Schuyler County Transit Analysis

Cornell University Design Connect

Produced in conjunction with the **ARC of Chemung-Schuyler (Schuyler County Transit)**

December 2024

Team

Cornell University Design Connect

Team Managers

Stella Frank - URS ‘25
Trevor Jensen - URS ‘23, MRP ‘25

Team Members

Demographics:

Diego Onofri - URS ‘26
Ethan Ordower - URS ‘25
Yucheng Zhang - URS ‘23’ MRP ‘24

Routes & Operations:

Matt Blades - URS ‘27
Moriyah Kleiman - M.S. Regional Science ‘26
Chet Lukanic - URS ‘25
Jin Watanabe - URS ‘27
Nicholas Wilsey - URS ‘25

Outreach:

Arjun Dhawan - URS ‘27
Selinna Ren - Landscape Architecture ‘27

ARC Chemung-Schuyler (Schuyler County Transit) Staff

Dorthy Asbury - Director of Transportation
Jen Lyn Fisher - Mobility Manager
Wendy Shutter - Director of Business Services

Team Note:

We are incredibly grateful to the ARC Chemung-Schuyler for allowing us the opportunity to work on this transit analysis project with them. We recognize the rarity of this sort of work and the far-reaching implications it has for the lifestyles of thousands of transit-dependent users and staff that its recommendations may impact; we are honored to be trusted to help contribute to this broader initiative. Many thanks are due to the ARC staff for generously finding and preparing datasets for us to analyze, promptly answering our many questions about SCT and Schuyler County, and hosting us for two site visits.

Table of Contents

1 - Demographics

Background

In line with the ARC's vision of serving mobility-limited residents (elderly, disabled, and low-income folks), we have used Census data to conduct a demographic analysis visualizing where these groups live. Additionally, we sought to understand what areas would be most receptive to transit, based on demographic indicators like income and population density. Most maps in this section used data sourced from the 2020 American Community Survey 5-Year Estimates tables, unless otherwise noted.

County Demographic Overview

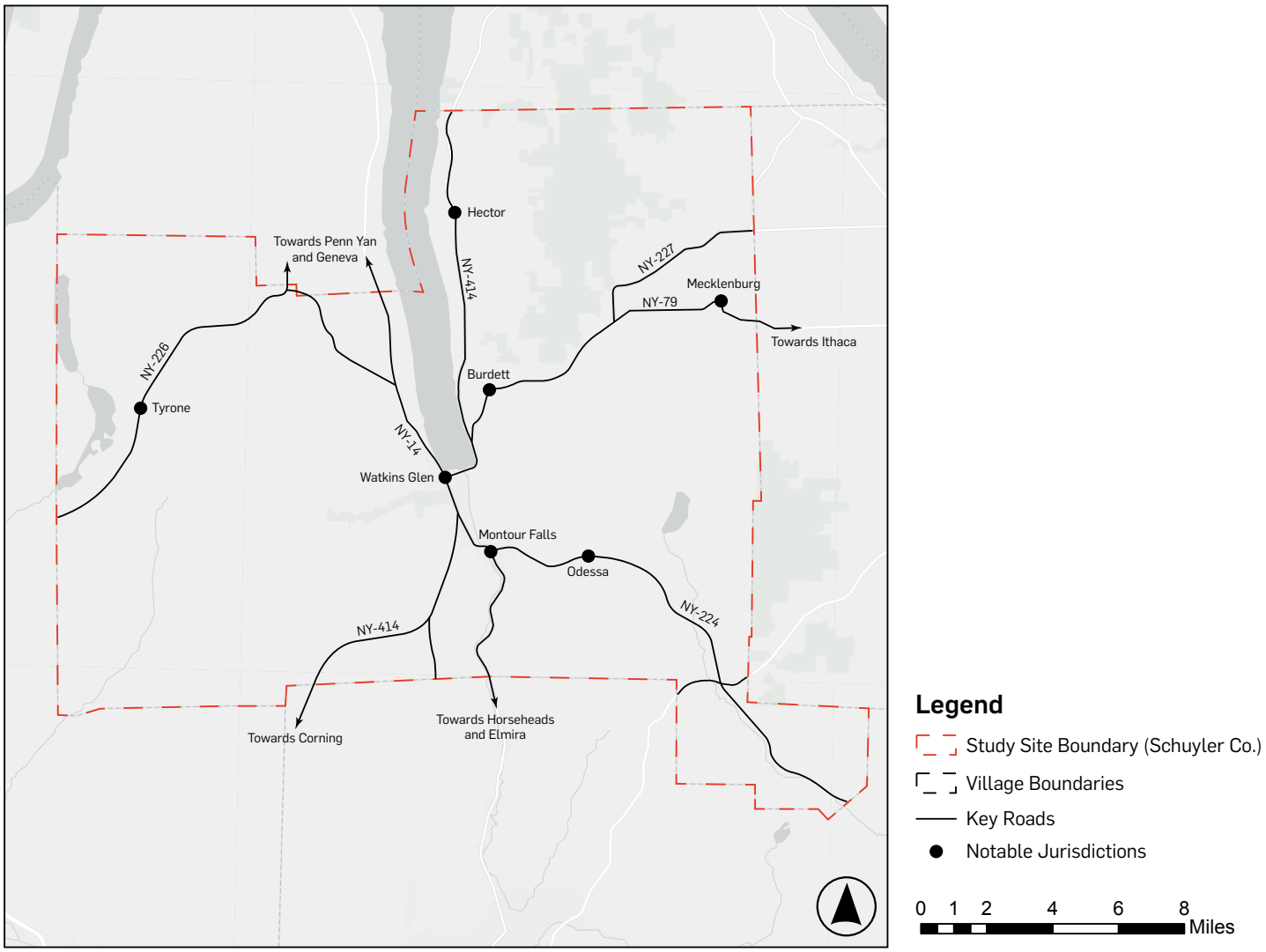


Fig 1: Schuyler County context map highlighting key (state) roads) and notable jurisdictions

Population (2023) **17,507**

Employment Rate (2022) **54.9%**

Population Density **54 ppl/mi^2**

Senior Population (# of Residents 65+) **3,900**

Overview

The need for Schuyler County Transit can best be revealed through the county's demographic profile.

Population

Schuyler County's overall population and population density are remarkably low in comparison to the New York state average. Schuyler's total population of 17,507 and density of 54.5 residents per square mile, making it the second least populous and eleventh least densely populated county amongst New York state's 62. It is also rural relative to many of its neighbors. Chemung, Steuben, and Tompkins Counties all have total populations between 81,325 and 103,558 (2023), a 128-141% differerence compared to Schuyler County. Similar trends are seen with population density; Steuben is the closest to Schuyler at 67 residents per square mile, while Tompkins and Chemung are much more dense at 223 and 207 respectively. The only adjacent counties that come close to Schuyler's figures are Yates and Seneca, with populations of 24,472 and 32,349 (2023) and population densities of 73 and 105 residents per square mile.

Age Distribution

The largest proportion (41%) of Schuyler County's population falls within the 35-64 age group, which includes the working age population that might rely on transit for daily commuting. However, the senior population (65+) constitutes 22% of the total population, revealing the great need for health and human services needs for county residents. Looking at both of these demographic groups, we can see that Schuyler County's aging pyramid is very top-heavy, placing pressure on public service providers to be able to grow to meet demand in the coming decades as this trend intensifies. For (transportation) planners, an emphasis on age-friendly community planning needs to be considered as well.

Although out-migration from rural communities and people's preference to "age-in-place" accelerate this demographic trend in rural counties across the country, Schuyler County is especially affected, as it ranks 8th highest in New York state for percentage of their population being in the senior (65+) demographic bin.

Racial Composition

Schuyler County is predominately White at 96.35% (2020), so mobility concerns centered around race are less likely to be prominent here. Indeed, Black individuals constitute only 1.1% of the population, Asian 0.6%, Native American 0.34%, and those identifying as Hispanic/Latino at only 2.04%. As such, we do not focus much on race in our demographic analyses and recommendations.

Income and Employment

Income and employment statistics reflect the economic constraints on many households in Schuyler County and thus potential dependency on public transit. The overall median household income for the county sits at $61,316 (2020), the 12th lowest in New York state. This is reflected in the fact that 15.8% of households in Schuyler County sit below the poverty line. Importantly, 1 in 4 children (24.4%) live in a household below the poverty line, demonstrating the difficult financial situation that many familes find themselves in.

Average Age by Census Block

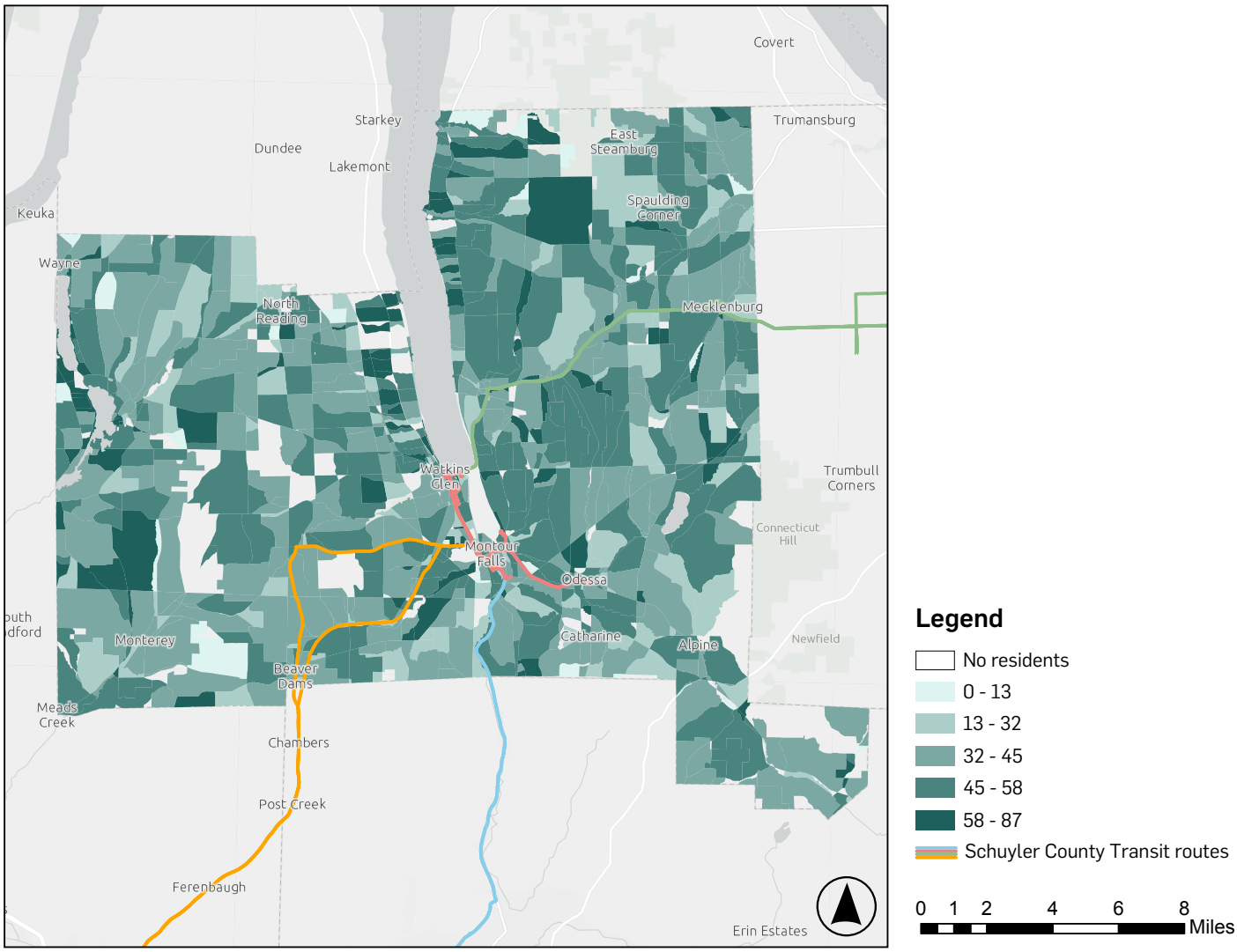


Fig 2: Average age per census block in Schuyler County (county-level view)

Fig 3: Average age per census block in Watkins Glen and Montour Falls (inset view)

The above maps depict the average age (per census block) of residents in the county along with bus routes overlaid for context. Importantly, there is no clear geographic pattern of aging across the county; census blocks with high average resident age are broadly distributed. Although this general spread means the data has limited ability to inform our recommendations, it nonetheless reaffirms the reality that Schuyler County has an aging population. Thus, it is important to service concentrations of elderly populations throughout the county. Currently, the elderly population living in the three primary villages are well-serviced, and there are connections to Schuyler Hospital and out-of county health services. There are several blocks along the Seneca Lake and Tyrone which are on the older side, indicating a possible a greater reliance on public transportation.

Median Household Income by Census Tract

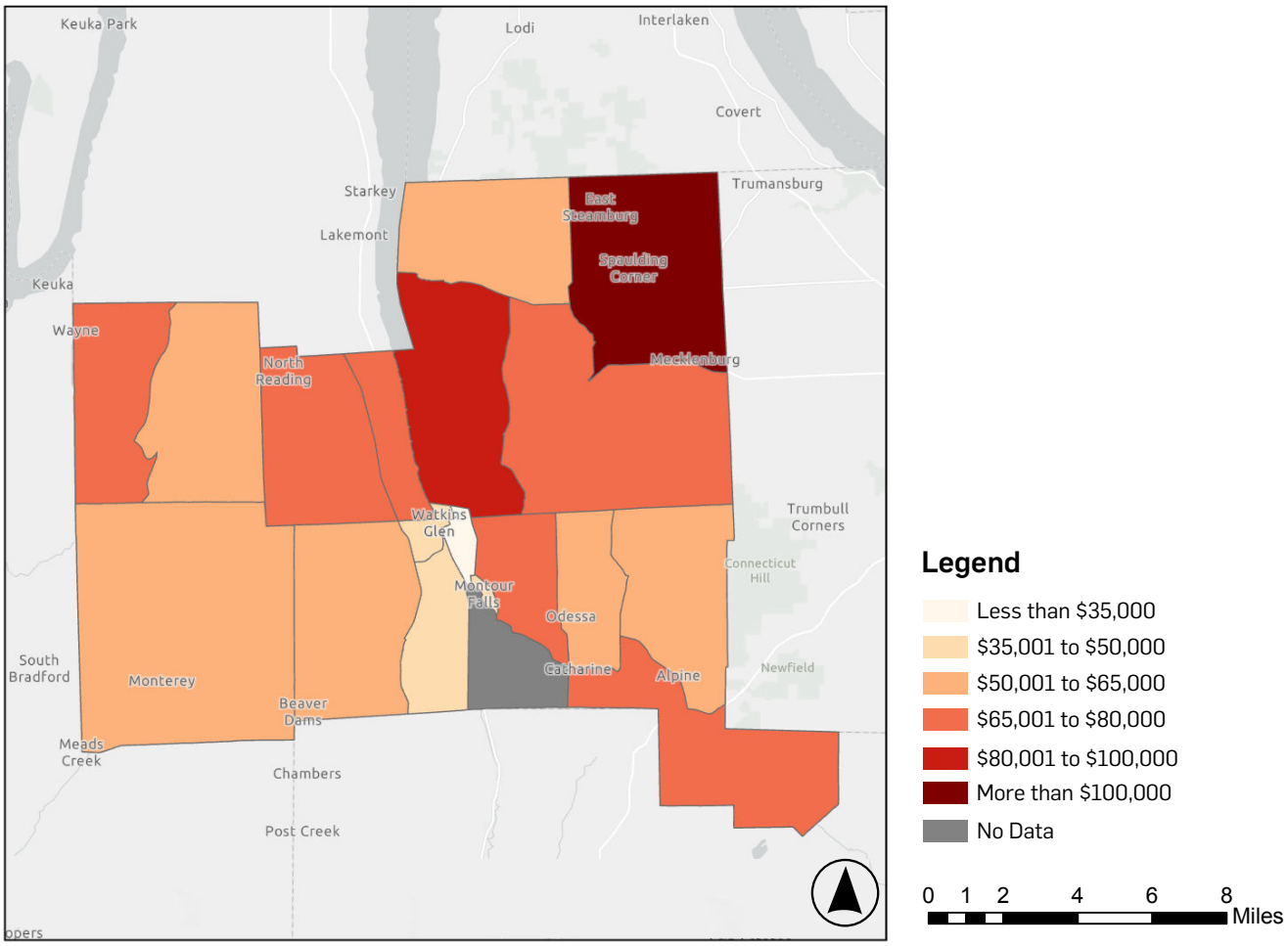


Fig 4: Median household income per census block group in Schuyler County (county-level view)

This above map depicts Median Household Income by census block group. Unfortunately, this data is not as granular as the other maps as the smallest unit of information is given at the census block group level. Additionally, the 2020 ACS 5-Year Estimates had MHI information only at the tract level, so we used 2022 ACS 5-Year Estimations instead to generate a more useful analysis. Nonetheless, broad income trends can be revealed by this map. The census block groups surround Seneca Lake have significantly higher MHI than other tracts; this is likely due to its proximity to Cornell University (as a bedroom community of Ithaca) and the high-value agrotourism vineyards along Seneca Lake. The poorest census tracts include Watkins Glen and Montour Falls, demonstrating how important the Village Connections route is for the lower income residents living there, and likely explaining some of why ridership is high on that route (discussed later). Additionally, the rural census block groups to the far west and south are also relatively poor. The western half of the county lacks scheduled fixed-route transit service altogether and southeastern tract lacks service past Odessa.

These findings help substantiate our recommendations discussed later. Wealthier, eastern county constituencies would be best served by expansion towards Ithaca/Cornell University for their commuting purposes, while poorer, western county residents could have their needs addressed with new service expansion connecting their town centers with Watkins Glen's health and shopping amenities. Impoverished individuals living in Watkins Glen and Montour Falls would benefit from higher service frequency.

Population Density by Census Block

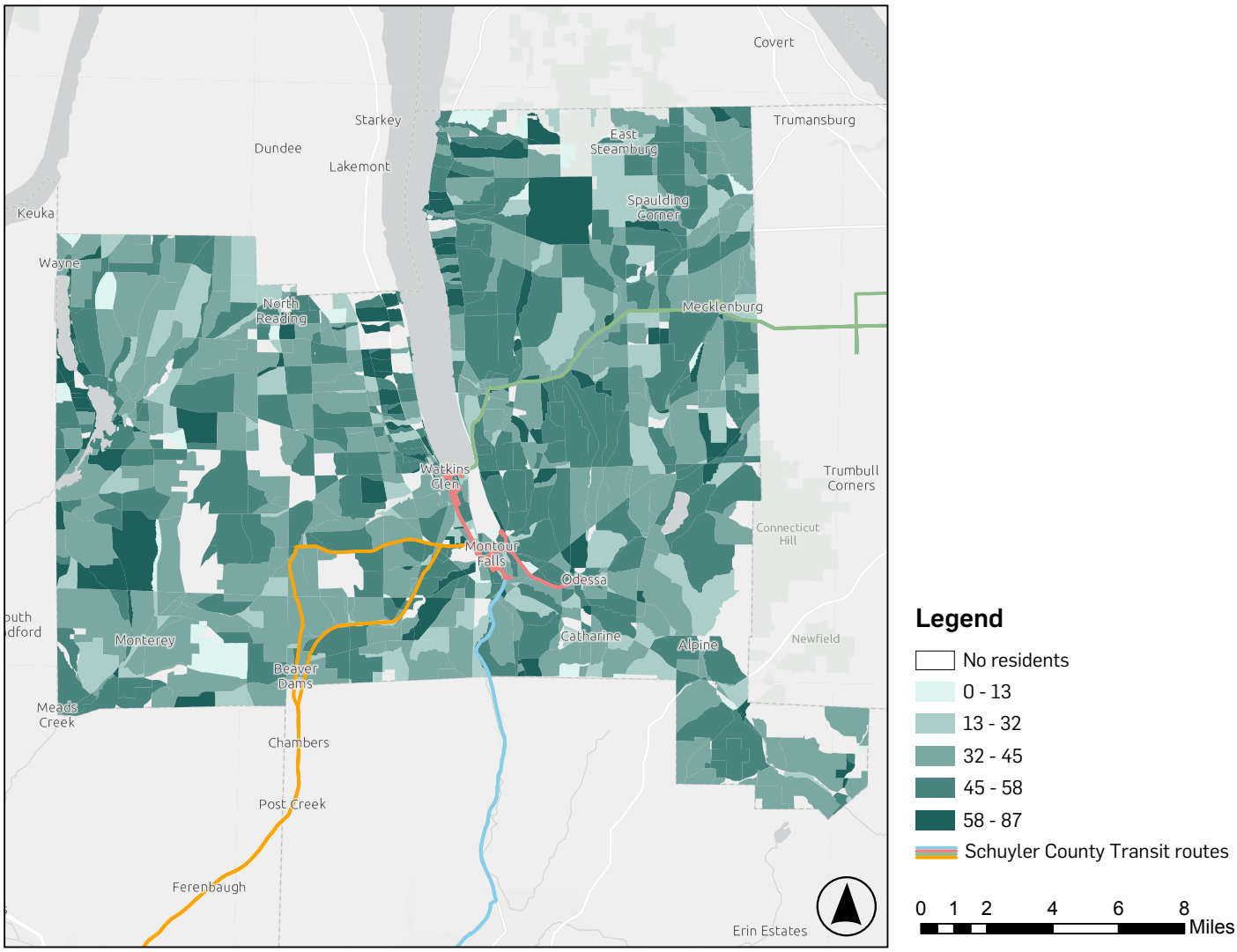


Fig 5: Population density per census block in Schuyler County (county-level view)

Fig 6: Population density per census block in Watkins Glen and Montour Falls (inset view)

Population Density is one of the key indicators/predictors of public transit's potential success, so we have mapped this metric to see how it aligns with Schuyler County Transit's existing route network.

The Village Connections route, connecting the three largest towns of Watkins Glen, Montour Falls, and Odessa, passes through the highest density areas in the county, with up 3,830 inhabitants per square mile. Importantly, these three villages are all aligned on an urbanized spine, allowing Village Connections to operate as the trunk of the route network. Coverage within these villages is further maximized by the flag zone policy Schulyer County Transit has to allow buses to deviate short distances off their fixed route. However, there are a few pockets of density that the bus service is missing due to the challenges they face for expanding service. For example the town of Tyrone – depicted via the darker green tracts in the northwestern corner of the county – could be a possible area for service expansion. However, we cannot solely rely on population density data to guide our recommendations due to the data's limitations. For instance, the denser blocks around Seneca Lake tend to have families of higher economic status, as discussed previously. High income tends to be an indicator of car ownership, and thus interest in transit tends to be lower; pockets of density do not always require public transit.

Preliminary Community Asset Mapping

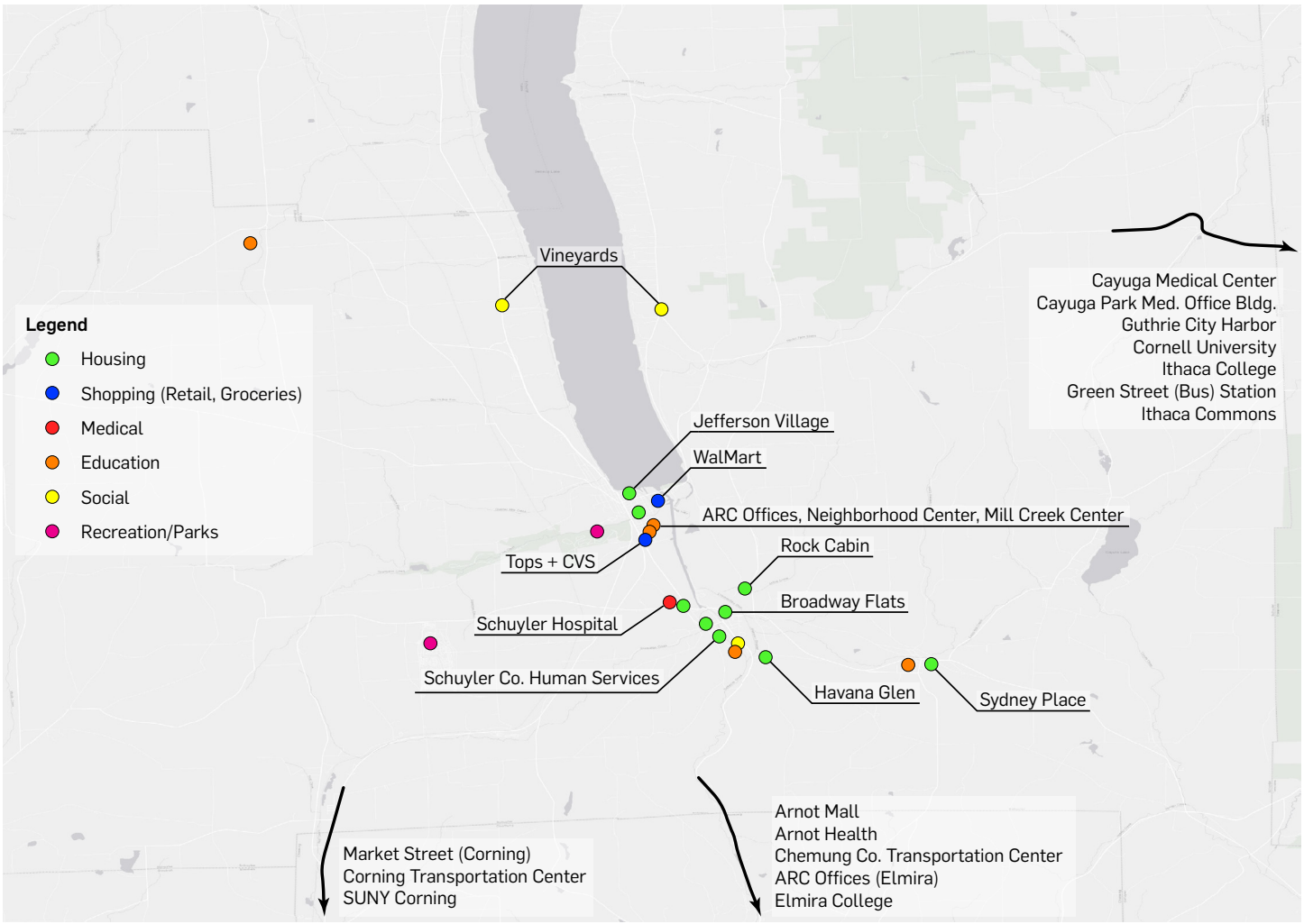


Fig 7: Community asset map for Schuyler and surrounding Counties

We conducted an internal preliminary community asset mapping exercise to understand how demographic trends align with or influence the location of essential services. By finding gaps between demographic need and asset deserts, we can identify future areas of growth for Schuyler County Transit.

The most important pattern we observed is how few medical assets are located within Schuyler County. Schuyler Hospital is located just outside the village of Montour Falls, but it is fairly small and lacks specialist facilities. Larger hospitals with clincs are instead located in neighboring counties, notably Chemung, Tompkins, and Steuben, necessitating the need for inter-county transit service connecting the residents to these services. Looking at public welfare, the county human services office is located in Montour Falls and is directly served by the Village Connections route.

Turning to pharmacies and grocery and retail stores, WalMart and Tops-CVS provide a shopping anchor in Watkins Glen that are well-served by the Village Connection route and some rural-intercity services. However, we also observe a greater density and variety of these essential shopping assets in Arnot Mall in Horseheads (Chemung County).

Looking to domestic assets like housing and education, housing, we have identified several living communities for the elderly and disabled. Manufactured home communities, as a form of rural low income housing, also exist predominately around Montour Falls.

Looking at broader trends, most assets in Schuyler County are concentrated to Watkins Glen and Montour Falls, particularly along the NY-14 and NY-224 corridors. However, we have observed that most rural areas of the county are asset deserts, demonstrating the need for intra-county rural service, either in the formats of expanded fixed route or demand-response (Dial-a-Ride). Furthermore, shortcomings in asset quality, especially for health services, within the county necessitate residents to be partially dependent on the community assets of neighboring counties. As such, we believe that while the existing intercity rural routes can serve a commuting function, much of their use is likely attributable to essential medical and shopping trips. As the county continues to age over the coming decades, this trend will only become more apparent.

A brief list of notable community assets is as follows:

Assisted Living Facilities: Falls Home
Senior/Income-Based Housing: Catherine Court Apartments, Jefferson Village, Romeo Village, School Apartments, Sydney Place
Manufactured Housing Communities: Havana Glen Park, Rock Cabin Apartments
Shopping (Retail, Groceries): WalMart, Tops + CVS
Health + Human Services: Schuyler Hospital, Arnot Health, Cayuga Medical Center, ARC Offices, the Neighborhood Center, Mill Creek Center

2 - Further Context

County-wide Traffic Analysis

Note that data used did not include non-contract passengers, e.g. The Arc Chemung-Schuyler standing orders.

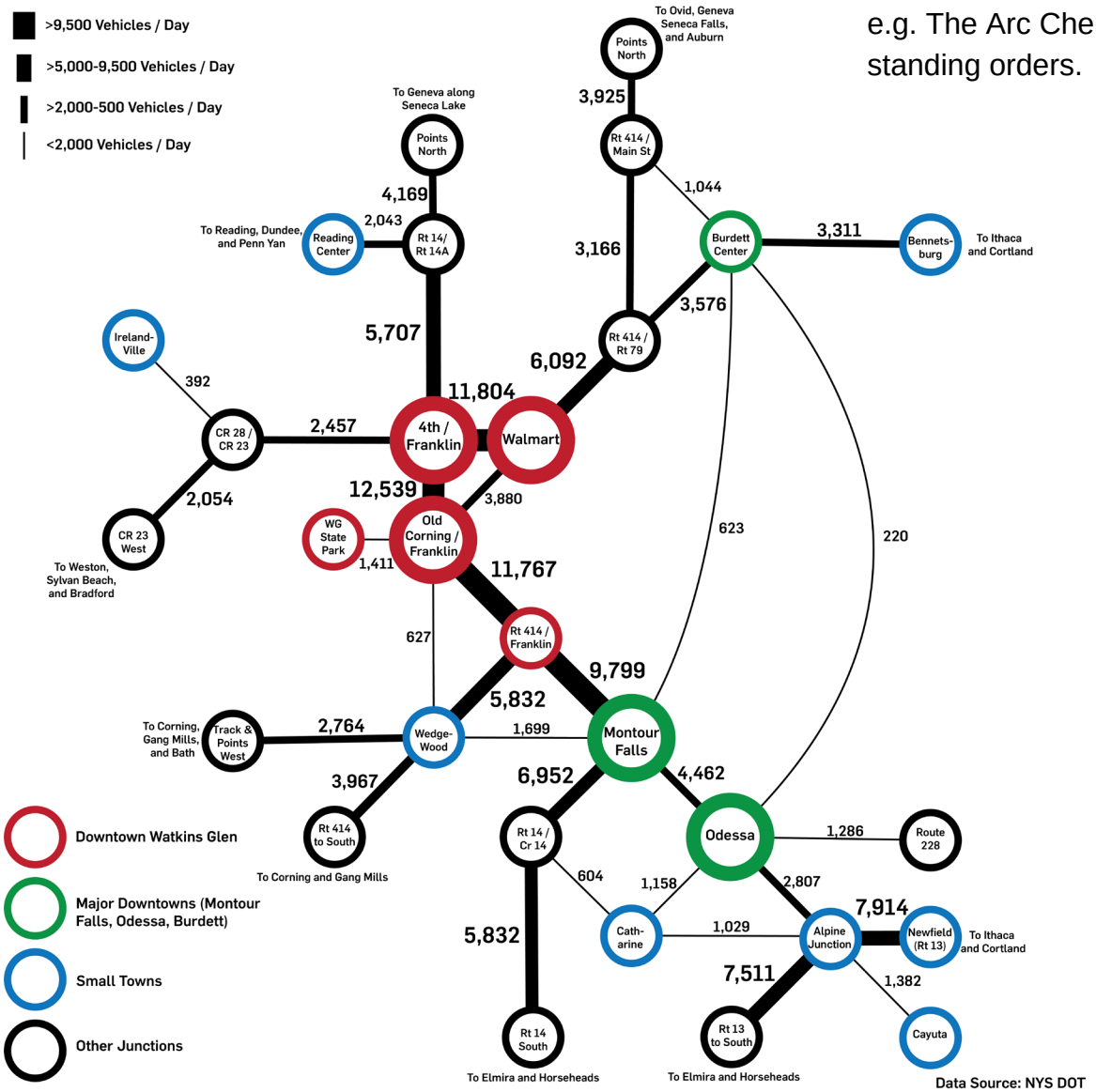


Fig 8: Traffic analysis map for Schuyler County

To estimate latent demand and county travel patterns, we analyzed traffic volumes on roads throughout the county. The links we analyzed were those that Schuyler County Transit already operates along, major out-of-county links (NY-14, 414, 13), and links to other larger towns in the county (Tyrone, Hector). We also investigated direct links between Burdett Center and Montour Falls, and Burdett Center and Odessa, to determine the feasibility of modifying existing routes to improve route efficiency.

As we expected, the largest concentration of traffic runs from Montour Falls to Walmart through downtown Watkins Glen, which runs in line with the ridership data we will discuss later. All of this is within the central "core" of the system.

There is also a large amount of traffic flowing through the county at the southeast corner, primarily trips operating from Elmira to Ithaca along NY-13 in Alpine Junction. Given Alpine Junction's popularity, it is potentially worth considering connecting that community with a fixed route; opportunities to coordinate a transfer with C-Tran's Elmira-Ithaca route exist. However, these traffic figures are indicative of Elmira-Ithaca commuting patterns and thus could also be cast aside in our analysis.

Traffic flows to points outside the county are summarized in the following table and with the anomalous high data along route 13 excluded.

Road	Vehicle Volume per Day	End Destination
NY-14 (South)	5,832	Elmira, Horseheads
NY-14 (North)	4,169	Geneva
NY-414 (South)	3,967	Corning, Gang Mills
NY-414 (North)	3,925	Ovid, Geneva, Seneca Falls, Auburn
NY-13 (East)	3,311	Ithaca, Cortland

Chart 1: Key intercounty commuting corridors

In general traffic flows towards the south trend slightly higher than those towards the north, but there isn't a significant difference. This analysis also revealed a distinct flow of traffic towards Tyrone, NY via County Route 23 towards the west.

Lastly, peripheral direct links between Montour Falls and Odessa to Bennetsburg seem infeasible due to extremely low traffic flows along these roads.

Data for this analysis was sourced from the New York State Traffic Data Viewer available at https://nysdottrafficdata.drakewell.com/publicmultinodemap.asp.

Federal Funding Grants

In our initial conversations with Schuyler County Transit, they were clear that almost all of their funding comes from FTA 5310 and 5311 grants, with no county tax revenue used. Because of this, we chose to explore what these grants are, how they operate, and how they apply to our project specifically.

5310 Grants are provided to states, and other designated recipients, to meet the transportation needs of people who are disabled as well as older adults. Funds are apportioned to states based each one's share of the population that comprises these groups. This funding is given to the New York State Department of Transportation to apportion to counties, cities, and other developed areas. Because of this, the agencies we are working with would be designated as a "subrecipient."

It also mentions support for both traditional and nontraditional projects. Traditional projects include any solution that comprises of buses and/or vans, wheelchair lifts, transit information systems, acquisition of transit services, and/or mobility management, as defined in 49 U.S.C. 5302(3). Nontraditional projects are any services that go beyond traditional paratransit services. These include, but are not limited to, travel training, volunteer driver programs, constructing accessible paths to transportation, signage improvements, and purchasing taxi or rideshare vehicles.

5310 funding will also cover up to 80% of capital expenditures, 50% of operating expenses, and 10% of administrative costs.

5311 Grants are part of the "Formula Grants for Rural Areas Program." They are intended to provide capital, planning and operations assistance to states to support public transit, specifically FTA-defined areas with less than 50,000 population. This is exactly the pool that Schuyler County and Watkins Glen fall into. These grants are applicable to both states and federally recognized Indian tribes, with specific recipients being state or government authorities, nonprofit organizations, public transit operators, and/or Intercity bus operators.

This pool of money can be used to cover up to 80% of capital project expenditures, 50% of operating assistance, and up to 80% of costs for ADA-abiding non-fixed route paratransit.

SWOT Analysis

Strengths

- The ARC recognizes the importance of addressing the disabled and growing senior population
- The route network they have designed supports these priorities
- The ARC is resilient in identifying funding sources to continually grow their transit service over the past 15 years

Weaknesses

- The ARC has trouble hiring more drivers and purchasing more vehicles to expand service
- Limited resources make it difficult to enhance service quality and reduce waiting times for buses
- The rural nature of the county makes traditional transit service provision difficult, though density doesn't always equal demand

Opportunities

- As a human services organization, the ARC is well positioned to offer transit service to community assets
- The ARC staff have a strong personal connection with their riders
- The ARC is continually exploring future avenues for expansion to serve their targeted demographic but also to break into the county's important tourism industry

Threats

- As the demand for transit service grows due to the rapidly aging population, SCT will need to grow at a commensurate rate to meet demand
- To fund this expansion, the ARC will need to identify additional funding sources
- Drivers themselves are aging and many are part-time or volunteers. Long-term retention concerns need to be addressed

Fig 9: Schuyler County Transit SWOT Matrix

Based on our conversations with ARC/SCT staff, we put together a SWOT Matrix to help organize and categorize many of these thoughts. In doing so, it set up some guiding principles that we directed how we approached imagining and prioitizing our recommendations. Synthesizing all of our findings into a briefer format, we feel that the ARC is the best possible entity to be operating SCT due to their mission, area of work, and community connections, yet their resource (human and capital) limitations will constrain future growth that we expect will be necessary.

Park & Ride Study Review

In looking for recently-produced precedent studies to guide our report, we investigated the "Exploration of Potential Park-and-Ride Lot Locations in Schuyler County" report preapred by ICF Inc. on behalf of NYSDOT for the ARC in May 2024. Park & Ride facilities are a common tool used to help increase public transit usage and reduce congestion. By strategically placing these parking facilities along commuting corridors, drivers can save money on fuel, reduce mileage traveled, and pay reduced or no parking fees overall by transferring to a bus that will complete their commute for them. This model can work especially well in low-density communities like Schuyler County, as it is not practical to run a bus within walking distance from every residence like in a city; rather, residents can drive themselves to the bus instead.

The report notes that Schuyler County has one 54-space park & ride facility, located in Alpine Junction in the southeast corner of the county. It is placed along the busy NY-13 corridor, which the report noted as having 2,000 trips pass by on a Spring day (our prior traffic analysis indicates this figure is much higher). It is worth noting that this park & ride is not served by Schuyler County Transit; rather, C-Tran's route 30 (Elmira-Ithaca) operates to here. This route is addresses travel patterns independent of Schuyler County Transit's jurisdiction (Chemung County to Cornell University commuting).

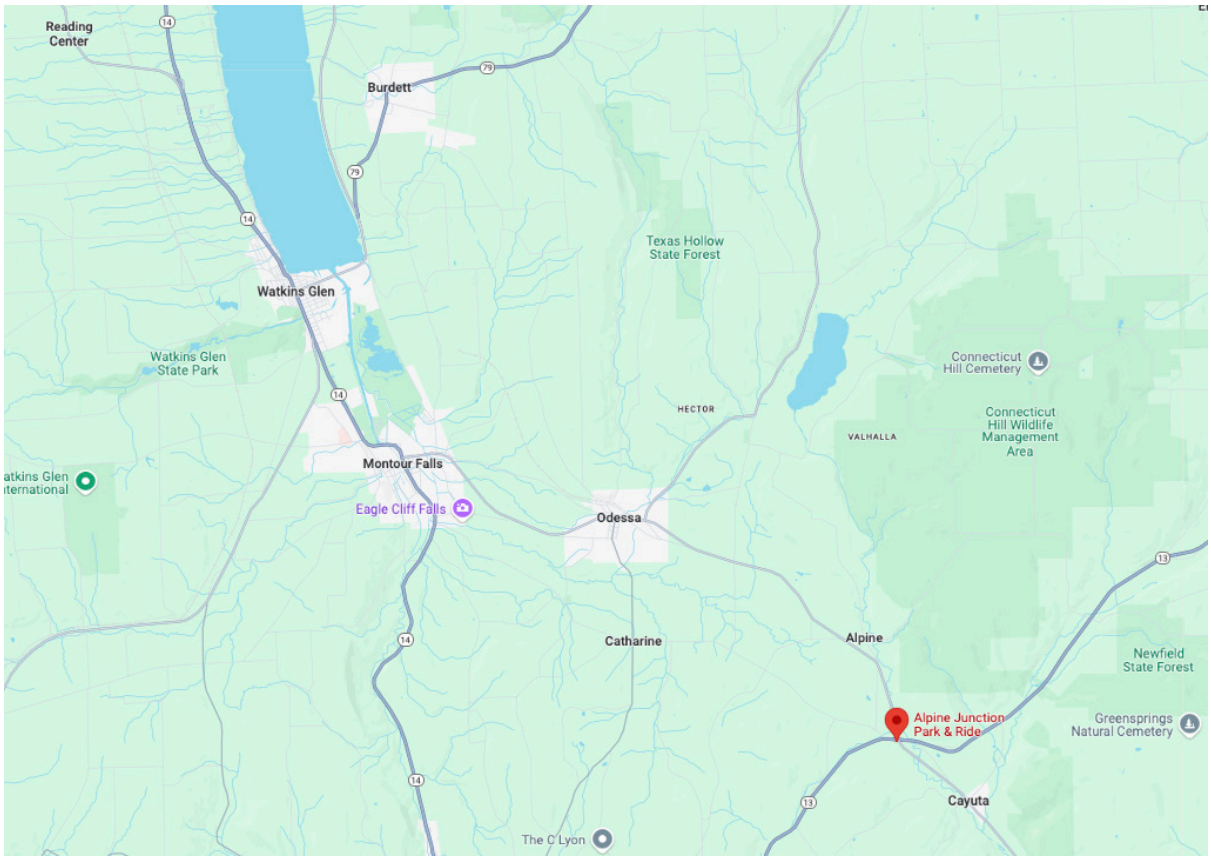


Fig 10: Map showing the location of Alpine Junction Park & Ride

In recommending new park & ride locations, the consultants analyzed origin and destination data to place their proposed facilities alongside popular travel patterns. They found that most trips end in the town of Dix (34%), the town of Hector (21%), and the town of Orange (12%). The same three towns comprised the majority of origin points as well.

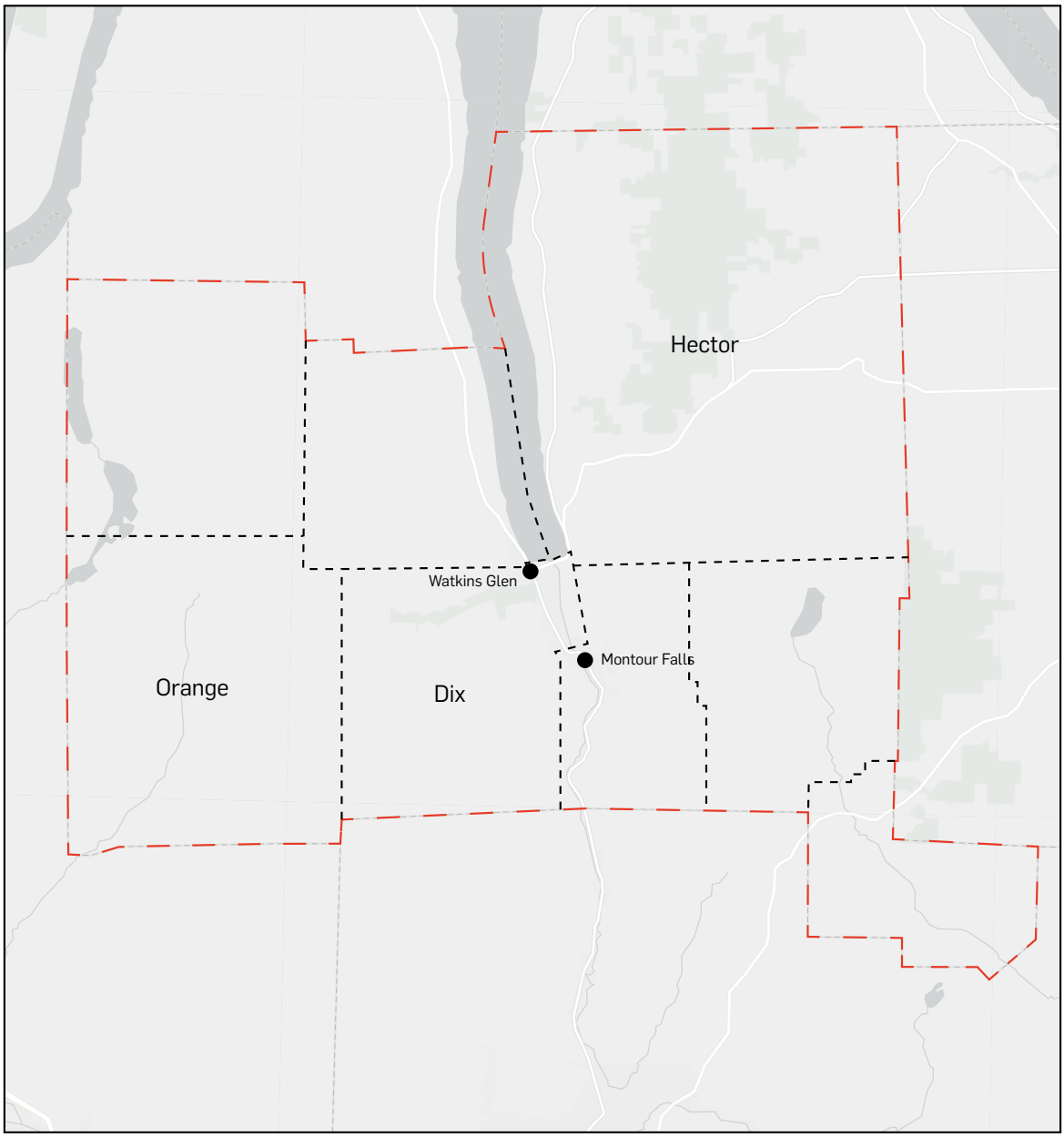


Fig 11: Towns identified in the Origin and Destination analysis

Regarding the type of places these origin and destination points are, most people were found to end their trips at home (27%), shopping centers (21%), and work (14%). Origin points were similar, with home (32%), "social" places (16%), shopping centers (15%), and work (14%) being cited.

To get to these places, most people drove themselves (54%), were a passenger with someone else - carpooling (31%), or walked (9%). It is implied that no one used public transit for these trips as no modal allocation is given for that category.

The report then pivoted to recommending locations based on these analyses. Their first location suggested finding a lot in Watkins Glen. With more than 8,300 commuter trips going to the city per day, there is lots of potential demand to provide these commuters with a place to park and transfer to a bus

complete their trip. Of the corridors analyzed, they call out NY-14 as a high traffic volume road with congestion that ought to be addressed. The report also suggests funneling some of the congestion bound for Watkins Glen's many tourist attractions (Watkins Glen State Park, Watkins Glen International) into the park & ride. Lastly, the report suggests the highly visibility of Watkins Glen will raise awareness for the park & ride.

The second proposed location looks at Reynoldsville on NY-79. This section of the road is quoted as having 3,300 daily commuter trips heading to/from Tompkins County. As such, residents of nearby Watkins Glen, Burdett, Mecklenburg, and Ithaca can easily utilize a park & ride here to finish their commuting trips via the Tompkins Connections route.

The report also proposes Mecklenburg as another park & ride location. Located on the same NY-79 corridor as Reynoldsville, this park & ride would serve a near-identical purpose. However, the size of Mecklenburg (2019 population of 4,000-6,000) means there is lots of opportunity for local transit ridership growth here. Constructing a formalized bus stop-parking lot could help popularize Tompkins Connections. Interestingly, Schuyler County Transit claims there is park & ride (gravel lot) in Mecklenburg in their Tompkins Connections schedule. It is unclear to us why this facility is not discussed in the report. The lot is around 500 ft. from the main road though, and thus may not be very well-advertised or apparent to potential users.

The last park & ride location suggested is in Beaver Dams. Located in the southern portion of the county, this location would help reduce congestion on NY-414 for cars traveling to/from Corning and on NY-14 for Elmira.

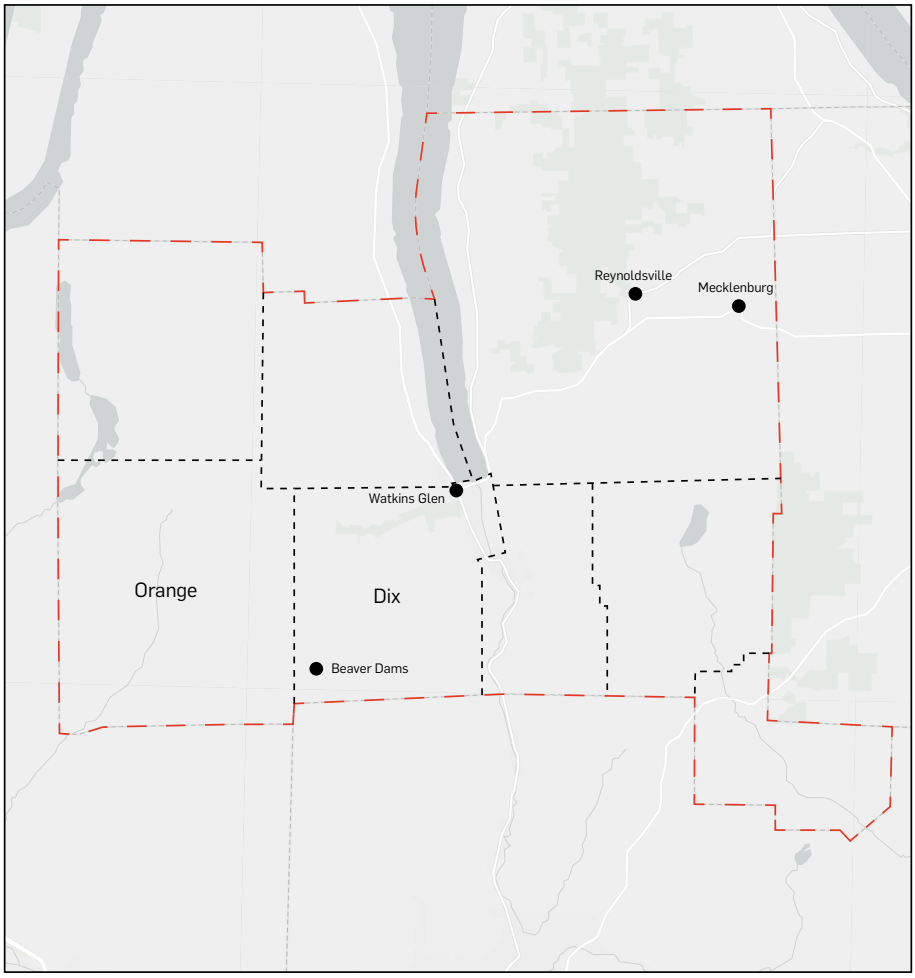


Fig 12: Potential P&R locations identified by the report

Call Log Analysis

All analyses in this section are based on call center logs received by SCT and the Link-Line Service

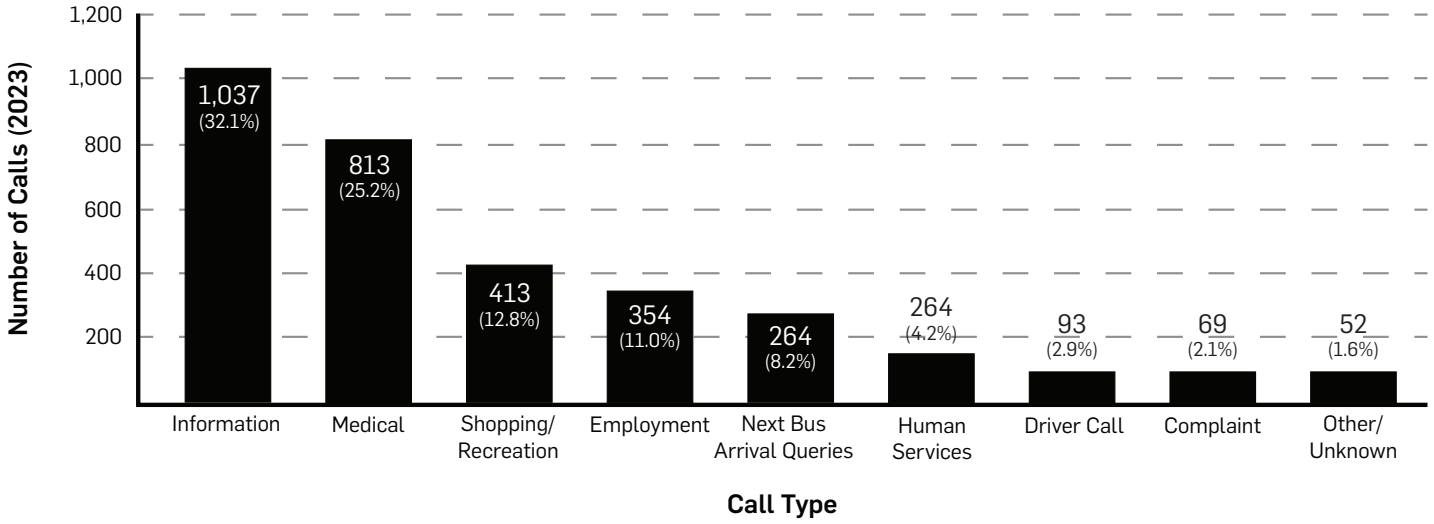


Chart 2: Number and share of call types made to Schuyler County Transit in 2023

The above chart uses call log data provided by SCT to categorize all calls made in 2023 by type. This data provides a look into what kinds of services people are looking from their transit system. Health, Human Services, and Shopping-related calls are fairly frequent, which align with our demographic expectations and will be discussed in further detail in the Operations Analysis section. A significant number of calls are also informational, as evidenced by the Information and Next Bus Arrival Queries columns. This demonstrates the need for better rider tools, such as real-time vehicle tracking (Google Maps) and schedule visibility. We attempt to address these topics in our Recommendations section.

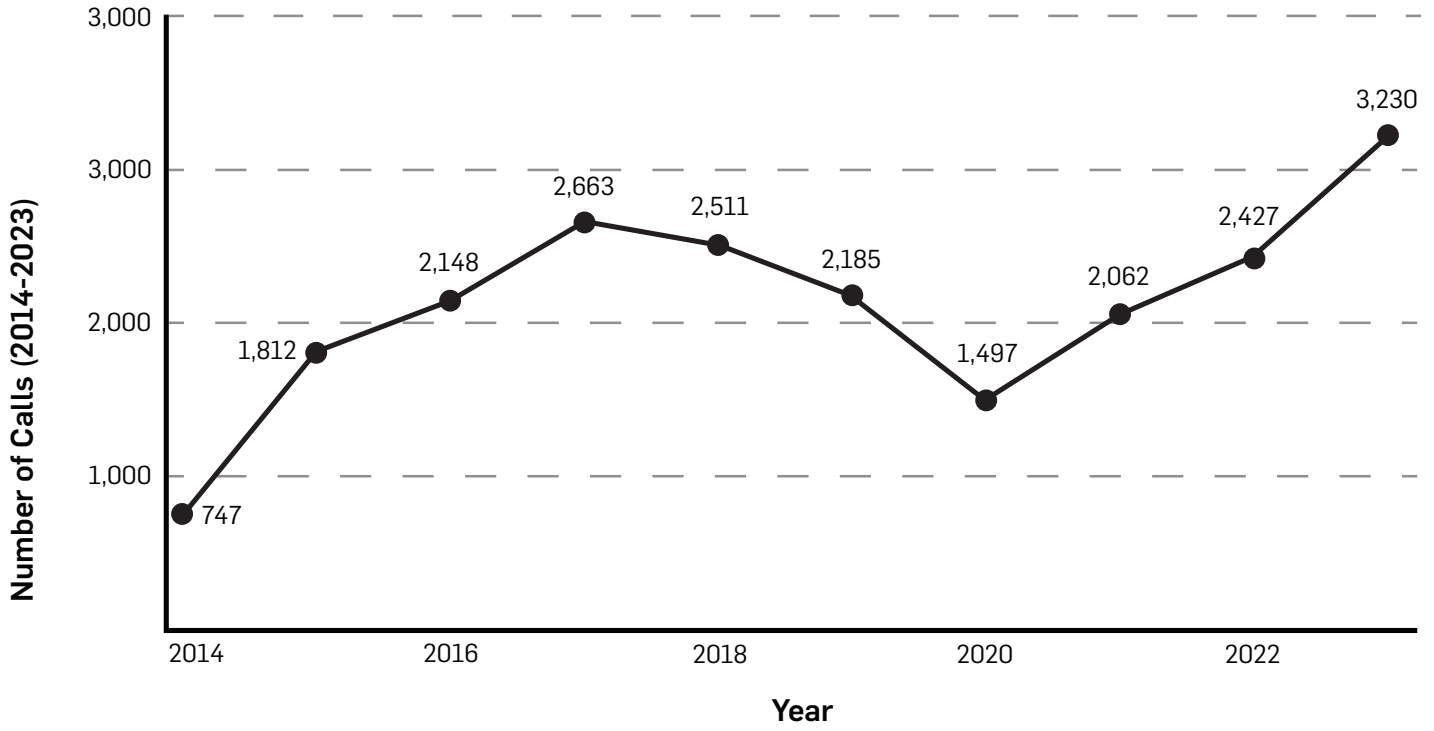


Chart 3: Total number of calls made to SCT per year from 2014-2023

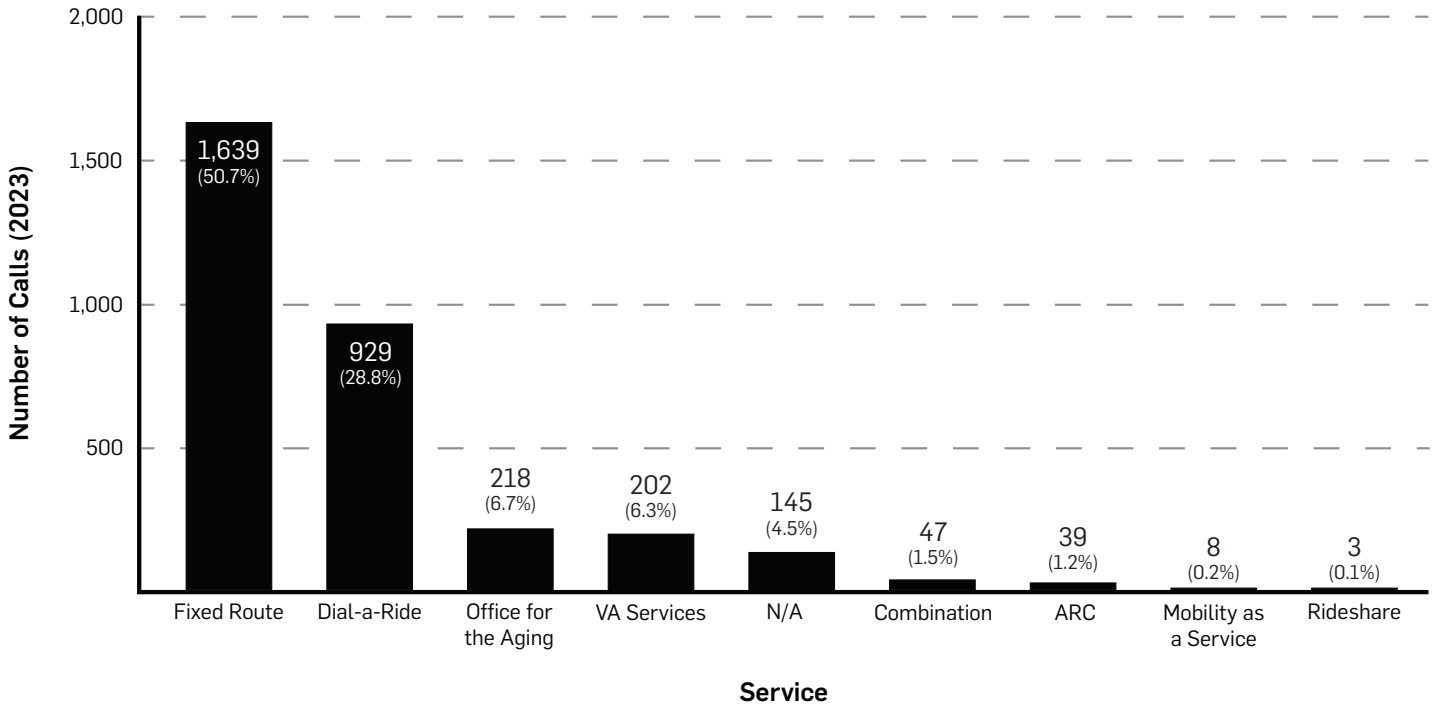


Chart 4: Calls by service type made to SCT in 2023

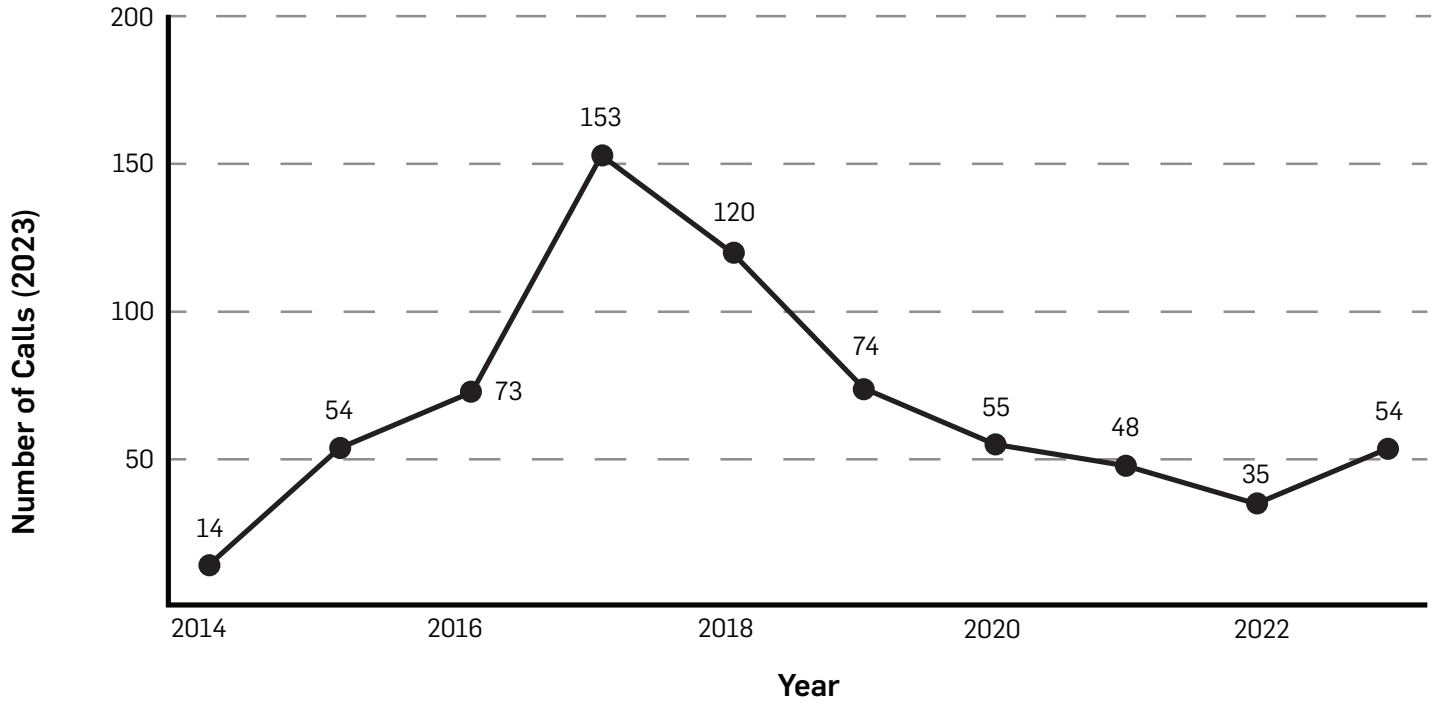


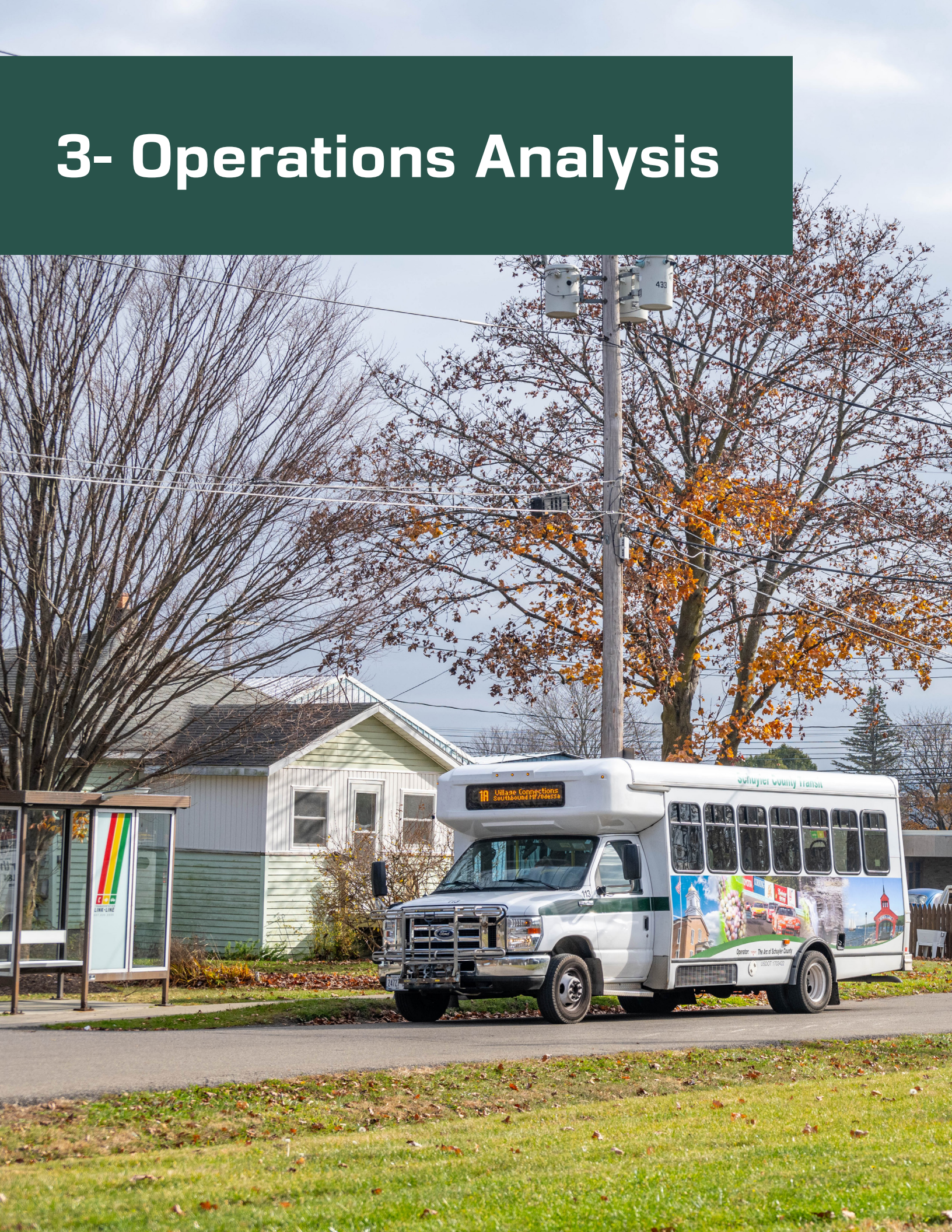
Chart 5: Number of calls resulting in unmet needs in 2023

Looking for Common Themes...

For each call Schuyler County Transit receives, they include a summary of what was discussed. Common service-related suggestions found include:

1. No DAR service on Mondays
2. No evening or weekend service
3. Transit schedules are unable to transport the caller to their doctor's appointment on time
4. No drivers available for the DAR request time
5. Requested fixed route diversion is too far off route (> 1 mile); DAR required to fulfill request

3- Operations Analysis



Background

To understand how Schuyler County residents are using their transit system, who is riding, and to identify any ridership patterns or trends, we conducted a Transit Operational Analysis. This context provides valuable insight in generating, refining, and prioritizing recommendations for future service expansion.

Methodology

To inform system recommendations, the Routes and Operations Subteam conducted a thorough analysis of all available data pertaining to Schuyler County Transit. The data sources utilized in this analysis include:

GTFS Feed: Data feed that includes the stop locations, routes, and times for all scheduled service

2023 STOA Data: Metrics of delivered service in 2023, including service hours, service miles, and ridership by route/vehicle

2023 Stop-Level Data: Arrival time performance by stop and route in 2023

September 2024 Stop-Level Data: Arrival time and performance by stop and route in September 2024 using SCT's new CAD-AVL system

System Overview

As of December 2024, Schuyler County Transit operates five fixed route services five days a week from early morning hours through the late afternoon, and a county-wide, demand-response Dial-a-Ride service four days a week for three hours per day. These fixed routes allow for off-route diversions upon rider request within one mile of the regularly scheduled route path. Unusually, this practice is allowed for all riders, regardless of age or disability status, and is offered in both urban and rural operating environments.

December 2024 System Map including Stops

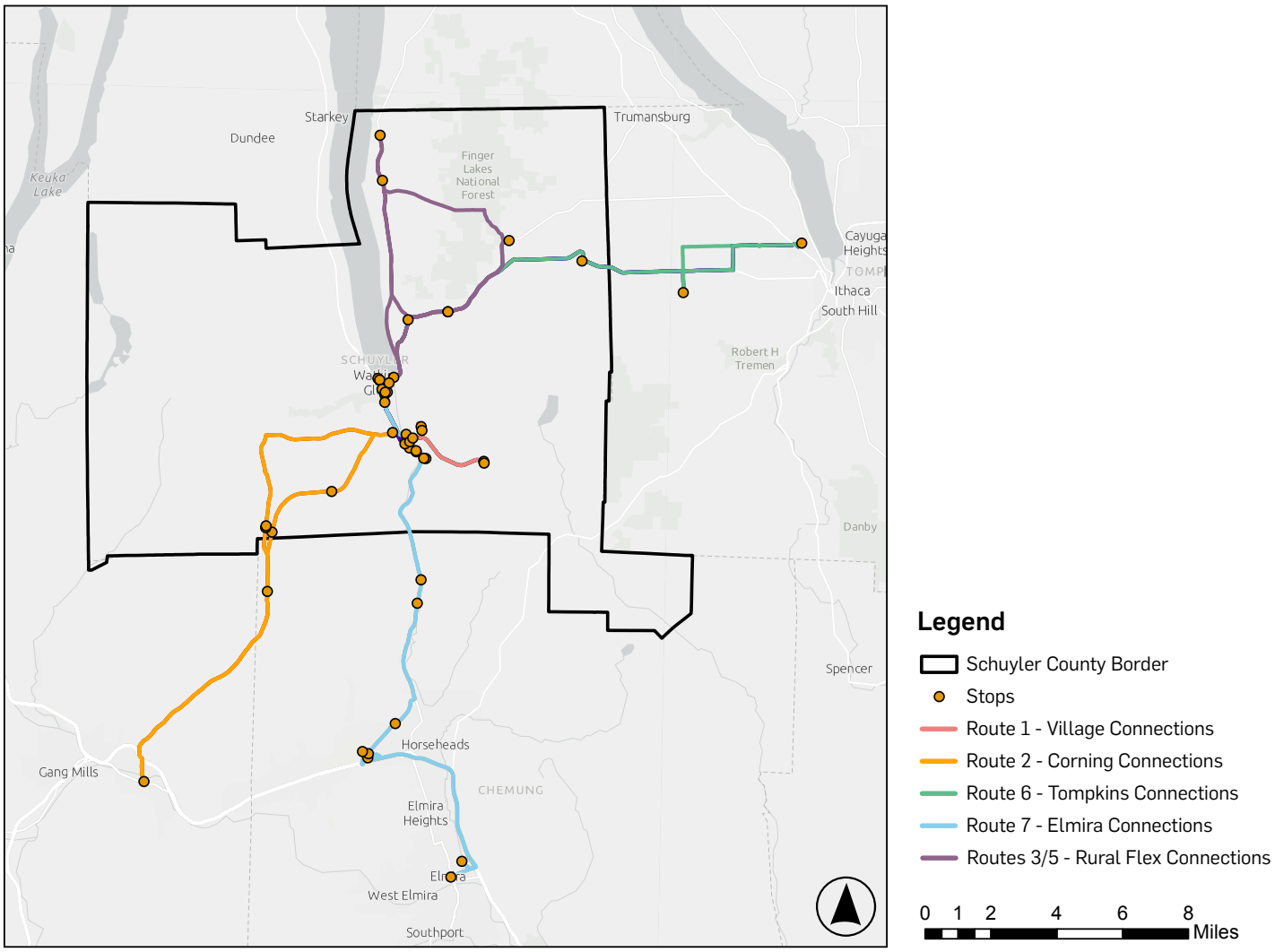


Fig 13: A county-scale map showing all five of Schuyler County Transit's fixed routes

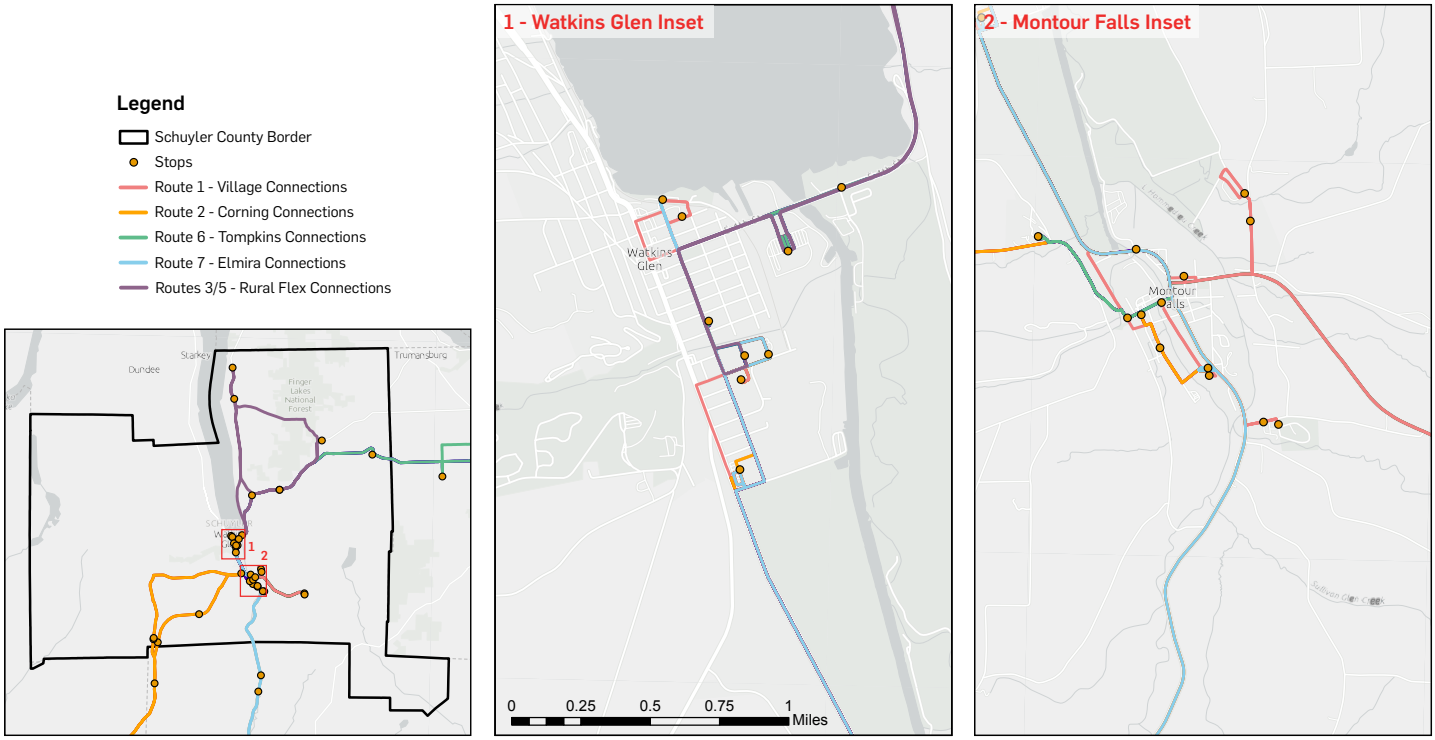


Fig 14: Insets showing routings in Watkins Glen and Montour Falls

Route 1 - Village Connections:

Village Connections, as shown in red on the map, is the preeminent trunk route in Schuyler County Transit's route network. It connects the three largest (by population) villages in the county, Watkins Glen, Montour Falls, and Odessa, with each other, operating along the only corridor of urban development in the county. The route seeks to service many of the county's most important community assets, including the large WalMart and Tops-CVS shopping centers in Watkins Glen and the Schuyler Hospital and county Human Services Building in Montour Falls. The route also hits several apartments oriented towards elderly individuals, to include Jefferson Village in Watkins Glen and Sydney Place in Odessa. Diversions to proximal manufactured home communities such as Havana Glen and Rock Cabin in Watkins Glen seek to maximize coverage.

Village Connections is Schuyler County Transit's most frequent route. Most trips complete the entire Watkins Glen-Montour Falls-Odessa circuit (one hour per direction, two hours total runtime), with a couple buses in the midday cutting their trips short at the ARC's offices-garage so the drivers can take a lunch break. The route's headway is hourly, requiring two vehicles to meet the schedule. Buses pass each other at the Schuyler Hospital. Service runs from 7:30 AM-5:30 PM on all weekdays and fares are $2.00 per ride.

Route 2 - Corning Connections:

Corning Connections, as shown in orange on the map, is Schuyler County Transit's oldest intercity route, connecting Watkins Glen and Montour Falls with the city of Corning in Steuben County. The route terminates at the Corning Transportation Center, providing easy transfer opportunities to C-Tran (Chemung County), Steuben County Transit, and the Corning-Erwin Area Transit System, as well as proximal access to downtown Corning's employment and retail offerings (Market Street). On its way south, Corning Connections can take two possible routings, a direct path down NY-414 or an alternative on County Roads 16 and 19. By routing the bus down CR-16 and 19, the agency is able to serve the rural community of Townsend, near the Watkins Glen racetrack. Because this inter-county travel is done

almost exclusively on higher-speed roads with minimal development and no pedestrian infrastructure, most boardings are accomplished using a flag-stop model, where any individual may flag down the Corning Connections bus anywhere safe along the bus' routing.

Corning Connections buses operate on a fairly uneven headway, with two outbound trips in the morning and one in the afternoon, and one inbound trip in the morning and two in the afternoon. Peak vehicle requirements for this route call for two buses. All of these trips are scheduled during rush hours, with no midday, off-peak service. Service runs on all weekdays and fares are $2.00 per ride.

Routes 3/5 - Rural Connections:

Rural Connections, as shown in purple on the map, is a rural, intercity-style route that connects small communities in the county's northeast corner (Burdett, Bennettsburg, Reynoldsville, and Hector) with Watkins Glen. As discussed in our demographics analysis, some of the highest-density rural communities in the county (Burdett and Hector) are located along this route.

Rural Connections operates twice per day, with a morning peak-period trip (route 3) operating an inbound trip from Reynoldsville into Watkins Glen and an afternoon peak-period roundtrip (route 5) operating an outbound and inbound trip between the same communities. Riders wishing to travel off of the fixed route are able to reserve a special pick-up or drop-off within a large, triangular flag area bounded by Burdett, Reynoldsville, and Hector. Any service within this triangle will only be provided if a request has been scheduled in advance. Rural Connections runs on all weekdays and fares for trips with no diversion requests are $2.00 per ride. A trip with a diversion into the reservation required zone would cost $3.00.

Route 6 - Tompkins Connections:

Tompkins Connections, as shown in green on the map, connects Watkins Glen and Montour Falls with Tompkins County. The route terminates at the Cayuga Medical Center in the town of Ulysses, providing access to an important regional healthcare provider and associated specialists which do not exist in Schuyler County. Certain trips service the Enfield Park & Ride on their way to CMC, providing semi-timed transfers with TCAT's route 20 for service into Ithaca. On its way to Tompkins County, Tompkins Connections services Burdett and Mecklenburg in eastern Schuyler County along NY-79.

Tompkins Connections doesn't have a perfectly even headway, but all trips are within 2.0-2.5 hours apart. This uneven headway accommodates 10-15 minute layovers at Cayuga Medical Center and the need to use only one bus on this route. Service runs on all weekdays and fares are $2.00 per ride.

Route 7 - Elmira Connections:

Elmira Connections, as shown in blue on the map, is Schuyler County Transit's newest route. It connects Watkins Glen and Montour Falls with Elmira and Horseheads in Chemung County. Elmira Connections services many major retail, health, and employment centers in Chemung County, including Arnot Mall, Arnot Health, the ARC offices in Elmira, and downtown Elmira via the Chemung County Transit Center. Importantly, transfers to many private intercity bus providers and C-Tran are possible at this transit center.

Like Tompkins Connections, Elmira Connections doesn't have a perfectly even headway as the schedule is built to be driveable with one bus, including a lunch break. Nonetheless, most departures are 2.5 hours apart from each other. Service runs on all weekdays between 5:45 AM and 6:44 PM and fares are $2.00

per ride.

Dial-a-Ride:

To supplement the fixed route services, the ARC also operates a Dial-a-Ride service which can travel all over Schuyler County. This Dial-a-Ride service is designed to be very flexible, functioning like a taxi in that near-door-to-door service is possible. To utilize this service, riders need to schedule a trip at least one day in advance. Dial-a-Ride is mostly designed for the very low-density, rural parts of the county that are difficult to serve with public transit, or receive no fixed route service at all. Much of the western (Tyrone) and southeastern (Alpine, Cayuta) corners of the county fall into this category.

Unlike the fixed routes, Dial-a-Ride has a fairly limited service schedule. Service runs only four days per week, from Tuesday through Friday and only from 10:00 AM-1:00 PM. This is due to the high average operating costs associated with the service, which ARC staff quote to be around $40 per trip. This mostly matches the FTA's defined industry standard of $45.01/trip ($32.74/trip in 2012, adjusted for inflation). Because this Dial-a-Ride has a higher standard quality of service, the cost per trip is $3.00.

To help synthesize all of this information, we have produced a route matrix which categorizes routes based on operating environment:

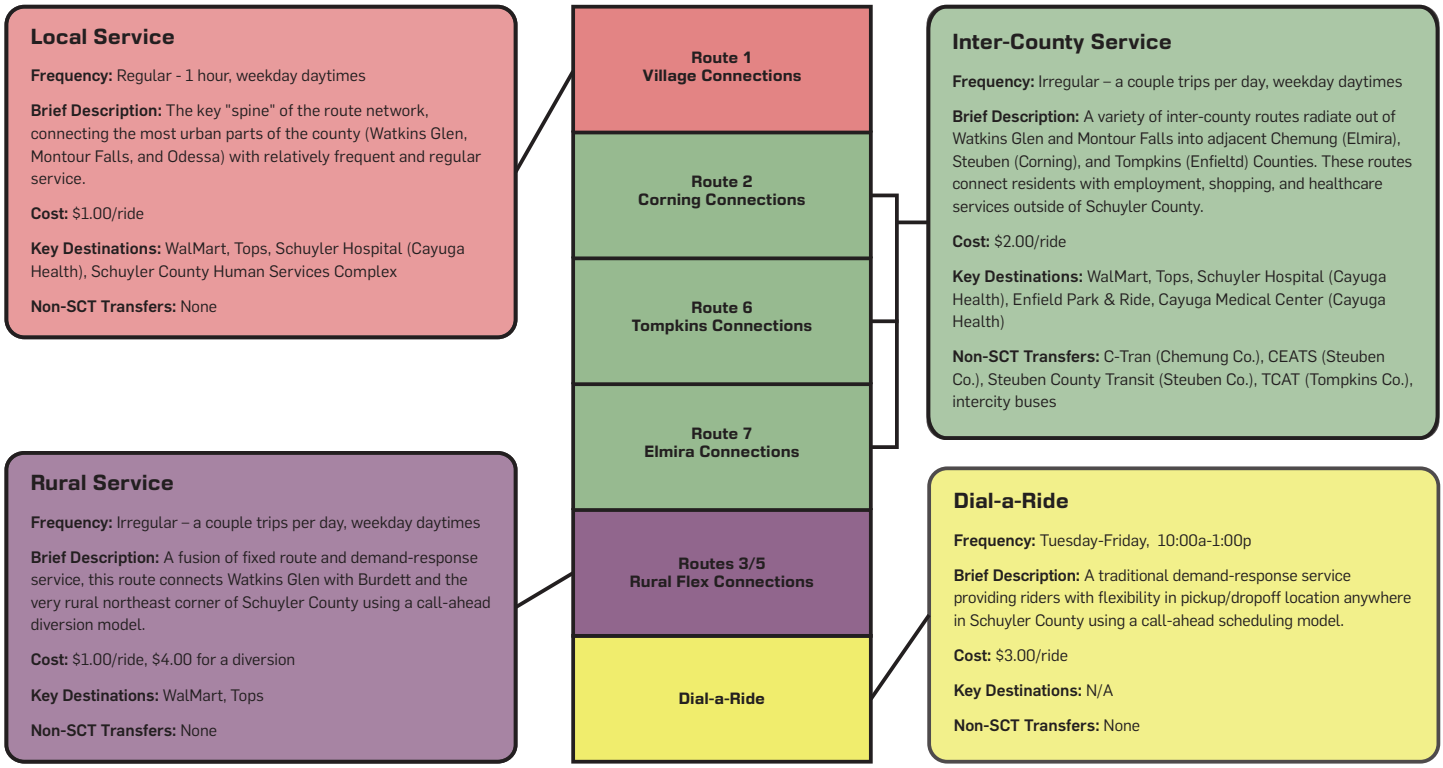


Fig 16: Route categorization matrix

Route Resource Allocations

Schedules provide the most specific and comprehensive picture of a route's scheduled service, but performance metrics such as hours of service provided and miles of service ran (per day per route) provide a simpler and more direct picture of how Schuyler County Transit allocates their limited driver and vehicle resources across their system.

Revenue Vehicle Miles by Route

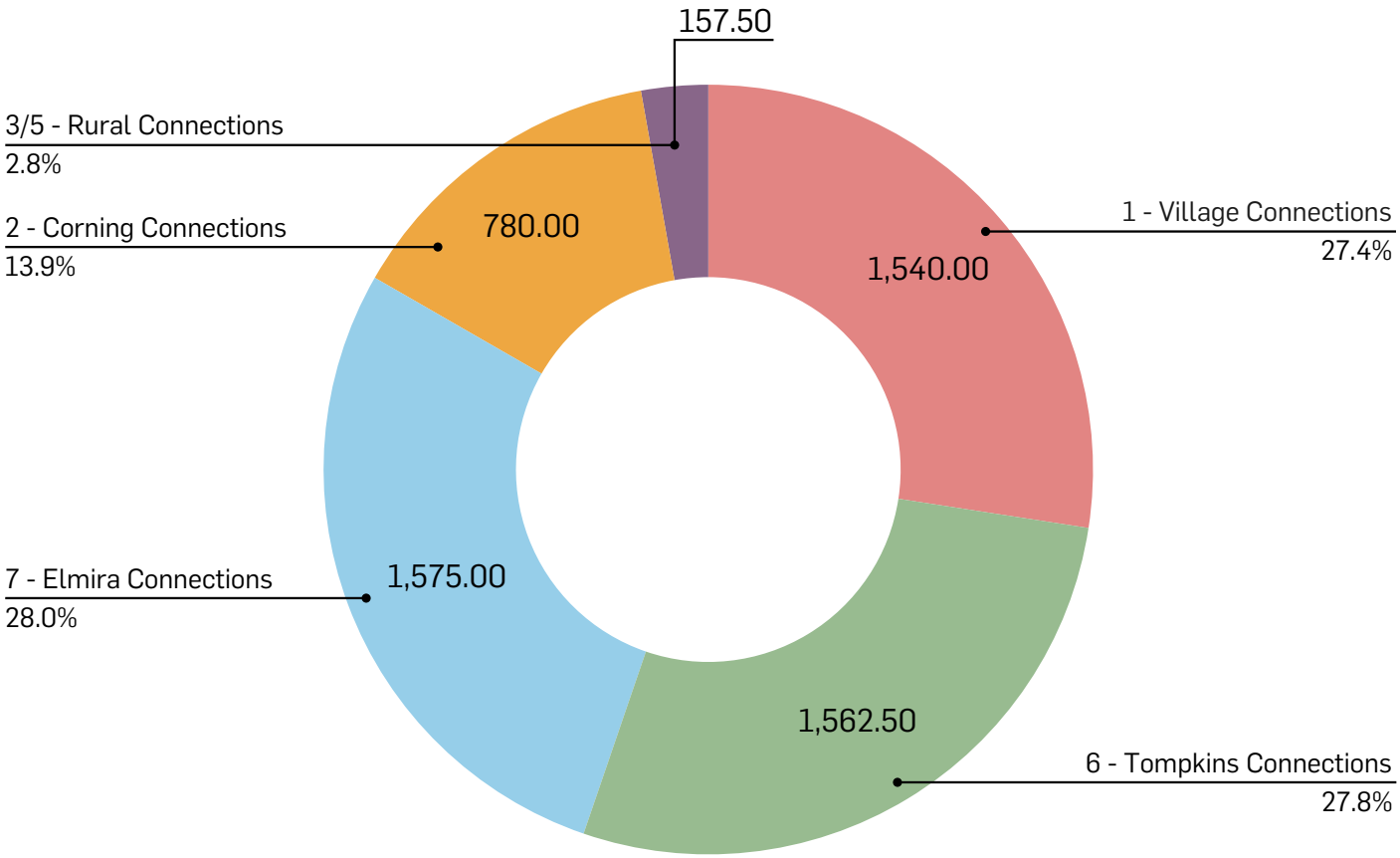


Fig 17: Revenue Vehicle Miles operated per week for each route

The above chart details how many miles per week each route covers while in revenue service (deadhead miles are not included). Village, Tompkins, and Elmira Connections dominate the chart, each constituting a little over a quarter of the 5,615 total weekly miles operated. Similar mileage counts for Tompkins and Elmira Connections are to be expected, as both routes operate 5 roundtrips per day and are longer-distance, inter-county style routes where each trip has a high travel distance. Corning Connections operates significantly fewer miles per week likely because it has a much lighter schedule of only 3 roundtrip-equivalents per day. Additionally, some Corning Connections trips only operate in one direction, deadheading to/from the garage for the other half of the roundtrip, limiting the number of miles counted towards the route's total. Village Connections maintains such a significant share of the weekly revenue vehicle miles in spite of its short length because it has so many trips per day (around 9 complete roundtrips). Rural Connections has the smallest share despite being a longer-distance rural route as it is not long compared to the inter-county services and only has two roundtrips per day.

Keeping track of revenue vehicle miles is important in tracking the mechanical toll and aging that each route puts on a bus fleet. It can also act as a proxy for the share of fuel costs that each route consumes. Therefore, it is important to consider a route's performance against the capital and variable costs that it creates to understand its true cost to the network and agency as a whole.

Revenue Vehicle Hours by Route

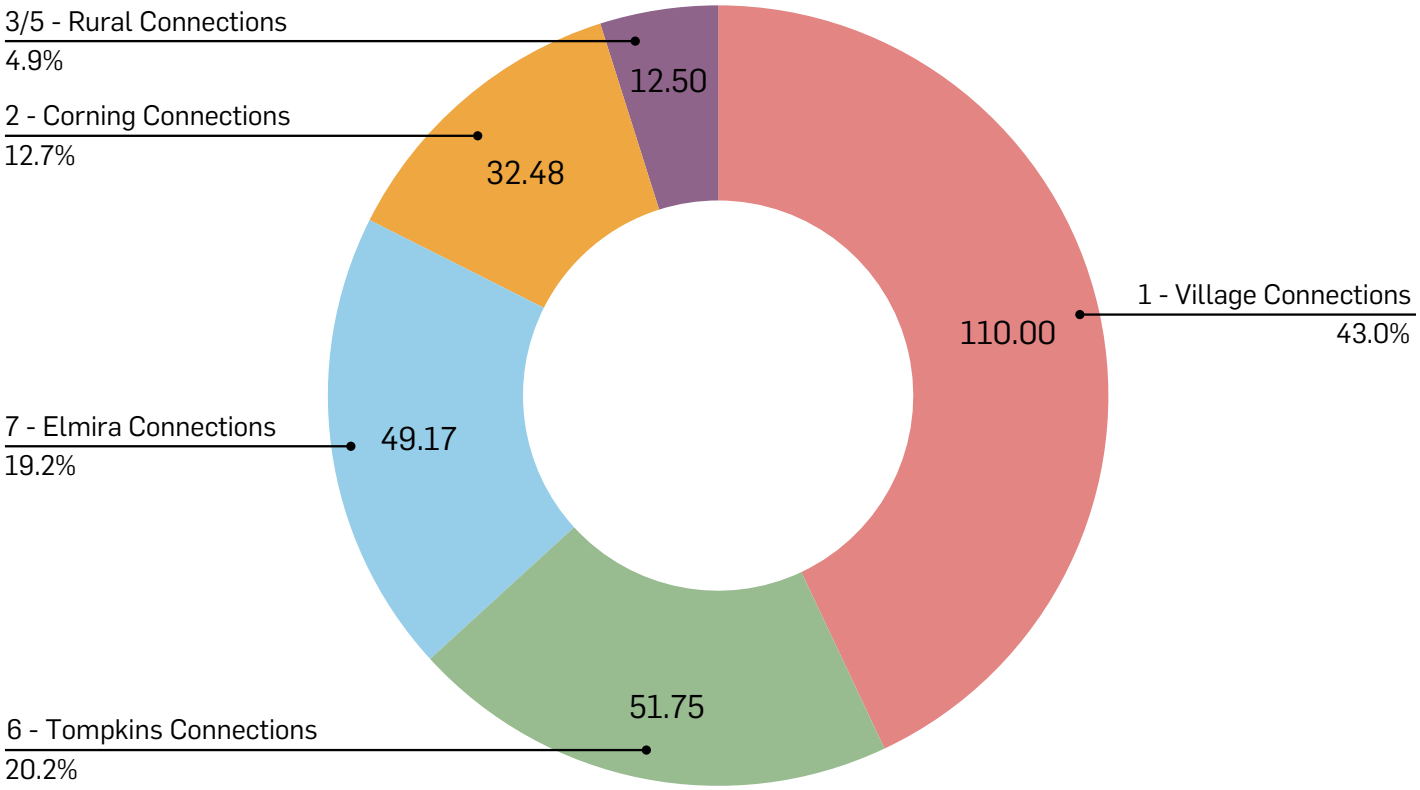


Fig 18: Revenue Vehicle Hours operated per week for each route

The above chart details how many hours per week each route runs for while in revenue service (deadhead miles are not included). Village Connections as expected comprises the majority of SCT's service hours, owing to its relatively high hourly frequency, many trips, and all-day two-bus vehicle requirement. Similar to their mileage metrics, Tompkins and Elmira Connections have similar hours-per-week figures, indicating that average travel speed in their rural sections are likely similar. Corning and Rural Connections make up the minority of service hours, again likely due to having fewer trips per day than other routes.

For most transit providers, bus drivers are the most precious resource that the agency can have. This is especially the case for Schuyler County Transit, which is facing an ongoing shortage of bus drivers; they are staffed at 22 but should have 26. Administrative employees drive frequently to prevent cutting service, taking them away from their office functions. As such, it is important to understand the labor cost of each route relative to their productivity to understand if drivers are being appropriately deployed around the system, or whether a shuffling in priorities is necessary.

Bus Stop Amenities

Bus stop amenities important assets for every transit agency. Simple things such as a shelter/roof over the bus waiting area or a bench can significantly improve the rider's experience waiting for the bus. This is particularly important from a public service point-of-view, as the ARC's interest and our demographic analysis both emphasize the importance of serving the aging and disabled populations of Schuyler County who would benefit greatly from stop amenities. From a practical point-of-view, studies show riders perceive time spent waiting for a bus at a rate twice as slow as traveling to their destination; keeping riders comfortable and out-of-the-elements go a long way in making the wait feel less onerous.

To this end, we examined each bus stop Schuyler County Transit serves through in-person, Google Street View, and Google Satellite View observations and noted the amenities they featured - Bus shelters, a light fixture, and a bench. We then categorized stops as low, medium, or high amenity based on the combination and number of features they had.

	Lighting		Bench		Shelter
Low	✓	or	✓		
Medium	✓	and	✓	or	✓
High	✓	and	✓	and	✓

Chart 6: Qualifications for a stop being classified as Low, Medium, or High Amenity

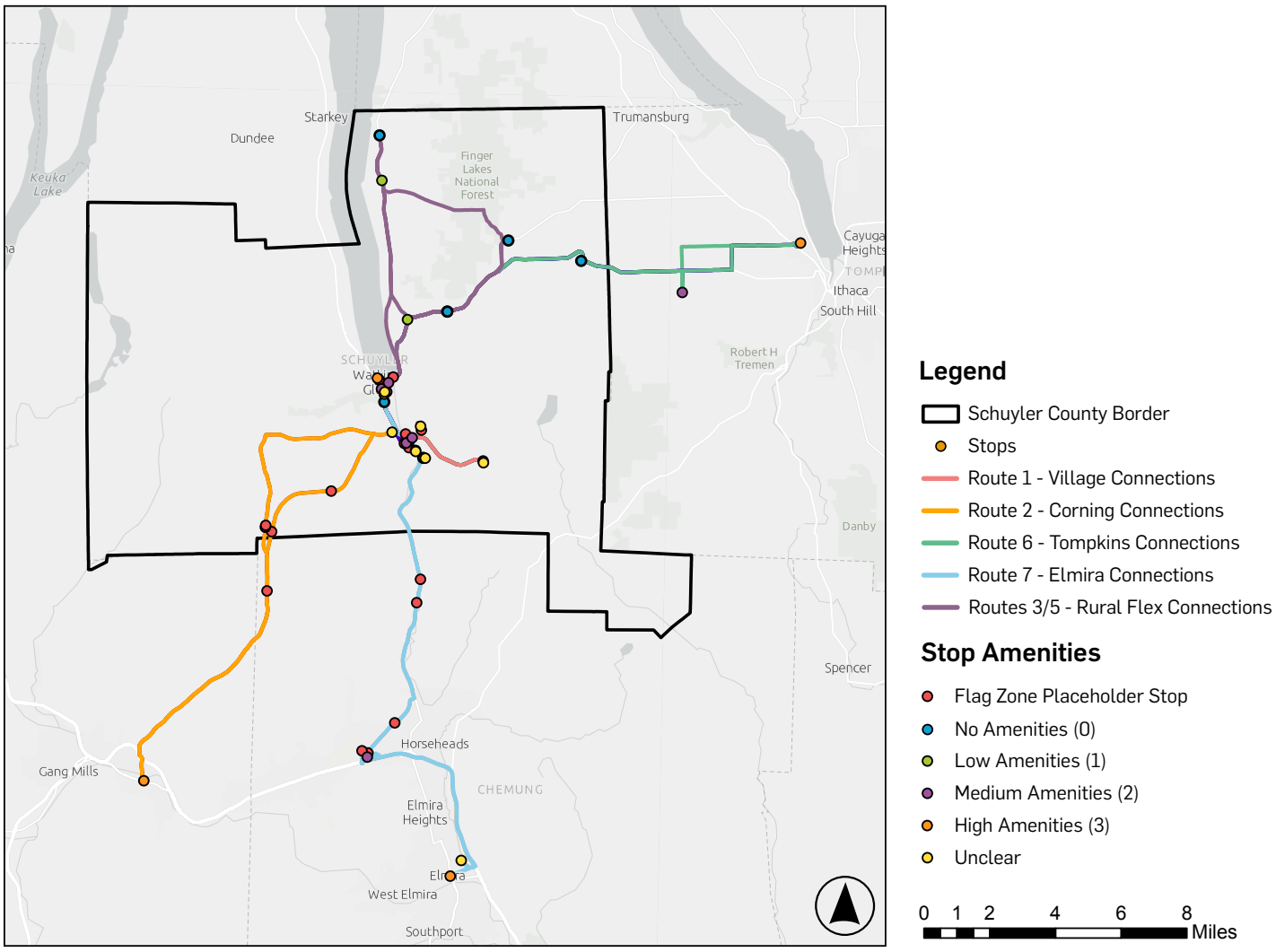


Fig 19: Out-of-county and rural Schuyler County bus stops categorized using the Low/Medium/High guidelines

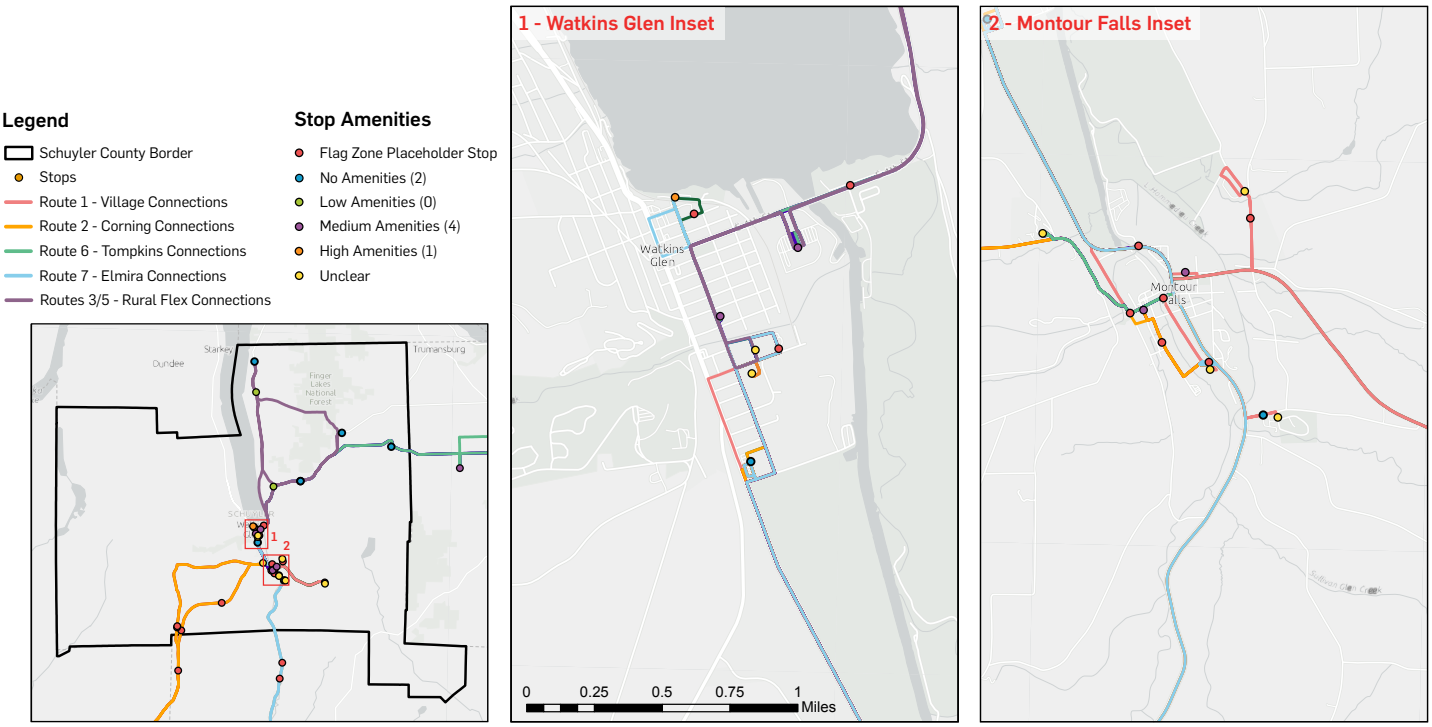


Fig 20: Stops in Watkins Glen and Montour Falls categorized using the Low/Medium/High guidelines

As expected, most high-amenity stops are located in Watkins Glen and Montour Falls, owing to their urban nature and expected higher per-stop ridership. Shelters are generally only found in these villages, and are few-and-far-between elsewhere in the county. Because shelters can be expensive assets, it is to be expected that they will be conservatively deployed. A variety of stops within the villages and in other areas have less-cost-intensive amenities, though many rural stops have no amenities. To count flag-zone ridership, the ARC has several placeholder flag-zone stops located around the county which have no physical component and are thus not considered in this study.

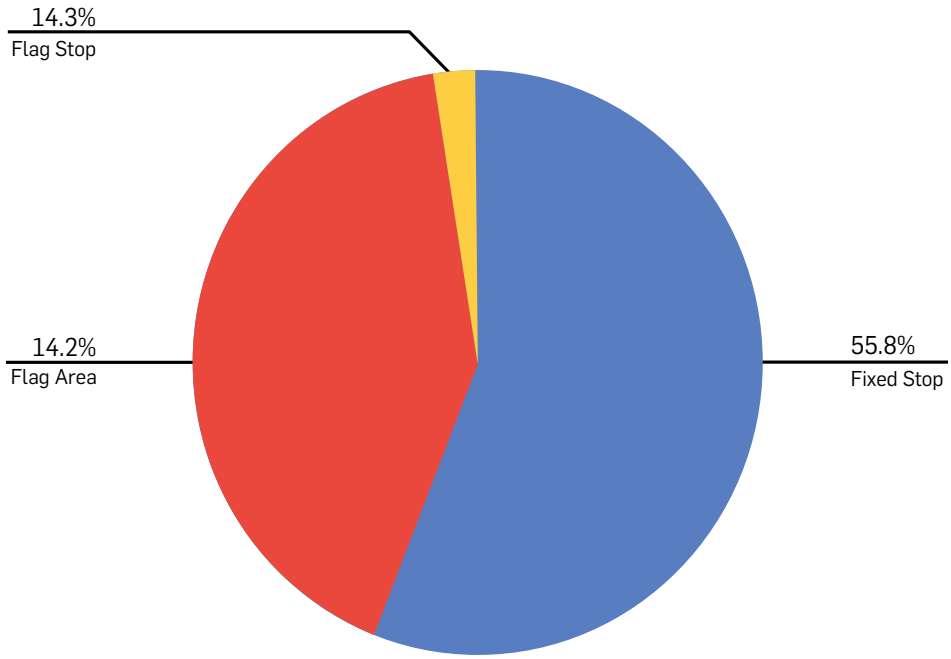


Fig 21: Stops categorized by rider waiting-boarding process

The primacy of fixed stops suggests that the majority of bus stops could in theory support additional amenities.

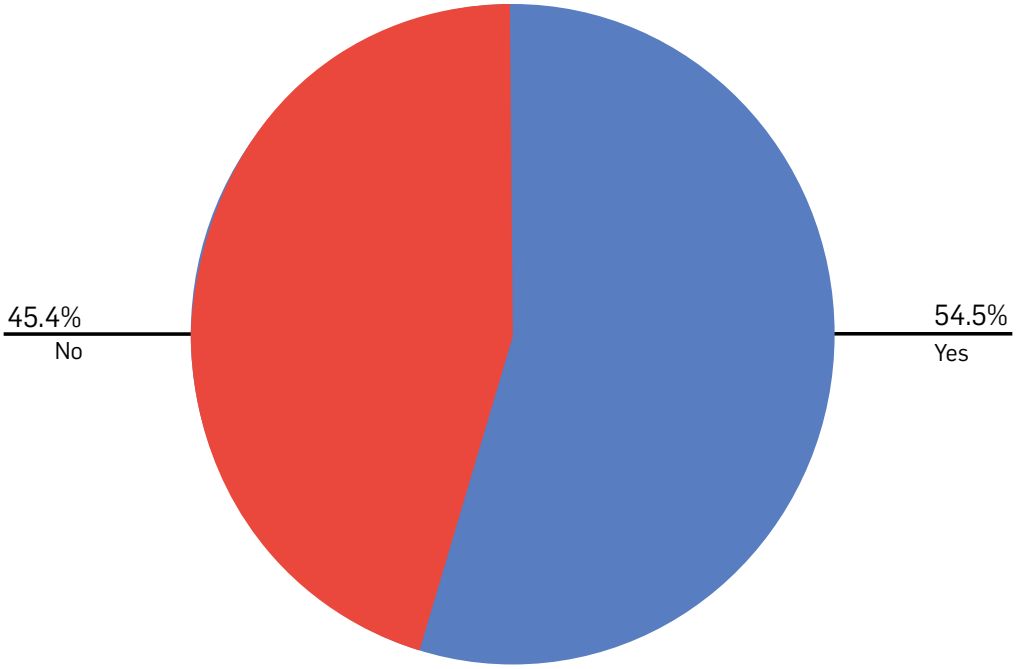


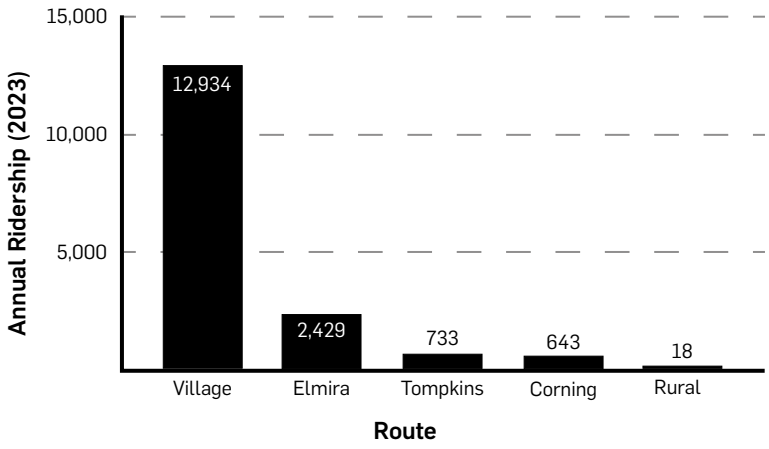
Fig 22: Stops categorized by accessibility via sidewalk

While what you experience at a bus stop is important to rider comfort and safety, how you access the bus stop is just as important. Using a combination of Google Street View and Google Satellite view, we categorized stops based on whether they were accessible via a sidewalk or not. Paved, off-road access is incredibly important, particularly for elderly and disabled individuals who may need a flat surface to safely walk/ride on for safety and comfort reasons. Additionally, their slower speed of travel means that they are especially vulnerable if walking on the shoulder of a road or in the grass/mud. As a result, it's somewhat concerning that nearly half of all bus stops are not directly connected to a sidewalk. Some of this might be unavoidable, as sidewalks on rural roads are very rare and could be considered "wasteful" due to expected low pedestrian traffic volumes. While sidewalk construction/access is not completely within the purview of SCT, stops should always be placed along sidewalks where possible, and coordination made with town, county, or state officials to construct a sidewalk to promote safe bus stop access.

Route Ridership and Productivity

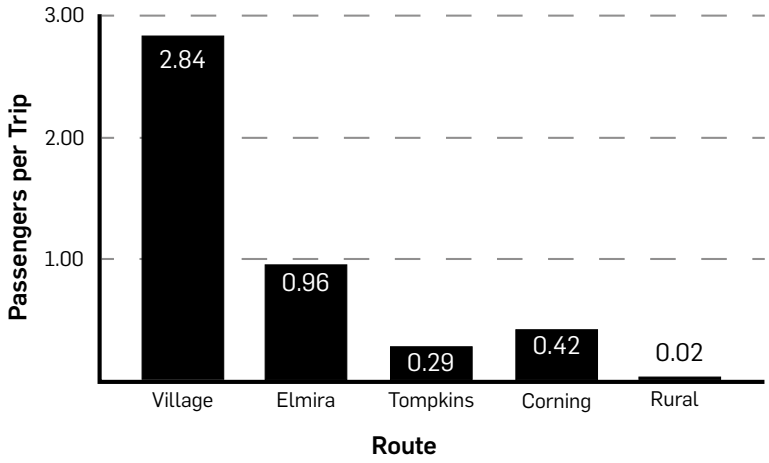
To better understand travel patterns, route productivity, and rider demographics, we used a variety of ridership-related datasets collected via Schuyler County Transit's CAD-AVL system and state reporting tables.

Chart 7: 2023 SCT ridership by route

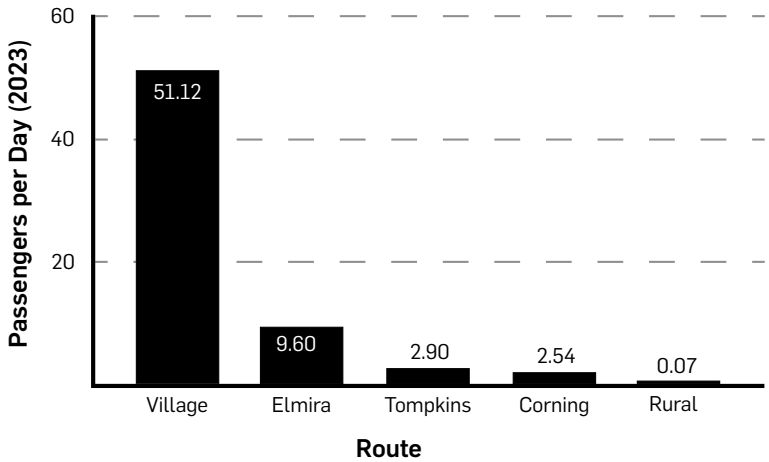


The chart to the left shows total annual ridership (boardings) for each route in 2023. As expected, Village Connections is the most popular route in the network, carrying 12,934 riders in 2023, while the other services transported a combined 3,823. Elmira Connections is the second most popular route, demonstrating the importance of the retail, health, and employment services in Elmira and Horseheads. Arnot Mall and Arnot Health in particular come to mind. Tompkins, Corning, and Rural Connections all have comparatively low ridership, with Rural being the lowest of the three. Rural Connections' low ridership counts are likely a consequence of its low frequency, unique demand-response route structure, and the affluence of the communities it serves. Many individuals in the areas it serves are likely Cornell employees that commute towards Tompkins County everyday. Yet, Rural Connections functions as a commuter route into Watkins Glen instead. Furthermore, although Rural Connections is categorized as a fixed route, it functions more like a paratransit service.

Chart 8: Average number of passengers per trip by route in 2023



Absolute ridership counts provide a broad picture of transit demand, but they don't take into account service frequency. To make the data more useful, it can be normalized to calculate the average passenger count per trip for each route, providing a more accurate breakdown of route productivity. Similar trends are observed using this metric, although Corning Connections now performs slightly better than Tompkins. This is likely a consequence of Tompkins Connections' route structure. While the route services the Cayuga Medical Center, access to other health and employment opportunities in the county are only possible through poorly-timed transfers with the TCAT route 20 bus at Enfield Park and Ride. This limits the utility of Tompkins Connections, and addressing this productivity lapse is something we address in our Recommendations section.



Another method of analyzing route productivity is to look at the average number of boardings each route has per day. These results are expected to mirror overall ridership and passengers-per-trip figures, but in a less abstract ("trip") format.

Schuyler County Transit ran 253 days in 2023.

Chart 9: Average number of passengers riding each route per day in 2023

Chart 10: 2023 SCT ridership by route including ADA passengers

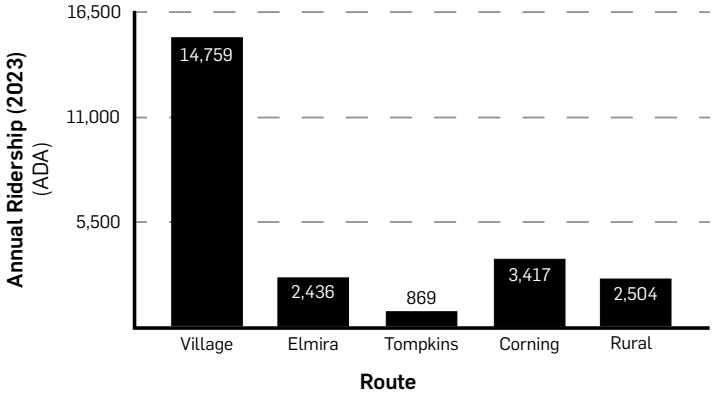


Chart 11: Average number of riders per trip by route including ADA passengers

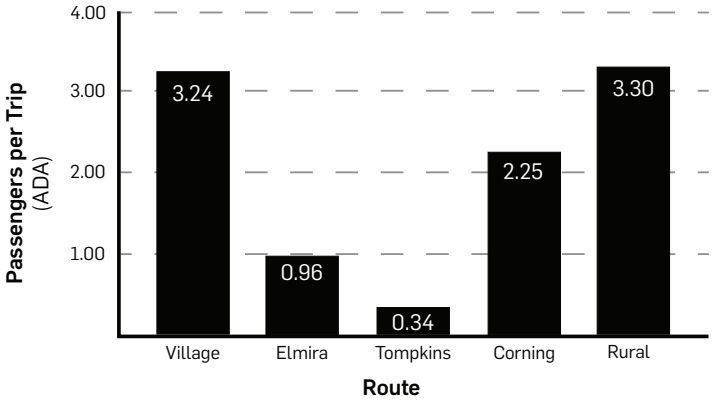
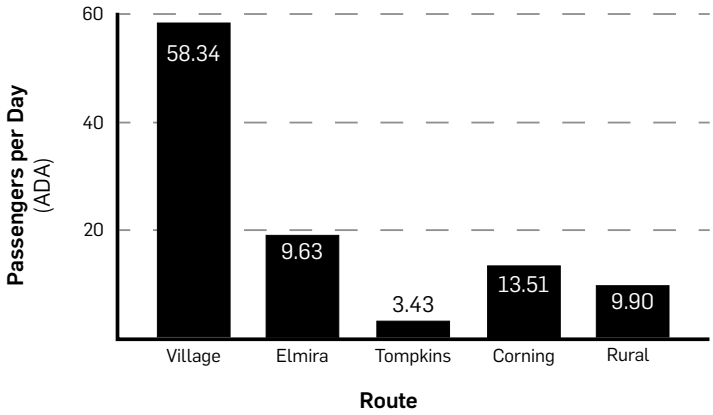


Chart 12: Average passengers per day by route including ADA passengers



In boardings data, a variety of "ADA"-categorized trips were included, which significantly change ridership counts, distribution, and route performance. In spite of conversations with SCT, it is unclear to us where exactly these ADA rides are coming from, as this ridership category tends to be reserved for paratransit service which operates independently of these fixed routes. Based on driver run-sheets provided by SCT, we believe these trips may be associated with the various "private runs" that occur before and after the scheduled/public Corning and Rural Connections trips, explaining their big boost in productivity.

Stop-Level Performance

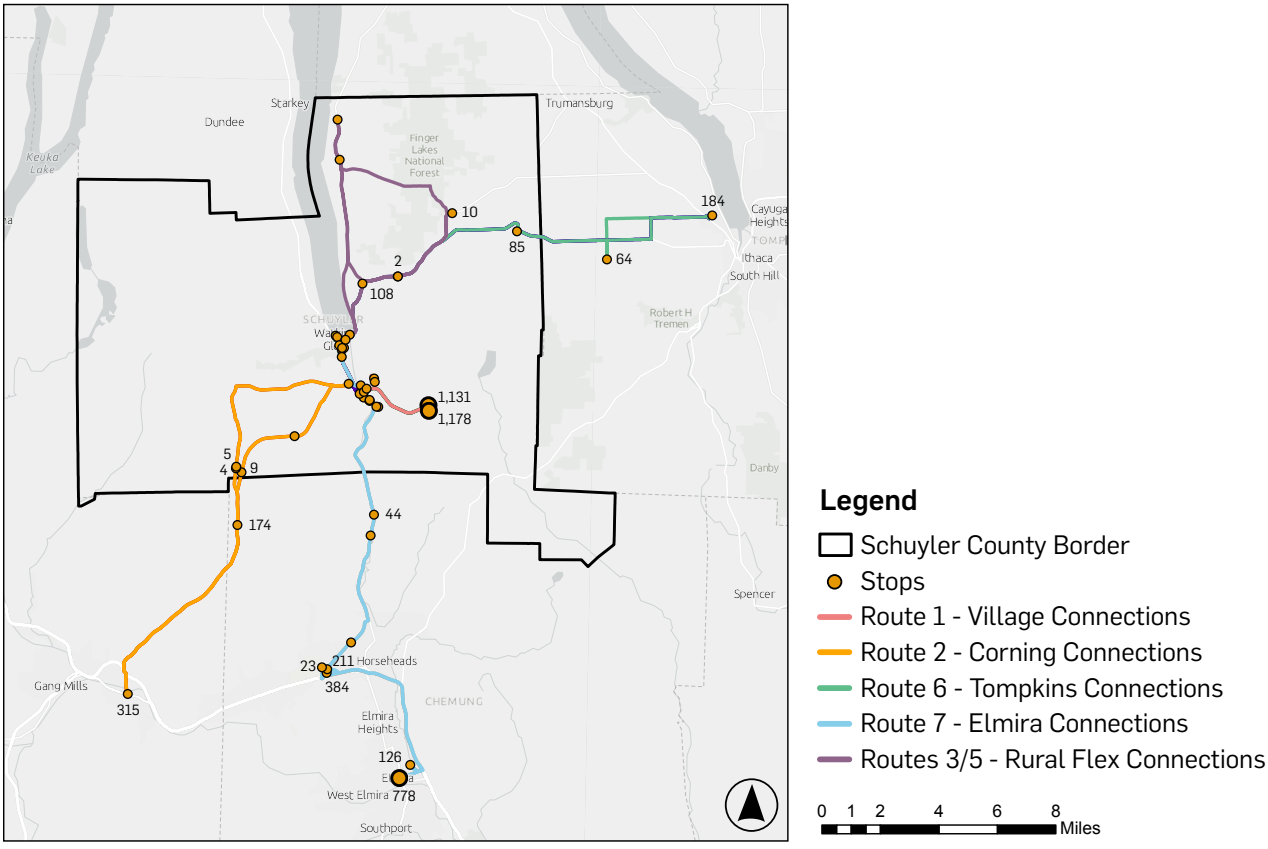


Fig 23: Out-of-county and rural stop-by-stop ridership counts

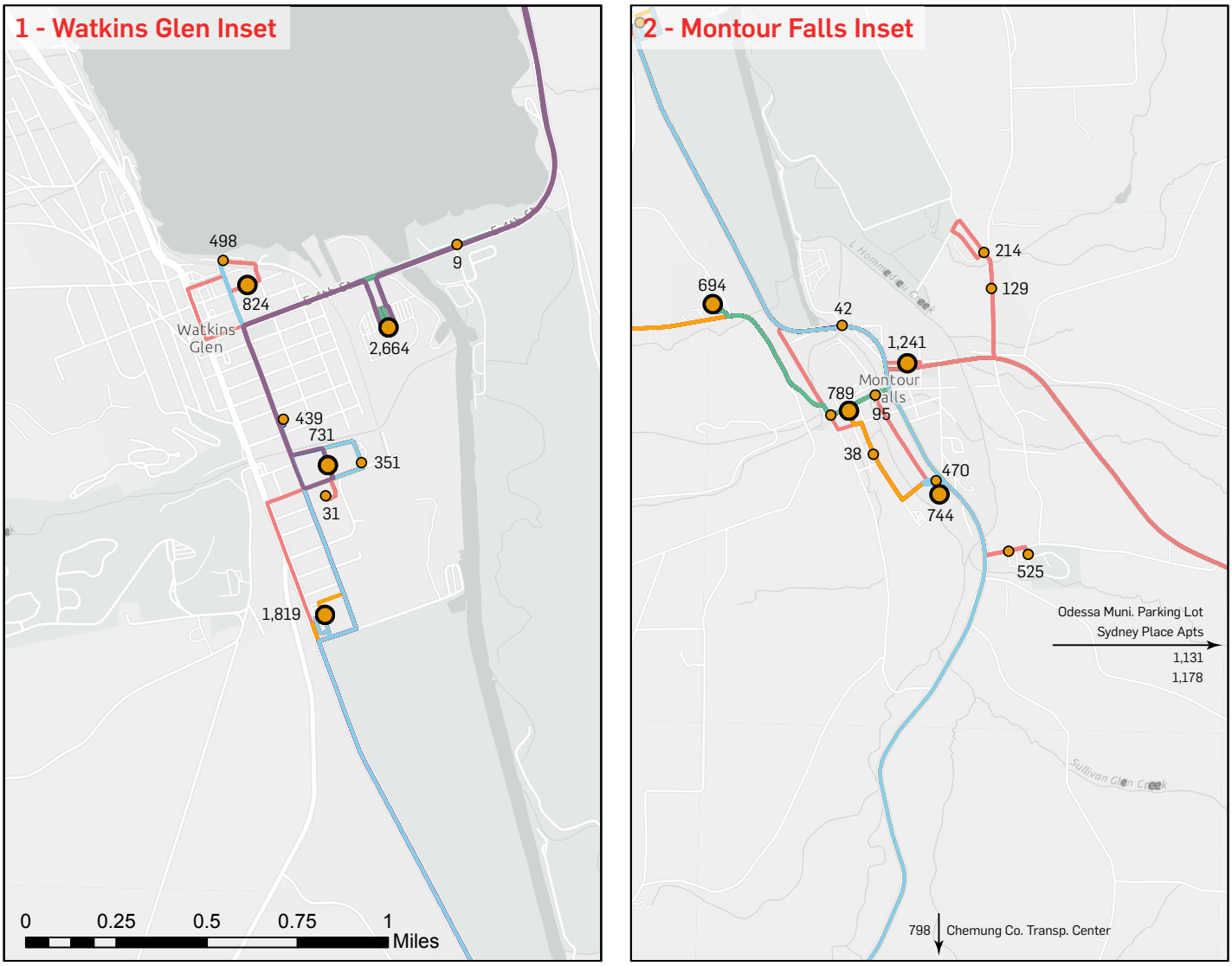


Fig 24: Urban (Watkins Glen and Montour Falls) stop ridership counts

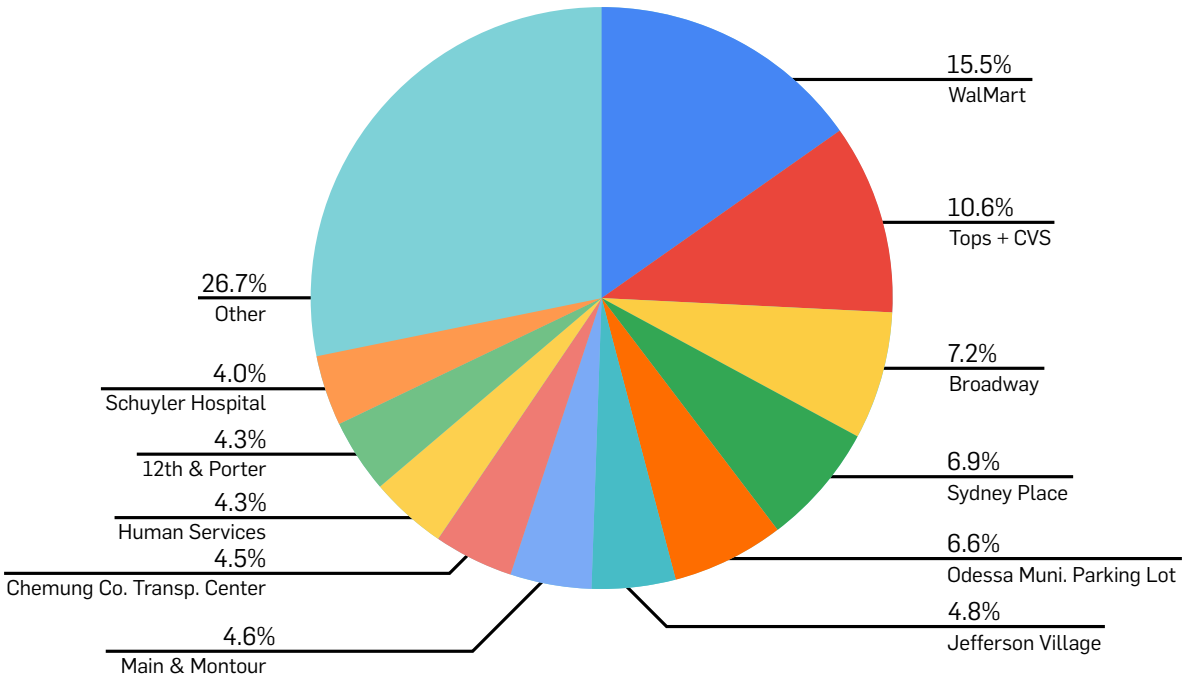


Fig 25: % of riders coming from the most important stops (11)

Based on our investigation of stop-by-stop ridership data, most boardings occur at a few key destinations. Six of the 44 non-flag stops constitute over 50% of ridership, and the ten most heavily used stops account for nearly 75% of total trips. The most popular destinations, mostly revolving around shopping/retail, health and human services, and residential buildings reveal that most trips are made for practical purposes rather than recreation. Notably, the only out-of-county stop with high ridership is the Chemung County Transportation Center timepoint; this represents the importance of the new Elmira Connections route and the community assets in Chemung County. Lastly, the listed residential facilities tend to be oriented towards senior and low income individuals, demonstrating Schuyler County Transit's importance to their residents.

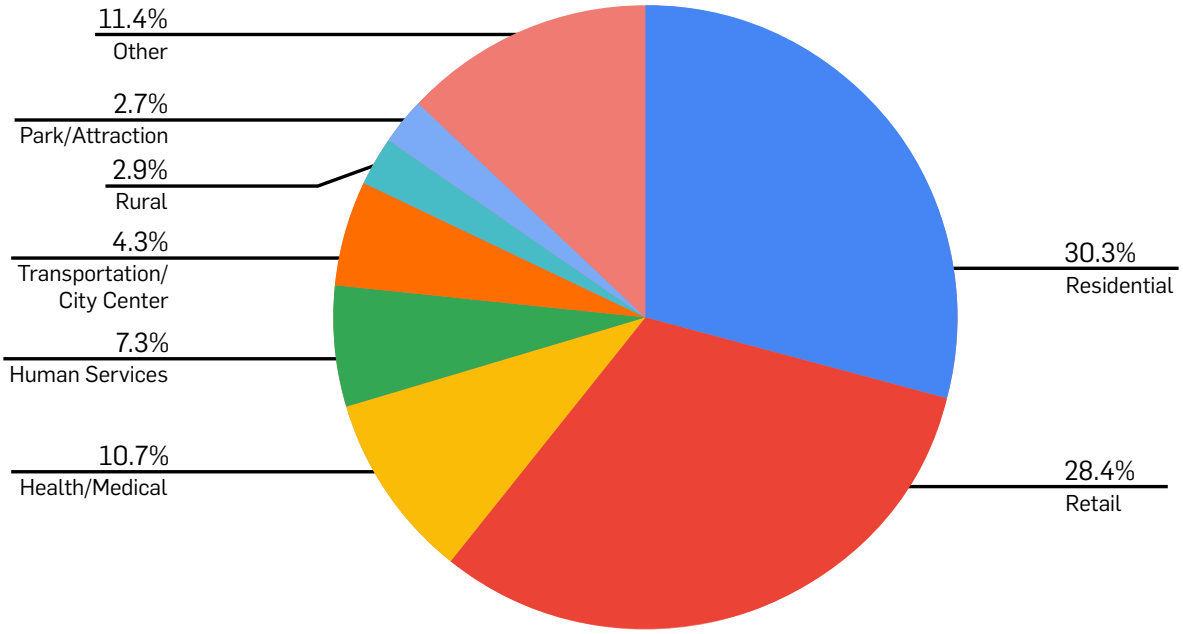


Fig 26: Stop ridership categorized by primary building served

To generate the above chart, we categorized each stop based on the building it serves. Residential ridership is expected to be the highest share, as most trips (assuming a simple roundtrip model) have to begin and end at a rider's home. The prominence of retail and health + human services represent the likely destination for riders, as they board the bus there to go home. The strong performance of these two categories of stops aligns with our conversations with Village Connections riders and drivers. As there is no alighting data, we interpret this chart to represent where riders are going in the system.

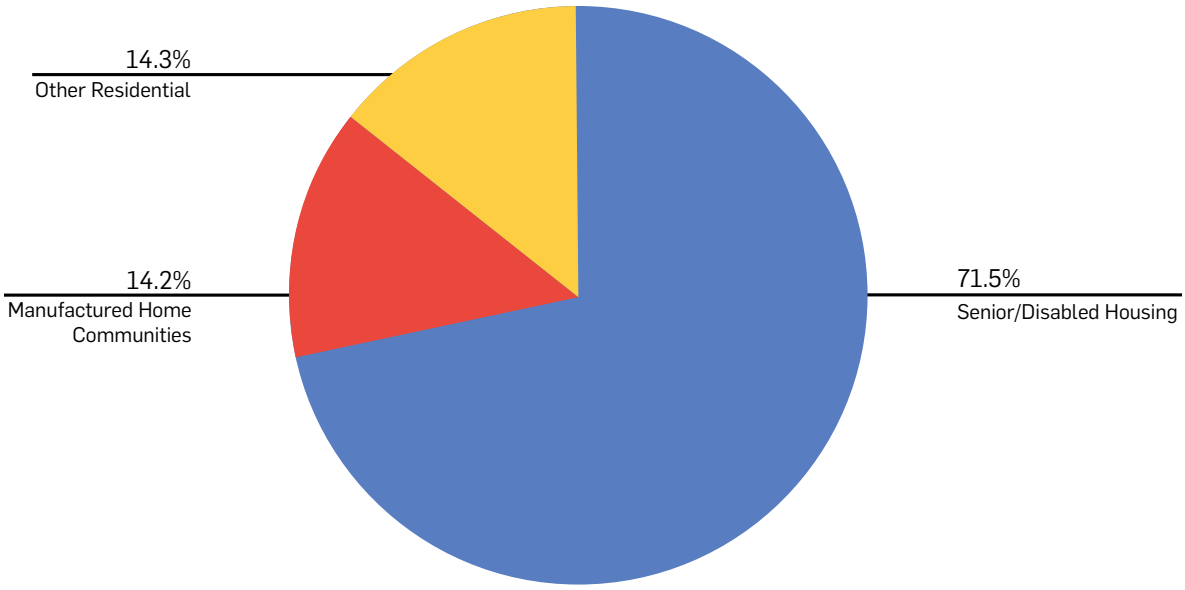


Fig 27: Residential ridership categorized by residential community being serviced

Based on the stop categories chart, we then further explored where people are coming from/going within each bin. As residential is the most prominent category, we have broken that down into the three major types of residential housing in the county, senior/disabled housing, manufactured home communities (as a proxy for rural low income housing), and traditional apartments/single-family-homes ("Other Residential"). These findings affirm how most trips taken are by mobility-limited individuals performing essential, non-leisure, non-commuting trips.

The tables below break out the composition of some of the other ridership categories:

Residential

Stop Name	Notable Housing Nearby	Type of Housing	Annual Riders
Broadway Street (Montour Falls)	Romeo Village Apts, Broadway Flats Apts	Senior/Income-Based	1,241
Sydney Place	Sydney Place Apts	Senior/Income-Based	1,178
Jefferson Village	Jefferson Village	Subsidized	824
Main Street & Montour Street	Falls Home	Assisted Living	789
Havana Glen Park	Havana Glen Park	Manuf. Home Community	525
Decatur/School Apartments	Watkins Glen School Apts	Senior/Income-Based	439
Rock Cabin Park	Rock Cabin Park	Manuf. Home Community	214
Total			5,210

Chart 13: 2023 ridership to residential-categorized stops

The table above shows ridership at stops near senior, disabled, and low income housing locations. Schuyler County Transit ridership is anchored by this list of apartments and mobile home parks. It's important to note that the Falls Home assisted living facility does not have a designated stop. Instead, it is a short walk from the Main St. & Montour St. stop. Moving the Main St. bus stop closer to Falls Home could be a short-term project to consider. It's also important to note that these major residential stops are spread out across the three villages. For example, the three with the highest ridership are Broadway in Montour Falls, Sydney Place in Odessa, and Jefferson VIllage in Watkins Glen. This presents a challenge for optimizing routing and reducing runtimes, as any changes made in the name of these improvements should not significantly reduce the quality of service to any particular development.

Retail

Stop Name	Annual Ridership
WalMart	2,264
Tops + CVS	1,819
Arnot Mall Door	384
Arnot Mall Flag Area	13
Total	4,880

Chart 14: 2023 ridership to Retail-categorized stops

WalMart and the strip-mall containing CVS and Tops make up the vast majority of retail trips. Helping riders access these locations should be a major aim of the team's recommendations. A much smaller number of riders also travel to the Arnot Mall in Chemung County to the south.

Health, Human Services

Stop Name	Annual Ridership
Arnot Health	737
Schuyler Hospital	694
Med Offices near Arnot	64
Cayuga Medical Center	63
Human Svcs Complex	744
Mill Creek	351
ARC Offices in Elmira	126
ARC Parking Lot (WG)	31
Total	2,810

Chart 15: 2023 ridership to HHS-categorized stops

Another major use of the bus system is health and medical care (11% of riders). Schuyler County has one major medical facility, the Schuyler Hospital. A significant number of riders also travel to Cayuga Medical Center in Tompkins County and the medical offices near the Arnot Mall in Chemung County.

Human services destinations are also important to riders (7% or riders). The two major facilities are the Human Services Complex in Montour Falls and the Mill Creek Center in Watkins Glen. Human services are also provided by the Arc of Chemung-Schuyler at its Elmira and Watkins Glen locations.

Transportation Centers

Stop Name	Annual Ridership
Chemung Co. Transportation Center	778
Corning Transportation Center	315
Total	1,093

Chart 16: 2023 ridership to transportation centers

The final significant generators of ridership are the transportation centers in downtown Elmira and downtown Corning. They link Schuyler County residents to jobs and services available in these larger cities. Moreover, these stops access transportation centers where riders can connect to regional bus transportation. High ridership to these two downtowns suggests that extending service to downtown Ithaca could be beneficial to residents of Schuyler County.

Rural

Stop Name	Annual Ridership
Chambers St. Flag Area	174
Mecklenburg P&R	85
Enfield P&R	64
Mill & Main (Burdett)	63
Main & Mill (Burdett)	45
Millport Flag Area	44
Reynoldsville Church	10
Beaver Dams Flag Area	9
Total	494

Chart 17: 2023 ridership to rural-categorized stops

Park/Attraction

Stop Name	Annual Ridership
Seneca Harbor Park	459
Clute Park (Seasonal)	9
Total	468

Chart 18: 2023 ridership to park-categorized stops

Data shows that very few riders come from rural parts of the county, including Burdett, Mecklenburg, and Beaver Dams (2.9%). Even fewer use the bus to access parks and attractions (2.7%), specifically Seneca Harbor Park. Therefore, the vast majority of riders are residents of the county's three population centers, Watkins Glen, Montour Falls, or Odessa who are accessing essential services such as groceries and medical care. Very few are commuters from the rural parts of the county or tourists traveling to parks and attractions. With this analysis in mind, the team focused its recommendations on maximizing service to key community assets in the villages of Watkins Glen, Montour Falls, and Odessa by optimizing the routing of Village Connections to shorten run times.

Rider Classification

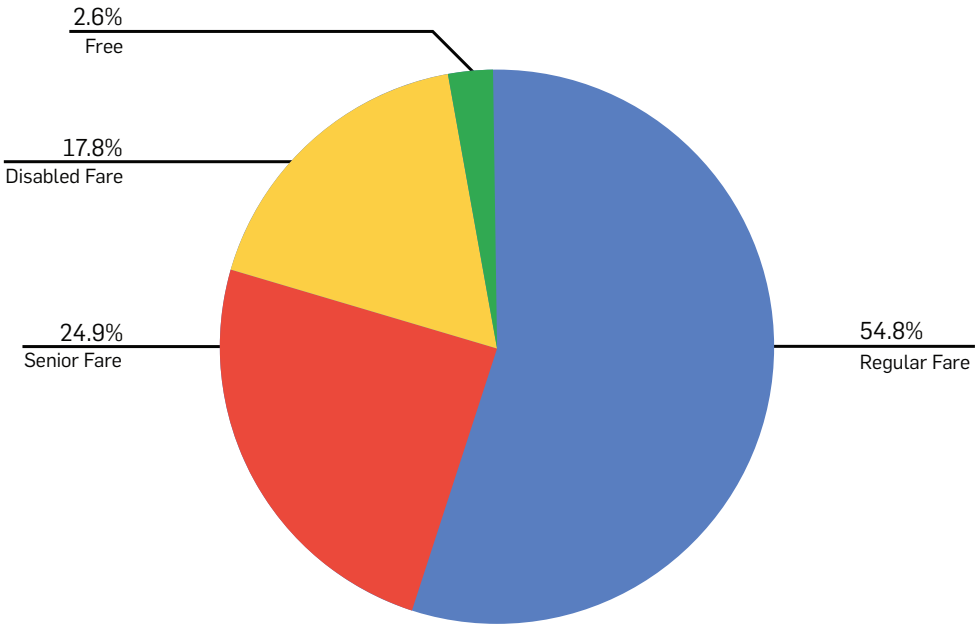


Fig 28: Fare type paid by each rider

The chart on the previous page displays ridership breakdown by rider type. Rider type is discerned by the bus driver, as they manually input who is getting on based on their fare class. Interestingly, the majority of riders are recorded as regular fare, suggesting that ridership from working-age adults is greater than we expect, relative to what the previous stop-level analyses tell us. This also flies counter to conversations had with SCT bus drivers, who state that their usual rider tends to be older. More investigation into this contradicting evidence would be necessary. However, the fact that a little around 43% of riders are mobility-disadvantaged in some way nonetheless reaffirms how important Schuyler County Transit is to elderly and disabled individuals.

On-Time Performance By Route

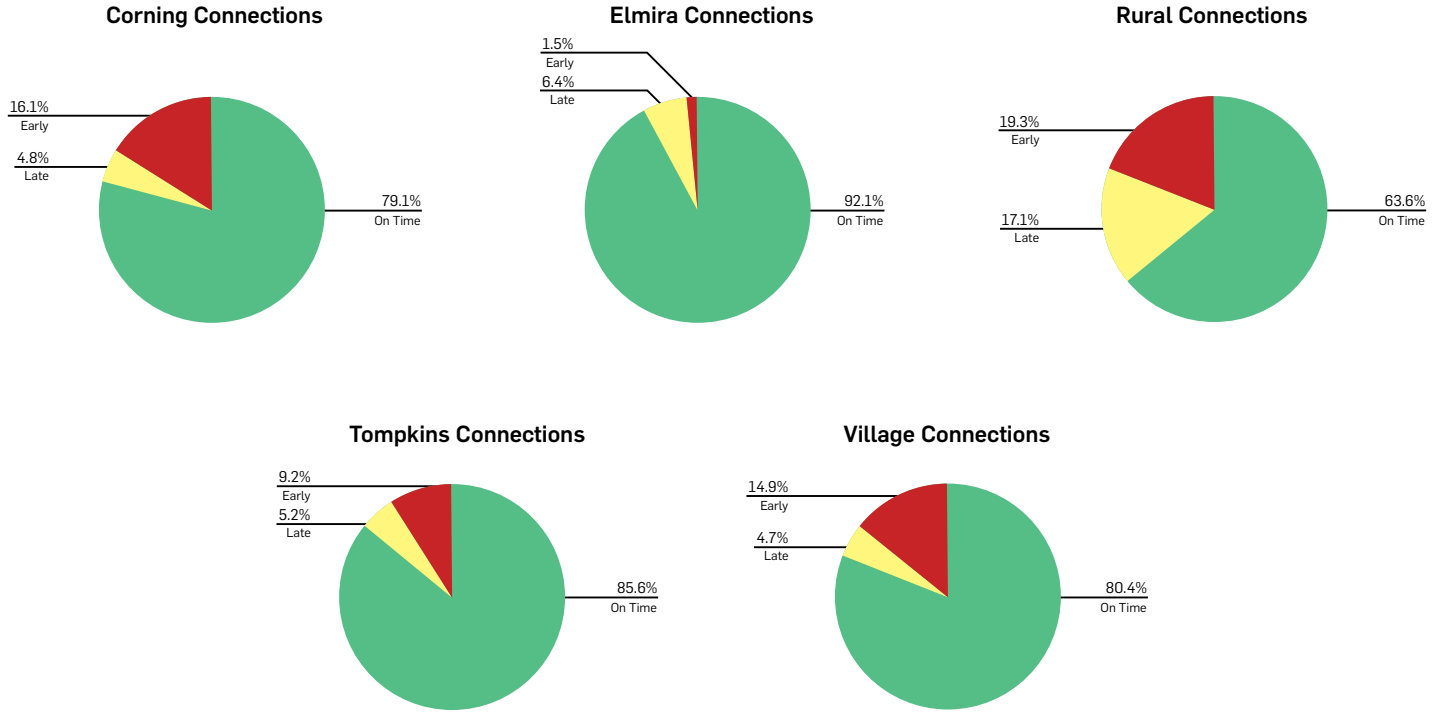


Fig 29: On-Time Performance statistics by route

These series of charts interpret Schuyler County Transit's on-time performance data. Buses are considered on time if they depart a timepoint-stop no later than 10 minutes after the scheduled time, and no earlier than 0 minutes before the scheduled time. Across the board, the majority of trips on each route are operating on time. Schuyler County Transit's older routes (Village Connections, Corning Connections, Tompkins Connections) have a fairly large percent of early trips, though. This is likely a consequence of Schuyler County Transit's operational practices; all routes allow for riders to schedule a diversion off-route of at most one mile. As such, schedulers padded the schedule to allow for these diversions to occur without having most trips run late. This comes at the consequence though of on-time performance, where many trips now leave earlier than expected, possibly leaving riders arriving exactly on-time at the stop behind. An alternative explanation may simply be that the schedules are out of date. SCT staff anecdotally state how route timings have not been changed since these routes were created up to 15 years ago. As travel times and ridership changes over years, these timings will gradually become more inaccurate. Some of our recommendations seek to address updating these times. Indeed, the newest route in the system, Elmira Connections, is the most on-time, demonstrating the importance of continually monitoring and updating route runtimes to better match real-world travel conditions.

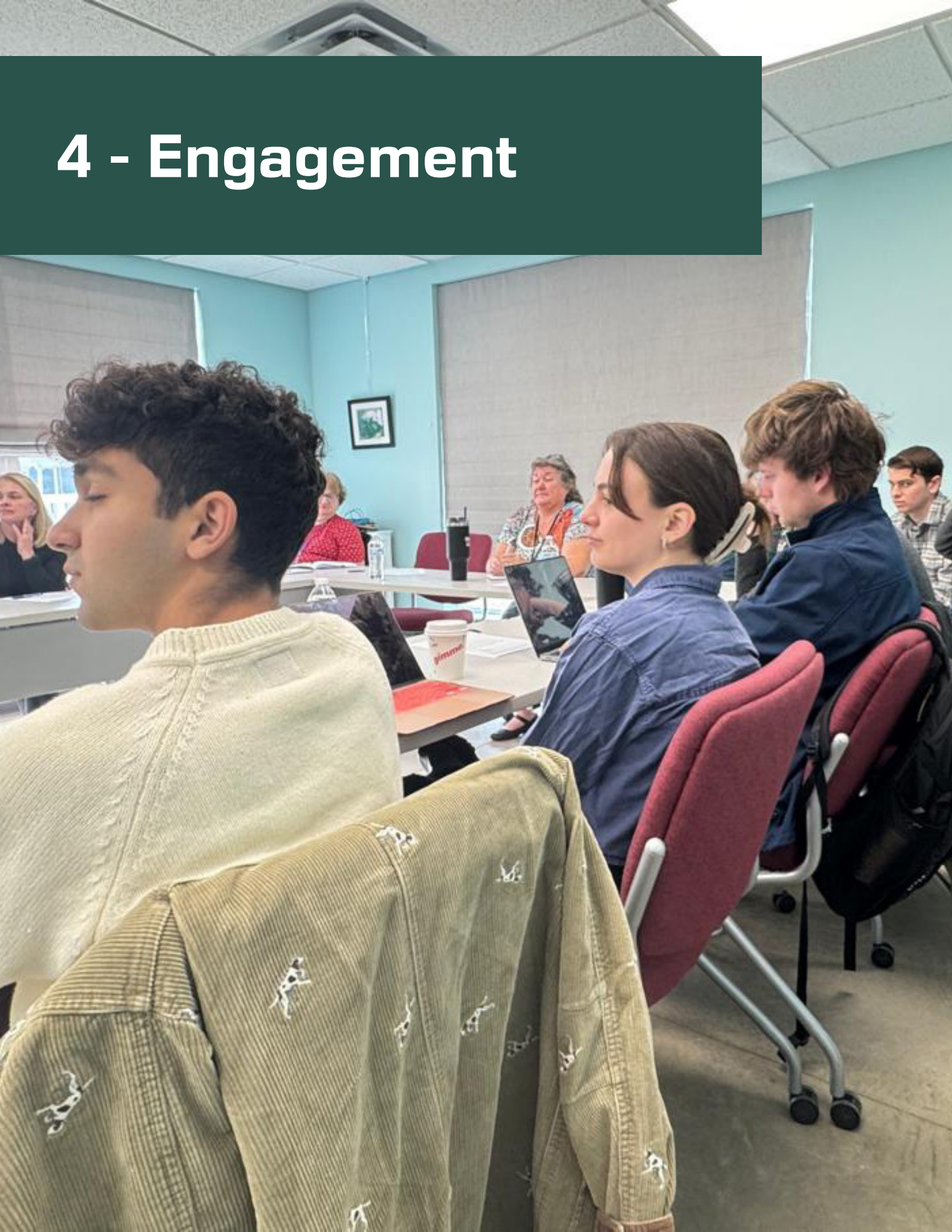
Network Efficiency

Revenue Miles Share	99.79%
Deadhead Miles Share	0.21%
Revenue Hours Share	97.65%
Deadhead Hours Share	2.35%

Chart 19: Share of revenue vs. deadhead miles/hours

SCT's routes are very efficient, in that they minimize deadhead time and hours significantly. By using such a large percentage of road-time for collecting passengers, drivers are not spending much time simply trying to go from one point to another. The minimal deadheads may also be a consequence of state (STOA) funding, which incentivizes transit agencies to minimize deadheading by subsidizing each revenue service mile traveled.

4 - Engagement



Background

The term of Schuyler County Transit's comprehensive planning extends for 1-2 years, but our involvement in this process is only for a couple months at the start of their work. As such, we have not had a chance to thoroughly participate in outreach events with the public. To help the ARC in managing their upcoming public events though, we have prepared a series of tools and recommendations to guide and manage how they interact with stakeholders and prioritize feedback.

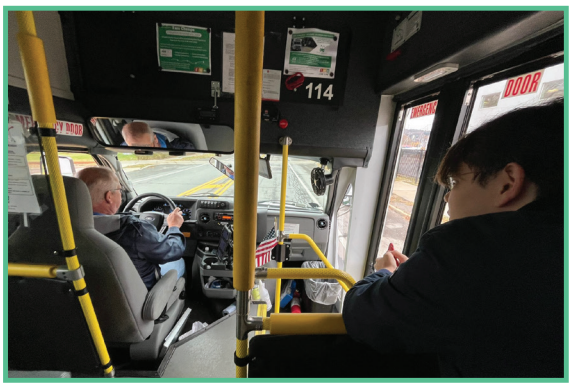
Outreach We Conducted

During our second site visit on November 20, 2024 we rode some Village Connections buses to hear driver and passenger perspectives on the challenges and opportunities of Schuyler County Transit. Their insights helped prioritize our recommendations and understand ridreship patterns along the network's most important route.

One suggestion involves expanding the bus buddy program. One passenger, a retired nurse who uses the Village Connections service twice daily, shared her experience as a Bus Buddy helping seniors and disabled riders navigate the system, and she emphasized that the program is cherished by many riders of the system. For example, she assisted a woman with severe arthritis who needed to spend hours at the Walmart in Watkins Glen. She worries for the woman because her arthritis continues to increase in severity but has not sought treatment for it, so the passenger expressed her gratitude to be able to assist her as a Bus Buddy. Formalizing and expanding this program could make it even more effective. Creating paid bus buddy positions for door-to-door pickup and drop-off services might encourage more people to use public transit confidently, especially those with mobility or health challenges. Additionally, it can be daunting for some residents to learn how to use public transit, leading them to avoid the option altogether. Pairing with them with a friendly and knowledgable face can alleviate some of their fears and encourage them to take the bus.

Additionally, the bus driver reported that most riders are seniors or individuals with disabilities traveling to essential destinations like hospitals or grocery stores. Based on this, improving vehicle accessibility is crucial. For instance, introducing low-floor, non-step access buses could make boarding easier for riders with mobility issues.

The interviews also emphasized the importance of the dial-a-ride service, which many residents use for physical therapy and work commutes. Expanding this service or better integrating it with regular bus routes could provide more comprehensive options. Additionally, transitioning from manual to digital logging of passenger boardings would streamline data collection, giving drivers more time to focus on their primary duties while improving data collection.



Engagement Prioritization

As the ARC conducts its extensive public outreach campaign around the county, they will likely encounter a wide variety of organizations, interest groups, community partners, and residents who will bring many perspectives and wishes. Their feedback may contradict itself and make responsibly managing all these perspectives difficult. As such, we have created an **Interest-Influence Matrix** that identifies key stakeholders they are likely to meet, anticipates their interest in receiving/funding service and their ability to influence transit policy, and provides brief guidance on how to react to their feedback.

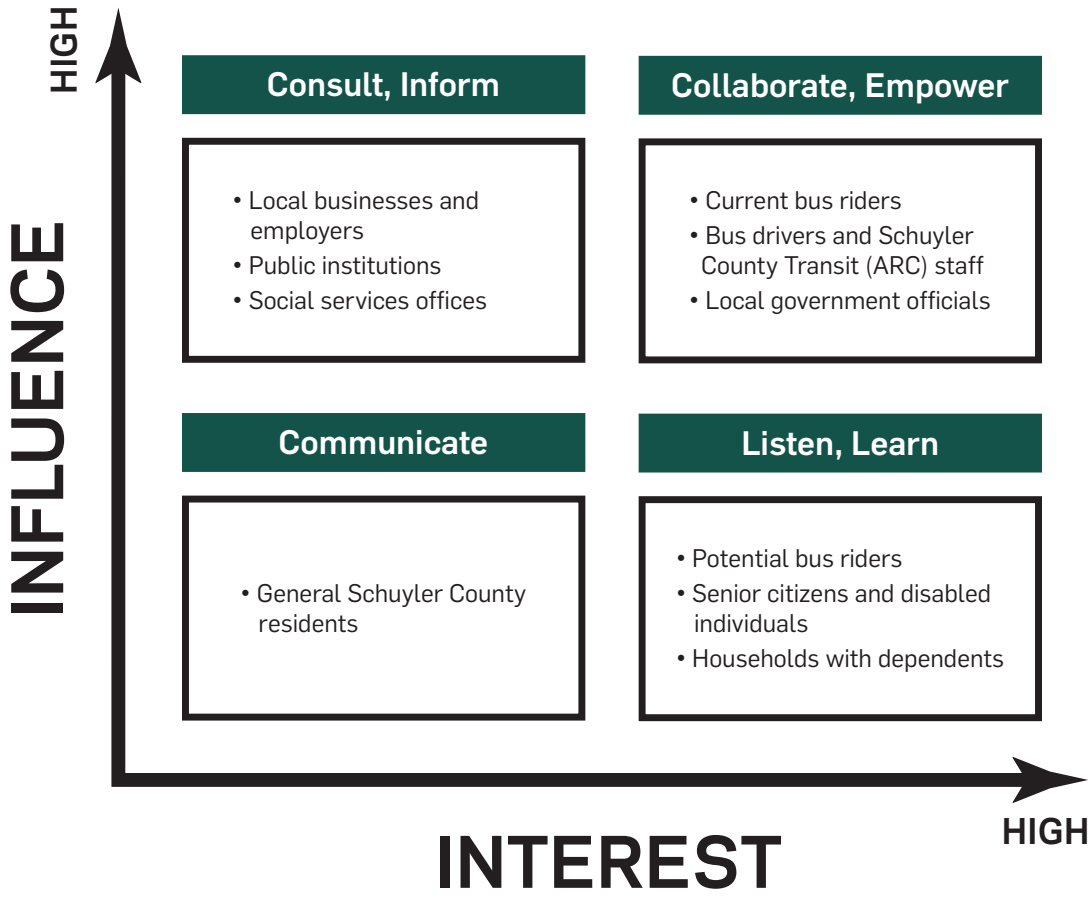


Fig 30: Engagement Prioritization Matrix

This matrix can help the ARC better prepare for their meetings by anticipating possible outcomes and engagement strategies. We hope they will be able to maximize engagement with their audience and better tailor their presentation to attendees.

Key Stakeholder Groups:

1. Current bus riders
2. Potential bus riders
3. Schuyler County residents
4. Local businesses and employers
5. Public institutions (e.g., libraries, healthcare facilities)
6. Senior citizens and individuals with disabilities
7. Households With Dependents
8. ARC C-S staff and bus drivers
9. Local government officials

Methodology for Matrix Categorization

High Interest, High Influence: Current bus riders rely on the system on a regular basis for employment, shopping, and transportation, so understanding their needs is imperative. Without their feedback, system changes and updates may not serve their needs; empowerment is key. Bus drivers and SCT staff are also very important to engage. Although not regular users, frontline employees listen to passenger feedback and frustrations daily, observe travel patterns, and will have a more holistic/less biased view than passengers on areas for growth and improvement. From observations as simple as bus stop placement (or lack thereof) to routing suggestions, collaboration with bus drivers is key to any successful comprehensive service overhaul. Lastly, local government officials are important to collaborate with as they know their constituents the best. With their local connections to their community and regular communication with those they represent, they are aware of their area's mobility challenges and can elevate voices that may not be able to directly interact with SCT staff.

High Interest, Low Influence: Potential riders, including but not limited to senior citizens, those with disabilities, and households with dependents are also important community members to reach out to. They represent the future of the system, and will hopefully contribute to its growth and ridership. It is important to listen to them to understand their mobility situation, why they don't use Schuyler County Transit, and learn what service changes or expansions can make transit a reasonable travel alternative for them. Given that they are naturally have less influence than regular riders, it is especially important to listen to their feedback.

Low Interest, High Influence: Local businesses and employers, public institutions, and social services offices should be consulted with because of how Schuyler County Transit's services may impact their operations (employee commuting, transporting customers/service recipients, etc.). Something as simple as adjusting a intercity trip time by 15 minutes could be incredibly disruptive to a group of employees riding the bus to work. Alternatively, a poorly timed intercity trip might be what is holding back some employees from taking the bus to work. To this end, it is essential to understand the interests of these groups and inform them of any progress and plans. However, extra effort may be required to solicit their opinions. While these entities are highly influential in their communities as drivers of the local economy and government, they may not see public transit as an important service given the county's car dependency.

Low Interest, Low Influence: The general population of Schuyler County should receive communication and updates about any major system changes in the spirit of transparency and marketing. They should also be able to submit comments based on any of these changes.

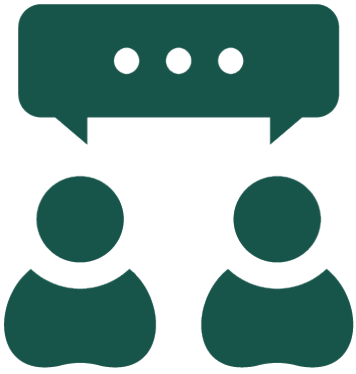
Town Hall Activities

For SCT's upcoming town hall meeting on county transportation improvements, we're planning several engaging activities designed to capture meaningful community input. Some ideas include:

Community Mapping

Communal: We advise the ARC to print out a large map of Schuyler County, inviting attendees from the town hall meeting to place pins on locations that are important to them or that they frequently visit. This will give us a visual sense of key destinations and areas where additional routes or bus stops could make the most impact. By seeing where people are most likely to need transportation services, we can prioritize routes that align closely with the community's needs.

Personal: Another possible exercise invovles letting people draw their commutes/transit travel privately while narrating to an ARC staff member as they do so. By focusing on what destinations and areas the attendee emphasizes and dwells on, planners can understand what is important to the individual.



Transit Storytelling

This activity encourages participants to share experiences, both good and bad, that they've had on Schuyler County's buses with each other in small break-out groups. By listening to each other's stories, attendees are able to find common threads between their feedback, contextualize their experiences, and synthesize broader and more holistic recommendations. As such participants are empowered to act and think like planners.

Brainstorming

We recommend the ARC set up a station where attendees can draw, write, or diagram out their "transit wishlist". This exercise invites creativity and shelters participants from being bogged down in the intricacies of transit planning scheduling. We want honest dialogue and feedback with no filters.

Social Media

We want attendees to interact with transit and SCT staff in an engaging and lighthearted way. Having a photoshoot area with props, signs, and marketable hashtags can help generate positive content to attract attendees to future outreach events. These photos would also give SCT more exposure in spreading the digital survey and general awareness of public transit.

Additional Engagement Ideas

Live Polling: Using digital tools to gather instant feedback and encourage participation from all attendees.

Colored Markers: By marking up the community map with colored elments, attendees can add another dimension to their notes about challenges with transit and opportunities for improvement.

Child-Friendly: It is difficult for famililes with children to attend public meetings because of childcare costs. Having a kids corner with transit-themed activities can allow entire families to attend with minimal costs, without accidentally excluding this demographic from participating.

These methods could help create a more dynamic and inclusive town hall experience, ensuring that diverse voices are heard in shaping Schuyler County Transit's future services.

Survey Design

To follow up with attendees after the meeting, or to engage with those unable to attend, we have developed the Schuyler County Transit Improvement Survey. Survey research is a valuable method for collecting information from individuals through their responses to questions, which allows for both quantitative and qualitative data collection (Ponto, 2015). The survey's sections have been designed to gather comprehensive data on the user's demographic information, commuting characteristics, and interaction with Schuyler County Transit. This report outlines the survey design process and key considerations in its development.

Survey Structure and Question Types

The survey follows best practices in questionnaire development, beginning with demographic questions before progressing to more specific inquiries about transit habits and preferences. A combination of closed and open-ended questions are used to balance ease of response with depth of information. Closed-ended questions with predetermined options were added for topics like frequency of bus use and primary transportation mode to facilitate quantitative analysis. Closed-ended questions are efficient for gathering data that can be easily analyzed. Open-ended questions were included to capture nuanced feedback on service quality and improvement suggestions, providing rich qualitative data (Ponto, 2015).

Content Areas

The survey covers several key areas relevant to transit planning:

1. Basic demographics
2. Commuting characteristics
3. Current bus service evaluation
4. Service improvement suggestions

Questions on commuting characteristics explore basic information like frequency of public transit use, but also trip purposes, preferred times, and reasons for choosing alternative transportation. This information can help identify gaps in current service. The section on current bus service evaluation uses both numeric rating scales and open-ended explanations to assess overall satisfaction as well as specific aspects like punctuality and accessibility.

Gathering Actionable Feedback

The final section on service improvement suggestions uses multiple question types to gather actionable feedback. Multiple choice questions with "select all that apply" options gauge interest in potential service changes like increased frequency or extended hours. Open-ended questions prompt respondents to identify their most frequented destinations and suggest ways the transit system could better serve those needs. The survey also explores the importance of inter-county connections, recognizing the regional nature of many commutes.

Conclusion

By combining structured response options with opportunities for open feedback, the survey aims to collect data that is both easily analyzable and rich in detail to inform transit planning efforts. The mix of question types and content areas were carefully designed to provide a comprehensive picture of current transit usage and future needs.

A copy of the physical survey is appended at the end of the survey discussion.

Survey Distribution Plan

To maximize accessibility and distribution, we have designed a physical and digital version of the survey. Both surveys are identical in structure and content.

Digital

We expect the most effective digital outreach method would be through the ARC's social media channels, particularly Facebook. Using Facebook can be a great way to reach out to young adults and adult audiences where we found Facebook groups related to Schuyler County have between 2,600 and 19,000 active members, who frequently engage with posts on a range of local topics such as bakeries, vacation rentals, and environmental initiatives. These groups are fairly active, as they average at least three posts per day and add approximately 2-10 individuals per week. These engagement metrics should yield good community visibility for SCT. In addition to Facebook, we suggest SCT leverage the ARC's extensive email distribution list to send the survey directly to Schuyler County residents already utilizing the ARC's services. To further encourage participation, SCT could consider offering a gift card raffle for

those who complete the survey. For example, a Walmart gift card worth $25-50 could be used as motivation to complete the survey.

Physical

We suggest the ARC partner with key public institutions and locations that community members regularly visit for print survey distribution. Printed surveys can be distributed at local libraries, including Watkins Glen Public Library, Montour Falls Memorial Library, and the Dutton S. Peterson Memorial Library (Odessa, NY) because of the open-doors nature of these assets. Other distribution points can include public institutions near prominent bus stops, such as the Mill Creek Center (Watkins Glen) and higher-density housing such as the Jefferson Villages (Watkins Glen) subsidized housing, and various senior housing facilities. Targeting these specific entities for distribution is especially important because their nearby bus stop's popularity allows our surveys to be put in informed and motivated hands. Additionally, we have considered including health and human services facilities such as the Schuyler Hospital and the county Human Services Building (Montour Falls). This would also include the out-of-county assets such as the Cayuga Medical Center and Arnot Health, accessible by bus routes serving Schuyler County patients and residents who work in the medical field. Because health appointments are so important for riders to access, it's important that SCT use the survey to understand how schedules can be written to better facilitate medical-related transportation.

We also encourage SCT to explore ways to increase awareness of the survey directly through the buses themselves. Physical copies of the survey can be placed on the buses, inviting riders to participate and share their thoughts on the transportation system. This approach ensures that SCT reaches those who actively use the service, getting insights from frequent riders. The very casual and cordial relationshp most riders have with the bus drivers mean that these individuals will likely be personally motivated to fill out the survey.

Engaging with staff, particularly the bus drivers and other frontline SCT employees, would be very valuable. Bus drivers know their riders and their system the best, as they watch travel patterns unravel and talk to riders about their concerns with bus service. While the survey itself may not be useful for them, their feedback on what they see/hear from riders can echo the suggestions the survey results and other engagement activities reveal. This would make it easier for planners to prioritize which proposals are most popular and relevant to riders.

To gather all the data, bus drivers could gather completed surveys towards the end of their shift and bring them back to the ARC office. Coordination between SCT and each partner location for survey pickup would be necessary.

Schuyler County Transit Improvement Survey

Basic Demographics

1. What is your age group?
   - ☐ 13-19
   - ☐ 20-39
   - ☐ 40-64
   - ☐ 65+

2. Are you a resident of Schuyler County?
   - ☐ Yes
   - ☐ No (Please specify: _____)

3. What is your current occupation?
   - ☐ Student
   - ☐ Employed (Full-time)
   - ☐ Employed (Part-time)
   - ☐ Unemployed
   - ☐ Retired
   - ☐ Other (Please specify: _____)

4. How long have you lived in Schuyler County?
   - ☐ Less than 1 year
   - ☐ 1-5 years
   - ☐ 6-10 years
   - ☐ More than 10 years

5. What is your highest level of education completed?
   - ☐ Some high school
   - ☐ High school diploma or equivalent
   - ☐ College (completed or in progress)

6. In which town or village within Schuyler County do you reside?

_____

7. How big is your household? _____

8. How many dependents (children or elderly (65+) reside in your household?

_____

9. Does your household own a car?
   - ☐ Yes (How many:_____)
   - ☐ No

Commuting Characteristics

10. What is your primary mode of transportation within Schuyler County?
   - ☐ Personal vehicle
   - ☐ Public bus
   - ☐ Walking
   - ☐ Carpooling
   - ☐ Other (Please specify:_____)

11. How often do you use the Schuyler County bus services?
   - ☐ Daily
   - ☐ Weekly
   - ☐ Monthly
   - ☐ Other (Please specify:_____)

12. What is the main purpose of your bus trips? (Select all that apply)
   - ☐ Commuting to work (Employer:_____)
   - ☐ School
   - ☐ Shopping/Errands
   - ☐ Medical appointments
   - ☐ Social/Recreational activities
   - ☐ Other (Please specify: _____)

13. What time of day do you typically use public transportation? (Check all that apply)
   - ☐ Early morning (5 AM - 8 AM)
   - ☐ Late morning (8 AM - 12 PM)
   - ☐ Afternoon (12 PM - 4 PM)
   - ☐ Early evening (4 PM - 6 PM)

Current Bus Service Evaluation

14. On a scale of 1-10 (1 being poor, 10 being excellent), how would you rate the current bus services in Schuyler County? ____

Please explain your rating: _____

_____

_____

15. How would you rate the punctuality of the bus service?
   - ☐ Always on time (Perfect)
   - ☐ Usually on time (OK)
   - ☐ Sometimes delayed (Acceptable)
   - ☐ Often delayed (Unreliable)

16. Do you require special accommodations for your mobility, be it on public transportation or otherwise?
   - ☐ Yes
   - ☐ No
   - ☐ Not sure (_____)

17. If you do require special accommodations, do Schuyler County Transit buses adequately meet your needs? (Bus and/or stop infrastructure, routing, etc.)

_____

_____

_____

18. Do you utilize Schuyler County Transit's on-route diversion service? (YES / NO). If "YES", please specify how frequently you use this service and why it is useful to you

_____

_____

_____

Fig 31: Front of the printed survey

19. What are the primary reasons you choose alternative transportation methods over the bus?

_____

_____

Service Improvement Suggestions

20. What are the top three places you most frequently visit using public transportation or alternative? Please specify the mode (Ex. Car, bus, etc.)

1. _____
2. _____
3. _____

21. How can Schuyler County Transit help you get to your most frequented destinations?

_____

_____

_____

_____

22. How important is connection to other county systems for you? Ex: Tompkins County (TCAT), Chemung County (CTRAN), etc.

- ☐ Very important
- ☐ Somewhat important
- ☐ Not important

23. Do you use Schuyler County Transit's rural routes to connect with other transit agencies (e.g., TCAT, CTRAN)?

- ☐ Yes
- ☐ No

If yes, how often and why? _____

24. What changes would encourage you to use the bus system more frequently? (Select all that apply)

- ☐ More frequent service
- ☐ Extended service hours
- ☐ More direct routes
- ☐ Improved bus stop amenities
- ☐ Real-time arrival information
- ☐ Improved accessibility

Explain your reasoning and/or situation in more detail:

_____

_____

_____

25. Do Schuyler County Transit's existing service options meet your work schedule? Please explain in detail.

_____

_____

_____

_____

26. Have you ever missed or been late to work due to public transportation delays or scheduling issues more than 2 times a week?

- ☐ Yes
- ☐ No

27. What factors would encourage you to use public transportation instead of driving? (Select all that apply)

- ☐ More convenient transit routes
- ☐ Cheaper fares
- ☐ Better parking facilities at transit hubs
- ☐ Less traffic congestion
- ☐ Environmental reasons
- ☐ Other (please specify): _____

28. Are there any specific areas or communities within Schuyler County you believe are underserved by the current transit system? If yes, please specify:

_____

_____

_____

29. Do you have any additional suggestions or comments to improve the Schuyler County transit system?

_____

_____

_____

Thank you for taking the time to complete this survey. Your feedback is valuable and will help us improve the Schuyler County transit system to serve your community better

Fig 32: Back of the printed survey

Fig 33: A poster we designed to advertise the digital survey

Focus Groups

From what we learned in the first Steering Committee meeting, board members are interested in compiling focus groups based on the outcome of the public events and the survey. When selecting participants, we suggest the ARC refer to our stakeholder prioritization matrix to ensure representation from key demographics. Focus groups for different stakeholder categories should be considered, based on demographic information gathered from the survey and town hall meetings, as well as the distinct ridership groups on different routes. This approach could help gather targeted feedback from each group's unique perspective. Importantly, those without power should be considered for outsize representation in these groups. We recommend the ARC aim for groups of 6-10 participants, as this size could allow for diverse opinions while remaining manageable in size.

For the focus group's tasks, we suggest the ARC develop a clear agenda with a set of open-ended questions designed to encourage detailed responses. To put participants at ease and encourage interaction, ARC staff should facilitate some icebreaker activity. Sessions can comprise a mix of question types, including those about current experiences, desired improvements, and potential new services. It might be helpful to employ interactive elements like maps or visual aids to stimulate discussion. Having a skilled facilitator to guide the conversation, keep the attendees on track, and draw out insights from all participants would be crucial for success.

To capture the richness of the discussions, the ARC could consider recording the sessions (with participants' consent) with a staff member taking detailed notes. After each session, planners would reflect on the conversations to identify common themes, unique insights, and potential solutions. Comparing findings across different demographic groups might help us understand varied needs and preferences. This information would be valuable in informing the ARC's transit improvement plans and validate or challenge assumptions made from survey and town hall data.

5 - Recommendations

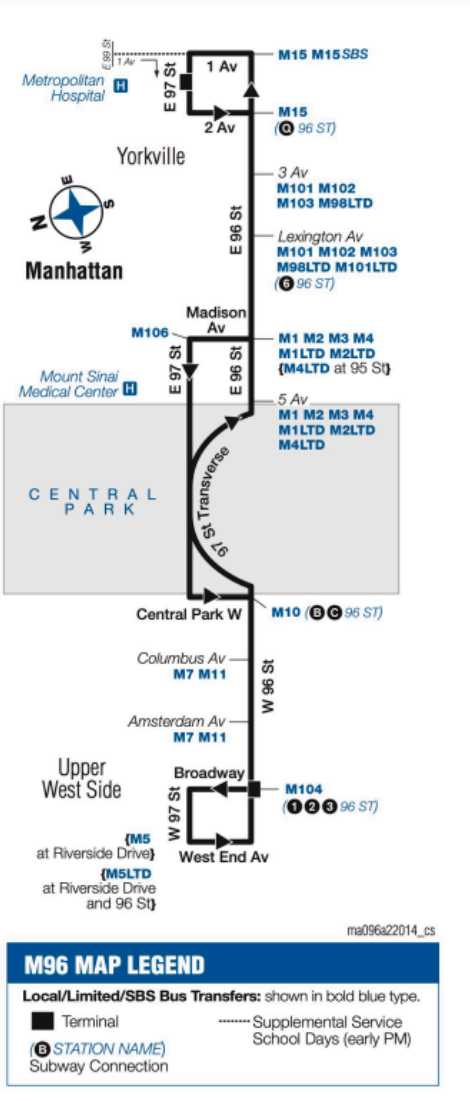
Background

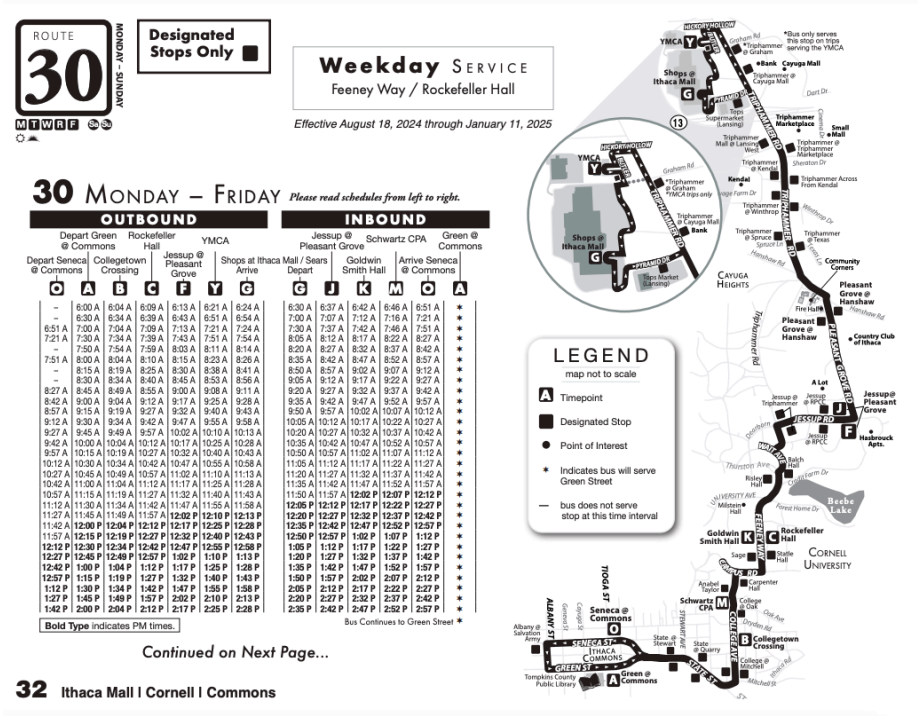
Based on our comprehensive context building with SCT staff, demographic analyses, and operations analyses we have crafted a variety of recommendations related to route network structure, scheduling, and transit amenities that we believe plug some holes in Schuyler County Transit's existing network. While these proposals have only been workshopped internally to test feasibility, we encourage SCT to use our engagement tools and strategies to gauge public interest and make adjustments where necessary.

Schedule & Map Redesign

A critical part of any transit agency is their branding identity, as this makes it easier for effectively engage with their system. It legitimizes the system and creates a cohesive way to identify routes.

In the first part of our design process, we analyzed other system timetables for initial guiding principles. The two we chose to examine were New York City's Metropolitan Transportation Agency (Route M96) and Tompkins Consolidated Area Transit (Route 30). We chose New York City's timetable as one indicative of a large, nearby system with a cohesive design language. The TCAT example was chosen as one which is hyper-local.





Key Takeaways - Best Practices:

1. A good timetable can (and often should be) black and white. This will save on printing costs and generally increase legibility through clarity

2. Font size is important - people are reading these in the real world, sometimes in the middle of winter, or may have difficulties with their vision. The more legibility we can provide by increasing font size, the better.

3. Use labeled stops (also known as timepoints) for wayfinding. Schuyler County Transit already uses these, but the stops are numbered rather than lettered as in TCAT's case. Having these means you don't need to show departure times at every stop, and you can further increase font size.

4. Make the most important elements big

5. Cross-streets aren't necessary to draw, but road labels are.

6. Simplify geography and use consistent geometry – this will make it easier to follow the maps. There should still be some indication of large geographic elements (towns, landmarks, major roads) for context.

7. A good map doesn't need to be oriented with north at the top. Include a north arrow regardless of orientation.

In our design process, we incorporated these findings to design effective timetables. Prototype schedules for routes 2, 6, and 7 were created; these routes are the simplest to represent. All maps were made exclusively using Adobe Illustrator software.

In each map we chose to prioritize elements in the following order:

1. Route number and name

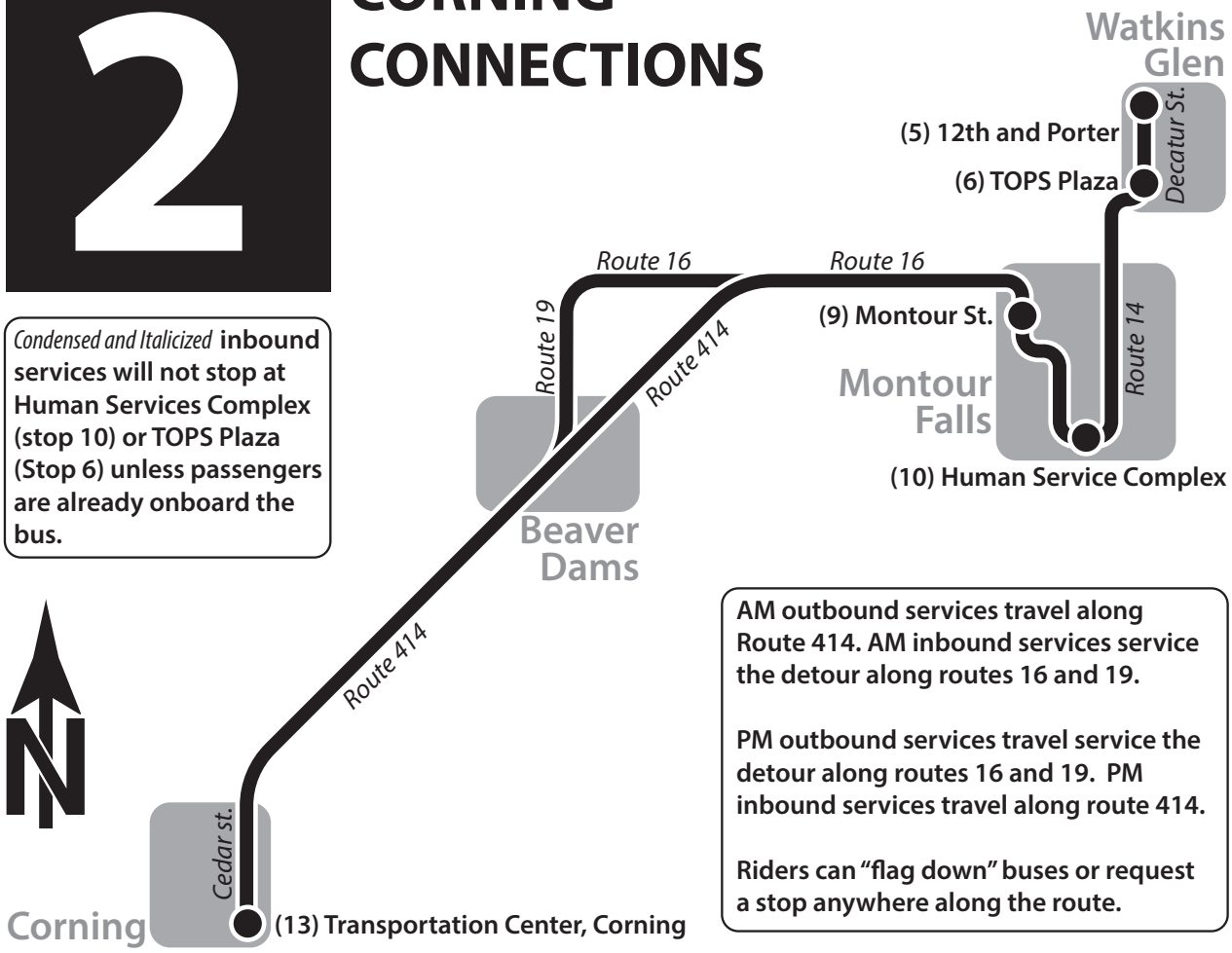
2. Route map.
- **a.** Villages Served
- **b.** Timetabled (numbered) stops
- **c.** Roads the service operates along
- **d.** North arrow

3. Full timetable with both "inbound" and "outbound" trips, and clarification of what those mean for each route specifically

4. Other information about route-specific operations - e.g. connections to other transit agencies, presence of flag stops, or coordinated transfers

Examples of each timetable are shown below:

2 CORNING CONNECTIONS



Condensed and Italicized **inbound services will not stop at Human Services Complex (stop 10) or TOPS Plaza (Stop 6) unless passengers are already onboard the bus.**

AM outbound services travel along Route 414. AM inbound services service the detour along routes 16 and 19.

PM outbound services travel service the detour along routes 16 and 19. PM inbound services travel along route 414.

Riders can "flag down" buses or request a stop anywhere along the route.

(13) Transportation Center, Corning	(10) Human Services Complex, Montour Falls	(6) TOPS Plaza, Watkins Glen	(5) 12th and Porter, Watkins Glen
7:20 AM	*8:40 AM*	*8:45 AM*	9:05 AM
3:55 PM	*4:30 PM*	*4:40 PM*	4:45 PM
4:30 PM	*5:00 PM*	*5:10 PM*	5:15 PM

INBOUND SERVICE

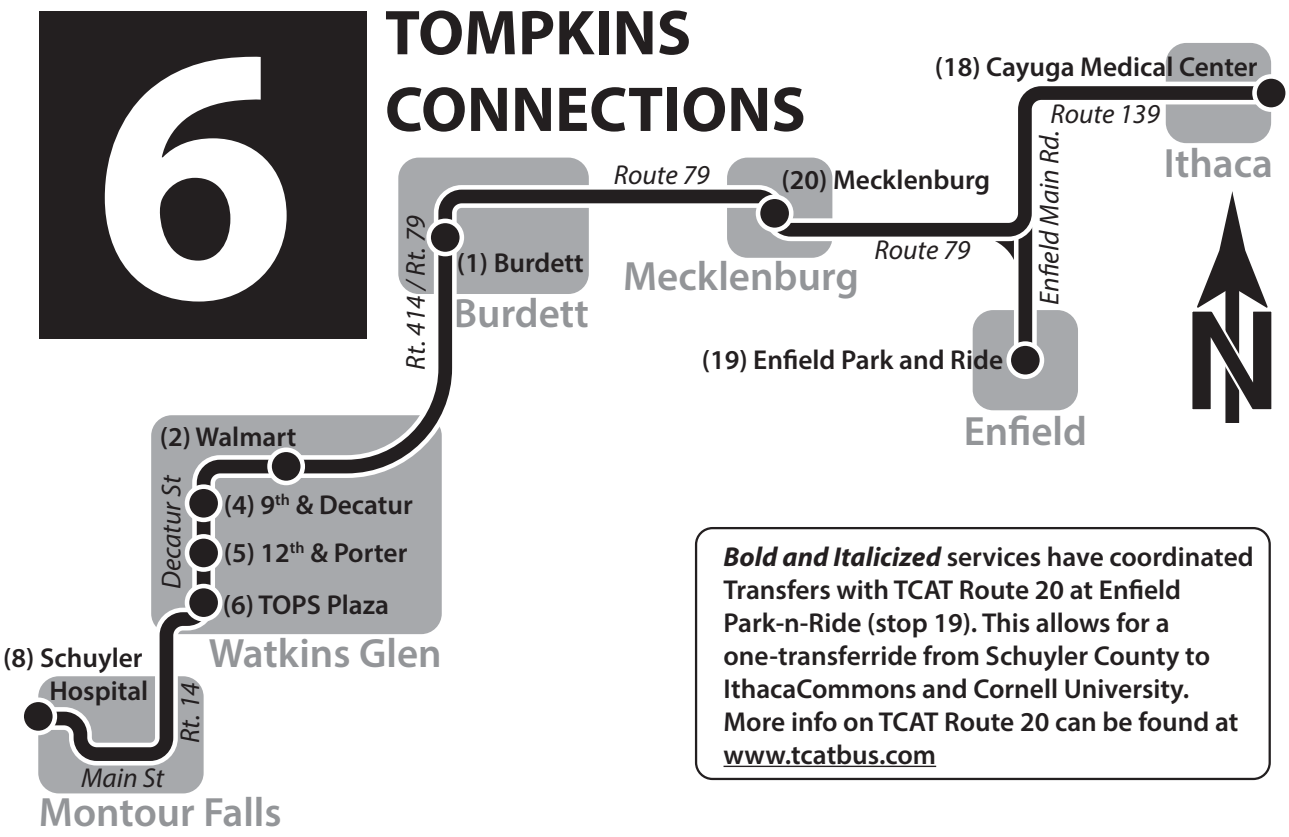
Towards Watkins Glen

Towards Corning

OUTBOUND SERVICE

7:20 AM	6:45 AM	6:35 AM	6:30 AM
7:45 AM	7:05 AM	6:55 AM	6:50 AM
4:30 PM	3:25 PM	3:15 PM	3:05 PM

Fig 34: Sample route 2 schedule



(5) 12th and Porter	(8) Schuyler Hospital	(2) Walmart	(1) Burdett	(20) Mecklenburg Park-and-Ride	(19) Enfield Park-and-Ride	(5) Cayuga Medical Center
5:55 AM	6:04 AM	6:19 AM	6:27 AM	6:37 AM	***6:47 AM***	6:58 AM
8:00 AM	8:10 AM	8:25 AM	8:33 AM	8:43 AM	------	8:58 AM
11:30 AM	11:39 AM	11:54 AM	12:02 PM	12:12 PM	12:22 PM	12:37 PM
2:00 PM	2:10 PM	2:25 PM	2:32 PM	2:42 PM	------	3:00 PM
3:52 PM	4:02 PM	4:25 PM	4:32 PM	4:43 PM	***4:53 PM***	5:08 PM

EASTBOUND SERVICE

Towards Cayuga Medical Center, Ithaca

Towards Schuyler Hospital

WESTBOUND SERVICE

8:20 AM	8:10 AM	7:55 AM	7:47 AM	7:37 AM	***7:27 AM***	7:10 AM
10:08 AM	9:58 AM	9:43 AM	9:35 AM	9:25 AM	------	9:10 AM
1:45 PM	1:35 PM	1:20 PM	1:12 PM	1:02 PM	------	12:47 PM
4:20 PM	4:02 PM	3:47 PM	3:40 PM	3:30 PM	------	3:15 PM
6:06 PM	5:35 PM	6:01 PM	5:55 PM	5:45 PM	***5:35 PM***	5:20 PM

Fig 35: Sample route 6 schedule

7 ELMIRA CONNECTIONS

N

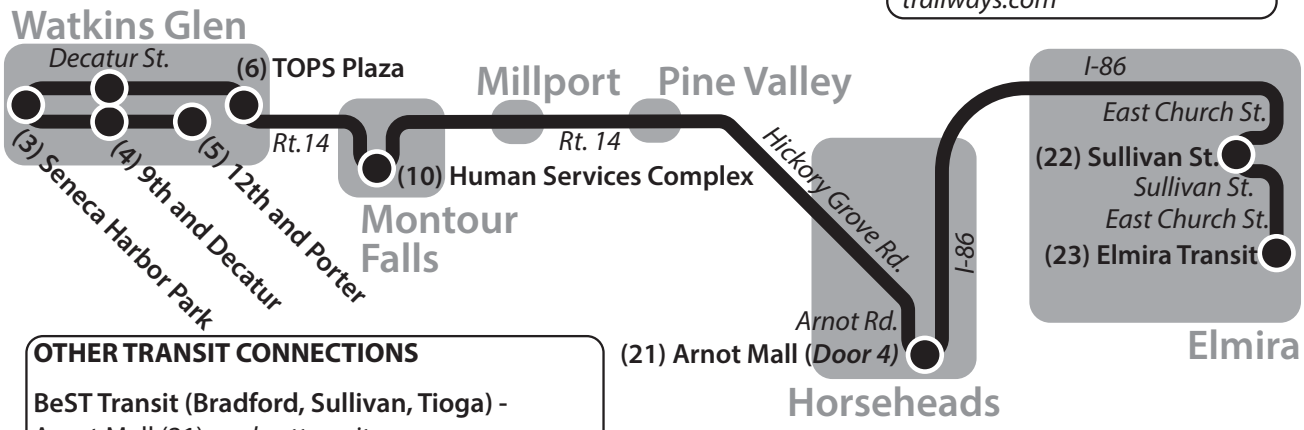
CONNECTIONS at ELMIRA TRANSIT (stop 23)

Greyhound - Elmira Transit (23)
greyhound.com

Megabus - Elmira Transit (23)
us.megabus.com

Ourbus - Elmira Transit (23)
ourbus.com

Trailways - Elmira Transit (23)
trailways.com



OTHER TRANSIT CONNECTIONS

BeST Transit (Bradford, Sullivan, Tioga) - Arnot Mall (21) - *gobesttransit.com*

CTRAN (Elmira-Corning) - Arnot Mall (21), Sullivan St. (22), Elmira Transit (23) - *ridectran.com*

(5) 12th and Porter	(3) Seneca Harbor Park	(6) TOPS Plaza, Watkins Glen	(10) Human Services Complex	(21) Arnot Mall (*Door 4*)	(22) Sullivan St.	(23) Elmira Transit
5:45 AM	-----	5:54 AM	6:01 AM	6:23 AM	6:39 AM	6:44 AM
8:15 AM	8:19 AM	8:24 AM	8:31 AM	8:53 AM	9:09 AM	9:14 AM
10:45 AM	10:49 AM	10:54 AM	11:01 AM	11:23 AM	11:39 AM	11:44 AM
2:00 PM	2:04 PM	2:09 PM	2:16 PM	2:38 PM	2:54 PM	2:59 PM
4:30 PM	4:34 PM	4:39 PM	4:46 PM	5:08 PM	5:24 PM	5:29 PM

SOUTHBOUND SERVICE

Towards Horseheads & Elmira

Towards Watkins Glen

NORTHBOUND SERVICE

7:59 AM	7:55 AM	7:50 AM	7:43 AM	7:21 AM	7:05 AM	7:00 AM
10:29 AM	10:25 AM	10:20 AM	10:13 AM	9:51 AM	9:35 AM	9:30 AM
12:59 PM	12:55 PM	12:50 PM	12:34 PM	12:21 PM	12:05 PM	12:00 PM
4:14 PM	4:10 PM	4:05 PM	3:58 PM	3:36 PM	3:20 PM	3:15 PM
6:44 PM	6:40 PM	6:35 PM	6:28 PM	6:06 PM	5:50 PM	5:45 PM

Fig 36: Sample route 7 schedule

Bus Stop Redesign

Background

During our second site visit, we had the privilege of attending the ARC's initial Steering Committee meeting. They highlighted the importance of serving the elderly population in the community, which depends heavily on the transit system for health appointments and shopping. During the meeting, they emphasized that their goal as a transit agency has never been to grow into a large-scale business, but rather to foster a friendly and supportive environment. Over the years, volunteer drivers have played a crucial role in their efforts during quarantine and bus drivers are known to share strong bonds with their passengers. Inspired by this sense of community, the design focuses on enhancing accessibility and user experience.

Bus shelters are an important asset for Schuyler County Transit to implement at its highest ridership stops. The shelter these structures provide keep vulnerable individuals warm, out of the elements, and gives them a place to rest while waiting for the bus. Disabled individuals are also important to consider in shelter design, as they may need extra space or a well-paved area to safely wait for and board the bus. While Schuyler County Transit has a variety of bus shelters already deployed, primarily in the Watkins Glen and Montour Falls, they are an aging design that lacks features that newer shelters in larger cities have. Additionally, many of these shelters were installed by the county nearly 15 years ago, when the system was brand new. As a result, they are approaching the end of their useful life (around 20 years), and will be in need of replacement soon. This presents a great opportunity for the ARC to adjust to sustainability intiatives and futureproof their system as more of the county, and thus their ridership, ages.

We recommend a variety of design proposals to create a new shelter standard. Each should come with a digital arrival board, listing the next departures for each route that serves the stop. This can alleviate the need to constantly need to switch out paper schedules in the stop and allows for programmable public-service messages to be communicated to riders efficiently.

Design Feature Ideas

1. Blue Roofs: Shelters should feature blue roofs that do not blend in with their surroundings, allowing them to stand out. This color also accommodates the needs of colorblind indivuals. Blue doesn't blend in with its built or natural surroundings well, allowing those with visual impairments to distinguish a sense of color difference between the distinctive shelter color and its surroundings.

2. Solar-Powered Passenger Notification System: To improve communication between passengers and bus drivers, each shelter is equipped with a button-activated light system. When a passenger wants to board the next bus, they click a button and the light illuminates, allowing drivers to anticipate stopping in advance, especially in low-visibility conditions. This ensures a smoother ride and better accommodates passengers with mobility challenges. Due to the far sight-lines this system is designed to work with, this is considered necessary for rural bus stops. This light system would be powered by solar energy to reduce costs and not require each shelter to be plugged into the power grid for flexibility in placement.

    Green Light: Indicates passengers are waiting at the shelter.
    Orange Light: Alerts the bus driver that passengers at the stop require additional assistance boarding.

3. Solar-Powered Digital Arrival Boards: We recommend including a digital arrival board that displays real-time bus arrival estimates. This feature is useful for passengers traveling to important appointments or work by helping them better plan their schedules and minimizing wait time at the stop. This feature can be used in both urban and rural shelters.

4. Route Map & Schedules: A poster-sized county map with route paths should be displayed in each shelter. This feature is especially beneficial for newcomers and tourists, enabling them to locate their position and understand the transit network easily. Having route schedules also present helps riders plan future trips while waiting for the bus.

5. Size and Accessibility

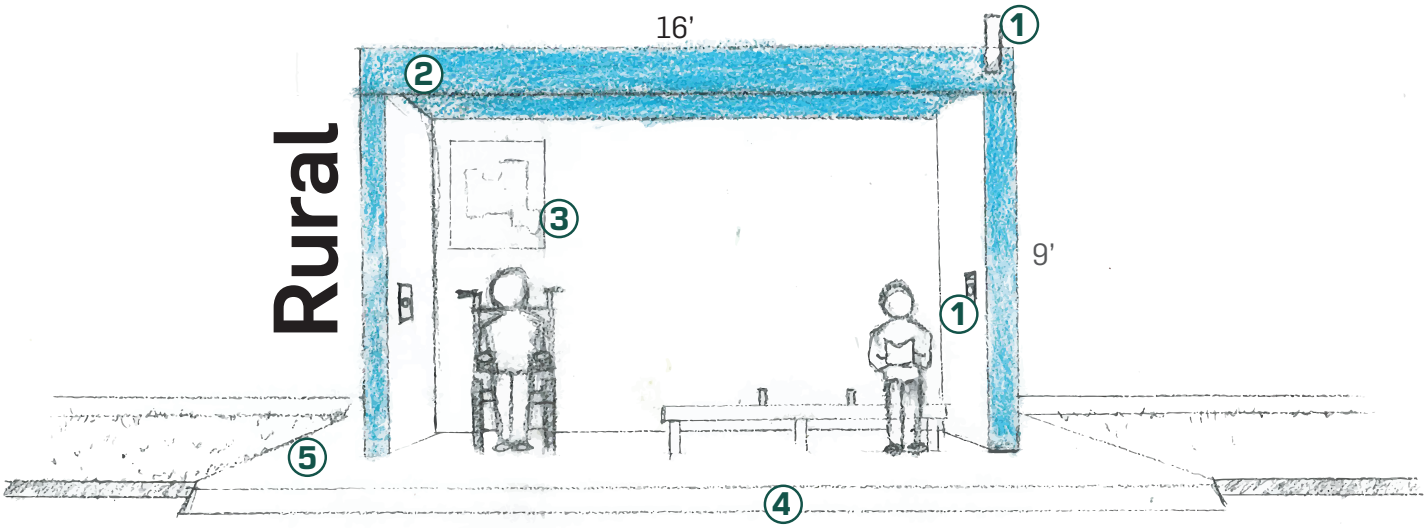
Rural Shelters: Designed to be spacious, measuring 16'x5'x8'. These shelters include seating for three people and a dedicated wheelchair space. The larger size reflects the lower frequency of stops in rural areas, where passengers may wait longer.

Urban Shelters: More compact at 10'x5'x8' to fit within limited urban spaces. These shelters accommodate two seats and a wheelchair space, reflecting the higher frequency of stops in town areas.

6. Ramp: Pursuant to best practices for accommodating disabled individuals, each shelter will built on a concrete pad with a sloping ramp on the edge of the sidewalk to allow wheelchair users to better access the road and get on the bus. Additionally partnering with local municipalities and the state DOT to construct more paved sidewalks around the bus shelter will improve safe access to the bus, particularly for mobility-challenged folks.

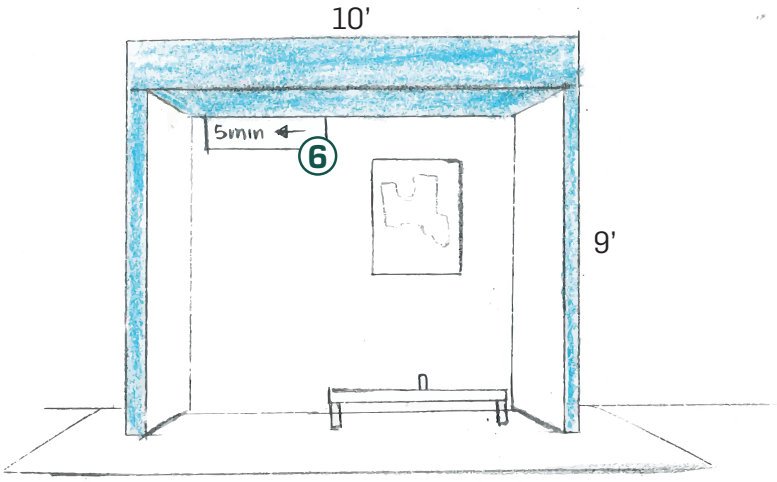
Sustainability and Community Impact

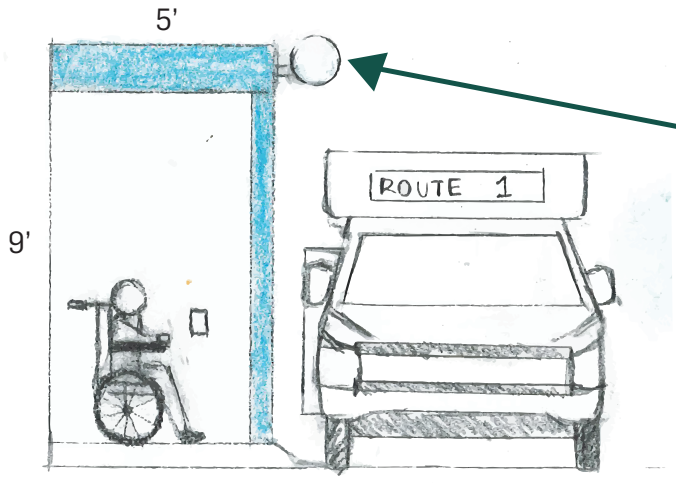
To ensure the shelters are both cost-effective and environmentally friendly, all features are powered by solar panels. This approach can not only reduce the environmental impact but also ensures consistent functionality even in remote areas without direct access to the electrical grid. By incorporating these innovative elements, the design aims to create a transit system that is cost-friendly, user-friendly, and sustainable. The shelter designed tries to accommodate the needs of all passengers, with a focus on those who require extra assistance, such as the elderly or disabled. By prioritizing accessibility, sustainability, and clear communication, the shelters can strengthen the connection between the transit system and its users making Schuyler County a safer community.



Legend

1. Light: for drivers to know there are people waiting
2. Color: For people with poor eyesight or color blindness to easily spot the shelter from afar
3. Map
4. Ramp: Smoother access to the road
5. Sidewalk: smoother access into the bus shelter
6. Digital arrival board





Green Light:
There are passengers currently waiting at the bus stop

Orange Light:
There are passengers waiting that need extra assistance

Fig 37: Drawn bus stop redesign rendering

We hope to encourage the ARC to workshop this design, particularly with elderly and disabled individuals, to make sure that their needs are met and they are comfortable with the design. To encourage feedback, we have produced this as a hand-drawn rendering so individuals feel like the design is organic, accessible, and modifiable. A computer-rendered model might feel intimidating and give the impression of finality instead of encouraging collaborative design.

Route Recommendations

We have designed four primary recommendations, of which some involve network restructuring. A before and after map are presented below highlighting changes, and more specific explanations are provided afterwards.

Current:

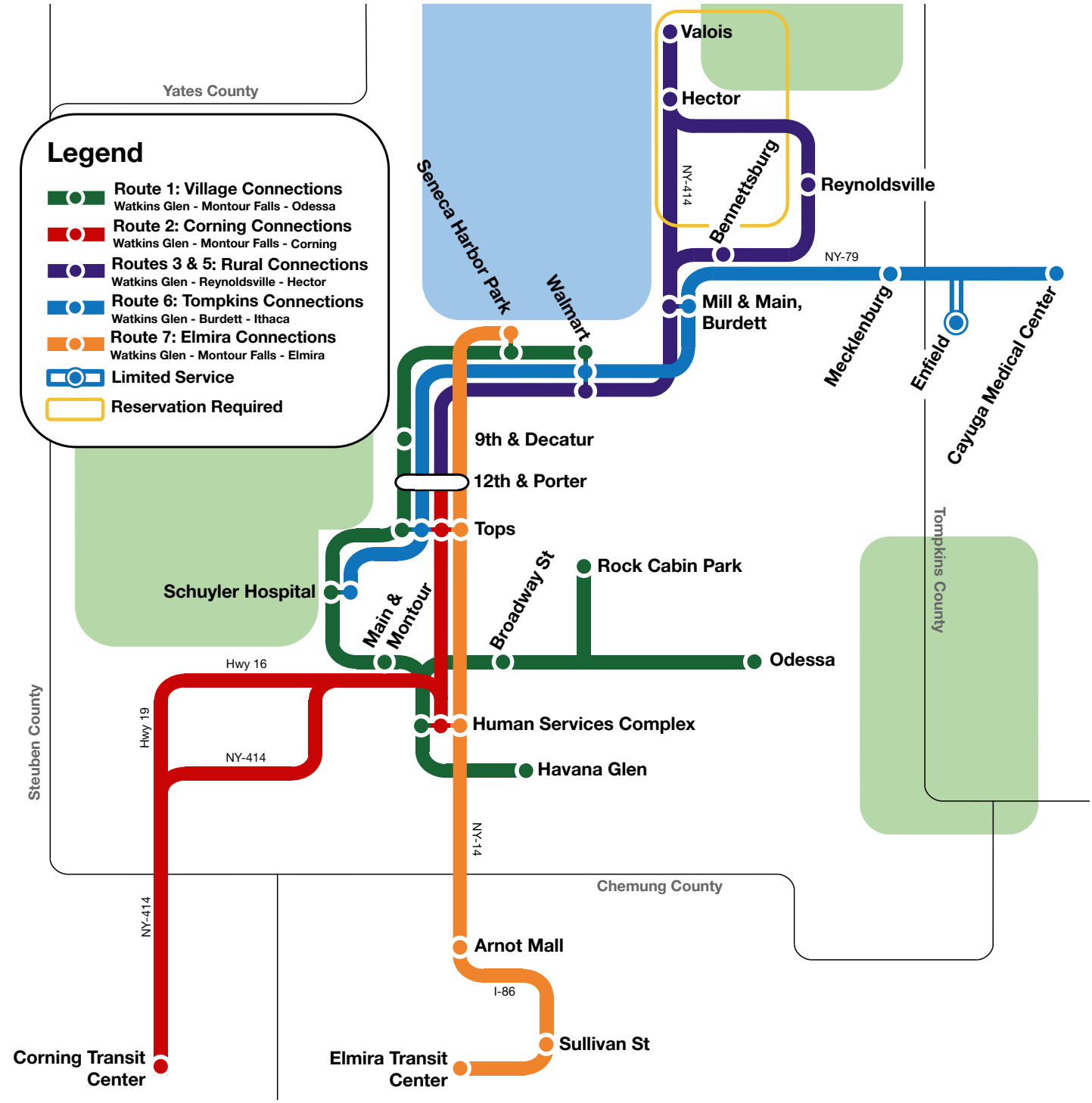


Fig 38: Current Schuyler County Transit route map

Future:

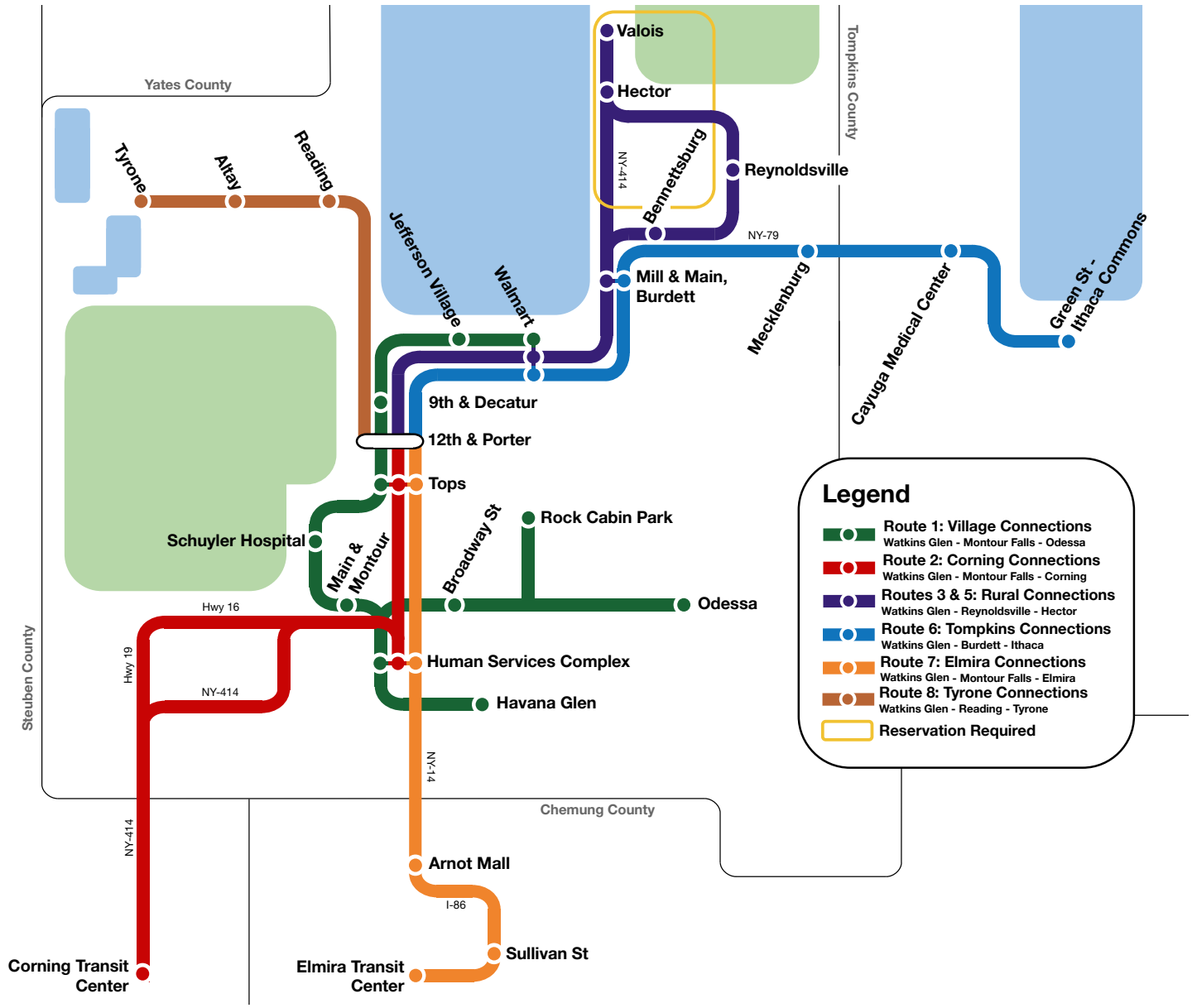


Fig 39: Possible future Schuyler County Transit route map reflecting our route structure recommendations

Re-Timing Village Connections

Our Operations Analysis demonstrated that the Village Connections route is undoubtedly the most heavily used service provided by Schuyler County Transit. As a result, we focused on finding ways to optimize this service. Speaking to riders, we heard a strong desire for shorter trips, especially to essential destinations like WalMart. Currently the full Village Connections takes one hour to make the trip from Odessa to Walmart. This trip length is not ideal, given riders furthest from WalMart generate a considerable amount of ridership bound for Watkins Glen. As a result, we looked for creative solutions to reduce these trip times, focusing on two reforms:

1. Eliminating unnecessary diversions
2. Cutting excess slack in the timing of bus schedule

We acknowledge that any routing or schedule changes based on these options come with significant drawbacks. Adjusting schedules risks causing buses to run late and eliminating diversions reduces bus access to certain areas. As a result, we took a very cautious approach to changing the route, discarding

ideas that would harm the community in the name of efficiency.

The first proposal we considered was eliminating less important stops. In doing so, Schuyler County Transit can shorten trips between more important destinations. With a shorter overall route, buses can also complete their round trips in less time possibly enabling more frequent service. We made sure not to propose changes to any stop that serviced critical housing, retail, medical, or human service assets. Instead, we hoped to remove stops that served parks and attractions, one of the least frequent sources of ridership (see page 41). We identified Seneca Harbor Park as the most obvious stop to remove. While it did serve 458 passengers in 2023 (similar ridership to the Decatur St School Apartments), it's only a three minute walk from the Jefferson Village stop. Considering that the park is recreational use, we think most riders travelling to it would be able to make this walk. Along with cutting the fixed stop, we also propose removing the section of the route along nearby Franklin Street. The flag stop in this area only saw 39 riders in 2023. While one might expect the city's downtown core would see high ridership, the evidence suggests otherwise. The team decided the best way to maximize service for SCT's primary constituencies was to cut service to these travel and recreation centered stops.

We estimate these changes will save drivers 5 minutes in the southbound direction and 4 minutes in the northbound direction. These savings are especially important because they shorten every single trip to Walmart, the most important destination in the system. In total a rider making a round trip to Walmart can expect to save 9 minutes, 4 minutes on the way there, 5 minutes on the way back.

The second proposal involved removing excess runtime in the existing bus schedule. In our on time performance analysis (see page 42), we found that Village Connections performed worse than newer services like Elmira Connections. The schedule is due for an evidence-based overhaul. We hoped to find parts of the schedule where buses arrive early and spend unnecessary time waiting for scheduled departures. The team looked for discrepancies and inaccuracies in the existing schedule using a combination of statistical analysis and Google Maps driving estimates. The largest source of unnecessary padding in the schedule can be found in the stop pair approaching Schuyler Hospital in both directions, where buses routinely spend extra time waiting at Schuyler Hospital. While having relief time for late buses isn't inherently bad, placing too much of this time at the center of the route needlessly extends the trips for all passengers. In total, we eliminated 10 minutes from the round trip, about 5 in either direction.

A third proposal, for possible future consideration was to serve some stops in one direction only. The team went through several iterations of this proposal. The idea stems from an observation of the inefficient routing through Montour Falls. The route travels through the town multiple times, doubling back on itself to serve stops spread out across the town. Unlike the efficient linear path in Watkins Glen, the section in Montour Falls more closely resembles the spokes on a wheel. From this observation, the team thought the service could loop through Montour Falls and Odessa, drastically reducing the length of the route.

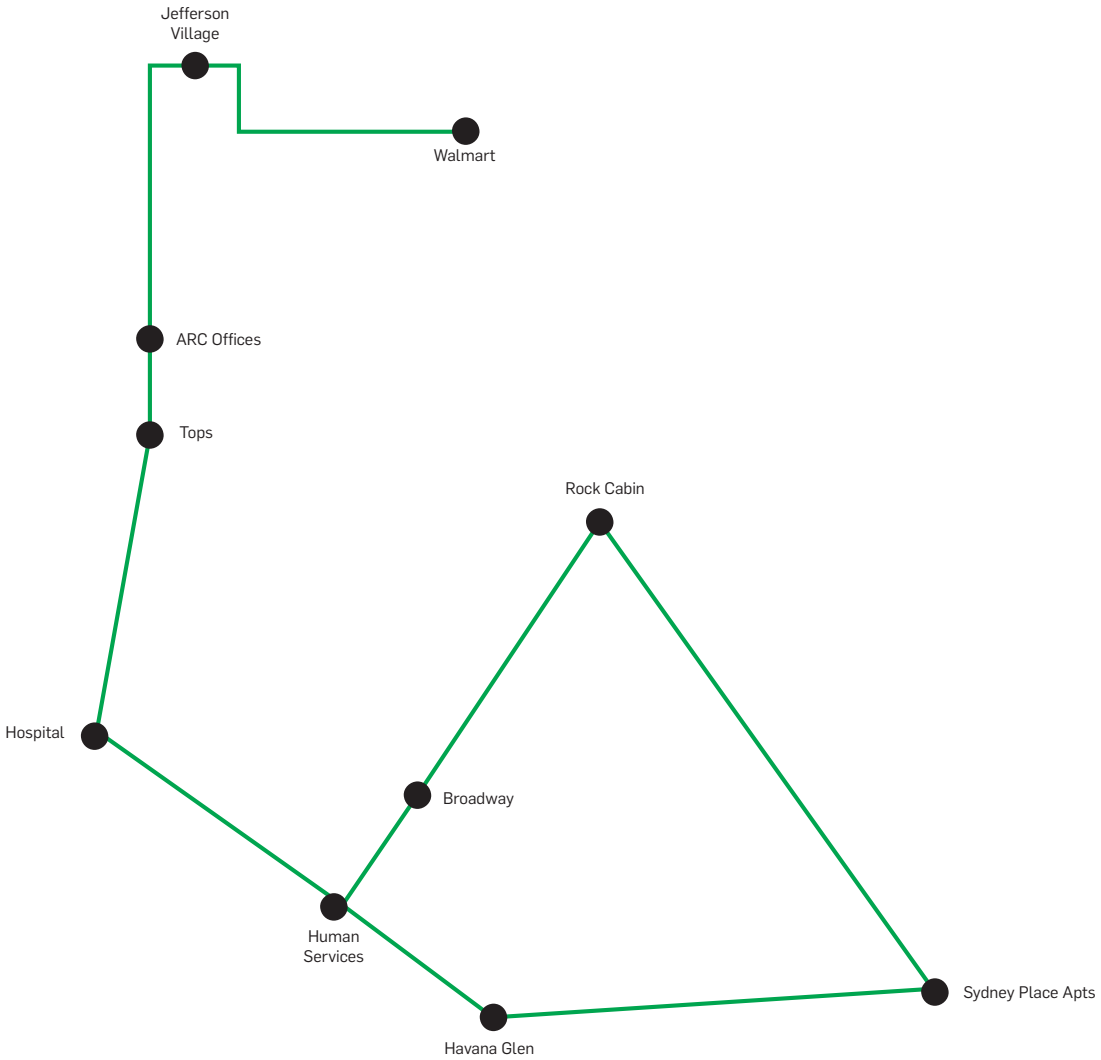


Fig 40: Simple line diagram of a possible 45-minute routing for Village Connections

Our routing down Havana Glen Road between the Havana Glen and Sydney Place timepoints theoretically would reduce travel time, allowing for a 45 minute frequency all day. Although the road is likely passable and safe to travel on using a cutaway bus, there is a weight limitation (poorly signed) on that road for vehicles of a maximum weight of 5 tons (10,000 lbs).

Under this loop concept, the bus would serve some stops in only one direction to shorten the total length of the trip. The stops that take the most additional time to serve are the Human Services Building, Havana Glen, and Rock Cabin. We determined that Human Services was too important to serve in only one direction. However, we believe Schuyler County Transit should consider stopping at Havana Glen Park in only one direction (southbound) and Rock Cabin Park in the other direction (northbound). Skipping Rock Cabin in one direction saves 5 minutes and skipping Havana Glen in one direction saves another 5 minutes. This change would reduce the round trip run time by 10 minutes, allowing buses to run every 45 minutes, further reducing wait times across the system. This change would also shorten trips between Odessa and most locations by 5 minutes in both directions. Currently Odessa faces the longest trips despite having the highest ridership of any residential stop. This change would improve service to this important set of riders.

Unfortunately, Havana Glen and Rock Cabin would see service cuts by nearly half on paper. However, the reality would be a little less severe. Every bus would still pass through these stops, they would just be going the “wrong direction” half the time. As a result, some passengers at Havana Glen and Rock Cabin Park would have to spend longer on the bus, travelling out to Odessa and back before eventually

reaching their destinations in Watkins Glen and Montour Falls. However, this change saves so much time for riders throughout the rest of the route, especially those in Odessa, the team deems the benefits of this proposal outweigh the costs. Based on these pros and cons, we suggest SCT to consider coordinating with the Village of Montour Falls to determine whether exceptions can be made to run the Village Connections bus down that route to achieve shorter frequency.

Although we cannot officially recommend the 45-minute frequency routing, we still believe that retiming the schedule to provide faster service would be productive. To this end, we have built new schedules, available on the following page that would get riders to and from Odess quicker, even if the route headway isn't shorter.; Furthermore, this schedule builds in layover time in Odessa and WalMart, allowing the drivers to rest, stretch their legs between these long trips, and use the bathroom at the WalMart end of the route. By building the layover into the ends of the route instead of the middle, drivers feel more free to exit their vehicle and relax instead of resting on duty in their seat.

Possible schedules for the 60 and 45 minute alternatives are provided on the following two pages.

60 Minute Schedule

Walmart Depart	Jefferson Village	9th & Decatur	12th & Porter	Tops	Schuyler Hospital	Main & Montour	Human Services	Havana Glen	Broadway St	Rock Cabin	Odessa Arrive
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	7:15	-	-	-	-	-	-	-	7:30
7:30	7:34	7:37	7:40	7:45	7:53	7:57	8:01	8:04	8:09	8:13	8:20
8:30	8:34	8:37	8:40	8:45	8:53	8:57	9:01	9:04	9:09	9:13	9:20
9:30	9:34	9:37	9:40	9:45	9:53	9:57	10:01	10:04	10:09	10:13	10:20
10:30	10:34	10:37	10:40	10:45	10:53	10:57	11:01	11:04	11:09	11:13	11:20
11:30	11:34	11:37	11:40	11:45	11:53	11:57	12:01	12:04	12:09	12:13	12:20
12:30	-	-	12:35	-	-	-	-	-	-	-	-
-	-	-	13:15	-	-	-	-	-	-	-	13:30
13:30	13:34	13:37	13:40	13:45	13:53	13:57	14:01	14:04	14:09	14:13	14:20
14:30	14:34	14:37	14:40	14:45	14:53	14:57	15:01	15:04	15:09	15:13	15:20
15:30	15:34	15:37	15:40	15:45	15:53	15:57	16:01	16:04	16:09	16:13	16:20
16:30	16:34	16:37	16:40	16:45	16:53	16:57	17:01	17:04	17:09	17:13	17:20
17:30	-	-	17:35	-	-	-	-	-	-	-	-

Odessa Depart	Rock Cabin	Broadway St	Havana Glen	Human Services	Main & Montour	Schuyler Hospital	Tops	12th & Porter	9th & Decatur	Jefferson Village	Walmart Arrive
	-	-	-	-	-	-	-	7:23	-	-	7:30
7:30	7:37	7:41	7:46	7:49	7:53	7:57	8:05	8:10	8:13	8:17	8:21
8:30	8:37	8:41	8:46	8:49	8:53	8:57	9:05	9:10	9:13	9:17	9:21
9:30	9:37	9:41	9:46	9:49	9:53	9:57	10:05	10:10	10:13	10:17	10:21
10:30	10:37	10:41	10:46	10:49	10:53	10:57	11:05	11:10	11:13	11:17	11:21
11:30	11:37	11:41	11:46	11:49	11:53	11:57	12:05	12:10	12:13	12:17	12:21
12:21	-	-	-	-	-	-	-	12:36	-	-	-
-	-	-	-	-	-	-	-	13:20	-	-	13:30
13:30	13:37	13:41	13:46	13:49	13:53	13:57	14:05	14:10	14:13	14:17	14:21
14:30	14:37	14:41	14:46	14:49	14:53	14:57	15:05	15:10	15:13	15:17	15:21
15:30	15:37	15:41	15:46	15:49	15:53	15:57	16:05	16:10	16:13	16:17	16:21
16:30	16:37	16:41	16:46	16:49	16:53	16:57	17:05	17:10	17:13	17:17	17:21
17:21	-	-	-	-	-	-	-	17:36	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-

45 Minute Schedule

Walmart Depart	Jefferson Village	9th & Decatur	12th & Porter	Tops	Schuyler Hospital	Main & Montour	Human Services	Havana Glen	Broadway St	Rock Cabin	Odessa Arrive
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	7:05	-	-	-	7:15	-	7:19	7:23	7:30
7:30	7:34	7:37	7:40	7:45	7:53	7:57	8:00	8:03	-	-	8:08
8:15	8:19	8:22	8:25	8:30	8:38	8:42	8:45	-	8:49	8:53	9:00
9:00	9:04	9:07	9:10	9:15	9:23	9:27	9:30	9:33	-	-	9:38
9:45	9:49	9:52	9:55	10:00	10:08	10:12	10:15	-	10:19	10:23	10:30
10:30	10:34	10:37	10:40	10:45	10:53	10:57	11:00	11:03	-	-	11:08
11:15	11:19	11:22	11:25	11:30	11:38	11:42	11:45	-	11:49	11:53	12:00
12:00	-	-	12:05	-	-	-	-	-	-	-	-
12:45	-	-	12:50	-	-	-	-	-	-	-	-
13:00	13:04	13:07	13:10	13:15	13:23	13:27	13:30	13:33	-	-	13:38
13:45	13:49	13:52	13:55	14:00	14:08	14:12	14:15	-	14:19	14:23	14:30
14:30	14:34	14:37	14:40	14:45	14:53	14:57	15:00	15:03	-	-	15:08
15:15	15:19	15:22	15:25	15:30	15:38	15:42	15:45	-	15:49	15:53	16:00

Odessa Depart	Rock Cabin	Broadway St	Havana Glen	Human Services	Main & Montour	Schuyler Hospital	Tops	12th & Porter	9th & Decatur	Jefferson Village	Walmart Arrive
-	-	-	-	-	-	-	-	7:23	-	-	7:30
7:34	-	-	7:39	7:42	7:45	7:49	7:57	8:02	8:05	8:08	8:12
8:12	8:19	8:23	-	8:27	8:30	8:34	8:42	8:47	8:50	8:53	8:57
9:04	-	-	9:09	9:12	9:15	9:19	9:27	9:32	9:35	9:38	9:42
9:42	9:49	9:53	-	9:57	10:00	10:04	10:12	10:17	10:20	10:23	10:27
10:34	-	-	10:39	10:42	10:45	10:49	10:57	11:02	11:05	11:08	11:12
11:12	11:19	11:23	-	11:27	11:30	11:34	11:42	11:47	11:50	11:53	11:57
12:04	-	-	12:09	12:12	12:15	12:19	12:27	12:32	12:35	12:38	12:42
-	-	-	-	-	-	-	-	12:55	-	-	13:00
-	-	-	-	-	-	-	-	13:40	-	-	13:45
13:42	13:49	13:53	-	13:57	14:00	14:04	14:12	14:17	14:20	14:23	14:27
14:34	-	-	14:39	14:42	14:45	14:49	14:57	15:02	15:05	15:08	15:12
15:12	15:19	15:23	-	15:27	15:30	15:34	15:42	15:47	15:50	15:53	15:57
16:04	-	-	16:09	16:12	16:15	16:19	16:27	16:32	16:35	16:38	16:42

Extending Tompkins Connections to Ithaca

When examining system ridership, we noticed that Tompkins Connections performs fairly poorly in overall ridership and is the second-least productive route in the network (see pg. 35). We theorized that this may be due to limited connectivity between the route and downtown Ithaca. Tompkins Connections is the only intercounty bus route that does not serve the downtown of the city it runs to. It relies on a poorly timed transfer with the TCAT route 20 a couple trips per day at a rural park and ride. It's possible to transfer to the TCAT route 14 at the Cayuga Medical Center, but these transfers are even more difficult to make. Our solution is to extend the Tompkins Connections bus to Ithaca Commons, servicing TCAT's Green Street (Ithaca Commons) stop. This extension would allow passengers to have a one-seat ride into downtown Ithaca, where they can access shops, restaurants, and jobs. In addition, passengers could easily transfer to other TCAT routes to community assets and employment centers around the county. Passengers could also connect to FlixBus, Trailways, Coach USA, and OurBus intercity services to reach further destinations such as New York and Syracuse. It would also significantly decrease travel time from Ithaca to Watkins Glen, as existing connections via the TCAT 14 and 20 are indirect.

While getting Tompkins Connections to Ithaca Commons itself would be a big help, further extensions and alignments in Ithaca can help turn some potentially popular transfers into one-seat rides. The most promising alternative involves routing the bus towards the recently-constructed Guthrie and Cayuga Health clincs along NY-13 and the Shops at Ithaca Mall. These specialist facilities offer services that are difficult to access for Schuyler County residents and providing a one-seat ride to them would be beneficial to the county's rapidly aging population.

Another possibility could see the route extended onto Cornell University's campus. As there are a large number of workers that commute to the university every day (See traffic analysis on page 16) along Tompkins Connections' corridor, some may be willing to ride the bus to save on on-campus parking costs. Our chosen route from Green Street would run directly up to the Vet School, and service the many academic and facilities buildings along Tower Road. Before returning to Cayuga Medical Center, the bus would serve Seneca Street & Ithaca Commons stop.

Extending Tompkins Connections further east would increase the route's runtime. To try and keep runtime as close to possible with this extension, we have devised two other routing changes to save time elswhere. En route to Cayuga Medical Center, we propose discontinuing the Enfield Park & Ride stop as the timed connections to the TCAT route 20 are not necessary if the bus continues directly to downtown Ithaca itself. SCT staff note that most rideship in Enfield occurs at the Dandy Mini-Mart at the intersection of NY-79 and Enfield Main Road, which would still be a flag stop on the route. Furthermore, Tompkins Connections would no longer service Schuyler Hospital, as timed transfers with Village Connections could fill that gap.

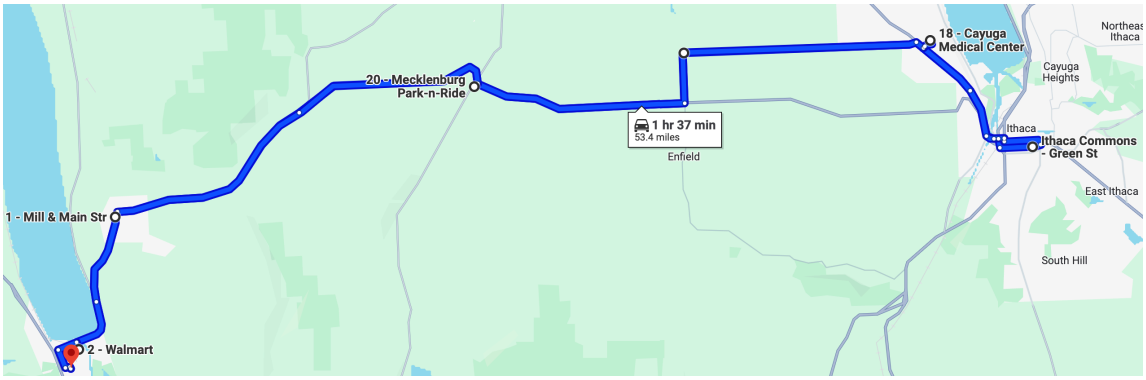


Fig 41: Proposed routing of the modified Tompkins Connections route

Facilitating Transfers Between Buses

We have made it a priority when redesigning the bus schedule to include transfers between Village Connections and the rest of the routes. Each route can stand on its own as they do now, but rebuilding the schedule to facilitate transfers between urban and rural routes, strengthening ridership across the network (rural feeder system). We decided to modify the schedules on the Tompkins Connections and the Elmira Connections to connect with our new Village Connections schedules. At first we tried modifying each trip individually to connect with Village Connections, but this caused inconsistencies in wait times and bus layover times, which would be confusing for both passengers and operators. Instead, converted Tompkins Connections route to operate on a two-hour headway, with transfers timed to the Village Connections route at the 12th & Porter stop. The Elmira Connections route also would operate on a two-hour headway, with transfers timed to the Village Connections route at the Human Service Building, based on the Elmira's peak-direction of travel. That is, transfers are coordinated so Village Connections riders can transfer to the Elmira-bound buses in the morning. In th evenings, Elmira Connections riders can transfer to Watkins Glen-bound Village Connections buses in the evening. As part of this scheme, we also recommend creating a transfer slip system so that passengers do not have to pay two separate fares.

Two schedules below detail how these connectinos can work against the 60-minute circulation frequency of Village Connections. Transfers times between buses generally are 10 minutes or less.

Tompkins Connections Schedule

12th & Porter Depart	Walmart	Burdett	Mecklenburg	Cayuga Medical	Green St Arrive	Green St Depart	Cayuga Medical	Mecklenburg	Burdett	Walmart	12th & Porter Arrive
5:40	5:45	5:53	6:03	6:18	6:33	6:40	6:55	7:10	7:20	7:28	7:33
7:40	7:45	7:53	8:03	8:18	8:33	8:40	8:55	9:10	9:20	9:28	9:33
9:40	9:45	9:53	10:03	10:18	10:33	10:40	10:55	11:10	11:20	11:28	11:33
12:40	12:45	12:53	13:03	13:18	13:33	13:40	13:55	14:10	14:20	14:28	14:33
14:40	14:45	14:53	15:03	15:18	15:33	15:40	15:55	16:10	16:20	16:28	16:33
16:40	16:45	16:53	17:03	17:18	17:33	17:40	17:55	18:10	18:20	18:28	18:33

Elmira Connections Schedule

12th & Porter Depart	Tops	Human Services	Arnot Mall	Sullivan St	Elmira Transit Arrive	Elmira Transit Depart	Sullivan St	Arnot Mall	Human Services	Tops	12th & Porter Arrive
5:49	5:54	6:01	6:23	6:39	6:44	6:49	6:54	7:10	7:32	7:39	7:44
7:49	7:54	8:01	8:23	8:39	8:44	8:49	8:54	9:10	9:32	9:39	9:44
9:49	9:54	10:01	10:23	10:39	10:44	10:49	10:54	11:10	11:32	11:39	11:44
13:06	13:11	13:18	13:40	13:56	14:01	14:06	14:11	14:27	14:49	14:56	15:01
15:06	15:11	15:18	15:40	15:56	16:01	16:06	16:11	16:27	16:49	16:56	17:01
17:06	17:11	17:18	17:40	17:56	18:01	18:06	18:11	18:27	18:49	18:56	19:01

The Corning Connections route follows a very peak-travel oriented schedule, with trips only during rush hours. We feel this schedule does not align ideally with the current ridership demographics that use Schuyler County Transit for medical and shopping reasons (midday travel), but hesitate to suggest timing changes since significant changes to rural routes are not always received well. While changing schedules opens up service to new possible riders, existing riders who plan their lives around these schedules may be negatively impacted. Without engaging directly with Corning Connections riders and riding the route, we feel that creating a schedule from scratch would not be helpful. However, we encourage SCT to explore this topic in their outreach and build a schedule similar to Tompkins and Elmira to facilitate transfers at 12th & Porter or the Human Services Building.

Service Expansion to Tyrone

Revisiting our demographic analysis, Schuyler County Transit's bus network successfully serves most of the densely populated parts of the county. However, we noted one major exception: its northwestern corner.

We recommend Schuyler County Transit create a new bus route, connecting Watkins Glen and Tyrone via NY-14, 14A, and 226. The bus would reach a variety of currently-unserved communities such as Reading Center, Altay, and Tyrone. While we do not have access to Dial-a-Ride pickup/dropoff location data, SCT staff anecdotally mention how most rural pickups are out in the direction of Tyrone, demonstrating interest for transit in that direction. Furthermore, our community asset mapping exercise (see pages 13-14) reveals that there are few grocery, retail, pharmacy, and health amenities in that section of the county. This makes it all the more important to consider providing some level of service to this region.

Tyrone would function as the anchor of this service, as our existing conditions analysis reveals is the most densely populated part of the county not served by transit (see pages 11-12). Reading Center is less prominent, but it is close to the relatively populated areas along the western shore of Seneca Lake. We could also expect relatively higher demand for service from this region because it's not as wealthy as the eastern side of the lake. However, Tyrone Connections could suffer a similar fate to Rural Connections in that they both would serve relatively dense but nonetheless small satellite communities. Our expectation is that the lower median household income west of Seneca Lake would lead to higher transit usage, but this theory could be tested by introducing the route on a trial basis. By building a schedule and offering incentives (free fares, discounted multi-ride passes, etc.), local interest and attention can be drummed up and demand can be tested without committing to run an unproductive route in the long-term.

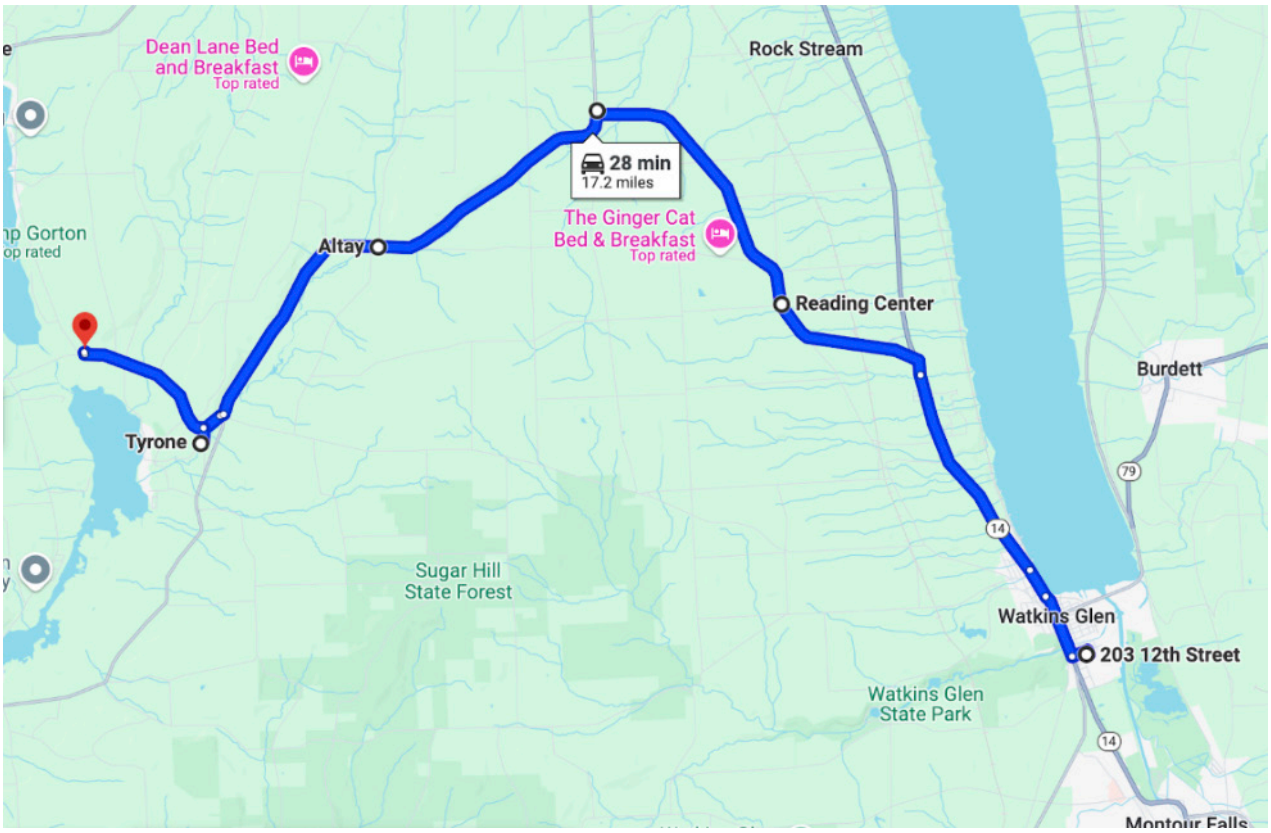


Fig 42: Proposed routing of the Tyrone Connections route

By choosing a routing which primarily travels down state roads, safe passage for buses and regular winter maintenance can be expected. Within Tyrone, various service alignments were considered as development is fairly spread out along the eastern shore of Lanoka Lake. Using Zillow housing data, we found that house prices on the lake were quite expensive, and thus those households are likely wealthy and would not be receptive to public transit. Instead, we decided to route the bus through the center of the village past the United Methodist Church and up County Road 23 through more modest development. The bus would run almost to the Schuyler-Steuben county line either terminating at a Dollar General or the Town Supervisor's office. Alternatively, a living community at the end of Fleet Cove Road on the lake exists. It is unclear to us if this is a year-round RV park/manufactured home community, or a seasonal RV camping ground. Further investigation is needed to consider whether this development should be on Tyrone Connections' alignment.

We have not built a schedule for this recommendation, but Google Maps' travel time estimates suggest the trip would take 28 minutes. Factoring in additional time to make stops, help limited-mobility passengers up the bus' stairs, and the slower travel speed of commercial vehicles will probably require a 35 minute per-direction runtime. Departure/arrival times in Watkins Glen should be determined based on the Village Connections schedule. Tyrone Connections should follow the same scheduling model as Tompkins and Elmira Connections, offering peak-period hour service oriented towards commuters and midday service for those traveling to midday doctor's appointments and performing essential shopping trip.

To help boost ridership further, we would also recommend the route try and service the Seneca Terrace Apartments located off of NY-14 near the bottom of Seneca Lake. It would be difficult to efficiently route Tyrone Connections on a safe path to that apartment complex, but future consideration to adding this route diversion could be given.

According to Google Maps, a one-way trip takes 28 minutes. Factoring in additional time for stops and passengers, the service would likely take about 35 minutes per direction. Buses should be scheduled to connect with Village Connections in Watkins Glen.

Other Possible Route Recommendations

Night + Weekend Service: From our conversations with riders and drivers, we found there is considerable interest for Village Connections service later into evening hours and on weekends. Seeing as most Village Connections ridership is associated with shopping, this recommendation at a surface level makes sense as most people go shopping after business hours and on weekends. Drivers cited that the last trips of each day and most trips on Friday tend to be busier than normal, suggesting people wish to shop outside of regular service hours, but don't have the option to. We investigated Friday and late afternoon ridership on Village Connections and found that there is no significant increase in ridership during these time periods. For instance, average daily ridership on Mondays-Thursdays on Village Connections is around 52 riders, while on Fridays it is 53. However, we encourage SCT to continue to investigate this through our previously discussed qualitative engagement methods and to explore 2024 year-end ridership to see if this is a recently developing pattern.

Coordination with CEATS: Corning Connections services downtown Corning but doesn't extend to Corning Community College south of the city. As Schuyler County Transit lacks options for higher education, timing Corning Connections to meet with CEATS route 1 that services the college could help improve ridership. However, timing transfers with other transit agencies is difficult (as seen with TCAT's route 20) and CEATS route 1 isn't very frequent itself (one bus every two hours).

Wine Tourism: SCT staff expressed interest in tapping into the prosperous agrotourism industry along Seneca Lake. However, we feel that this proposal should not be prioritized for a variety of reasons. As Schuyler County itself has no rail, airport, or significant intercity bus operation, most tourists arriving in the county will be doing so with their own private vehicle or on a tour group. As such, we expect that they would drive themselves to any vineyards due to the convenience, or be transported there privately with their tour group. Furthermore, Schuyler County Transit's mission prioritizes serving individuals with limited mobility options due to age, disability, or income status. As such, any extra resources should be allocated to transporting these individuals as opposed to short-term, likely affluent visitors. Additionally, Schuyler County already contracts with a private transportation company to provide shuttle service to these vineyards. Branded as the "Lakeside Trolley", it operates to vineyards on both sides of Seneca Lake five days per week with many trips on Saturdays to transport inebriated passengers during peak tourism months. It would be duplicative for Schulyer County Transit to operate a nearly-identical service. Lastly, many of these vineyards have small, often unpaved parking lots. These tight turnaround areas would be difficult to navigate even with a small cutaway bus, and navigating within parking lots is in general a hazardous practice as cars can back out of a space at any moment. For safety and liability purposes, transit agencies try to minimize their incidents-per-mile, such as minimizing turns, stops, and difficult driving conditions (parking lots). However, a possible vineyards route providing commuter service for the local, seasonal employees living in Watkins Glen to these attractions could be a productive use of resources.

Watkins Glen State Park Tourism: For reasons similar to the wine tourism proposal, we don't feel that this service would be the best use of resources. The state park already operates shuttle vans connecting their main parking lot to all three entrances of the park. Additionally, the Villages Connections route already runs fairly close to this parking lot, at only one street away.

Rural-Tompkins Connections Transfers: As Rural Connections operates in an area with a relatively high number of Cornell commuters, creating a timed transfer with Tompkins Connection in Burdett could help funnel commuters from communities north of NY-79 to a route that will take them towards their work instead of back to Watkins Glen. This timed transfer would be difficult to coordinate though, as the demand-response nature of Rural Connections means its travel time would vary each day, leading to long waits in Burdett to the route running early or missed connections due to lateness.

Alpine Junction Park & Ride Service: Schuyler County Transit could consider opening a fixed route down the NY-224 corridor past Odessa towards Alpine, Cayuta, and the Alpine Junction Park & Ride. However, this expansion may not be necessary as C-Tran already serves this community with their own (infrequent) route 30. Furthermore, while shuttling riders down to the park & ride for the transfer could help with Tompkins County access, an expanded route 6 would likely be a more effective solution, due to its direct routing and lack of transfers.

Thinking Bigger Picture

While a fixed route transit model is a tried-and-true method of network design, more transit agencies are starting to consider more flexible models to address lagging route performance. As so much of Schuyler County is very low density, it would be very financially and operationally inefficient to implement a coverage-based fixed route model that covers all communities in the county. To that end, we briefly explored possible alternative models for Schuyler County Transit to consider.

Microtransit: Microtransit is an increasingly popular approach to throwing out inflexible, minimally responsive fixed routes and using technology to replace them with a new rider-led model. Individuals

can use an app (or call SCT dispatch) to schedule a desired trip with near door-to-door service. While it functions like a taxi service, riders may still have to share a vehicle with others making similar travel paths. Microtransit is a strong model for serving larger-size, lower density communities, because traditional coverage-based solutions are reliant on putting a bus route near every residence. This limits possible ridership (fewer destinations along the route), and is expensive to operate, as increasing coverage requires creating more routes and using more buses. Microtransit instead is guaranteed to have riders because it will only travel down your street if you request it to, and its coverage is only limited by the size of the zone you give the vehicle and demand, rather than a disperse road network. Additionally, microtransit is almost always paired with an app which allows users to request a pick-up/drop-off points and dynamically strings these requests into a specialized, unique route for the operator. This alleviates the workload on transit dispatchers trying to manually piece together ride requests and allows riders to schedule trips closer to their departure time than previously possible.

Although we cannot predict the potential productivity of microtransit in Schuyler County, it has the potential to be more environmentally friendly than fixed route service. At present, most of the intercity routes are carrying a fraction of a person per trip, with few of these rides likely coming from in-county flag zones. Even if only one-two ride a microtransit van at one time on a longer, 1 hour roundtrip journey, that would represent a significant improvement in service productivity. Because microtransit would involve a lot more deadheading between pickup points than fixed route service, potential emissions from the vehicles are expected to be higher on a per-rider basis, but new hybrid-electric, battery-electric, and hydrogen fuel cell technologies can help alleviate these concerns.

This grant has not been awarded.

To this end, SCT has applied for ~~and been awarded~~ the NYSERDA Electric Mobility Grant which will fund a zero-emissions microtransit pilot in the county. This presents an important opportunity to test whether the microtransit model will work in the county. If applied in an urban context, the service can supplement and possibly replace the Village Connections route with a more responsive, and potentially frequent, alternative. Riders we spoke to often complained about long wait times for buses after finishing shopping and the long travel time (relative to driving) from their home to WalMart. By avoiding following a set path and schedule, drivers could take a group of passengers on a much more direct and efficient route. Additionally, riders cite rigid transit schedules as a burden in scheduling doctor's appointments. By allowing them to better coordinate their arrival time at Schuyler Hospital with when their appointment is, riders have more freedom in scheduling doctor's visits and will alleviate the need to make last-minute cancellations due to current operating constraints.

If applied in a rural context, microtransit can function in a vanpool-feeder type role, collecting people from outlying communities and shuttling them to community assets in Watkins Glen and Montour Falls. It might be easier to implement microtransit in this operating environment since Dial-a-Ride functions in a similar way, except it uses a more traditional call-ahead scheduling system instead of a dynamic app-based model. However, planners should limit the scope of the project by creating a special "pilot" zone to try the service in (Ex. One town) instead of trying to cover as much of the county as possible. By creating too large of a pick-up/drop-off zone, resources can be stretched very thin very quickly, especially if the service catches on; the larger the service area, the longer the unproductive deadheads would be between trips. To this end, microtransit should not be extended outside of the county, even if many important community assets are located there.

However, we feel the long-term feasibility of microtransit is unclear. The Electric Mobility Grant is a one-time funding option and not a long-term, continual flow of money. The ARC/SCT should continue to investigate longer-term, consistent grant funding options based on the success (or not) of this pilot to make sure that the heightened expectations riders will have for service can be maintained. Additionally, microtransit would likely be very expensive on a per-person basis to operate. As previously discussed,

the Dial-a-Ride option is quite expensive on a per-person basis (around $40 per trip), and the cost of implementing new technology and hardware is likely to increase that. Also, the more popular and widespread the service, the more vehicles you need to run, which is difficult with long-lead times for new vehicles and employment constraints. Microtransit also suffers from a lack of certainty. In a fixed-route model, a rider can expect exactly when the bus will come using real-time arrival information and/or the bus' schedule. However, microtransit usually will provide an arrival window which is not as precise, meaning riders will still have to deal with the uncertainty of waiting and a non-ideal travel schedule. None of this should deter the ARC from considering this operating model, but these constraints should be considered during planning and implementation.

Pooling Resources with the School District: Vehicle and employment limitations significantly constrain Schuyler County Transit's ability to grow quickly. Conversations could be had with the school district's bussing operation to understand whether some coordination between the ARC and the district could be done. Most school buses follow a very peaked service pattern, where they are all deployed in the morning and evening hours, but sit idle in the midday while kids are in school. As middays are popular for scheduling health appointments and grocery shopping, particularly for the elderly, these idle resources could be put to good use bulking up Schuyler County Transit's schedules.

However, school bus driver scheduling and ADA-access concerns with existing school buses may not fit well with Schulyer County Transit's operational and regulatory frameworks. While highly speculative, this idea can hopefully start a wider discussion between transportation providers to consider the topic of resource-pooling.

6 - Appendix

Figures & Charts List

Outreach Plan Sources List

1. Ponto, Julie. 2015. “Understanding and Evaluating Survey Research.” March 1, 2015. https://pmc.ncbi.nlm.nih.gov/articles/PMC4601897/.

2. Harrison, Eona, Matthew Mizota, Hannah Daly, and Elsa Falkenburger. 2021. “Community-Engaged Surveys: From Research Design to Analysis and Dissemination.” PDF. In Community Voice and Power Sharing Guidebook. Urban Institute. https://www.urban.org/sites/default/files/publication/104934/community-engaged-surveys-from-research-design-to-analysis-and-dissemination_0.pdf.

3. Maguire, Meadhbh. 2021. “Survey Methods: How Planning Practitioners Use Them, and the Implications for Planning Education.” Journal of Planning Education and Research 44 (2): 605–18. https://doi.org/10.1177/0739456x211043272.

4. Yaddanapudi, Sandhya, and Ln Yaddanapudi. 2019. “How to design a questionnaire.” Indian Journal of Anaesthesia 63 (5): 335. https://doi.org/10.4103/ija.ija_334_19.

Interactive Community Asset Mapping

Link: https://raincyz.github.io/assignment/webmap_collection/schulyer_map/

Definition: Community Assets in the community asset map (CAM) are defined as tangible resources within the community that contributes to the residents’ quality of life, which ultimately generate or attract transportation demand and influence travel patterns.

Purpose of CAM: The interactive CAM serves as an tool for internal learning during the redesign process. It helps:

1. Identify and catalog existing physical assets
2. Visualize underserved areas and opportunities for improvement
3. Enhancing collaborations by potentially serving as a communication tool with stakeholders

Categorization:

Education: [Consider removing?]
Health Care: Places to fulfill the medical needs, including hospital, clinics, and pharmacies
Retail: Places to fulfill daily grocery and shopping demands, including supermarkets, department stores, malls, and marketplaces
All Other Shops [not displayed]: All other retail shops, examples include clothing stores, hardware stores, etc.
Restaurants: Full-service restaurants, fast food, cafe, bar, pub, etc.
Public Services: Includes government and administrative buildings, religious buildings, community and social services, and cultural/civic facilities
Tourism: Tourist attractions and accommodations, including museums, artworks, parks, scenic viewpoints, and hotels/guest houses

Selected Microtransit Case Studies

1. Berkshire Regional Transit Authority (MA): https://www.apta.com/wp-content/uploads/TCRP_CaseStudy_Microtransit_v4.pdf

2. Battle Creek, MI: https://www.wmuk.org/wmuk-news/2023-07-17/on-demand-transit-is-a-hit-in-calhoun-county-now-battle-creek-wants-to-see-it-expand

3. Wilson, NC: https://www.transit.dot.gov/sites/fta.dot.gov/files/2023-04/FTA-Report-No-0243.pdf