riders possible. It serves different purposes in differently sized cities, and it also serves two main types of riders: choice riders and dependent riders. Choice riders are those who have the option of taking a personal vehicle but prefer to take

transit for various reasons, while people who have no option but to take transportation are dependent riders (Eric Morris, conversation with author, January 27, 2025).

For many large and dense cities, where parking is limited, difficult, and expensive, transit is often meant to take people out of their cars to relieve some of the stress on the road network, meaning that the focus of these systems is primarily on choice riders, who have different preferences than dependent riders. Choice riders would prefer fast, frequent service with relatively few stops and increased service around peak hours (Morris 2025). This suits them, as they are often working office jobs in central business districts (Morris 2025). Often, this preference is met with train lines. However, dependent riders would prefer greater coverage, meaning a greater number of stops, and service spread more evenly throughout the day, as they do not solely rely on transit for going to and from work. As a result, these riders are more often served on bus routes.

Smaller cities are often much less dense than larger ones. This spatial difference means that parking and congestion in central areas is not as much of an issue, and there may not even be a central business district in which people congregate during the day. Smaller cities are often quite spread out, and therefore it is difficult to walk anywhere. As a result, transit systems in smaller places often cater much more to the dependent riders than the choice riders. These systems tend to sacrifice efficiency for coverage, meaning that they attempt to cover as much of the city as they can, but they often take inefficient routes, sacrificing time as well (Morris 2025). Given how much more compatible buses are with already-existing infrastructure and the desire for greater coverage, small cities typically use them instead of rail. Headways are often pretty high on these systems, as they are not designed to get people around quickly, but rather to provide “basic mobility for people who are disadvantaged” and cannot afford or operate personal

vehicles (Morris 2025). “If you don’t have a car, it will eventually get you to where you need to get,” Dr. Morris told me (Morris 2025). These systems often have funding issues that prevent them from easily improving the frequency of their service, although systems like Greenlink have worked to improve their span, now running later into the night than they used to (Morris 2025).

Overall, Dr. Morris told me that there are two types of cities with good markets for public transit: “big, rich, old, dense cities [...] and college towns” (Morris 2025). This would suggest that the University of North Carolina is a big part of what makes Chapel Hill Transit so much better than Greenlink. Since Greenville is a smaller city, its transit system likely focuses on serving dependent riders who rely on the services to go about their daily lives. Chapel Hill, on the other hand, is a college town, and while it does have some routes that are likely not intended primarily for the university, most of its routes are related to it in some way or another. This would explain why some of the routes on these systems, particularly Greenlink, are so inefficient, and it would also explain the large headways that are present particularly in Greenville. While Higashide’s seven criteria are important for increasing ridership in large cities, helping to relieve congestion, in smaller ones, the goal is less to increase ridership and more to ensure that the service goes where people who cannot drive need it to go.

Don’t Miss the Forest for the Trees

It is impossible to look at these two bus systems as being independent of the two differing communities where they are located. Local factors must be at play in determining the size, organization, and efficiency of these systems. In this section, it will become clear that Chapel Hill Transit has several built-in advantages over Greenlink, especially in three particular areas: each system’s funding, its responsibility to its surrounding area, and its community’s preferences.

Funding

One of the most important factors, if not *the* most important factor, in determining a transit system's setup has to be its funding. A system could do everything right from a route planning standpoint, and it could have widespread enthusiasm among the community that it serves, but if it does not have the money to buy enough buses for frequent service, people will not ride it if they are presented with other options, especially cars.

Chapel Hill Transit has at least one massive funding advantage over Greenlink: the University of North Carolina. According to UNC's Transportation and Parking Five-Year Plan, covering 2023 to 2028, the university funds fare-free service to Chapel Hill Transit riders ("Five-Year Plan: 2023-2028"). Fare-free service likely attracts some choice riders, but beyond just making the service free, the university's funding is likely responsible for much of the system's relative success. According to Chapel Hill's 2023-2024 adopted budget, Chapel Hill Transit received $10.4 million from UNC, its leading funder, which was coupled with other local, state, and federal sources to total $32.1 million ("2023-2024 Adopted Budget - Transit").

Greenlink, on the other hand, has a much lower budget. In the 2025 fiscal year, the projected budget is roughly $12.3 million ("Annual Operating Budget - Fiscal Year 2024-2025"). This may not sound like much compared to Chapel Hill Transit, and indeed it really is not that much, but compared to the Greenville of even just last year, it is a marked improvement—nearly a 17% increase ("Annual Operating Budget - Fiscal Year 2024-2025"). A 2017 report bemoaned Greenlink's funding, which at that point was under $6 million, as being "behind on all measures" ("Greenlink Operations - Winter Report 2017"), so it seems that the city has actually come a long way in a relatively short time frame. It may still be behind Chapel Hill Transit, but its funding increases will almost certainly help the system to improve its service.

It seems plausible that the University of North Carolina's funding of Chapel Hill Transit could have some pretty noticeable effects on the routes and frequencies of the services offered. As the party responsible for the largest chunk of the funding, providing practically an entire 2024-Greenlink-budget's-worth, that would only make sense. This may be the reason that routes like the U, which services primarily the UNC campus, have such low headways, whereas other routes that are likely less important to the university are served more infrequently. Still, this makes sense, as students are the sector of the population that forms the greatest slice of Chapel Hill Transit's ridership ("2023 Customer and Resident Survey").

Responsibility to the surrounding area

Another important factor is the importance of the transit system in the surrounding area. Chapel Hill Transit seems to have a smaller responsibility in regards to its surrounding area, basically just serving Chapel Hill and the adjacent town of Carrboro, which are conjoined to the extent that it is nearly impossible to tell when you have moved from one to the other. Other transportation companies and organizations operate routes that connect Chapel Hill to Raleigh and Durham, whereas Greenlink serves Greenville, where it is based, as well as the relatively-nearby Mauldin and Simpsonville to some extent. This means that geographically, Chapel Hill Transit is responsible for a more compact area than Greenlink.

Just as Chapel Hill Transit does not operate fixed-route services to Raleigh or Durham, Greenlink does not operate services to places like Spartanburg or Anderson, two slightly smaller but still reasonably sized cities in surrounding counties that form part of the same metropolitan statistical area. However, instead of these routes being operated by other bus companies, services between Greenville, Spartanburg, and Anderson simply do not exist. This may mean that since

people can commute into Chapel Hill on other buses, they then rely on Chapel Hill Transit to get around while in Chapel Hill, but such a population of potential bus riders does not exist in the area in and around Greenville because in order to arrive in the city, you need to have a car already.

Local preferences and attitudes

Additionally, the political atmosphere and general opinion regarding public transportation is likely important and different in each place. Greenville County just failed to pass a penny tax that would fund much-needed road construction and repair (Moss 2024). That decision directly affects most county residents, who use their cars every day to get around, so why would these same residents care about funding things like sidewalks leading up to bus stops or bus shelter construction, which do not even affect them?

Chapel Hill, meanwhile, seems to have a pretty positive view of public transportation. I was not able to find comparable data for Greenville, but many people who use public transportation in Chapel Hill also have a car, meaning that they are actively choosing the bus ("2023 Customer and Resident Survey"). Students make up a majority of Chapel Hill's ridership ("2023 Customer and Resident Survey"), and since Greenville does not have a comparably-sized university, it likely lacks that demographic.

Onwards and Upwards

Now that we know a bit about these systems and their surroundings, what goals should they have for the future? Clearly, it is easy to say that they should increase the frequency of their services or open new routes or something like that. Eventually, yes, they will want to do this, but

I think that if they could have already done it, then they would have. The two systems seem to have different goals for the future, and as such, their paths should differ.

Greenlink

For the moment, what seems most important in Greenlink's case is obtaining more funding, since they are already a well-run agency, according to Dr. Eric A. Morris. "Given what they have to work with, and given the nature of the region, they do a good job," he told me in our conversation (Morris 2025). However, without funding, it will be nearly impossible to improve the service. Increased funding could come from a number of sources. Notably, federal funding seems to provide a pathway to faster improvement, although it may be difficult to obtain. In 2018, a grant proposal that would have funded a new maintenance facility was rejected (Landrum 2018), but continuing to apply for similar grants could greatly help Greenville's transit development.

Additionally, Greenlink seems to have placed a focus on hiring, with a career fair on February 3rd ("Calendar - Greenlink Job Fair"). Leading up to the career fair, notices announcing it popped up whenever I accessed the website. Campaigns like this one, which encourage the public to engage with Greenlink, could be a viable solution to the staffing problem that the system was having as recently as 2023 (Fitzgerald 2024).

Another important goal for Greenlink is to follow a transit development plan that was created in 2018. It appears that Greenlink is doing its best to follow the plan already, as one of the first main goals is to extend night service, which the system has done by extending its hours until close to midnight.

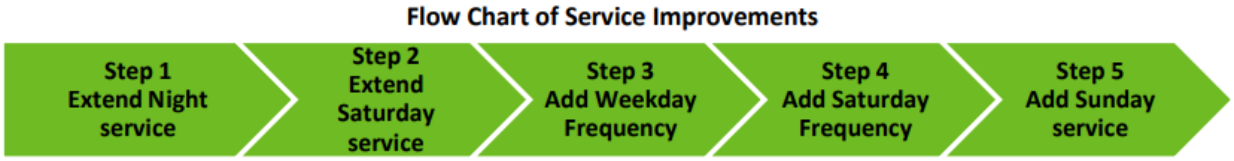


Figure 11: the 2018 Greenville Transit Development Plan's service improvement goals ("Greenlink 2020-2024 Transit Development Plan")

This development plan provides reasonable and incremental goals that the system could use to bring its service from where it is today to something that could be appealing to more people. In addition to the goals above, the plan also provides suggestions for new services, some of which would serve different purposes than today's routes. For instance, the plan details several commuter routes that would bring people into the downtown from park-and-ride lots in surrounding cities, as well as others that would not go through the downtown at all but instead cut across different parts of the city. In all, 19 routes were recommended in the plan ("Greenlink 2020-2024 Transit Development Plan"). According to one study, the full implementation of this plan could bring thousands of jobs and up to $2 billion, or an additional 3%, to the Greenville County economy (von Nessen 2023).

Chapel Hill

In the coming years, Chapel Hill Transit should have two main focuses. First, it needs to bring back its pre-pandemic services. As has been made clear in previous parts of this paper, it seems to already be attempting this, and it should continue until it has successfully restored the services that are crossed out on some of its routes' schedules. The other main focus should be on the development of a bus rapid transit line cutting through the city north and south.

Chapel Hill Transit has been making large strides in returning pandemic-affected services to normal as recently as January 6, 2025. Five lines were restored to pre-pandemic levels,

including one that saw 11 trips added throughout the day ("Chapel Hill Transit Announces Service Changes"). It also recently added a new route, the C route ("Chapel Hill Transit Announces Service Changes"). Seeing as rider preferences may have changed since the pandemic, this also seems like a reasonable solution, as some lines may not be as viable now as they once were, while other areas may now be much more conducive to bus service.

Another potential upcoming improvement to the system is the North-South Bus Rapid Transit project. This project aims to connect the north of Chapel Hill to the southern part of the city by means of a roughly-eight-mile route, which would include over five miles of exclusive bus lanes ("North-South Bus Rapid Transit"). Like the rest of the Chapel Hill Transit routes, this one would also be fare-free, and it would run with headways between 7.5 minutes and 20 minutes, depending on the time of day and the day of the week ("North-South Bus Rapid Transit"). The route would be along a corridor that has seen a faster return to pre-pandemic ridership levels than the rest of the system, and in 2023, it was projected to account for 1.3 million annual rides on its own, increasing to nearly 2.7 million by 2045 ("North-South Bus Rapid Transit"). Funding for this project is a bit unclear, as it was recommended for $138 million in federal funding, although it has only received $32 million from federal funds, which are projected to make up 70% of its cost (McConnell 2025). As it stands, the project is expected to begin construction in 2027 and open in 2029 (McConnell 2025). If funding can be secured, this project would likely greatly improve connectivity between the University of North Carolina campus, in the south of Chapel Hill, and the northern reaches of the city.

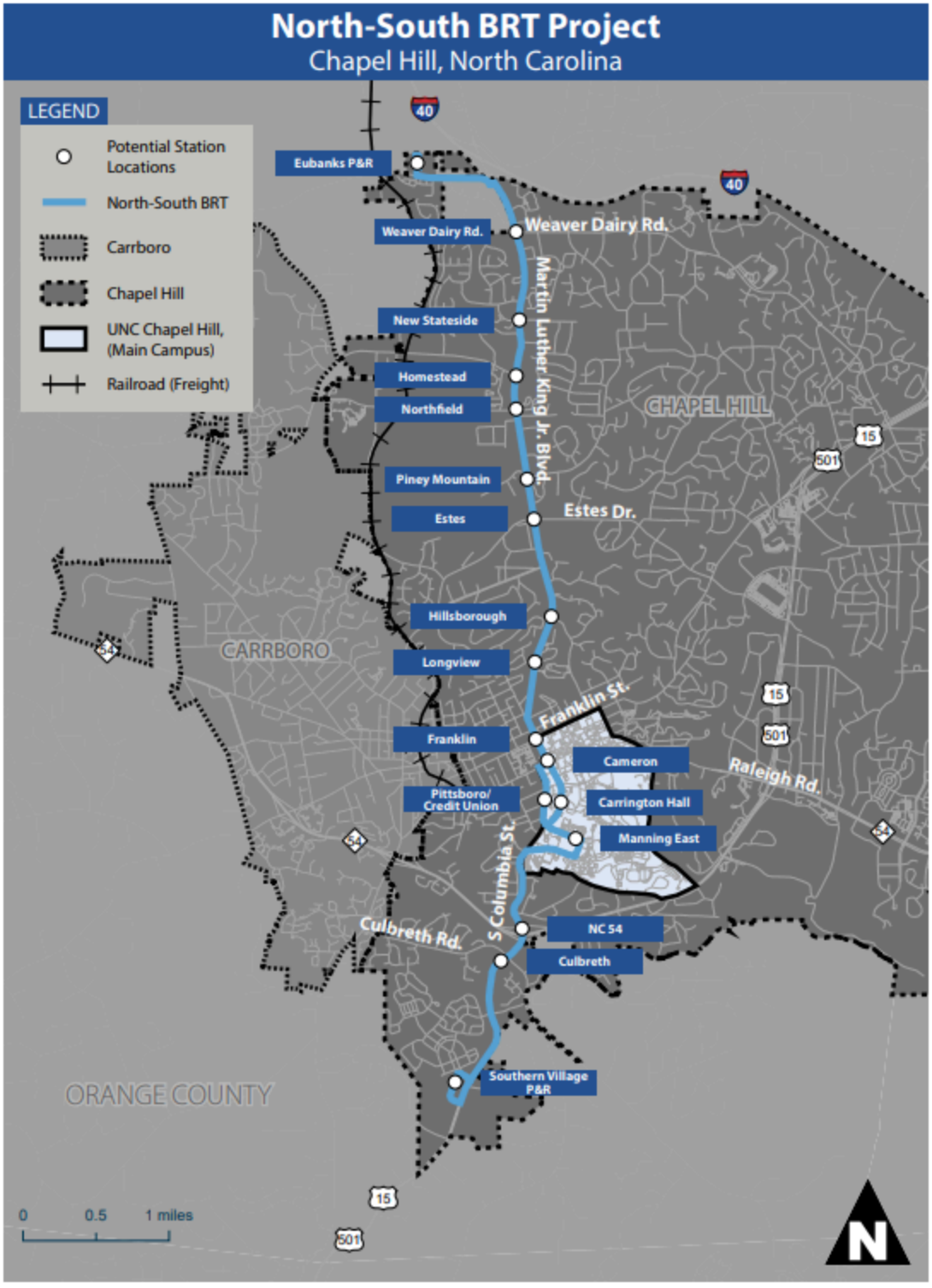


Figure 12: the proposed route of the Chapel Hill North-South Bus Rapid Transit line ("North-South Bus Rapid Transit")

Conclusion

Initially, I had intended for this comparison to unearth some ways for Greenlink to improve its service in order to meet the higher quality service that I perceived Chapel Hill Transit as having. Overall, Chapel Hill Transit provides a more usable system, but there are contextual reasons for the differences in service quality that are out of Greenlink's control. The University of North Carolina, with its considerable resources, is the most notable difference between these two systems, and there does not seem to be a realistic way for Greenlink to drum up the same monetary support and ridership that a university with tens of thousands of students, faculty, and staff can.

Most small cities in the United States will find themselves in circumstances more similar to those of Greenlink than to those of Chapel Hill Transit. Bus systems in these cities, if they exist in the first place, should focus on covering the greatest area that they can in order to best serve residents who do not have access to cars, if they are not already doing so. Likewise, small cities without buses, if it is within their fiscal ability to do so, should attempt to create basic systems that could serve these residents. Ultimately, this is the most important reason to have public transportation in small cities, as the congestion present in larger cities, which can be relieved by public transit, is not an issue.

Within the confines of the roles that Greenlink and Chapel Hill Transit play in their respective cities, both certainly have room to improve, and each has some things that it does quite well. Greenlink has very good and publicly accessible data on various service statistics, such as delays and ridership. They also have an easy way to suggest improvements on their website and a page to show the upgrades that they are currently in the process of making. Greenlink is also clearly attempting to recruit more staff to operate its buses, and with its

relatively large funding increases over the past few years, I would expect it to begin offering increased frequencies on more of its routes, or maybe even opening new routes at some point. Considering the fact that it is located in a place without much of an interest in public transit, Greenlink is doing quite well. Hopefully, it will be able to continue improving the quality of its service for those who depend on it, and perhaps as Greenville continues to grow, it could become a viable means to reduce the traffic that I am sure will plague the downtown before too long.

Chapel Hill Transit, as it is today, is likely the more appealing of the two systems, as it operates more routes, many of which have higher frequencies than Greenlink's, runs buses every day of the week, and does not charge a fare. Its focus, as it seems to be, should be on restoring its services to their pre-pandemic frequencies, which will greatly help its choice riders, and on the development of the North-South Bus Rapid Transit Project. The system may also benefit from focusing on areas besides the University of North Carolina. While its riders are primarily students, dependent riders in other areas would benefit from increased services.

I'll be excited to see where both of these systems are in 10 years.

References

"1392 Cleveland St." Google Maps. Accessed February 17, 2025. https://www.google.com/maps/@34.8222517,-82.3738139,3a,60.4y,183.68h,78.97t/data=!3m7!1e1!3m5!1sw_WbBjv3bdH9ab9IsW5zyQ!2e0!6shttps:%2F%2Fstreetviewpixels-pa.googleapis.com%2Fv1%2Fthumbnail%3Fcb_client%3Dmaps_sv.tactile%26w%3D900%26h%3D600%26pitch%3D11.02860332815824%26panoid%3Dw_WbBjv3bdH9ab9IsW5zyQ%26yaw%3D183.67612012365987!7i16384!8i8192!5m1!1e2?entry=ttu&g_ep=EgoyMDI1MDEyMi4wIKXMDSoASAFQAw%3D%3D .

"2023 Annual Agency Profile - Greenville Transit Authority." United States Department of Transportation. Accessed February 17, 2025. https://www.transit.dot.gov/sites/fta.dot.gov/files/transit_agency_profile_doc/2023/40053.pdf.

"2023 Annual Agency Profile - Town of Chapel Hill." United States Department of Transportation. Accessed February 17, 2025. https://www.transit.dot.gov/sites/fta.dot.gov/files/transit_agency_profile_doc/2023/40051.pdf.

"2023 Customer and Resident Survey." Town of Chapel Hill. Accessed January 25, 2025. https://www.townofchapelhill.org/government/departments-services/transit/more-from-chapel-hill-transit/customer-and-resident-survey-2023.

"2023-2024 Adopted Budget - Transit." Town of Chapel Hill. Accessed February 17, 2025. https://www.townofchapelhill.org/home/showpublisheddocument/54610/638295884617600000.

"504 N Greensboro St." Google Maps. Accessed February 16, 2025. https://www.google.com/maps/@35.9144799,-79.0722355,3a,77.5y,225.36h,95.5t/data=!3m7!1e1!3m5!1ssFvPjd-4aBaCsk4OW8L99w!2e0!6shttps:%2F%2Fstreetviewpixels-pa.googleapis.com%2Fv1%2Fthumbnail%3Fcb_client%3Dmaps_sv.tactile%26w%3D900%26h%3D600%26pitch%3D-5.4952895957028005%26panoid%3DsFvPjd-4aBaCsk4OW8L99w%26yaw%3D225.3639496008333!7i16384!8i8192?entry=ttu&g_ep=EgoyMDI1MDIwNS4xIKXMDSoASAFQAw%3D%3D.

"50th Anniversary." Town of Chapel Hill. Accessed February 17, 2025. https://www.townofchapelhill.org/government/departments-services/transit/50th-anniversary.

"601 Raleigh St." Google Maps. Accessed February 17, 2025. https://www.google.com/maps/@35.911089,-79.0467663,3a,68.5y,20.04h,91.43t/data=!3m7!1e1!3m5!1s8MYcIbN45CccPLSoe76F4w!2e0!6shttps:%2F%2Fstreetviewpixels-pa.googleapis.com%2Fv1%2Fthumbnail%3Fcb_client%3Dmaps_sv.tactile%26w%3D900%26h%3D600%26pitch%3D-1.4292591546078341%26panoid%3D8MYcIbN45CccPLSoe76F4w%26yaw%3D20.040098338822291!7i16384!8i8192?entry=ttu&g_ep=EgoyMDI1MDIwNS4xIKXMDSoASAFQAw%3D%3D .

"898 Cleveland St." Google Maps. Accessed February 17, 2025. https://www.google.com/maps/@34.8292804,-82.3803956,3a,75y,177.64h,86.21t/data=!3m7!1e1!3m5!1siEnjKjhCg7OOGMLkxhGxTA!2e0!6shttps:%2F%2Fstreetviewpixels-pa.googleapis.com%2Fv1%2Fthumbnail%3Fcb_client%3Dmaps_sv.tactile%26w%3D900%26h%3D600%26pitch%3D3.7883712414363373%26panoid%3DiEnjKjhCg7OOGMLkxhGxTA%26yaw%3D177.64324056928297!7i16384!8i8192!5m1!1e2?entry=ttu&g_ep=EgoyMDI1MDEyMi4wIKXMDSoASAFQAw%3D%3D .

"A Route." Town of Chapel Hill. Accessed February 17, 2025. https://www.townofchapelhill.org/home/showpublisheddocument/56710/638689009637770000.

"Annual Operating Budget - Fiscal Year 2024-2025." Greenville, SC - Official Website. Accessed February 17, 2025. https://www.greenvillesc.gov/DocumentCenter/View/28968/City-of-Greenville-FY-2024-25-Budget-Final?bidId=.

Bonina, Jared. "Public Transportation Ridership Report - Fourth Quarter 2023." American Public Transportation Association, July 2, 2024. https://www.apta.com/wp-content/uploads/2023-Q4-Ridership-APTA-Update-1.pdf.

"Bus Safety Data Report." United States Department of Transportation, September 2021. https://www.transit.dot.gov/sites/fta.dot.gov/files/2021-09/Bus-Safety-Data-Report-2008-2018-09-23-2021.pdf.

"C Route." Town of Chapel Hill. Accessed February 17, 2025. https://www.townofchapelhill.org/home/showpublisheddocument/56724/638690001988200000.

"Calendar - Greenlink Job Fair." Greenville, SC - Official Website. Accessed February 17, 2025. https://www.greenvillesc.gov/Calendar.aspx?EID=13236.

"Chapel Hill Transit Announces Service Changes." Town of Chapel Hill, December 5, 2024. https://www.townofchapelhill.org/Home/Components/News/News/19440/4048?backlist=%2Fgovernment%2Fnewsroom%2Fchapel-hill-enews.

"F Route." Town of Chapel Hill. Accessed February 17, 2025. https://www.townofchapelhill.org/home/showpublisheddocument/52758/638052261824870000.

"FCX Route." Town of Chapel Hill. Accessed February 17, 2025. https://www.townofchapelhill.org/government/departments-services/transit/routes-schedules/all-routes-schedules/fcx-route.

Fitzgerald, Megan. "Greenlink Works to Address Bus Driver Shortage, Improve Safety." Greenville Journal, March 14, 2024. https://greenvillejournal.com/community/greenlink-works-to-address-bus-driver-shortage-improve-safety/.

"Five-Year Plan: 2023-2028." UNC Transportation and Parking. Accessed February 16, 2025. https://move.unc.edu/about/act/five-year-plan-2023-2028/.

"Fixed Route Map and Timetable." Greenville, SC - Official Website. Accessed February 17, 2025. https://www.greenvillesc.gov/DocumentCenter/View/18929/Greenlink-System-Map-PDF.

"Greenlink 2020-2024 Transit Development Plan." Greenville, SC - Official Website, April 2018. https://www.greenvillesc.gov/DocumentCenter/View/11221/2018-Transit-Development-Plan-PDF.

"Greenlink Operations - Winter Report 2017." Piedmont Health Foundation, 2017. https://piedmonthealthfoundation.org/wp-content/uploads/2017/02/Piedmont-Health-Foundation-Greenlink-Report.pdf.

"Greenlink Performance." GVL GIS. Accessed February 16, 2025. https://gis.greenvillesc.gov/pages/greenlink-performance.

Higashide, Steven. *Better buses, better cities: How to plan, run, and win the fight for effective transit*. Washington, DC: Island Press, 2019.

Landrum, Cindy. "Transit Plan Outlines How Greenlink Could Expand Hours, Service." Greenville Journal, May 3, 2018. https://greenvillejournal.com/news/bus-service/.

McConnell, Brighton. “Chapel Hill Transit Lands $24.4 Million in Federal Grants for Bus Rapid Transit Project.” Chapelboro.com, January 16, 2025. https://chapelboro.com/news/news-transit/chapel-hill-transit-lands-24-4-million-in-federal-grants-for-bus-rapid-transit-project.

Moss, Savannah. “Split Decisions: Citizenship Amendment Passes, Greenville’s Penny Sales Tax Defeated.” The Greenville News, November 6, 2024. https://www.greenvilleonline.com/story/news/politics/elections/2024/11/06/sc-passes-constitutional-amendment-greenville-penny-sales-tax-fails/75901554007/.

Nessen, Joseph von. “The Economic Impact of the Greenlink Transit Development Plan.” Greenville Connects, February 2023. https://greenvilleconnects.org/wp-content/uploads/2023/02/002-SC-2023-GreenvilleConnects-EconImpRprtV3-press.pdf.

“North-South Bus Rapid Transit.” United States Department of Transportation, 2023. https://www.transit.dot.gov/sites/fta.dot.gov/files/2024-03/NC-Chapel-Hill-North-South-BRT-Profile-FY25_0.pdf.

“Passes & Fares.” Greenville, SC - Official Website. Accessed February 16, 2025. https://www.greenvillesc.gov/595/Passes-Fares.

“Schedules and Routes.” Greenville, SC - Official Website. Accessed February 16, 2025. https://www.greenvillesc.gov/1200/Schedules-and-Routes.

“System Map.” Town of Chapel Hill. Accessed February 17, 2025. https://www.townofchapelhill.org/home/showpublisheddocument/51208/637843096905800000.

“U Route.” Town of Chapel Hill. Accessed February 17, 2025. https://www.townofchapelhill.org/home/showpublisheddocument?id=46301.

“U.S. Census Bureau Quickfacts: Chapel Hill Town, North Carolina.” United States Census Bureau. Accessed February 17, 2025. https://www.census.gov/quickfacts/fact/table/chapelhilltownnorthcarolina/POP060210.

“U.S. Census Bureau Quickfacts: Greenville City, South Carolina.” United States Census Bureau. Accessed February 17, 2025. https://www.census.gov/quickfacts/fact/table/greenvillecitysouthcarolina/PST045223.

“U.S. Census Bureau Quickfacts: Greenville County, South Carolina.” United States Census Bureau. Accessed February 17, 2025. https://www.census.gov/quickfacts/fact/map/greenvillecountysouthcarolina/INC110221.

"U.S. Census Bureau Quickfacts: Orange County, North Carolina." United States Census Bureau. Accessed February 17, 2025. https://www.census.gov/quickfacts/fact/table/orangecountynorthcarolina/PST045224.

Wong, Fiona. "Chapel Hill Transit Wins Statewide Safety Award for Lack of Preventable Accidents." Daily Tar Heel, April 23, 2024. https://www.dailytarheel.com/article/2024/04/city-chapel-hill-transit-award-safety.