



Comprehensive Operations Analysis Concept Development and Recommended Network Evaluation Technical Memorandum

August 2021

*Presented to Duluth Transit Authority
Prepared by Connetics Transportation Group*



Table of Contents

1.0 Introduction.....	1
2.0 Summary of Key Findings	2
3.0 Development of Network Concepts.....	5
3.1 Summary of Route Workshop Materials.....	5
3.2 Route Workshop Concept Development.....	7
3.2.1 Defining Concept Scenarios	9
3.2.2 Service Types and Creation of Network Concepts	9
4.0 Network Concept Evaluation.....	14
4.1 Evaluation Criteria.....	14
4.2 Concept Evaluation Findings.....	14
5.0 Recommended Draft Network Plan and Evaluation.....	16
5.1 Recommended Draft Network Service Details.....	16
5.2 Recommended Draft Network Evaluation and Benefits.....	47
5.2.1 Coverage Evaluation	47
5.2.2 Trip Quality Evaluation.....	52
5.2.3 Equity Evaluation	56
5.2.4 Recommended Draft Network Benefit Summary	59
Appendix A: TAG – Route Workshop Summary and Concept Evaluation Presentation	61
Appendix B: Average Travel Time Results.....	92
Appendix C: Quality Transit Area Results.....	112
Appendix D: Customer and Driver Survey Technical Memorandum	117

Tables

Table 1: Recommended Draft Network Route Frequency and Service Spans	18
Table 2: Route 101: Spirit Valley-DTC-UMD Proposed Operations	19
Table 3: Route 102: DTC-Mall Proposed Operations.....	21
Table 4: Route 103: New Duluth-DTC-Lakeside Proposed Operations	23
Table 5: Route 104: E 4th Local Proposed Operations.....	25
Table 6: Route 105: E 9th Local Proposed Operations.....	27
Table 7: Route 106: Kenwood Local Proposed Operations	29
Table 8: Route 107: LSC-Trinity-Mall Local Proposed Operations	31
Table 9: Route 108: Piedmont-Mall-Airport Proposed Operations	33
Table 10: Route 109: Proctor-Spirit Valley-DTC Proposed Operations.....	35
Table 11: Route 110: DTC-Superior-Tower Ave Proposed Operations	37
Table 12: Route 111: Superior Circulator Proposed Operations.....	39
Table 13: Route 112: Woodland-UMD-Mall Proposed Operations	41
Table 14: Route 113: Park Point-DTC-Central Hillside Proposed Operations	43
Table 15: Route 114: Port Town Trolley Proposed Operations.....	45
Table 16: Recommended Draft Network Statistics Analysis.....	49
Table 17: Select Travel Points	53
Table 18: Coverage Impacts to Identified Equity Groups	57
Table 19: Equity Group Access to Frequent Service.....	58
Table 20: Equity Group Changes by Quality Transit Area	58

Figures

Figure 1: Study Guiding Principles.....	5
Figure 2: Survey Response – DTA Organizational Focus Preference	6
Figure 3: Survey Response – Appetite for Service Change.....	7
Figure 4: Transit Service Tradeoffs and Potential Outcomes.....	8
Figure 5: Concept 1 Proposed Service Map.....	12
Figure 6: Concept 2 Proposed Service Map.....	13
Figure 7: Recommended Draft Network System Map.....	17
Figure 8: Route 101: Spirit Valley-DTC-UMD Proposed Alignment	20
Figure 9: Route 102: DTC-Mall Proposed Alignment.....	22
Figure 10: Route 103: New Duluth-DTC-Lakeside Proposed Alignment	24
Figure 11: Route 104: E 4th Local Proposed Alignment.....	26
Figure 12: Route 105: E 9th Local Proposed Alignment.....	28
Figure 13: Route 106: Kenwood Local Proposed Alignment.....	30
Figure 14: Route 107: LSC-Trinity-Mall Local Proposed Alignment.....	32
Figure 15: Route 108: Piedmont-Mall-Airport Proposed Alignment	34
Figure 16: Route 109: Proctor-Spirit Valley-DTC Proposed Alignment	36
Figure 17: Route 110: DTC-Superior-Tower Ave Proposed Alignment.....	38
Figure 18: Route 111: Superior Circulator Proposed Alignment	40
Figure 19: Route 112: Woodland-UMD-Mall Proposed Alignment	42
Figure 20: Route 113: Park Point-DTC-Central Hillside Proposed Alignment	44
Figure 21: Route 114: Port Town Trolley Proposed Alignment.....	46
Figure 22: Locations No Longer with Direct Transit Service	48
Figure 23: High Frequency Service Coverage Comparison	51
Figure 24: Net Average Travel Time Comparison by Day of Week.....	52
Figure 25: Select Travel Point Locations.....	53
Figure 26: Example of Activity Center Average Travel Time Comparison – Downtown Superior	54
Figure 27: Downtown Duluth Weekday Quality Transit Area Comparison Graphic.....	55
Figure 28: Quality Transit Area Comparison	55
Figure 29: Recommended Draft Network Benefits Summary	60

1.0 Introduction

In August 2020, the Duluth Transit Authority (DTA) engaged Connetics Transportation Group (CTG) to conduct a Comprehensive Operations Analysis (COA) of their fixed-route transit system. This technical memorandum presents the methodology and findings of the development and evaluation of two network concepts and the Draft Recommended Network for the COA. The COA is structured around five distinct phases, with the “identification and evaluation of alternatives” and “development of a recommended network” representing phases 3 and 4 of the process. The phases of the COA with corresponding objectives are outlined below:

- **Phase 1 Guiding Principles:** Determines the values and strategies that guide the COA process.
- **Phase 2 Existing Conditions:** Review and assess the regional markets and existing DTA service.
- **Phase 3 Identify and Evaluate Alternatives:** Create service delivery concepts for the future DTA network.
- **Phase 4 Finalize Recommended Network:** Select a final recommended network for implementation.
- **Phase 5 Implementation and Scheduling Plan:** Create a plan to execute service changes and implement the recommended network.

The DTA provides transit service to the Twin Ports region, which is comprised of portions of St. Louis and Carlton counties in Minnesota and Douglas County in Wisconsin. Fixed-route transit service is provided primarily in and around the City of Duluth, Minnesota and the City of Superior, Wisconsin. Throughout late 2020 and early 2021, CTG collaborated with DTA staff, members of a technical advisory group (TAG), and a regional stakeholder committee to develop guiding principles, assess regional markets, and evaluate existing transit operations. During the Spring of 2021, CTG conducted multiple route workshops with DTA staff and TAG members to develop two network concepts. Each concept was evaluated based on coverage, trip quality, and equity considerations. With additional DTA staff and TAG member input, the concepts were ultimately merged into the Draft Recommended Network. Utilizing the same evaluation process, the draft network was assessed and compared to existing DTA service. This technical memorandum documents the development process and evaluation of the two network concepts and Draft Recommended Network for the COA. The document is organized as follows:

Section 2: Summary of Key Findings highlights the primary findings of sections 3, 4, and 5 of this technical document.

Section 3: Development of Network Concepts details the materials reviewed and process utilized to develop the two network concepts.

Section 4: Network Concept Evaluation discusses the criteria and key evaluation results of the network concepts that led to the development of the proposed network.

Section 5: Recommended Draft Network Plan and Evaluation provides route specifics and details the evaluation process and key benefits of the Recommended Draft Network.

Appendices: provide supporting documentation from the network development and evaluation process, including a route workshop presentation, survey results, and additional analysis materials.

2.0 Summary of Key Findings

This section details the key findings from this technical memorandum. These findings help summarize the network concepts and Recommended Draft Network development and evaluation processes. A detailed summary of benefits from the Recommended Draft network is also provided in **Section 5**.

Development of Network Concepts

Network concepts were developed through a series of route workshop meetings.

- The route workshops included participation from CTG staff, DTA staff, and a technical advisory group (TAG) of regional experts.
- Workshop participants utilized previous data analysis, survey results, and transit planning best practices to guide the development of two network concepts.
- Various survey results indicated that the DTA should develop future services that focus on increasing ridership, providing better access to employment, and operating efficiently. The stakeholder survey revealed that 74% of respondents were open to moderate or significant changes to the existing DTA system.

Two frequency-centered network concepts were created for further evaluation.

- Route workshop participants voted to focus on frequency network concepts due to recent survey results and feedback from the 2017 DTA Transit Development Plan.
- Concept 1 “Frequency Focused” looked to provide high frequency service on core routes and would utilize less frequent circulating service to transfer at hubs for lower density destinations.
- Concept 2 “Frequency Balanced” aimed to slightly scale back high frequency service on core routes to provide additional circulation / coverage service and more one-seat rides.

Network Concept Evaluation

Concepts 1 and 2 were evaluated based on how they would impact coverage, trip quality, and equity-based metrics compared to existing service.

- Population and employment coverage within walking distance (1/4 mile) of a transit route were expected to decrease for both concepts 1 and 2 due to the removal of route patterns in lower density and low ridership areas.
- Population access to frequent transit service (i.e., people within walking distance of 15-minute or better service) nearly doubled in both concepts compared to existing service.
- Both concepts significantly improved travel times throughout the region due to improved frequencies and service spans on both weekdays and weekends. Concept 1 experienced a larger net average travel time improvement than Concept 2.
- The emphasis on higher frequency services allowed for shorter wait/transfer times and improved regional connectivity in both concepts; however, Concept 1 showed a larger increase in trips that improved by 25% or more.
- Identified equity group access to frequent transit service improved by 40% or more for both concepts.

- Concept 1 displayed dramatic access improvements to most key activity centers, especially for Downtown Superior. Concept 2 improved over existing but demonstrated more marginal access results to the key activity centers, including very little access improvements to Downtown Superior.

Evaluation findings from each concept were reviewed and discussed amongst DTA staff and TAG members.

- The Recommended Draft Network Plan was created by combining the preferred elements of each concept and consolidating them into a service plan recommendation.

Recommended Draft Network Plan and Evaluation

The Recommended Draft Network is a cost neutral plan that aims to make transit in the region easier to understand, attractive to both existing and new users, and improves the rider experience with enhanced travel times and access to major destinations. The following outlines the key components of the network:

- A simplified route structure that includes a total of 14 routes that operate on all days.
- Two high frequency (pre-BRT)¹ routes that serve most major destinations. These services help improve regional travel times and will reduce transfer/wait times for riders connecting between services.
- The remaining 12 routes are more streamlined and provide a mix of coverage, circulation, and one-seat rides.
- The network provides more consistent service spans for weekdays and weekends.
- Additional service is added to the weekends with approximately a 25% increase in service hours over existing.

The evaluation process also focused on coverage, trip quality, and equity-based metrics. The following outlines the key evaluation findings and describes the major benefits of the Recommended Draft Network.

- The streamlining of transit services in the Recommended Draft Network is expected to reduce overall coverage in the region, as a product of restructuring less direct and unproductive routes. The proposed network focuses on serving primary corridors and key activity centers leading to approximately a 14% reduction in population, but only a 4% reduction of employment and 2% reduction of existing ridership within walking distance of a transit route.
- The Recommended Draft Network will provide over eight additional miles of high frequency service and serve over 16,000 more people and 14,000 more jobs within walking distance than the existing network. Most additions occur between Downtown Duluth and the University of Minnesota-Duluth (UMD) and up the hill along Central Entrance near the Miller Hill Mall and surrounding commercial areas.
- The network produces a collective 24% net system average travel time improvement over existing. Travel times on all days of the week also show significant improvement, with average travel time decreasing by 23% on weekdays, by 18% on Saturdays, and by 28% on Sundays.
- Approximately 37% of all trips experience a significant average travel time improvement. Only 1.5% of trips experience a significant worsening of travel times, with most occurring in areas no longer receiving direct transit service.

¹ “Pre-BRT” refers to a higher frequency service that is the precursor to Bus Rapid Transit (BRT). BRT is a higher quality bus service that is often compared to rail. BRT provides frequent, fast, and reliable transit service with fewer stops. BRT commonly includes features like improved customer amenities, enhanced bus stops, branded vehicles, and special road accommodations. The DTA aims to convert this high frequency service to BRT in the upcoming years.

- The Recommended Draft Network provides a more consistent system with enhanced and reliable frequencies throughout most of the day and expanded spans of service. This system design results in a growth in access and indicates that more Twin Ports residents will be able to travel to major activity centers within 60-minutes compared to the existing system.
- A slight decrease in transit coverage is expected for some of the identified equity groups, although most will be able to access a higher quality transit service by walking slightly further. Reduced coverage occurs primarily in areas with low existing ridership, indicating that impacts will likely be minimal as these areas did not have high concentrations of residents who were reliant on transit previously.
- Improved access to frequent service for the identified equity groups is expected. Identified equity populations within walking distance of a high frequency service will increase by at least 40%. This improved access will provide considerable mobility enhancements for these groups, resulting in improved transit travel times to major destinations and more access to employment opportunities.
- Persons with disabilities is the sole equity group that may be more significantly impacted by the proposed network, as they may not be able to walk or travel further to access transit. Fortunately, most of these individuals qualify for DTA's STRIDE paratransit service and will be able to maintain their mobility throughout the Twin Ports region by utilizing the program. All reduced coverage areas remain within the service boundary of the STRIDE paratransit program.

3.0 Development of Network Concepts

During the Spring of 2021, DTA staff worked with CTG and a technical advisory group (TAG) of regional experts to develop two new network concepts for the DTA system. The development of each network concept occurred through several “route workshop” settings where the group reviewed previous data and analysis, discussed route planning principles, tradeoffs, and service delivery types, and tested a plethora of transit service ideas for the Twin Ports region. This section provides an overview of the route workshop process and network concept development for the COA.

3.1 Summary of Route Workshop Materials

The following section provides a high-level summary of the materials that were utilized to assist in the development of the network concepts. The group collectively reviewed the previous COA work efforts including the developed guiding principles, key findings of the existing conditions technical memorandum, and key survey results. Additional details of these materials can be found in **appendices A and D**.

Guiding Principles

Guiding principles for the COA were determined in Phase 1 of the study. A review of these principles was critical to assure that each network concept matches with the desired direction of the study. **Figure 1** displays the study’s guiding principles below.

Figure 1: Study Guiding Principles



Existing Conditions Key Findings

Key findings and analysis summaries of the study area’s existing conditions were reviewed in detail during the route workshops. The following provides a condensed list of those key findings for reference. Additional details of the existing conditions analysis and findings can be found in the Existing Conditions Technical Memorandum.

Twin Ports Regional Review

- Existing DTA service provides suitable transit coverage throughout the region.
- There is limited latent ridership demand in the system.
- A review of regional travel patterns for all trips (not just transit) shows the impact of the COVID-19 pandemic in 2020. Using 2019 travel patterns is better suited for understanding regional movements in the Twin Ports.

Service Overview and Performance Assessment

- DTA's operational performance is consistent with its peers and national trends.
- The existing DTA network is comprised of varied service types and spans.
- Weekday ridership is concentrated in key activity centers; weekend ridership is more dispersed.
- Current service provides quality and consistent on-time performance.
- Similar performance metrics for weekdays, Saturdays, and Sundays indicate the presence of a strong transit user base.

Activity Center Review

- It is critical to provide fast and frequent service to key activity centers in the region.
- Service between activity centers is inconsistent depending on time of day, leading to longer travel times and limited access.

Key Survey Results

In early 2021, several surveys were conducted for the study including a community survey, stakeholder survey, and operator survey. **Figures 2 and 3** show the results of two survey questions that helped focus the group throughout the route workshop process. Detailed survey results and findings can be found in **Appendix D**.

Figure 2: Survey Response – DTA Organizational Focus Preference

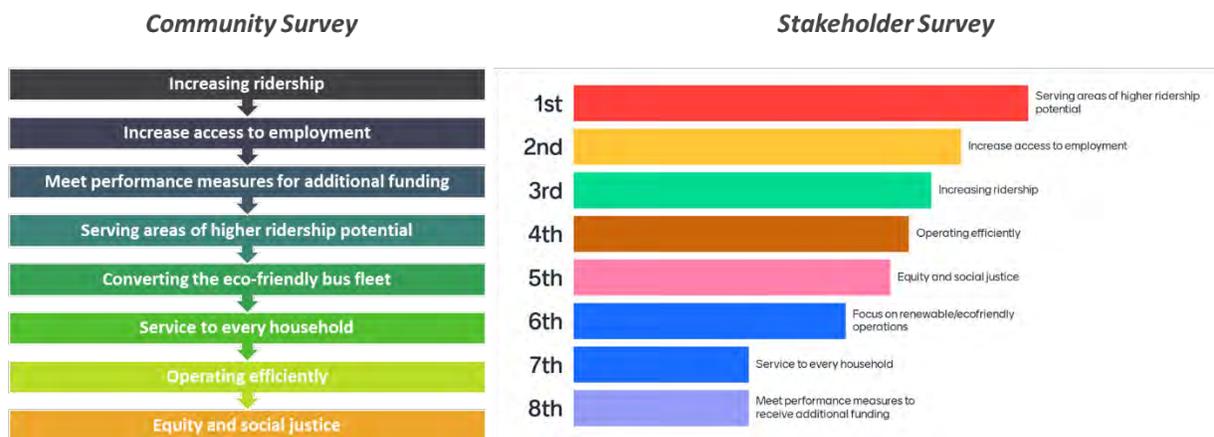
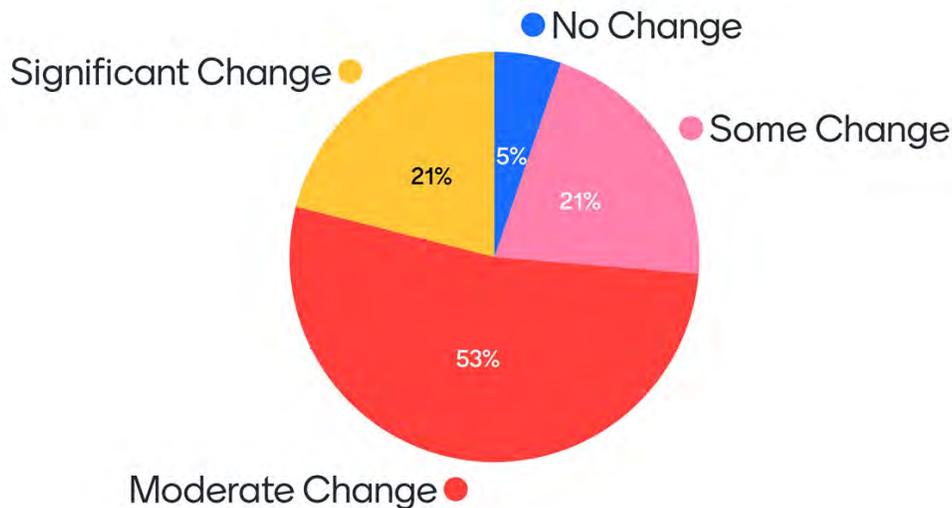


Figure 3: Survey Response – Appetite for Service Change

Stakeholder Survey



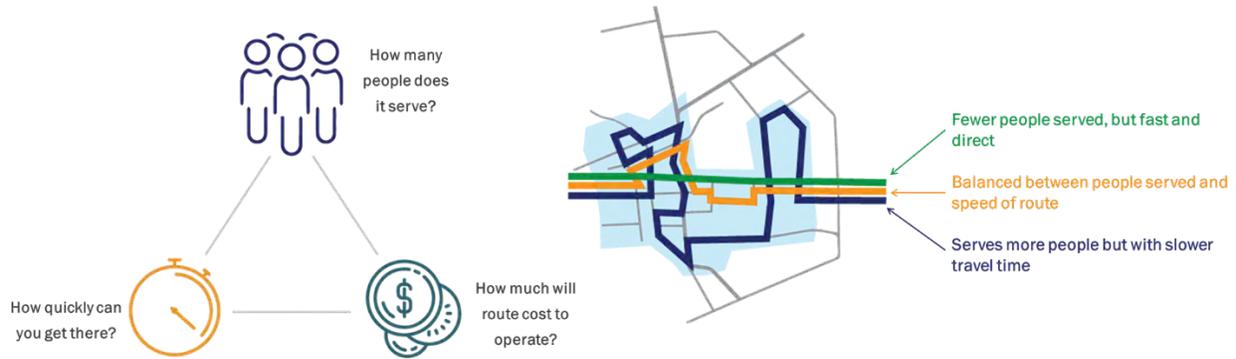
These question responses helped focus the route workshop by determining what the community and stakeholders want the DTA to focus on as an organization, as well as identified the appetite for service changes stakeholders are looking for with this study. From these results, it was identified that the DTA should primarily focus future service on increasing ridership (providing service to high ridership areas), providing better access to employment, and operating efficiently. The stakeholder survey indicated that most believe there should be change in the network, with 74% of respondents demonstrating a moderate to significant appetite for change.

3.2 Route Workshop Concept Development

The purpose of the route workshops was to work with DTA staff and TAG members to develop two new network concepts for the DTA system. Several half day virtual workshops were held with the group to review the previous analysis, learn about transit planning principles and tradeoffs, discuss and test service options and routing, and ultimately develop two concepts. Both concepts would eventually be evaluated, and the best components would be merged to create the Recommended Draft Network, as further discussed in **Section 5**.

The discussion of transit planning principles, tradeoffs, and service options is an important step in the route workshop process as it helps educate and focus participants on the most up-to-date transit planning best practices. When planning a new bus route, workshop participants had to consider things like how often the bus comes, where the bus goes, what days it operates, how far must riders walk to access the service, and does it reliably take you to your destination. Along with these components, a variety of tradeoffs and potential outcomes must be considered, as shown in **Figure 4**.

Figure 4: Transit Service Tradeoffs and Potential Outcomes



Designing transit routes can be complicated as considerations of tradeoffs and desired outcomes need to be weighed against one another and tailored to fit the needs of the region and specific neighborhoods. Terms such as frequency (how often a service comes, leading to how quickly riders can get to their destinations), coverage (how many people and/or jobs does a route serve), and operating resources (how much does a service cost) are typically the primary tradeoffs to be considered. Cost and funding resource limitations are often the biggest hurdles to overcome. If too much of an agency's resources are spent in one place, then it leaves less to provide service in another. Funding can also be limited due to political or geographic boundaries. For example, the City of Superior in Wisconsin accounts for over 20% of the DTA's service area population but receives slightly less than 10% of the agency's bus revenue hours for the existing service. Unfortunately, geographic boundaries and funding limitations have led to this gap in service, and balancing tradeoffs between frequency, coverage, and cost was a major part of the route workshop sessions.

Tradeoffs can also influence the potential outcome of a service's alignment. Routes that are frequent tend to be more attractive to riders but can be expensive for an agency to implement, depending on the directness of its alignment. Routes that meander off major roads and circulate amongst neighborhoods tend to provide more door-to-door service but often have slower travel times and can be less attractive to many riders. These types of services tend to be less cost effective and adding frequent service to them can be expensive. Routes that provide direct service between key locations along major roads are often the most efficient and attractive services in a transit system. These services are often faster and more reliable than circuitous alignments and allow an agency to cost effectively add frequency to the service. Frequent services often attract more riders but may require users to walk further to access the service, as they typically will not circulate amongst neighborhoods. Ultimately, all transit agencies must find a balance between these tradeoffs and potential outcomes, and the route workshop sessions worked on addressing these limitations for the developed concepts.

3.2.1 Defining Concept Scenarios

To assist in developing the two network concepts, route workshop participants were asked additional questions related to possible transit service design including preferences on transfer locations, providing frequent services with transfers versus more one-seat rides, emphasizing speed with less stops and longer walks versus slower trips with an emphasis on access, and weekday frequency and spans versus improved weekend service. The input from the route workshop materials and participant feedback led to the presentation of the following four concept scenario definitions to consider moving forward as the criteria for developing the two network concepts:

Frequency Focus

Most resources for connections to activity centers and core; most transfers made at the Downtown Transit Center (DTC) in Duluth.

Frequency Balance

Resources focused on main travel corridors; most transfers made at DTC

Access Balance

Resources focused on main travel corridors, with some routes providing access outside the core; some transfers made at outer locations

Access Focus

Resources focused on main travel corridors, with more routes providing access outside the core; most transfers made at outer locations

The route workshop participants voted on their preferred concept definitions and universally selected the “Frequency Focus” and “Frequency Balance” options. The primary reason for selecting these options was community feedback to the 2017 DTA Transit Development Plan requesting more frequent service, and the community and stakeholder survey results responses that focused on increasing ridership and providing better access to major employment areas. They also stated that the stakeholder appetite for change survey results helped them focus on the frequency-related definitions, as the existing DTA system structure is primarily coverage or access-based service.

3.2.2 Service Types and Creation of Network Concepts

Transit systems are typically comprised of a variety of service types that are layered together to serve the varying needs of a region. During the route workshop sessions, seven transit service types were explored for the development of the network concepts. The service types considered are summarized as follows:

- High Frequency – operates most of the day, provides high frequency connections to activity centers.
- Frequent Local – operates most of the day, provides frequent service on main travel corridors.
- Local – operates most of the day, provides basic service on main travel corridors.
- Crosstown – operates most of the day, provides service across the region away from DTC.
- Circulator – varies in service span, provides fixed route distribution service for lower density locations.
- Flex Zones – varies in service span, provides on-demand mobility service for lower density locations.
- Express – operates in peak periods, typically weekday only service to activity centers.

All seven service types were explored as options during a series of route workshop drawing sessions. The goal of these drawing sessions was to develop the “Frequency Focused” and “Frequency Balanced” network concepts. Emphasis was placed on being creative and exploring the service type and frequency options, testing a variety of routing/alignment possibilities, estimating productivity, and determining what would work best for specific routes and the system. Not all service type options made it through to the network concept recommendations (e.g., flex zones and express service) as these service types were deemed to be unproductive and/or inefficient for the context that the DTA operates. After several extensive drawing sessions, the network concepts were finalized and were categorized as the following:

Concept 1 – Frequency Focused

- High frequency service on core routes
- Transfers to circulator routes at hubs to reach lower density destinations

Concept 2 – Frequency Balanced

- Less frequent service on core routes
- Additional circulation/coverage service and more one-seat rides

Concept 1 was developed first and focused on providing high-frequency service between most of the region’s key destinations. The high frequency routes would provide approximately 10 to 15-minute service throughout the day and consume many existing resources. Two routes providing 20-minute frequencies between DTC and UMD were also explored in lieu of the existing UMD circulator. The remaining fixed routes operated with 30 to 60-minute frequencies and often would feed into a transfer hub with high frequency service and require riders to transfer. Concept 1 also looked at significantly changing service in the City of Superior by providing more frequent and expanded spans of service. Because there are limited funding resources available for the City of Superior, Concept 1 aimed to provide service with two routes that connect Downtown Duluth to key Superior destinations and would operate in more dense areas that may produce higher ridership returns. Transit service coverage was reduced in several Superior neighborhoods including Billings Park, East End, and South Superior in Concept 1. A total of 16 routes were explored in Concept 1 and **Figure 5** displays an overview map of the proposed service. Additional details for Concept 1 service are available in **Appendix A**.

Concept 2 was developed second and focused on scaling back the resources utilized to add higher frequencies and explore more “one-seat rides” (i.e., less of a need to transfer), coverage, and circulating services. The high frequency routes in Concept 1 were reduced to 15-minute service and all other routes were set to operate at 30 to 60-minute frequencies. Routes providing one-seat rides to Downtown Duluth were further explored including options from Gary/New Duluth and Woodland. Additional coverage and circulating service was provided in the Lakeside, East Hillside (return of the UMD circulator), West Duluth (south of Grand Avenue), and Hermantown (additional Miller Hill Mall area circulation) areas. Additional coverage service was also explored in the City of Superior. Superior service in Concept 2 was comprised of three 60-minute services with one local and two circulating routes. The local fixed route would have an expanded span from existing operations and provide service between Downtown Superior (north Belknap Street along Tower Avenue) and Downtown Duluth (DTC). The two circulator routes would provide fixed-route service between Billings Park and East End via Downtown Superior, and between Superior and South Superior via Downtown Superior. Transit service to Allouez and Itasca would no longer be provided in Concept 2. A total of 19 routes were explored in Concept 2. **Figure 6** displays an overview map of the proposed service. Additional details of Concept 2 service are available in **Appendix A**.

Both concepts would utilize and serve five key transit hubs that are near key destinations and primarily would facilitate transfers amongst routes. The hubs consist of the DTC, UMD hub, Miller Hill Mall area hub, Spirit Valley hub, and Superior hub. DTC and the UMD hub are existing facilities and likely would not require any near-term changes. The Miller Hill Mall area hub can be accommodated at the existing door 8 stop; however, there is a possibility of a new transit facility being built in this area to better support future service. The Spirit Valley hub would be a new facility/location potentially located near the intersection of Grand Avenue and 59th Avenue W. This would be a relocation of the Lake Superior Zoo transfer location and would require, at a minimum, the relocation of shelters and/or transit stop signposts for near-term operations. The Superior hub would potentially facilitate transfers near the intersection of Tower Avenue and Belknap Street. The DTA would also need to move shelters and/or transit stop signposts for near-term operations at this location.

Figure 5: Concept 1 Proposed Service Map

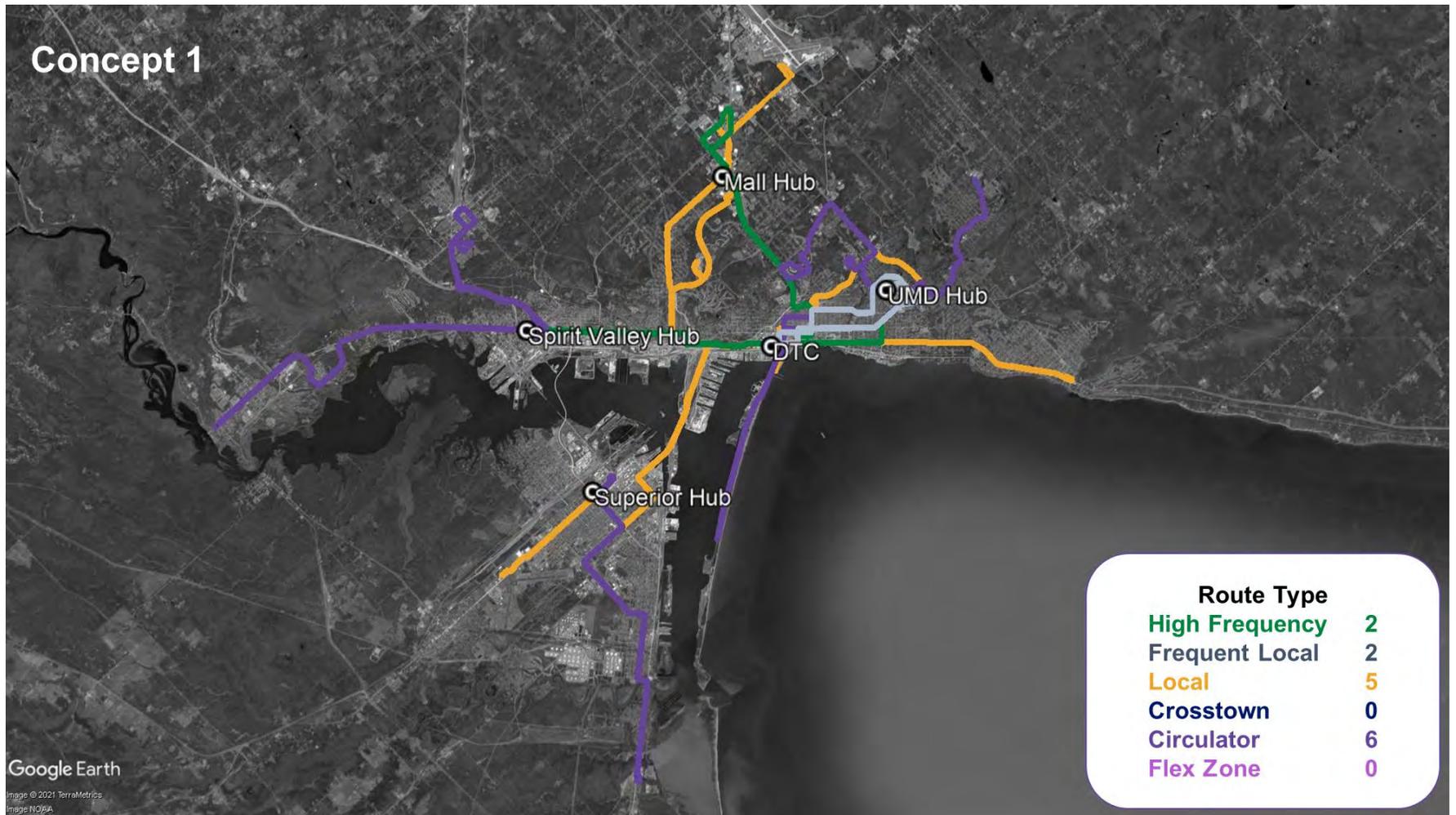
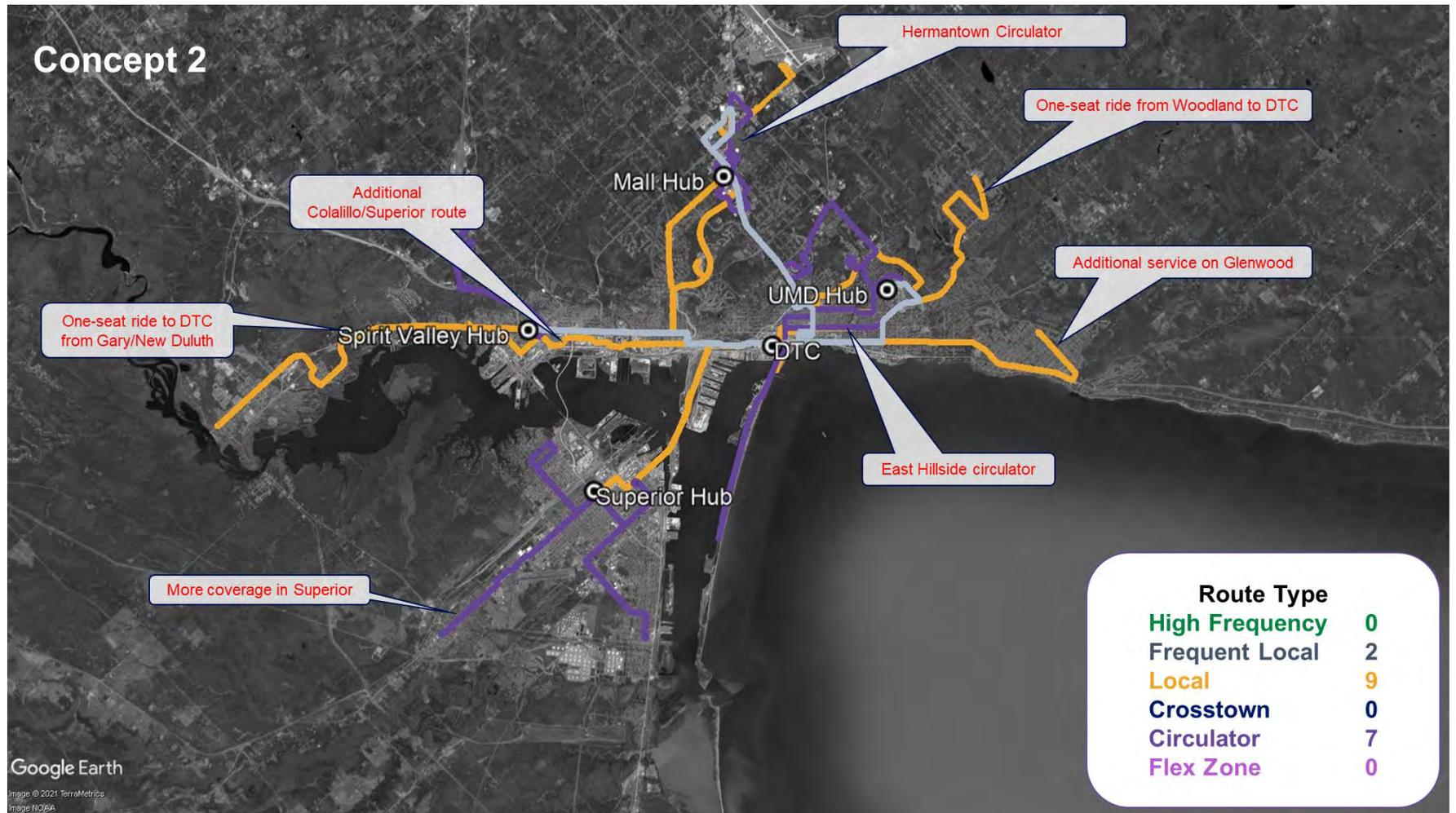


Figure 6: Concept 2 Proposed Service Map



4.0 Network Concept Evaluation

To better understand the impacts and tradeoffs of each concept, a detailed evaluation was conducted comparing the proposed service plans to each other and the existing network. CTG conducted the evaluation and presented the results to DTA staff and TAG members. Detailed discussions and additional collaboration amongst the group ultimately led to identifying the best elements of each concept. This section provides an overview of the evaluation conducted for concepts 1 and 2.

4.1 Evaluation Criteria

Each service concept was evaluated through an identical process that aimed to compare the proposed service plans amongst one another and to the existing network. The evaluation focused on addressing the following fundamental questions:

- Are we connecting people to the places they want to go?
- How quickly can people make their trip?
- How much tolerance is there for change?
- Are we satisfied with some trips getting worse if lots of trips get better?
- How can we attract people to ride as the pandemic winds down?

These questions were asked to DTA staff and TAG members throughout the evaluation process and helped focus the group and build consensus. The evaluation was driven by a quantitative analysis process that assessed three key areas: coverage, trip quality, and equity. The coverage evaluation focused on assessing the change in residential and employment access of transit service, along with reviewing the impacts to existing ridership. The trip quality evaluation reviewed travel time and access changes between areas throughout the Twin Ports region and to/from key destinations. The equity evaluation calculated the impacts each concept had on transit access to critical demographic groups including Black, Indigenous, and People of Color (BIPOC), low-income households, households with access to one or no vehicles, and persons with disabilities. The results from these evaluations are not discussed in detail in this section; however, **Section 4.2** lists a summary of high-level findings and **Appendix A** contains more detailed results.

4.2 Concept Evaluation Findings

This section lists high-level findings from the evaluation of concepts 1 and 2 and are organized by the evaluation elements of coverage, trip quality, and equity. These findings were reviewed and discussed with DTA staff and TAG members and assisted with determining the preferred elements of each concept to carry forward.

Coverage Findings

- Population and employment coverage within walking distance ($\frac{1}{4}$ mile) of a transit route were expected to decrease for both concepts 1 and 2 due to the removal of route patterns in lower density and low ridership areas.
- Concept 1 concentrates resources into more high frequent services and provides fewer routes than Concept 2, leading to a greater reduction in population coverage compared to existing (Concept 1 – 16% reduction; Concept 2 – 7% reduction).

- Employment coverage experiences a slight reduction (Concept 1 – 6% reduction; Concept 2 – 5% reduction); however, all major regional job and activity centers are consistently covered by transit service and reductions occur only in lower density areas.
- Population access to frequent transit service (i.e., people within ¼ mile of 15-minute or better service) almost doubled in both concepts over existing.
- Existing ridership is almost entirely covered by both concepts with a slight reduction of approximately 2%. This indicates that less than 225 daily boardings would no longer be directly served.

Trip Quality Findings

- Both concepts significantly improved travel times throughout the region due to improved frequencies and service spans on both weekdays and weekends. Concept 1 experienced a larger net average travel time improvement than Concept 2 (Concept 1 – 19% improvement; Concept 2 – 15% improvement).
- The emphasis on higher frequency services allowed for shorter wait/transfer times and improved regional connectivity. This led to almost a third (32%) of modeled trips improving travel times by 25% or more in Concept 1. Concept 2 also improved with 23% of model trips improving travel times by 25% or more.
- Quality Transit Area (QTA)² to/from key activity centers (Downtown Duluth, UMD, Miller Hill Mall, West Duluth, and Downtown Superior) increased for both concepts. Concept 1 saw more significant weekday improvements (Concept 1 – 18% improvement; Concept 2 – 5% improvement). Both concepts also improved in this access-based metric on weekends and shared similar growth trends (Saturday - 7-8% improvement; Sunday - 23-27% improvement) due to more consistent and improved frequencies and spans of service.

Equity Findings

- Like the coverage findings, the identified equity groups were expected to slightly decrease for both concepts 1 and 2 due to the removal of route patterns in lower density and low ridership areas; however, when considering transit trip quality, these groups experienced a drastic increase.
- Equity group access to frequent transit service improved by 40% or more for both concepts.
- QTA for equity populations to/from key activity centers mostly improved or remained similar to the existing system for both concepts. Concept 1 displayed significant improvements for most key activity centers, especially for Downtown Superior, providing enhanced QTA metrics to Downtown Duluth. Concept 2 experienced more marginal QTA results for the key activity centers and demonstrated no improvement over existing for Downtown Superior.

The evaluation findings from each concept were critically reviewed and discussed amongst DTA staff and TAG members. The Recommended Draft Network Plan was created by combining the preferred elements of each concept and consolidating them into a cost-neutral network service plan recommendation. The primary service recommendations included 14 routes that would provide more consistent frequencies and service spans all days of the week, featured high frequency service between major destinations, maintained several one-seat rides to DTC including connections from areas in western Duluth (i.e., Morgan Park and New Duluth), and provided 30-minute service between DTC and areas of Superior. More information on the Recommended Draft Network Plan services is detailed in **Section 5**.

² QTA is a measure of typical access to/from specific locations. It represents, on average, the locations transit users can access within 60-minutes throughout the day. Additional details about this measure can be found in **Section 5**.

5.0 Recommended Draft Network Plan and Evaluation

This section discusses the details of the Recommended Draft Network services, evaluation process, and summary of anticipated benefits. The plan will provide the Twin Ports region with a redesigned DTA transit network that is simplified and more consistent than the existing service. The new proposed network aims to make transit in the region easier to understand, attractive to both existing and new users, and to improve the rider experience with enhanced travel times and access to major destinations.

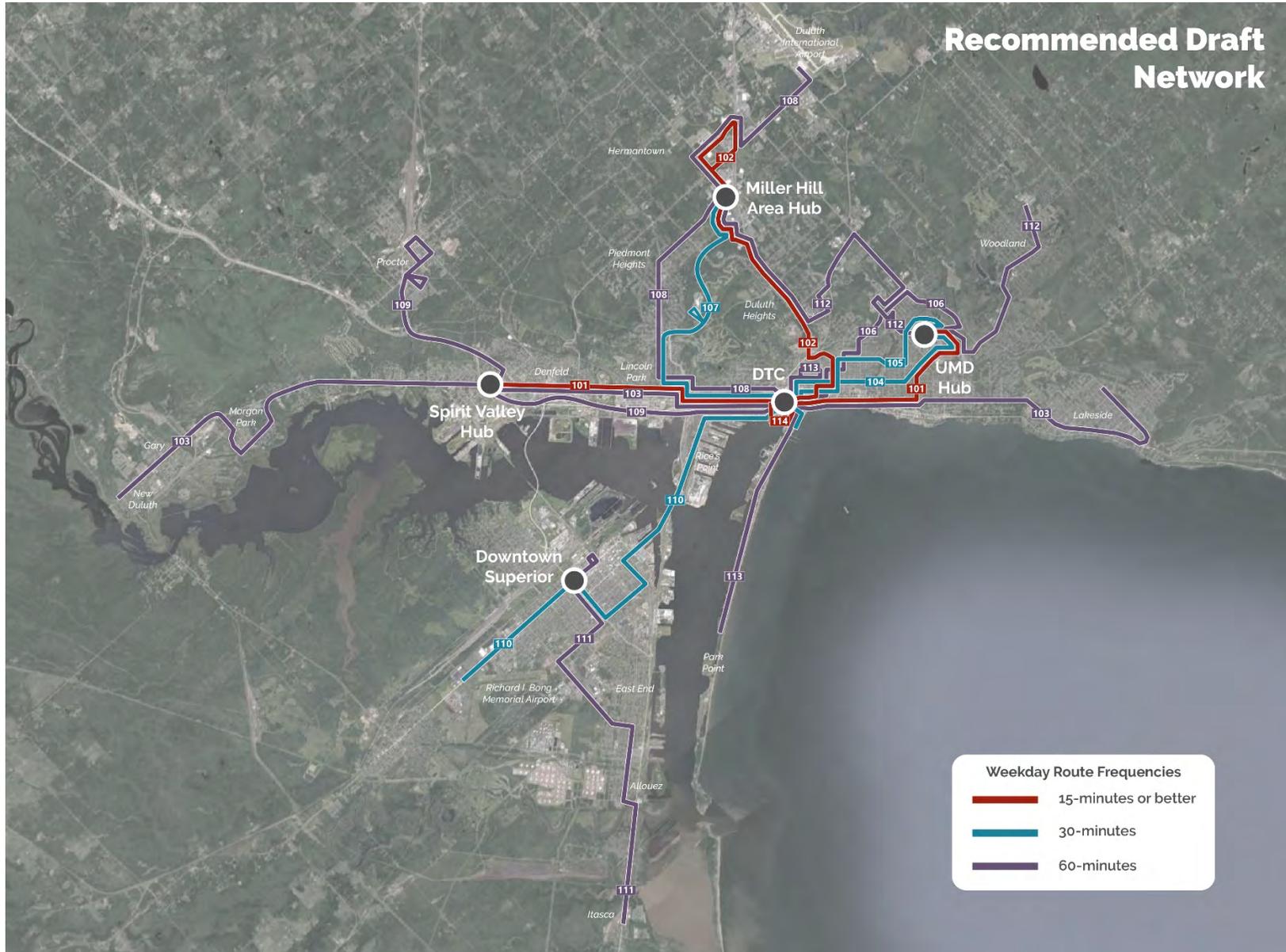
5.1 Recommended Draft Network Service Details

The Recommended Draft Network focuses on creating a better transit experience for current and future DTA users. The draft network serves most of the same places as the existing system with 14 routes (down from 33 routes previously) that provide enhanced and more consistent service across the entire day. This simplifying and streamlining of DTA routes improves regional travel times, helps new riders quickly learn and navigate the system, reduces confusion related to service start and stop times, leads to more consistent trip patterns (i.e., ability to take the same routes for round trip travel), and offers better access to key areas throughout the day, seven days a week.

Two high frequency (pre-BRT) routes are the work horses of the network: connecting key destinations, providing more consistent frequency of service on major corridors, improving regional travel times and access, reducing wait and transfer times, and minimizing the need to know and use a bus schedule when you are in these service corridors. The routes operate every 10-to-15-minutes on weekdays and every 20-minutes on weekends throughout most of the day. Over 16,000 more people and over 14,000 more jobs are within walking distance of the new high frequency routes. Identified equity groups, such as BIPOC, low-income households, households with limited access to personal vehicles, and persons with disabilities, see an increase in access to frequent service by 40% or more.

The remaining 12 routes are more streamlined and provide a mix of coverage, circulation, and one-seat rides at 30 to 60-minute frequencies throughout the region. The routes are designed to collect and distribute riders - throughout the Twin Ports, serving key destinations and offering ample transfer opportunities to the two high frequency routes. They serve the same locations on weekdays and weekends and generally have longer and more consistent hours of operation than existing service. As a system, the combination of high frequency and streamlined routes creates an enhanced and more attractive transit network that is simple, consistent, and provides improved quality of service and access to places Twin Port residents want to go. **Figure 7** shows the Recommended Draft Network system map and **Table 1** displays each service's proposed frequency and span of service. The following section discusses each proposed service in more detail.

Figure 7: Recommended Draft Network System Map



Route 101: Spirit Valley-DTC-UMD

Route 101 is the first of two pre-BRT routes that make up the high frequency spine of the Recommended Draft Network. It operates via Superior Street and Grand Ave between Kirby Plaza at UMD, DTC, and the proposed Spirit Valley Hub located near Grand Avenue and N 58th Avenue W. The route is a consolidation of the existing west mainline (routes 1, 2, and 3) and east mainline (routes 6 and 7) services between Grand Avenue/58th Avenue W and Superior Street/S 21st Avenue E. The new service creates a consistent frequency and improves connections throughout the corridor. It operates every 10-to-15-minutes on weekdays and every 20-minutes on weekends throughout most of the day.

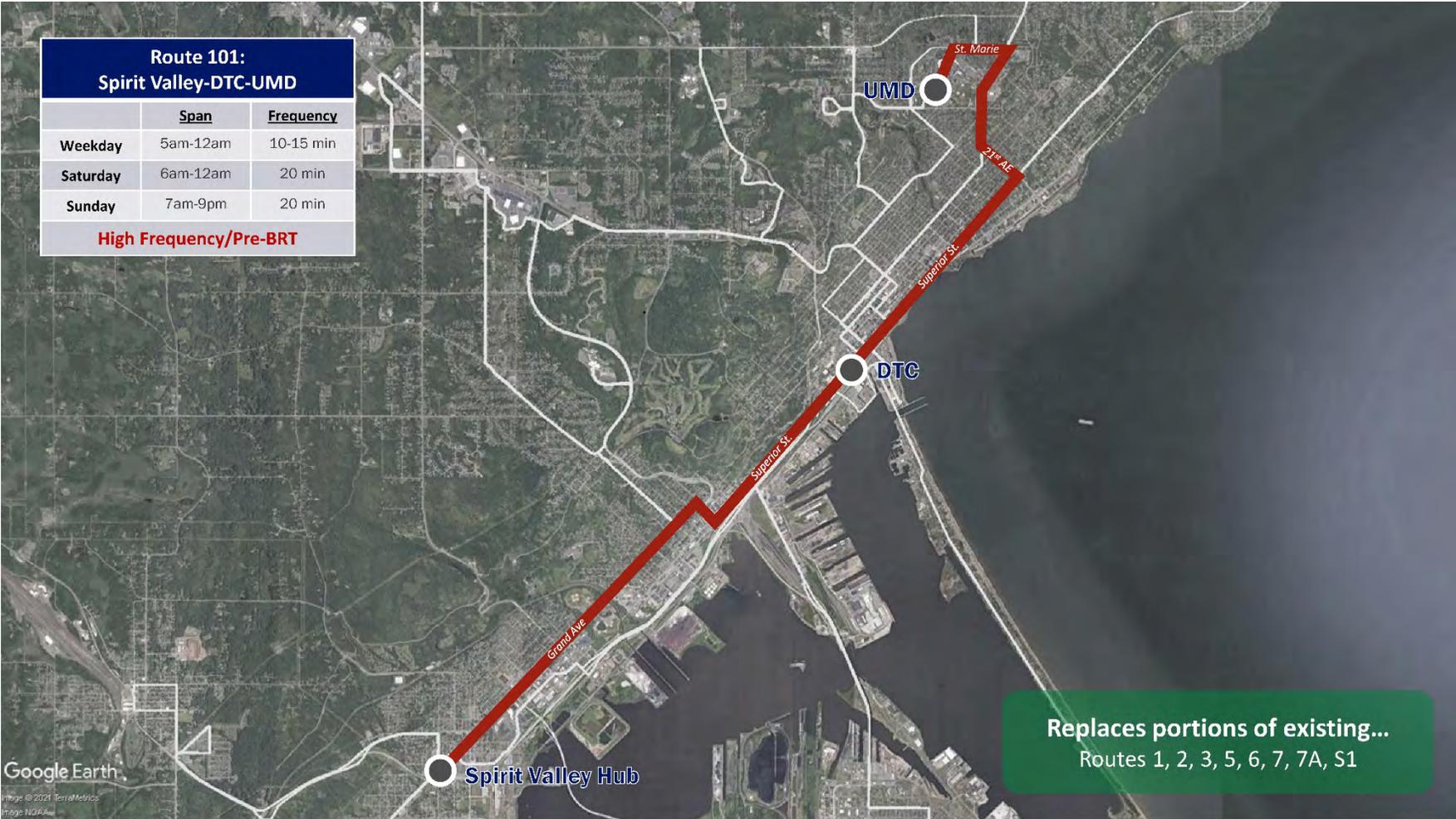
Major Changes:

- On the “west mainline” portion, higher frequency services now terminate at 58th Avenue W instead of Lake Superior Zoo. Local service to Gary and New Duluth continues past 58th Avenue W using proposed Route 103.
- On the “east mainline” portion, the route stays on Superior St between N 3rd Avenue E and N 10th Avenue E instead of deviating up to E 1st and E 2nd streets like the existing routes 6 and 7.
- On the “east mainline” portion, higher frequency services now terminate at 21st Avenue E, instead of 24th Avenue E.

Table 2: Route 101: Spirit Valley-DTC-UMD Proposed Operations

Day Type	Span	Peak Frequency	Midday Frequency	Early/Late Frequency
Weekday	5 am - 12 am	10 min	15 min	60 min
Saturday	6 am - 12 am	20 min	20 min	60 min
Sunday	7 am - 9 pm	20 min	20 min	60 min

Figure 8: Route 101: Spirit Valley-DTC-UMD Proposed Alignment



Route 101: Spirit Valley-DTC-UMD		
	Span	Frequency
Weekday	5am-12am	10-15 min
Saturday	6am-12am	20 min
Sunday	7am-9pm	20 min
High Frequency/Pre-BRT		

Replaces portions of existing...
Routes 1, 2, 3, 5, 6, 7, 7A, S1

Route 102: DTC-Mall

Route 102 is the second of the two pre-BRT routes that make up the high frequency spine of the Recommended Draft Network. It operates via N 6th Avenue E and Central Entrance between the DTC and the Hermantown Walmart with service to the proposed Miller Hill Area Hub which is anticipated to be in the vicinity of the Decker Road and Mall Drive intersection. The route consolidates portions of existing routes 10, 10E, 10H, 11, and 11K. It operates every 10 to 15-minutes on weekdays and every 20-minutes on weekends throughout most of the day.

Major Changes:

- The circulation pattern around the Miller Hill Mall area east of Mall Drive is more consistent and streamlined than the existing 10, 10E, and 10H.
- Service is extended to the Hermantown Walmart, providing a high frequency service to this key destination.

Table 3: Route 102: DTC-Mall Proposed Operations

Day Type	Span	Peak Frequency	Midday Frequency	Early/Late Frequency
Weekday	5 am - 12 am	10 min	15 min	60 min
Saturday	6 am -12 am	20 min	20 min	60 min
Sunday	7 am - 9 pm	20 min	20 min	60 min

Figure 9: Route 102: DTC-Mall Proposed Alignment



Route 103: New Duluth-DTC-Lakeside

Route 103 is a local fixed route that is proposed to operate via Commonwealth Avenue, Grand Avenue, Superior Street, and Glenwood Street between New Duluth and Lakeside. It also serves the DTC and the proposed Spirit Valley Hub located at Grand Avenue and N 58th Avenue W. The route consolidates portions of existing routes 2, 2X, 5, 7, and 7X and operates every 60-minutes on both weekdays and weekends.

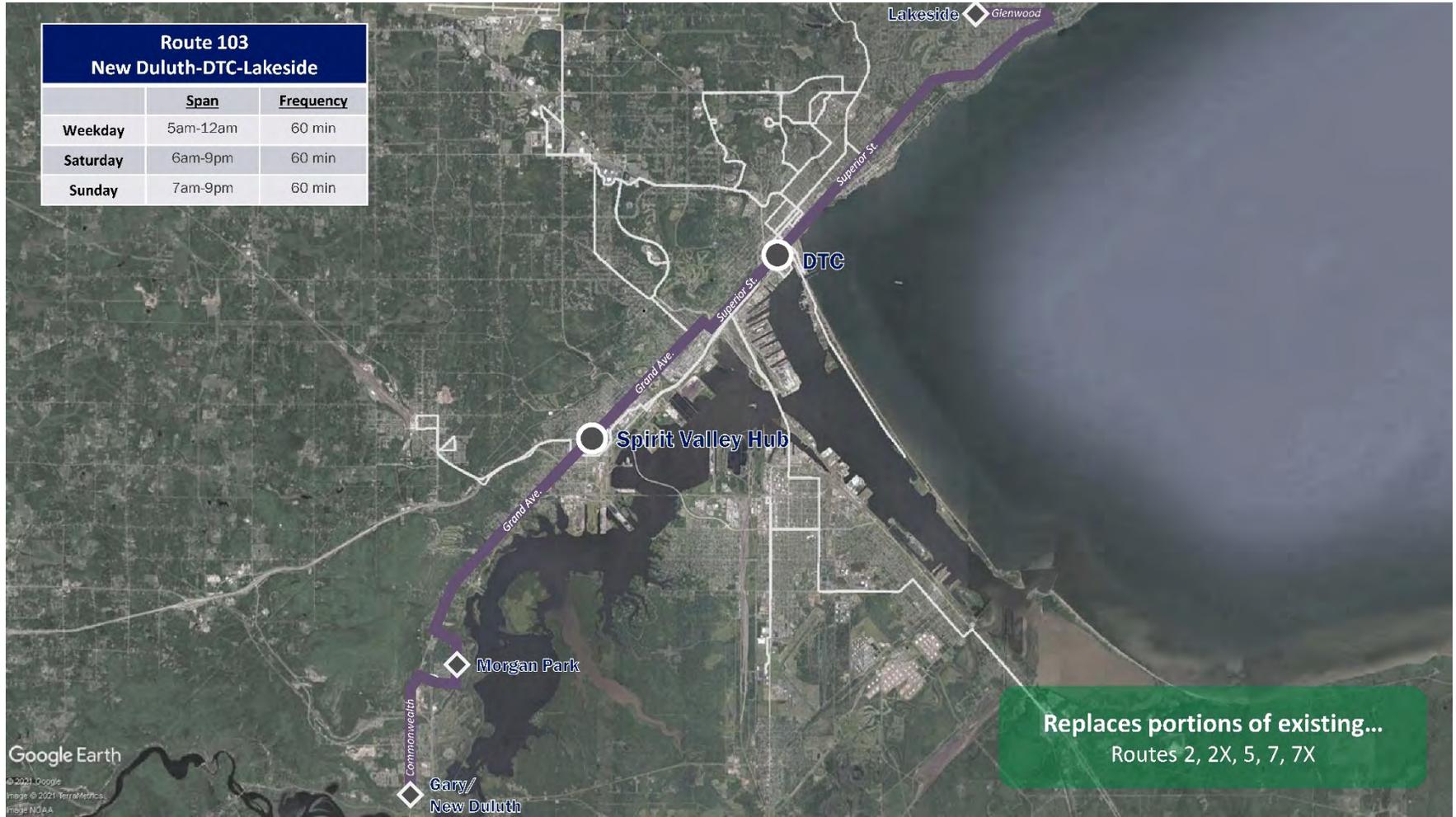
Major Changes:

- Covers all of existing Route 2 alignment.
- The one-way loop at the eastern end of existing Route 7 is removed and replaced with bi-directional service along Superior Street and Glenwood Street.

Table 4: Route 103: New Duluth-DTC-Lakeside Proposed Operations

Day Type	Span	Peak Frequency	Midday Frequency	Early/Late Frequency
Weekday	5 am - 12 am	60 min	60 min	60 min
Saturday	6 am - 9 pm	60 min	60 min	60 min
Sunday	7 am - 9 pm	60 min	60 min	60 min

Figure 10: Route 103: New Duluth-DTC-Lakeside Proposed Alignment



Route 104: E 4th Local

Route 104 is a local fixed route that is proposed to operate via E 4th Street, Woodland Avenue, and St. Marie Street between DTC and the Kirby Plaza at UMD. The route also serves the Central and East Hillside neighborhoods. It consolidates portions of existing routes 10, 10E, 13, and 23 and operates every 30-minutes on weekdays and every 60-minutes on weekends.

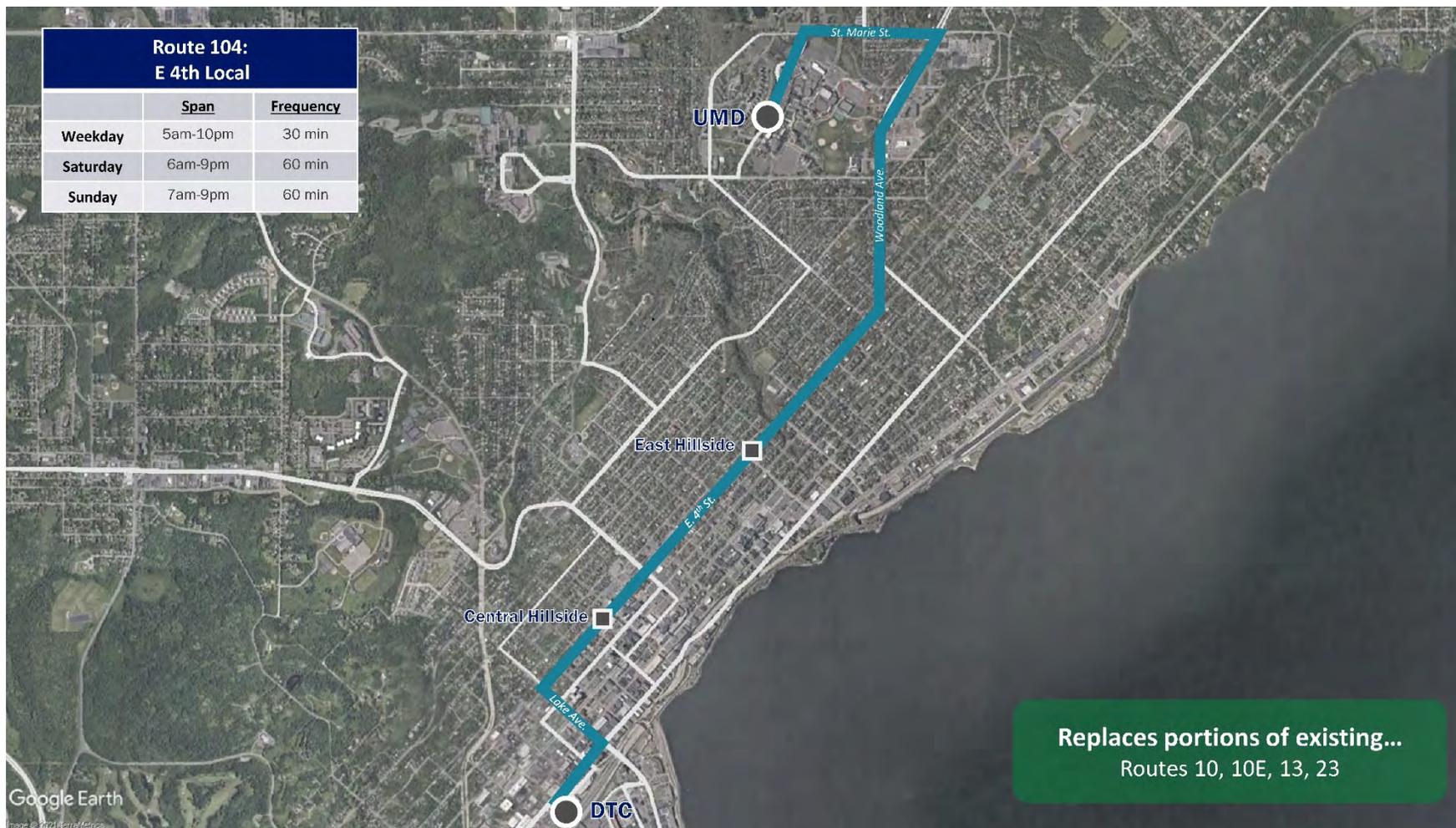
Major Changes:

- Circulation pattern around UMD is changed to match the proposed Route 101 and provide access to the commercial development along Woodland Avenue east of UMD.
- Woodland Avenue is utilized between 19th Avenue E & 24th Avenue E, instead of E 4th and Kent Rd.
- Service to Woodland Avenue north of UMD is removed and covered by proposed Route 113.

Table 5: Route 104: E 4th Local Proposed Operations

Day Type	Span	Peak Frequency	Midday Frequency	Early/Late Frequency
Weekday	5 am – 10 pm	30 min	30 min	60 min
Saturday	6 am – 9 pm	60 min	60 min	60 min
Sunday	7 am – 9 pm	60 min	60 min	60 min

Figure 11: Route 104: E 4th Local Proposed Alignment



Route 105: E 9th Local

Route 105 is a local fixed route that is proposed to operate via N 6th Avenue E, E 9th Street and N 19th Avenue E between DTC and Kirby Plaza at UMD. The route also serves the Central and East Hillside neighborhoods. It consolidates portions of existing routes 11, 11K, 11M, and 23 and operates every 30-minutes frequencies on weekdays and every 60-minutes on weekends.

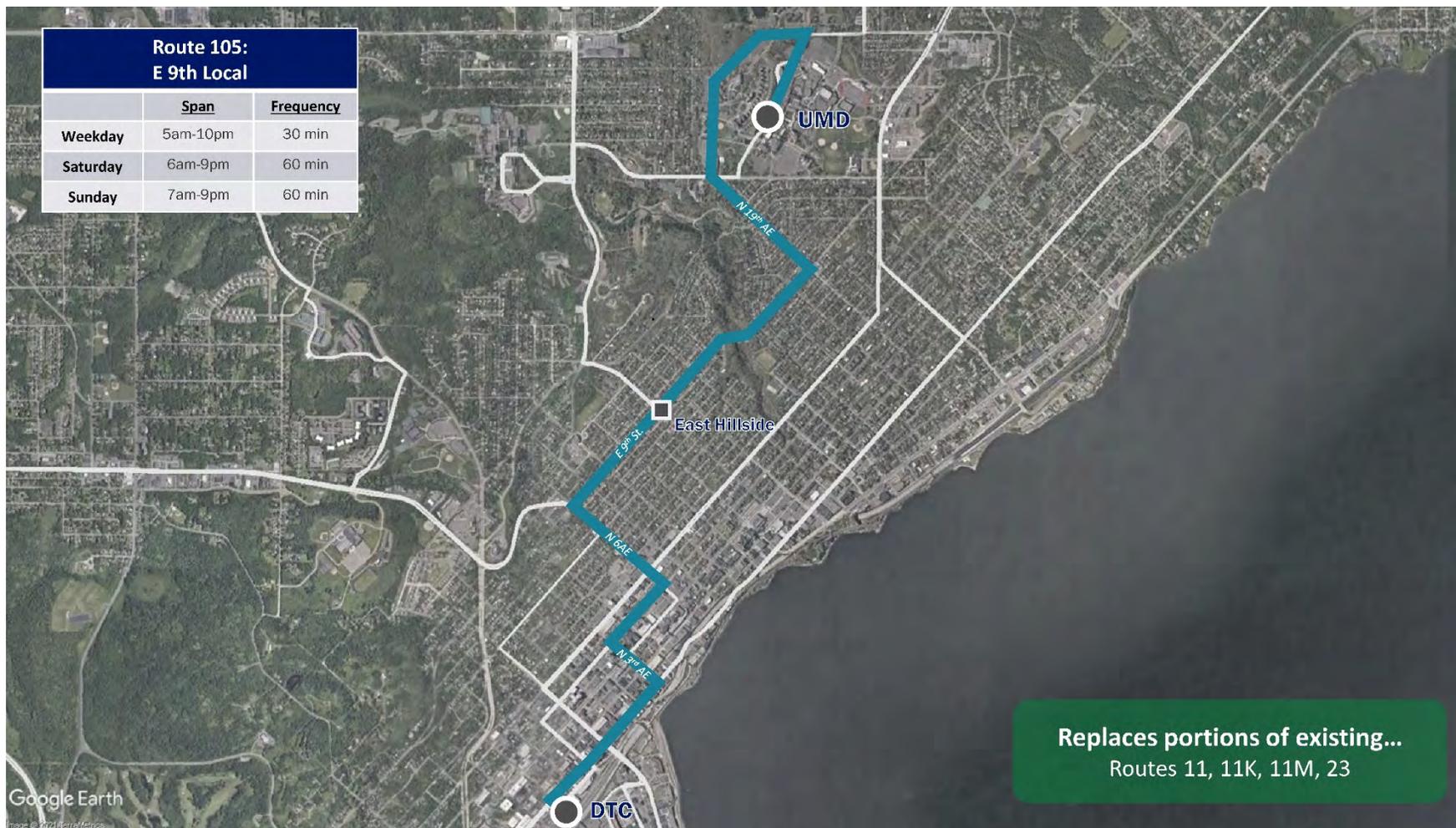
Major Changes:

- Route turns around at Kirby Plaza and leaves UMD the same way it came, replacing the one-way loop through campus.

Table 6: Route 105: E 9th Local Proposed Operations

Day Type	Span	Peak Frequency	Midday Frequency	Early/Late Frequency
Weekday	5 am -10 pm	30 min	30 min	60 min
Saturday	6 am - 9 pm	60 min	60 min	60 min
Sunday	7 am – 9 pm	60 min	60 min	60 min

Figure 12: Route 105: E 9th Local Proposed Alignment



Route 106: Kenwood Local

Route 106 is a local fixed route that is proposed to operate via N 6th Avenue E, E 9th Street, N 11th Avenue E, Kenwood Avenue, and Arrowhead Road between DTC and Kirby Plaza at UMD. The route also serves the College of St. Scholastica (CSS). It consolidates portions of existing routes 11K and 12 and operates every 60-minutes on both weekdays and weekends.

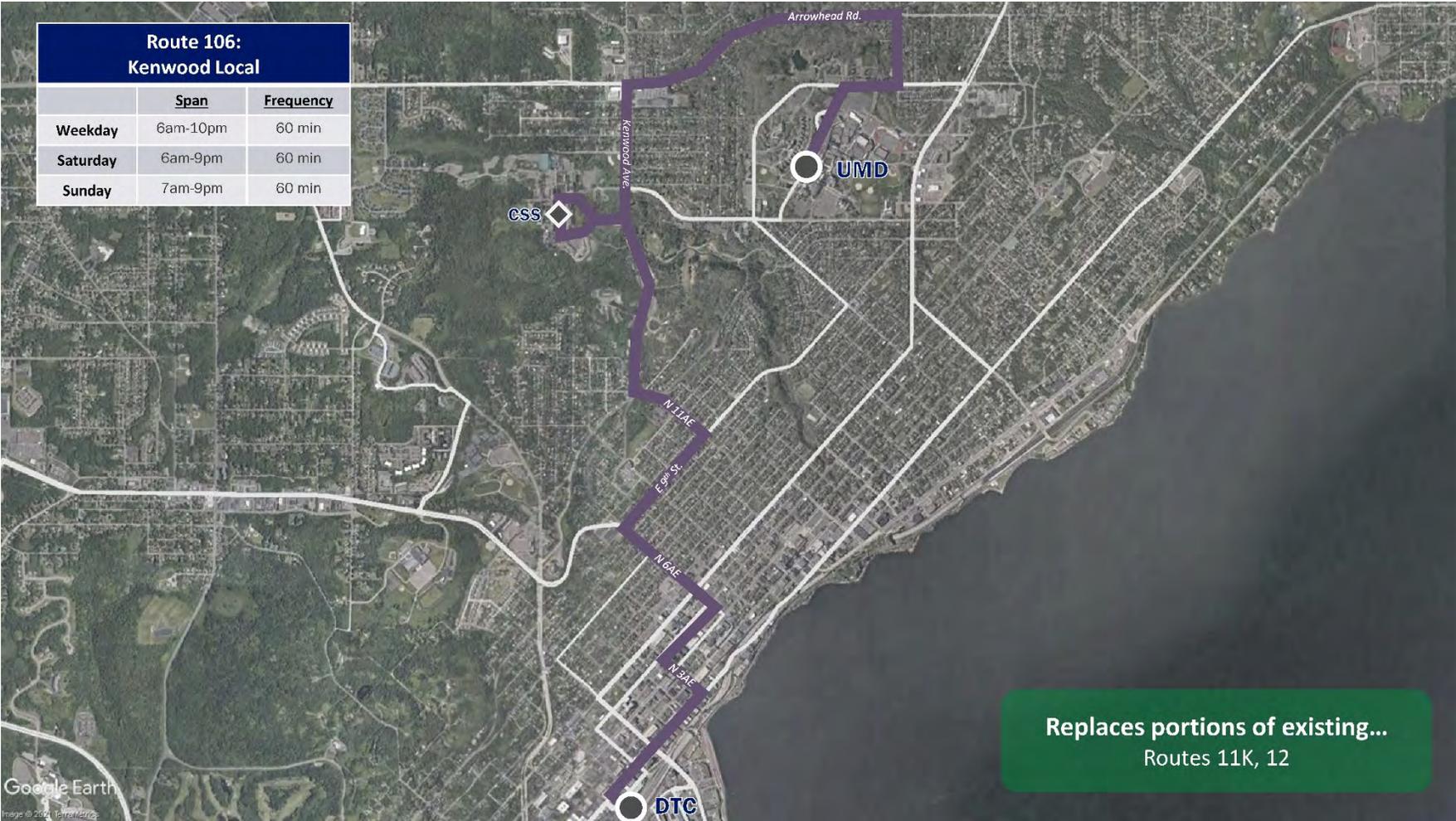
Major Changes:

- Service to E 13th Street was rerouted via E 9th Street and N 11th Avenue E to keep service along more major road corridors.

Table 7: Route 106: Kenwood Local Proposed Operations

Day Type	Span	Peak Frequency	Midday Frequency	Early/Late Frequency
Weekday	6 am - 10 pm	60 min	60 min	60 min
Saturday	6 am - 9 pm	60 min	60 min	60 min
Sunday	7 am - 9 pm	60 min	60 min	60 min

Figure 13: Route 106: Kenwood Local Proposed Alignment



Route 107: LSC-Trinity-Mall Local

Route 107 is a local fixed route that is proposed to operate via Canal Park Drive, Superior Street, N 24th Avenue E, and Trinity Road between Canal Park and the proposed Miller Hill Area Hub which is anticipated to be in the vicinity of the Decker Road and Mall Drive intersection. The route also serves DTC, Lincoln Park, and Lake Superior College (LSC). It consolidates portions of routes 5, 8, and 9MT and operates every 30-minutes on weekdays and every 60-minutes on weekends.

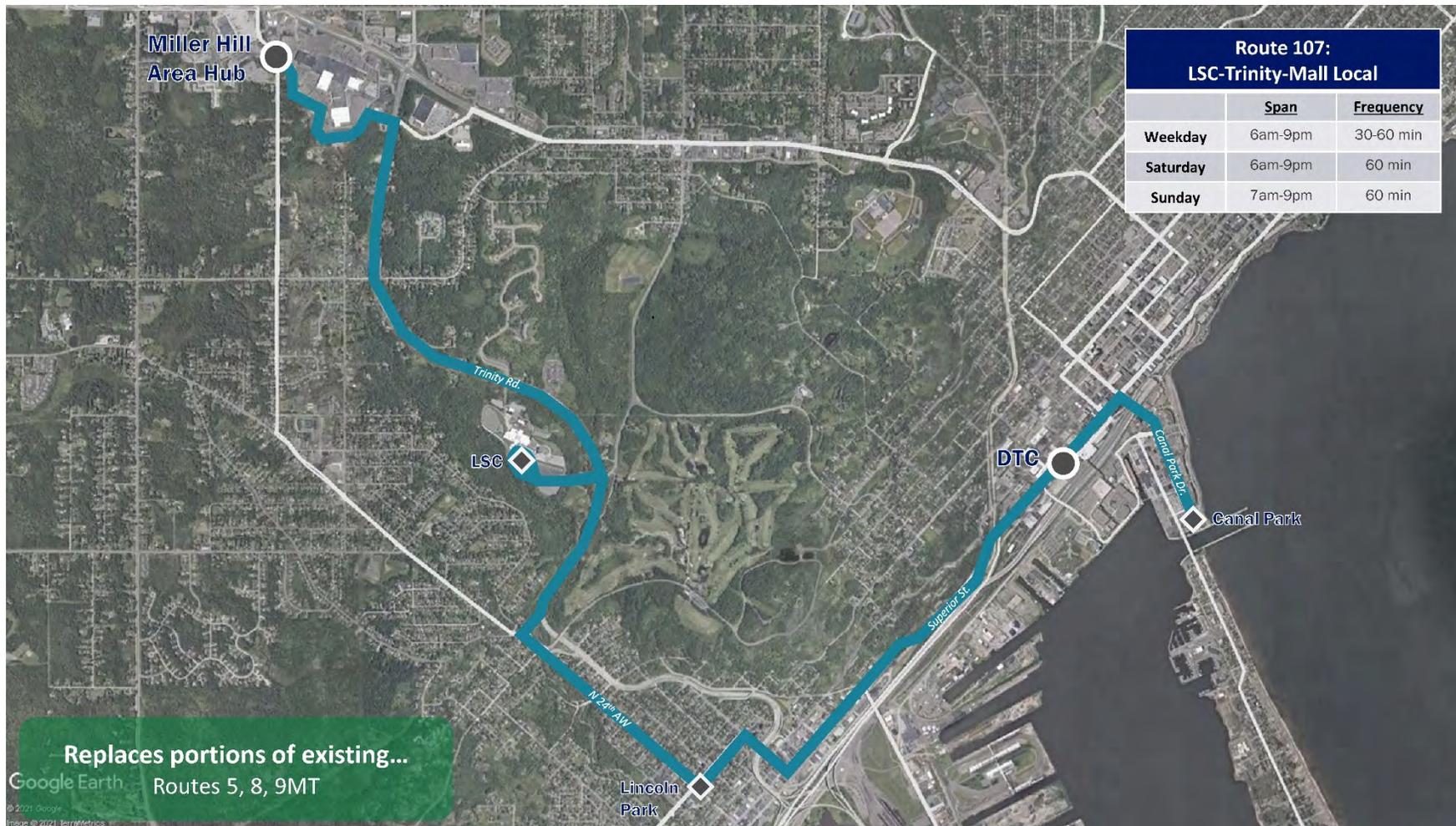
Major Changes:

- Additional direct service between the DTC and Canal Park Drive
- Existing Route 8 service between the Miller Hill Mall and the Airport is removed and covered by the proposed Route 108.

Table 8: Route 107: LSC-Trinity-Mall Local Proposed Operations

Day Type	Span	Peak Frequency	Midday Frequency	Early/Late Frequency
Weekday	6 am – 9 pm	30 min	30 min	60 min
Saturday	6 am – 9 pm	60 min	60 min	60 min
Sunday	7 am – 9 pm	60 min	60 min	60 min

Figure 14: Route 107: LSC-Trinity-Mall Local Proposed Alignment



Route 108: Piedmont-Mall-Airport

Route 108 is a local fixed route that is proposed to operate via Superior Street, N 24th Avenue W, Decker Road, Maple Grove Road, Loberg Road, and Haines Road between the DTC and Duluth International Airport with service to the proposed Miller Hill Area Hub which is anticipated to be in the vicinity of the Decker Road and Mall Drive intersection. The route also serves the Lincoln Park neighborhood and the Hermantown Walmart. It consolidates portions of existing routes 5, 8, 9M, 9MT, and 10 and operates every 60-minutes on both weekdays and weekends.

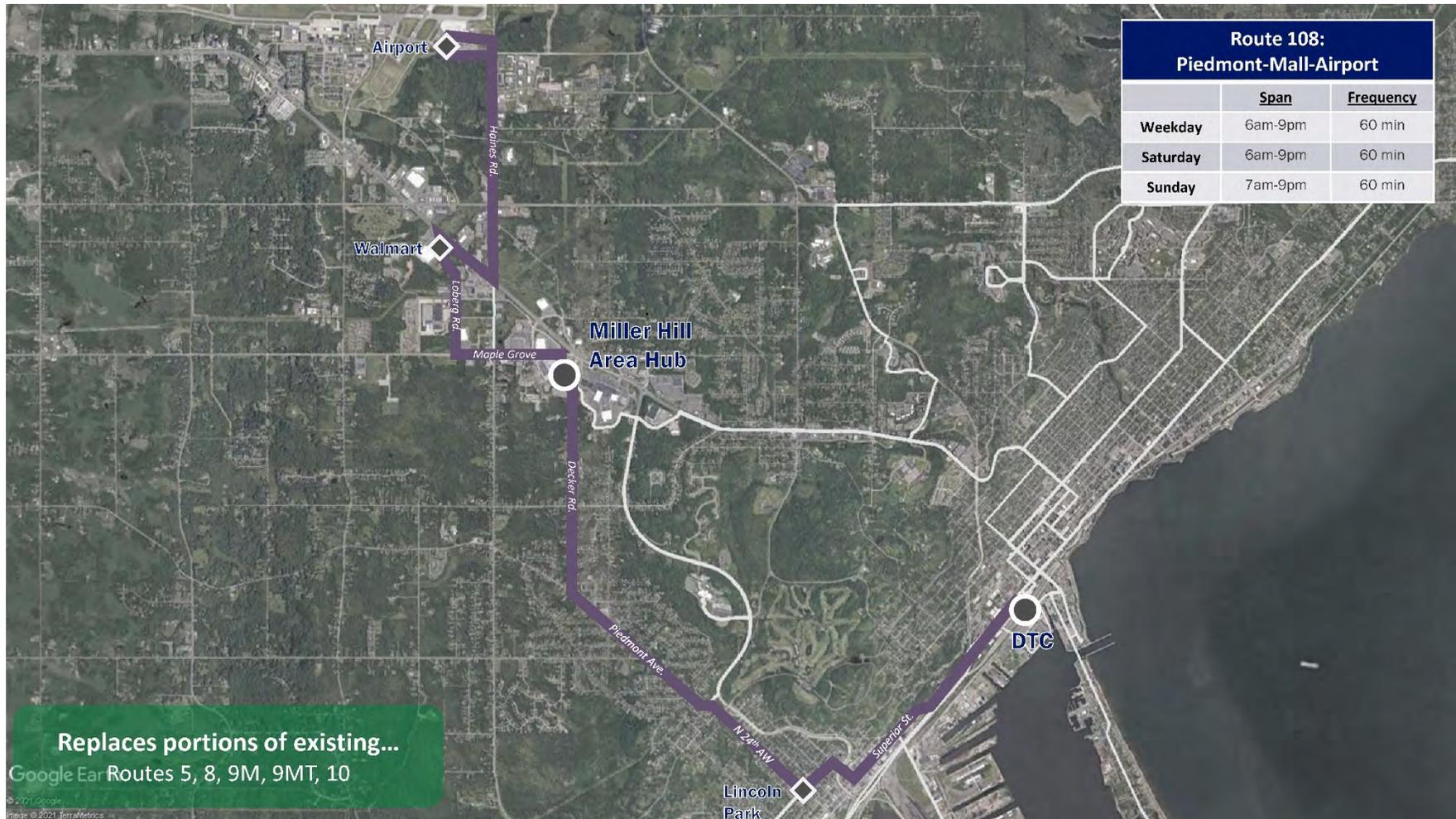
Major Changes:

- Routing on Decker Road was preferred over Haines Road due higher ridership potential and a more direct connection to the Miller Hill Mall area.
- Service is extended to serve the Duluth Airport.
- The one-way loop via Morris Thomas Road, Haines Road, and Piedmont Avenue (existing Route 9MT) is removed due to low ridership.

Table 9: Route 108: Piedmont-Mall-Airport Proposed Operations

Day Type	Span	Peak Frequency	Midday Frequency	Early/Late Frequency
Weekday	6 am – 9 pm	60 min	60 min	60 min
Saturday	6 am – 9 pm	60 min	60 min	60 min
Sunday	7 am – 9 pm	60 min	60 min	60 min

Figure 15: Route 108: Piedmont-Mall-Airport Proposed Alignment



Route 109: Proctor-Spirit Valley-DTC

Route 109 is a limited stop fixed route that is proposed to operate via Superior Street, I-35, Mike Colalillo Drive, Grand Avenue, 59th Avenue W, Cody Street, and Boundary Avenue between the DTC and Proctor. The route also serves the proposed Spirit Valley Hub which is anticipated to be in the vicinity of the Grand Avenue and N 58th Avenue W intersection. It provides non-stop service via I-35 between DTC and 40th Avenue W and between Proctor and the Spirit Valley Hub. The route consolidates portions of existing routes 3, 3X, 4, and S1 and operates every 60-minutes on both weekdays and weekends.

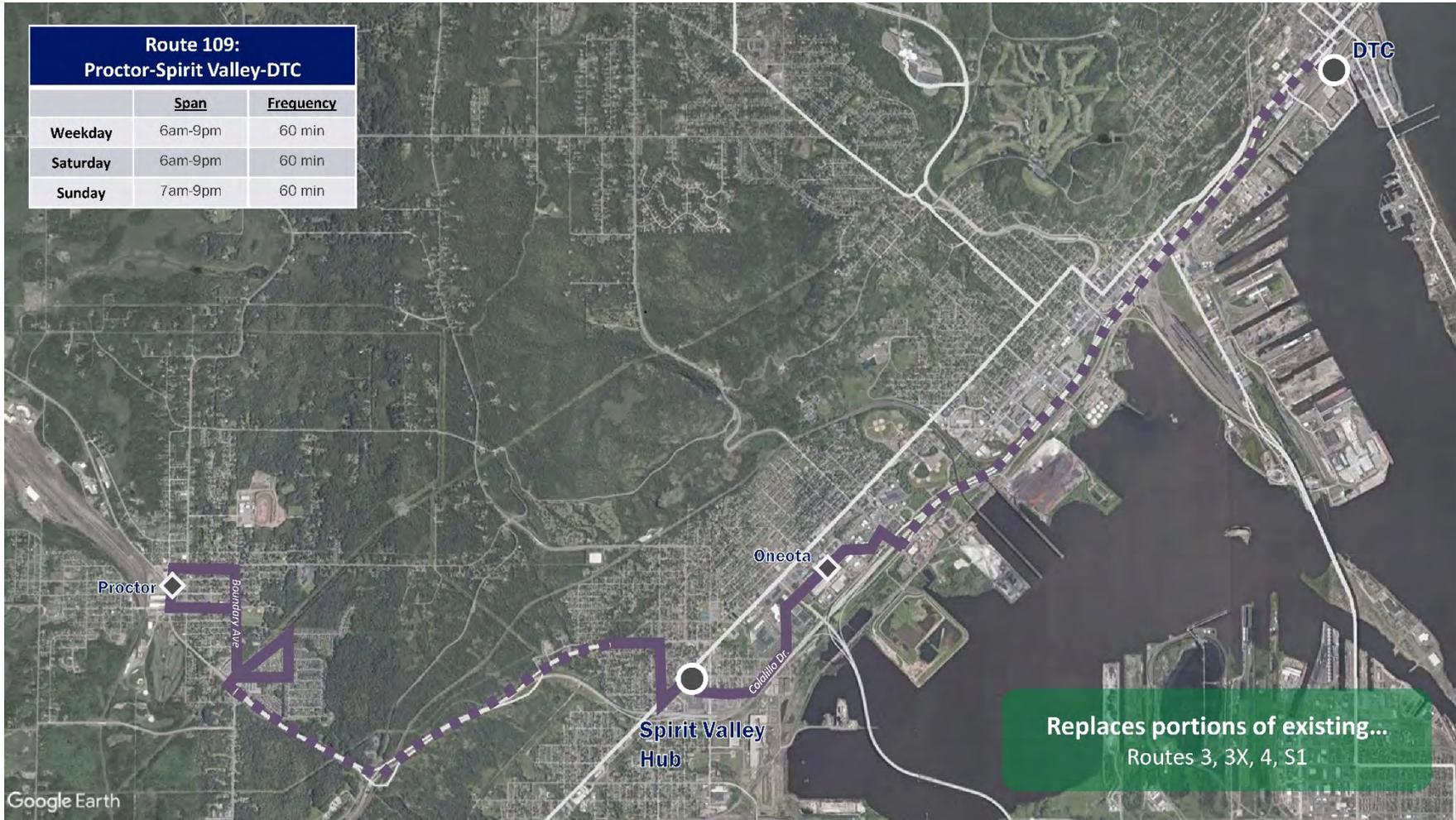
Major Changes:

- Operates non-stop via I-35 between DTC and 40th Avenue W instead of using Superior Street and Grand Avenue.
- Operates non-stop via I-35 between Spirit Valley and Proctor, instead of utilizing Highland and Vinland streets.
- Service in Proctor does not travel west of 3rd Ave due to low ridership and to avoid delays associated with the railroad crossing.

Table 10: Route 109: Proctor-Spirit Valley-DTC Proposed Operations

Day Type	Span	Peak Frequency	Midday Frequency	Early/Late Frequency
Weekday	6 am – 9 pm	60 min	60 min	60 min
Saturday	6 am – 9 pm	60 min	60 min	60 min
Sunday	7 am – 9 pm	60 min	60 min	60 min

Figure 16: Route 109: Proctor-Spirit Valley-DTC Proposed Alignment



Route 110: DTC-Superior-Tower Ave

Route 110 is one of the two proposed routes providing service in Superior, Wisconsin. It is proposed to operate via Superior Street, Garfield Avenue, 5th Street, Catlin Avenue, Belknap Street, and Tower Avenue between the DTC and the Superior Aldi (Tower Avenue and N 46th Street). The route also serves the University of Wisconsin-Superior (UWS), Downtown Superior, and the Superior Walmart. It consolidates portions of existing routes 16, 16X, 17, and 17S and operates every 30-minutes on weekdays and every 60-minutes on weekends.

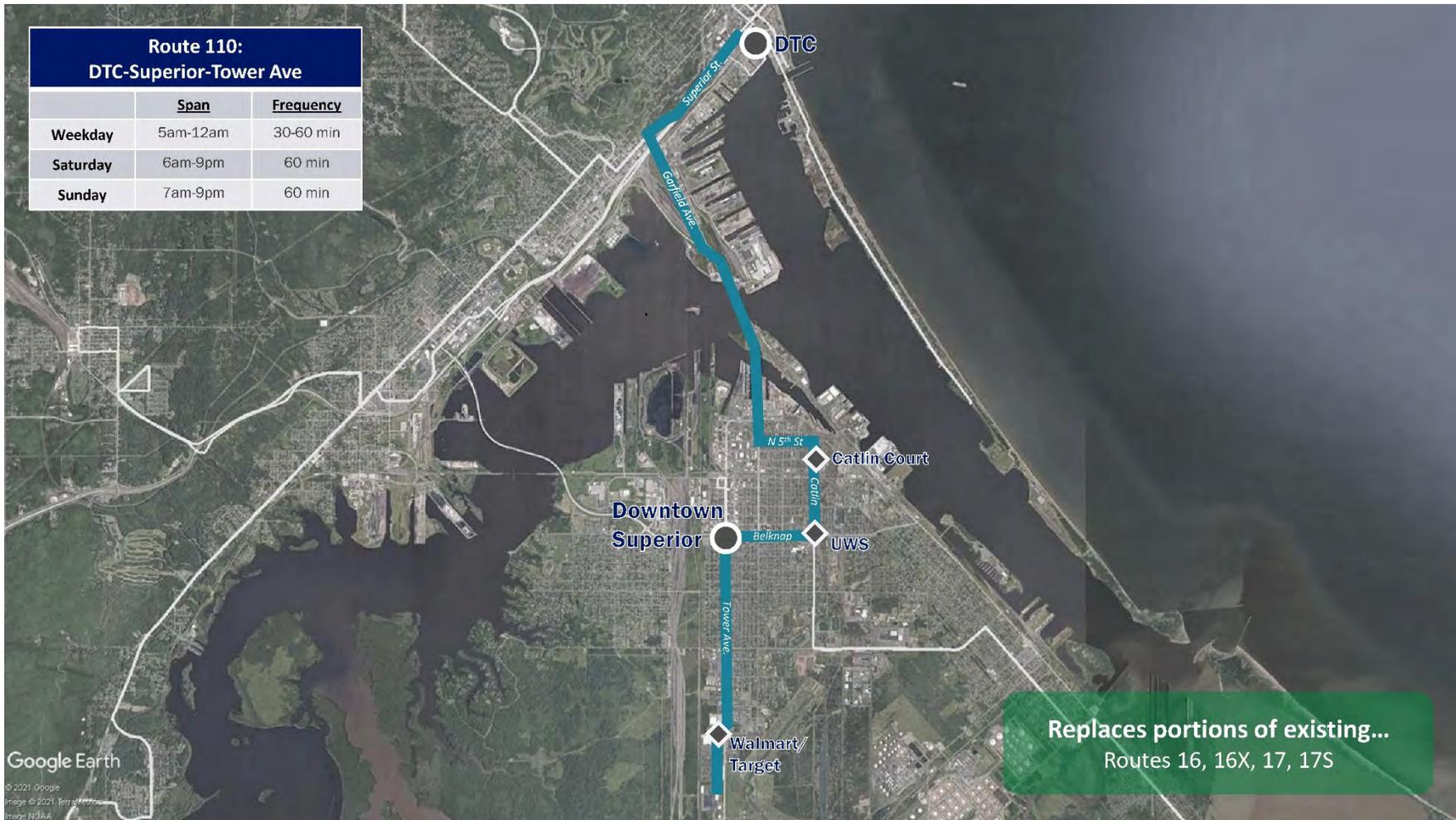
Major Changes:

- Frequency is increased to every 30-minutes to provide better regional connections between Superior and Duluth.
- Alignment is modified to access Downtown Superior via N 5th Street, Catlin Avenue, and Belknap Street.
- Service to Billings Park and South Superior were removed due to low ridership and limited resources.

Table 11: Route 110: DTC-Superior-Tower Ave Proposed Operations

Day Type	Span	Peak Frequency	Midday Frequency	Early/Late Frequency
Weekday	5 am – 12 am	30 min	30 min	60 min
Saturday	6 am – 9 pm	60 min	60 min	60 min
Sunday	7 am – 9 pm	60 min	60 min	60 min

Figure 17: Route 110: DTC-Superior-Tower Ave Proposed Alignment



Route 111: Superior Circulator

Route 111 is one of the two proposed routes providing service in Superior, Wisconsin. It is proposed to operate via Tower Avenue, Belknap Street, Catlin Avenue, N 28th Street, E 5th Street and US-2 between Downtown Superior and Itasca. The route also serves UWS, Superior High School, Mariner Mall, the East End commercial area (Super One), and Allouez. It consolidates portions of existing routes 16 and 16X and operates every 60-minutes on both weekdays and weekends.

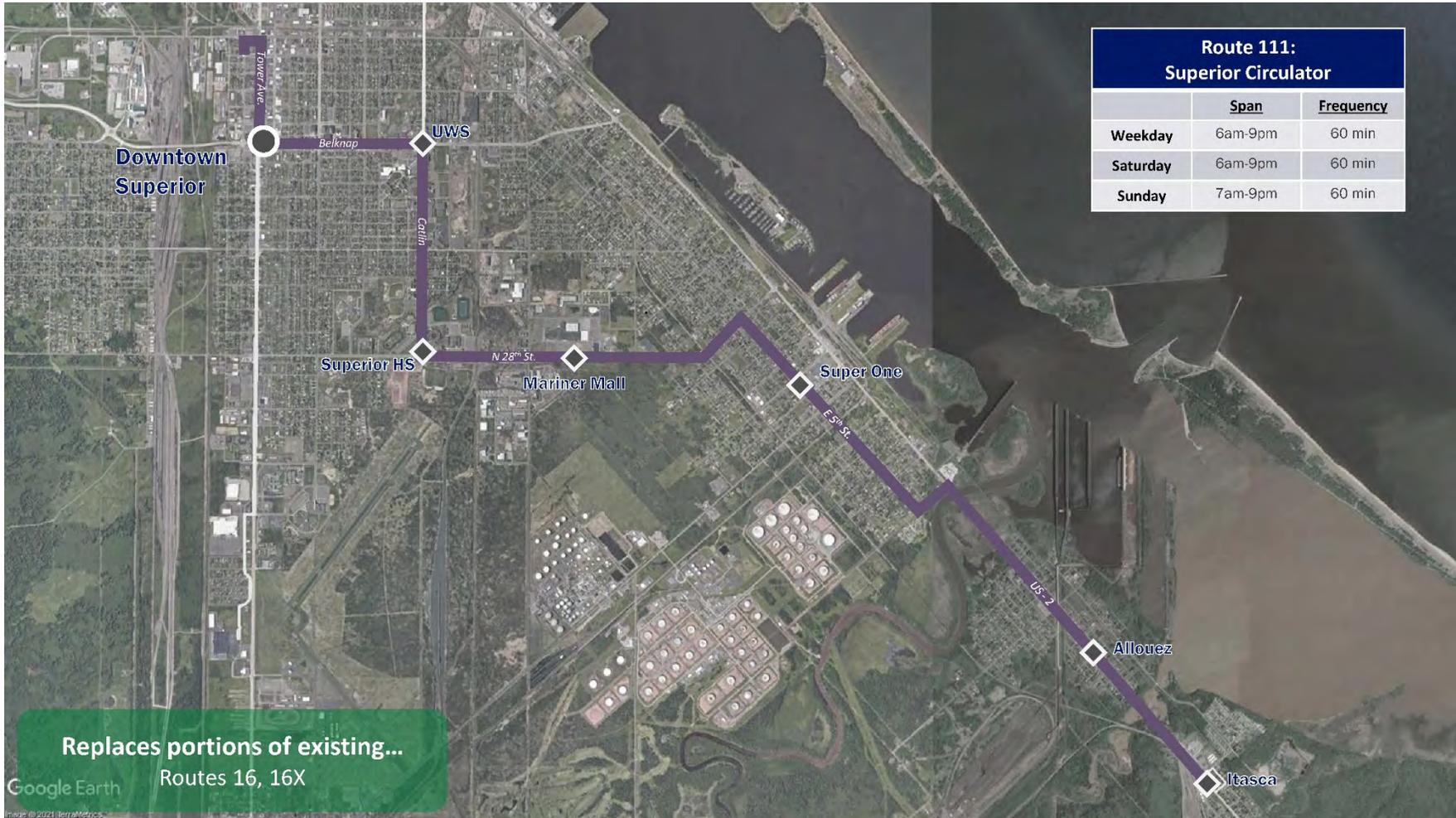
Major Changes:

- Terminates at Tower Avenue and Broadway Street in Downton Superior instead of continuing to the DTC.
- No longer provides service along 5th Street and Hill Avenue between US-2 and 28th Street.

Table 12: Route 111: Superior Circulator Proposed Operations

Day Type	Span	Peak Frequency	Midday Frequency	Early/Late Frequency
Weekday	6 am – 9 pm	60 min	60 min	60 min
Saturday	6 am – 9 pm	60 min	60 min	60 min
Sunday	7 am – 9 pm	60 min	60 min	60 min

Figure 18: Route 111: Superior Circulator Proposed Alignment



Route 112: Woodland-UMD-Mall

Route 112 is a local fixed route that is proposed to operate via Woodland Avenue, St. Marie Street, Kirby Drive, Arrowhead Road, Rice Lake Road, and Central Entrance Drive between the Woodland Park and Ride Lot and the proposed Miller Hill Area Hub which is anticipated to be in the vicinity of the Decker Road and Mall Drive intersection. The route also serves UMD, CSS, and apartment complexes along and near Rice Lake Road. It consolidates portions of existing routes 11K, 11M, 13, and 18 and operates every 60-minutes on both weekdays and weekends.

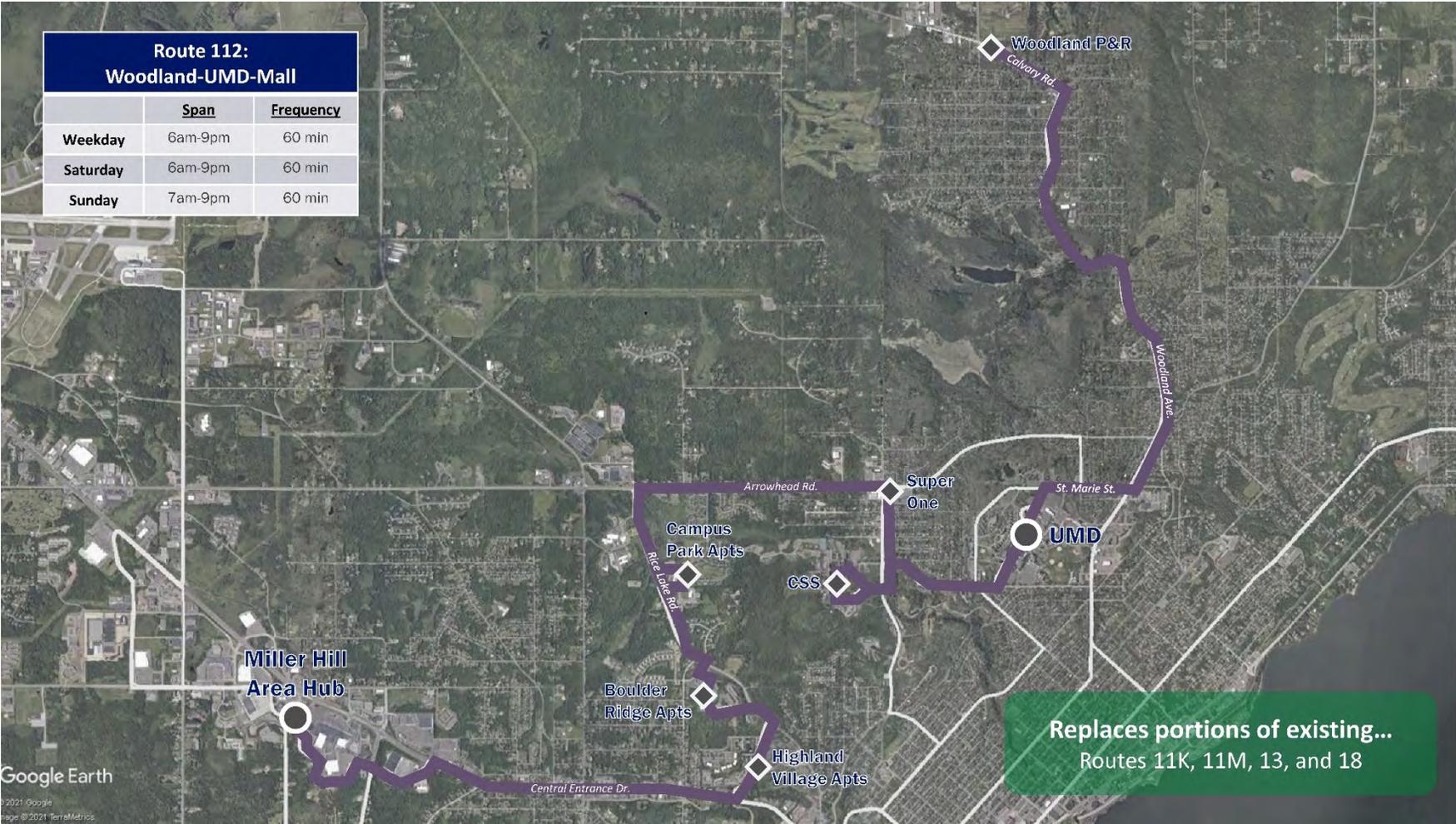
Major Changes:

- Route is extended west to serve the proposed Miller Hill Area Hub.
- Route is extended north to cover portion of Woodland Avenue north of UMD currently covered by existing Route 13.
- Direct service between the Woodland neighborhood and Downtown Duluth no longer exists. Passengers coming from Woodland must transfer to the proposed high frequency Route 101 or another local route destined for downtown at Kirby Plaza.

Table 13: Route 112: Woodland-UMD-Mall Proposed Operations

Day Type	Span	Peak Frequency	Midday Frequency	Early/Late Frequency
Weekday	6 am – 9 pm	60 min	60 min	60 min
Saturday	6 am – 9 pm	60 min	60 min	60 min
Sunday	7 am – 9 pm	60 min	60 min	60 min

Figure 19: Route 112: Woodland-UMD-Mall Proposed Alignment



Route 113: Park Point-DTC-Central Hillside

Route 113 is a local fixed route that is proposed to operate via Minnesota Avenue, Lake Avenue, Superior Street, E 7th Street, and E 4th Street between Park Point and DTC. The route also provides circulation service between the Central Hillside neighborhood along E 7th and E 4th streets, and the DTC in response to the steep grades in those areas. It consolidates portions of existing routes 10, 10E, and 15 and operates every 60-minutes on both weekdays and weekends.

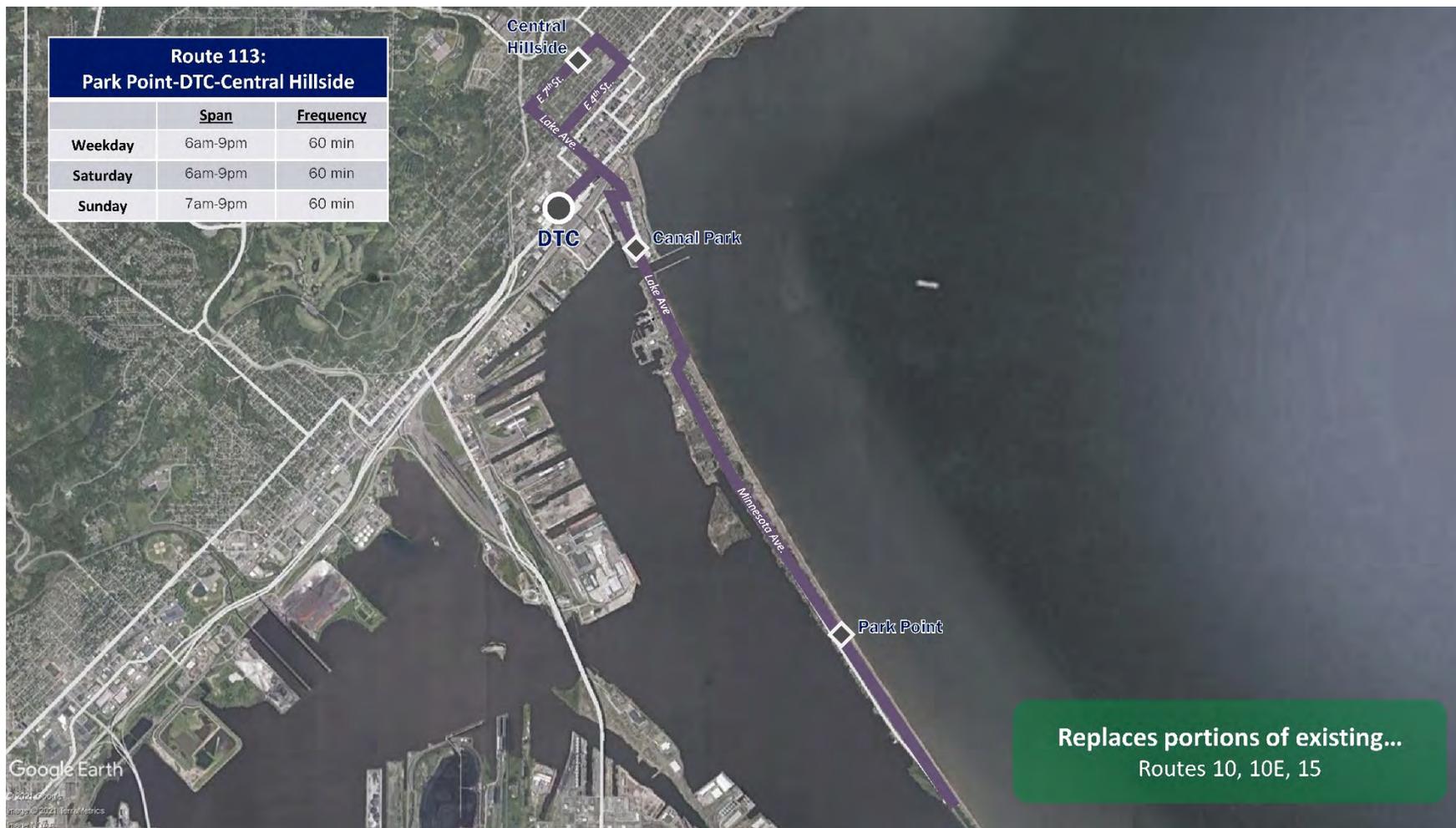
Major Changes:

- Service is extended to E 4th Street and E 7th Street in the Central Hillside neighborhood after serving the DTC to provide circulation in the neighborhood and provide more coverage due to the steep grade in those areas.

Table 14: Route 113: Park Point-DTC-Central Hillside Proposed Operations

Day Type	Span	Peak Frequency	Midday Frequency	Early/Late Frequency
Weekday	6 am – 9 pm	60 min	60 min	60 min
Saturday	6 am – 9 pm	60 min	60 min	60 min
Sunday	7 am – 9 pm	60 min	60 min	60 min

Figure 20: Route 113: Park Point-DTC-Central Hillside Proposed Alignment



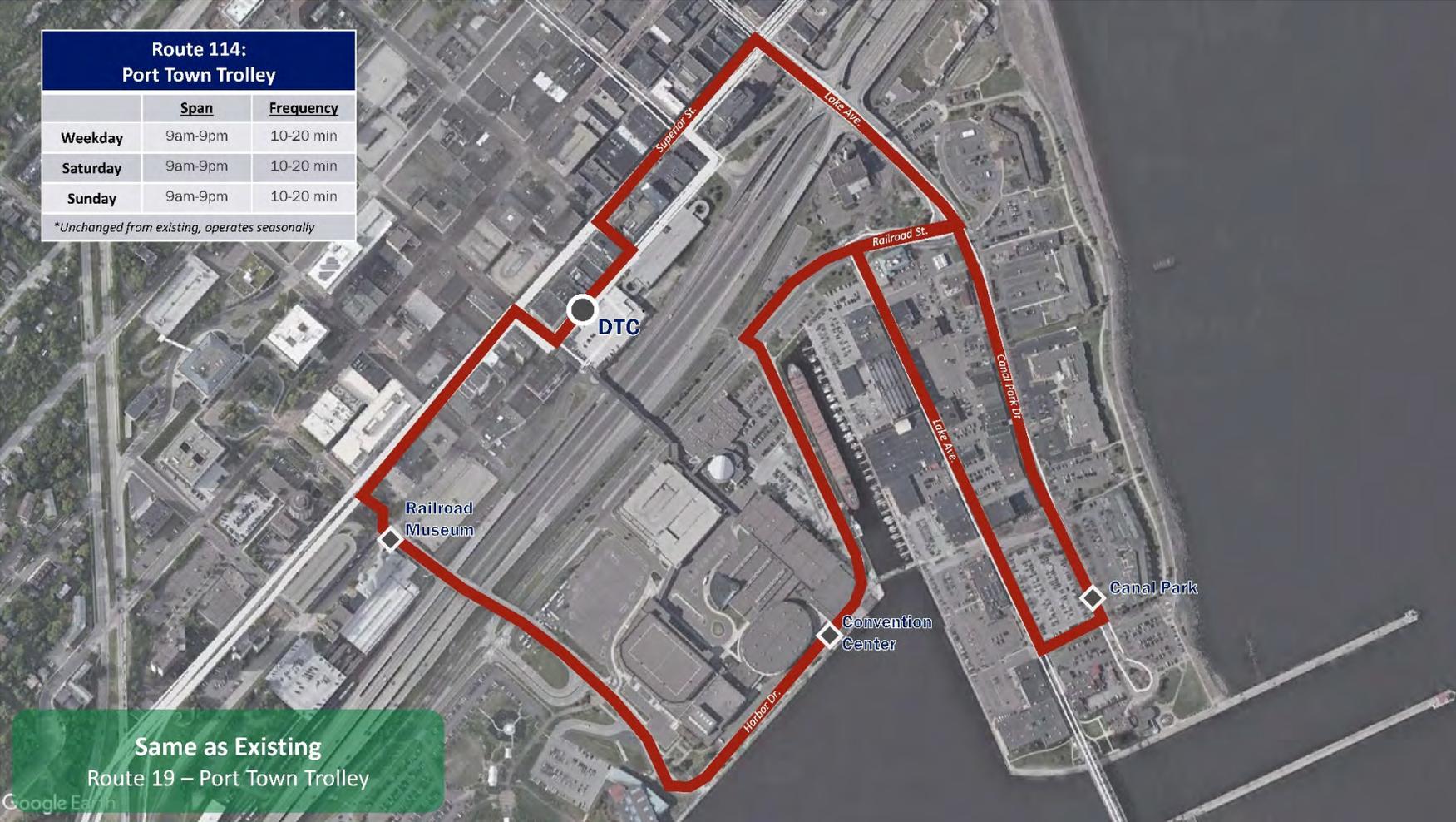
Route 114: Port Town Trolley

Route 114 is the proposed renumbering of the existing Route 19: Port Town Trolley. There are no proposed service changes to this route. The route provides circulating service between DTC, Canal Park, and the Duluth Entertainment Convention Center. It operates seasonally, every 10 to 20 minutes on both weekdays and weekends.

Table 15: Route 114: Port Town Trolley Proposed Operations

Day Type	Span	Peak Frequency	Midday Frequency	Early/Late Frequency
Weekday	9 am – 9 pm	10 min	10 min	20 min
Saturday	9 am – 9 pm	10 min	10 min	20 min
Sunday	9 am – 9 pm	10 min	10 min	20 min

Figure 21: Route 114: Port Town Trolley Proposed Alignment



5.2 Recommended Draft Network Evaluation and Benefits

The Twin Ports region has been changing in recent years, with shifting development patterns, additions of housing and employment areas, and changing travel behavior. The proposed Recommended Draft Network focuses on redesigning the existing transit network to better meet the region's transit needs. A detailed evaluation of the proposed network was conducted to measure the benefits and impacts the service will have on Twin Port residents. Like the evaluation of network concepts discussed in **Section 4**, the process was driven by a quantitative analysis effort that assessed three key areas: coverage, trip quality, and equity. The following details the evaluation process and identified benefits of the proposed network.

5.2.1 Coverage Evaluation

Coverage, as related to transit, is often defined as how much of the community has access to transit services. This measure does not necessarily determine the quality or type of service but refers to a region's general access to any transit option. For example, someone who lives near a bus that comes once a day, and someone that lives near a bus that comes once per hour are both considered to be covered. The Recommended Draft Network coverage evaluation takes this concept a step further and reviews coverage of residents, employment, and ridership compared to existing transit service.

The existing DTA service operates 33 routes on weekdays and provides reduced service on weekends (16 routes on Saturday, and 12 routes on Sunday). The inconsistency of service on weekends has repeatedly been discussed, in planning studies and recent surveys, as a barrier that has limited access for many of the region's residents. Approximately a third of the weekday routes operate at limited times and are tailored to serve specific areas and ridership markets. These routes offer more coverage throughout the region; however, they provide a lower quality of transit service because they have limited hours of operations and are attractive only to people traveling at times that match with the specific schedule. Ridership and productivity measures (e.g., riders per trip or revenue hour, cost per rider, etc.) tend to be worse on these services compared to local fixed routes that operate more consistently throughout the day.

The Recommended Draft Network focused on reducing unproductive and inconsistent service by reallocating resources into more streamlined operations that aimed to attract more riders with increased frequency and/or more consistent spans of service for all days of the week. This focused restructuring of service to higher density and ridership producing areas along major road corridors ultimately means that some areas will no longer have direct transit service. Residents in these areas may be required to walk slightly further to access transit; however, once they access the route, the quality and consistency of the service is substantially improved over existing. **Figure 22** and **Table 16** display the areas that the Recommended Draft Network would no longer directly serve along with population, employment, and ridership comparisons to existing service.

Figure 22: Locations No Longer with Direct Transit Service



Table 16: Recommended Draft Network Statistics Analysis

Draft Recommended Network Coverage Analysis			
	Population	Employment	Ridership
Within ¼ mile	93,448 (86%)	71,768 (96%)	9,680 (98%)
<i>Reduction from Existing</i>	-15,434	-2,829	-222
Within ¾ mile	106,771 (95%)	79,451 (99%)	9,857 (99%)
<i>Reduction from Existing</i>	-5,558	-1,142	-55

The streamlining of transit services in the Recommended Draft Network was expected to reduce overall coverage in the region, as a product of restructuring less direct and unproductive routes. The proposed network focuses on serving primary corridors and key activity centers leading to approximately a 14% reduction in population, but only a 4% reduction of employment and 2% reduction of existing ridership within ¼ mile of a transit route.

The population reduction is most significant in the City of Superior where about half of the overall coverage reduction occurs amongst three neighborhoods, totaling approximately 7,700 residents (East End: 3,200; Billings Park: 2,650; South Superior: 1,850). These three neighborhoods are generally comprised of single-family residential land uses and have not produced very many transit riders, approximately 65 average boardings per weekday or less than 1% of the DTA’s daily weekday ridership. Portions of the East End and Billings Park neighborhoods will have some access to the new higher quality transit service but will be expected to walk slightly further. Most South Superior residents will no longer be able to access transit service. As mentioned in **Section 3.2**, funding limitations largely dictate the maximum amount of transit service that can be provided in the City of Superior. The Recommended Draft Network prioritized longer hours of operations and improved frequencies to the higher density and existing ridership areas in Superior. If additional funding is obtained, a third route that provides more coverage service in Billings Park and South Superior could be considered.

In Minnesota, the population coverage reduction is concentrated in the Lakeside, Morley Heights, and Observation Hill neighborhoods, totaling approximately 5,700 residents. These neighborhoods are also comprised primarily of single-family residential land uses and produce only about 25 average boardings per weekday. The Lakeside neighborhood encompasses most of the reduction with just over 3,000 residents losing coverage; however, the excluded portion of Lakeside only produces about 10 average weekday boardings. Most Lakeside residents are still in proximity (within ½ mile) to the proposed service and could access transit with a slightly further walk. The Observation Hill (about 1,600 residents) and Morley Heights (about 1,050 residents) neighborhoods also experience reductions but have limited existing transit service producing a total of about 15 average weekday boardings. Observation Hill and Morley Heights residents would no longer be able to easily access transit as proposed in the Recommended Draft Network. The remaining areas no longer within walking distance of transit service encompass approximately 2,000 residents and 130 average weekday boardings. These reductions are spread fairly evenly amongst the remaining locations.

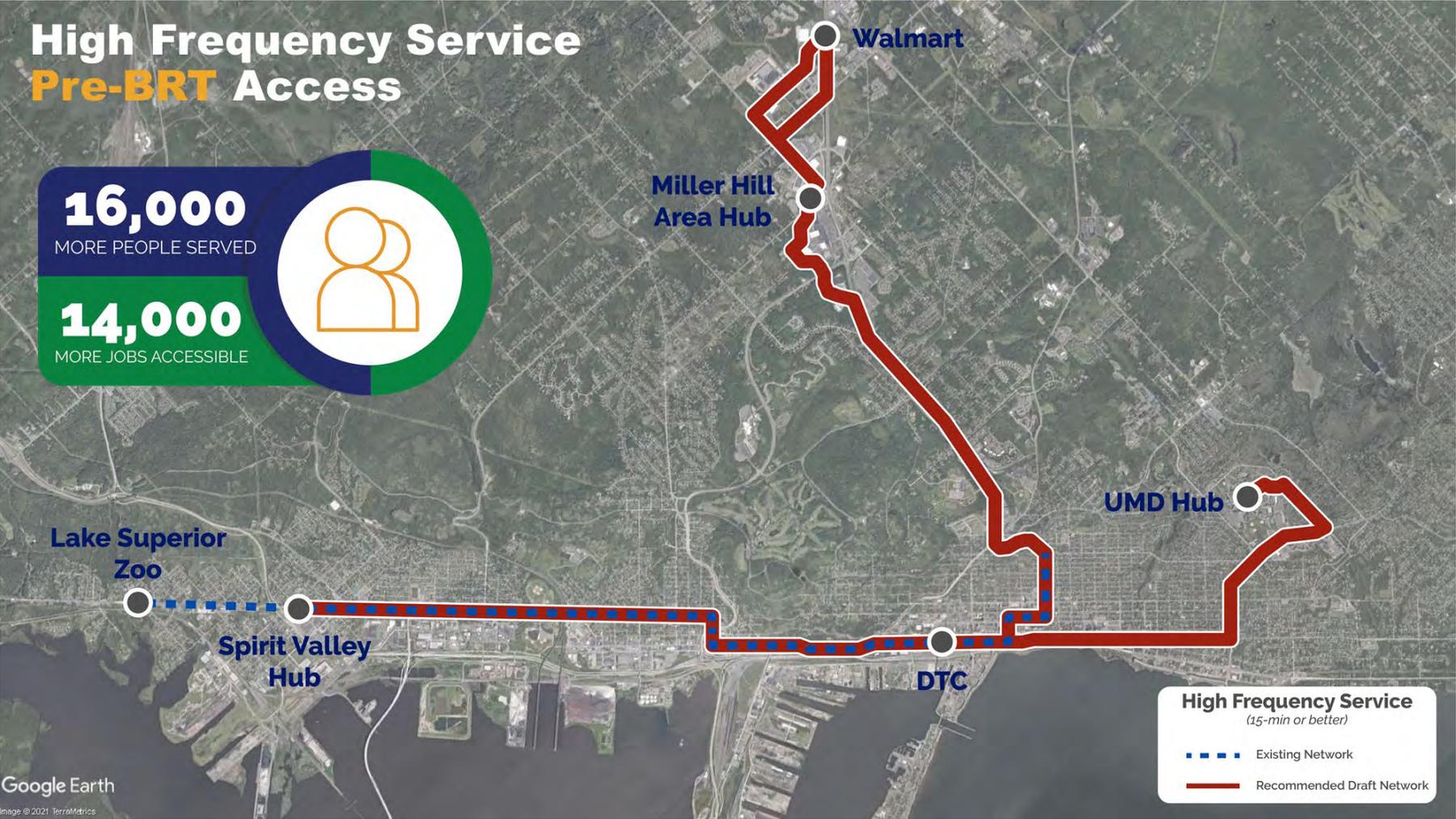
The Recommended Draft Network focuses on providing more frequent and consistent service to the region's key activity centers. Most of these areas include all major regional commercial and employment generators and encompass approximately 96% of the existing service's employment coverage. Employment no longer covered is not concentrated and is not expected to impact a significant amount of existing transit trips. Overall coverage of the region's existing ridership remains high with approximately 98% covered or a reduction of less than 225 average weekday boardings. Most of the uncovered existing ridership areas could still access transit by walking slightly further than they do currently.

Access to High Frequency Service

Another important coverage evaluation is access to high frequent service. A high frequency service is typically defined as a route that provides 15-minute or better frequencies. These services are often more attractive to riders as they provide consistent and reliable transit along the corridors on which they operate. The existing DTA network does not have any routes that exceed 30-minute frequencies; however, several routes operate along portions of Grand Avenue and Superior Street, collectively leading to service that is more frequent than 15 minutes. However, layering services to create enhanced frequencies is rarely consistent, due to scheduling limitations and operational delays. This situation can lead to bus bunching and create larger gaps between transit trips. Many transit agencies around the country have turned to bus rapid transit (BRT) to provide more frequent and reliable service. BRT can be defined as a higher quality bus service that is often compared to rail. BRT provides frequent, fast, and reliable transit service with fewer stops that commonly includes features like improved customer amenities, enhanced bus stops, branded vehicles, and special bus priority roadway accommodations.

The Recommended Draft Network proposes two high frequency pre-BRT routes (i.e., routes 101 and 102). These services are called "pre-BRT" as they will provide frequent and consistent service but may not immediately include all the elements of a typical BRT route. The DTA aims to convert these routes to BRT in future years. Routes 101 and 102 will provide riders with routes that connect them to key destinations, improves regional travel time and access, and minimizes the need to know and use a bus schedule when near these service corridors. **Figure 23** displays a comparison map of the existing and Recommended Draft Network's high frequency service. The proposed network will provide over eight additional miles of high frequency service and serve over 16,000 more people and 14,000 more jobs within walking distance than the existing network. Most of these additions occur between Downtown Duluth and UMD and up the hill along Central Entrance near the Miller Hill Mall and other commercial areas.

Figure 23: High Frequency Service Coverage Comparison



5.2.2 Trip Quality Evaluation

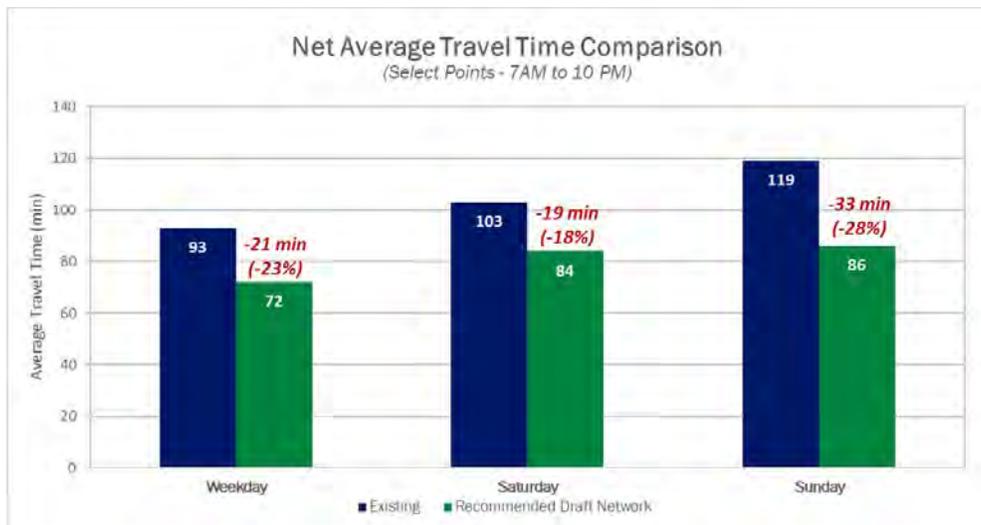
The quality of service can be one of the largest indicators that attracts people to ride transit. A quality transit service can be defined as a route that consistently connects people with places they want to go and does so efficiently. From a rider perspective, efficiency can be quantified in terms of travel time and access, and by evaluating these metrics, an assessment on trip quality can be made. The COVID-19 pandemic has caused significant impacts to people’s travel behavior and has led to a shift towards more telecommuting and/or employment that is less focused around peak commute times. As a result, travel time and access metrics for the Recommended Draft Network were averaged and evaluated across the day and compared to the existing system.

Travel Time Assessment

Average travel times between key activity centers and select travel points across the Twin Ports Region were modeled in the ArcGIS Network Analyst Tool for both the existing system and Recommended Draft Network on weekdays and weekends. A total of 29 locations (5 activity centers and 24 additional travel points) were selected and the average travel times across the day (i.e., between 7:00 am to 10:00 pm) were determined. A map and complete list of the travel points are shown in **Table 17** and **Figure 25**.

The calculated transit travel times encompass a complete linked passenger trip, accounting for all facets of the trip: access/egress walking time, dwell/wait/transfer time, and in-vehicle transit travel time (including multiple routes) based on existing and proposed schedules. **Figure 24** displays the net average travel time comparison for weekdays, Saturdays, and Sundays between the existing system and the Recommended Draft Network.

Figure 24: Net Average Travel Time Comparison by Day of Week

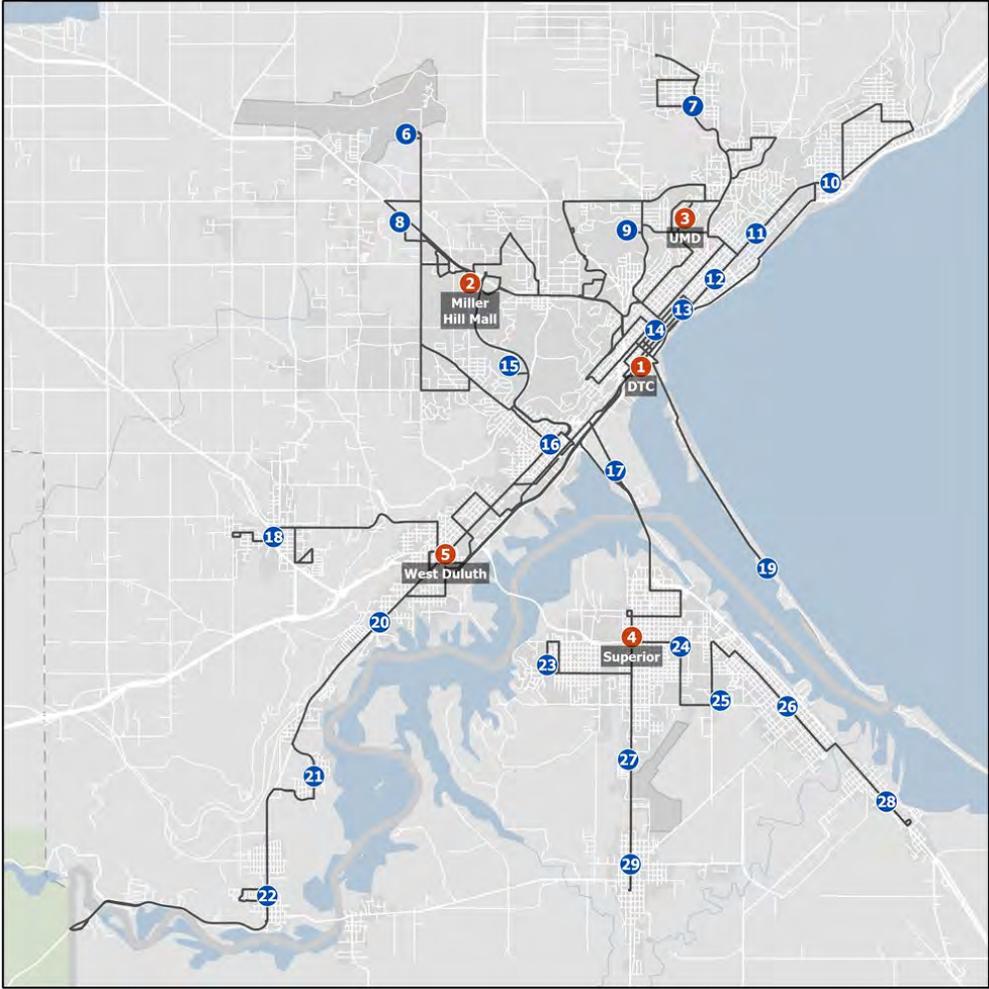


The Recommended Draft Network produces a collective 24% net system average travel time improvement over existing. This metric was calculated by comparing the differences between the sum of average travel times for both networks. Travel times on all days of the week also show significant improvement by reducing the average travel time on weekdays by 23%, on Saturdays by 18%, and on Sundays by 28%. Approximately 37% of all trips experience a significant average travel time improvement (improved by 25% or more) and only 1.5% of trips experience a significant worsening of travel times (worsened by 25% or more). Trips experiencing negative impacts largely occur from areas no longer receiving direct transit service.

Figure 25: Select Travel Point Locations

Table 17: Select Travel Points

DTA Service Area - Select Travel Points	
1 - DTC / Downtown Duluth	16 - Lincoln Park
2 - Miller Hill Mall	17 - Rice's Point
3 - University of Minnesota Duluth (UMD)	18 - Proctor
4 - Downtown Superior	19 - Park Point
5 - West Duluth	20 - Lake Superior Zoo
6 - Duluth International Airport	21 - Morgan Park
7 - Woodland	22 - Gary / New Duluth
8 - Walmart (Duluth)	23 - Billings Park
9 - College of St. Scholastica (CSS)	24 - University of Wisconsin-Superior (UWS)
10 - Lakeside	25 - Mariner Mall
11 - Congdon Park	26 - East End
12 - Endion	27 - Walmart (Superior)
13 - East Hillside	28 - Allouez
14 - Central Hillside	29 - South Superior
15 - Lake Superior College (LSC)	

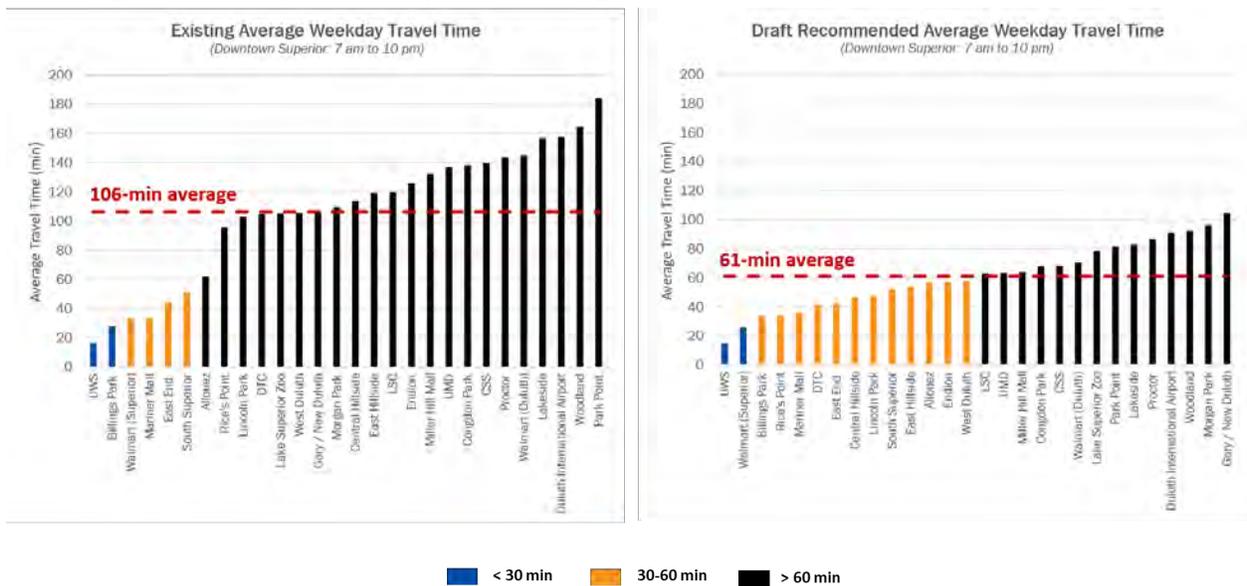


In addition to measuring system-level average travel time improvements, a focus on travel time improvements to/from activity centers was assessed. The five major activity centers identified in the previous existing conditions analysis included Downtown Duluth, UMD, the Miller Hill Mall, Downtown Superior, and West Duluth. It is critical to provide quality transit to these locations and surrounding areas, as they contain a majority of region’s existing transit ridership (over 65% of the DTA’s daily weekday ridership) and over half of the region’s jobs.

The Recommended Draft Network experiences collective average travel time improvements to all the activity centers on both weekdays and weekends. In general, individual trips to the activity centers also show improvements. The improved travel times can be contributed to enhanced frequencies on core services, more direct routing, less wait/transfer times in many locations, and expanded hours of operations (especially on weekends). Travel times to/from Downtown Superior improve dramatically due to higher frequencies and expanded service spans of the proposed Route 110. Connections between Superior (including to downtown and to major commercial areas on Tower Avenue) and Downtown Duluth would consistently connect the Minnesota and Wisconsin portions of the region and allow for reduced regional travel times for those crossing state lines.

Figure 26 displays an example of the weekday travel comparison for the Downtown Superior activity center. Additional activity center comparison charts and modeled average travel times amongst the selected points in the region can be found in **Appendix B**.

Figure 26: Example of Activity Center Average Travel Time Comparison – Downtown Superior



Note: For travel between 7 am – 10 pm measured on weekdays. Average travel time is an evaluation metric and does not always reflect a customer’s actual travel time.

Quality Transit Accessibility

Quality transit provides a service that quickly gets riders to places they want to go, and assures that their trip can be made reliably across most of the day. CTG's Quality Transit Area (QTA) assessments measure a rider's typical or average access across the day and determines how far they can reliably travel throughout the Twin Ports with transit in 60 minutes. For this analysis, the QTA metric was created to develop a graphic that displays access and quantifies the change of that access between the existing system and the Recommended Draft Network. It assesses areas that can be reached to/from the five activity centers within 60-minutes at least 75% of the time between 7:00 am and 10:00 pm. **Figure 27** shows an example of the QTA graphics for Downtown Duluth on weekdays. **Figure 28** displays the quantified QTA area of access measured in square miles. These quantified areas compare the collective sum of QTA access for all five activity centers for the existing system and Recommended Draft Network.

Figure 27: Downtown Duluth Weekday Quality Transit Area Comparison Graphic

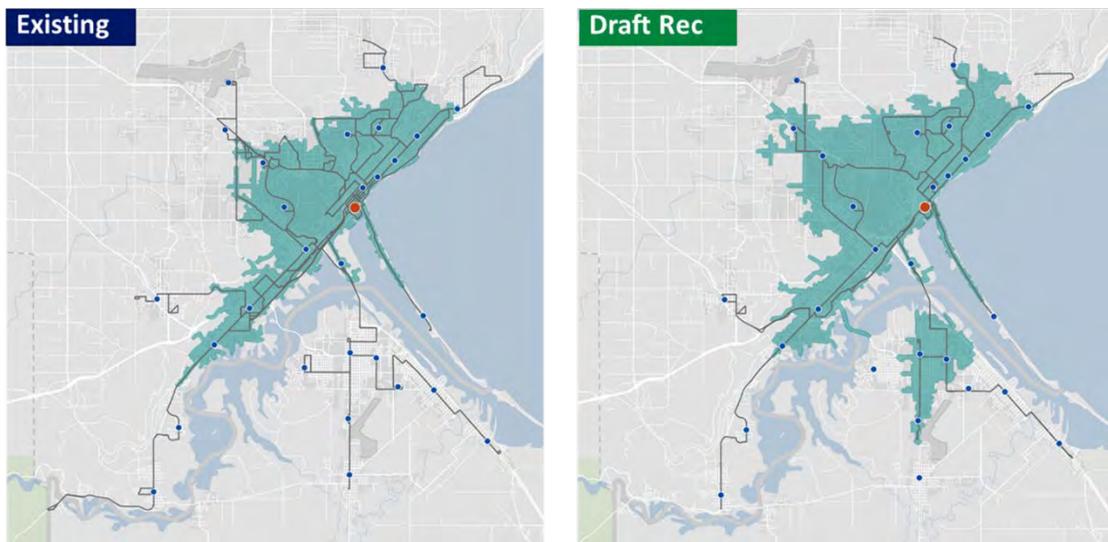
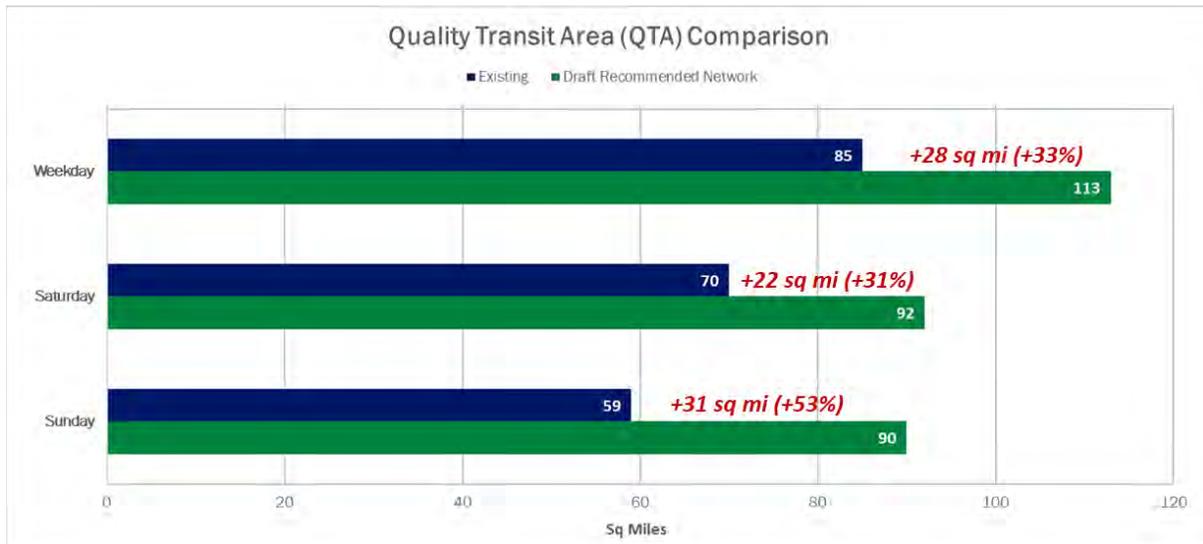


Figure 28: Quality Transit Area Comparison



The Draft Recommended Network experiences over 30% increases in collective QTA access to/from activity centers over existing for all days of the week. The proposed network provides a more consistent system with enhanced and reliable frequencies throughout the day and expanded spans of service. This has led to a growth in QTA access and indicates that more Twin Ports residents will be able to access these key destinations within 60-minutes compared to the existing system. The substantial growth on Saturdays and Sundays is directly related to providing higher frequencies (20 minutes) on proposed routes 101 and 102. By maintaining a slightly higher frequency of service on these primary corridors, users of the system will have reduced wait/transfer times and be able to access more locations within 60-minutes on weekends than ever before.

The Downtown Duluth weekday QTA graphic in **Figure 27** is a great example of how QTA grows in the Recommended Draft Network. The teal shading in each map displays the 60-min QTA travelshed for locations that can travel to/from Downtown Duluth consistently throughout the day. The Recommended Draft Network adds approximately nine square miles of QTA access (37% increase over existing), has grown to cover more commercial areas up the hill (e.g., Walmart), and provides consistent access to parts of Wisconsin including Downtown Superior, the University of Wisconsin-Superior (UWS), and the Tower Avenue corridor (e.g., Walmart, Aldi, etc.). **Appendix C** contains QTA graphics for each activity center for weekdays, Saturdays, and Sundays. The expansion of QTA is related to the addition of the higher frequency services (i.e., route 101 and 102), more direct routing, and more consistent spans of service. In general, riders in Minnesota will be able to consistently travel and make connections between Downtown Duluth, UMD, the Miller Hill Mall, and West Duluth in 60-minutes or less for all days of the week. Riders in Wisconsin will be able to directly access Downtown Duluth more consistently and will have more opportunities to connect to services traveling to the other activity centers. Operations between Downtown Duluth and Downtown Superior are significantly improved and will provide service until midnight on weekdays and 9 pm on Saturdays and Sundays.

5.2.3 Equity Evaluation

Evaluating equity is critical to assure the most vulnerable residents in the Twin Ports region will be served. This assessment focused on evaluating impacts to equity groups that were classified into four categories including: Black, Indigenous, and People of Color (BIPOC); low-income households (less than \$30,000 of annual income); households with access to one or less vehicles; and persons with disabilities. These groups were evaluated based on general coverage, access to frequent service, and QTA improvements to/from activity centers.

The coverage evaluation in **Section 5.2.1** details how the Recommended Draft Network focuses on restructuring service to higher density and ridership producing areas along major road corridors, and ultimately leads to some areas having less coverage of transit service. Due to this restructuring, identified equity groups are expected to see some decline in general transit coverage, but for most groups, the reduction is consistent with or less than the reduction to the overall population. **Table 18** displays the anticipated reduction for each group within $\frac{1}{4}$ mile and $\frac{3}{4}$ mile of a route. The map of locations that lose direct transit service (**Figure 22**, previously shown in **Section 5.2.1**) are the same areas that would experience reductions for the equity groups.

Table 18: Coverage Impacts to Identified Equity Groups

Coverage	1/4 Mile		3/4 Mile	
	Existing	Recommended Draft Network	Existing	Recommended Draft Network
<i>Overall Population</i>	108,882	93,448 (86%)	112,329	106,771 (95%)
BIPOC	10,808	9,980 (92%)	11,131	10,771 (97%)
HH with 1 or less vehicles	9,908	8,116 (82%)	10,224	9,440 (92%)
Low Income HH	14,061	12,825 (91%)	14,310	13,743 (96%)
Persons with Disabilities	11,711	10,204 (87%)	11,962	11,340 (95%)

Each equity group experiences a decrease in transit coverage of approximately 1,000 to 1,500 people or households within a ¼ mile of service. These impacts are reduced significantly when assessing coverage within ¾ mile of a service, indicating that some of these groups would still have access if they would walk slightly further. Like the coverage evaluation results, the City of Superior contained approximately half of the reductions with the remaining spread fairly evenly throughout the eliminated areas in Minnesota. In general, the equity groups experience a less significant reduction compared to the overall population coverage metrics.

It is critical to note that many of the areas where reductions occur produce very low ridership with the existing system. This generally demonstrates that reduced coverage areas do not contain high concentrations of populations and households that are currently reliant on transit and impacts to existing riders belonging to the identified equity populations are likely to be minimal. Persons with disabilities is the sole equity group that may be more significantly impacted by the proposed network, as they may not be able to walk or travel further to access transit. Fortunately, most of these individuals qualify for DTA's STRIDE paratransit service and will be able to maintain their mobility throughout the Twin Ports region by utilizing the program. All reduced coverage areas remain within the service boundary of the STRIDE paratransit program.

A major benefit of the Recommended Draft Network is the improved access to frequent service for the identified equity groups. The proposed pre-BRT services (routes 101 and 102) provide over eight additional miles of more frequent and consistent service. Equity group population and household access to the pre-BRT services increases by at least 40% over existing. This improved access will provide considerable mobility enhancements for these groups including improved transit travel times to major destinations and more access to employment opportunities. **Table 19** displays the equity group access improvements to frequent service for the Recommended Draft Network.

Table 19: Equity Group Access to Frequent Service

Equity Group Access to Frequent Service (within ¼ mile)					
	Total Population	BIPOC	0 to 1 Vehicle Households	Low Income Households	Persons with Disabilities
Existing	18,461	3,079	1,739	4,088	2,587
Recommended Draft Network	34,727	4,992	2,529	6,114	3,724
<i>Improvement</i>	<i>+88%</i>	<i>+62%</i>	<i>+45%</i>	<i>+50%</i>	<i>+44%</i>

QTA was also analyzed for the equity groups to determine the impact of quality transit access to/from the five key activity centers. All equity groups demonstrate growth within the QTA access to each activity center. This indicates that more persons and households belonging to one of the identified equity populations will be able to consistently access these key locations within 60 minutes throughout most of the day. **Table 20** displays the magnitude of the increases for each group over existing.

Table 20: Equity Group Changes by Quality Transit Area

Equity Group Changes by Quality Transit Area (QTA)						
	Total Population	BIPOC	Own 1 or less vehicles	Low Income Households	Persons with Disabilities	Jobs
Change over existing						
Downtown Duluth	+16,756	+1,595	+1,294	+2,355	+2,001	+12,008
UMD	+6,304	+788	+849	+1,300	+1,197	+13,209
Miller Hill Mall	+18,560	+1,651	+1,247	+1,710	+1,406	+10,276
West Duluth	+14,756	+1,259	+1,012	+1,239	+867	+12,393
Downtown Superior	+12,454	+2,389	+915	+3,513	+1,952	+36,845
% Change over existing						
Downtown Duluth	+31%	+24%	+30%	+29%	+37%	+22%
UMD	+13%	+13%	+25%	+19%	+27%	+32%
Miller Hill Mall	+59%	+37%	+48%	+28%	+39%	+22%
West Duluth	+40%	+25%	+31%	+18%	+19%	+28%
Downtown Superior	+65%	+144%	+55%	+130%	+81%	+393%

Top 10 % increases

Note: For travel between 7 am – 10 pm measured on weekdays

The percentage of population and households in each identified equity group increases by a range of 13% to 144% with most increasing by 20% or more. Total population and jobs related to the same QTA areas were also included in the table as a reference, and graphics of each QTA area can be found in **Appendix C**. Quality transit access to/from Downtown Superior sees the most substantial percentage increases, as proposed Route 110 provides more frequent and consistent connections to the Downtown Duluth area. The other activity centers experience sizable increases for the equity groups due to direct access to the high frequency service and connecting routes.

5.2.4 Recommended Draft Network Benefit Summary

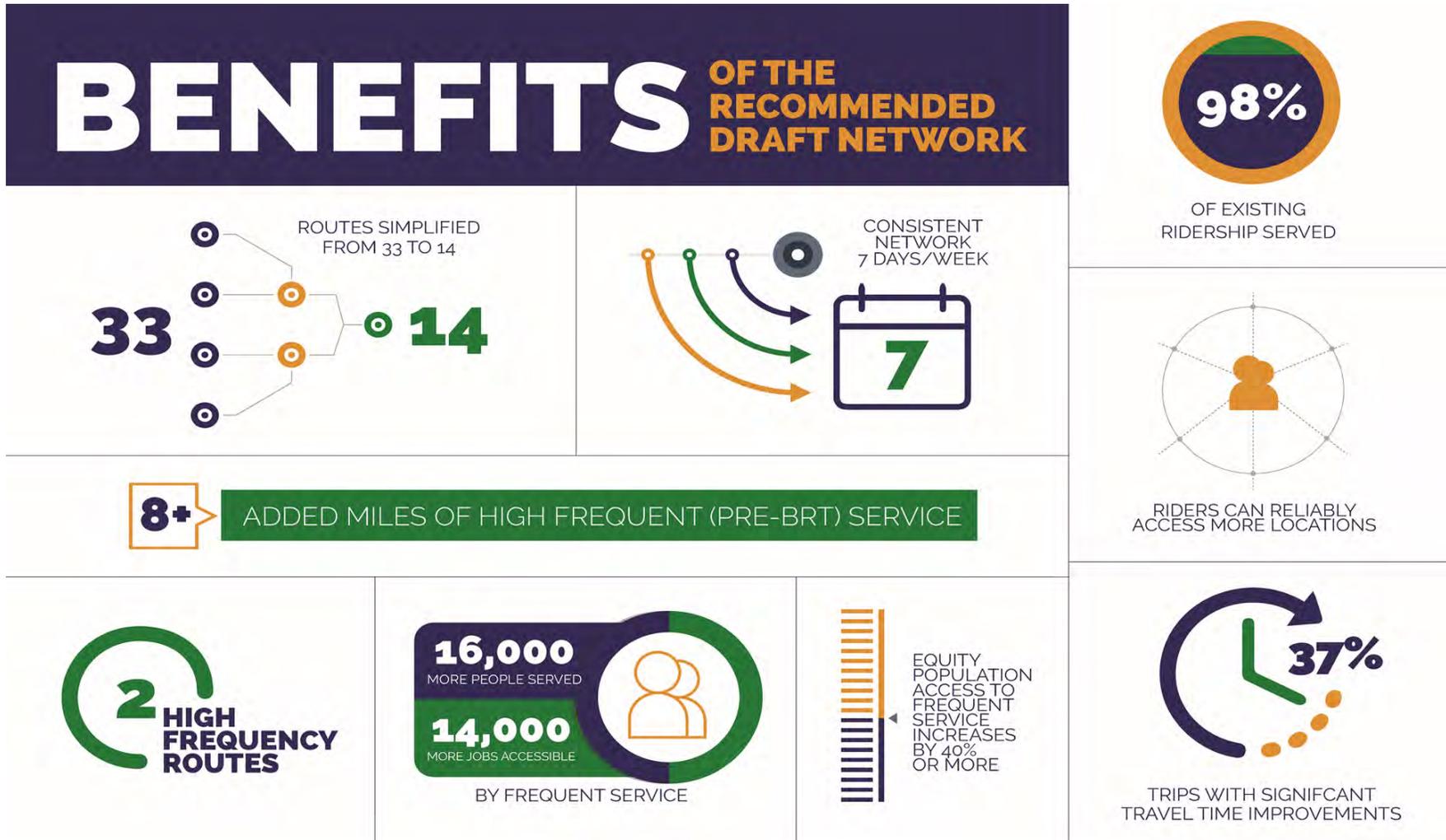
The Recommended Draft Network will provide more attractive and reliable transit services for as many people as possible, improve access and travel to key destinations and employment areas, and provide a more consistent transit system for all days of the week in the Twin Ports region. The proposed network is a cost neutral plan³ that will be easier to navigate for both existing and new riders, due to a consolidated route structure and the removal of seasonal and AM/PM peak focused services. Each route will provide service along the same alignment on both weekdays and weekends. Weekend service is planned to expand by approximately 25% to help better facilitate the needs of the region

The proposed network will provide over eight additional miles of high frequency service on two pre-BRT routes with potential to serve over 16,000 more people and 14,000 more jobs within walking distance compared to the existing network. These services will operate between many major destinations and will create more consistent corridor trips, meaning that buses are less likely to bunch together and will arrive at stops adequately spaced throughout the day. Those with access to the pre-BRT routes will also experience reduced wait and transfer times and will often be able to utilize the service without needing to rely on a schedule.

The Recommended Draft Network will serve approximately 98% of the existing DTA riders and should provide a more attractive transit service for the Twin Ports region. Most residents will experience significant travel time and access improvements, especially for those along the high frequency service corridors or traveling to/from key activity centers and other major destinations like colleges and commercial areas. Identified equity groups will also experience improved transit trip quality and access to these locations. **Figure 29** displays a graphic summary of the major benefits of the Recommended Draft Network.

³ A cost neutral plan refers to the hours of operation and overall cost will be the same between the existing and Draft Recommended Network.

Figure 29: Recommended Draft Network Benefits Summary



Appendix A: TAG – Route Workshop Summary and Concept Evaluation Presentation

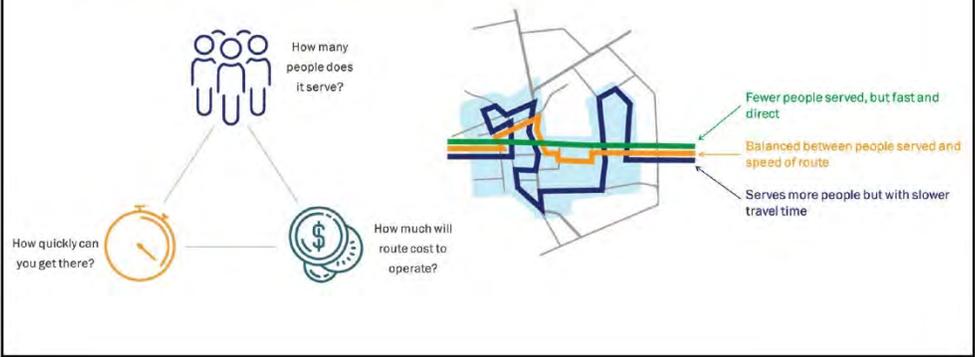


What goes into route planning?

- How often does the bus come? 
- Where does the bus go? 
- Can the bus reliably get you to your destination? 
- What days does the bus operate? 
- How far do I have to walk to access the bus? 

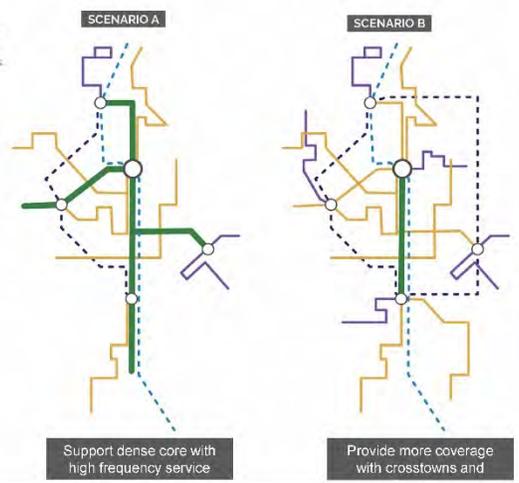
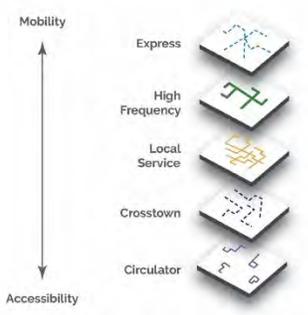


Tradeoffs & Potential Outcomes



Service Layers Form a Network

A transit network is developed by layering different service types that serve distinct markets. A high mobility network will emphasize more rapid and express routes. A high access network will emphasize more circulator routes.





Service Types

High Frequency	all-day, high frequency connections to activity centers
Frequent Local	all-day, frequent service on main travel corridors
Local	all-day, basic service on main travel corridors
Crosstown	all-day, serving main travel corridors away from DTC
Circulator	fixed route distribution service for lower density locations
Flex Zones	on-demand mobility service for lower density locations
Express	weekday only peak period service to activity centers



Define Draft Scenarios

- A. Frequency Focus**
Most resources for connections to activity centers and core; most transfers made at DTC
- B. Frequency Balance**
Resources focused on main travel corridors; most transfers made at DTC
- C. Access Balance**
Resources focused on main travel corridors, with some routes providing access outside the core; some transfers made at outer locations
- D. Access Focus**
Resources focused on main travel corridors, with more routes providing access outside the core; most transfers made at outer locations

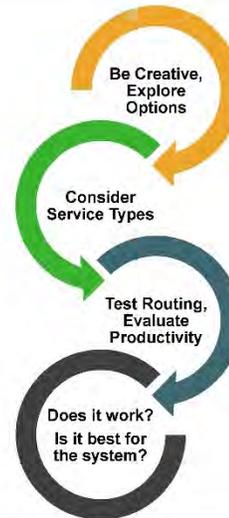
Selected Concepts

Concept 1- Frequency Focused

- High frequency service on core routes
- Use of circulators to transfer at hubs for lower density destinations

Concept 2 – Frequency Balanced

- Less frequent service on core routes
- Additional circulation / coverage service and more one-seat rides



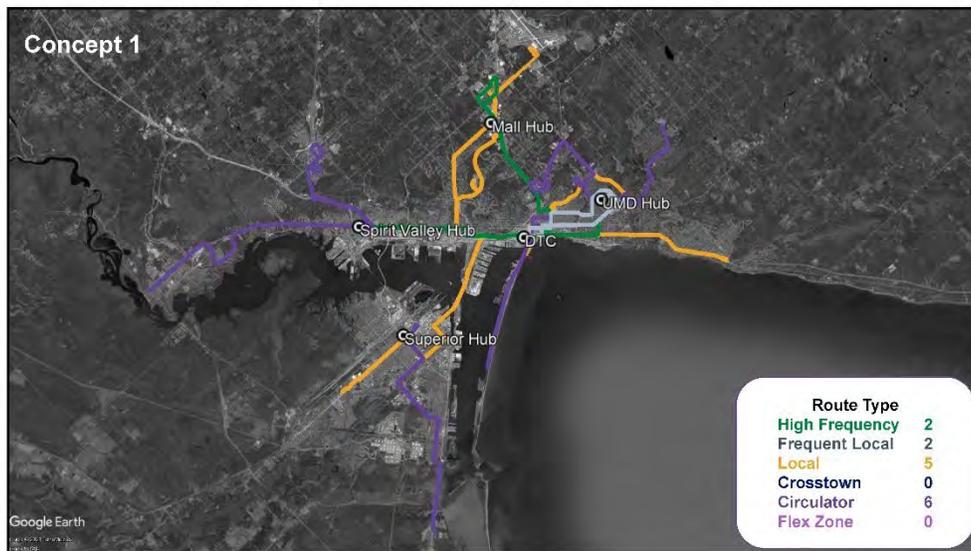
Concept Review

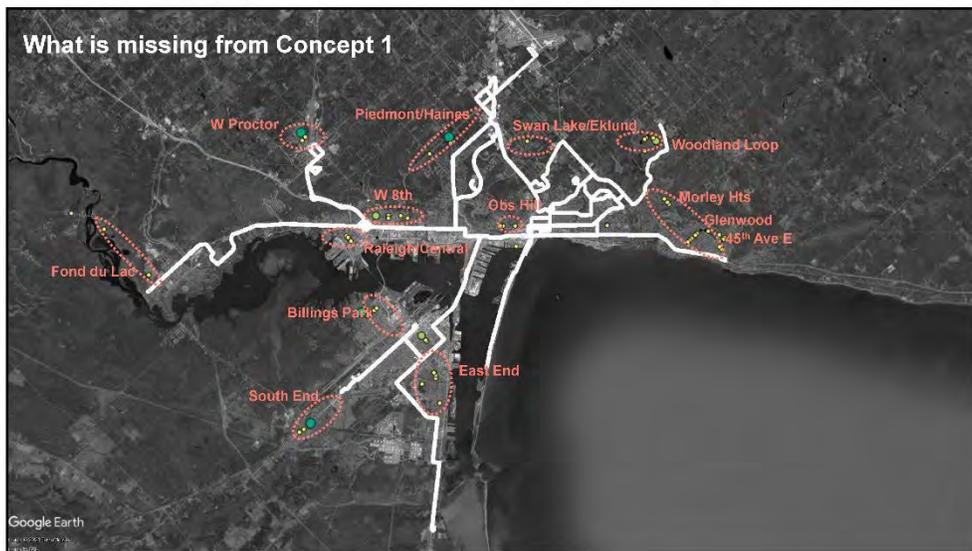


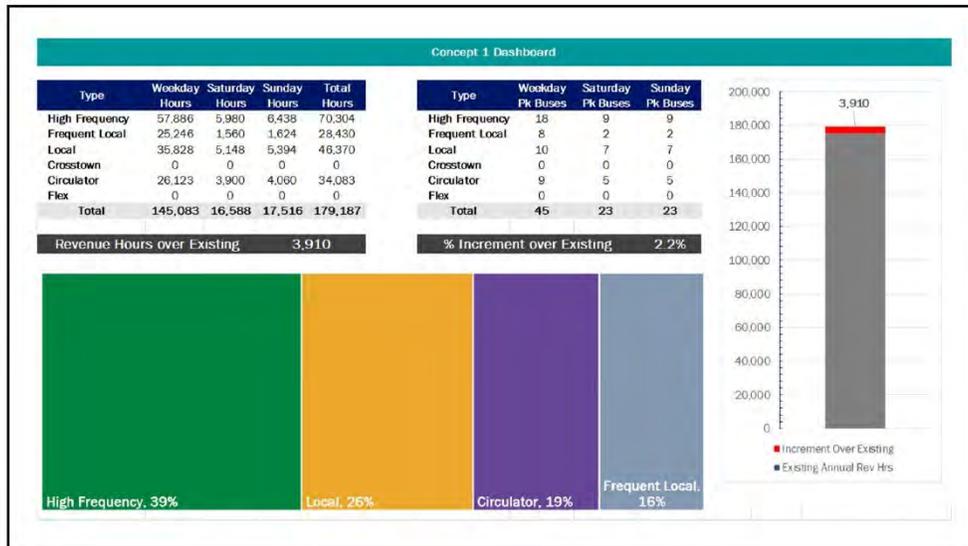


Concept 1 Frequency Focus

Two **High Frequency** and two Frequent Local routes
Use of circulators to transfer at hubs for lower density destinations







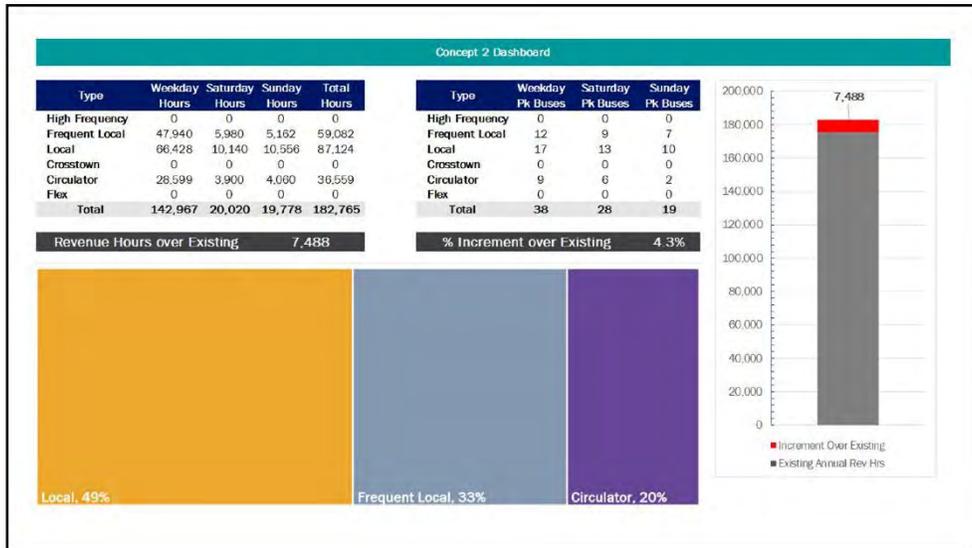
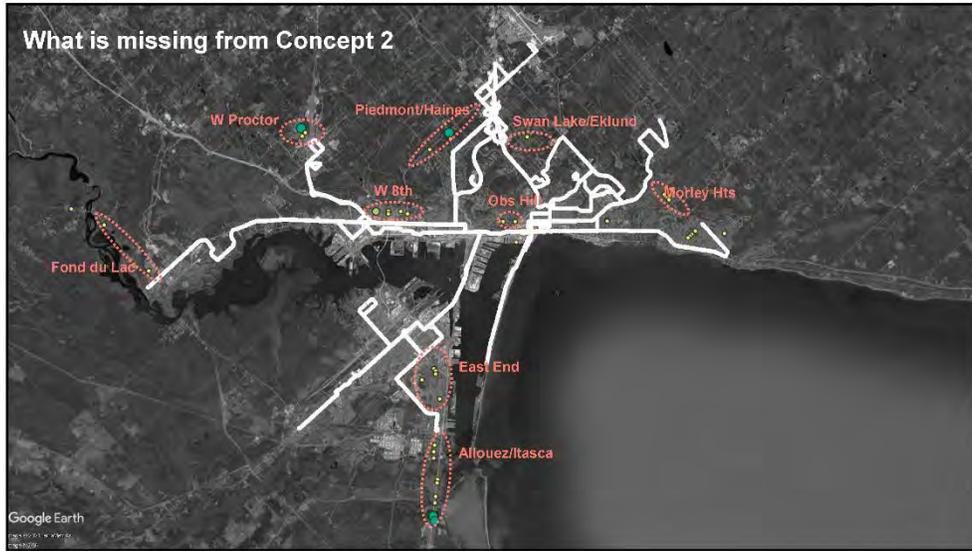


Concept 2 Frequency Balanced

- Reduced service levels on core routes
- Outward extension of Woodland and New Duluth routes to provide one-seat rides to DTC
- Coverage route on Colalillo Way/W Superior
- Hermantown Circulator
- Additional service in Lakeside



What is missing from Concept 2



Frequency Comparison



Existing Frequency Weekday





Concept 1 Frequency Weekday



Concept 2 Frequency Weekday

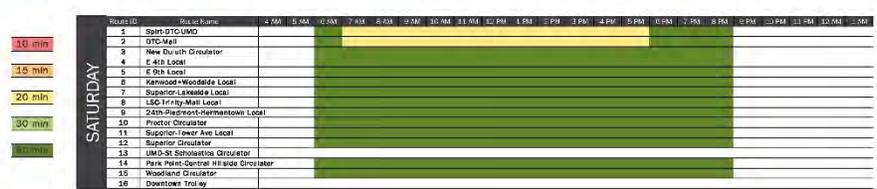




Existing Frequency Saturday

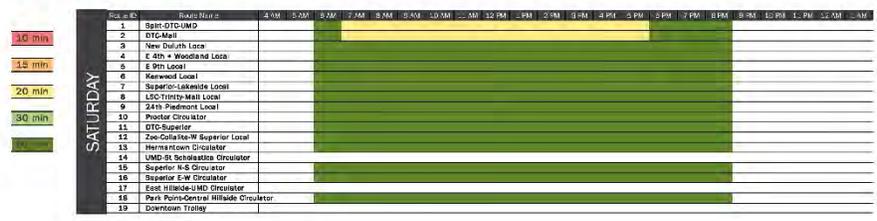


Concept 1 Frequency Saturday





Concept 2 Frequency Saturday



Existing Frequency Sunday





Concept 1 Frequency Sunday

Route ID	Route Name	4 AM	5 AM	6 AM	7 AM	8 AM	9 AM	10 AM	11 AM	12 PM	1 PM	2 PM	3 PM	4 PM	5 PM	6 PM	7 PM	8 PM	9 PM	10 PM	11 PM	12 AM
1	Sprint-DTC/UMD																					
2	DTC-Mail																					
3	New DuSith Circulator																					
4	E 4th Local																					
5	E 9th Local																					
6	Kennwood + Woodbine Local																					
7	Superior-Lansdale Local																					
8	LSC Trinity-Mail Local																					
9	24th Piedmont-Harmanstown Local																					
10	Proctor Circulator																					
11	Superior-Tower Ave Local																					
12	Superior Circulator																					
13	UMD-St. Scholastica Circulator																					
14	Park Point-Central Hillside Circulator																					
15	Woodland Circulator																					
16	Downtown Trolley																					

- 10 min
- 15 min
- 20 min
- 30 min
- 45 min

SUNDAY



Concept 2 Frequency Sunday

Route ID	Route Name	4 AM	5 AM	6 AM	7 AM	8 AM	9 AM	10 AM	11 AM	12 PM	1 PM	2 PM	3 PM	4 PM	5 PM	6 PM	7 PM	8 PM	9 PM	10 PM	11 PM	12 AM
1	Sprint-DTC/UMD																					
2	DTC-Mail																					
3	New DuSith Local																					
4	E 4th + Woodland Local																					
5	E 9th Local																					
6	Kennwood Local																					
7	Superior-Lansdale Local																					
8	LSC Trinity-Mail Local																					
9	24th Piedmont Local																					
10	Proctor Circulator																					
11	DTC Superior																					
12	Zoo-Collins-W Superior Local																					
13	Harmanstown Circulator																					
14	UMD-St. Scholastica Circulator																					
15	Superior N-S Circulator																					
16	Superior E-W Circulator																					
17	East Hillside-UMD Circulator																					
18	Park Point-Central Hillside Circulator																					
19	Downtown Trolley																					

- 10 min
- 15 min
- 20 min
- 30 min
- 45 min

SUNDAY

Concept Evaluation



Evaluation points the way to recommendations



Fundamental questions:

- Are we connecting people to where they want to go?
- How quickly can people make their trip?
- How can we attract people to ride as pandemic winds down?
- How much tolerance for change?
- Are we satisfied with some trips getting worse if lots of trips get better?



Three key areas of review

Coverage

How well does each concept provide DTA service to jobs and people?

Trip Quality

How efficient is each concept at connecting people to where they want to go?

Equity

Are we making sure our most vulnerable citizens are being served?

Coverage Evaluation

How well does each concept provide DTA service to jobs and people?



Key Finding

Both concepts show a decrease in coverage of population and employment, but only 2% of existing riders are not within 0.25 miles of DTA service.



Residential Coverage

	Existing	Concept 1	Concept 2
0.25-mile coverage area	108,882 (100%)	91,022 (84%)	101,216 (93%)
<i>Reduction</i>		-17,860	-7,666
0.75-mile coverage area	112,329 (100%)	107,749 (96%)	109,012 (97%)
<i>Reduction</i>		-4,580	-3,317



Employment Coverage

	Existing	Concept 1	Concept 2
0.25-mile coverage area	75,637 (100%)	70,809 (94%)	71,823 (95%)
<i>Reduction</i>		-4,828	-3,814
0.75-mile coverage area	80,593 (100%)	79,404 (98%)	80,262 (99%)
<i>Reduction</i>		-1,189	-331



Existing Ridership Coverage

	Existing	Concept 1	Concept 2
Average Weekday Ridership Coverage (1/4 mile)	9,912 (100%)	9,667 (97.5%)	9,732 (98.2%)
<i>Reduction</i>		-245	-180



Existing Ridership Not Covered

Notes:
Each network uses 0.25 mile buffer
Some stops are end of line where ridership is inflated by drivers getting on/off



Key Finding

Population with access to frequent service almost doubles in both concepts

Access to Frequent Service

	Existing	Concept 1	Concept 2
Population with Access to Frequent Service (1/4 mile)	18,461 (100%)	36,176 (195%)	36,819 (199%)
Increase		+17,715	+18,358

Frequent service defined as weekday 15-minute or better headways



Trip Quality

How efficient is each concept at connecting people to where they want to go?



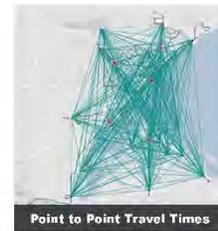
Key Finding

Concepts would see drastic travel time improvements:
 Average of 18 minutes saved per trip in Concept 1
 Average of 9 minutes saved per trip in Concept 2



Net Average Travel Time

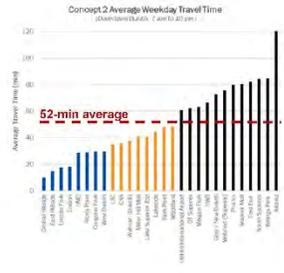
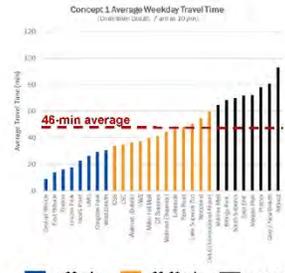
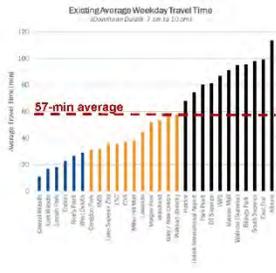
	Existing	Concept 1	Concept 2
Weekday	93 min	75 min (-19%)	84 min (-10%)
Saturday	103 min	91 min (-12%)	92 min (-11%)
Sunday	119 min	91 min (-24%)	92 min (-23%)
Net Improvement	-	19%	15%
Percent of trips that get 25% better	-	32%	23%
Percent of trips that get 25% worse	-	7%	3%



Travel notes:
 Travel between 7a – 10p
 Between 25 selected points throughout the region
 Times include walk time, wait time, and in-vehicle travel time
 Travel times aggregated to create this measure



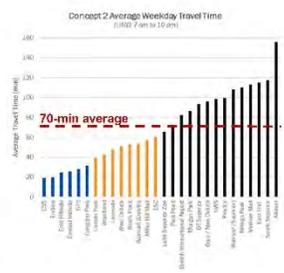
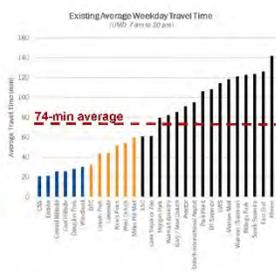
Downtown Duluth Avg Travel Times



Note: For travel between 7 am – 10 pm measured on weekdays



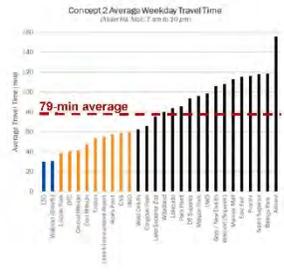
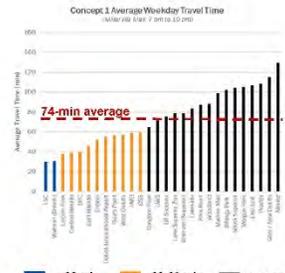
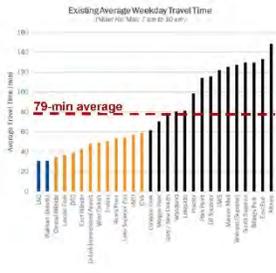
UMD Avg Travel Times



Note: For travel between 7 am – 10 pm measured on weekdays



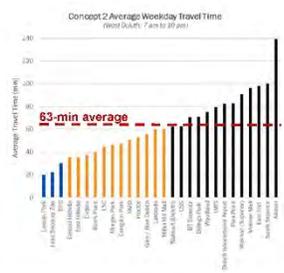
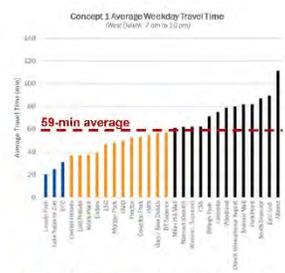
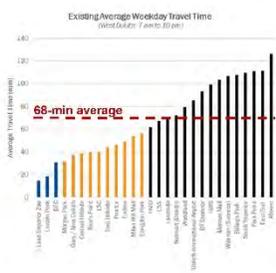
Miller Hill Mall Avg Travel Times



Note: For travel between 7 am – 10 pm measured on weekdays



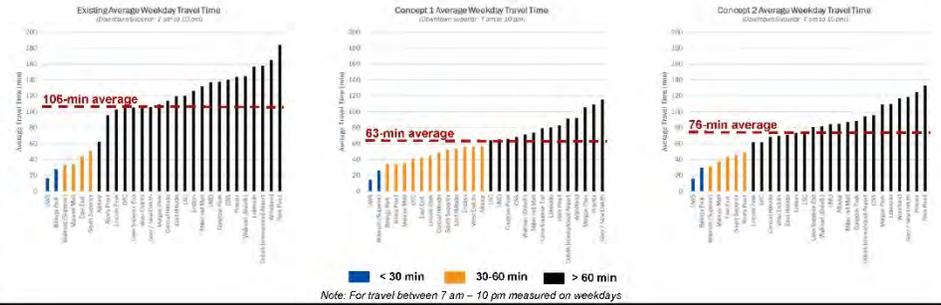
West Duluth Avg Travel Times



Note: For travel between 7 am – 10 pm measured on weekdays



Downtown Superior Avg Travel Times



Quality Transit Area (QTA)

QTA is area with three components:

- Accessibility – gets rider where they want to go
- Mobility – rider gets there quickly
- Consistency – rider can reliably make the trip over the entire day

We measured the area of the region that can be accessed by quality transit, which gives us the Quality Transit Area expressed in square miles



Key Finding

The area with where you can reliably make a 60-minute transit trip improves across all concepts and days of week:

+18%		+8%		+27% in Concept 1
+5%		+7%		+23% in Concept 2
Weekday		Saturday		Sunday



Quality Transit Area

	Existing	Concept 1	Concept 2
Weekday	85 sq mi	101 sq mi	90 sq mi
Increase		+16 sq mi (+18%)	+5 sq mi (+5%)
Saturday	70 sq mi	76 sq mi	75 sq mi
Increase		+6 sq mi (+8%)	+5 sq mi (+7%)
Sunday	59 sq mi	74 sq mi	72 sq mi
Increase		+15 sq mi (+27%)	+13 sq mi (+23%)

Transit travel defined as:
 Between 7a – 10p
 From five main activity centers (DTC, UMD, West Duluth, Superior, Miller Hill Mall)
 With 75% or better reliability
 Measured as area accessed in square miles, with all five areas added together



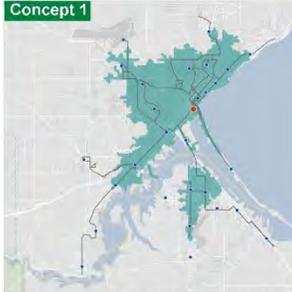
QTA for Downtown Duluth

DTC 60 min access Area (75% or greater)			
	Existing	Concept 1	Concept 2
Total Sq Miles	22	31	26
% Change	-	37%	16%

Existing



Concept 1



Concept 2



Note: For travel between 7 am – 10 pm measured on weekdays



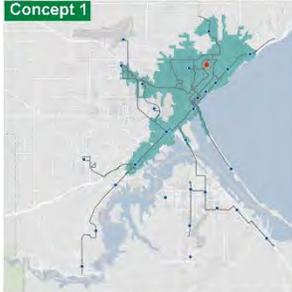
QTA for UMD

UMD 60 min access Area (75% or greater)			
	Existing	Concept 1	Concept 2
Total Sq Miles	16	21	19
% Change	-	28%	16%

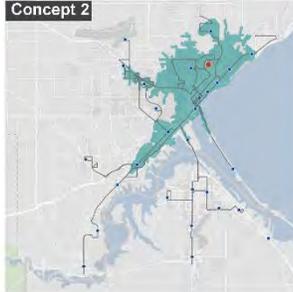
Existing



Concept 1



Concept 2



Note: For travel between 7 am – 10 pm measured on weekdays



QTA for Miller Hill Mall

Miller Hill Mall 60 min access Area (75% or greater)			
	Existing	Concept 1	Concept 2
Total Sq Miles	18.9	18.8	18.6
% Change	-	-1%	-2%

Existing



Concept 1



Concept 2



Note: For travel between 7 am – 10 pm measured on weekdays



QTA for West Duluth

West Duluth 60 min access Area (75% or greater)			
	Existing	Concept 1	Concept 2
Total Sq Miles	19	17.5	17.0
% Change	-	-8%	-8%

Existing



Concept 1



Concept 2



Note: For travel between 7 am – 10 pm measured on weekdays



QTA for Downtown Superior

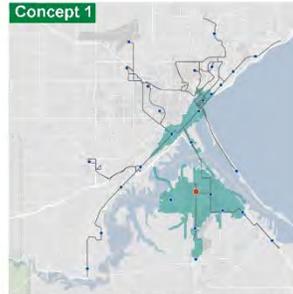
Downtown Superior 60 min access Area (75% or greater)

	Existing	Concept 1	Concept 2
Total Sq Miles	9	13	9
% Change	-	42%	3%

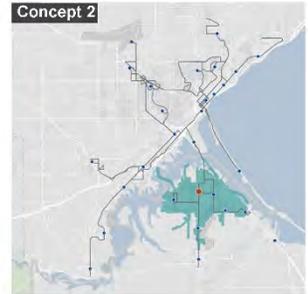
Existing



Concept 1



Concept 2



Note: For travel between 7 am – 10 pm measured on weekdays

Equity Evaluation

Are we making sure our most vulnerable citizens are being served?



Key Finding

When measured strictly by coverage, equity population coverage slightly decreases.
 When considering transit trip quality, equity population sees a drastic increase.



Equity Coverage

	Study Area	Existing	Concept 1	Concept 2	Existing	Concept 1	Concept 2
		1/4 Mile			3/4 Mile		
BIPOC coverage	12,399	10,808 (100%)	9,764 (90%)	10,261 (95%)	11,131 (100%)	10,936 (98%)	10,790 (97%)
Low Income HH coverage	16,575	14,061 (100%)	12,477 (89%)	13,258 (94%)	14,310 (100%)	13,845 (97%)	13,833 (97%)
Persons with Disabilities coverage	14,938	11,711 (100%)	9,943 (85%)	10,917 (93%)	11,962 (100%)	11,458 (96%)	11,537 (96%)



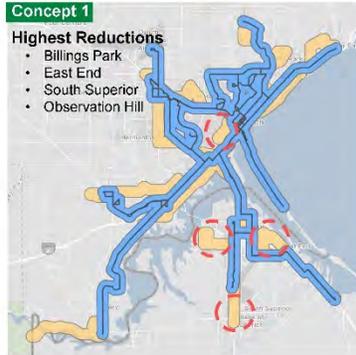
Equity Coverage Reduction Areas

Note:
Each network uses 0.25 mile buffer

Concept 1

Highest Reductions

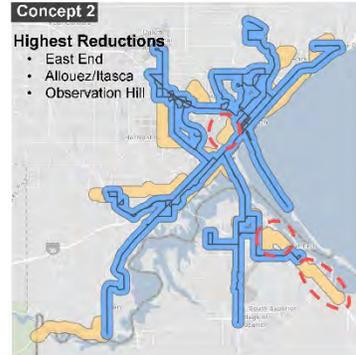
- Billings Park
- East End
- South Superior
- Observation Hill



Concept 2

Highest Reductions

- East End
- Allouez/Itasca
- Observation Hill



Equity Population Access to Frequent Service

Access to Frequent Service Characteristics (15 minute headways or better)					
	Total Population	BIPOC	Own 1 or less vehicles	Low Income HH	Jobs
Existing	18,461	3,079	1,739	4,088	27,245
Concept 1	36,176	4,818	2,740	6,254	42,965
Change over existing (Concept 1)	196%	156%	158%	153%	158%
Concept 2	36,819	4,977	2,822	6,320	43,079
Change over existing (Concept 2)	199%	162%	162%	155%	158%

Existing



Concept 1



Concept 2





QTA for Equity Population

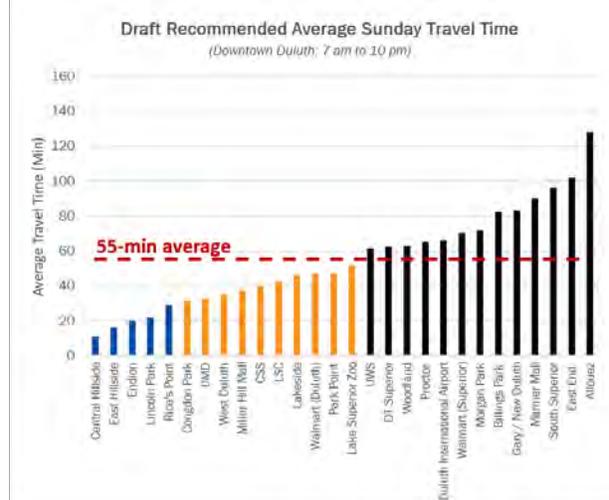
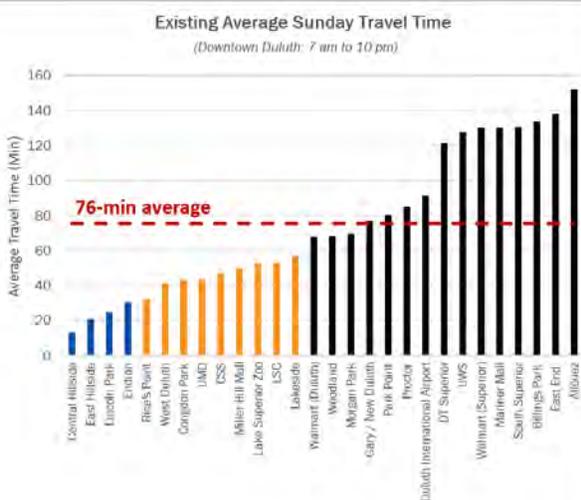
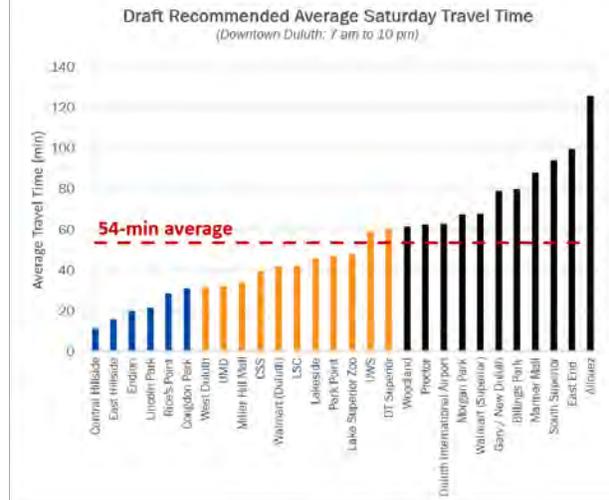
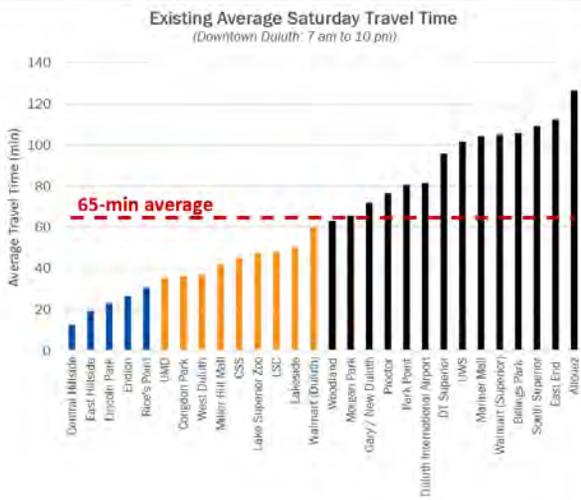
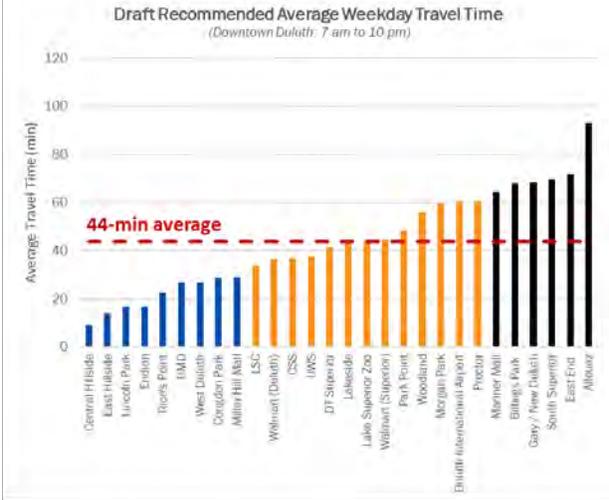
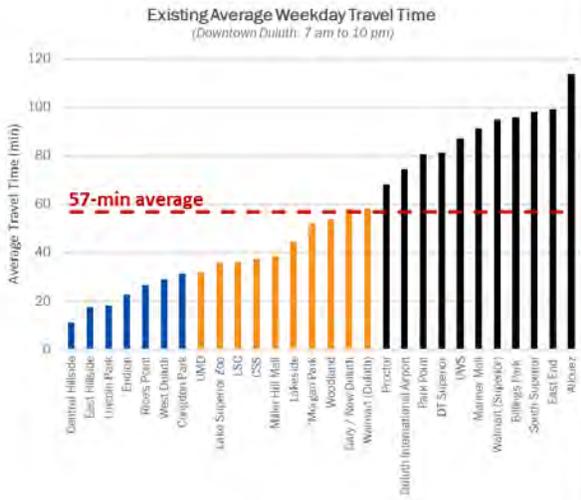
Change in Population Served with QTA					
	Total Population	BIPOC	Own 1 or less vehicles	Low Income HH	Jobs
Concept 1					
Downtown Duluth	33%	25%	35%	30%	22%
UMD	15%	13%	27%	19%	37%
Miller Hill Mall	7%	-2%	5%	-2%	-16%
West Duluth	22%	20%	5%	14%	18%
Downtown Superior	62%	138%	55%	126%	352%
Concept 2					
Downtown Duluth	6%	3%	7%	2%	7%
UMD	11%	9%	22%	14%	36%
Miller Hill Mall	-1%	-5%	-6%	-8%	-17%
West Duluth	12%	9%	-1%	2%	16%
Downtown Superior	0%	0%	0%	0%	0%

Top 10 Increases

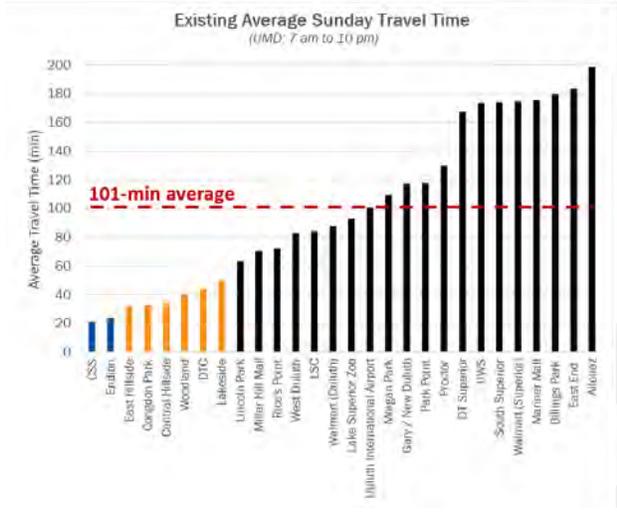
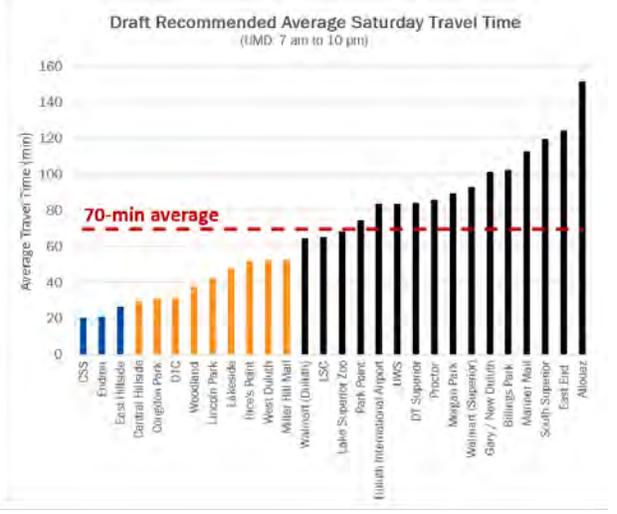
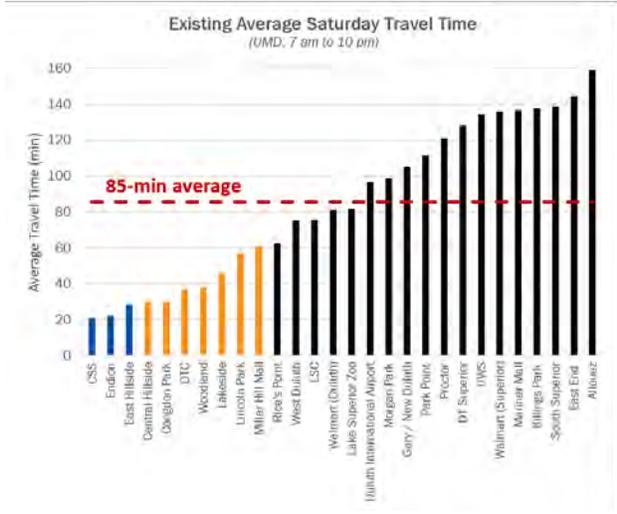
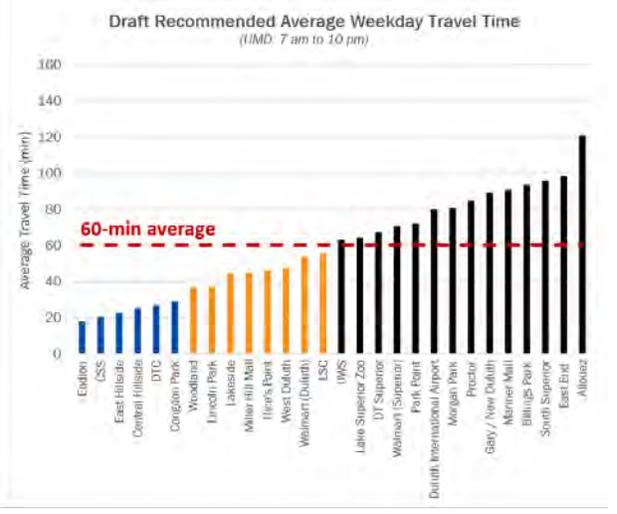
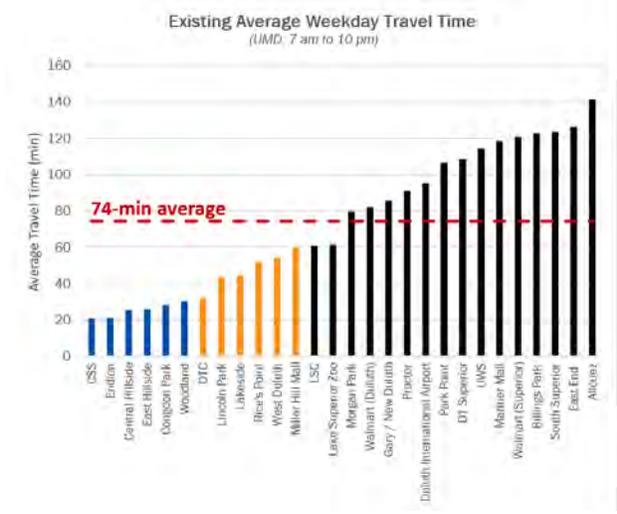
Note: For travel between 7 am – 10 pm measured on weekdays

Appendix B: Average Travel Time Results

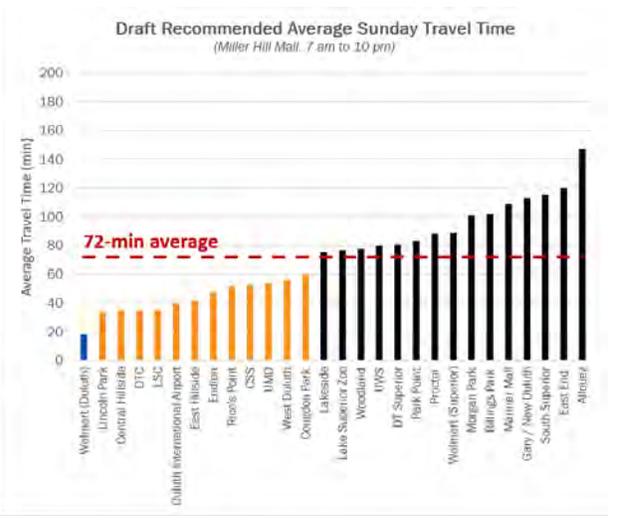
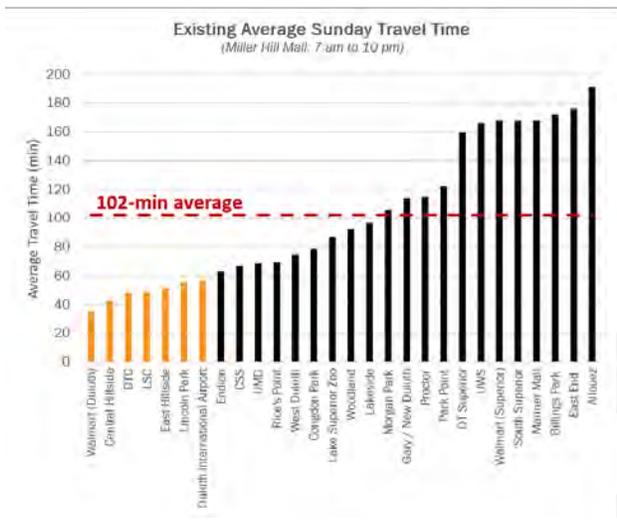
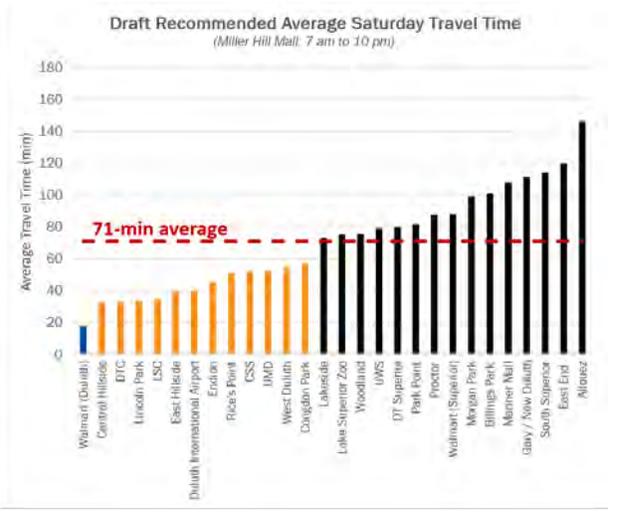
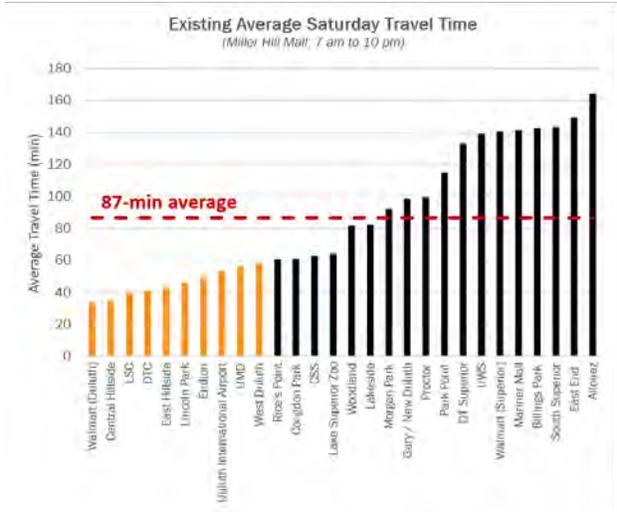
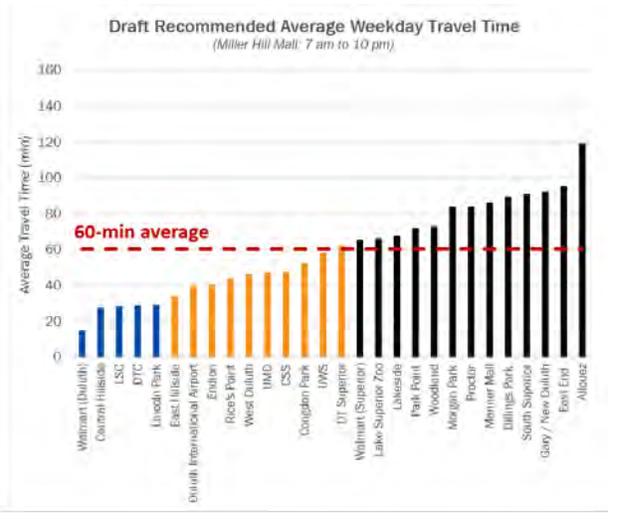
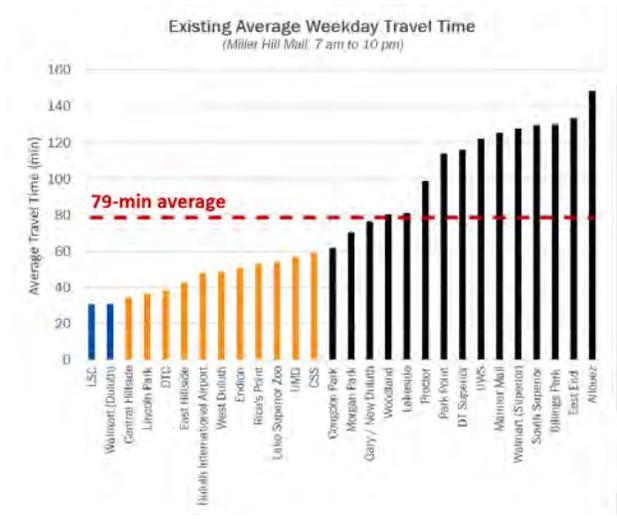
Average Travel Time to/from Downtown Duluth



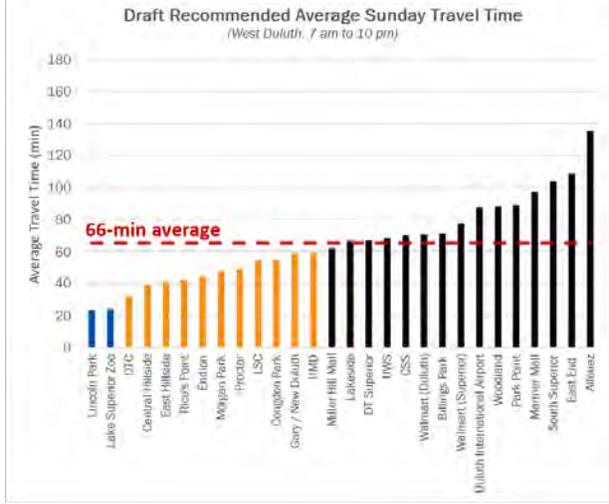
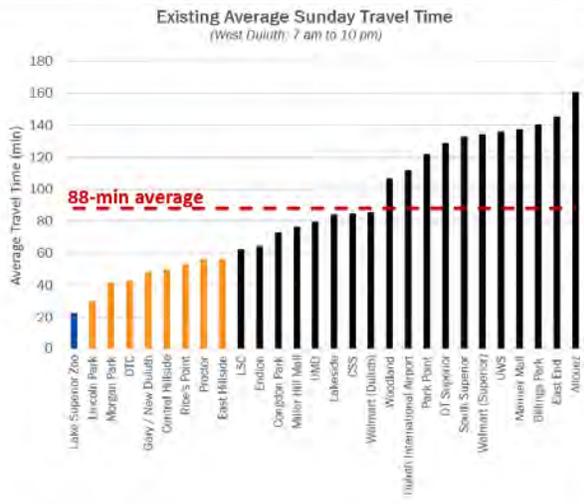
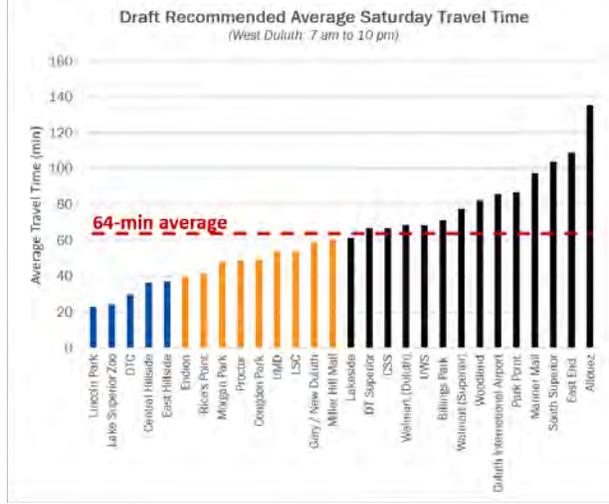
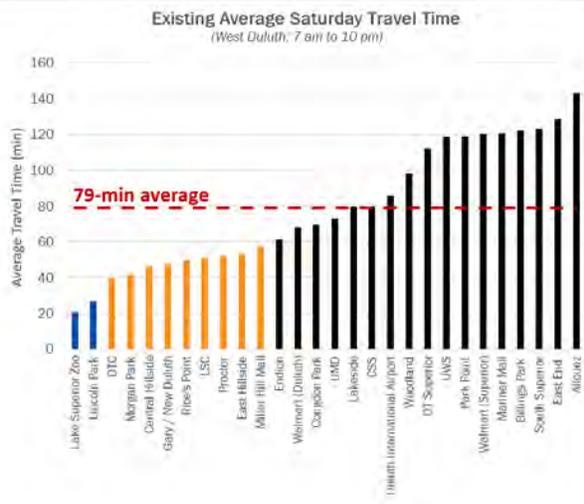
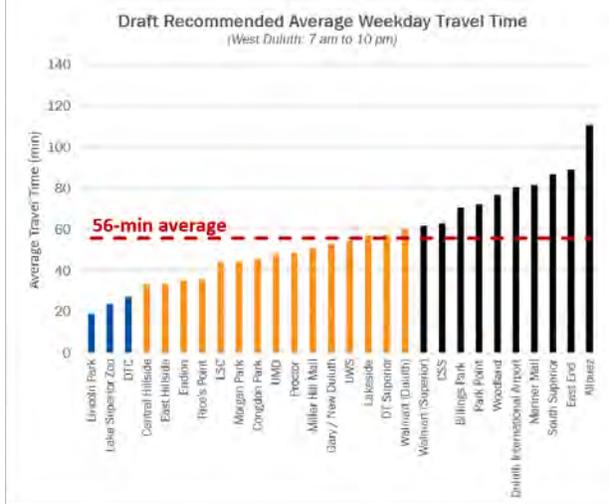
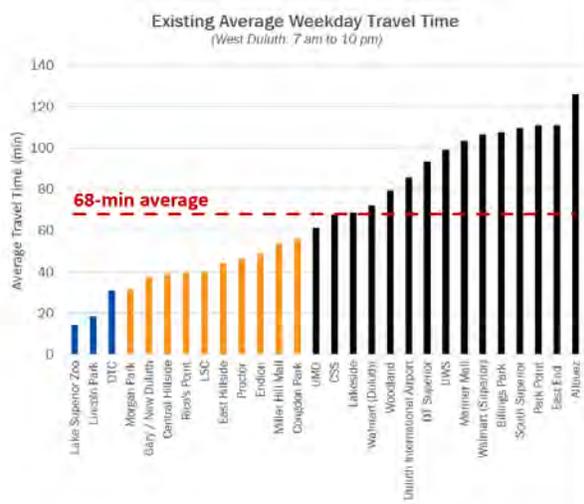
Average Travel Time to/from UMD



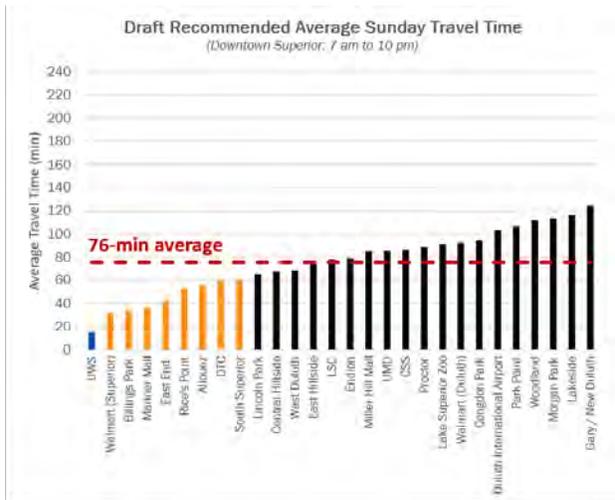
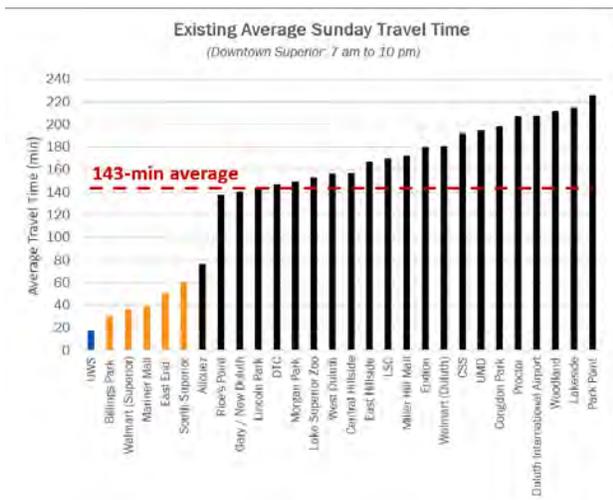
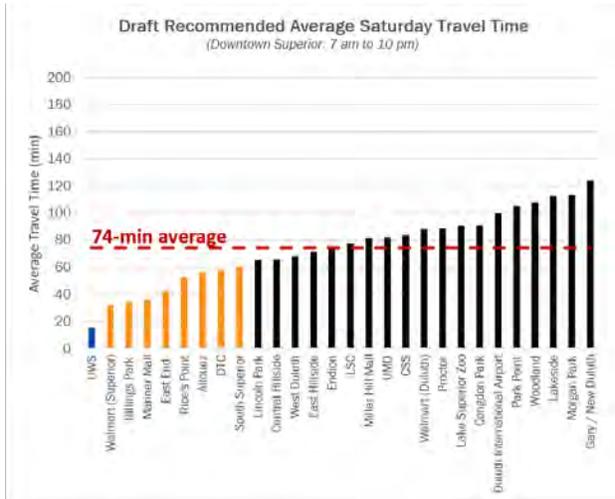
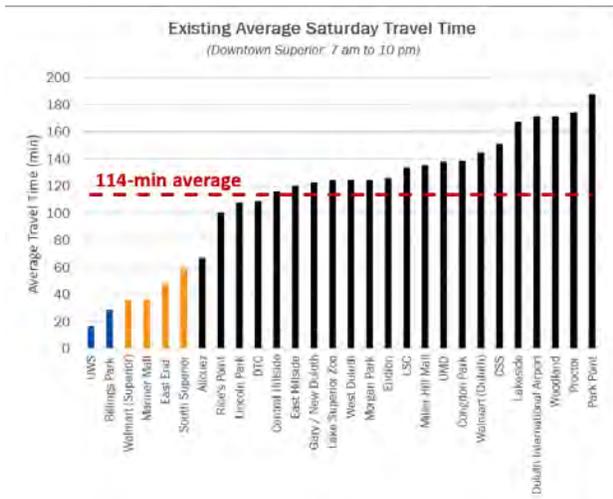
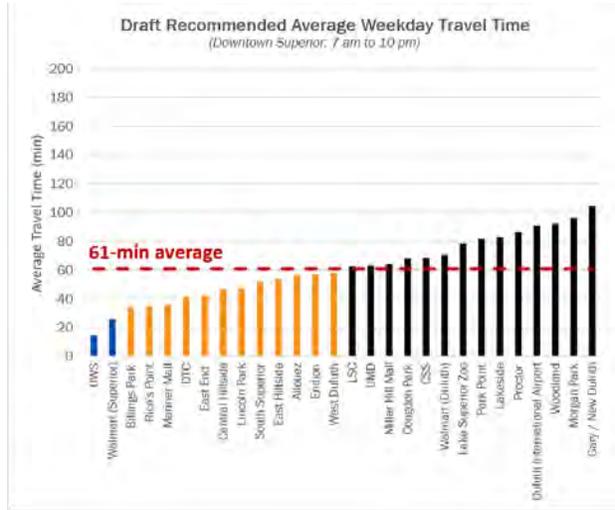
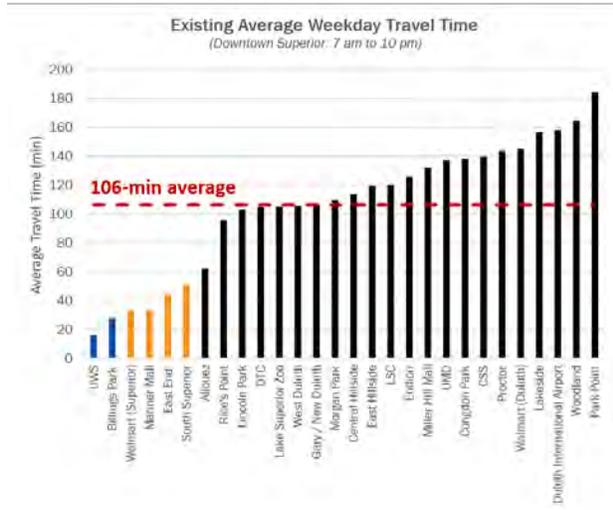
Average Travel Time to/from Miller Hill Mall



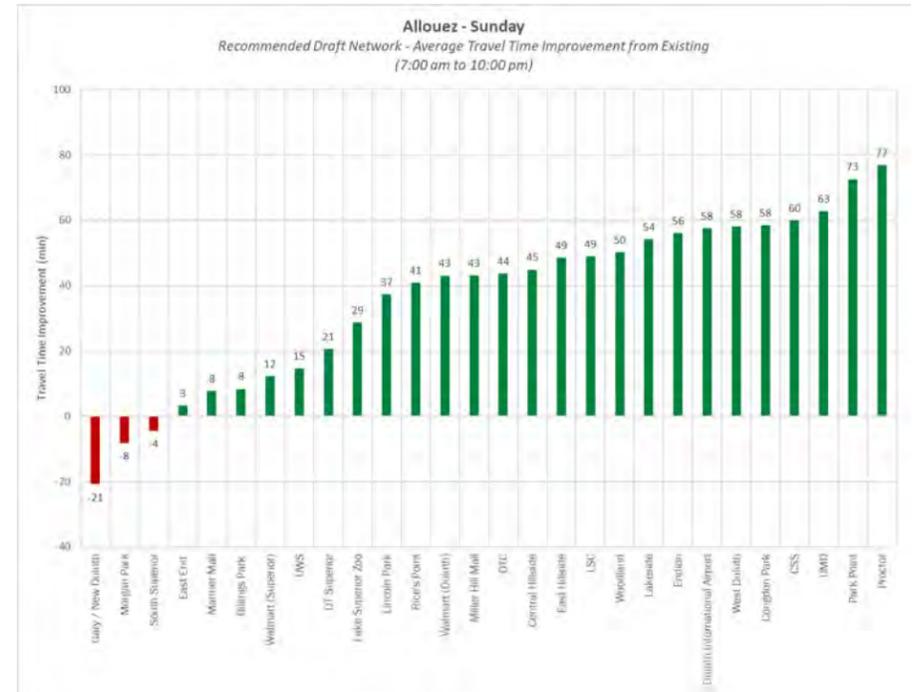
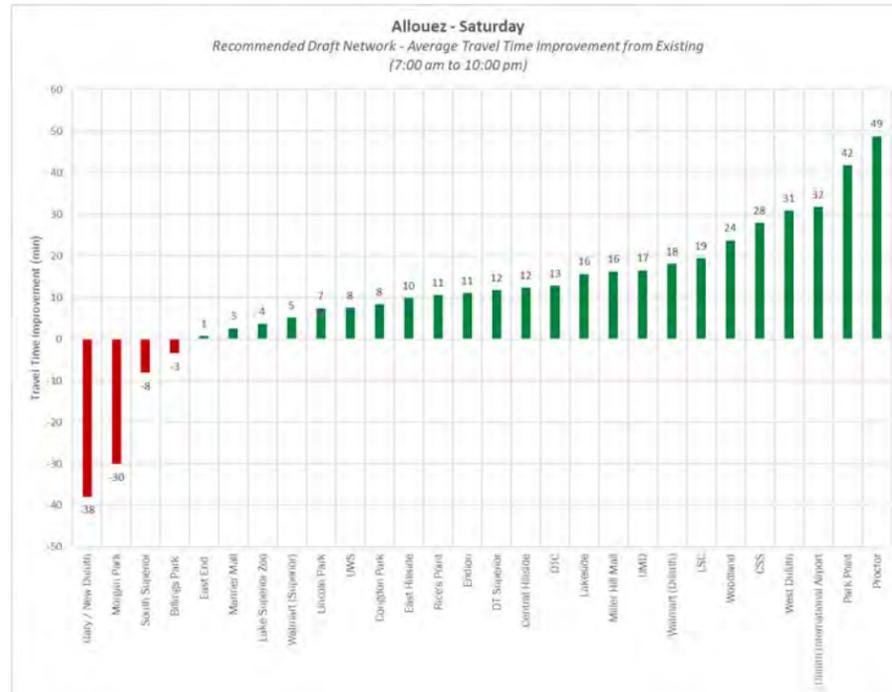
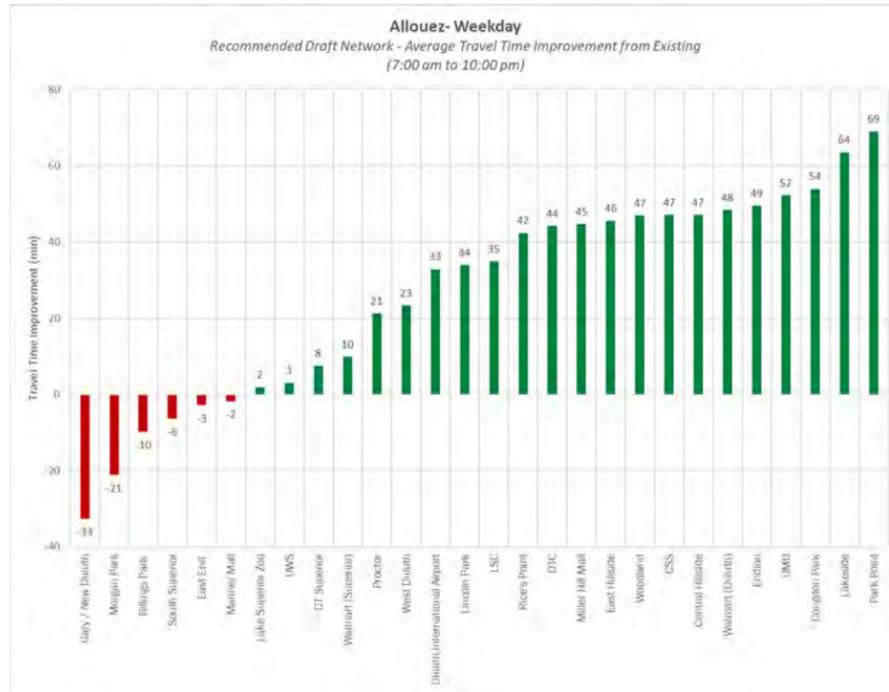
Average Travel Time to/from West Duluth



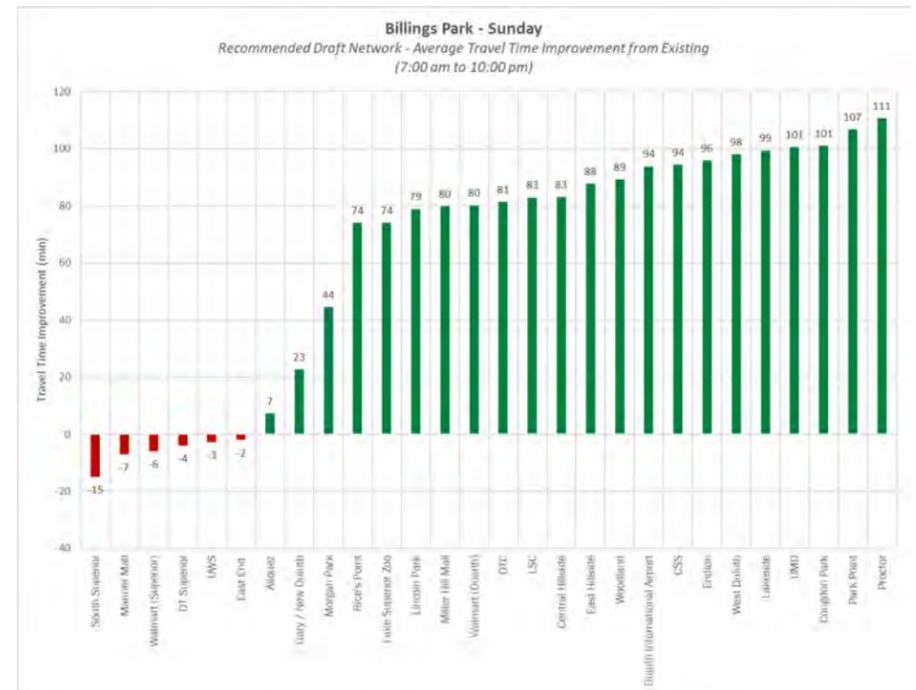
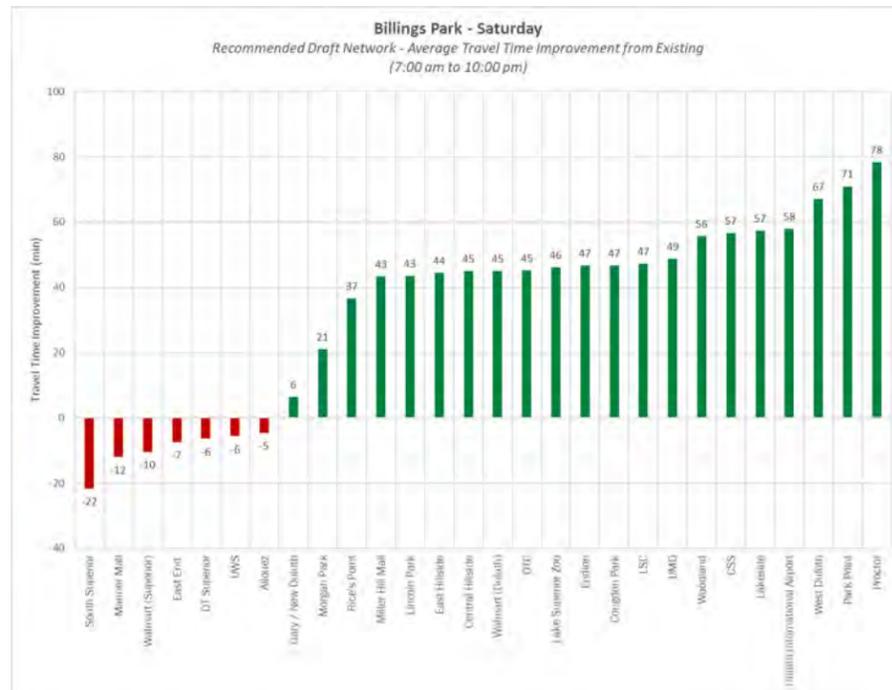
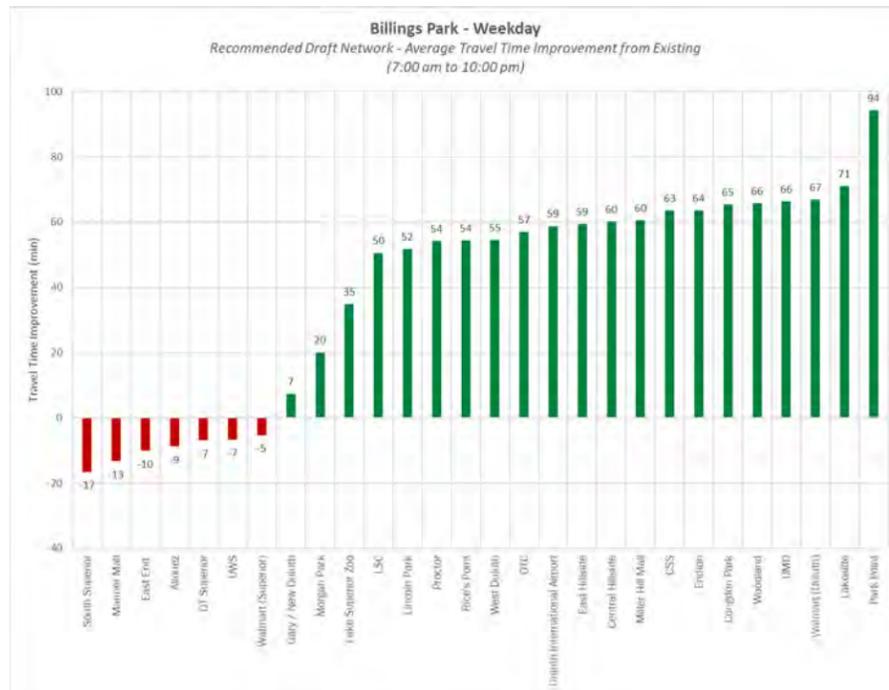
Average Travel Time to/from Downtown Superior



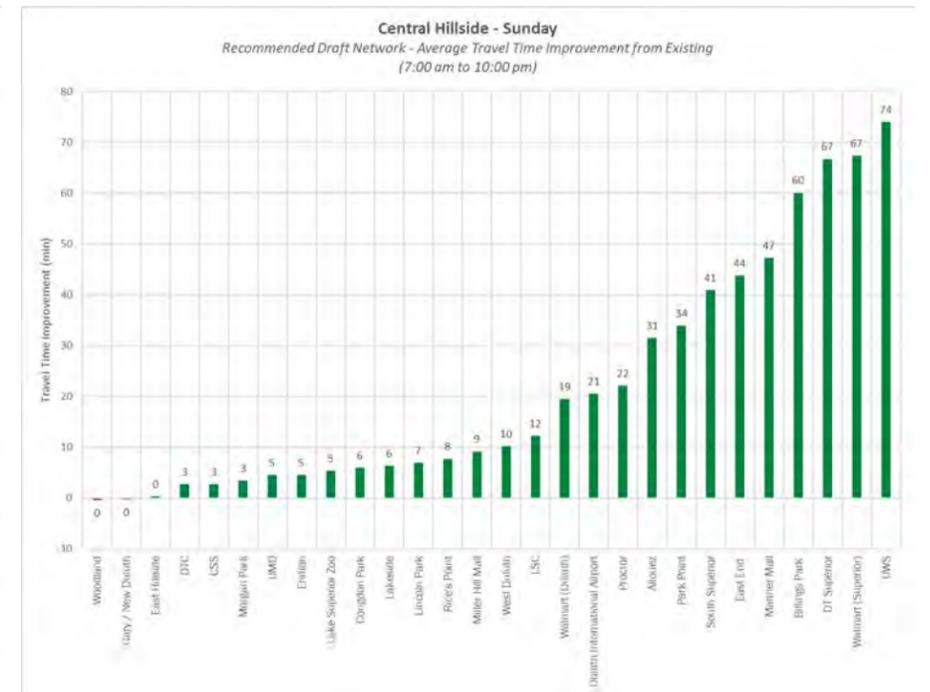
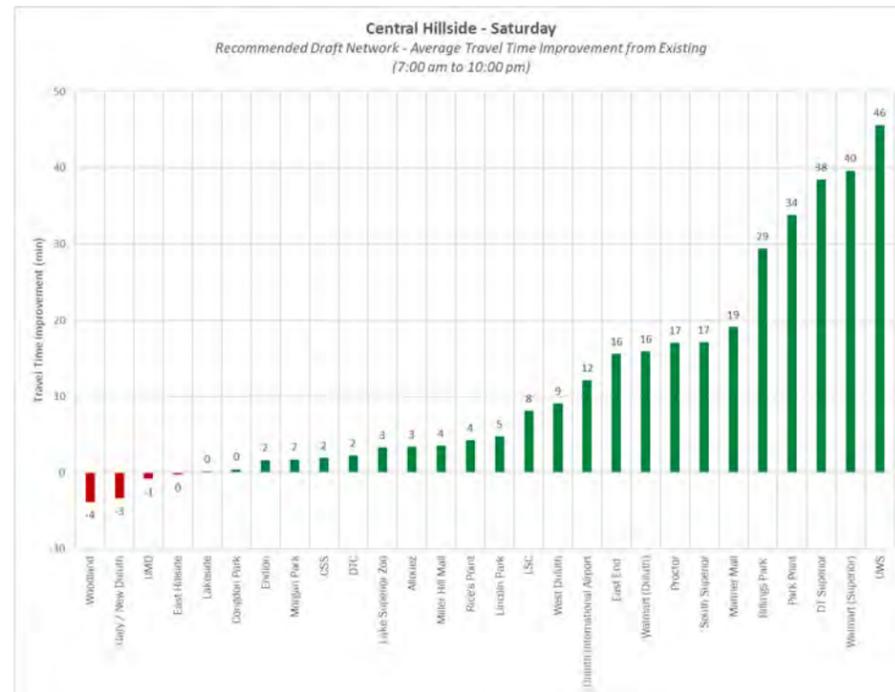
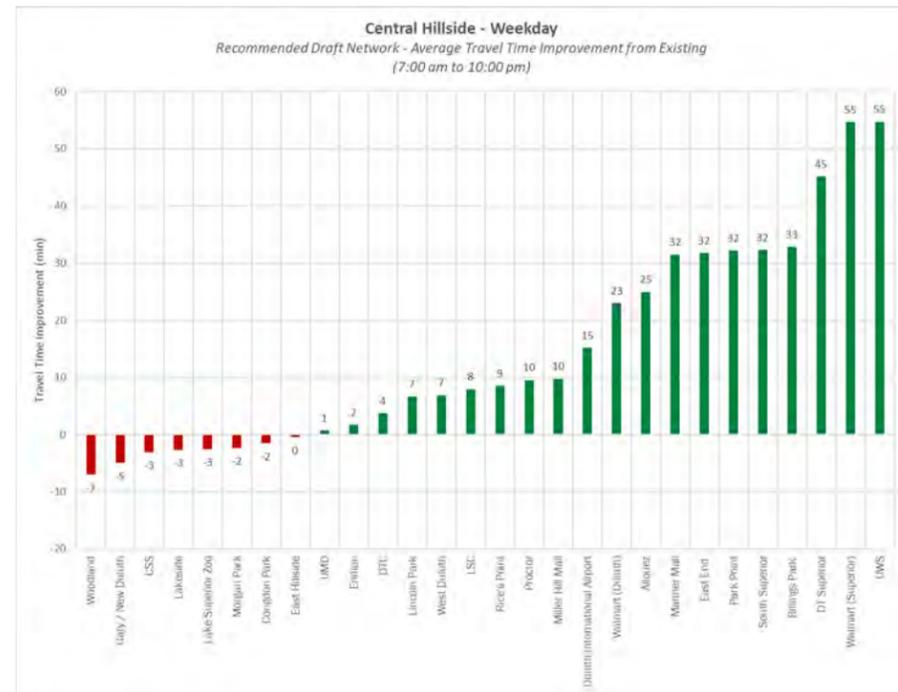
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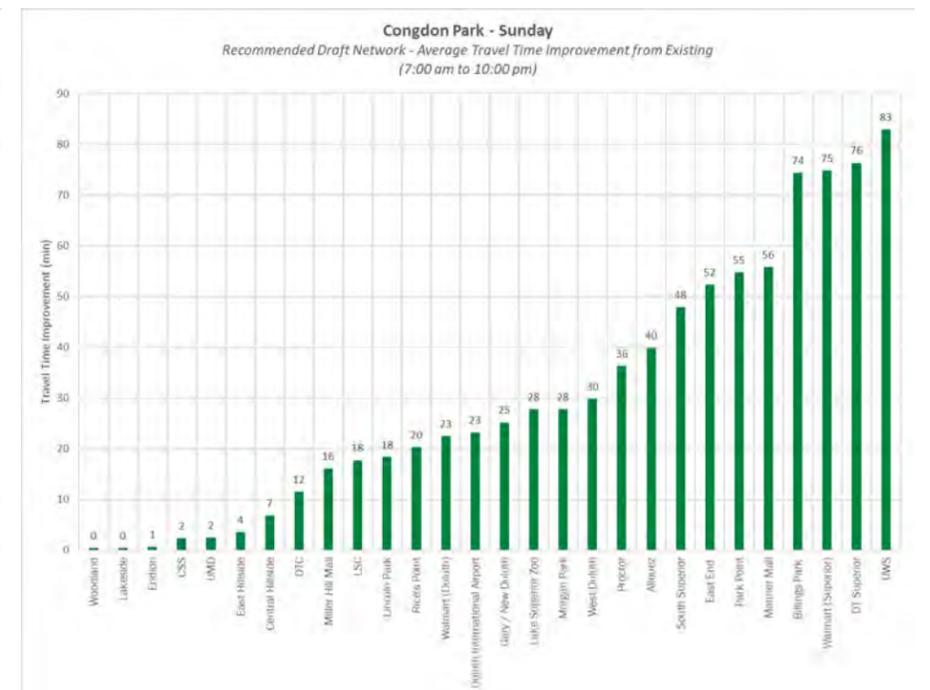
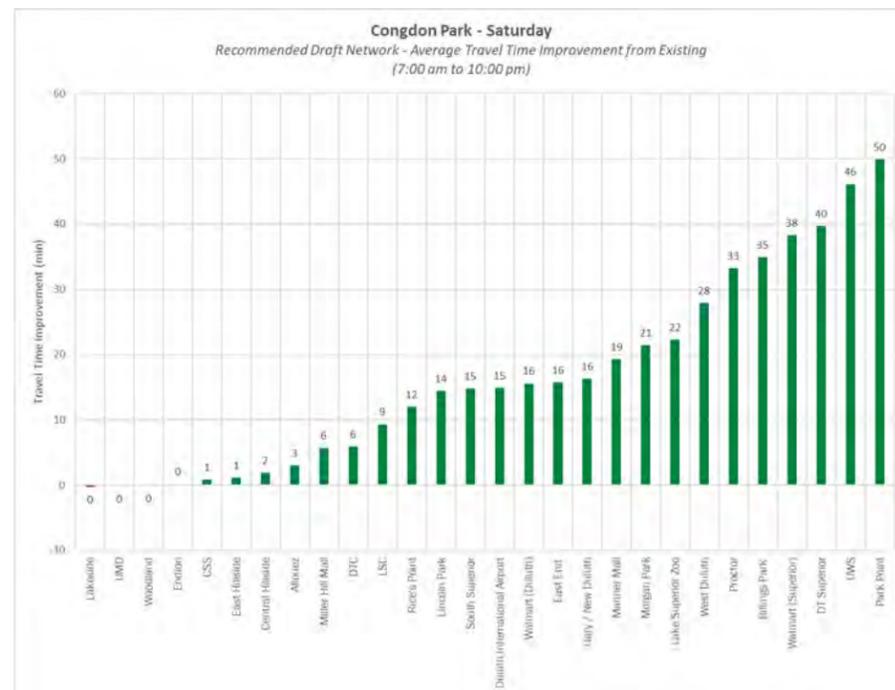
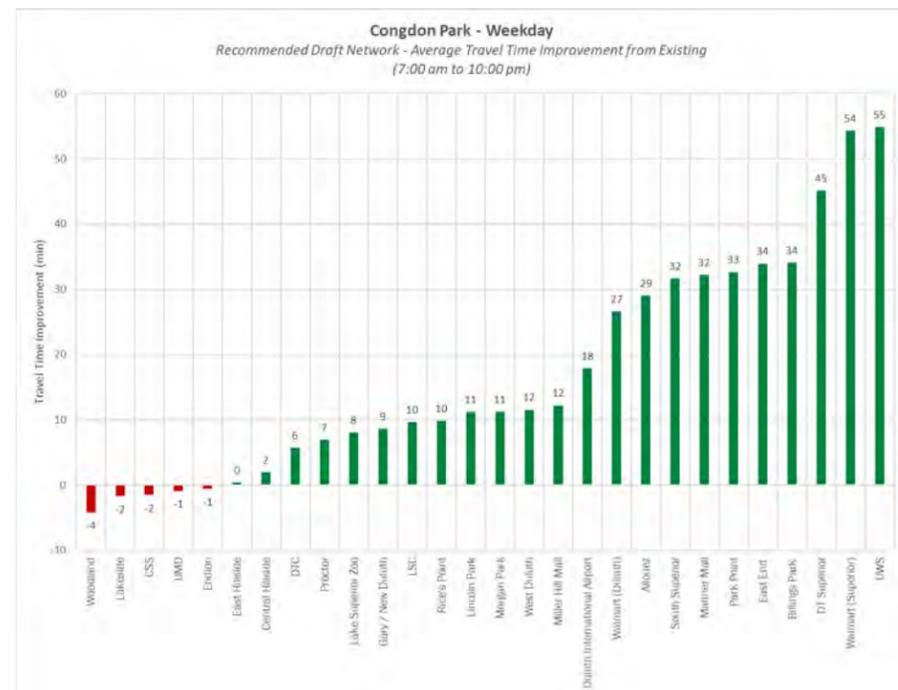
Billings Park



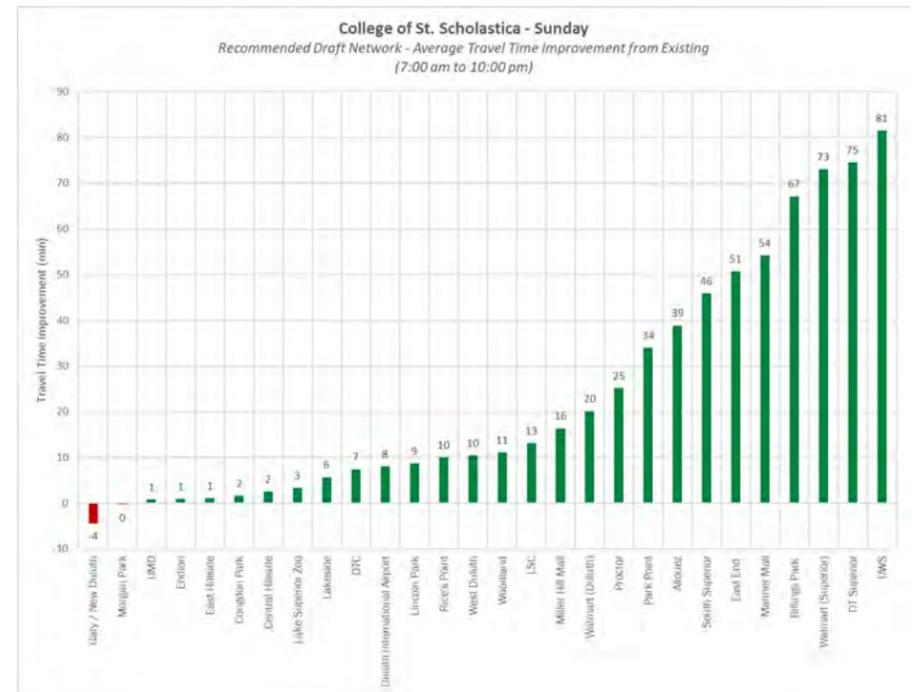
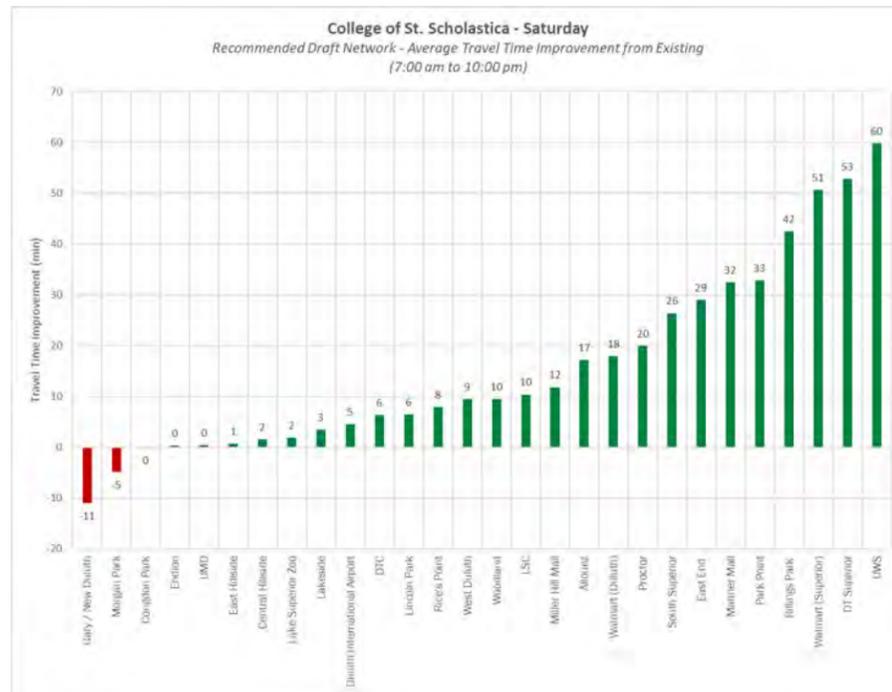
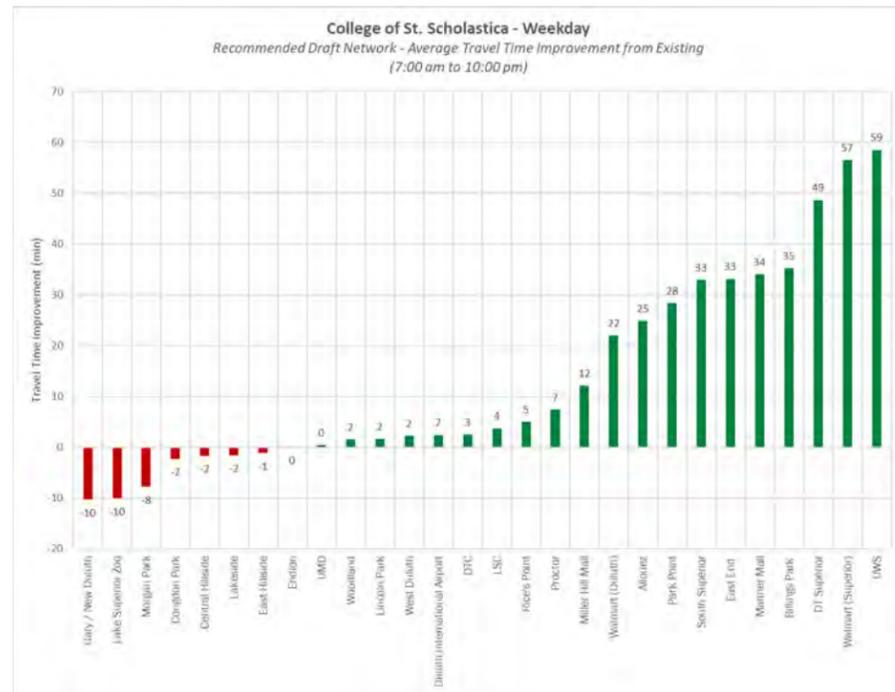
Central Hillside



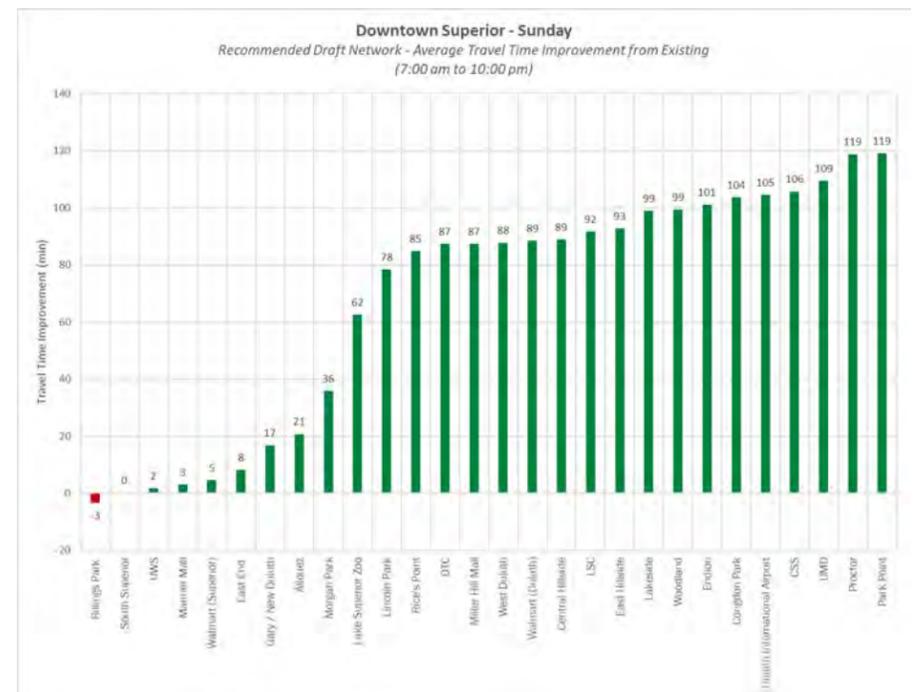
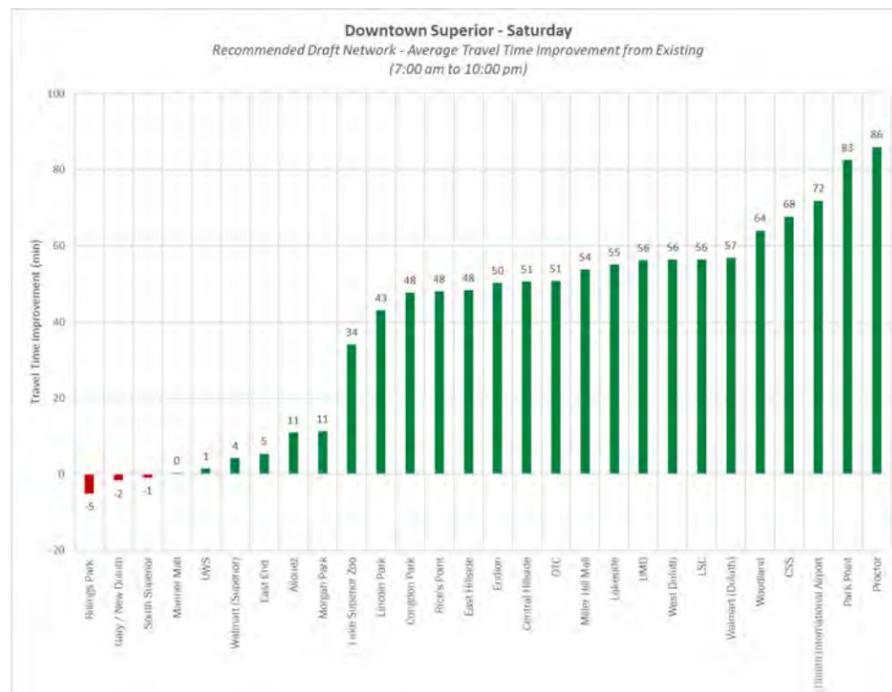
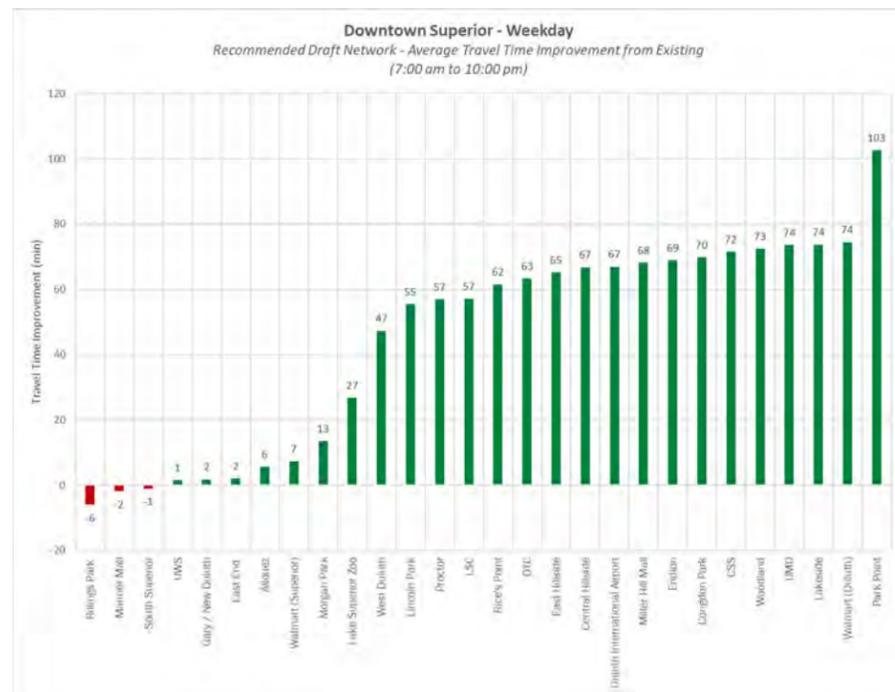
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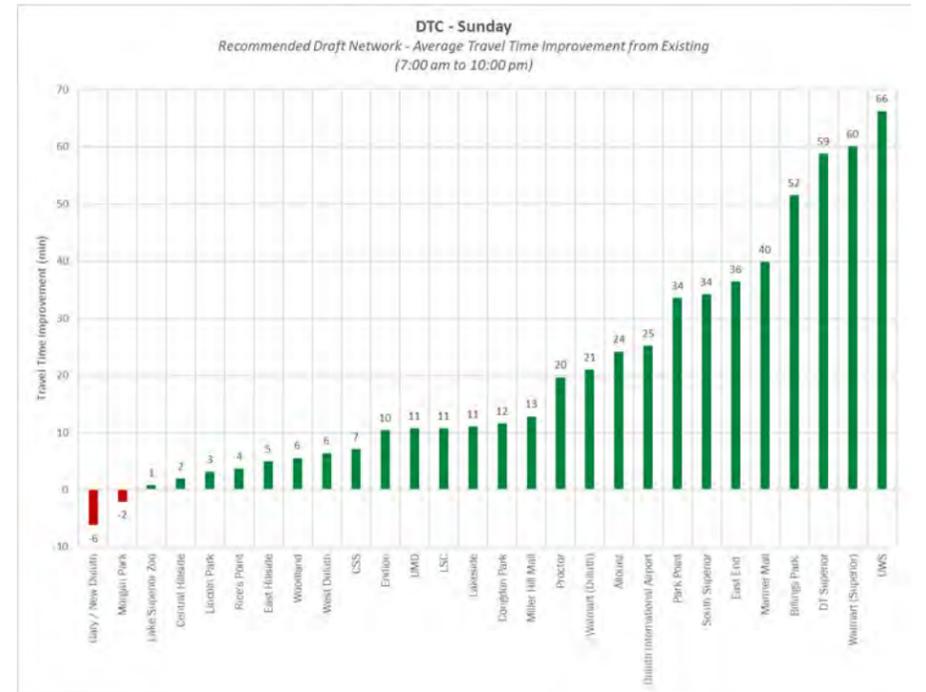
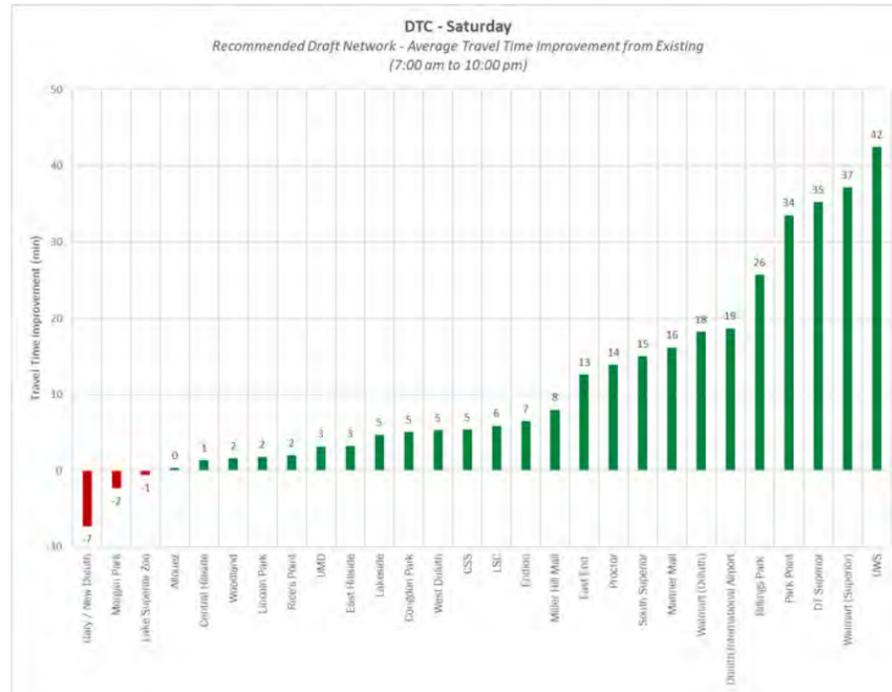
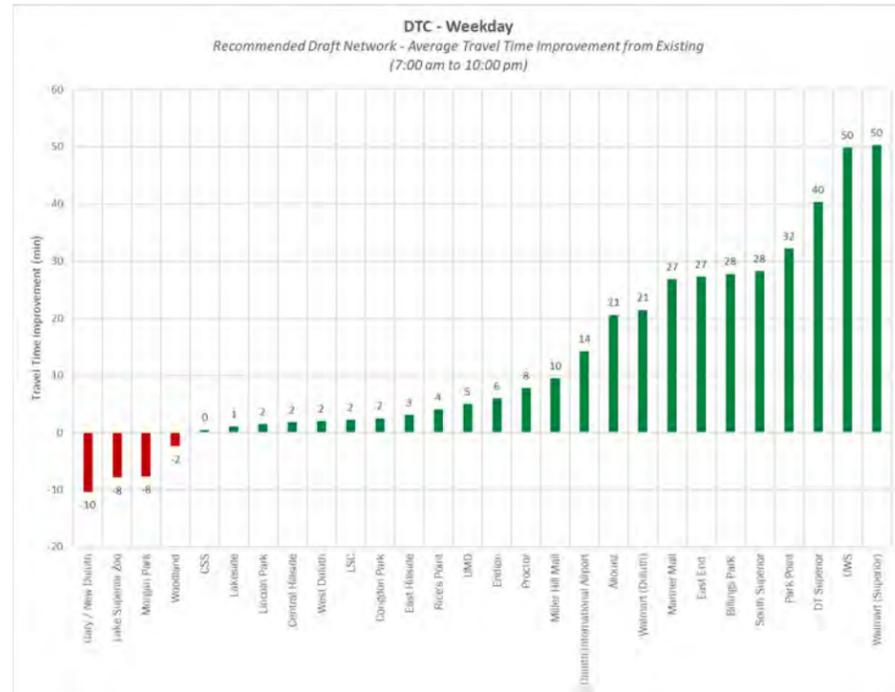
College of St. Scholastica



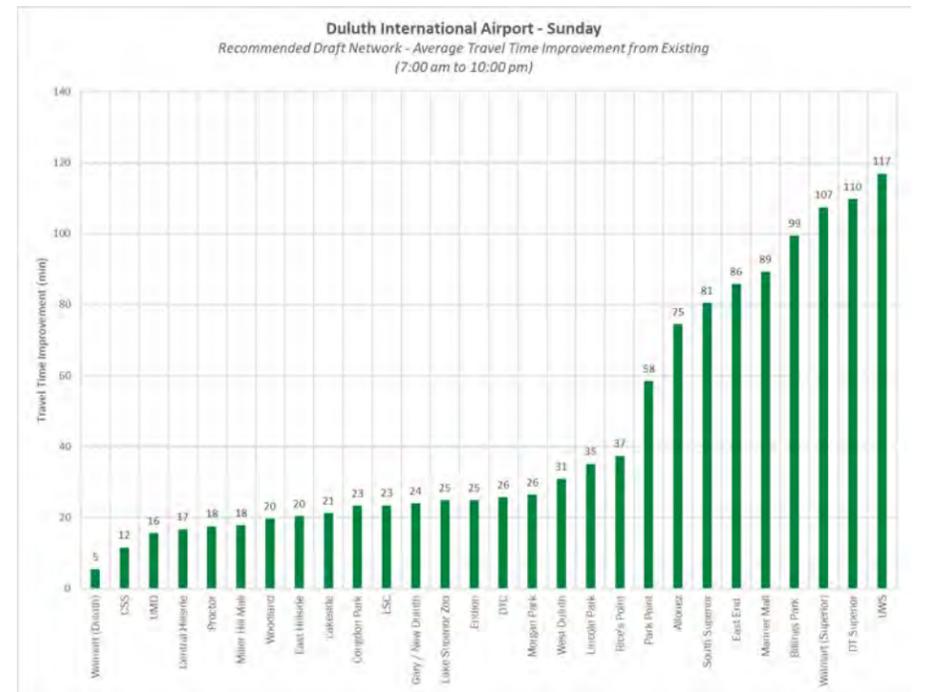
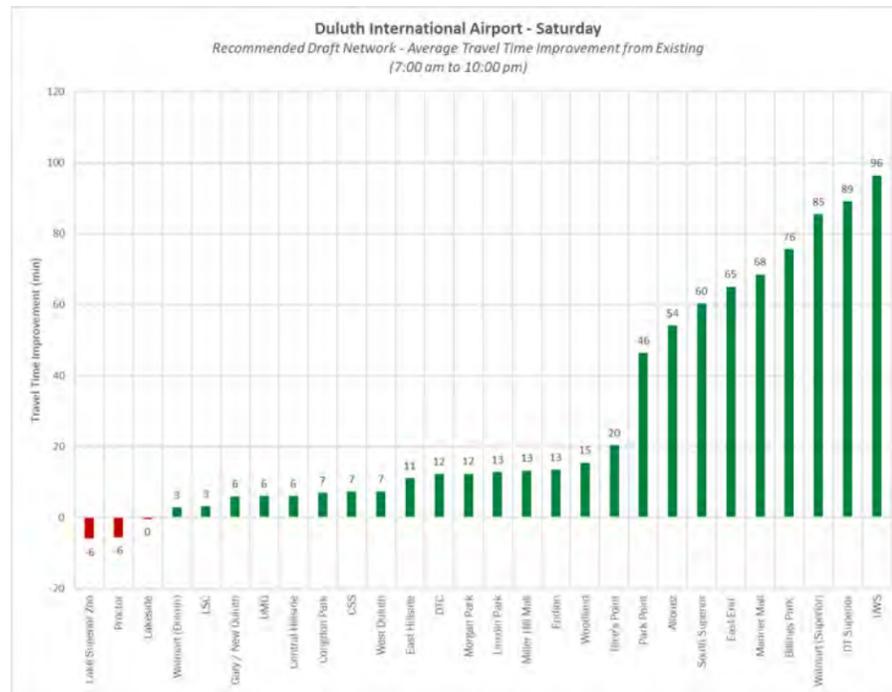
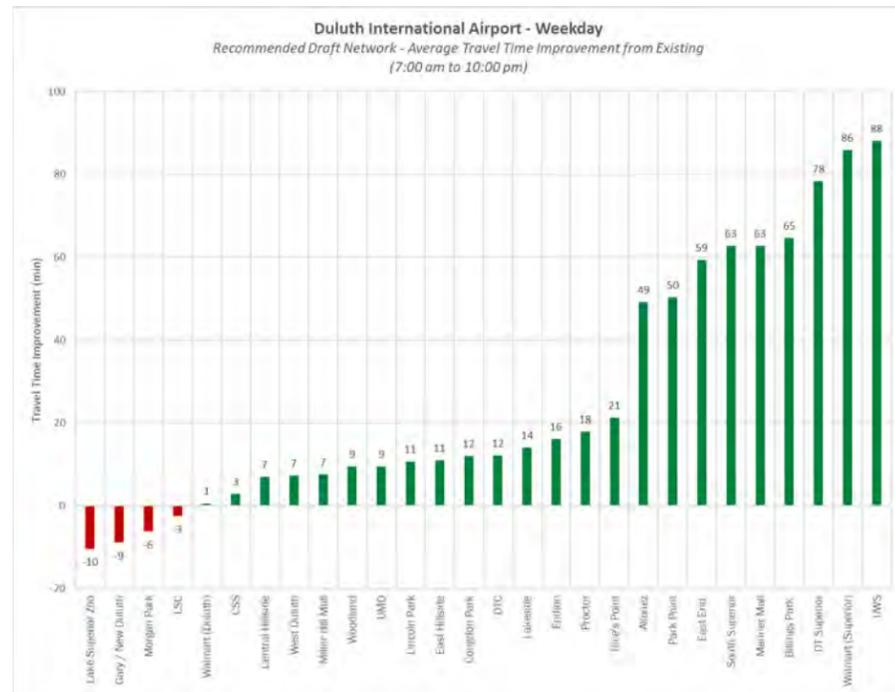
Downtown Superior



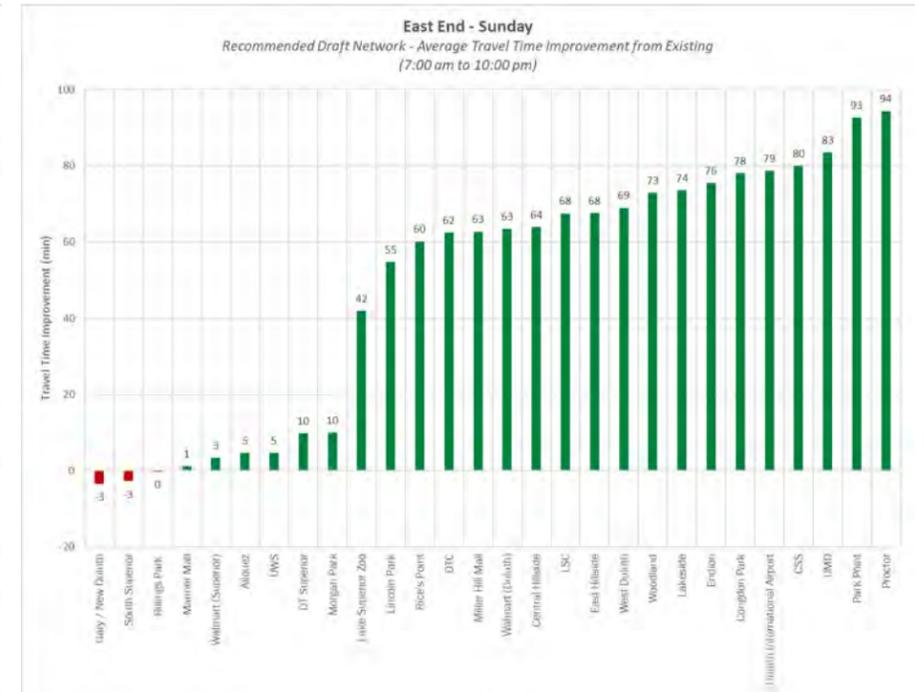
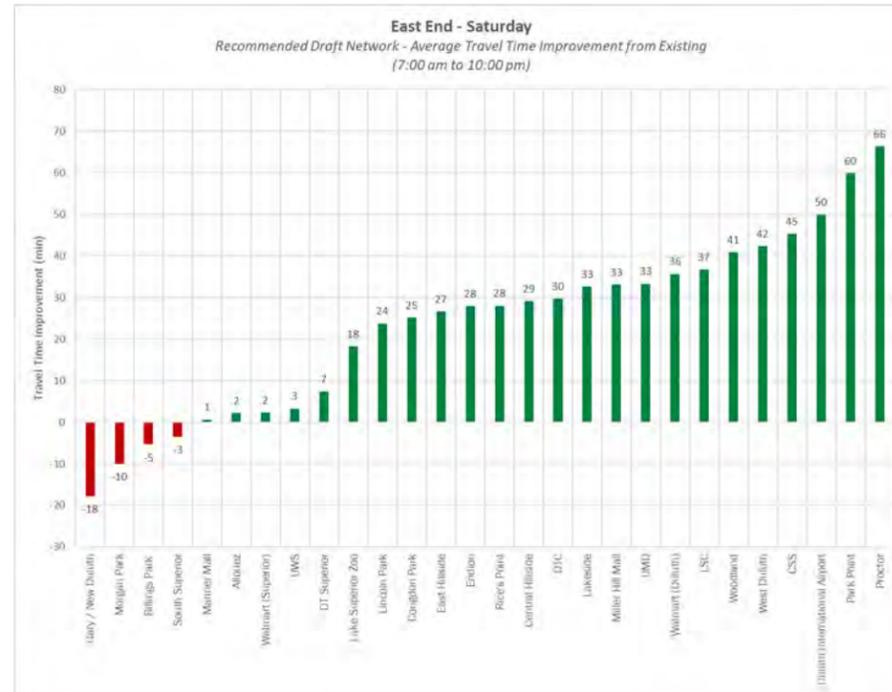
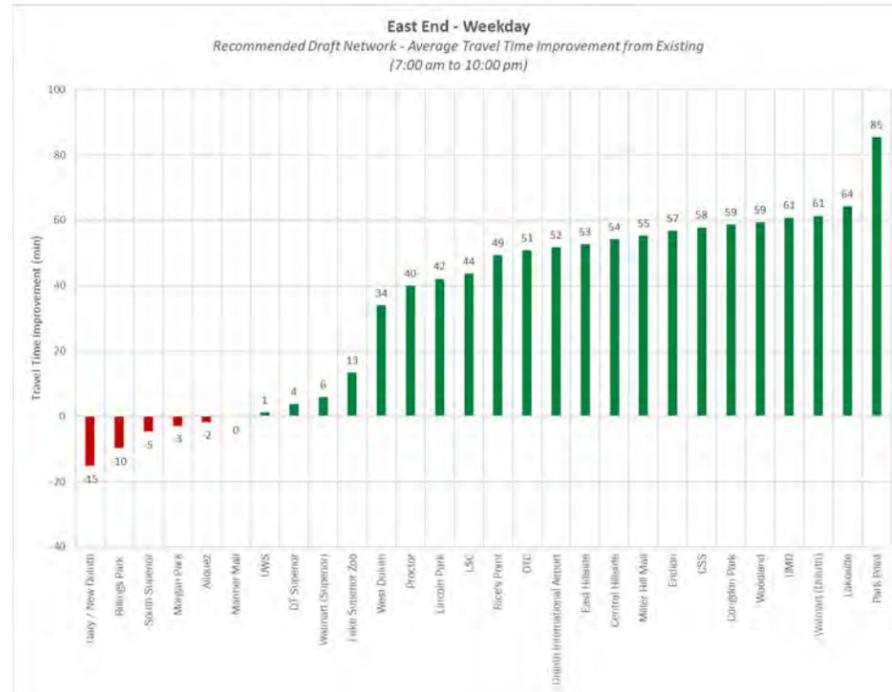
DTC



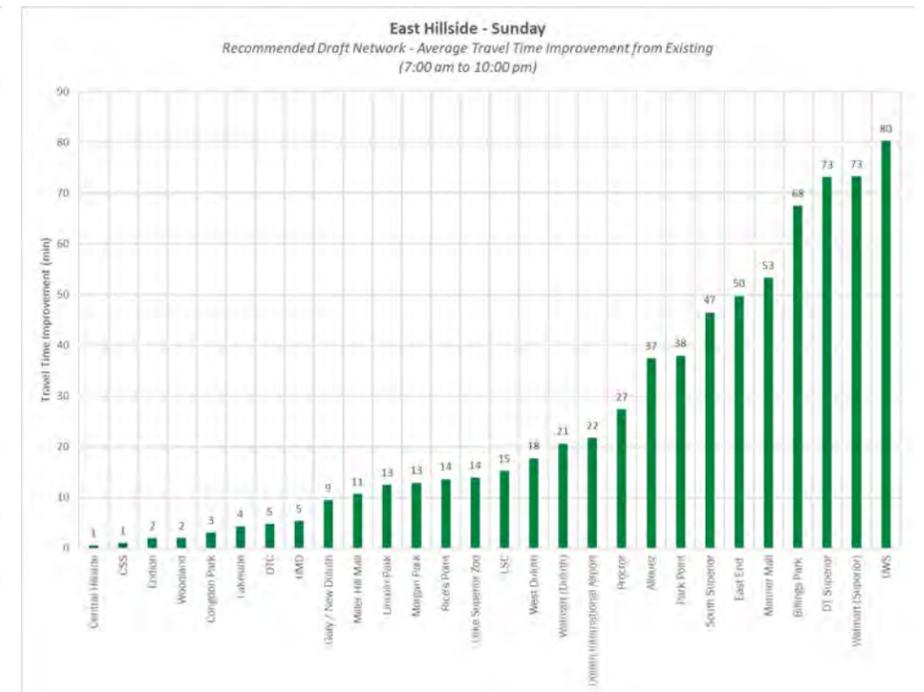
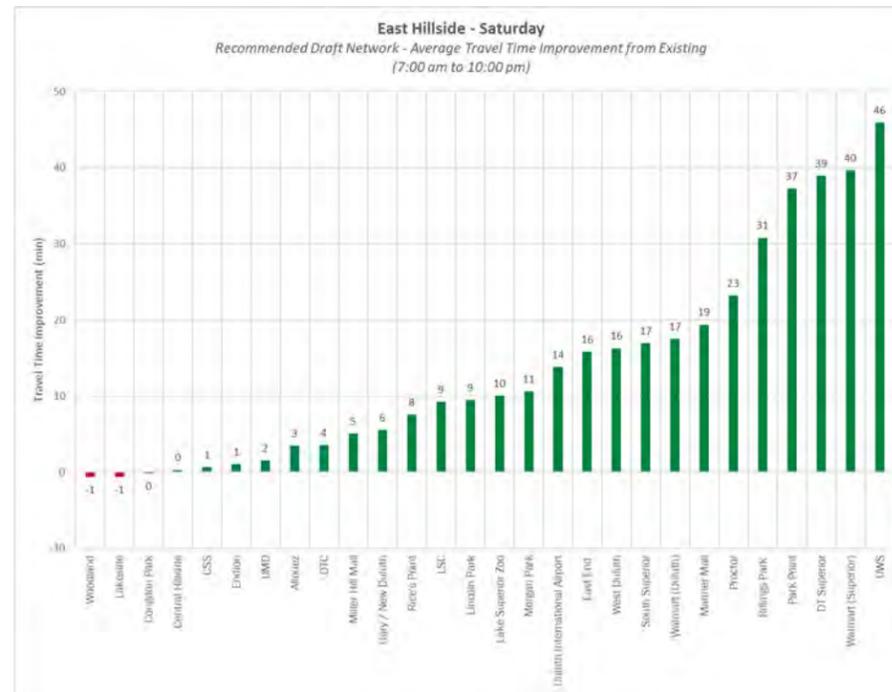
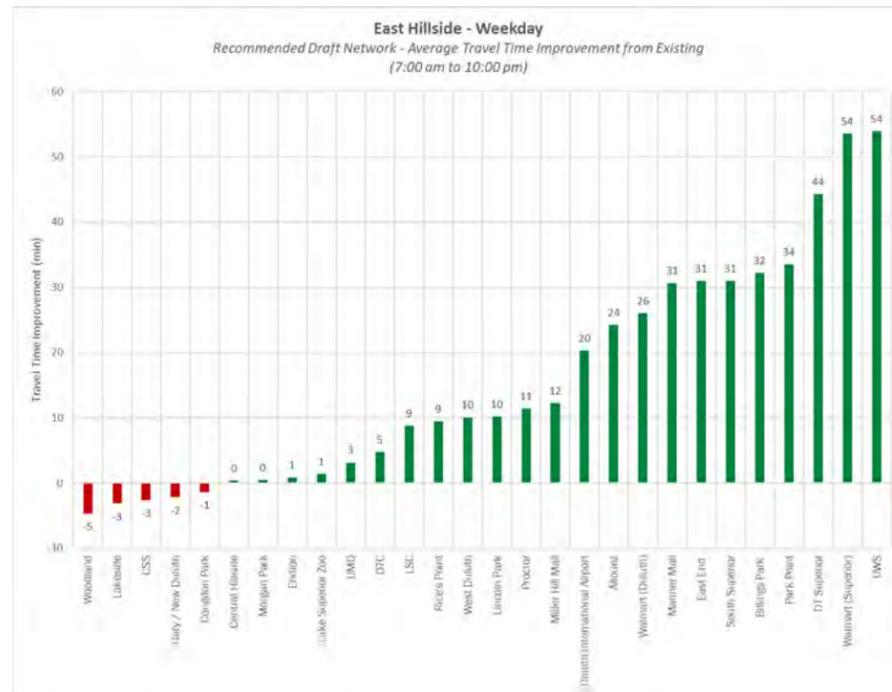
Duluth International Airport



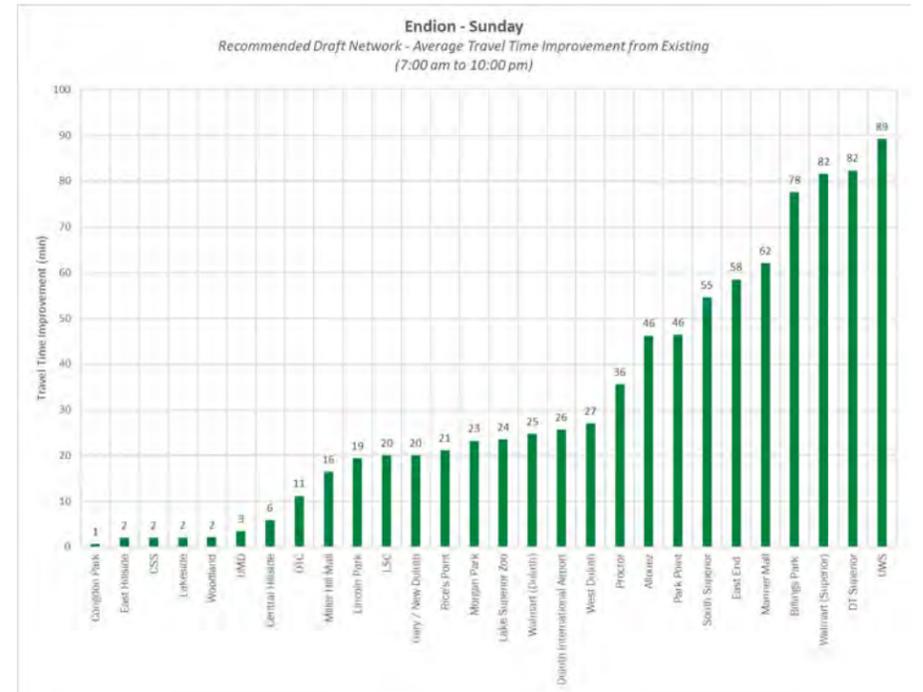
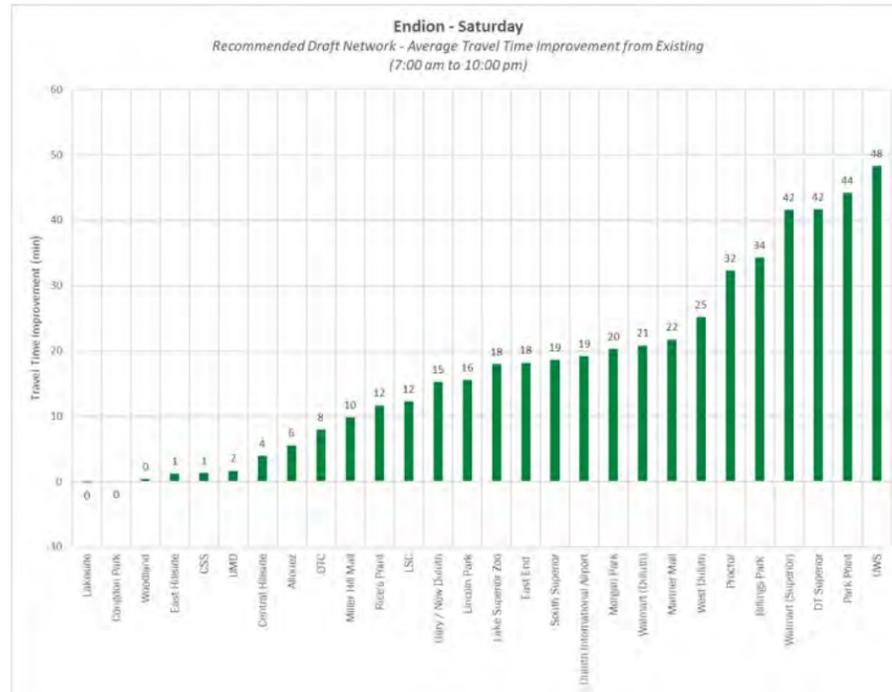
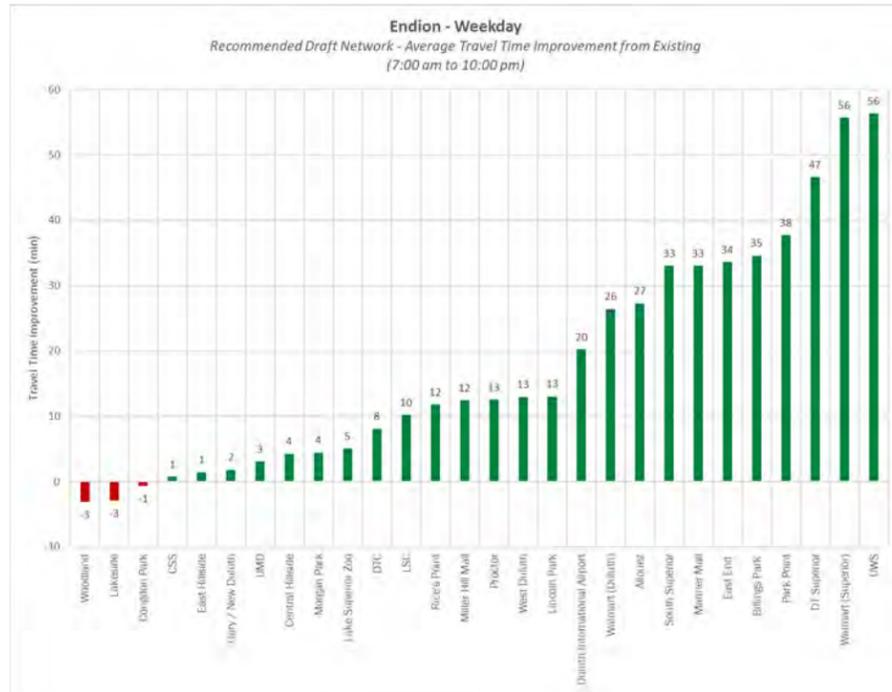
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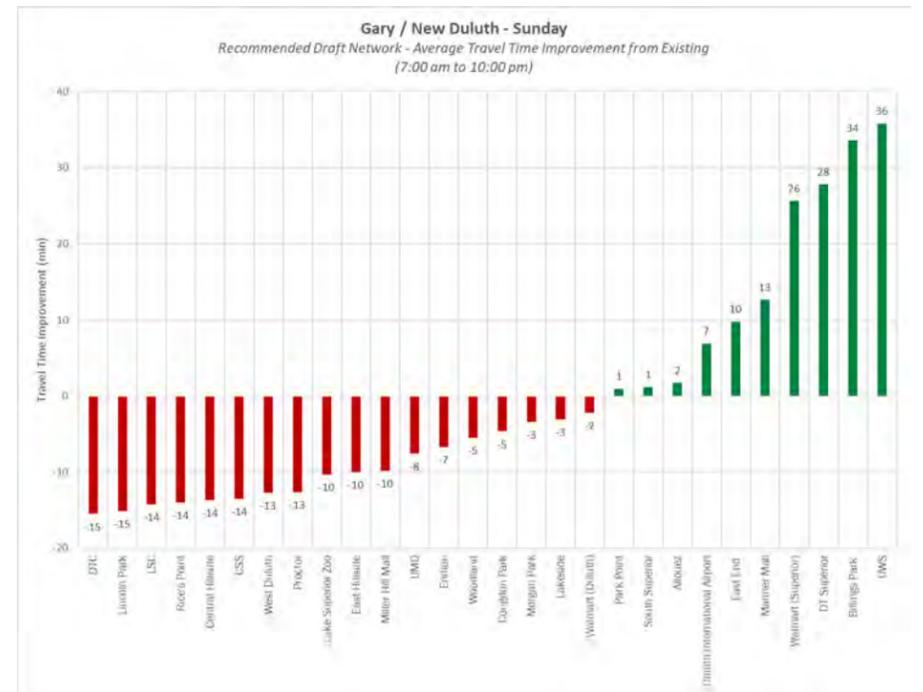
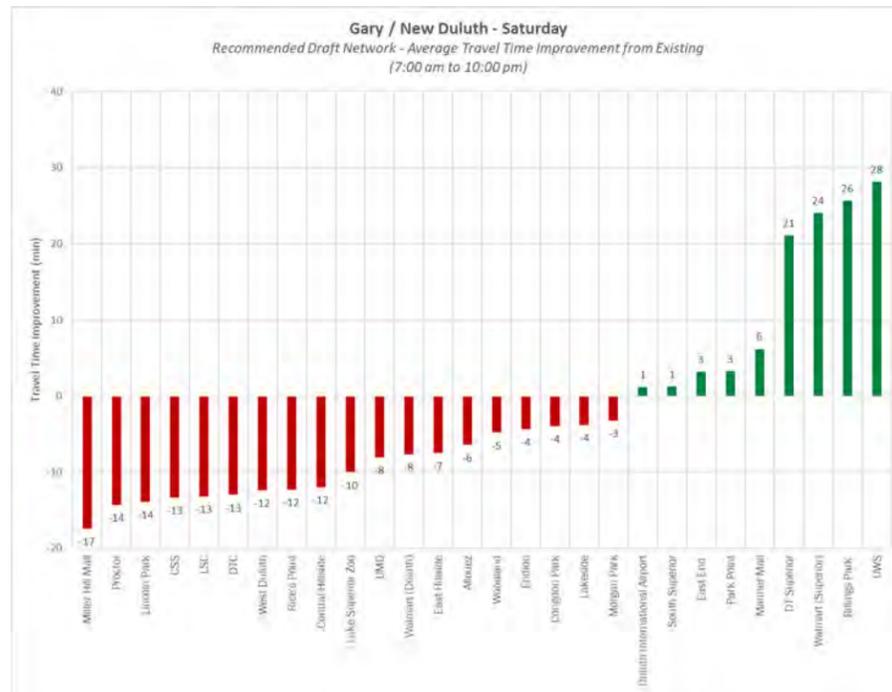
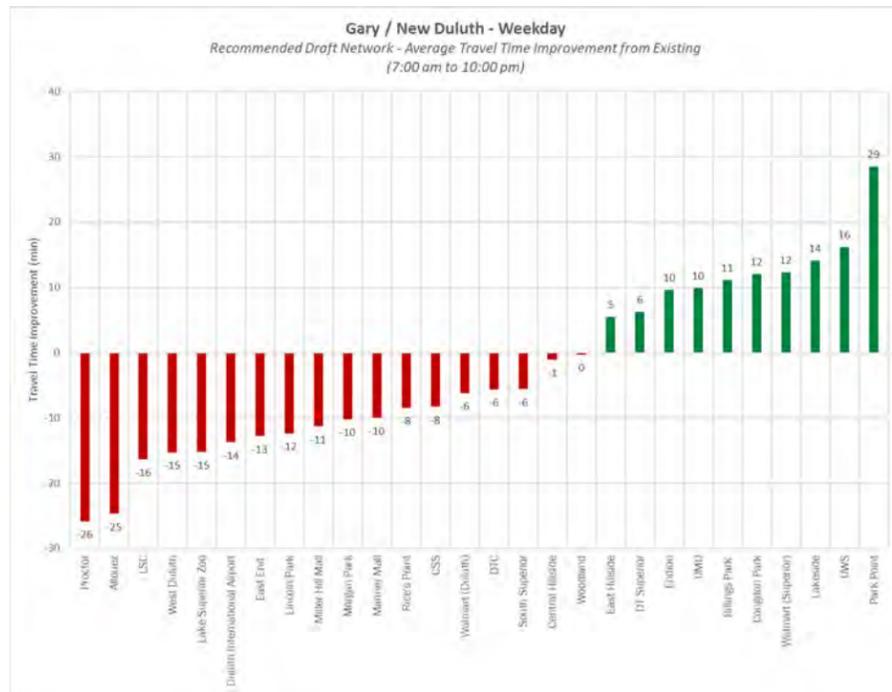
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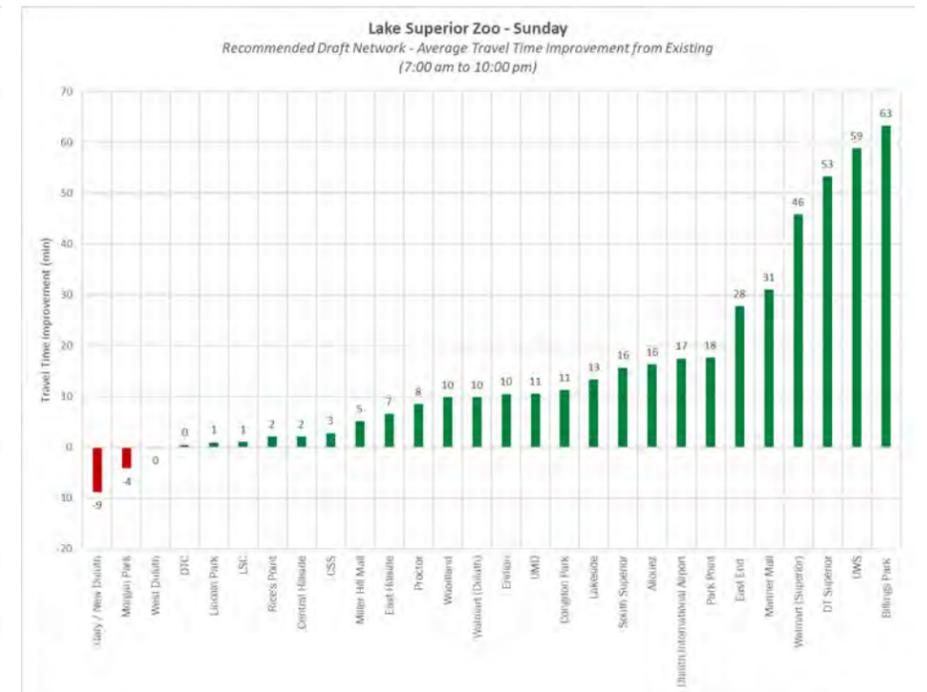
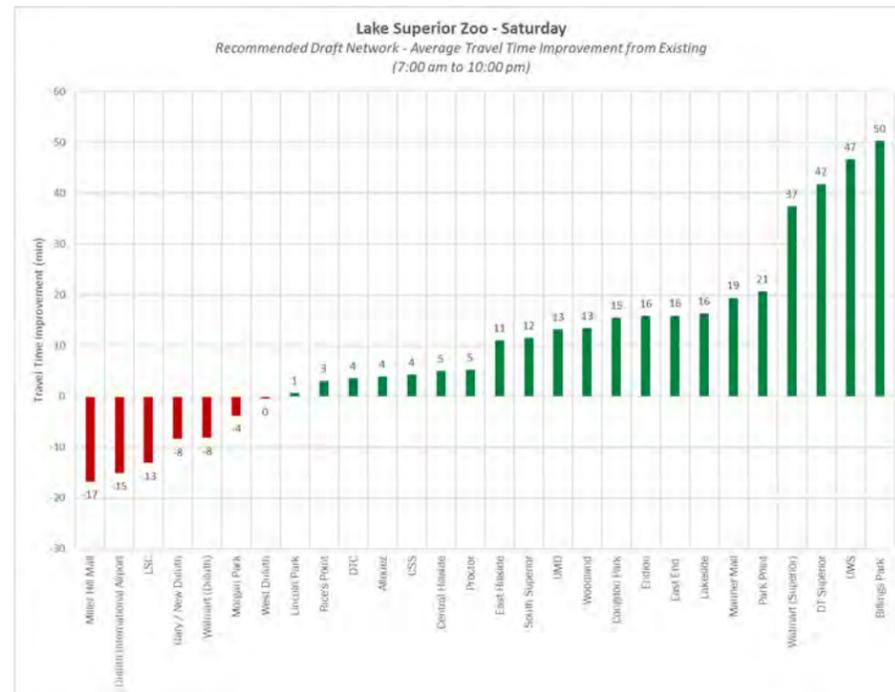
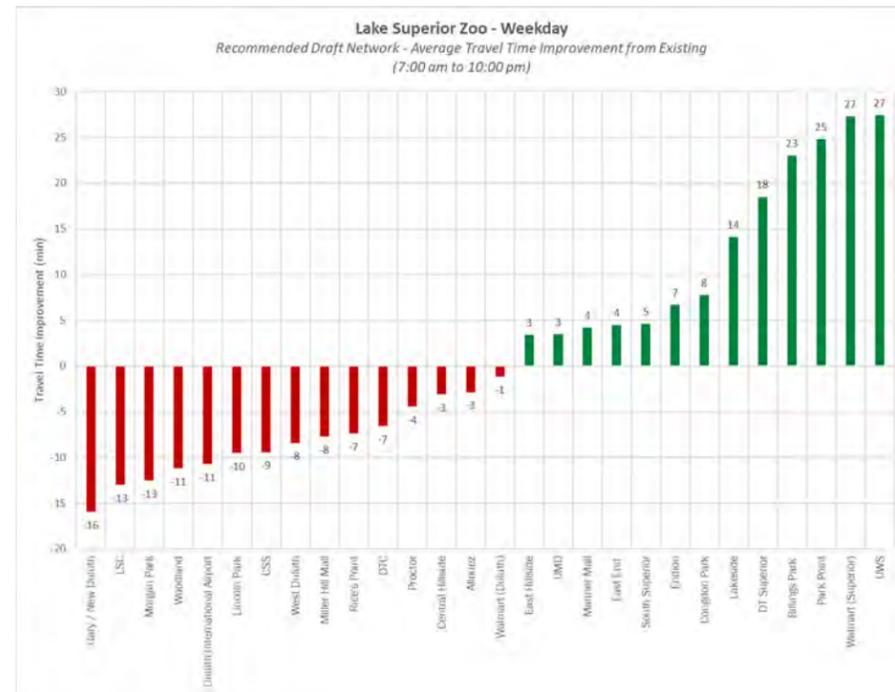
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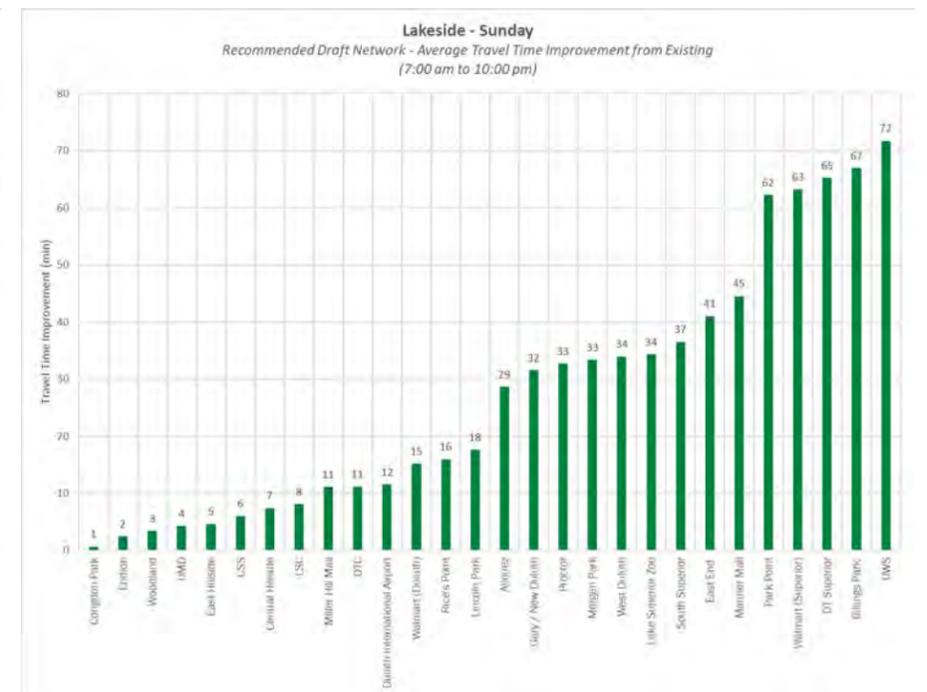
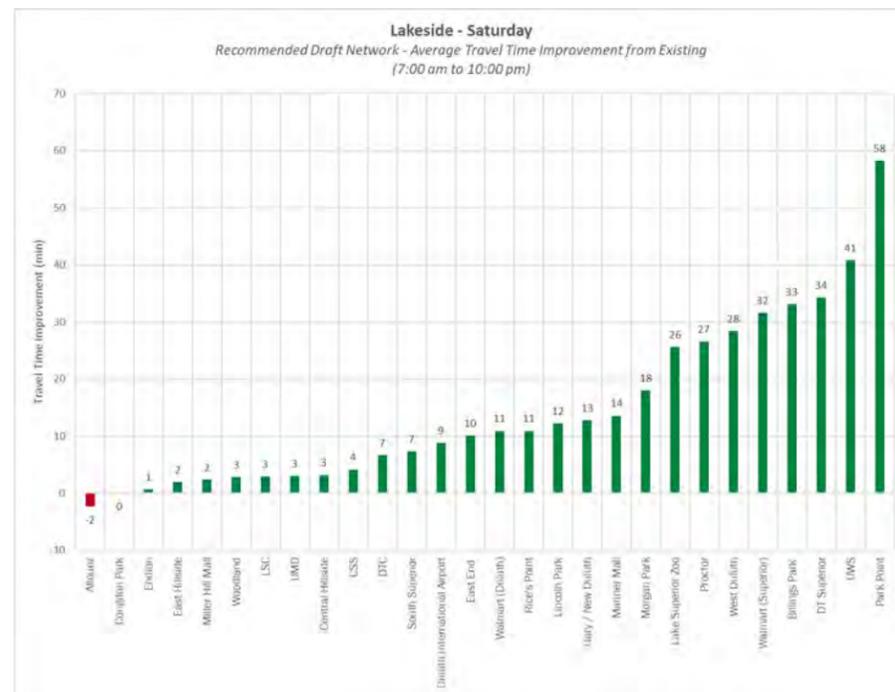
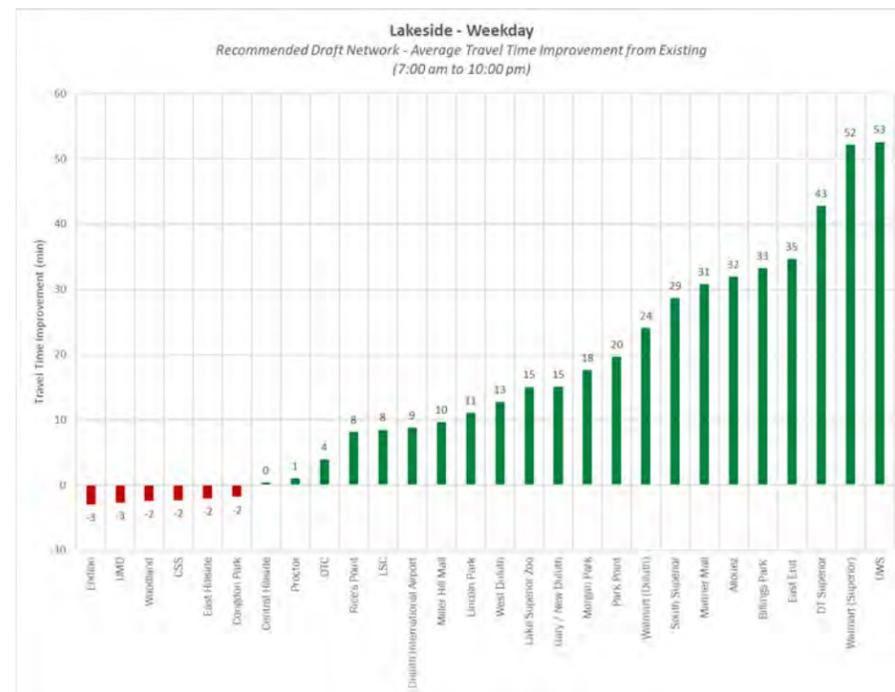
Gary / New Duluth



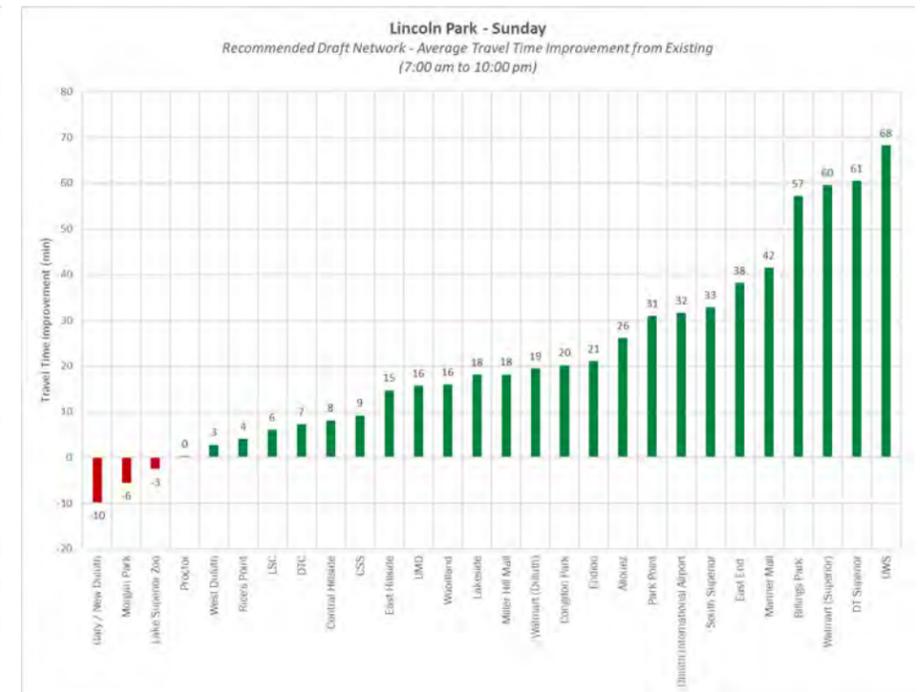
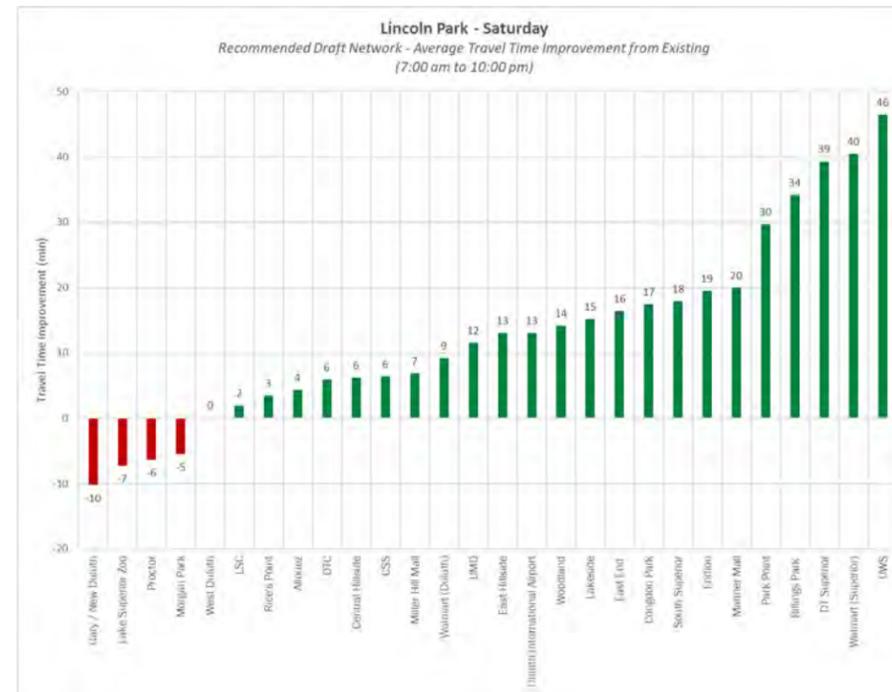
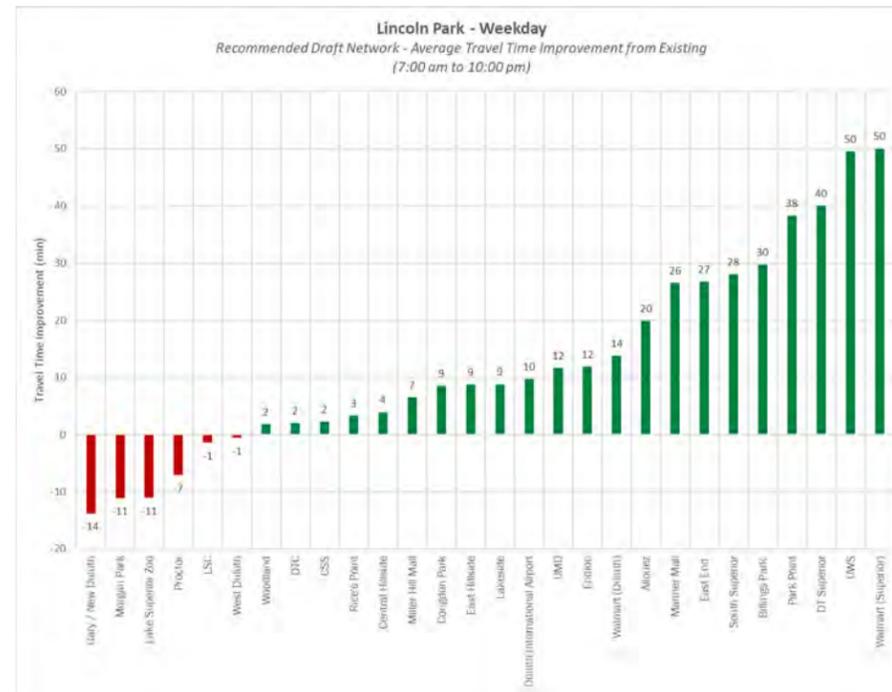
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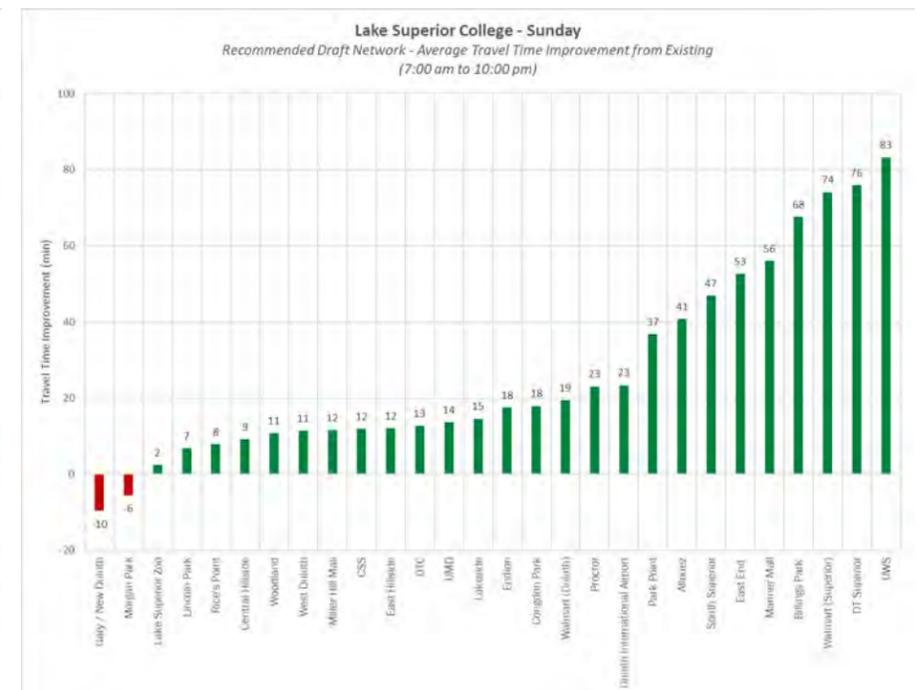
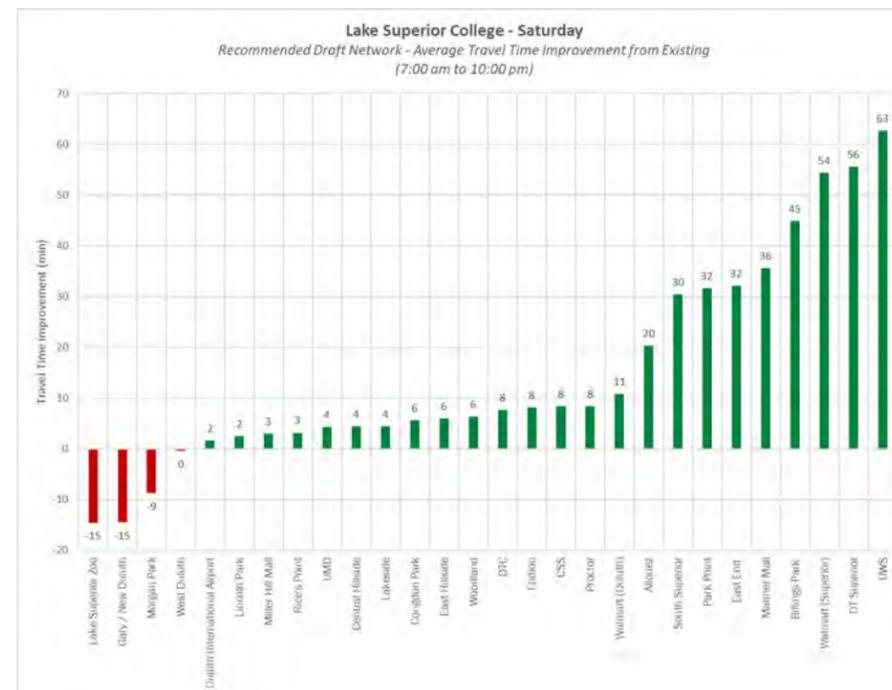
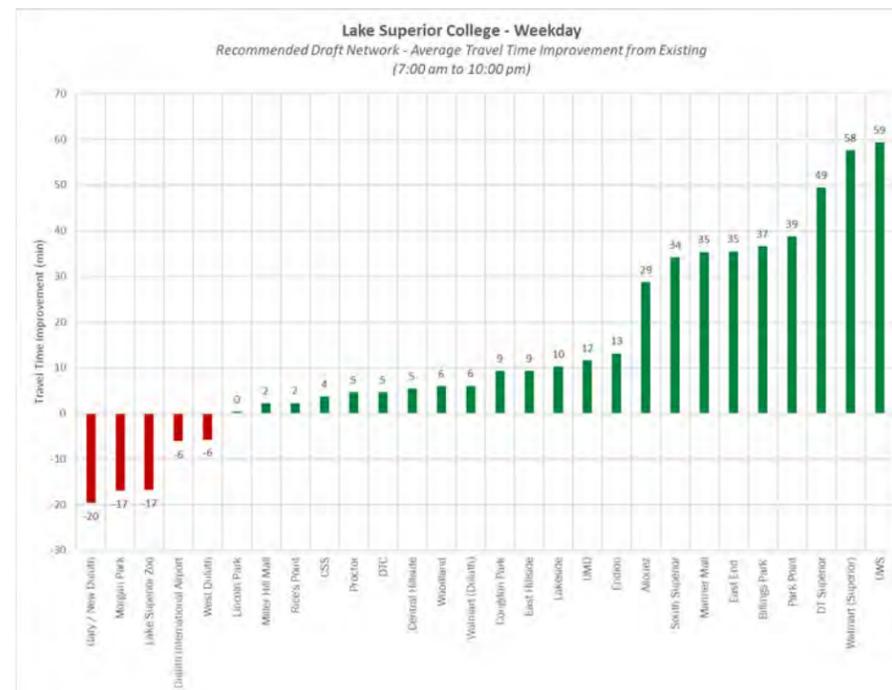
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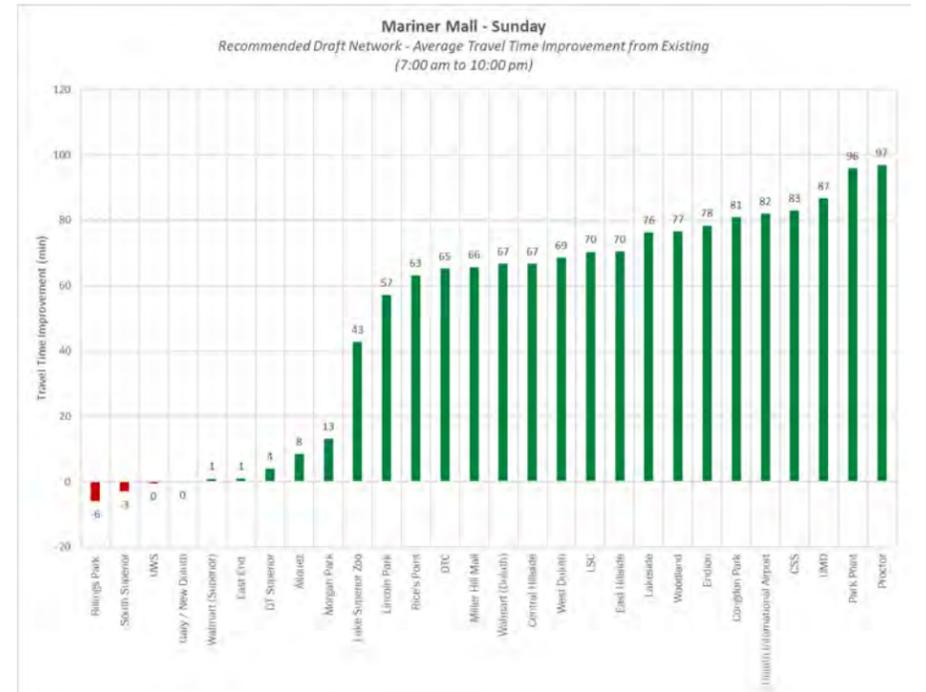
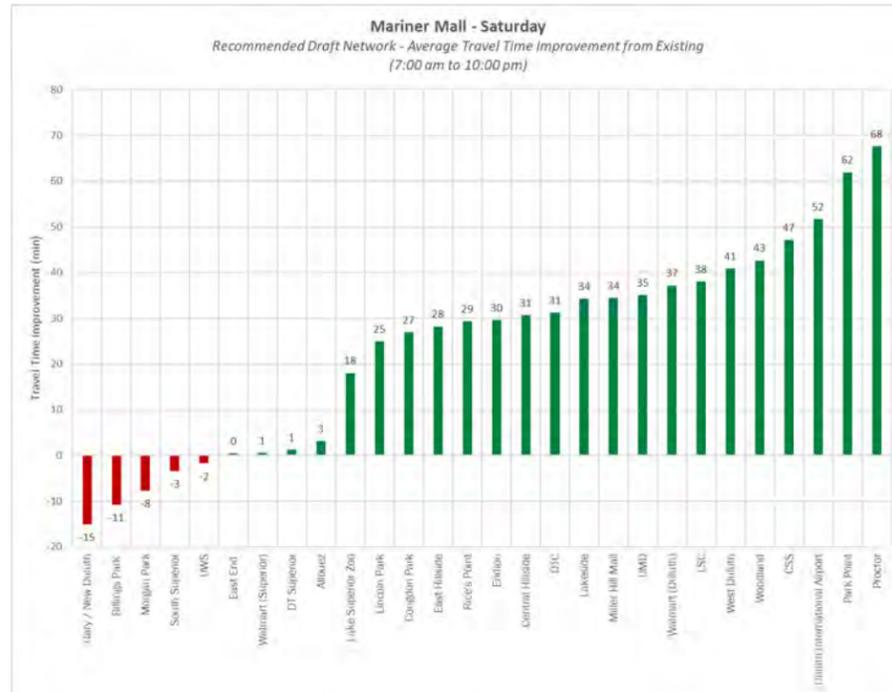
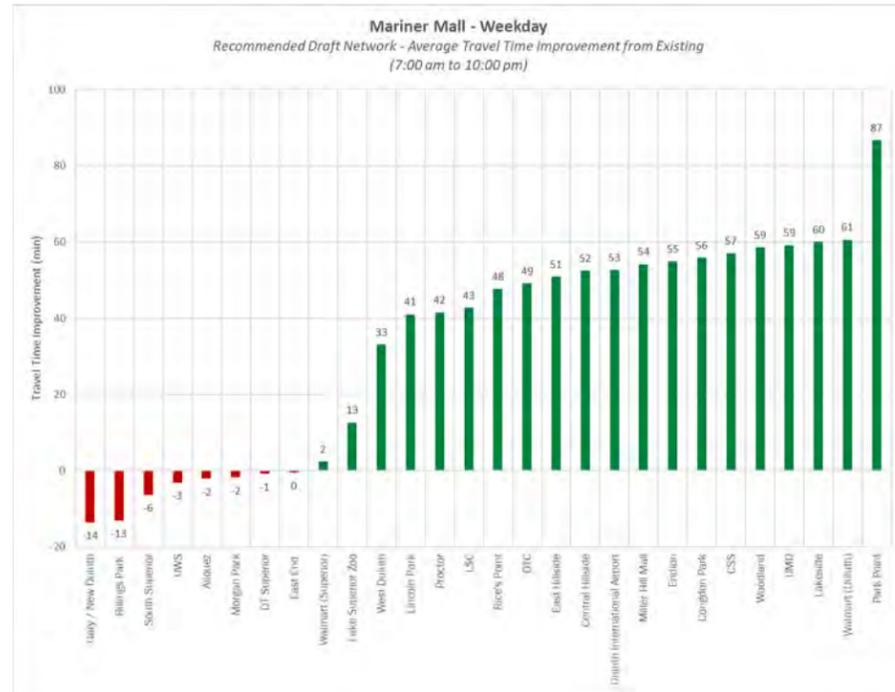
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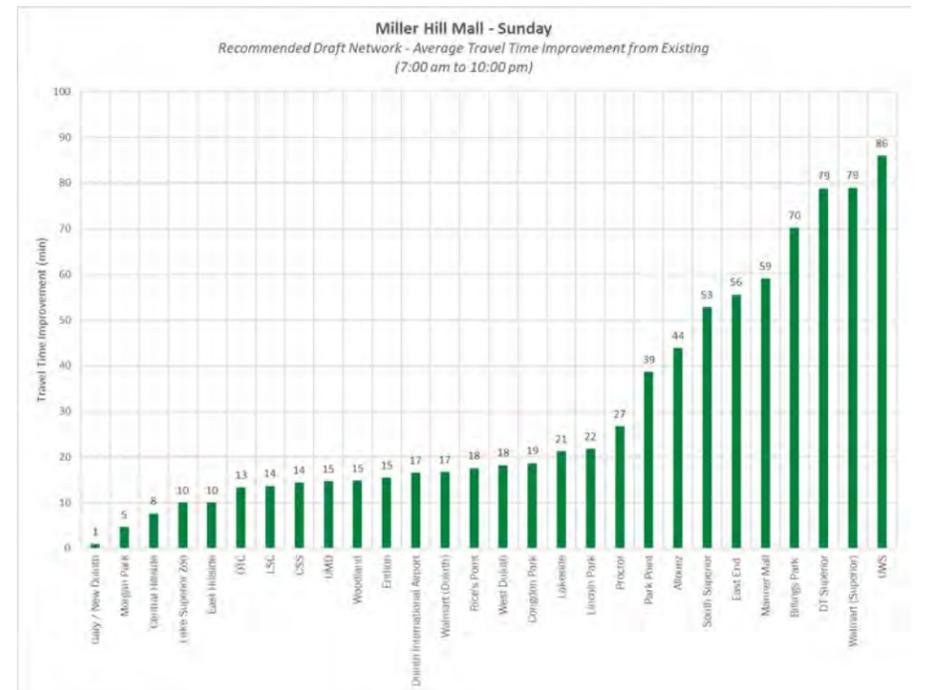
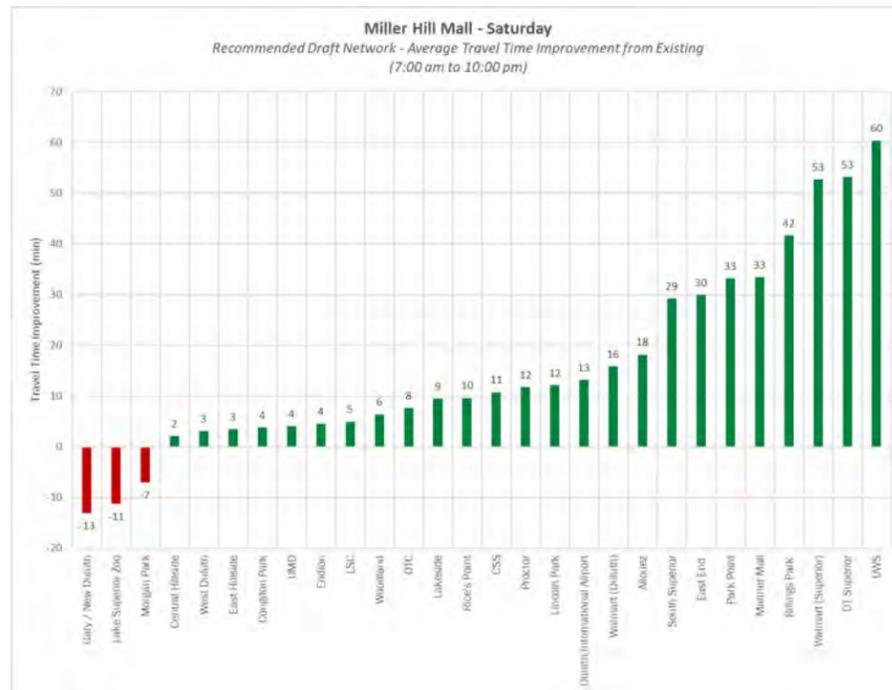
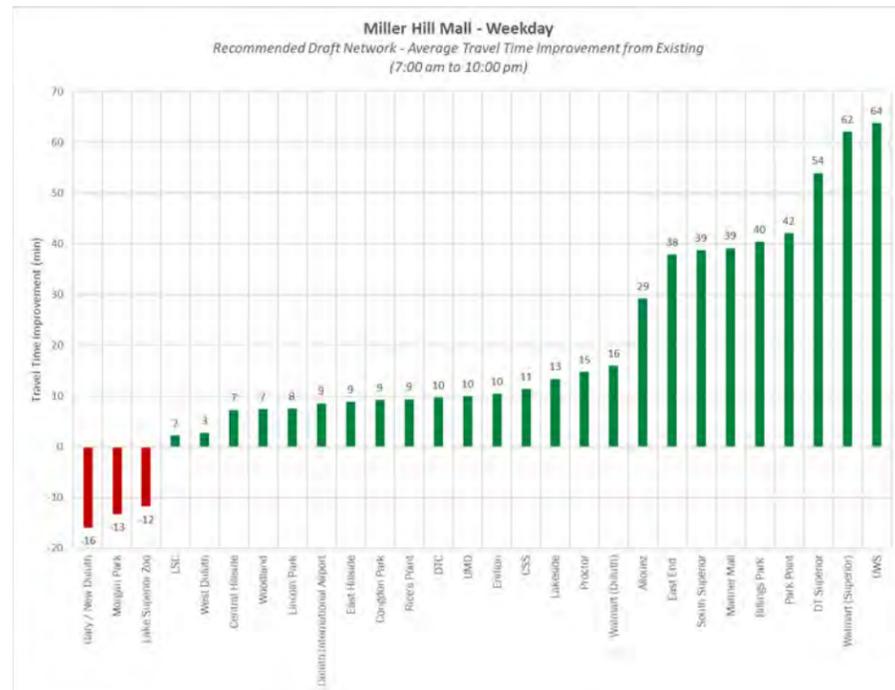
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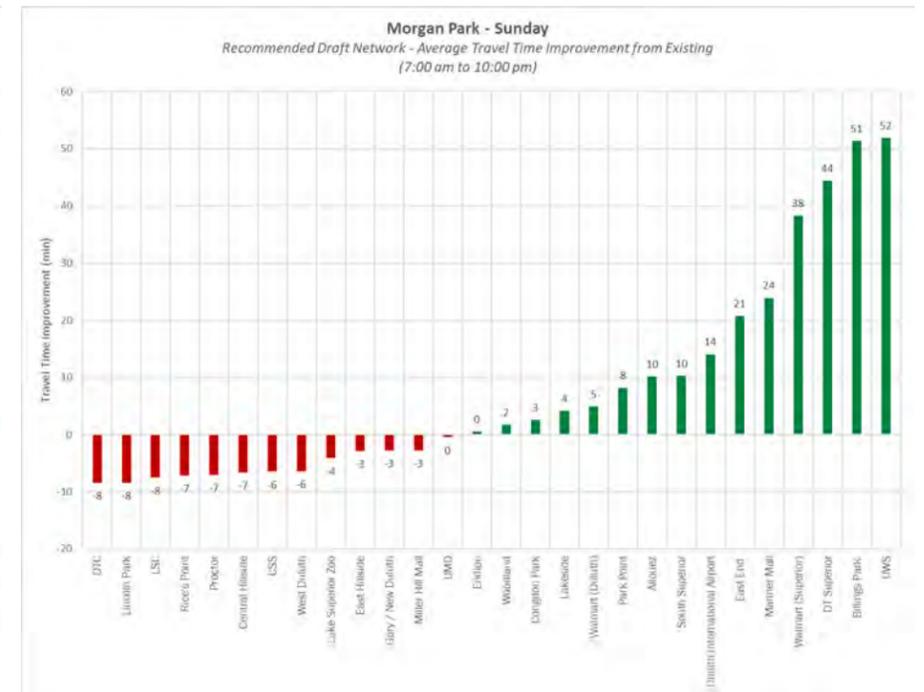
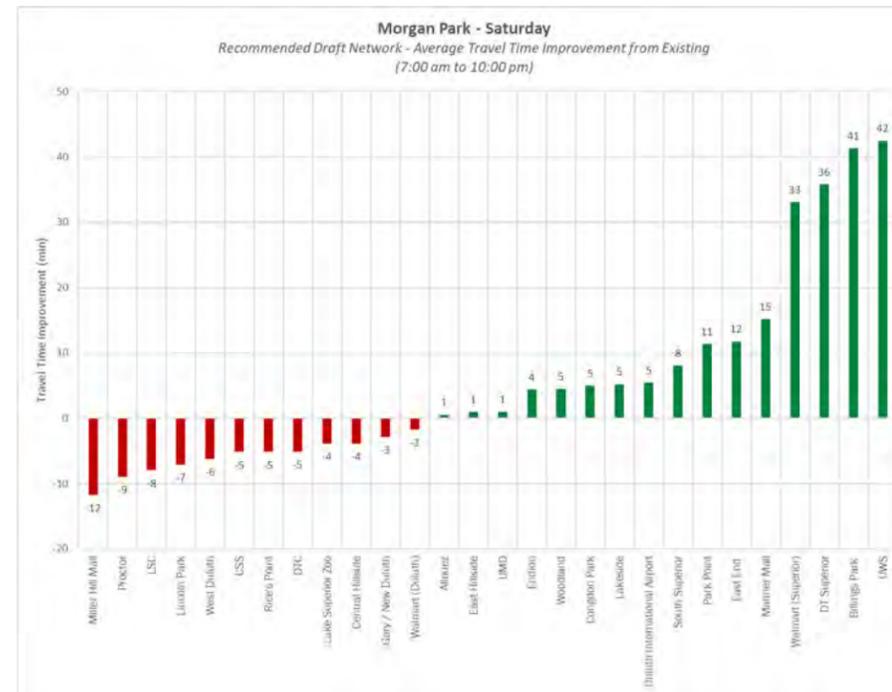
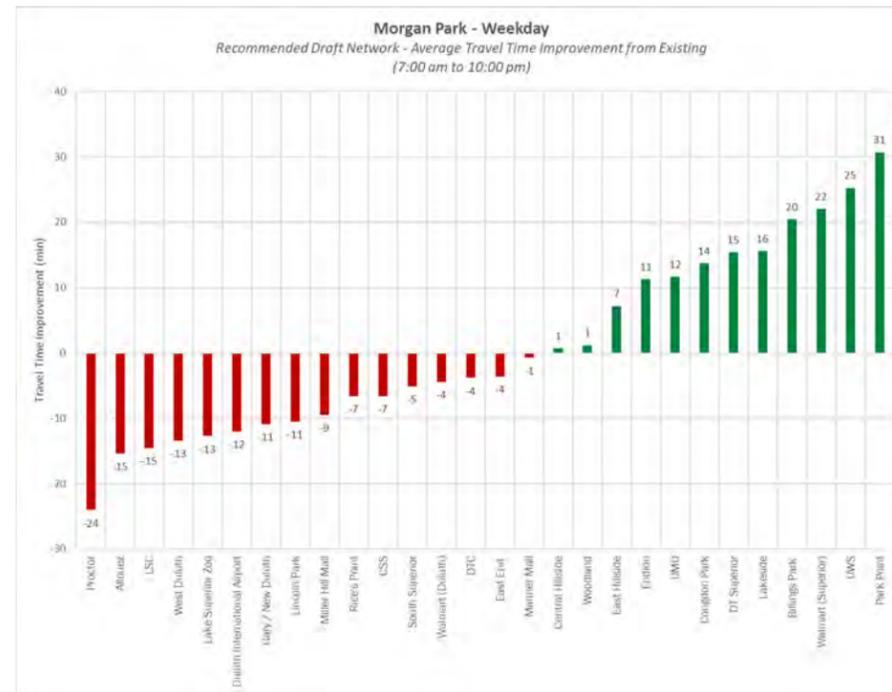
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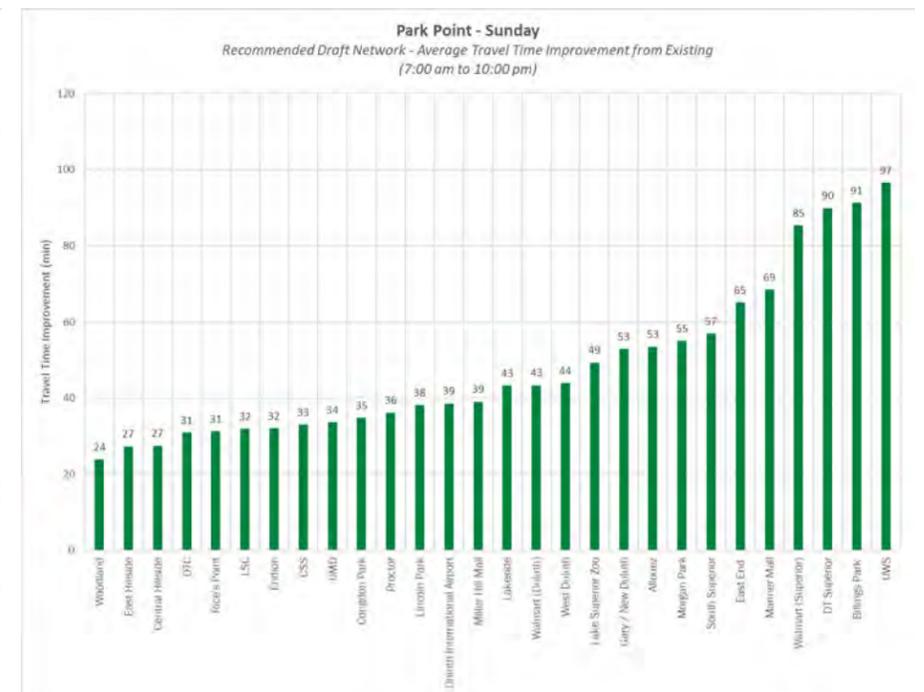
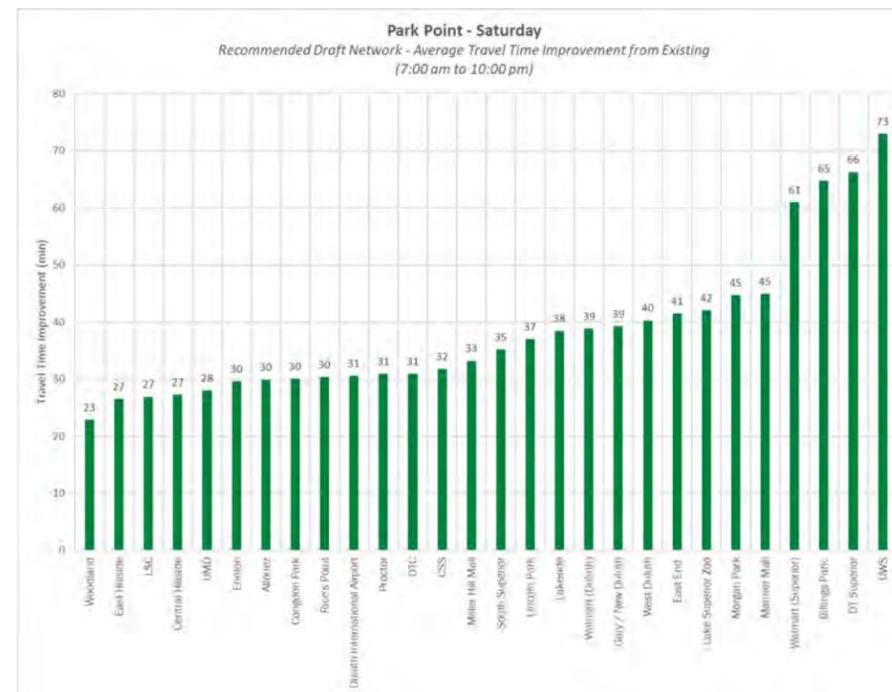
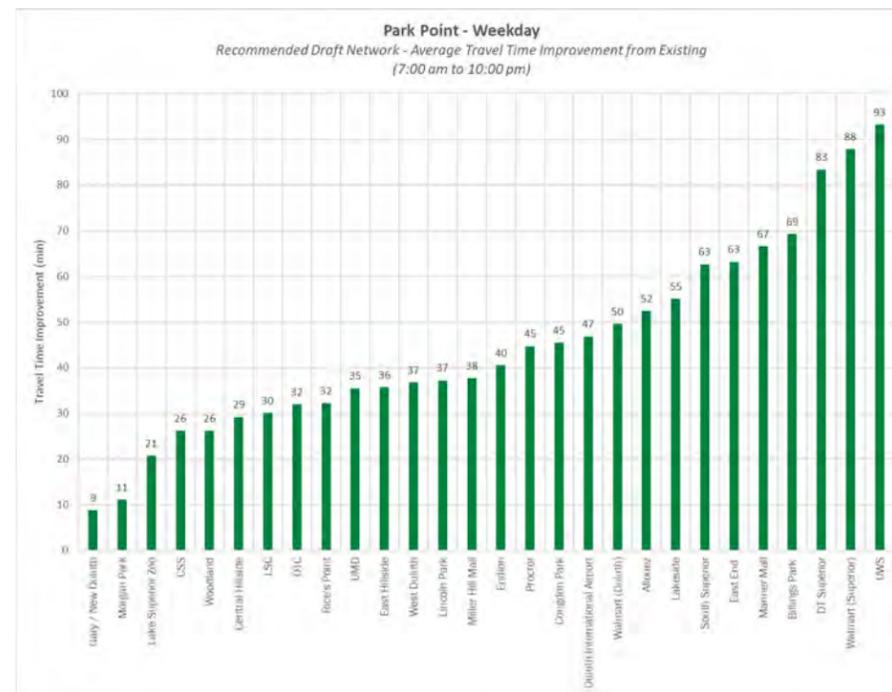
Miller Hill Mall



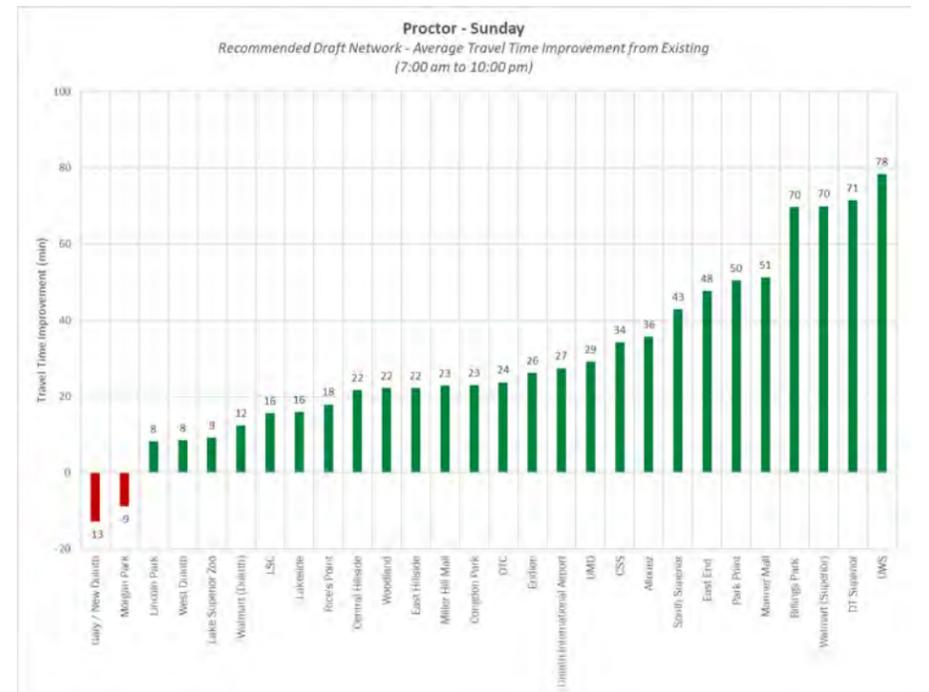
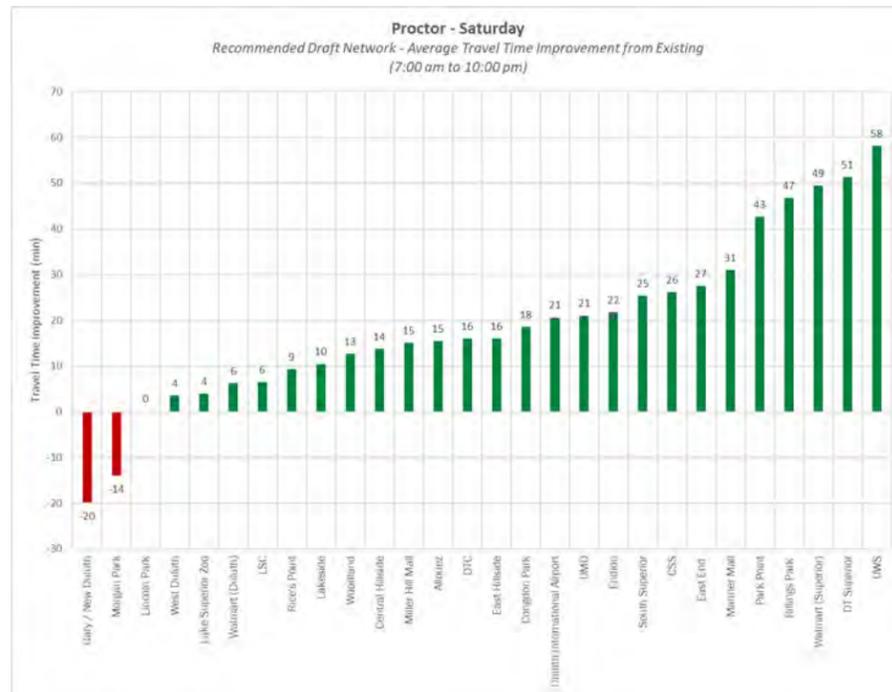
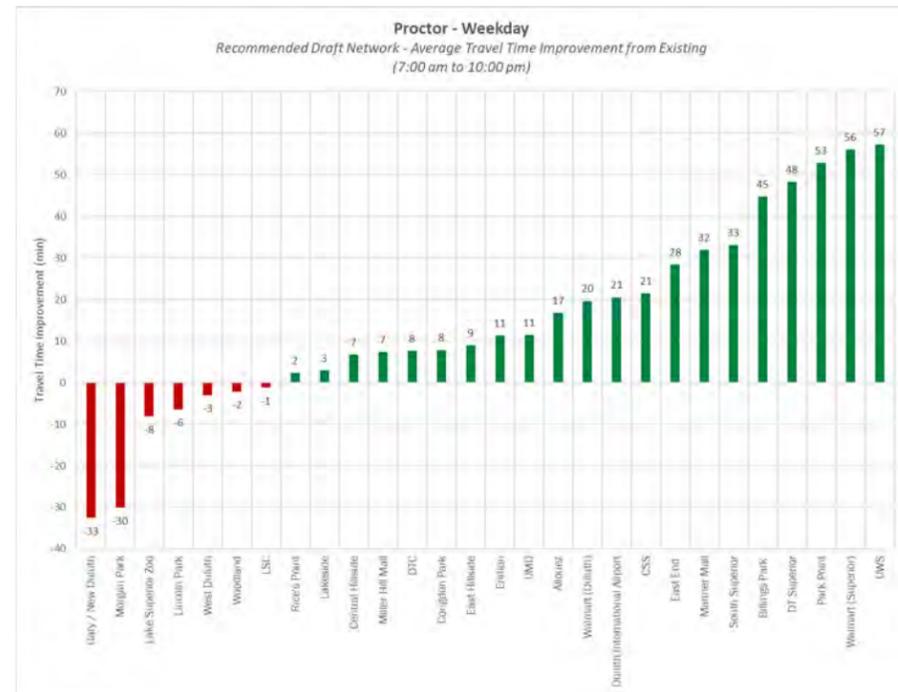
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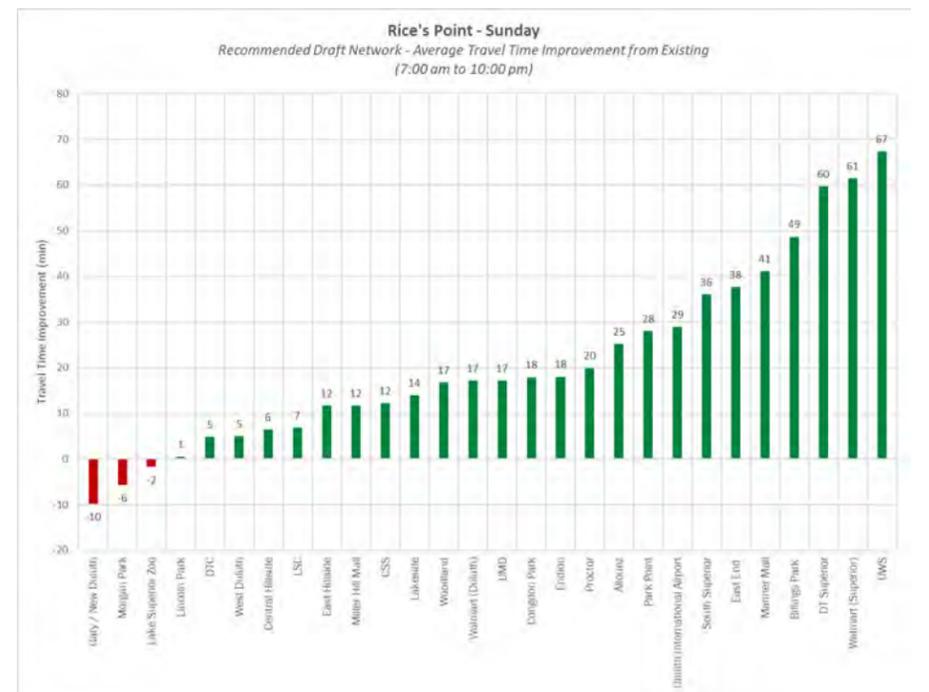
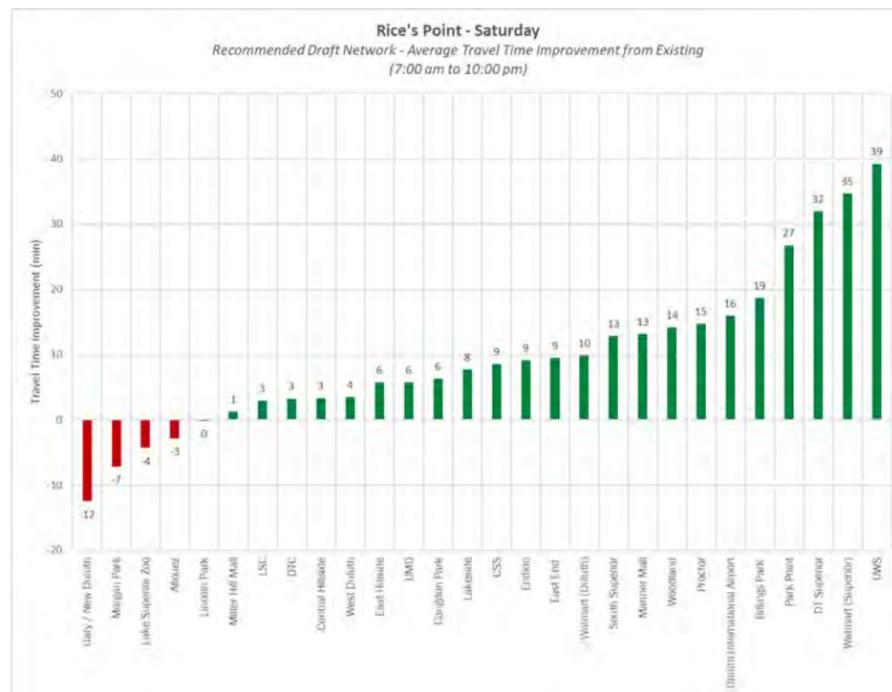
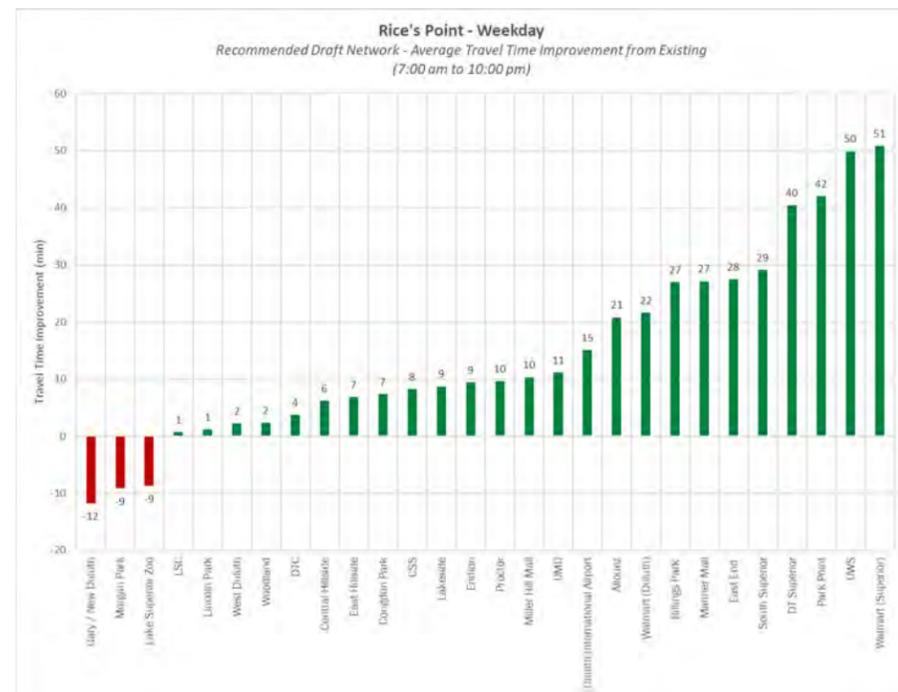
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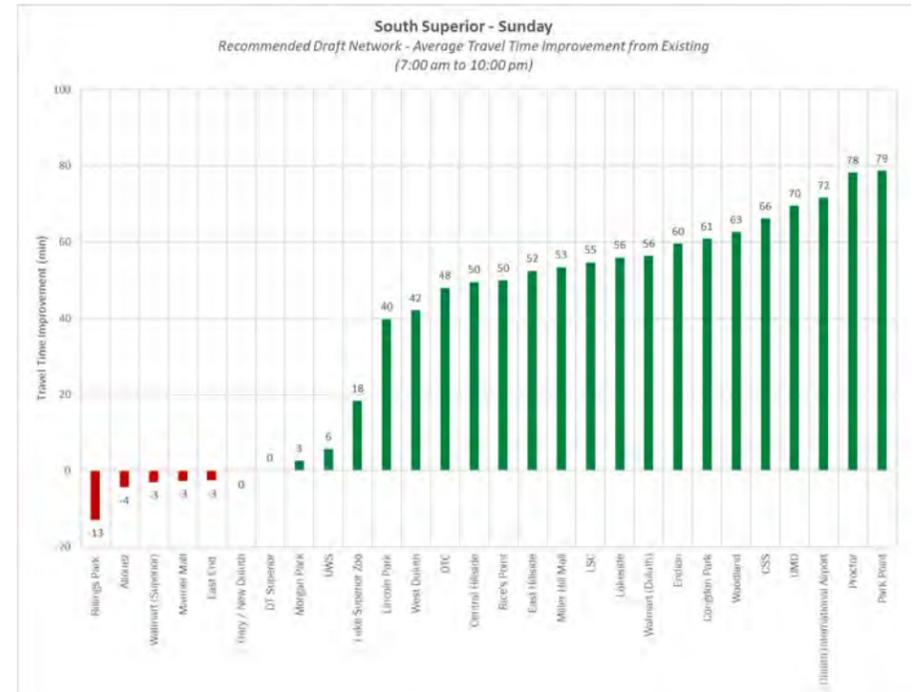
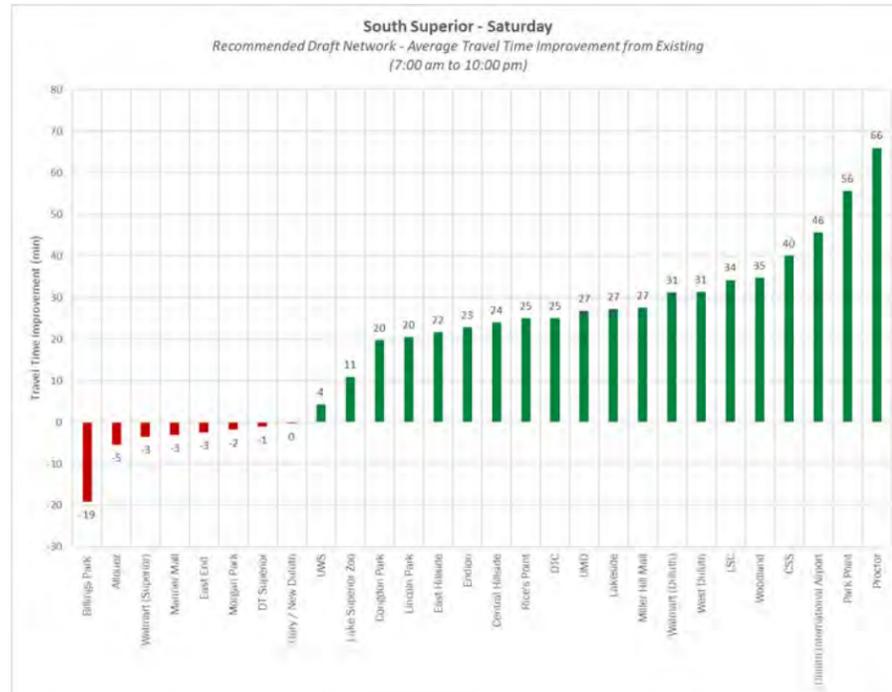
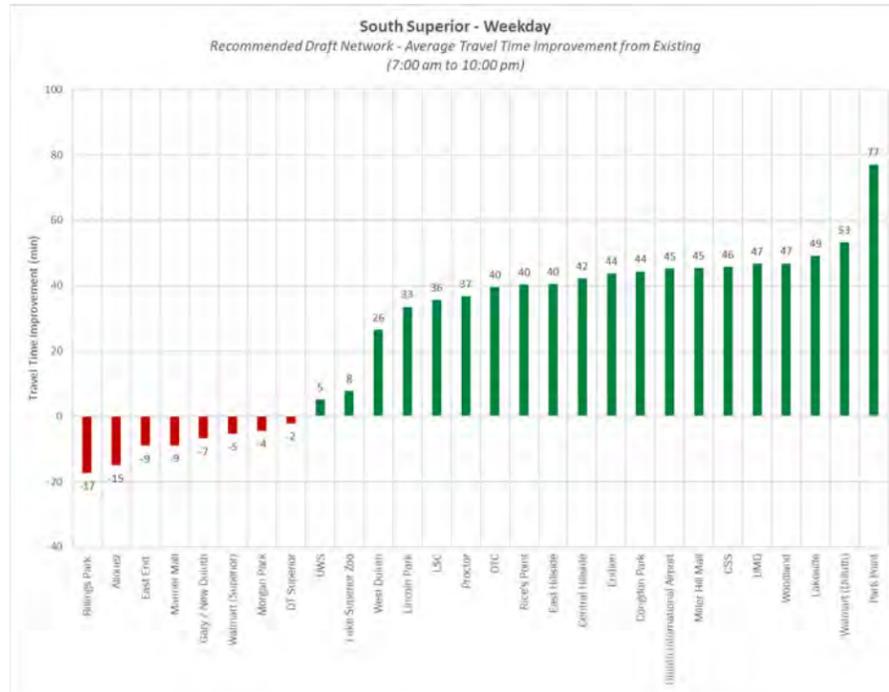
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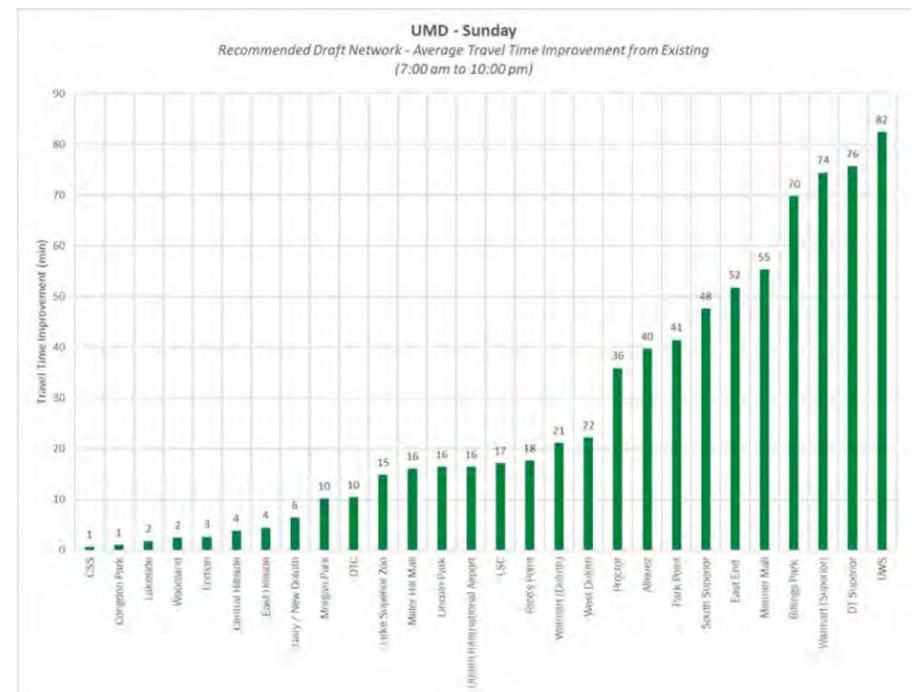
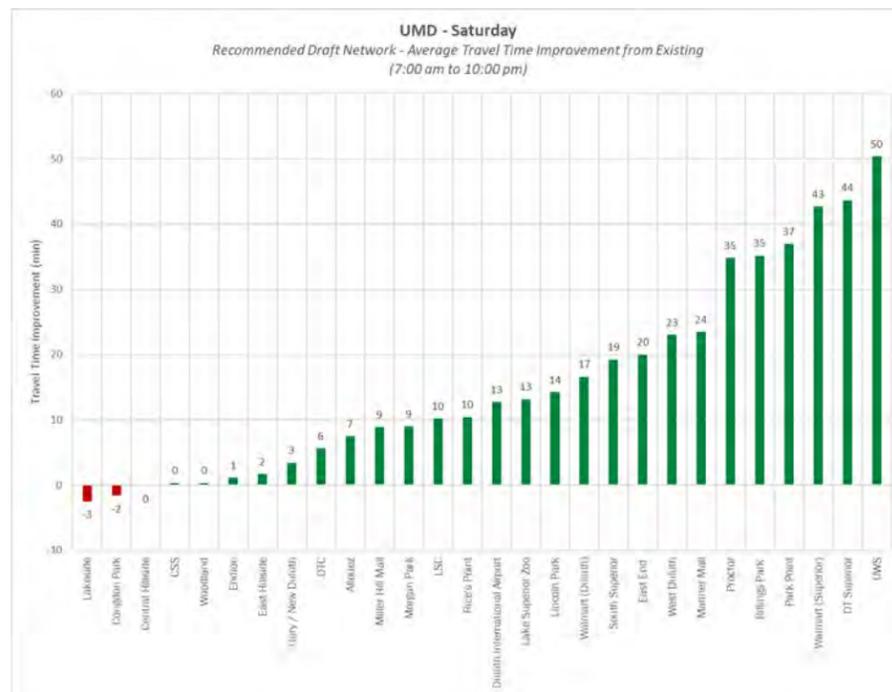
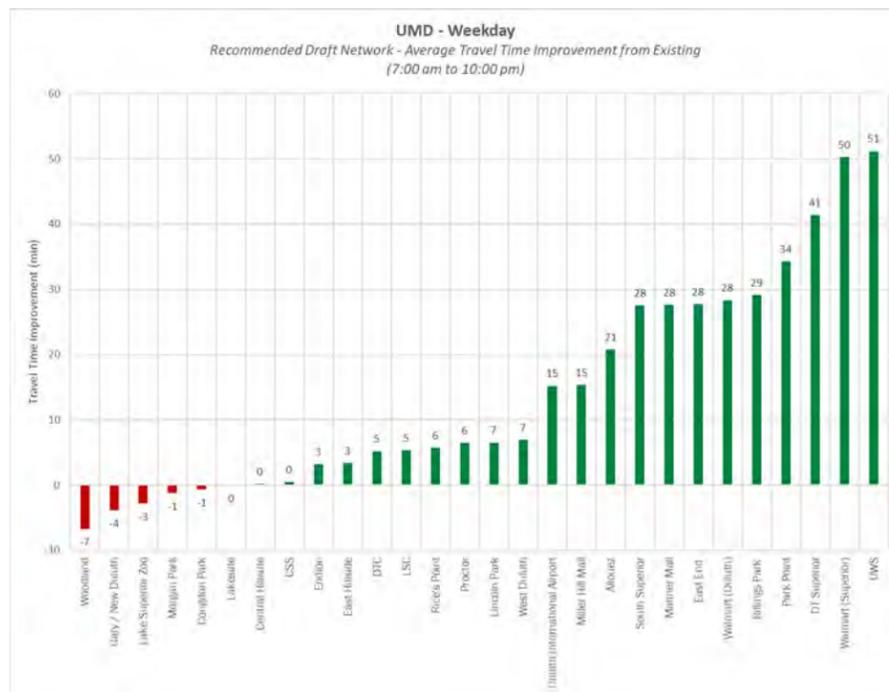
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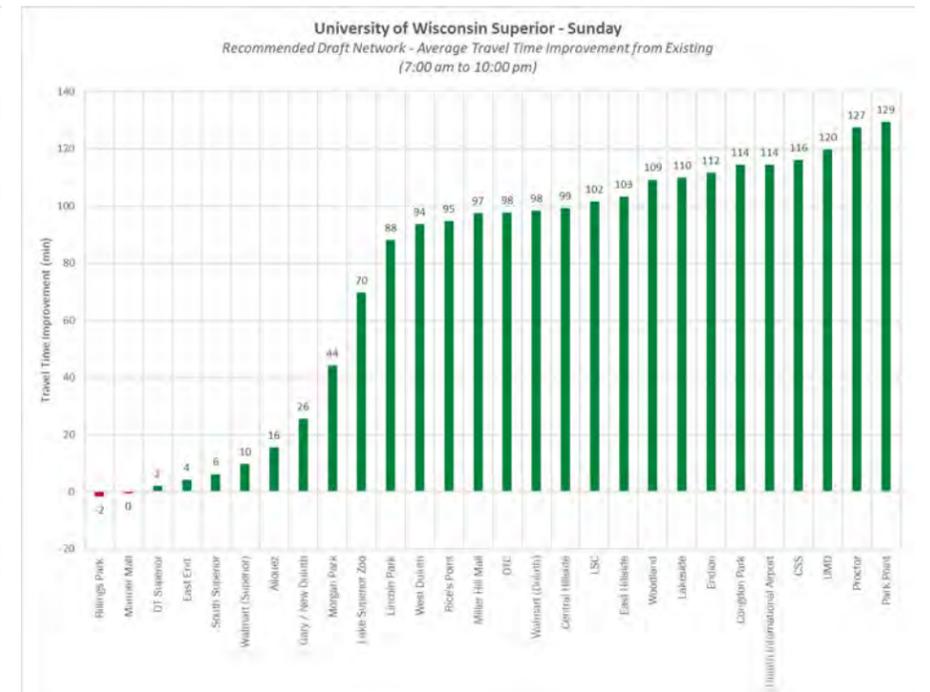
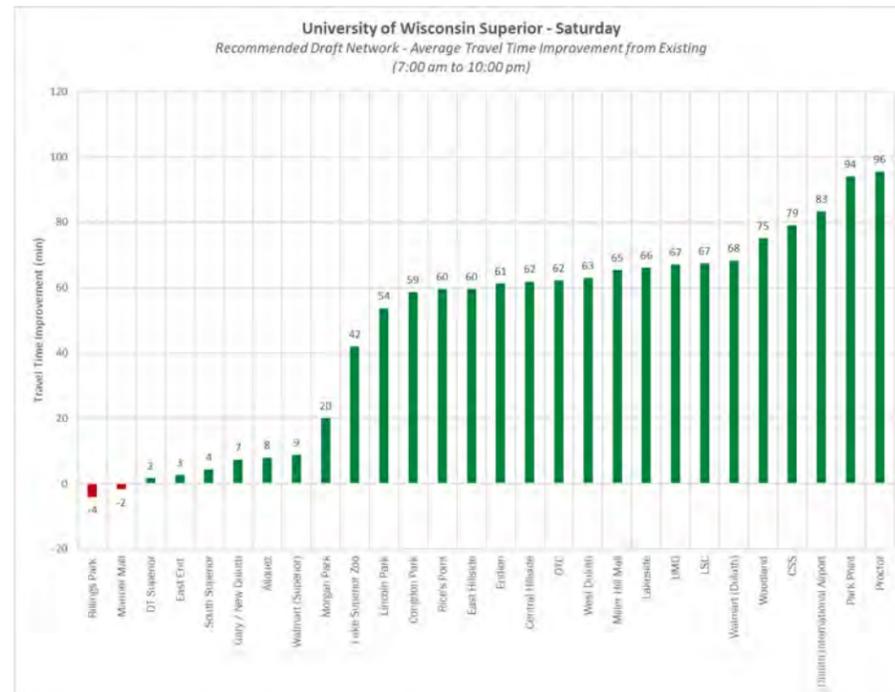
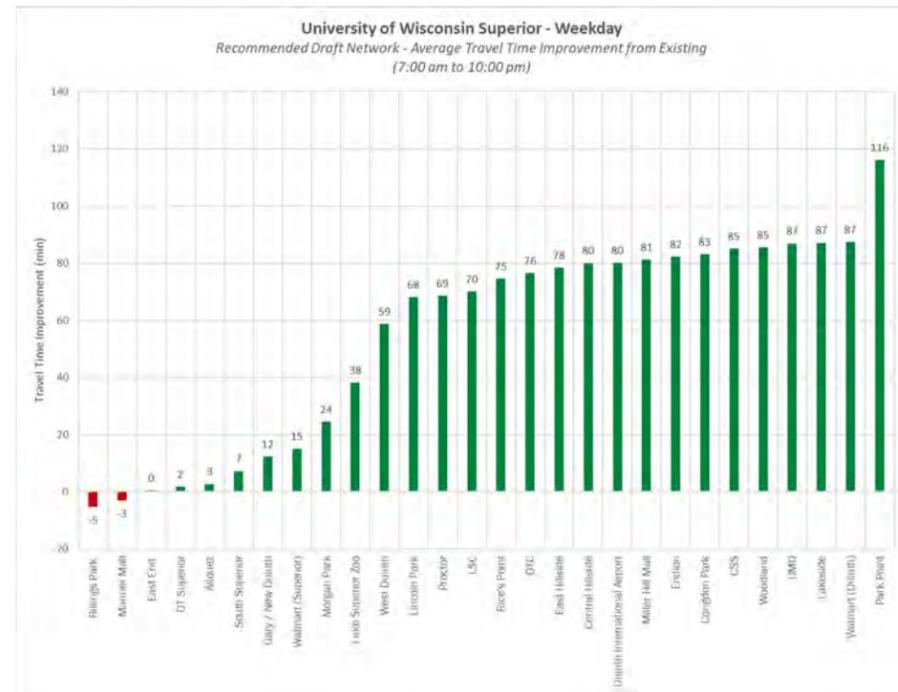
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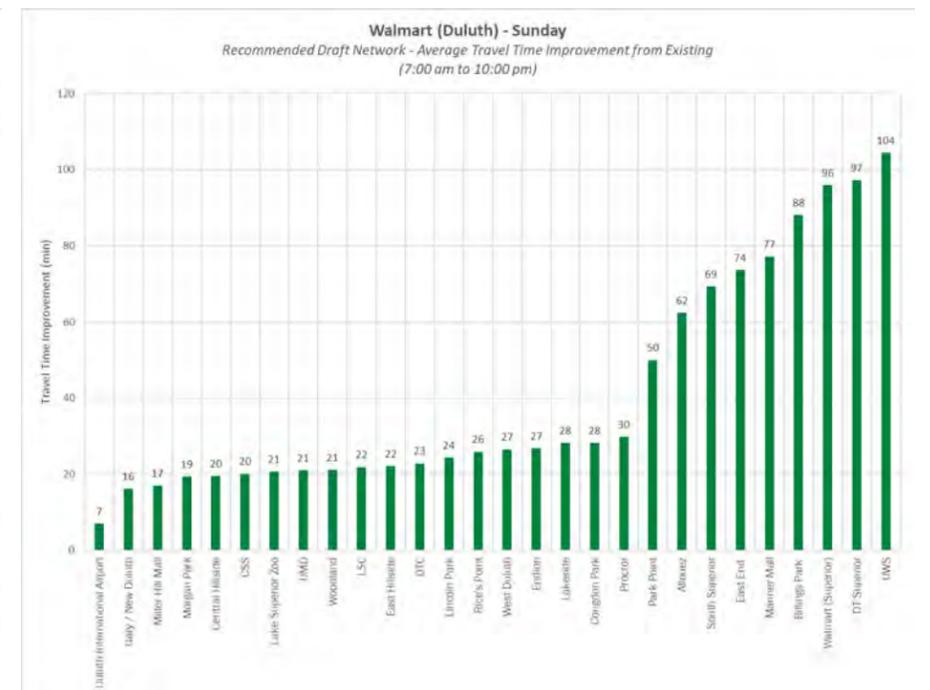
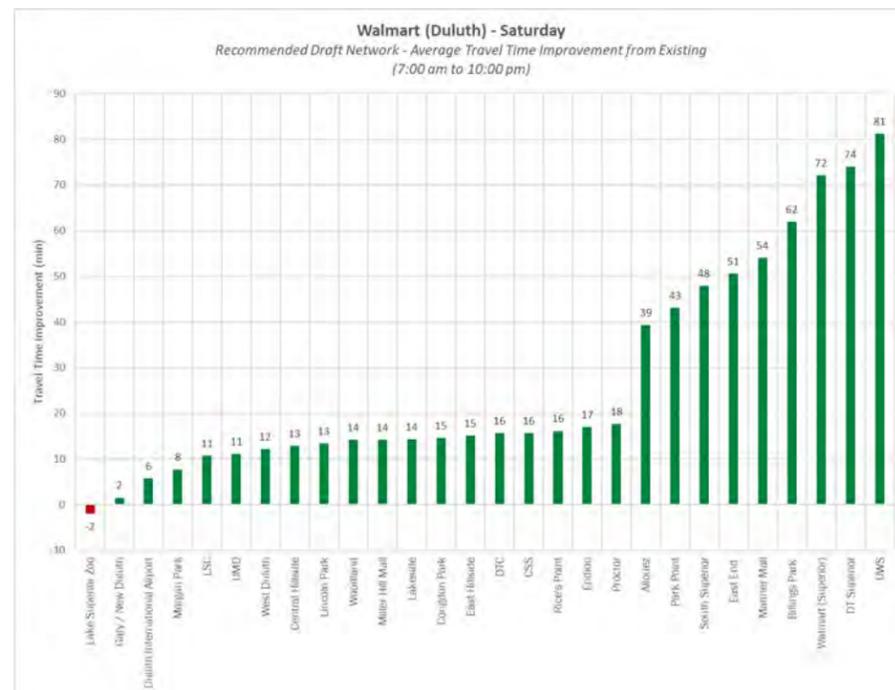
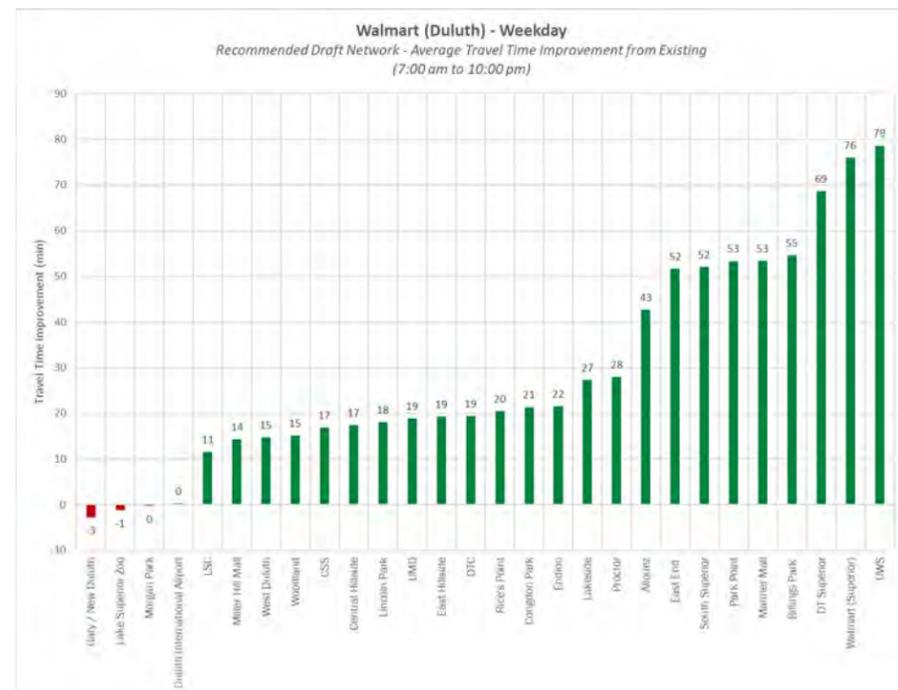
UMD



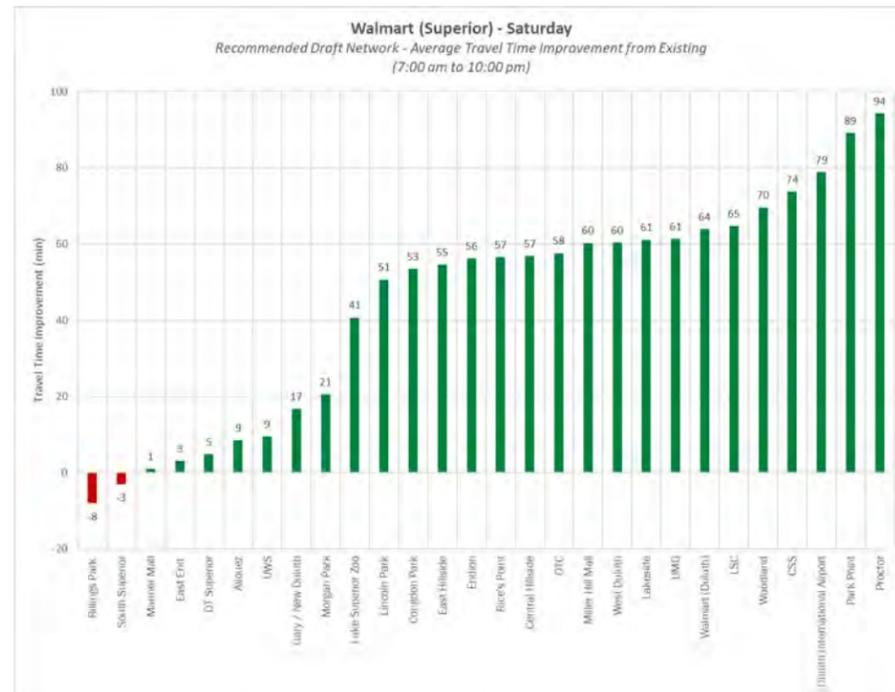
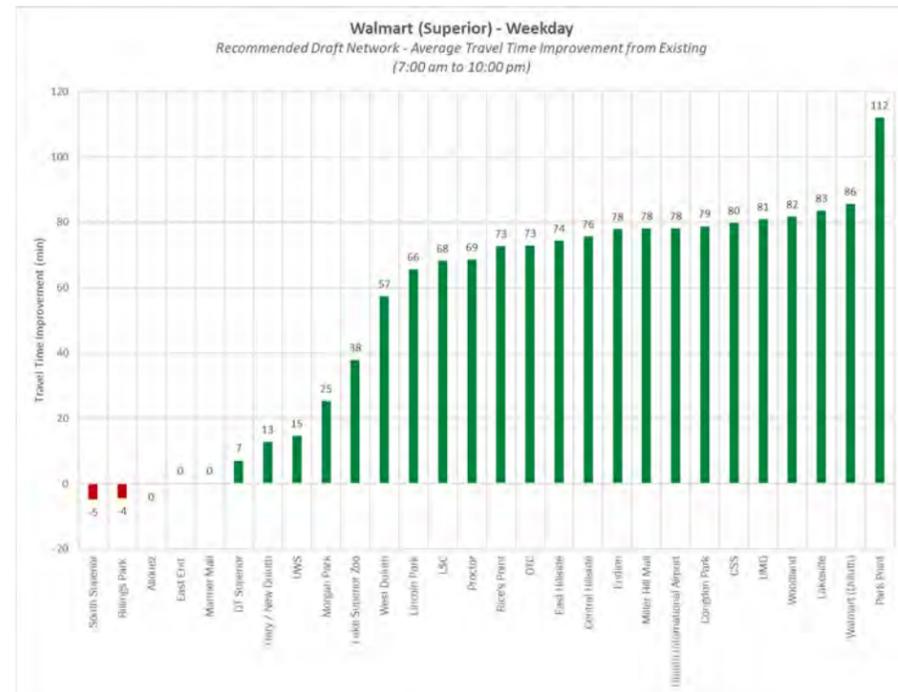
University of Wisconsin Superior



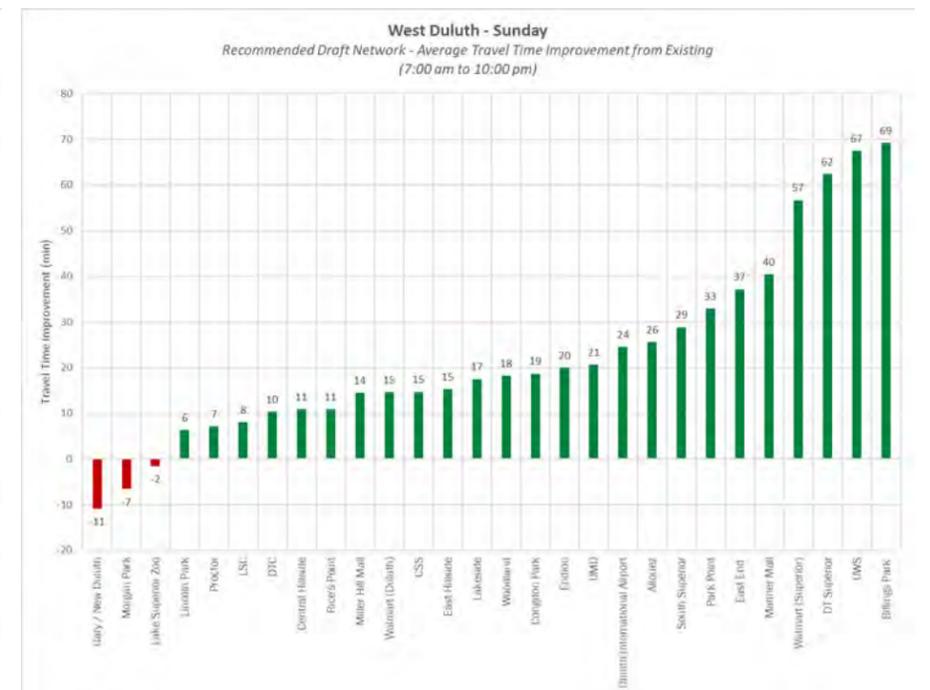
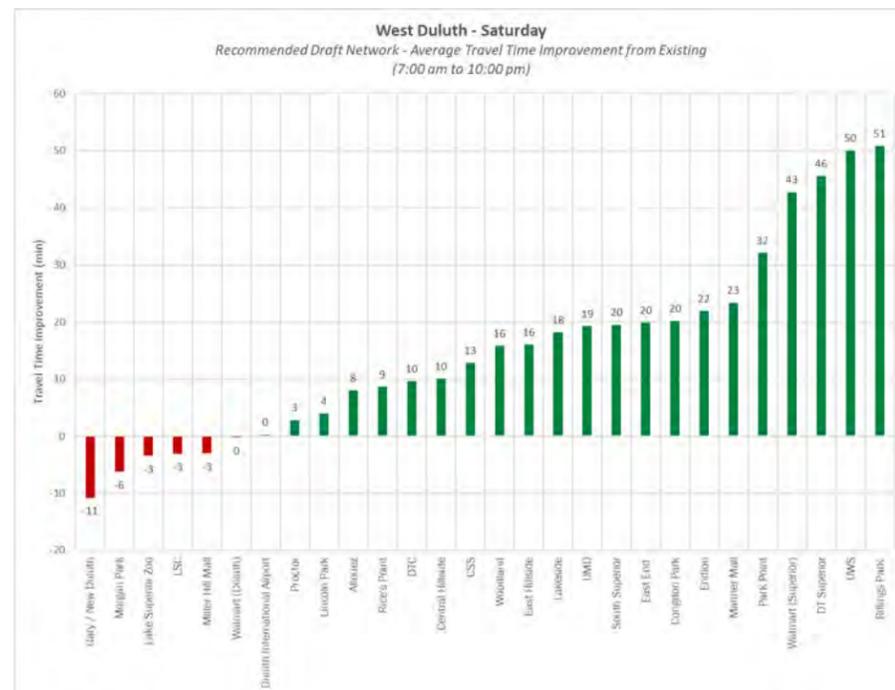
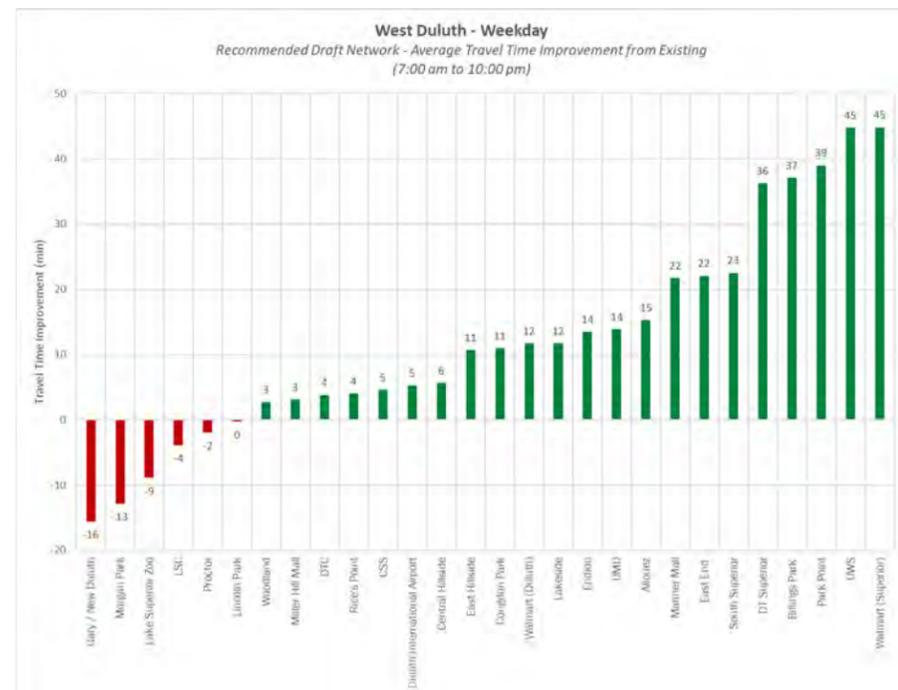
Walmart (Duluth)



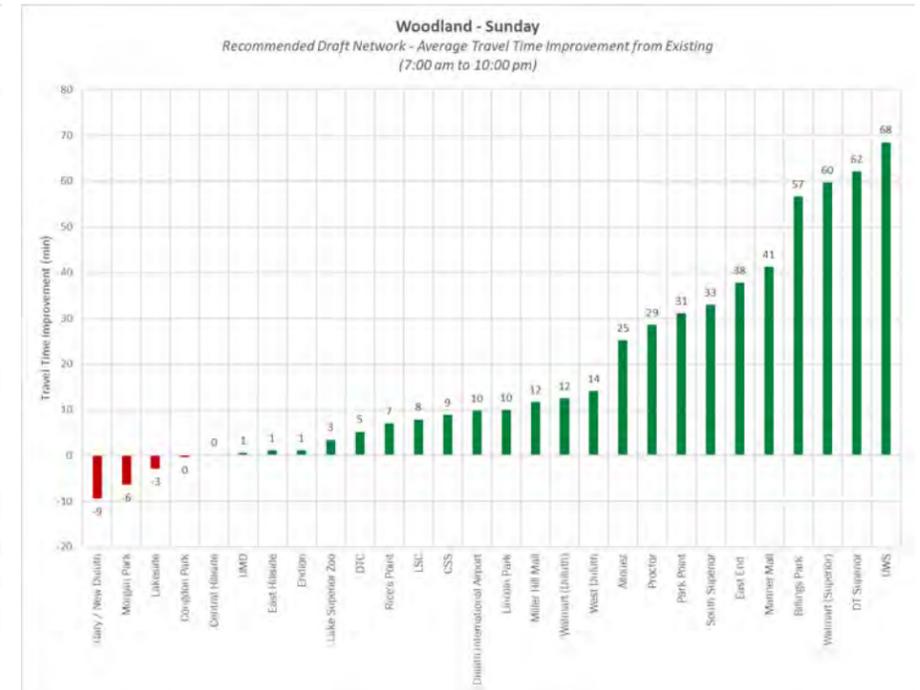
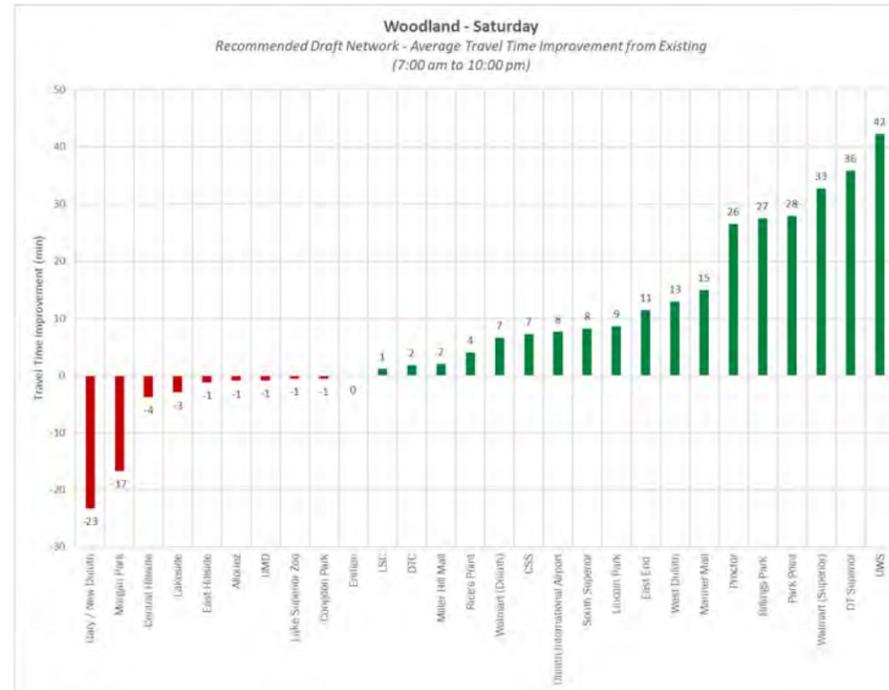
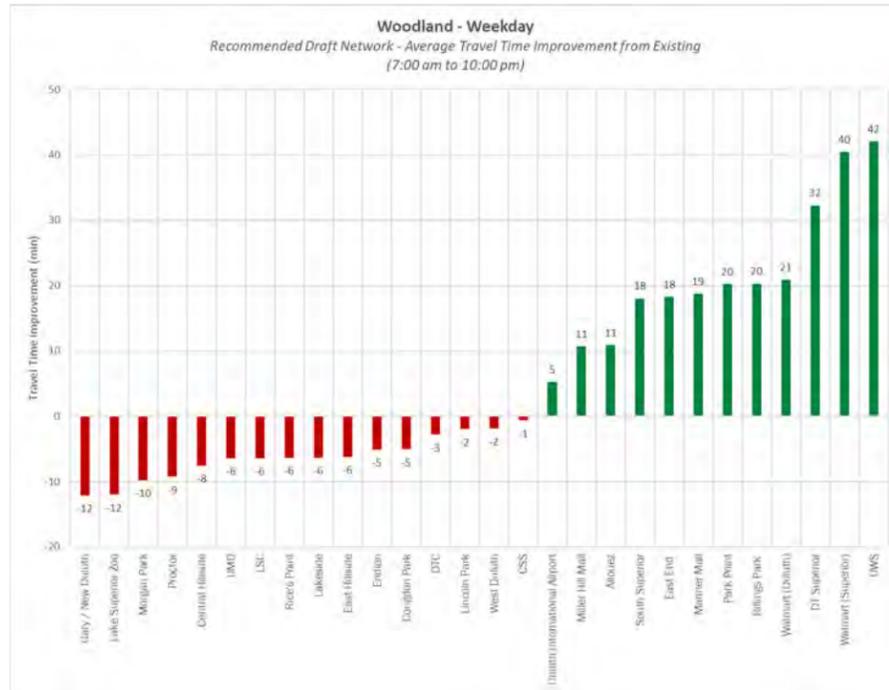
Walmart (Superior)



West Duluth

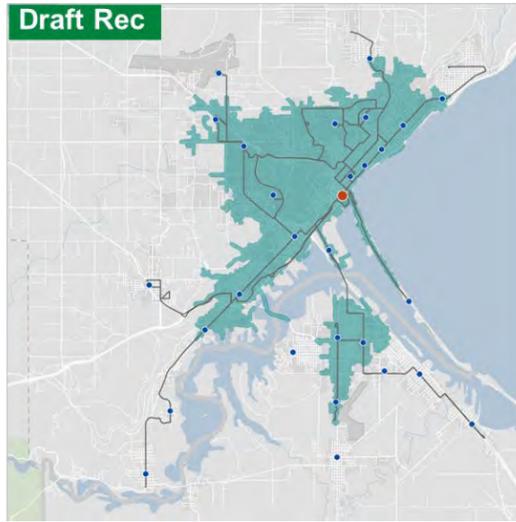
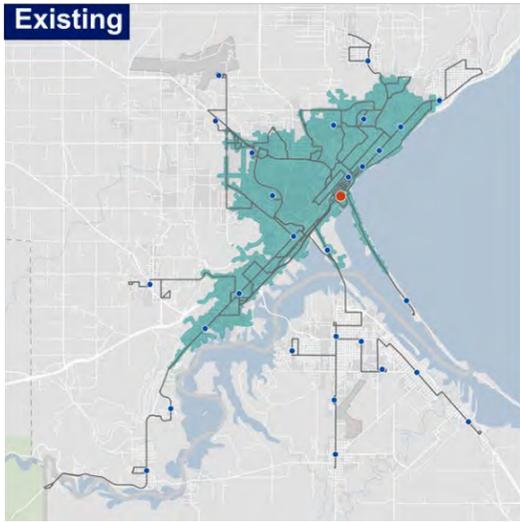


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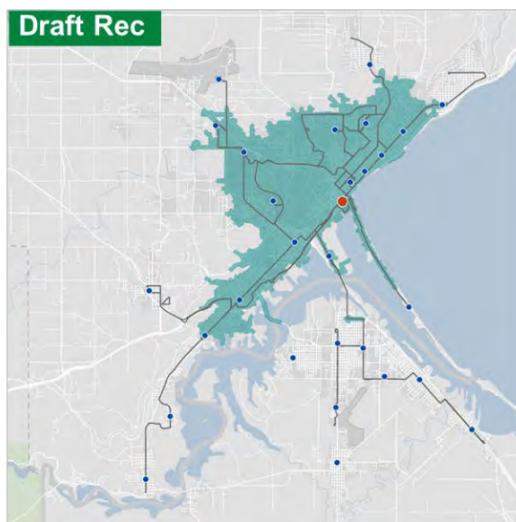
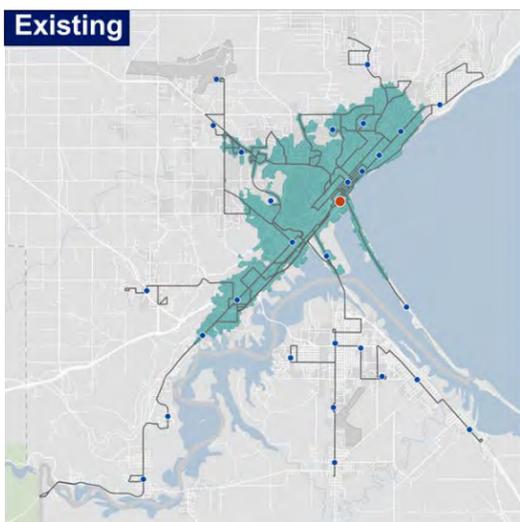
Appendix C: Quality Transit Area Results

Downtown Duluth Weekday QTA



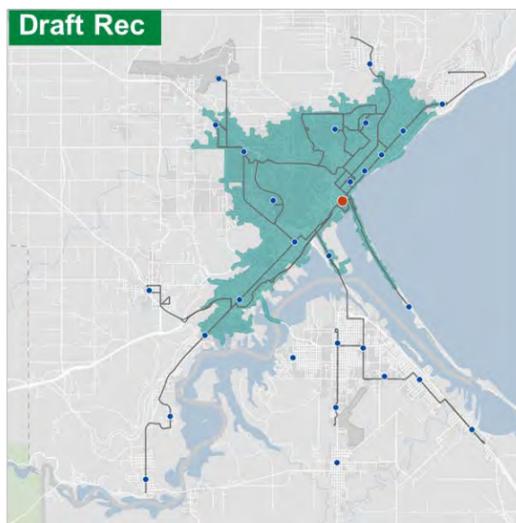
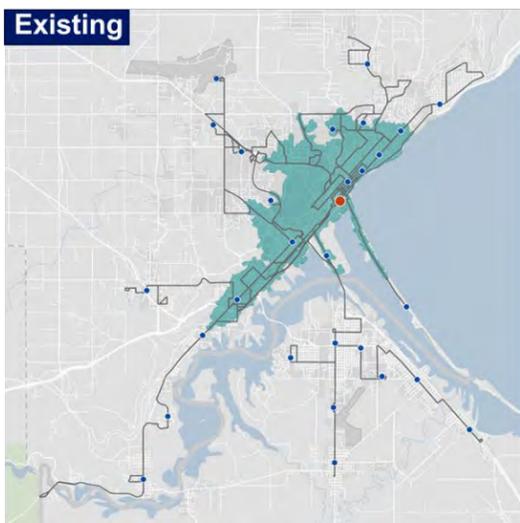
DTC 60 min access Area (75% or greater)		
	Existing	Draft Rec
Total Sq Miles	22	31
% Change	-	+37%

Downtown Duluth Saturday QTA



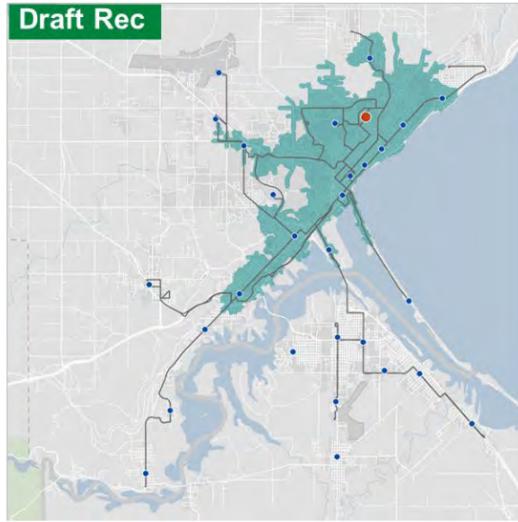
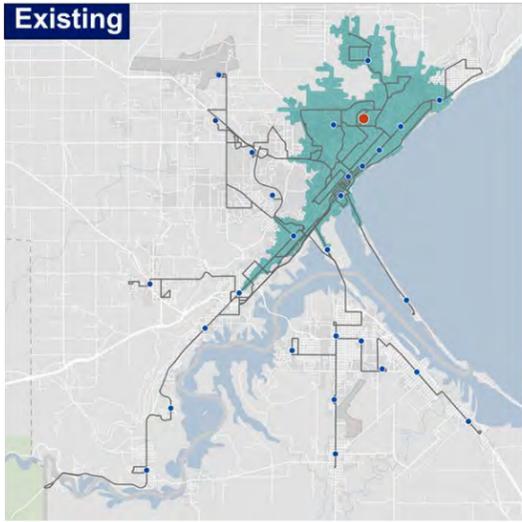
DTC 60 min access Area (75% or greater)		
	Existing	Draft Rec
Total Sq Miles	18	25
% Change	-	+39%

Downtown Duluth Sunday QTA



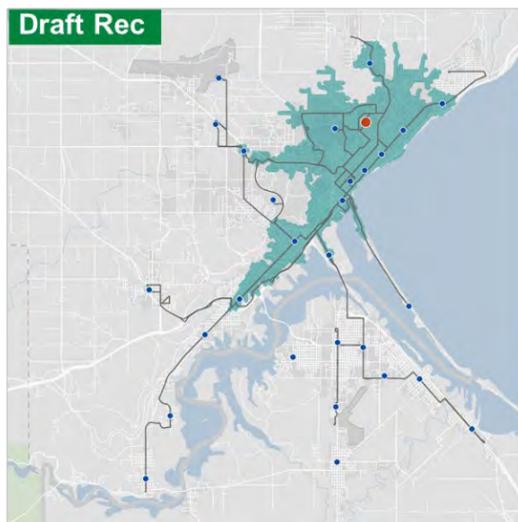
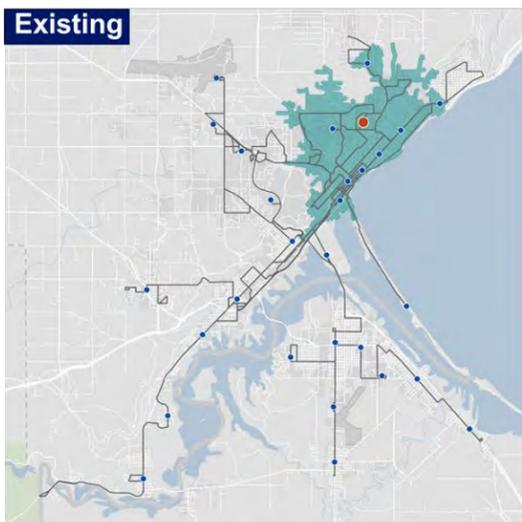
DTC 60 min access Area (75% or greater)		
	Existing	Draft Rec
Total Sq Miles	14	24
% Change	-	+72%

UMD Weekday QTA



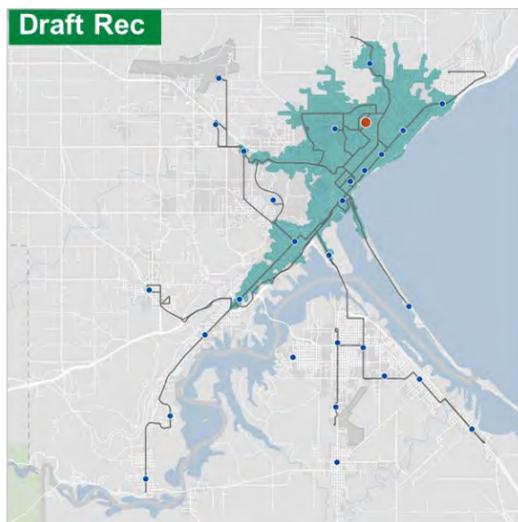
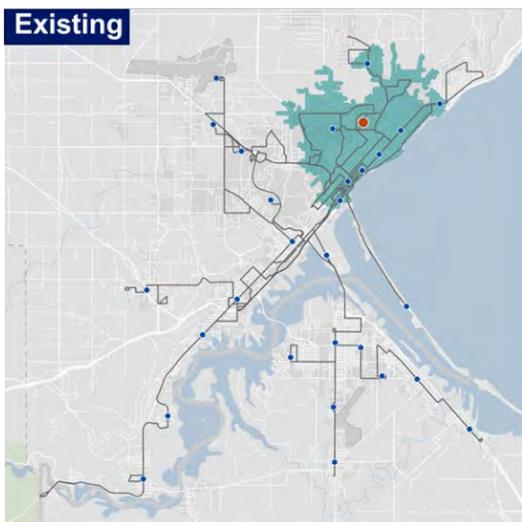
UMD 60 min access Area (75% or greater)		
	Existing	Draft Rec
Total Sq Miles	16	20
% Change	-	+26%

UMD Saturday QTA



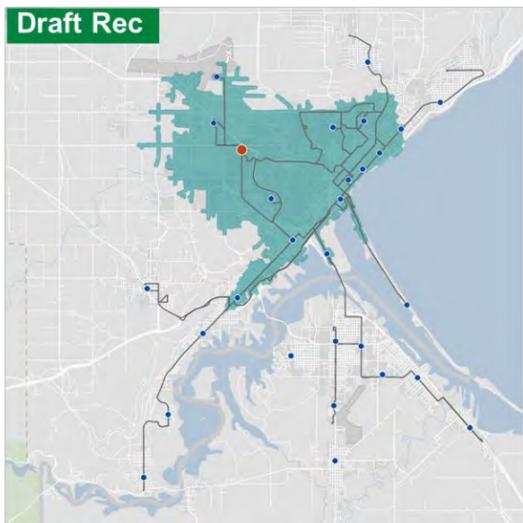
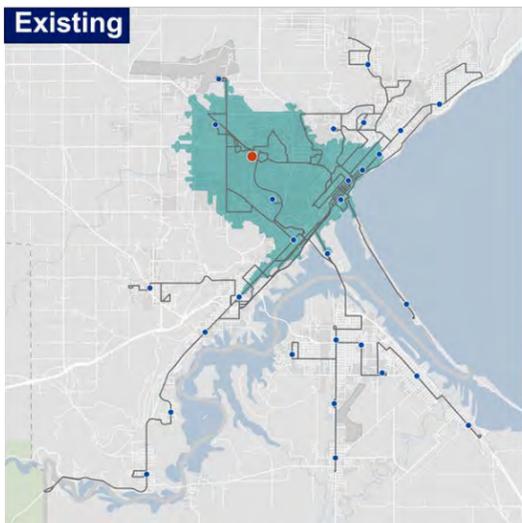
UMD 60 min access Area (75% or greater)		
	Existing	Draft Rec
Total Sq Miles	13	17
% Change	-	+34%

UMD Sunday QTA



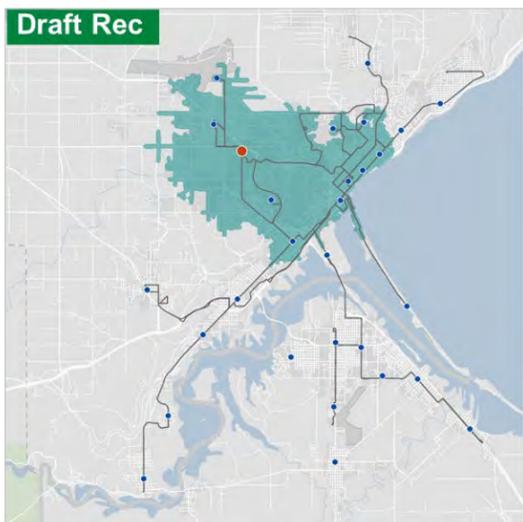
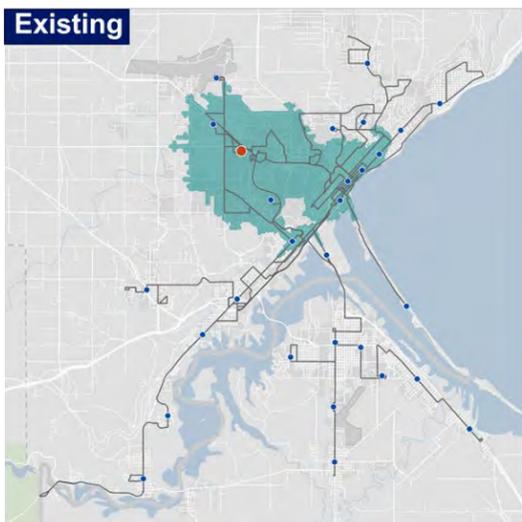
UMD 60 min access Area (75% or greater)		
	Existing	Draft Rec
Total Sq Miles	12	17
% Change	-	+43%

Miller Hill Mall Weekday QTA



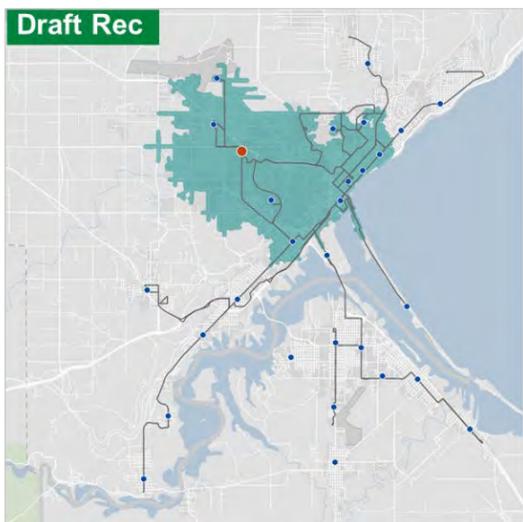
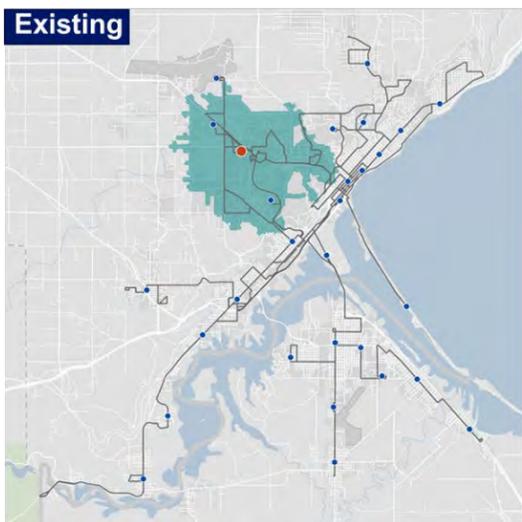
Miller Hill Mall 60 min access Area (75% or greater)		
	Existing	Draft Rec
Total Sq Miles	19	27
% Change	-	+44%

Miller Hill Mall Saturday QTA



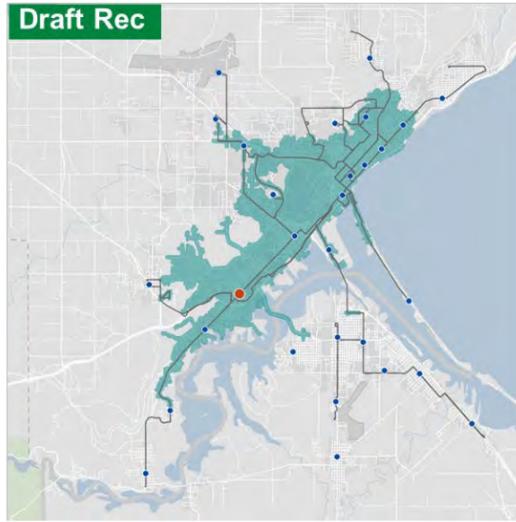
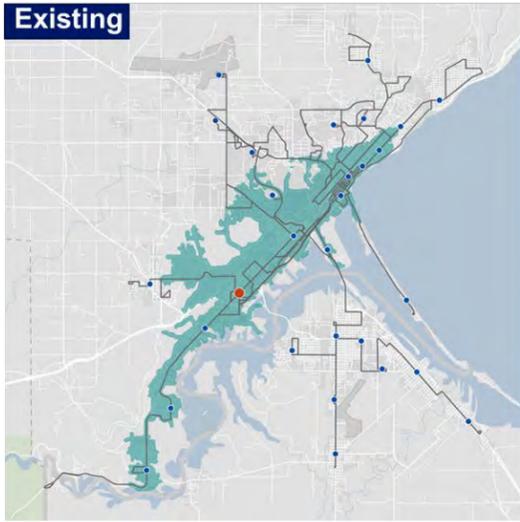
Miller Hill Mall 60 min access Area (75% or greater)		
	Existing	Draft Rec
Total Sq Miles	18	24
% Change	-	+33%

Miller Hill Mall Sunday QTA



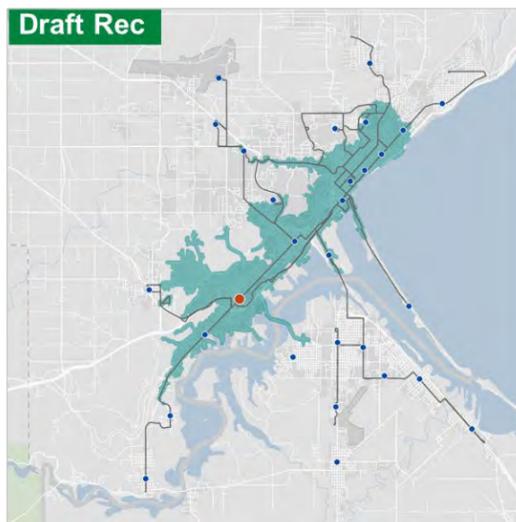
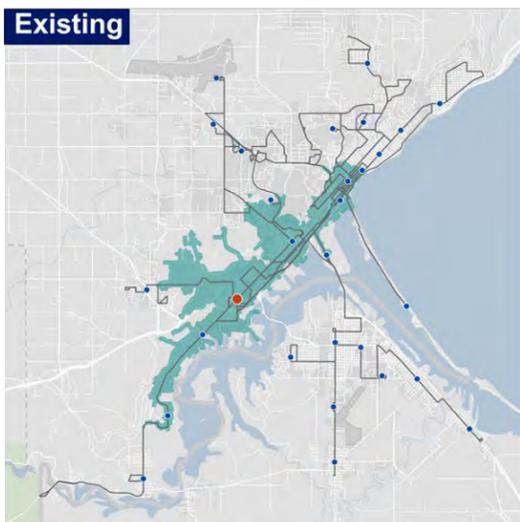
Miller Hill Mall 60 min access Area (75% or greater)		
	Existing	Draft Rec
Total Sq Miles	13	23
% Change	-	+78%

West Duluth Weekday QTA



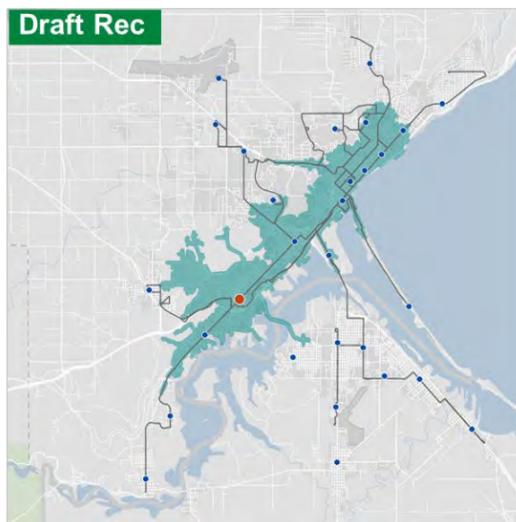
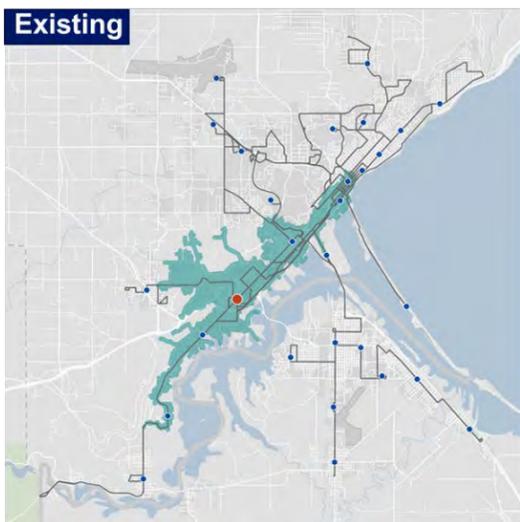
West Duluth 60 min access Area (75% or greater)		
	Existing	Draft Rec
Total Sq Miles	19	22
% Change	-	+19%

West Duluth Saturday QTA



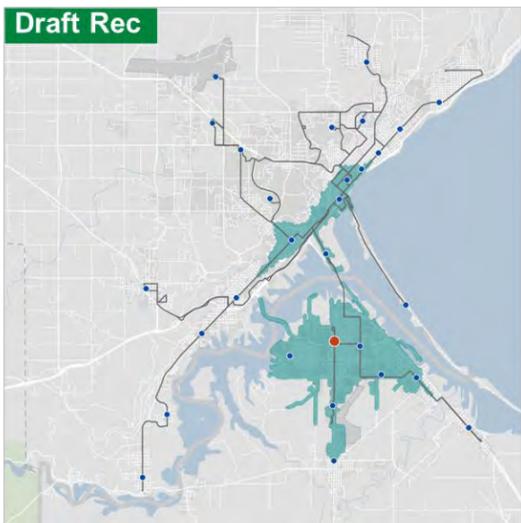
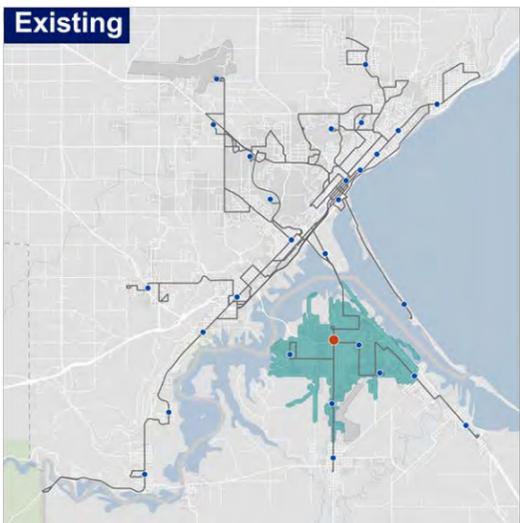
West Duluth 60 min access Area (75% or greater)		
	Existing	Draft Rec
Total Sq Miles	13	17
% Change	-	+35%

West Duluth Sunday QTA



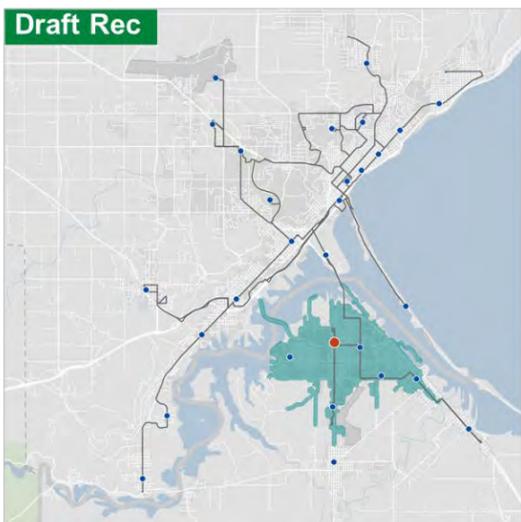
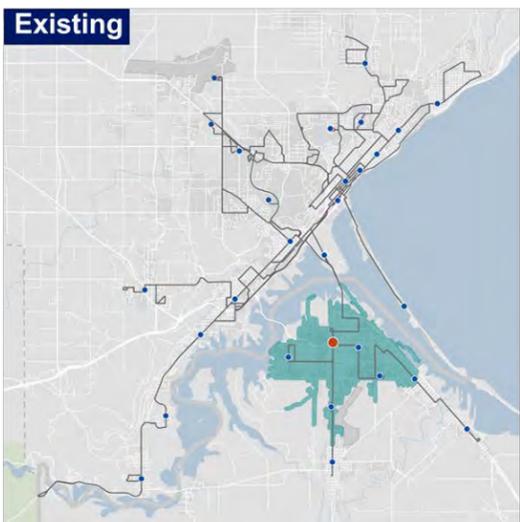
West Duluth 60 min access Area (75% or greater)		
	Existing	Draft Rec
Total Sq Miles	11	16
% Change	-	+50%

Downtown Superior Weekday QTA



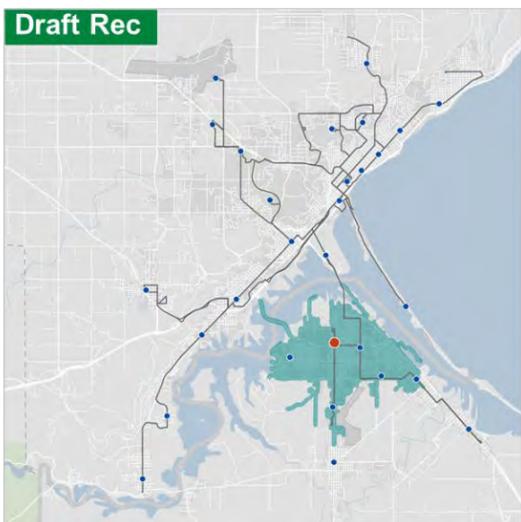
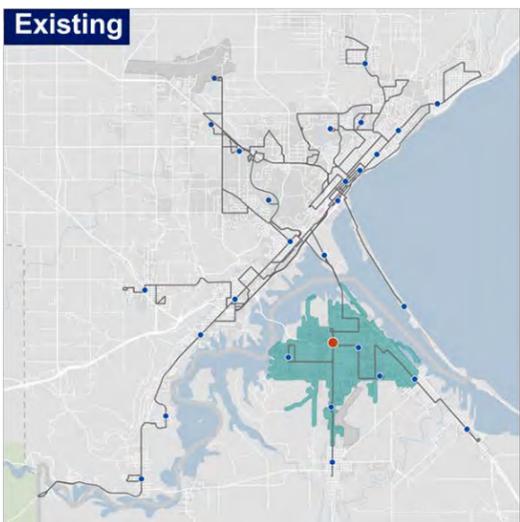
DT Superior 60 min access Area (75% or greater)		
	Existing	Draft Rec
Total Sq Miles	9	13
% Change	-	+44%

Downtown Superior Saturday QTA



DT Superior 60 min access Area (75% or greater)		
	Existing	Draft Rec
Total Sq Miles	9	10
% Change	-	+6%

Downtown Superior Sunday QTA



DT Superior 60 min access Area (75% or greater)		
	Existing	Draft Rec
Total Sq Miles	9	10
% Change	-	+4%

Appendix D: Customer and Driver Survey Technical Memorandum



Comprehensive Operations Analysis Customer and Driver Survey Technical Memorandum

June 2021

*Presented to Duluth Transit Authority
Prepared by Connetics Transportation Group*



Table of Contents

1.0	Introduction	3
2.0	Summary of Key Findings	4
3.0	Survey of Riders and Non-Riders	6
	Demographic Overview	7
	Trip Purpose, Origin, and Destination Overview	14
	Rider Opinions and Satisfaction Levels	19
	Travel Behaviors Pre & Post COVID-19 Pandemic	23
	Open Ended Questions	26
	Customer Survey Key Findings	27
4.0	Driver Survey	28
	General Questions	29
	User Experience Questions	32
	Operational Questions	36
	Driver Survey Key Findings	39
5.0	Stakeholder Meeting #1: Mentimeter Responses	40
	Appendix A: Copy of Customer Survey	43
	Appendix B: Rider and Non-Rider Survey Data	49
	Appendix C: Copy of Driver Survey	74
	Appendix D: Driver Survey Data	79
	Appendix E: Pre and Post Pandemic Rider Behavior Sankey Chart Data	85

Tables

Table 1: “I would ride transit more if...” Results	20
Table 2: DTA Organization Focus Results.....	21
Table 3: Top 5 Response Pairs	25
Table 4: Top 5 Response Pairs Representing a Change in Travel Behavior	25

Figures

Figure 1: Gender Identity Results	7
Figure 2: Age Results.....	8
Figure 3: Racial/Ethnic Background Results	9
Figure 4: Income Results	10
Figure 5: Vehicle Access Results	10
Figure 6: Primary Language Spoken Results	11
Figure 7: Disability Status Results.....	12
Figure 8: Map of Zip Codes	13
Figure 9: Trip Purpose Results.....	14
Figure 10: Regional Trip Origin Results.....	15
Figure 11: Neighborhood Trip Origin Results - Duluth.....	16
Figure 12: Neighborhood Trip Origin Results - Superior.....	17
Figure 13: Trip Destination Results.....	18
Figure 14: Trip Frequency Influencing Factors	19
Figure 15: Rider Satisfaction Results.....	22
Figure 16: Travel Behavior Pre & Post Pandemic.....	23
Figure 17: Travel Behavior Pre & Post Covid Sankey Diagram	24
Figure 18: Driver Tenure Results.....	29
Figure 19: Driver Route Preference Results	31
Figure 20: Passenger Issues reported to drivers.....	32
Figure 21: Areas needing improvement (driver opinion).....	33
Figure 22: Tailored vs Consistent Service (All Drivers).....	34
Figure 23: Tailored vs Consistent Service (Less Senior Drivers)	34
Figure 24: Tailored vs Consistent Service (More Senior Drivers)	34
Figure 25: Top 4 Routes Needing Attention.....	35
Figure 26: Dangerous Stops	37
Figure 27: Tight Turns & Desired Transfers	38
Figure 28: Stakeholder organization type breakdown	40
Figure 29: Stakeholder Perception of DTA services	41
Figure 30: DTA Organizational Focus according to Stakeholders.....	41
Figure 31: Stakeholder Appetite for Change.....	42

1.0 Introduction

The DTA provides transit service to the Twin Ports region which is comprised of portions of St. Louis and Carlton counties in Minnesota and Douglas County in Wisconsin. Fixed-route transit service is provided primarily in and around the City of Duluth, Minnesota and the City of Superior, Wisconsin.

In August 2020, the Duluth Transit Authority (DTA) engaged Connetics Transportation Group (CTG) to conduct a Comprehensive Operations Analysis (COA) of their fixed-route transit system. The COA is structured around five distinct phases, with each phase having the following objectives:

- **Phase 1 Guiding Principles:** Determines the elements and strategies that guide the COA process.
- **Phase 2 Existing Conditions:** Review and assess the regional markets and existing DTA service.
- **Phase 3 Identify and Evaluate Alternatives:** Create service delivery concepts for the future DTA network.
- **Phase 4 Finalize Recommended Network:** Select a final recommended network for implementation.
- **Phase 5 Implementation and Scheduling Plan:** Create a plan to executive service changes and implement the recommended network.

CTG worked with DTA staff and members of a technical advisory group (TAG) to complete a list of Guiding Principles to complete the study. Based on these principles, the COA recommended network should efficiently deploy resources and have buy-in from the community. Further, the recommended network should be attractive to Twin Port's residents, improve the passenger experience, improve access to opportunity, and be equitable, resilient, and easy to scale when opportunity arises.

This technical memorandum presents the methodology and findings of three public engagement activities conducted for the COA including a community survey, DTA driver survey, and a summary stakeholder feedback. Each section provides a brief analysis of the survey questions and denotes an overview of general trends and key findings.

Section 2: Summary of Key Findings highlights the primary findings of sections 3, 4, and 5 of this document. These findings will help to inform decision making when developing network recommendations.

Section 3: Community Survey documents respondent feedback from the community on usage and preferences related to travel patterns and DTA service.

Section 4: DTA Driver Survey documents driver responses to a survey that discussed preferences and operational difficulties.

Section 5: Stakeholder Meeting #1 Feedback provides the results of the Mentimeter survey that took place during the virtual Stakeholder #1 Meeting on February 25th, 2021.

Appendices provides supporting documentation of the surveys, including copies of the survey questions, and complete survey response data.

2.0 Summary of Key Findings

The following details the key findings from this technical memorandum. These findings help document responses from community members, DTA drivers, and regional stakeholders. They will be utilized to assist in identifying and evaluating service alternatives, and ultimately determining the final recommended transit network.

Community Survey

DTA ridership is expected to gradually rebound but may experience long-term impacts from the pandemic.

- Of respondents choosing “almost daily” as their pre-pandemic response, 89% stated they would continue riding daily post pandemic.
- 68% of respondents indicated no change in the frequency they plan on taking transit after the pandemic, compared their pre-pandemic response.

Respondents indicated that most trips in the region (79%) started in Duluth, with nearly half (47%) beginning in four main neighborhoods.

- The four neighborhoods, listed in order of frequency, are: 1) West Duluth, 2) East Hillside/Chester Park, 3) Lakeside/Lester Park, & 4) Lincoln Park

Work trips was the most common response for why respondents utilized transit.

- 54% of respondents included work as at least one of the reasons they ride the DTA
- 41% of respondents included “leisure destination” as at least one the reasons they ride DTA

Downtown Duluth is the number one trip destination for transit trips taken in the region.

- 67% of respondents chose “Downtown Duluth” as one of their typical transit destinations
- Miller Hill Mall Area and Western Duluth were 2nd and 3rd, with 40% and 22%, respectively

Not having access to a ride or personal vehicle was the primary factor that influenced the frequency of transit usage.

- 91% of respondents stated “No ride or vehicle available to use” was the factor that increased the frequency of taking transit the most

Respondents ranked “increasing ridership” and “increase access to employment” as the top responses for the DTA to focus on as an organization.

- These responses indicate that the community would like service to be focused in more dense areas of the system and provide service to key destinations/employment areas.

Driver Survey

Transfers (both locations, and the transfer ticket specifically) cause issues for drivers and passengers.

- Garfield & Superior is a location where transfers are often attempted, but the schedule does not reliably allow for them to occur
- There are trips, specifically on evenings and weekends, that take longer to complete than the 60-minute transfer window allows
- Drivers do not uniformly enforce transfers, and passengers attempt to improperly use transfers, leading to confusion at the farebox

Drivers believe that stops are located too close together and it degrades the quality of service.

- 64% of drivers listed “stops are too close together” as one of their top areas needing most improvement

Reconstructed 1st and Superior streets have made turns onto these streets more difficult for drivers.

- Modified and newly constructed roads should be reviewed to ensure adequate space is allowed for bus stops

DTA drivers are more influenced by the hours of their workday than the specific routes they cover.

- Generally, the preference is for straight shifts with evenings and weekends off

Drivers indicated that Route 17 may need to be reviewed and considered for improvements.

- 48% of drivers said they avoid this route, with the primary reasons being tight timing and a lack of restrooms or layover locations along the route.

Stakeholder Meeting #1 – Feedback

Stakeholders present at the February 25th, 2021 Stakeholder meeting believe that DTA’s most important organizational focus should be serving areas of higher ridership.

Most respondents believe there should be change in the network, with 74% of respondents demonstrating a moderate to significant appetite for change.

3.0 Community Survey

The Duluth-Superior Metropolitan Interstate Council (MIC) and the Duluth Transit Authority (DTA) developed a public survey to collect feedback for the Better Bus Blueprint study from current riders and the community at large. The survey consisted of 23 questions aimed to address how well the DTA is serving the community and included inquiries related to demographics, trip purpose, trip origins and destinations, opinions on DTA's existing service and priorities, and travel behaviors prior to and during the COVID-19 pandemic. The survey was made available online (through Survey Monkey) and provided as a hard copy to select areas and upon request.

The survey was launched after the first Better Bus Blueprint stakeholder meeting on February 25th, 2021 and remained open until April 12th, 2021, a period of 46 days. Regional stakeholders (representatives from government entities, schools and housing, economic development, employment, public health, and advocacy organizations), were asked to share the link to the survey with their respective networks. Additional promotion occurred via social media and on fliers distributed throughout the community. Beyond the online survey, physical copies were distributed to hard-to-reach and underrepresented communities. To incentivize completion of the survey, respondents had the option to leave their email address for a chance to win prizes such as gift cards to area businesses and bus passes.

The final survey results included 562 responses. Of the respondents that chose to provide demographic data, most were white, female, primarily English speaking, living without a disability, and earning less than \$50,000/year.

The following details the key findings of the community survey. Details of each survey component are discussed on the following pages, and a copy of the complete survey and results can be found in **Appendices A and B**.

Demographic Overview

Each respondent was asked optional demographic questions. The results were utilized to ensure that the survey was representative and allowed for additional crosstabulation analysis. Over 80% of survey respondents provided demographic feedback.

Gender Identity

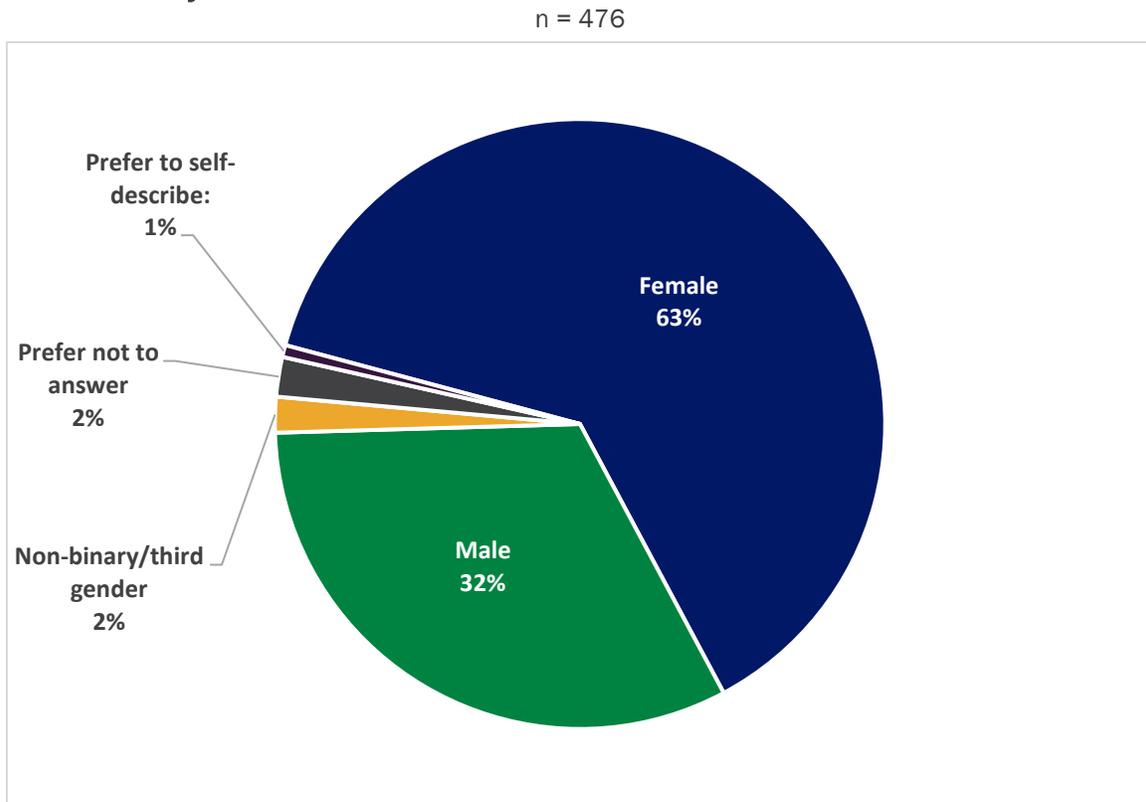


Figure 1: Gender Identity Results

Respondents identifying as female were slightly overrepresented in the survey results. According to 2018 American Community Survey (ACS) Data, the study area is approximately evenly split between males and females. Five percent of respondents identified as a gender other than male or female or preferred not to answer.

Age

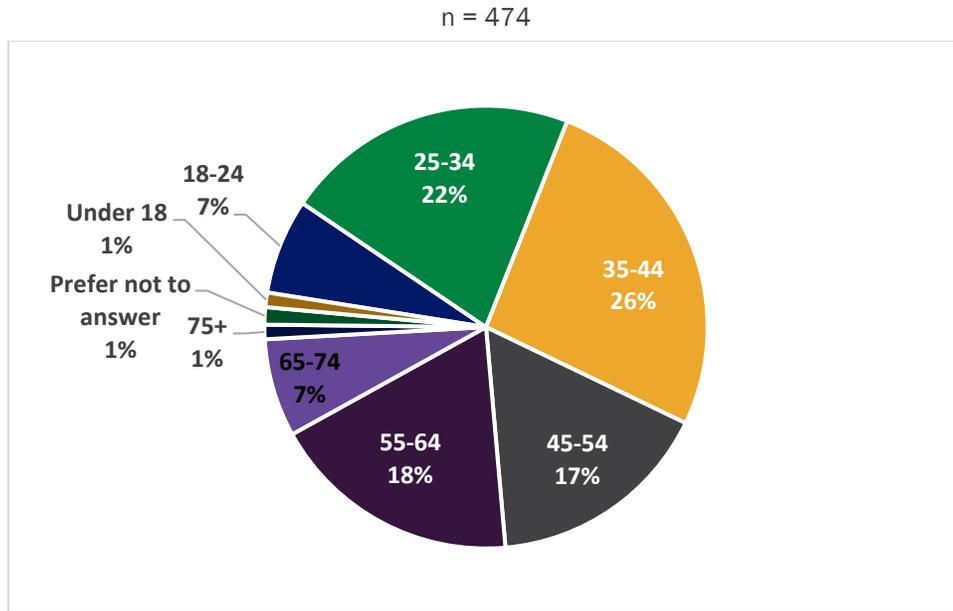


Figure 2: Age Results

The 18-24, 65-74 and 75+ age groups were slightly underrepresented in the survey, and the 25-34 and 35-44 age groups were slightly overrepresented. The overrepresentation of the age range between 25 and 54 is typical in transit, as this is when people are typically most economically active. According to 2018 ACS Data within the study area, 20% of the population is under the age of 18, 13% is between ages 18 and 24, 12% is between ages 25 and 34, 12% is between ages 35 and 44, 13% is between ages 45 and 54, 14% is between ages 55 and 64, 10% between ages 65 and 74, and 7% is over the age of 75.

Racial/Ethnic Background

n = 471

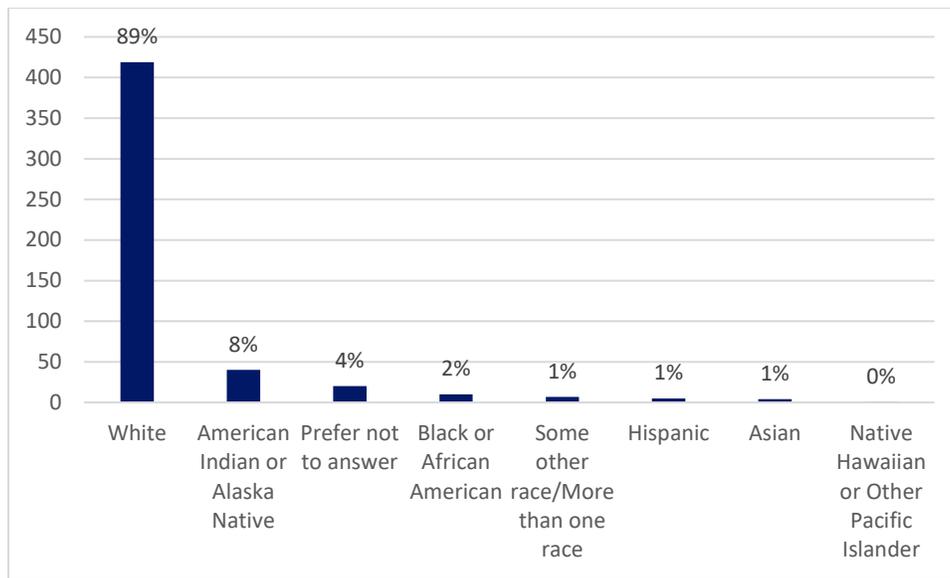


Figure 3: Racial/Ethnic Background Results

Note: Respondents allowed to choose more than one option. Percentages based on 471 responses.

Eighty-nine percent of respondents identified as white alone. The largest, non-white racial identity in the survey was American Indian or Alaska Native, with 8% of respondents. Black or African American, Hispanic, Asian, and “some other race/more than one race” each captured 1-2% of responses. According to 2018 ACS Data, 91% of the study area population identifies as white alone.

Income & Vehicle Access

n = 473 & 539

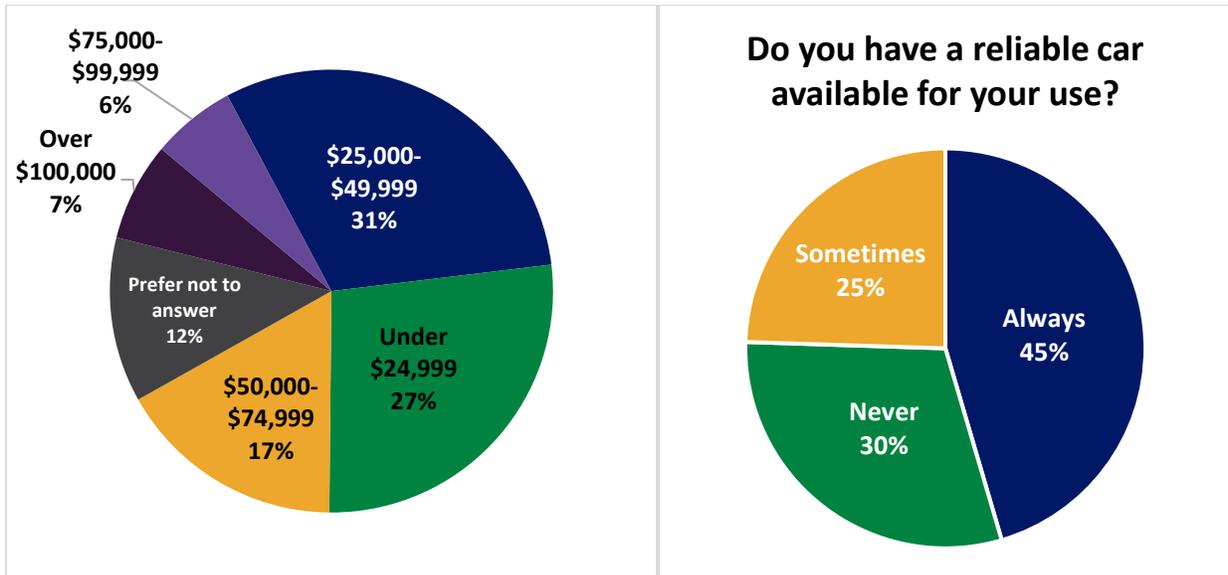


Figure 4: Income Results

Figure 5: Vehicle Access Results

Lower income and vehicle ownership households tend to rely more heavily on transit. Almost 60% of respondents reported earning an annual income less than \$50,000, 27% reported earning an income under \$25,000, and 7% of respondents reported earning an annual income over \$100,000. Forty-five percent of respondents always had access to a reliable car, while the remaining 55% either had limited access or no access. This response was significant as 2018 ACS data shows that only 2% of the study area households do not own a at least one car.

Primary Language Spoken

n = 471

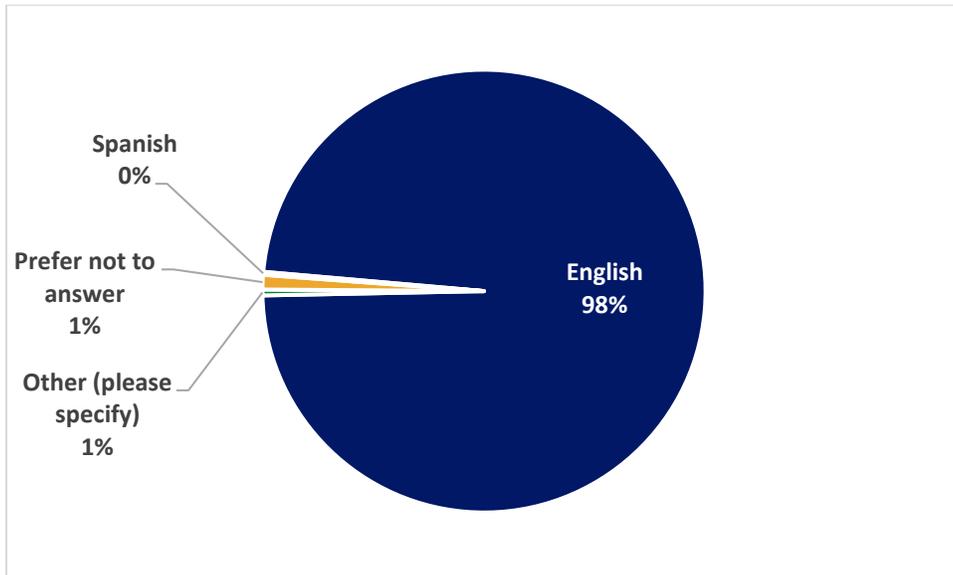


Figure 6: Primary Language Spoken Results

According to 2018 ACS data, nearly 99.8% of the study area population speaks English fluently. The survey reflects this with 98% of respondents reporting speaking primarily English. Less than 1% percent spoke primarily Spanish and 1% classified as “Other” which was determined through processing to be respondents who spoke Ojibwe, the language spoken by the Ojibwe people (the fifth largest Native American population in the United States).

Disability Status

n = 448

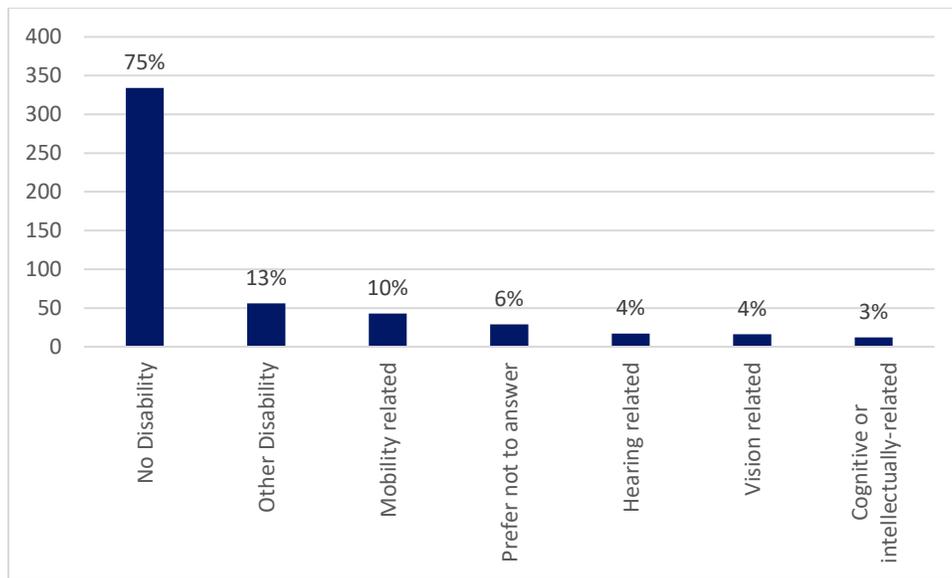


Figure 7: Disability Status Results

Note: Respondents allowed to choose more than one option. Percentages based on 448 responses.

Persons with disabilities are less likely to operate personal vehicles and their mobility is often more dependent on transit services. According to 2018 ACS data, only 10% of the study area population lives with a disability, but 25% of respondents reported living with a disability. Ten percent of respondents lived with disabilities related to mobility, 4% related to hearing, 4% related to vision, 3% related to cognitive or intellectual deficiency, and 13% classified as other.

Zip Codes

Survey responses by zip code (self-reported) are shown in the figure below.

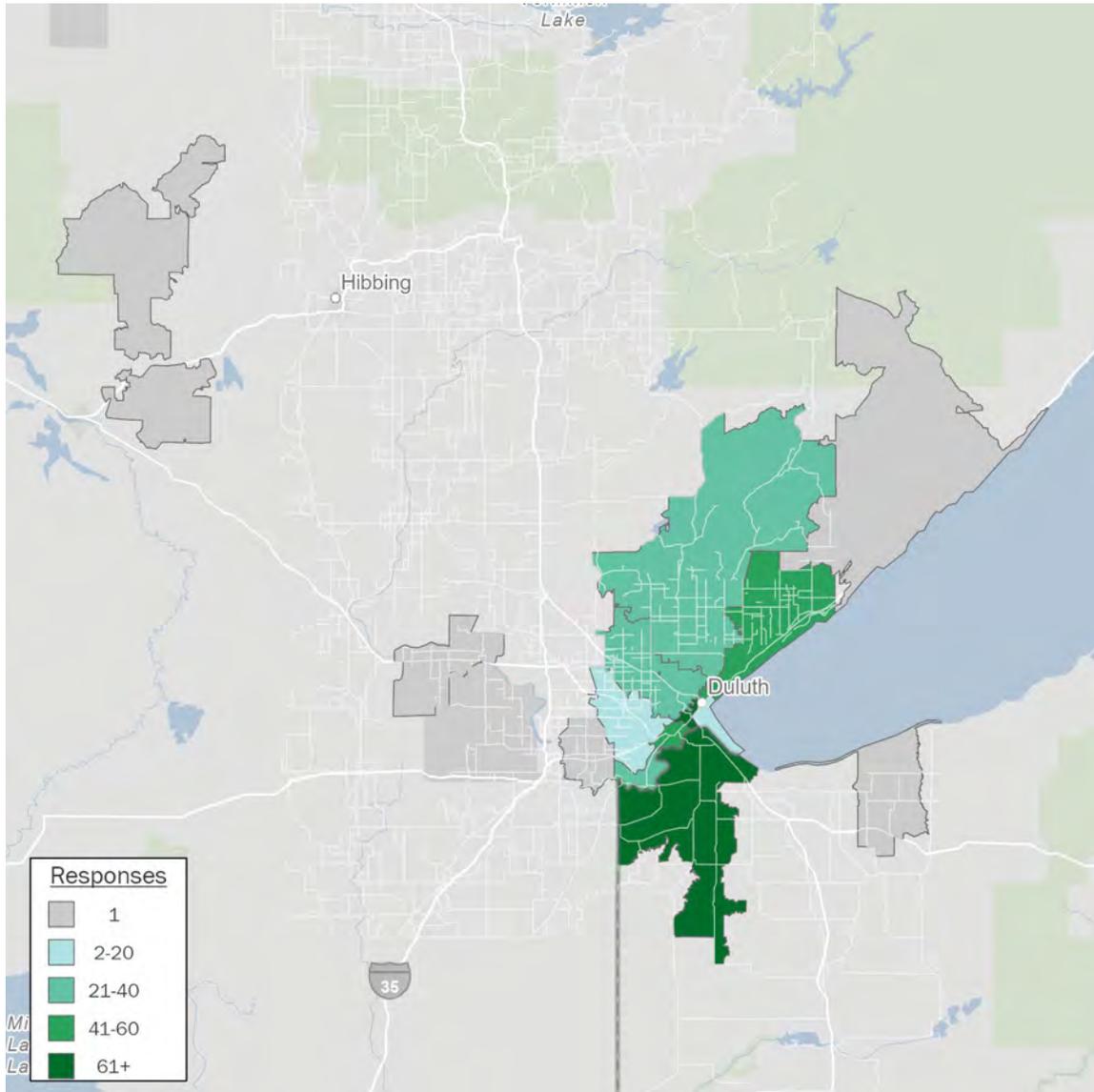


Figure 8: Map of Zip Codes

Trip Purpose, Origin, and Destination Overview

The origin and destination-related questions asked for responses related to a person’s trip origin (prior to the pandemic), and based on their response, additional questions were asked. The trip purpose questions focused on identifying what reasons respondents utilized transit for.

Trip Purpose*

n = 539

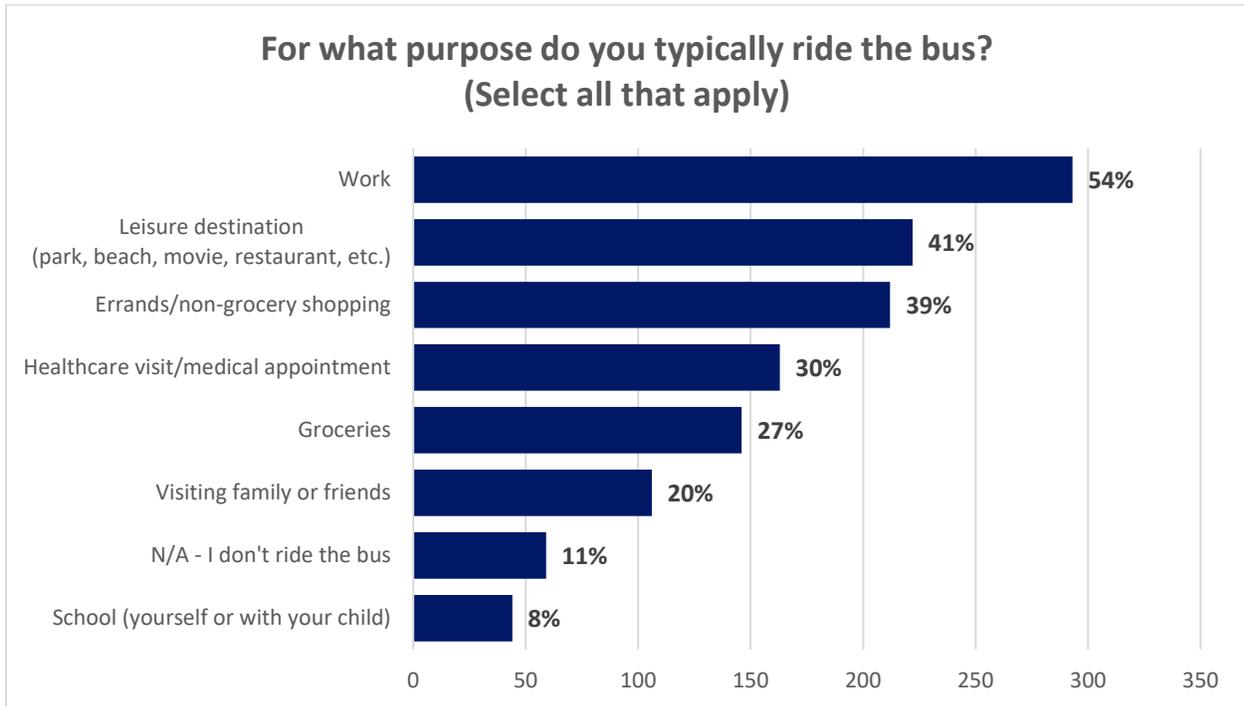


Figure 9: Trip Purpose Results

Note: Respondents allowed to choose more than one option. Percentages based on 539 responses.

Over half of respondents (54%) listed “work” as at least one of the reasons they typically ride the bus. While percentages fluctuate, it does align with national trends that work was the primary trip purpose for transit riders. “Leisure destination” was the second most common trip purpose with 41% of respondents listing it as at least one of the reasons they typically ride the bus. This outpaced more essential travel like Errands (39%) and Healthcare visits (30%). Only 8% of respondents listed “School” as a trip purpose despite the several college campuses in the region (namely the University of Minnesota – Duluth, the University of Wisconsin – Superior, and Lake Superior College). All listed campuses have a U-pass program that affords their students unlimited trips on the DTA.

Regional Trip Origin

n = 520

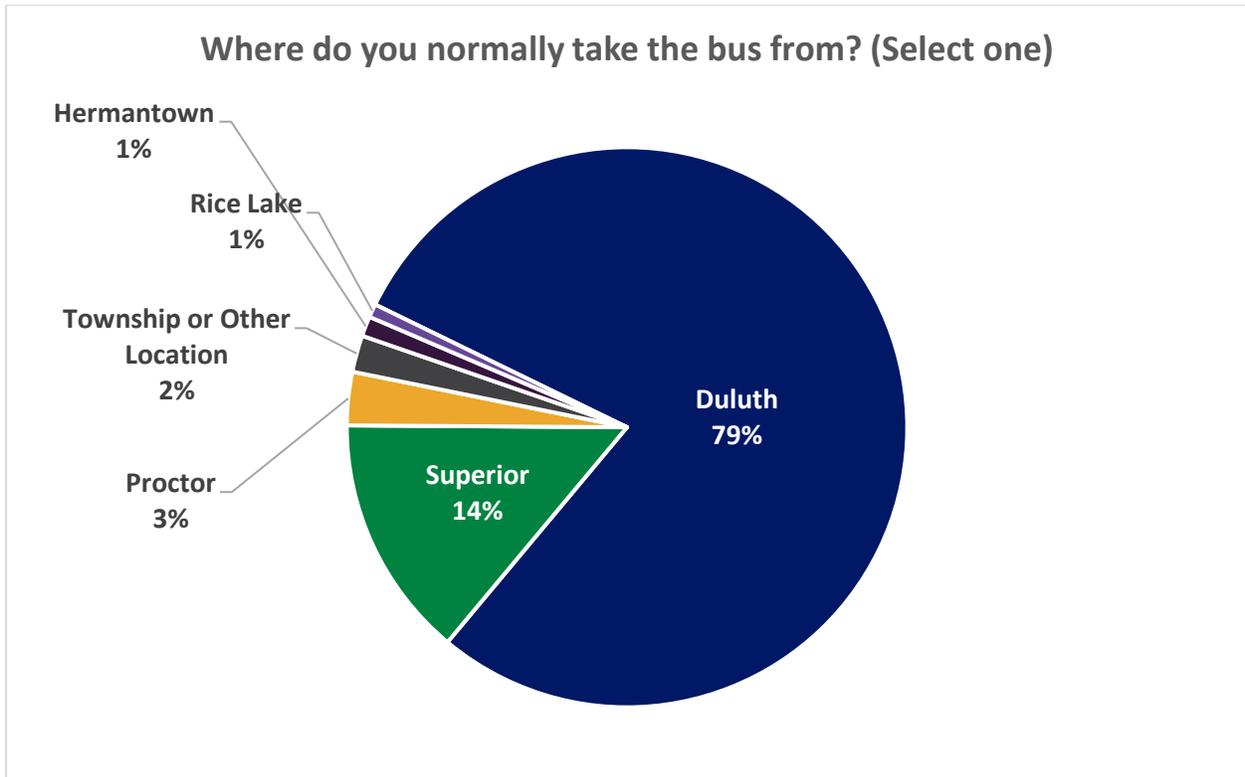


Figure 10: Regional Trip Origin Results

Regionally, 79% of respondents stated that their trip started in Duluth, and 14% stated their trip started in Superior. Superior makes up about 22% of the study area population, but service levels are relatively low compared to the rest of the region. 3% of respondents start their trip in Proctor, 1% in Hermantown and Rice Lake, and 2% in a township or other location. Of the “township or other location responses” one was an erroneous entry, and the others were sub-regions of Duluth or Superior.

Neighborhood Trip Origin – Duluth

n = 423

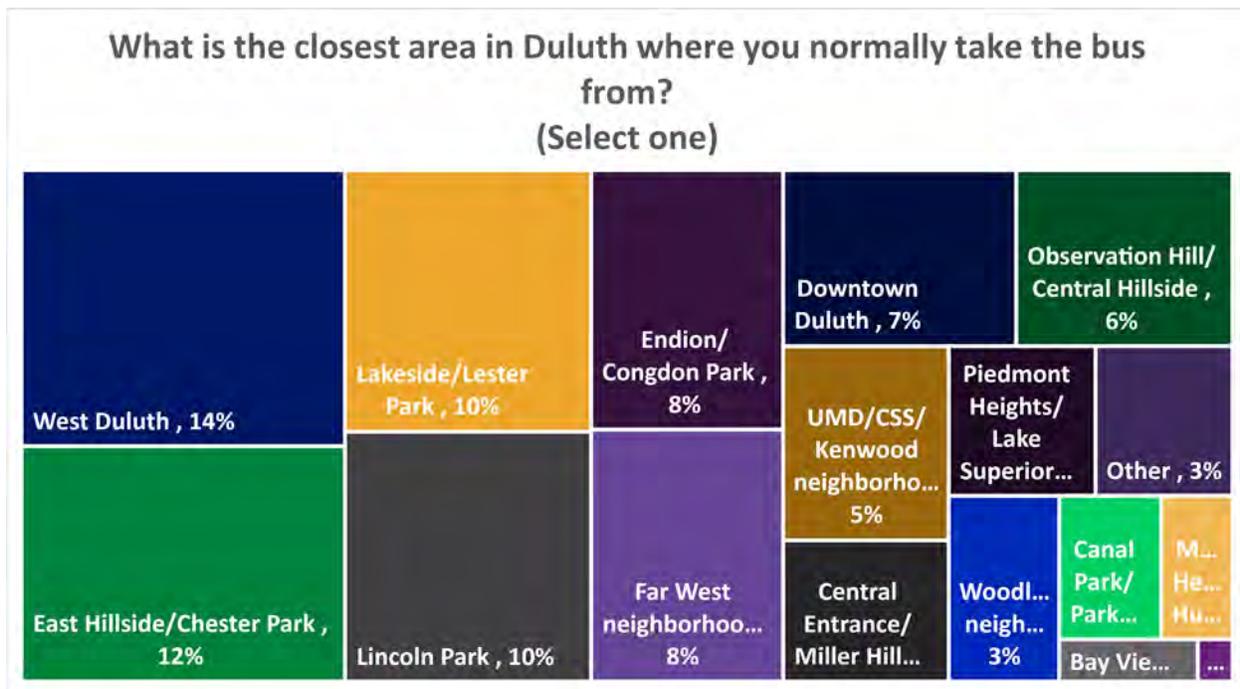


Figure 11: Neighborhood Trip Origin Results - Duluth

Respondents with Duluth, regional trip origins were then asked what neighborhood in Duluth their trip typically starts. The following 4 origins make up 47% of the responses:

1. West Duluth (Denfeld, Spirit Valley, Irving Park, Fairmount, Norton Park)
2. East Hillside/Chester Park (above 4th St, near Whole Foods Coop, Myers-Wilkins Elem)
3. Lakeside/Lester Park (near East High, Brighton Beach)
4. Lincoln Park (Craft District, Garfield Ave to Ore Docks/Wade Stadium/Wheeler Field)

All four of these responses coincide with major activity centers that were identified in the existing conditions report, or high performing routes.

Neighborhood Trip Origin – Superior

n = 84

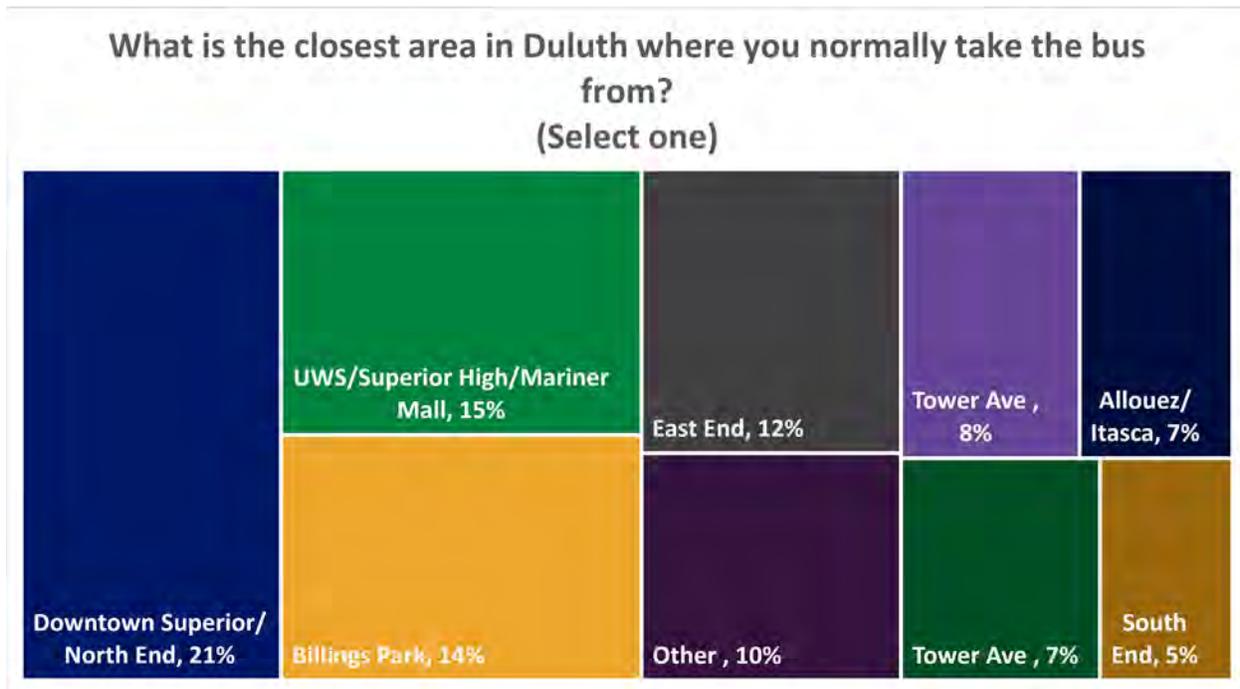


Figure 12: Neighborhood Trip Origin Results - Superior

Respondents with Superior, regional trip origins were then asked what neighborhood In Superior their trip typically starts. The following 4 origins made up 63% of responses:

1. Downtown Superior/North End (North of Belknap St)
2. UWS/Superior High/Mariner Mall
3. Billings Park
4. East End

Trip Destination

n = 506

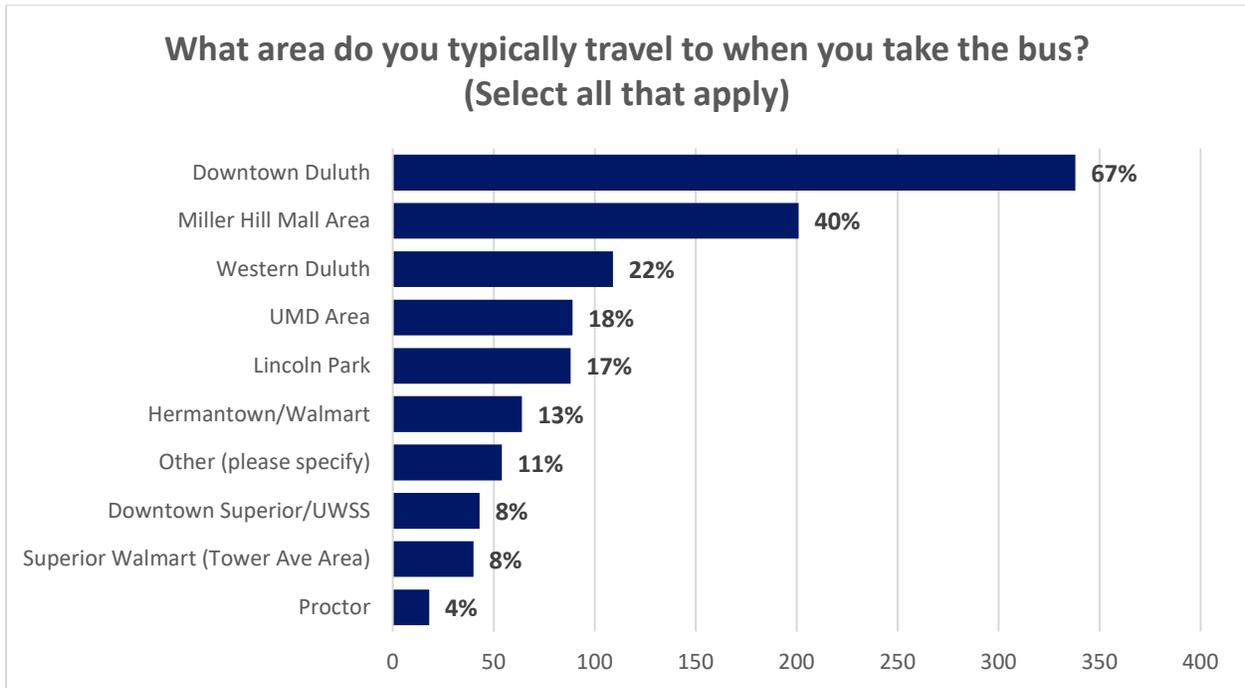


Figure 13: Trip Destination Results

Note: Respondents allowed to choose more than one option. Percentages based on 506 responses.

A significant number of respondents selected Downtown Duluth and the Miller Hill Mall as their top destinations. The top 4 destinations selected were four of the five key activity centers that were identified in the existing conditions analysis. The only exception is Downtown Superior, which fell lower on the list.

Rider Opinions and Satisfaction Levels

Rider opinion and satisfaction questions were asked to help identify what influences the frequency respondents take transit service, opinions on DTA’s organizational direction, and overall satisfaction. Results from these questions are in the following sections.

Do the following factors increase or decrease how much you ride the bus?

n = 154 - 355

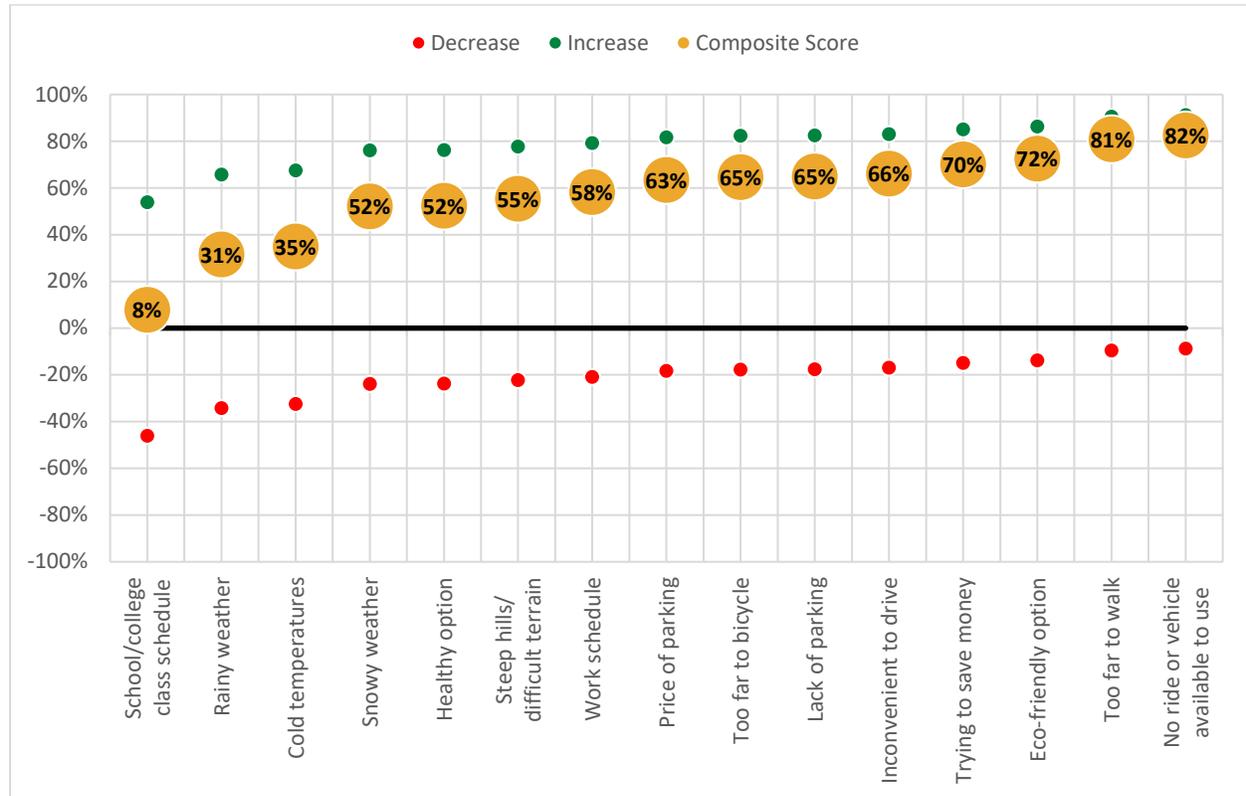


Figure 14: Trip Frequency Influencing Factors

A response to each factor was optional to ensure respondents only gave opinions on elements that influence their personal transit decisions. The percentage of respondents that decrease the frequency of their transit usage based on the factor are plotted in red as negative values, and the percentage that increase the frequency of their transit usage based on the factor are plotted in green in positive values. The composite score is the sum of the two percentages. Every factor tested yielded a positive composite score, meaning they increase frequency of transit usage.

The factor that had the most significant impact on increased frequency of transit usage was “No ride available or vehicle available to use” with a composite score of 82%. The 2nd most significant impact was “Too far to walk” with an 81% composite score. The “school/college class schedule” factor had the least significant impact on transit frequency usage with an 8% composite score. Collectively, about 45% of all respondents answered with negative responses to these questions, while 55% stated these factors increase their transit usage.

Increasing Ridership

Respondents were given the prompt “I would ride transit more if...” and asked to rank the given options from 1 (highest) to 7 (lowest) based on how often it would encourage them to choose transit more. The results are presented in the table below:

n = 515

Table 1: “I would ride transit more if...” Results

Rank	Option	Average Rank	Median Rank
1 (Highest)	Bus goes where I want it to go	2.95	2
2	Trip was faster	3.18	3
3	Fewer transfers/one-seat ride	3.73	3
4	Bus was more reliable	4.18	4
5	Lower fares	4.30	5
6	Cleaner/more comfortable	4.33	5
7 (Lowest)	More "how to use the bus" training available	5.33	6

The top ranked response was “Bus goes where I want it to go” with an average rank of 2.95 and “More how to use the bus training available” was ranked the lowest, with an average rank of 5.33. The DTA has focused on coverage using specialized service that only operates a few trips a day. This survey result suggests that either this tripper service is not sufficient, or the existing service does not connect origins and destination in a way that meets customers’ needs.

Organizational Focus

Respondents were given the prompt “I think the DTA as an organization should focus on...” and asked to rank the given priorities from 1 (highest) to 8 (lowest). The results are presented in the table below:

n = 497

Table 2: DTA Organization Focus Results

Rank	Option	Average Rank	Median Rank
1 (Highest)	Increasing Ridership	3.03	3
2	Increase access to employment	4.08	4
3	Meet performance measures for additional funding	4.40	4
4	Serving areas of higher ridership potential	4.61	4
5	Converting the eco-friendly bus fleet	4.80	5
6	Service to every household	4.95	6
7	Operating efficiently	5.00	5
8 (Lowest)	Equity and social justice	5.12	5

“Increasing ridership” and “Increase access to employment” were the highest ranked organizational focuses. This suggests that respondents may want a transit system that focuses on connecting residents to key destinations including major employment areas. “Equity and social justice” ranked lowest with an average rank of 5.12; however, this option was less specific and targeted than the others and may have received lower responses due to the structure of the question and responses.

Customer Satisfaction

Customer satisfaction questions asked how much respondents agree with a series of statement on a scale from strongly disagree to strongly agree. Results are presented below:

n = 489 - 493

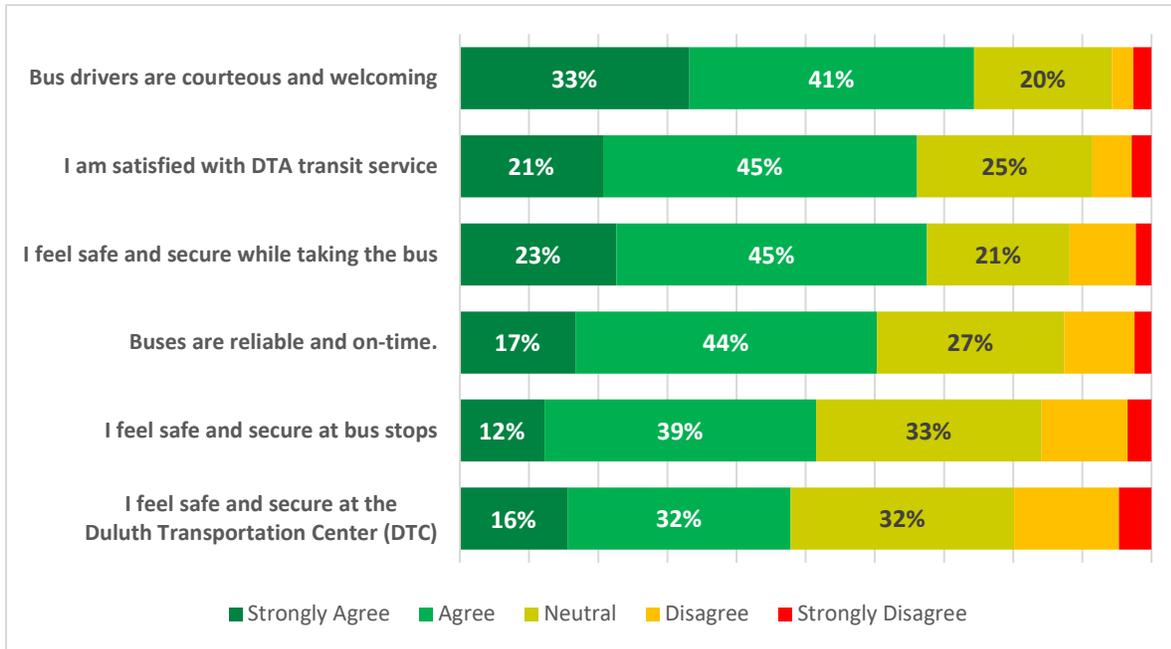


Figure 15: Rider Satisfaction Results

DTA customers have a high level of satisfaction with their bus service, with the top level of satisfaction being with the courtesy of the drivers (94%) and the lowest level of satisfaction being with the safety and security at the Duluth Transportation enter (80%). The largest negative responses are equated to options that involved safety and security preferences at DTC or at bus stops.

Travel Behaviors Pre & Post COVID-19 Pandemic

Three travel behavior questions were asked sequentially to gain a better understanding of how transit ridership will recover from COVID-19 in the Twin Ports region:

1. How often did you ride a DTA bus before the COVID-19 pandemic (March 2020)?
2. How often do you ride a DTA bus now?
3. How often do you think you will ride a DTA bus after the COVID-19 pandemic ends?

Shown below are the responses to the “before” and “after” questions. Responses to the “now” question, as well as full responses data can be found in **Appendix B**. The below graph shows absolute numbers of each response, it does not reflect individual respondents’ flows through the questions. The Sankey chart presented later in this section details this information.

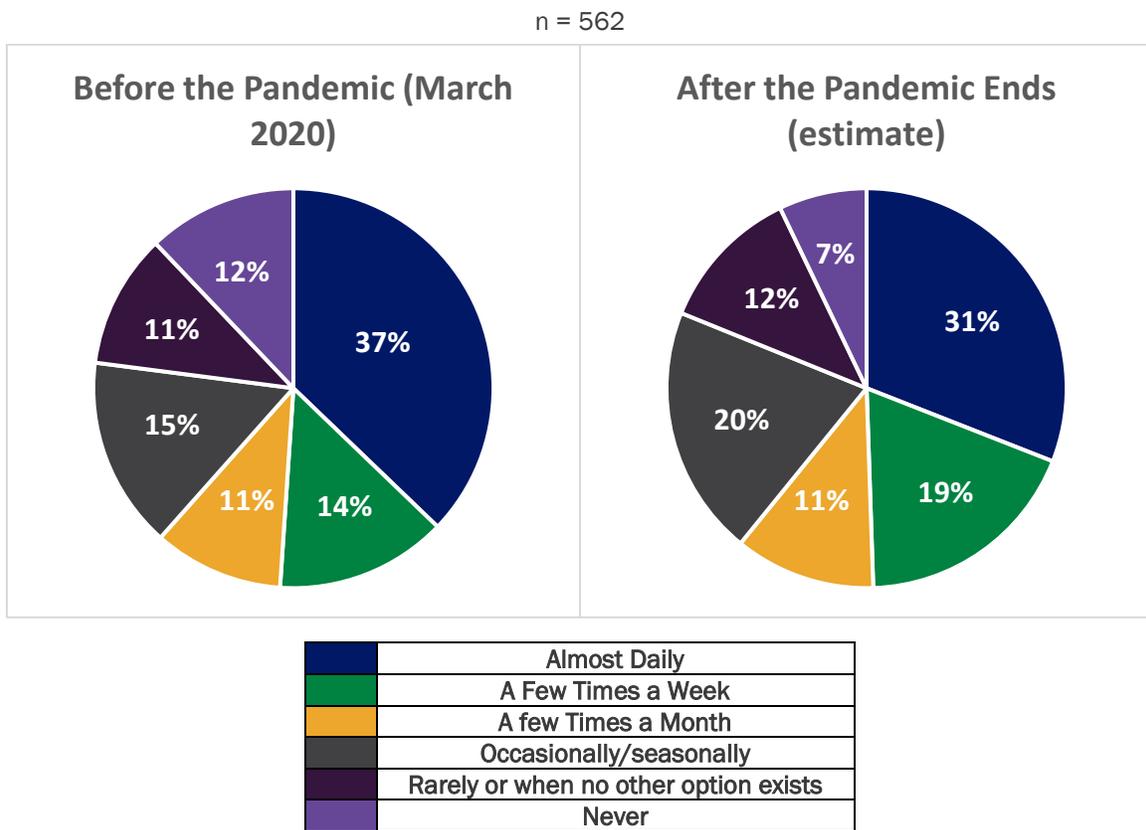


Figure 16: Travel Behavior Pre & Post Pandemic

According to the survey, the share of respondents reporting riding “almost daily” post pandemic is 83% of pre pandemic levels. This is positive news given the early pandemic concerns that transit ridership would not recover significantly. Nearly half of respondents took transit at least a few times per week before the pandemic, and the finding is the same post pandemic, with 51% and 50% respectively. Within that group however, there was a 5-6% shift from “daily” to “a few times a week.” The share of respondents taking transit “occasionally/seasonally” increased 5% in the post pandemic period, but the share of respondents never taking transit reduced by half, from 12% to 7%.

The following Sankey chart uses the same data as the above chart, but it follows individual respondents' answer choices through the question series. The left side of the chart is how respondents answered the pre-pandemic question, and the right side of the chart is how that same respondent answered the post-pandemic question. This allows us to see general trends in response pairs and quantify how riders and non-riders plan to change (or not change) how they consume transit service. Like the previous charts, the "now" response is omitted, but full results can be found in **Appendix B**. The absolute top 5 response pairs and the top 5 response pairs that represent a change in travel behavior can be found in the tables below the chart. A full list of response pairs and their magnitude can be found in **Appendix E**.

n = 562

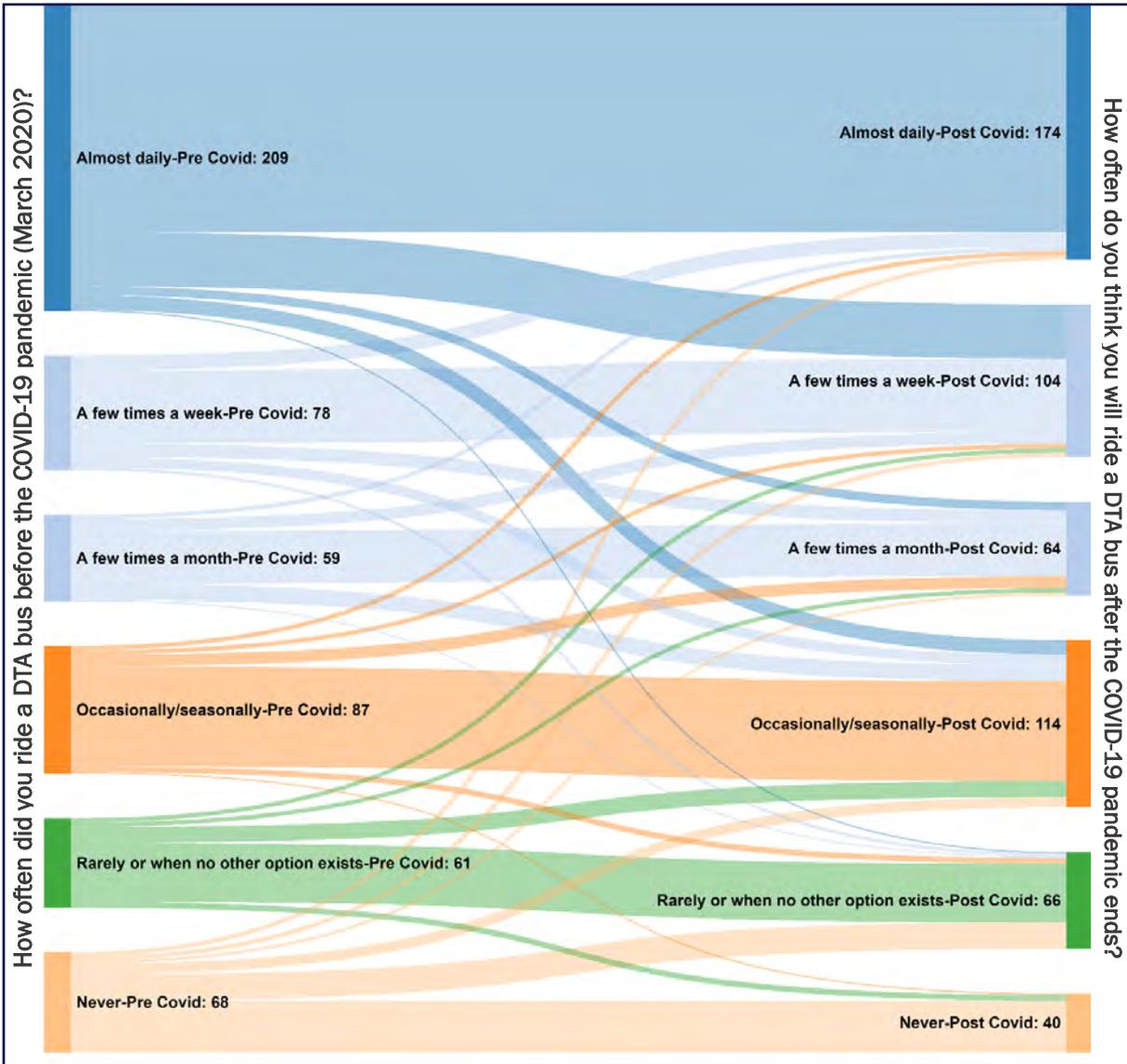


Figure 17: Travel Behavior Pre & Post Covid Sankey Diagram

Table 3: Top 5 Response Pairs

Pre-Pandemic Response	Post Pandemic Response	Magnitude	% (n = 562)
Almost Daily	Almost Daily	155	28%
Occasionally/Seasonally	Occasionally/Seasonally	68	12%
A few times a week	A few times a week	50	9%
Rarely or when no other option exists	Rarely or when no other option exists	40	7%
Almost Daily	A few times a week	37	7%

Table 4: Top 5 Response Pairs Representing a Change in Travel Behavior

Pre-Pandemic Response	Post Pandemic Response	Magnitude	% (n = 562)
Almost Daily	A few times a week	37	7%
Never	Rarely or when no other option exists	18	3%
A few times a month	Occasionally/Seasonally	11	2%
Rarely or when no other option exists	Occasionally/Seasonally	11	2%
A few times a week	Almost Daily	10	2%

Sixty-eight percent of the flow patterns represent no change, and apart from the last one, all the top 5 flow patterns represent no change in transit usage before and after the pandemic. This suggests that, although there is going to be some shifting in rider behavior, a majority of Twin Ports residents plan on returning to their previous travel patterns once the pandemic is over. Of the 174 respondents that reported their expected post pandemic trip frequency as “almost daily”, 155 of them (89%) were already daily riders pre-pandemic. Notably, there were no pre-pandemic daily riders that reported never riding transit again after the pandemic ends. It is reasonable to assume that if an individual does not plan on returning to transit, then they also would not complete this survey, but this trend could also suggest a strong level of loyalty to the system among pre-pandemic daily riders.

The largest flow pattern that represented a change was “Almost Daily” to “a few times a week”. It is well known that there was a significant increase in hybrid working arrangements during the pandemic that is likely to have lasting impacts. Although it was only 3%, the second largest flow pattern representing a change was “Never” to “Rarely or when no other option exists.”

Open Ended Questions

Respondents were asked two open ended questions: 1) Where would you like to see more DTA bus service available? and 2) Please share any other comments you have below. A full list of responses can be found in Appendix B.

Community Survey Key Findings

DTA ridership is expected to gradually rebound but may experience long-term impacts from the pandemic.

- Of respondents choosing “almost daily” as their pre-pandemic response, 89% stated they would continue riding daily post pandemic.
- 68% of respondents indicated no change in the frequency they plan on taking transit after the pandemic, compared their pre-pandemic response.

Respondents indicated that most trips in the region (79%) started in Duluth, with nearly half (47%) beginning in four main neighborhoods.

- The four neighborhoods, listed in order of frequency, are: 1) West Duluth, 2) East Hillside/Chester Park, 3) Lakeside/Lester Park, & 4) Lincoln Park

Work trips was the most common response for why respondents utilized transit.

- 54% of respondents included work as at least one of the reasons they ride the DTA
- 41% of respondents included “leisure destination” as at least one the reasons they ride DTA

Downtown Duluth is the number one trip destination for transit trips taken in the region.

- 67% of respondents chose “Downtown Duluth” as one of their typical transit destinations
- Miller Hill Mall Area and Western Duluth were 2nd and 3rd, with 40% and 22%, respectively

Not having access to a ride or personal vehicle was the primary factor that influenced the frequency of transit usage.

- 91% of respondents stated “No ride or vehicle available to use” was the factor that increased the frequency of taking transit the most

Respondents ranked “increasing ridership” and “increase access to employment” as the top responses for the DTA to focus on as an organization.

- These responses indicate that the community would like service to be focused in more dense areas of the system and provide service to key destinations/employment areas.

4.0 Driver Survey

The Better Bus Blueprint also surveyed current DTA bus drivers to gain operational insights on the system. The survey consisted of 13 questions divided into three sections: 1) general, 2) user experience, and 3) operational. General questions focused on years of service and route preference. User experience focused on what drivers think is and is not working well and compared that to passengers' opinions. Operational questions focused on specific, on the road challenges that are most noticeable from the perspective of a driver.

This survey was distributed after the driver interview sessions on November 5th, 2020 and remained open until January 6th, 2021, a period of 62 days. Flyers with a link and a QR code to the survey were distributed, and road supervisors engaged in direct outreach with drivers to get their feedback. Upon closing, the survey had 27 responses, or about 25% of the DTA drivers.

The following sections highlight the individual questions and discuss general trends in their results. A copy of the digital survey and full results can be found in **Appendices C & D**.

General Questions

Question 1: How Long have you worked for the DTA? (Choose one)

n = 27

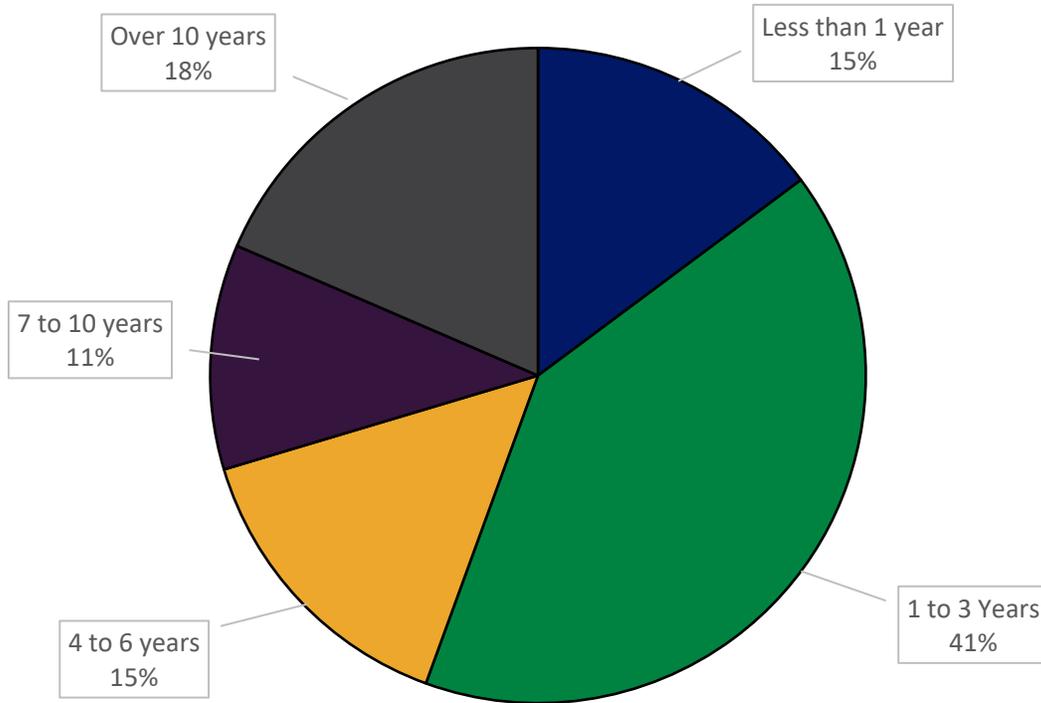


Figure 18: Driver Tenure Results

This question was asked to ensure that the survey captured a representative swath of DTA drivers and compare sentiments across experience levels. Of the 27 respondents, 4 had been with the DTA less than 1 year, 11 between 1 and 3 years, 4 between 4 and 6 years, 3 between 7 and 10 years, and 5 over 10 years.

Question 2 & 3: What route(s) are you driving with the current pick? (Choose all that apply). Why did you choose this/these routes?

n = 27 & 25

Top 5 Routes

1. Route 13 – E 4th/UMD/Woodland (52%)
2. Route 1 – Grand Avenue Zoo (48%)
3. Route 10H – Mall via 6AE (44%)
4. Route 2 – New Duluth (41%)
5. Route 7 – East Mainline Lakeside (37%)

Main Reasons (Generally)

- Shift preferences (i.e.- prefer to work mornings/evenings/etc.)
- Avoiding split shifts
- Weekends off
- Avoiding/gravitating to busy routes
- Favorable layover time and location

Note: Respondents allowed to choose more than one option. Percentages based on 27 responses.

- This question was asked to ensure that no route was overrepresented or left out in the survey results.
- The DTA does a considerable amount of complex interlining (a process by which one route turns into another route at the end of the line) in its scheduling, so one driver could potentially drive several routes over the course of a single workday. The percentage is a share of how many of the 27 respondents drove that route at least once, not an absolute percentage of the 27 respondents.
- The top 5 routes are some of the most heavily interlined routes.
- The only routes that had no responses were routes 23 and 25, which were not operating during the time that the survey was taken.

Questions 4 & 5: What is your least preferred route to drive? (Choose one). Why do you avoid this route?

n = 27 / 26

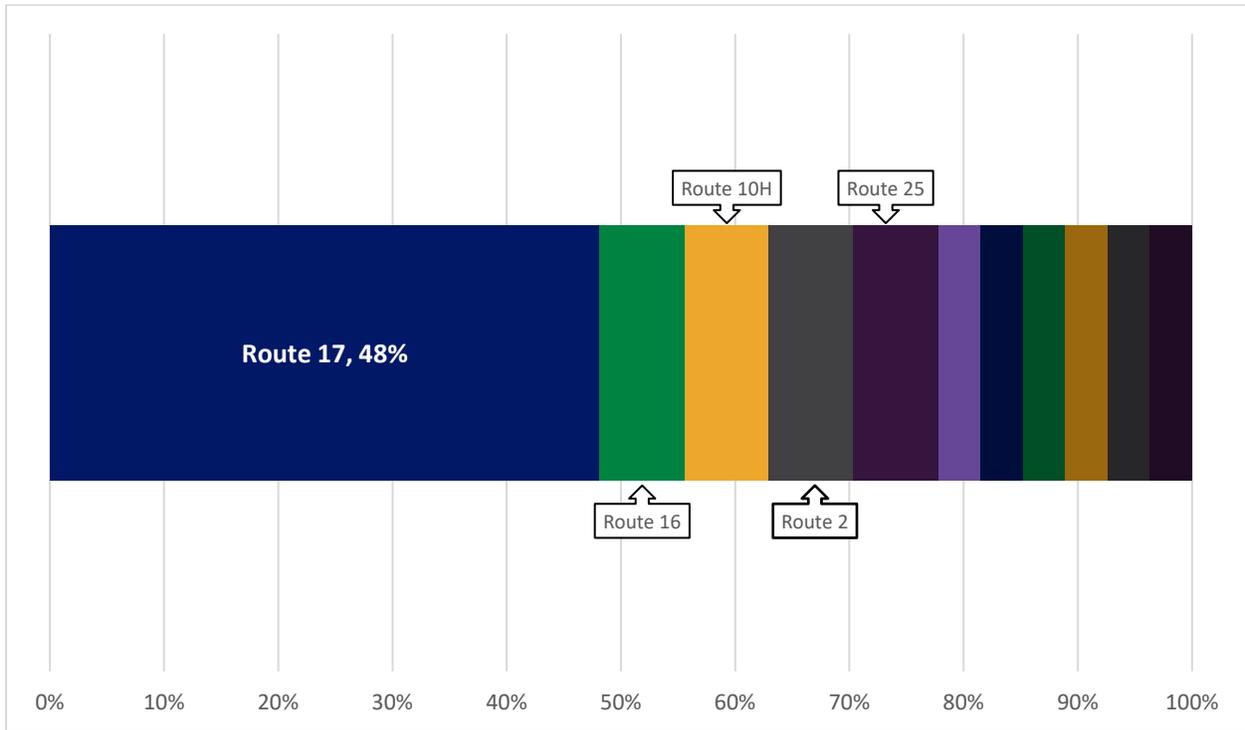


Figure 19: Driver Route Preference Results

- This question was asked to determine if there is a particular route considered most problematic.
- Nearly half of respondents chose route 17- Superior, and all respondents that chose this route cited tight scheduling and lack of restroom facilities as their reason for avoiding it. This finding matches with discussions that occurred in staff interviews. Route 17 has some of the highest average speeds out of all routes in the system, with some time periods having speeds over 20 mph.
- Route 16 – Duluth Superior also received two votes, with scheduling difficulties mentioned by one of the two respondents.
- Routes 2 – New Duluth, 10H – Mall via 6AE, and 25 – DuLooper also received two votes each. The 2 and 10H were called out for their high utilization slowing the route down, and the 25 was called out for timing issues and being repetitive.

User Experience Questions

Question 6: What do riders tell you are their biggest challenges using the system? (Choose all that apply)

n = 25

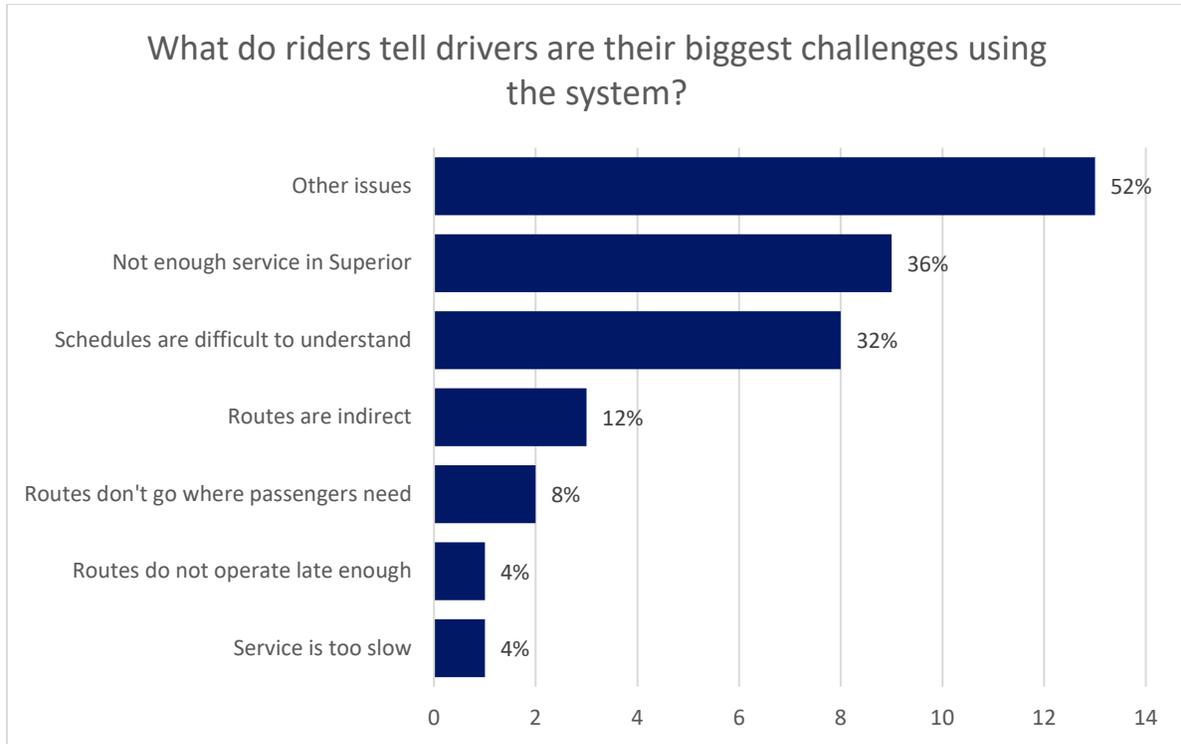


Figure 20: Passenger Issues reported to drivers

Note: Respondents allowed to choose more than one option. Percentages based on 25 responses.

Drivers were asked what issues they regularly hear from passengers. This was done to leverage their unique perspective as frontline workers. Results from this question were later compared to a similar question asked of riders in the customer survey.

“Other Issues” was the most popular response. Of the “other” issues, there were:

- four responses citing transfers
- two responses citing confusion with headsigns
- two responses citing passenger behavior issues
- a few that could be added to the existing “schedules are difficult to understand” category.

The transfer comments were multifaceted, but two themes emerged. First, respondents remarked that passenger misuse and discrepancies among driver enforcement has made transfers confusing enough that several advocated for their removal. Second, respondents remarked that the 60-minute window provided by the transfer was not wide enough to accommodate all trips, especially if a connection is missed and the passenger had to wait for the next bus. Extending the window to 90 minutes was presented as a solution.

Question 7: What areas do YOU think most need improvement? (Choose top two)

n = 25

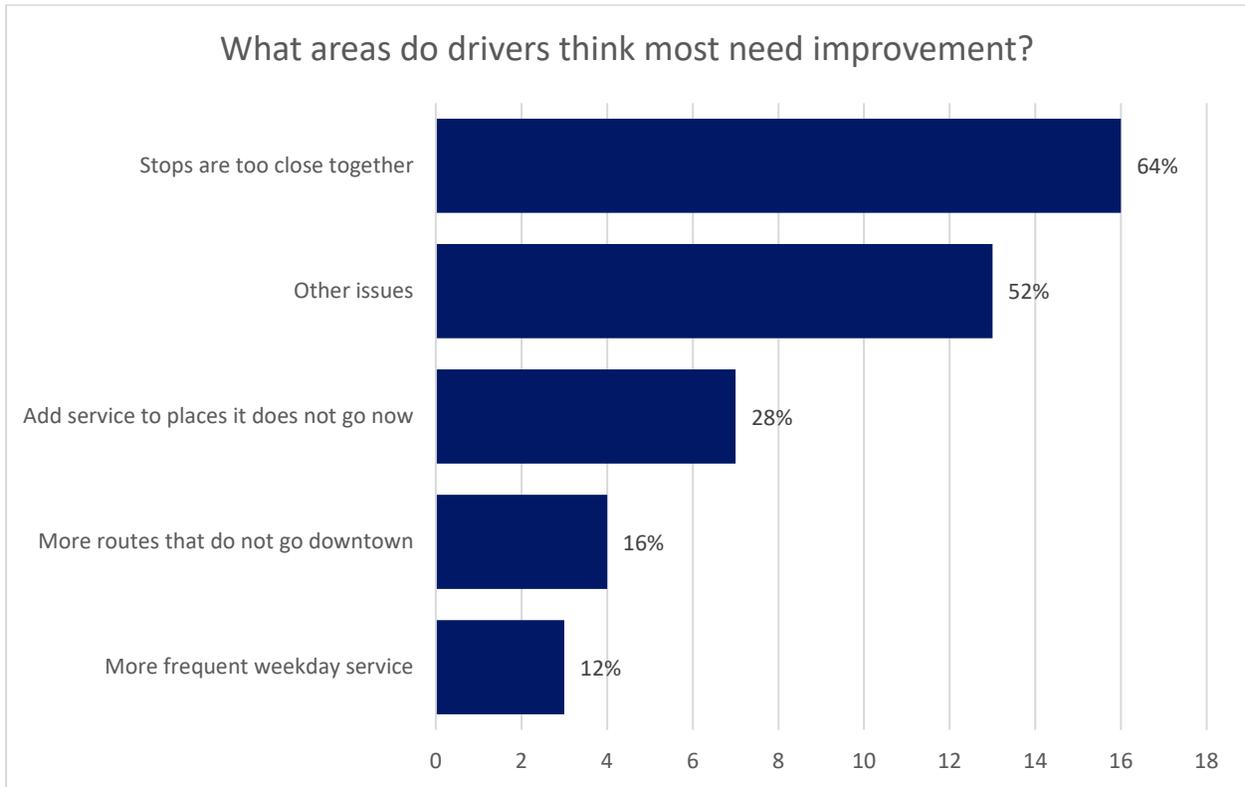


Figure 21: Areas needing improvement (driver opinion)

Note: Respondents allowed to choose more than one option. Percentages based on 25 responses.

This question complements question 6, but instead asks the driver their personal opinion. “Stops are too close together” was the number one response among drivers with 64% of drivers choosing this option.

The “other issues” section included a transfer comment that echoed what was heard in question 6, a fare comment that mentioned rounding out fares to \$1 & \$2 (from \$0.75 & \$1.50) to remove the need for coins at the farebox, and getting rid of the peak vs off peak fare because it is confusing to passengers.

“Later Weekday service,” “Later weekend service,” and “More frequent weekend service” were all answer choices as well, but no respondents chose these.

Question 8: Many of the routes in the DTA system have a number of patterns and route deviations. Which of the two choices below do you think is more correct?

n = 25

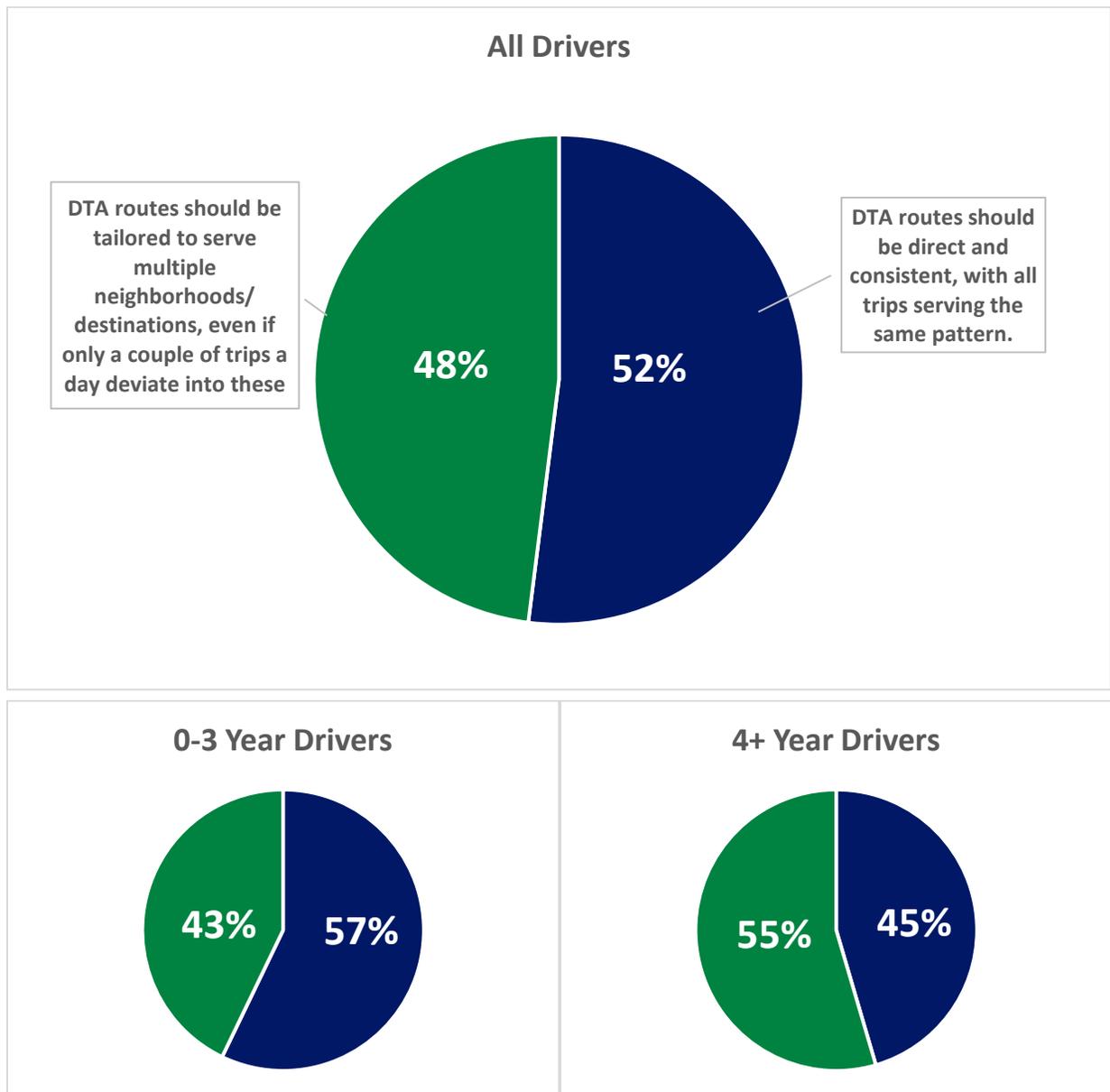


Figure 22: Tailored vs Consistent Service (All Drivers)

Figure 23: Tailored vs Consistent Service (Less Senior Drivers)

Figure 24: Tailored vs Consistent Service (More Senior Drivers)

DTA operates a very tailored system, and this question was meant to assess the value of this choice. The result was a 48%/52% split, with the slight preference towards a more consistent system. Drivers of 0-3 years slightly favored a more consistent system, while driver of 4+ years slightly favored a tailored system.

Question 9: As we start to take a deeper dive into potential service changes, what routes need the most attention? (Choose up to 3)

n = 25

Top 4 Routes

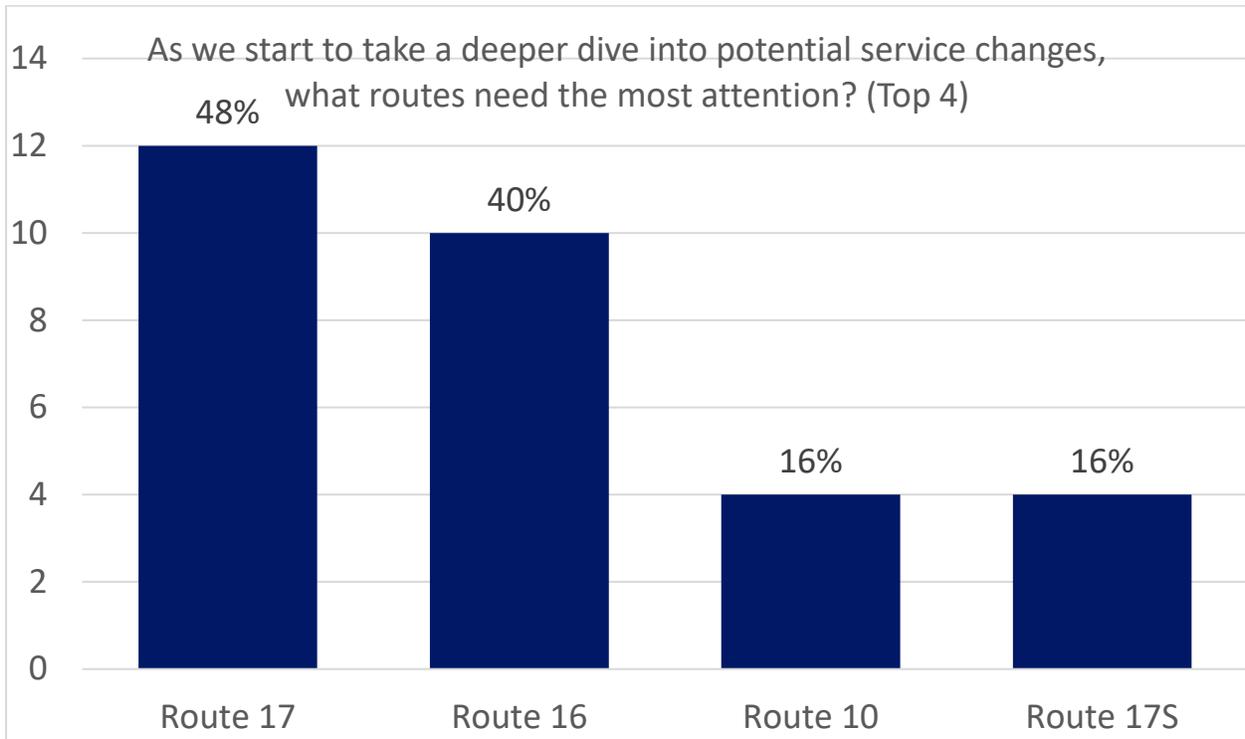


Figure 25: Top 4 Routes Needing Attention

Note: Respondents allowed to choose more than one option. Percentages based on 25 responses.

Superior routes were 3 of the top 4 routes noted as needing most attention. The route 10 and its variants were also in the top 4 due to known on time performance issues due to heavy utilization.

Operational Questions

Question 10: Are there locations/routes that have too much slack in the schedule that force you to slow down or hold at timepoints? If so, please list up to three of these locations where you think the schedule could be revised to avoid a slowdown.

n = 18

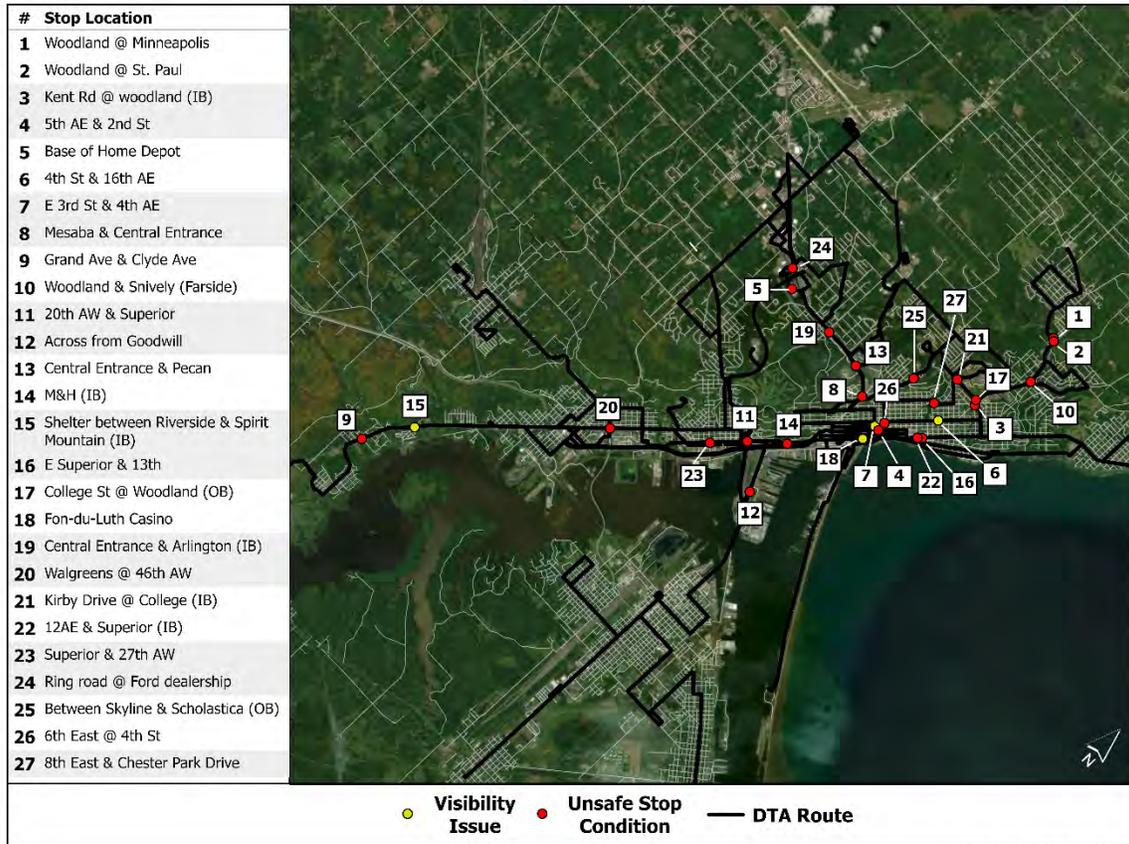
List of Responses:

- Central Entrance
- On top of Mesaba and 6th Ave when running the route 10
- M&H time point (too much time)
- 10H on weekends (too much time to get to mall)
- Grand Avenue
- 6th Ave E and 4th St
- Central Entrance between Pecan and Cub foods (at times it is a good place to make up time)
- Route 15
- DuLooper
- Inbound early route 1
- 6 & 7 Route 12AE and superior street (route changed runtime not adjusted)
- Route 2
- Garfield avenue.
- 10H
- Between 54th east and 60th east
- Routes 6/7 between 10th AE & 24th AE
- When the 3 deviates off the mainline everything except the Zenith Terrace area seems to have plenty of time
- 13

Question 11: Are there bus stop locations that are unsafe (poor lighting, passengers standing in blind spots, etc.)? Please list your top three locations with issues.

n = 17

DTA Driver Survey Results Dangerous Stops



Data Source: DTA Driver Survey

Figure 26: Dangerous Stops

- Most stops along Mesaba Ave., Central Entrance Dr. and non-interstate highways (ex.-US-53) are a problem due to high speeds and unsafe pedestrian conditions.
- Drivers generally dislike stops immediately after left turns, citing the risk for rear end collisions with the bus.
- It may be worthwhile to scrutinize areas with fresh road diets and/or street parking. Parking is often right up to the bus stop, leaving no room for the driver to curb the vehicle, and encouraging drivers to right turn around the stopped vehicle. Consider taking some parking away or moving stops to the far side of the intersection in these instances.

Question 12 & 13: Are there specific turns/intersections that are problematic? Are there places where transfers are often attempted, but are difficult to make? If so, please list up to three of each.

n = 18 & 13

DTA Driver Survey Results Tight Turns & Desired Transfers

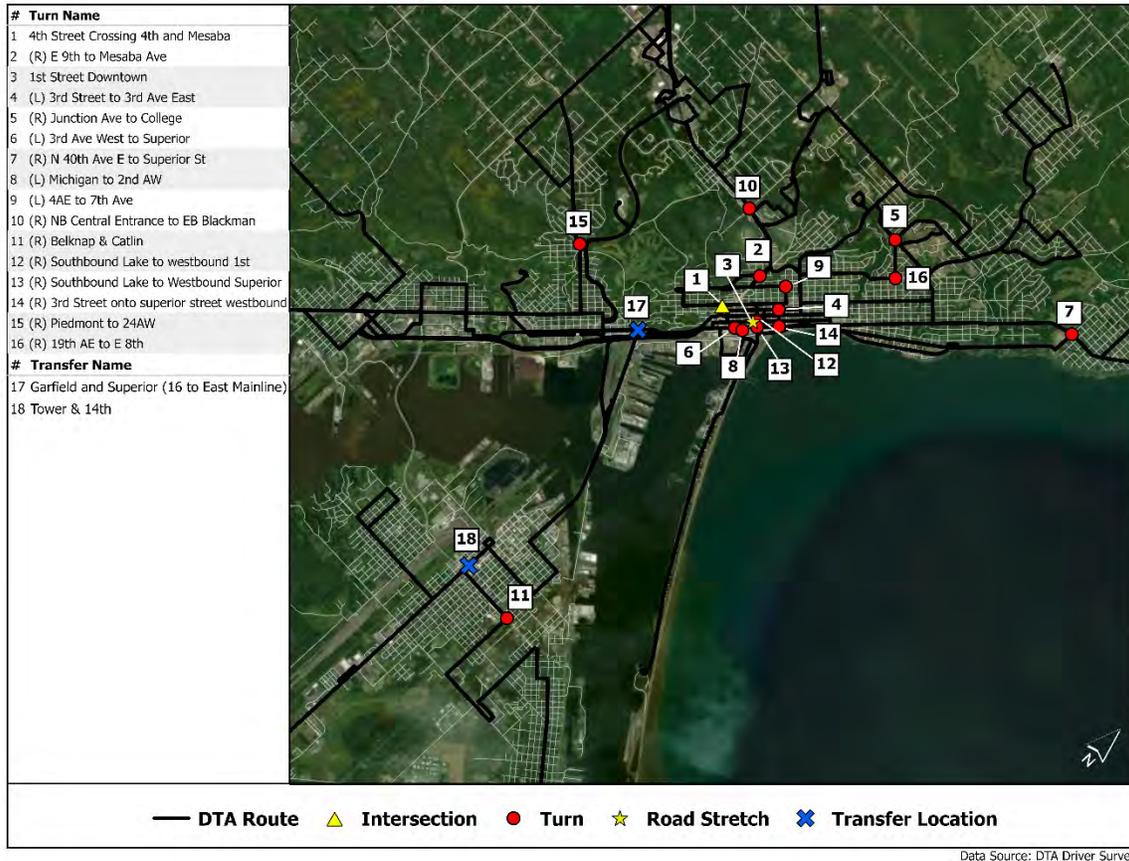


Figure 27: Tight Turns & Desired Transfers

- The newly reconstructed 1st and Superior streets have made turns onto these roads difficult for drivers. Southbound Lake Ave and 3AE onto westbound 1st St. and Superior St. came up several times as problematic turns.
- The transfer between the 16 – Duluth Superior and the West Mainline routes at Garfield & Superior is a valuable mid-route transfer that is difficult to make presently.

Driver Survey Key Findings

Transfers (both locations, and the transfer ticket specifically) cause issues for drivers and passengers.

- Garfield & Superior is a location where transfers are often attempted, but the schedule does not reliably allow for them to occur
- There are trips, specifically on evenings and weekends, that take longer to complete than the 60-minute transfer window allows
- Drivers do not uniformly enforce transfers, and passengers attempt to improperly use transfers, leading to confusion at the farebox

Drivers believe that stops are located too close together and it degrades the quality of service.

- 64% of drivers listed “stops are too close together” as one of their top areas needing most improvement

Reconstructed 1st and Superior streets have made turns onto these streets more difficult for drivers.

- Modified and newly constructed roads should be reviewed to ensure adequate space is allowed for bus stops

DTA drivers are more influenced by the hours of their workday than the specific routes they cover.

- Generally, the preference is for straight shifts with evenings and weekends off

Drivers indicated that Route 17 may need to be reviewed and considered for improvements.

- 48% of drivers said they avoid this route, with the primary reasons being tight timing and a lack of restrooms or layover locations along the route.

5.0 Stakeholder Meeting #1: Mentimeter Responses

The Stakeholder #1 virtual meeting was conducted as part of the Better Bus Blueprint on February 25th, 2021. At the meeting, regional stakeholders were briefed on the status of the COA, presented with the initial results of the existing conditions analysis, and asked to help shape the guiding principles for the plan. Mentimeter was used throughout the presentation to collect feedback from the stakeholders. The four questions asked, and their responses are listed in the following sections.

What type of Organization do you represent?

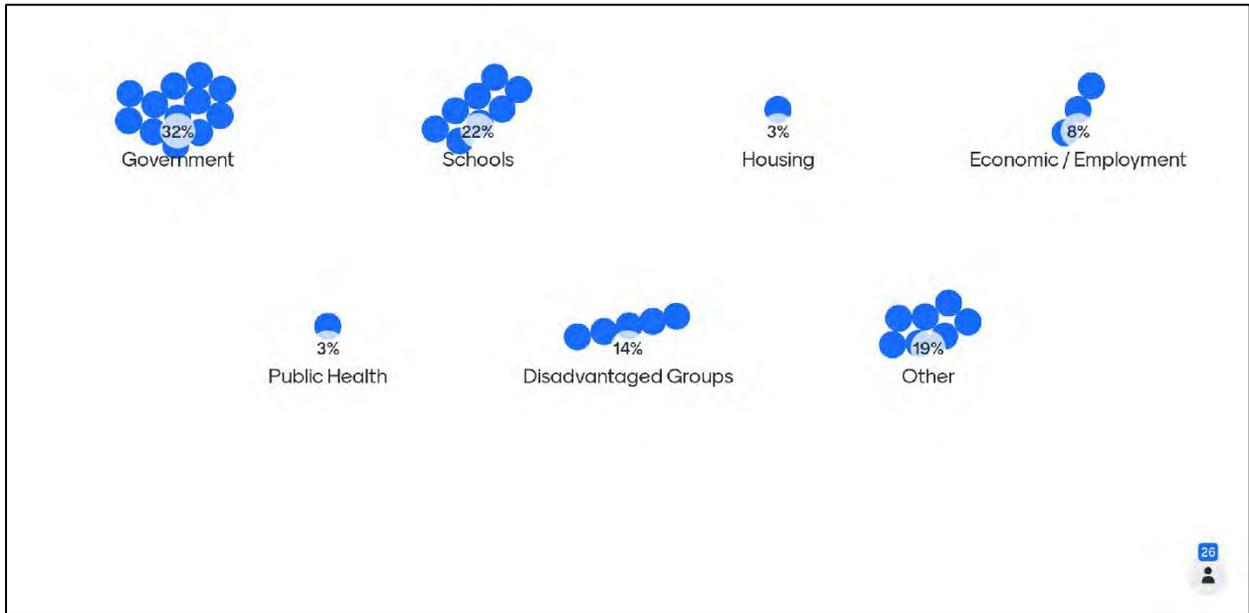


Figure 28: Stakeholder organization type breakdown

Twenty-six different stakeholder groups were represented at the meeting, with just over half (54%) being classified as government organizations or schools.

What is your current perception of DTA services?



Figure 29: Stakeholder Perception of DTA services

In a free response format, stakeholders were asked their current perception of DTA services. The word cloud that was generated showed “reliable”, affordable, and “limited” as keywords used to describe the service.

I think the DTA as an organization should focus on:

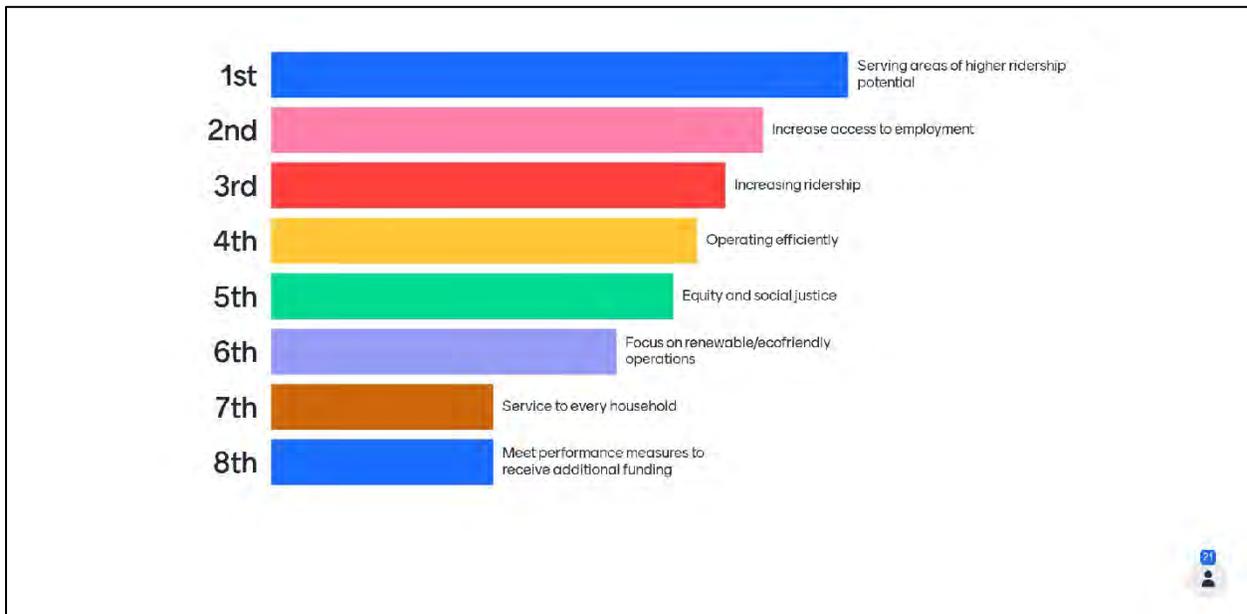


Figure 30: DTA Organizational Focus according to Stakeholders

Stakeholders were asked to choose which objective DTA should focus on from a list of 8 options. “Serving areas of higher ridership potential” was the focus that was highlighted as most important.

What is your appetite for change with the current network?

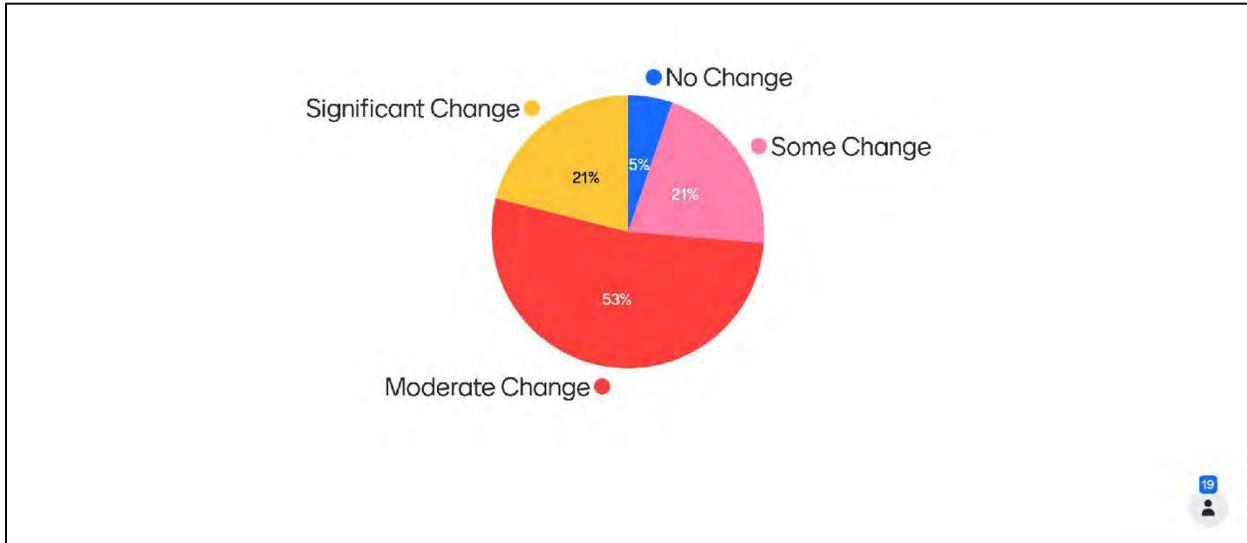


Figure 31: Stakeholder Appetite for Change

Stakeholders were asked their appetite for change with the current network. Nearly all participants had some desire for change, with 53% demonstrating an appetite for moderate change, and 21% for significant change. Only one responded had no desire for change within the current system.

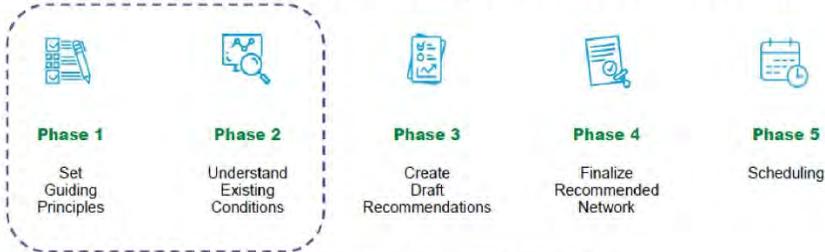
Appendix A: Copy of Customer Survey



What is the Better Bus Blueprint?

The Better Bus Blueprint is a full review of the DTA’s fixed-route bus operations. The study aims to improve transit routing and schedules to better meet the community’s needs.

The Better Bus Blueprint will be conducted in five phases, shown in the graphic below. Draft recommendations are planned to be published in late Spring 2021, with a final recommended network planned for approval in Summer 2021. The service changes may take effect Spring of 2022 after the schedules and implementation steps are taken.



Why is DTA conducting this study?

In 2017, the DTA completed a large study to help guide the direction for the following 5+ years. In that plan, the DTA heard loud and clear the community wanted to see service improvements by running buses more often and making the system less complicated. Phase 2 of that plan suggested the DTA focus on efficiency and add in more frequent service. Due to the complexity of a bus network, it required significant work to re-align it to fit the needs of the community.

The purpose of the Better Bus Blueprint is to improve DTA bus routes to efficiently and effectively move people through the Twin Ports.

Planning and updating bus routes involves many considerations. For example:

- What days will the bus operate?
- Where will the route go?
- How often will the bus come to each stop?
- How fast will the bus travel (based on route and number of stops)?
- How far do riders have to walk to access the bus?

As we answer these questions, there are many tradeoffs to be made. We need to decide how to best allocate limited funds to meet the needs of the community and appeal to as many people as possible.

We Need Your HELP!

Take our short survey to help us understand your travel and transit priorities. Simply point your phone’s camera at the QR code on the left to take the online survey, go to the website listed below, or complete the hard copy provided. Hard copy surveys will be collected on March 29th.

For more on the Better Bus Blueprint, visit duluthtransit.com/home/better-dta/better-bus-blueprint/
Questions or comments? Call 218-623-4316 or Email planning@duluthtransit.com.



SCAN to take survey online

DTA Community Survey

Your bus network is changing! Let us know what is important to you.

The changing demands placed on transit impacts the entire Twin Ports community whether a person takes the bus every day, every once in a while, or not at all. A comprehensive study is underway to understand and improve the public transportation system and better serve our community.

Your insight will help to inform this update of the transit routes and schedules to reflect the values of the Twin Ports community more accurately. Based on what we hear now, we will prepare new service concepts later in 2021. We will do another round of public engagement then to see if we're on the right path.

1. How often did you ride a DTA bus before the COVID-19 pandemic (March 2020)? (check one)

Almost daily	Occasionally/seasonally
A few times a week	Rarely or when no other option exists
A few times a month	Never

2. How often do you ride a DTA bus now? (check one)

Almost daily	Occasionally/seasonally
A few times a week	Rarely or when no other option exists
A few times a month	Never

3. How often do you think you'll ride a DTA bus after the COVID-19 pandemic ends? (check one)

Almost daily	Occasionally/seasonally
A few times a week	Rarely or when no other option exists
A few times a month	Never

4. If you take the bus, where do you normally take the bus from? (check one)

Duluth	Hermantown
Superior	Rice Lake
Proctor	Township or other location (please specify):

(continued, next page)

5. If you answered “Duluth” for question 4, what’s the closest area in Duluth where you normally take the bus from? (check one)

<input type="checkbox"/>	Observation Hill/Central Hillside (near Damiano, Washington Center, Enger Park, Cascade Park)
<input type="checkbox"/>	East Hillside/Chester Park (above 4th St, near Whole Foods Coop, Myers-Wilkins Elem)
<input type="checkbox"/>	Endion/Congdon Park (near London Rd, Edgewater, UMD Old Main, Ordean East Middle)
<input type="checkbox"/>	Lakeside/Lester Park (near East High, Brighton Beach)
<input type="checkbox"/>	Woodland neighborhood
<input type="checkbox"/>	UMD/CSS/Kenwood neighborhood
<input type="checkbox"/>	Morley Heights/Hunter Park neighborhood
<input type="checkbox"/>	Airport/Airpark/Rice Lake Rd (near Boulder Ridge, Lowell Elem, United Healthcare)
<input type="checkbox"/>	Bay View Heights/Zenith Terrace
<input type="checkbox"/>	Far West neighborhoods (Fond du Lac, New Duluth, Gary, Morgan Park, Smithville, Riverside)
<input type="checkbox"/>	West Duluth (Denfeld, Spirit Valley, Irving Park, Fairmount, Norton Park)
<input type="checkbox"/>	Lincoln Park (Craft District, Garfield Ave to Ore Docks/Wade Stadium/Wheeler Field)
<input type="checkbox"/>	Piedmont Heights/Lake Superior College
<input type="checkbox"/>	Central Entrance/Miller Hill Mall (Duluth Heights, Harbor Highlands)
<input type="checkbox"/>	Downtown Duluth (Gov’t Center, Library, Hospital District, Fitgers, Plaza Shopping Center)
<input type="checkbox"/>	Canal Park/Park Point
<input type="checkbox"/>	Other (please specify):

6. If you answered “Superior” for question 4, what’s the closest area in Superior where you normally take the bus from? (check one)

<input type="checkbox"/>	Allouez/Itasca
<input type="checkbox"/>	Billings Park
<input type="checkbox"/>	Tower Ave (Belknap Street to 28th Street)
<input type="checkbox"/>	Tower Ave (28th Street to Walmart/Fairgrounds)
<input type="checkbox"/>	East End
<input type="checkbox"/>	Downtown Superior/North End (north of Belknap Street)
<input type="checkbox"/>	South End
<input type="checkbox"/>	UWS/Superior High/Mariner Mall
<input type="checkbox"/>	Other (please specify):

7. If you take the bus, what area(s) do you typically travel to? (check all that apply)

<input type="checkbox"/>	Downtown Duluth	<input type="checkbox"/>	Lincoln Park
<input type="checkbox"/>	Miller Hill Mall area	<input type="checkbox"/>	Superior Walmart (Tower Ave area)
<input type="checkbox"/>	UMD area	<input type="checkbox"/>	Hermantown/Walmart
<input type="checkbox"/>	Western Duluth	<input type="checkbox"/>	Proctor
<input type="checkbox"/>	Downtown Superior/UWS	<input type="checkbox"/>	Other (please specify):

(continued, next page)

8. Do you have a reliable car available for your use? (check one)

Always	_____
Sometimes	_____
Never	_____

9. For what purpose do you typically ride the bus? (check all that apply)

School (yourself or with your child)	_____	Visiting family or friends	_____
Work	_____	Healthcare visit/medical appointment	_____
Errands/non-grocery shopping	_____	Leisure destination (park, beach, movie, restaurant, etc.)	_____
Groceries	_____	I don't	_____

10. Do the following factors increase or decrease how much you ride the bus?

	Increases	Decreases
School/college class schedule	_____	_____
Work schedule	_____	_____
Lack of parking	_____	_____
Price of parking	_____	_____
Inconvenient to drive	_____	_____
Trying to save money	_____	_____
Eco-friendly option	_____	_____
Healthy option	_____	_____
Steep hills/difficult terrain to cross	_____	_____
No ride or vehicle available to use	_____	_____
Cold temperatures	_____	_____
Snowy weather	_____	_____
Rainy weather	_____	_____
Too far to walk	_____	_____
Too far to bicycle	_____	_____

11. I would ride transit more if: Rank the choices from 1 (highest) to 7 (lowest)

Rank	Choice
_____	Trip was faster
_____	Bus was more reliable
_____	Cleaner/more comfortable
_____	More "how to use the bus" training available
_____	Lower fares
_____	Bus goes where I want it to go
_____	Fewer transfers/one-seat ride

(continued, next page)

12. I think the DTA as an organization should focus on: Rank the choices from **1** (highest) to **8** (lowest)

Rank	Choice
	Increasing ridership
	Meet performance measures for additional funding
	Increase access to employment
	Converting the eco-friendly bus fleet
	Equity and social justice
	Service to every household
	Operating efficiently
	Serving areas of higher ridership potential

13. I feel:

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Satisfied with the DTA transit service.					
Safe and secure while taking the bus.					
Safe and secure at the Duluth Transportation Center (DTC).					
Safe and secure at bus stops.					
Buses are reliable and on-time.					
Bus drivers are courteous and welcoming.					

14. Where would you like to see more DTA bus service available?

15. Please share any other comments you have below:

(continued, next page)

About You

The DTA is committed to gathering input from a wide range of individuals, representative of the entire community. Your information is being requested to understand who is participating. You are not required to provide information. However, by completing the survey you will help us better understand the needs and preferences of the diverse communities we serve. Your responses will be compiled with other participant responses and will not be associated with you, personally.

16. In what ZIP code is your home located? (enter 5-digit ZIP code) _____

17. Which category below includes your age? (check one):

Under 18	35-44	65-74
18-24	45-54	75+
25-34	55-64	Prefer not to say

18. With which gender do you identify? (check one):

Female
Male
Non-binary/third gender
Prefer not to answer
Prefer to self-describe:

19. Which of the following best describes your racial/ethnic background? (check all that apply)

American Indian or Alaska Native
Asian
Black or African American
Native Hawaiian or Other Pacific Islander
White
Hispanic
Prefer not to answer
Some other race/more than one race (Please specify):

20. What is your income? (check one):

Under \$24,999
\$25,000 to \$49,999
\$50,000 to \$74,999
\$75,000 to \$99,999
\$100,000 or greater
Prefer not to answer

21. Do you live with a disability? (check all that apply)

Yes (mobility related)
Yes (vision related)
Yes (hearing related)
Yes (cognitive or intellectually-related)
Yes (other)
No
Prefer not to answer

22. What is the primary language spoken in your home? (check one):

English
Spanish
Ojibwe
Prefer not to answer
Other (please specify):

23. To stay updated and to enter to win a prize, please share your e-mail address:

THANK YOU for taking the time to give us your input!

Appendix B: Rider and Non-Rider Survey Data

How often did/will you ride a DTA bus:	Before the pandemic (March 2020)	Now	After the pandemic ends (estimate)
Almost daily	209	119	174
A few times a week	78	59	104
A few times a month	59	43	64
Occasionally/ seasonally	87	61	114
Rarely or when no other option exists	61	100	66
Never	68	180	40
Grand Total (n)	562	562	562

Where do you normally take the bus from? (Select one)	
Duluth	410
Superior	73
Proctor	16
Township or Other Location	11
Hermantown	6
Rice Lake	4
Grand Total (n)	520

Other Responses:

- Gary New Duluth
- Itasca
- Itasca
- Gary new Duluth
- WEST DULUTH
- Park Point
- Superior and Duluth
- Gary New Duluth
- I have taken a bus from Grand Rapids to Duluth and we have sent numerous people on that route for Dr. Appointments.
- Morgan Park
- Fond du Lac area

What's the closest area in Duluth where you normally take the bus from? (Select one)	
West Duluth (Denfeld, Spirit Valley, Irving Park, Fairmount, Norton Park)	61
East Hillside/Chester Park (above 4th St, near Whole Foods Coop, Myers-Wilkins Elem)	52

Lakeside/Lester Park (near East High, Brighton Beach)	44
Lincoln Park (Craft District, Garfield Ave to Ore Docks/Wade Stadium/Wheeler Field)	42
Endion/Congdon Park (near London Rd, Edgewater, UMD Old Main, Ordean East Middle)	34
Far West neighborhoods (Fond du Lac, New Duluth, Gary, Morgan Park, Smithville, Riverside)	33
Downtown Duluth (Gov't Center, Library, Hospital District, Fitgers, Plaza Shopping Center)	28
Observation Hill/Central Hillside (near Damiano, Washington Center, Enger Park, Cascade Park)	26
UMD/CSS/Kenwood neighborhood	22
Central Entrance/Miller Hill Mall (Duluth Heights, Harbor Highlands)	16
Piedmont Heights/Lake Superior College	15
Other (please specify)	14
Woodland neighborhood	14
Canal Park/Park Point	10
Morley Heights/Hunter Park neighborhood	7
Bay View Heights/Zenith Terrace	4
Airport/Airpark/Rice Lake Rd (near Boulder Ridge, Lowell Elem, United Healthcare)	1
Grand Total	423

Other Responses:

- West Duluth to miller Hill mall #5 is a nice cause goes straight there.
- West end
- From central hillside by st Mary's
- Downtown near King Manor
- I can take the pinball pass on weekends but weekdays I can take Number 10 mall area.
- 12th Ave. E. &4th St.
- Gary
- Superior
- Proctor
- Plaza Shopping Center East End Hospital areas
- I live in Hermantown, closest bus stop is Piedmont.
- From Proctor
- Zenith in Proctor

What's the closest area in Superior where you normally take the bus from? (Select one)	
Downtown Superior/North End (North of Belknap St)	18
UWS/Superior High/Mariner Mall	13
Billings Park	12
East End	10
Other (please specify)	8
Tower Ave (Belknap St to 28th St)	7
Allouez/Itasca	6
Tower Ave (28th St to Walmart/Fairgrounds)	6
South End	4
Grand Total	84

Other Responses:

- Don't really go to superior.
- If I'm going to superior would have to be down at the transit center to be able to head over to superior Wisconsin side
- I don't take the bus in Superior
- N/a
- none
- NA, I do not live in Superior.
- I don't go to or from Superior.
- Don't go to superior.

What area do you typically travel to when you take the bus? (Select all that apply)	
Downtown Duluth	338
Miller Hill Mall Area	201
Western Duluth	109
UMD Area	89
Lincoln Park	88
Hermantown/Walmart	64
Other (please specify)	54
Downtown Superior/UWSS	43
Superior Walmart (Tower Ave Area)	40
Proctor	18
	N= 506

Other responses:

- 5th street and Hammond Ave area Superior
- Best Buy and South Superior want to go-to Barker's Island and Park Point
- Superone East
- To work at Goodwill
- Woodland Avenue
- Hermantown menards
- Duluth Heights
- Lakeside
- Essential Health St Mary's hospital
- Essentia Health
- Lakeside
- Billings park
- To 19th Ave E & Superior St. to get to work on London Rd
- 24th and Superior street, Endion Area
- I take to and from work I live in Spirit Valley an work at ST Luke's Hospital
- Piedmont heights
- Sometimes I go to Piedmont area to go to big Daddyies or if the bus for Pima would run on weekdays to take me home that would be kind of close to the mall area like on weekends that would be appreciate it besides just the weekends and holidays number 9 would be very helpful 24b/7
- Itasca
- Lakeside

- LSC
- Basically I take the bus everywhere I need to t
- Downtown superior
- Lsc
- Lakeside
- Plaza area shopping
- Lester park area
- Lake Superior College
- Lakeside
- East end superior
- Around e 4th st
- Essentia health
- Kenwood
- St Luke's Hospital
- Menards..Glensheen
- Lakeside businesses near 60th Ave. E.
- College of St. Scholastica
- Hospital - or Cities
- Mariner mall
- Lakeside
- St Lukes
- Lakeside
- Woodland neighborhood
- College of St. Scholastica
- Lakeside, East High school
- Lakeside
- Lakeside
- Essentia St. Marys
- Top of Piedmont
- East End Superior
- East End Superior (work daily)
- Essentia Health Duluth
- To appointments
- Canal Park
- Piedmont

Do you have a reliable car available for your use?	
Always	245
Never	162
Sometimes	132
Grand Total	539

For what purpose do you typically ride the bus? (Select all that apply)	
Work	293

Leisure destination (park, beach, movie, restaurant, etc.)	222
Errands/non-grocery shopping	212
Healthcare visit/medical appointment	163
Groceries	146
Visiting family or friends	106
N/A - I don't ride the bus	59
School (yourself or with your child)	44
n=	539

Do the following factors increase or decrease how much you ride the bus?			
Factor	Decreases	Increases	Grand Total
School/college class schedule	71	83	154
Rainy weather	99	190	289
Cold temperatures	106	220	326
Snowy weather	85	270	355
Healthy option	55	176	231
Steep hills/difficult terrain	56	195	251
Work schedule	67	254	321
Price of parking	46	205	251
Too far to bicycle	42	195	237
Lack of parking	48	225	273
Inconvenient to drive	49	240	289
Trying to save money	40	227	267
Eco-friendly option	42	263	305
Too far to walk	32	302	334
No ride or vehicle available to use	29	301	330

I would ride transit more if: (Rank the choices)								
	1	2	3	4	5	6	7	Grand Total
Count of Trip was faster	134	99	94	61	37	36	54	515
Count of Bus was more reliable	41	73	72	93	87	99	50	515
Count of Cleaner/more comfortable	40	36	65	109	133	102	30	515
Count of More "how to use the bus" training available	27	27	39	72	54	84	212	515
Count of Lower fares	51	45	84	72	111	85	67	515
Count of Bus goes where I want it to go	138	138	79	43	31	61	25	515
Count of Fewer transfers/one-seat ride	84	97	82	65	62	48	77	515

I think the DTA as an organization should focus on: (Rank the choices)

	1	2	3	4	5	6	7	8	Grand Total
Count of Increasing ridership	164	82	79	57	47	26	16	26	497
Count of Meet performance measures for additional funding	31	84	66	93	64	66	40	53	497
Count of Increase access to employment	66	61	106	65	58	53	51	37	497
Count of Converting the eco-friendly bus fleet	28	47	46	104	81	78	67	46	497
Count of Equity and social justice	50	37	33	37	106	78	72	84	497
Count of Service to every household	47	56	49	43	53	98	78	73	497
Count of Operating efficiently	40	63	46	54	52	58	113	71	497
Count of Serving areas of higher ridership potential	71	67	72	44	36	40	60	107	497

I feel...						
	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Grand Total
Count of Satisfied with the DTA transit service.	102	224	125	28	14	493
Count of Safe and secure while taking the bus.	111	220	101	47	11	490
Count of Safe and secure at the Duluth Transportation Center (DTC).	76	158	158	74	23	489
Count of Safe and secure at bus stops.	60	193	160	61	17	491
Count of Buses are reliable and on-time.	82	214	133	50	12	491
Count of Bus drivers are courteous and welcoming.	163	202	98	15	13	491

Where would you like to see more DTA bus Service Available?

- #5 Sundays til 8pm?
- Rural park and ride opportunities for commuters perhaps?
- St. Scholastica
- Extended service hours and more weekend routes
- Super One area, off Woodland Ave areas
- Frontage road by Raven
- Park Point
- Hermantown
- Duluth needs a rail/metro system
- Routes #14 W. 4th (evenings and weekends), and #25 DuLooper (RETURN SOON!)
- Rice Lake Road near Amberwing
- Canal park and fon da lac
- More trips toward Lakeside
- Cloquet and two harbors
- Holy Rosary area, mall and hospital loop
- Superior
- Canal Park, Brighton Beach,
- Yes I miss route 21 :(
- The number 4 bus
- Throughout Superior
- Superior over the bong bridge directly to West duluth
- LSC later in the evening on weekdays and on weekends
- Multi family areas and large employment areas
- Barkers Island and London Road
- Third Street and 2nd Street and 2bd Ave West and 3rd Ave West.
- Eklend
- Up by Northstar academy
- 10
- Menards Perkins west end glensheen
- W 5th st
- I would really like to see the scroller announcing the next stop. They have a

system like this in Boulder, CO. Other than that your bus system is awesome!

- Hermantown
- Hermantown before and after arrowhead transit is open. Especially evenings.
- Out in the country of Superior and Duluth.
- Hermantown and Superior
- overall more frequency on current routes, better access to parks
- Park point
- Fairmont area/zoo/Raleigh area
- Pike Lake areas and Hermantown and Lake Side
- Along Haines Rd between Piedmont and the layover stop. Also in the Hermantown area between Walmart, Miller Hill Super One and Haines Road/Maple Grove Road intersection
- Superior, particularly between Duluth & Superior but also within. Barkers Island is a destination!
- Cirrus, more Hermantown and Proctor locations with less transfers
- More evening and late night service for late work schedules and night life
- London Rd
- Superior
- Airpark routes
- To Lakeside and to the Mall from UMD; West Duluth to Superior
- East End Duluth early morning on weekends
- London Road between 10th & 21st
- Ramsey Raleigh
- Rural areas
- Far east to downtown.
- PROCT
- I'd like to see less wait time to get next bus and more timely service so it would be easier to insure you can get to where you need to be when you need to be there without waiting very long times.
- South Superior, East End Superior
- Glensheen, Enger, DECC
- Longer hours and more efficient service b/t Duluth and Superior
- Airpark (for employment options)
- Canal Park
- I would like to see public transit from designated parking areas to events in town, like activities at Bayfield, sporting events, or festivals.
- More buses that run earlier on the weekends to get to work on time A better connections
- Superior
- Southside of Superior!
- Mall area
- Hermantown Area
- Down town loop
- The ramsey raleigh and park point bus be put back in service again
- More airport and Walmart service when Costco opens in the fall.
- Weekends Lakeside
- Late night and early morning service on Sunday. Many work overnight and get off at 6am and we all have to walk 6 to 7 miles every Sunday morning. It's not safe and but if we could take a bus it would beuch more faster and much more safer.
- Kenwood ave and skyline
- Number nine route - daily I sincerely do appreciate the DTA what day do you have to offer
- Superior. It would be nice to have easier access to local parks and trails
- More buses in Superior specifically for students who needs transport to school
- More busses up in hermantown
- West Duluth
- Buses on TIME AND DRIVERS ENFORCE THE MASK LAW
- I'd like to see a bus stop on Cody Street going up and back down towards grand ave
- Faster transportation between west Duluth & Superior over the Bong Bridge
- West duluth
- Beyond Hermantown walmart a couple miles
- Lakeside
- Fond du lac/mont du lac
- West to downtown to accommodate early morning employment Especially on WEEKEND

- Sams club
- I'm hermentown
- Insuring non-smoking areas remain NON-smoking areas
- Proctor
- Far West Duluth
- More frequent service in Superior. I'd commute to my job in Superior if I didn't have to transfer or if I knew another bus would be coming soon if I missed one.
- More neighborhoods in Superior.
- Lincoln Park Middle School
- Park Point Beach in the summer time, especially weekend service.
- Please bring back the park Point route!
- Park Point
- I would like to see the DTA advertise more to Students that they can ride for free using their Student IDs. I work with college students and none of them know that it is free. I would like to see college students spend their money in Duluth.
- Less bus stops. They take available business parking away from local businesses.
- Later bus routes Across the bridge
- Morgan park area to other areas of duluth
- To my neighborhood more runs out to Morgan Park and or Gary
- GO into Target parking lot again
- Superior!
- Maybe a loop over the Blanik Bridge on a loop (downtown to downtown) with room for bikes
- Lakeside on London Road
- Up the shore to Lakeside area
- Superior
- Throughout superior
- Superior
- Where public housing is.
- Superior
- Lakeside, Proctor, Morgan Park, Gary/New Duluth
- More often than every hour for the 12 route.
- More frequent service to far west. One hour between buses is too long. I realize they are more frequent at rush hours, but I

need to be able to get home sometimes in the middle of the day without it taking two hours

- Lakeside/London Rd/Lester Park
- I love in Lincoln Park and have to walk 6 blocks with a cane to get to my nearest bus stop. It's close to impossible to ride for me.
- Routes between UMD and Lake Superior College, Direct routes to CSS
- 14 bus route
- East high school to UMD
- east
- I would rather see higher frequency than more service area, or faster arrival to existing route destinations
- A route from western Duluth directly to the Government Services Center at least Monday through Friday. It's impossible for me to walk up the steep hills to get to work.
- Superior
- Superior in the mornings in should have a bus from downtown to south superior and Billings Park to south superior so we don't have to transfer as much in the morning.
- Burning tree road behind and near aldiss
- More often trips to Hermantown Walmart
- More frequent Proctor trips, YMCA/Essentia Health in Hermantown, more Hermantown coverage (bowling alley, movie theater, etc)
- Give the #4 route back please
- 27th Ave West up the hill
- More mall busses
- Morgan Park!
- I think that there should be buses that go out farther in Rule areas
- 1st, 2nd, 3rd, and 4th Street East
- Park point
- More frequent trips to/from duluth and superior and south superior. Perhaps every 45 mins. Flat rate all the time. Places in Superior to buy fare cards. The machine at Superior Library has been out of order for a long time. In order to get a fare card I have to take a bus from Superior to downtown Duluth just to get the card. .
- Lakeside

- direct route from Lakeside to UMD and the Mall area.
- Closer for those of us working at essential health. Bus 7 needs to drop us off on 3rd street not superior so we walk in the dark at 5:45 am uphill in a not so great neighborhood
- A bus to Fleet Farm..
- An hour between bus pick-ups is not efficient for getting to work on time, not many people enjoy having to wait around for 45 minutes roughly before starting a job.
- Bring #4 and London road back
- Would like to see less drunk people on the bus on and at Transit center.
- To superior at later times
- I mostly only go between West Duluth and Downtown, and I'd just like to see a Main Line bus departing West Duluth every 15 minutes, instead of XX:01, XX:06, XX:31, and XX:41. A more even distribution of departure times would be incredibly helpful. Watching that XX:06 bus leave at XX:04 means I'm going to be late for work.
- More trips between Duluth & Superior, later busses crossing the bridge.
- West Hillside 14 - Better Saturday, and begin Sunday and evening rides until 9 p.m. or when the Mall closes.
- Hermantown shopping areas
- More proctor buses earlier and later in the day
- Hermantown
- Lakeside
- Superior
- Midway Township
- Woodland
- It's not so much a question of where, but more often and later hours of transportation available, especially to Zenith Terrace in Proctor. I would use the bus more if that were available.
- Animal Allies, Wildwoods
- To outlying areas like Cloquet
- From neighborhoods directly to the mall area and universities without a stop at the downtown transfer center
- I would take the bus every day to work if there was service from East Congdon (around 4th and 36th) and the College of Saint Scholastica.
- hotels, I use the bus often when I am traveling for work
- I wish there was a stop across from the casino. The only 2 stops going to UMD from Downtown is at the Antique store and then 2 blocks away at the 3rd ave east hub. Very inconvenient and tired of running!!!
- Along the East-West corridor downtown, above Superior St. (2nd St., 3rd St), and/or up and down the avenues
- UMD to Mall Area
- UMD area on Sunday
- Direct route from Lakeside/Lester Part to UMD/CSS
- Solvay Hospice House,
- Grand to 27th and Superior to craft district
- Lakeside to UMD and mall, #21 was great, I miss it
- Direct Lincoln Park to Canal Park connection. More frequent woodland service. Have some cross-town stops skip the DTA transfer center.
- Superior
- More running from far west through downtown
- I miss the #21 in Lakeside w/ the express downtown. If you offered it again and advertised it as an express bus like the you do the return buses in the evening after work it would be successful. If you ride the #7 in the morning going East, you can see all the traffic going downtown from Lakeside - many many potential riders if you made it fast for them to get to work.
- Hermantown and maybe service to Cloquet.
- A faster transportation option for people traveling between Duluth & Superior, such as over the Bong Bridge.
- UMD/CSS direct to Airport
- Hermantown, Mall, Costco, Walmart, Sams Club areas
- have smaller buses in the community like lakeside cover the neighborhoods

- In the evening. I work late, and some days the bus isn't an option for my route when I get off work.
- Neighborhoods where service has been cut.
- Quicker service across town and on top of the hill. For example, going from Piedmont to the mall can take longer to take the bus than walk since the bus goes down the hill. Same for going to anywhere on one side of town to the other. There are almost always long transfers and relatively slow route. An express type route going the whole distance from west to east regularly both at the bottom and the top of the hill would do wonders for quick transport. Right now it often would take me 5 or 6 times longer to travel via bus to get across town then to drive, which means I usually drive.
- Aspen wood on Arrowhead Road
- Turn Superior and Central Entrance (others?) into a Bus, Ped, and local traffic only zone
- Better access to areas so folks don't have to walk as far, especially in the winter time
- Large employers in Hermantown to increase employment options for low income persons
- Target
- Direct route from Woodland Ave to Mall area
- Lakeside to UMD/CSS without having to transfer downtown - the current transfer options can make a 20 minute drive an hour long bus ride.
- Neighborhoods on east side of town. In particular, the route that bus 21 used to travel between lakeside-congdon-UMD-Mall
- I live in Hermantown and work in Downtown Duluth
- Bus #18 to be more consistent and NOT tie to UMD's schedule.
- Lakeside to UMD/CSS area
- bring 25 back
- Hermantown
- two way service in Lakeside (not only one-way loop)
- Want to see service return to Park Point.
- Lakeside
- Superior
- London road. Kenwood to mall area, Kenwood to umd
- Everywhere
- More frequency on established routes.
- Out in Lakeside.
- Extended superior schedule
- Bring back duloooper
- Proctor
- From Proctor to Mall area. Go thru Hermantown to get there instead of having to go all the way downtown and then back up the hill. Transferring to the Piedmont bus on 24th doesn't work because the bus times are too close together and it takes a long time. I would like to see Arrowhead Transit operate in Proctor and go to Hermantown.
- Direct service from UWS to Miller Hill Mall area.
- Proctor, ski hill area
- The same routes, but more frequently (16, 17)
- Itasca/Allouez
- City of Superior
- The bus stop that does to the end of burning tree road behind petsmart and hobby lobby is really important for my medical needs.
- Ramsey-Raleigh-West 8th
- Hermantown
- More express options from West Duluth to downtown with UMD connection earlier in the am (going to downtown)
- Hermantown
- Canal park
- evening route on weekends from woodland to downtown
- Park point
- Lakeside
- Observation hill, Mall area shuttle, Gary, Park Point
- Park Point
- Fitness center entrance other side of mall
- The number 4 route running again as I live near 8th street.
- Raleigh Street

- Glensheen, Enger, DECC

Racial/Ethnic Background	
White	419
American Indian or Alaska Native	40
Prefer not to answer	20
Black or African American	10
Some other race/More than one race	7
Hispanic	5
Asian	4
Native Hawaiian or Other Pacific Islander	1
n=	471

Income	
\$25,000-\$49,999	146
Under \$24,999	128
\$50,000-\$74,999	79
Prefer not to answer	57
Over \$100,000	34
\$75,000-\$99,999	29
Grand Total	473

Disability Status	
No Disability	334
Other Disability	56
Mobility related	43
Prefer not to answer	29
Hearing related	17
Vision related	16
Cognitive or intellectually-related	12
n = 448	448

Primary Language Spoken	
English	463
Other (please specify)	2
Prefer not to answer	5
Spanish	1
Grand Total	471

Other responses:

- American
- Mix of English and Ojibwe

Age	
18-24	33
25-34	102
35-44	124
45-54	78
55-64	87
65-74	34
75+	5
Prefer not to answer	6
Under 18	5
Grand Total	474

Gender Identity	
Female	300
Male	154
Non-binary/third gender	9
Prefer not to answer	10
Prefer to self-describe:	3
(blank)	
Grand Total	476

Self-Descriptions:

- Women older
- Nonbinary

Please share any other comments you have below.

- Honestly I would like #5s running atleast til 9pm leaving mall area would be awesome Monday through Saturday that be great.
- Reduce fleet to smaller vehicles (vans) and operate similar to an uber service or cab service. I think the buses are mostly empty as far as I can observe anyway. Why are we driving such big vehicles around if they're not full?
- Some drop off spots are still a long ways to walk to destination.
- NA
- My biggest concern is that the drivers could use more training on driving. They scare the shit out of me.
- Too many LIES from the DTA regarding the return of route #25, DuLooper. Unnecessary RUDENESS from DTA/DTC drivers, staff, security and other passengers when I state: "I HAVE A MEDICAL EXEMPTION, AND CANNOT WEAR ANY KIND OF FACE COVERING."
- Please reinstate old hours, hard working people are losing money which makes you lose money!
- Have buses be on time and I've been late to work because of it
- The last time I rode the bus, there were 3 people nearby hacking and coughing - two of whom were not wearing their masks properly. Can something be done to make sure that, at the very least, proper mask use is enforced? Many of us do not have a choice as to our preferred method of transportation, and it would be nice if the bus felt a little safer, health-wise!!
- Better planning of routes and safer bus stops. I stopped taking the bus to the mall because it took over 2 hours from Congdon due to arrival time downtown being 5 minutes too late to catch mall bus. Also, we need a bus shelter in this neighborhood because many of us can't stand for long periods of time. Still miss the East

4th route that ran by Rosary with a bus shelter on 27th/Wallace. In addition, some drivers cheat on the last runs and leave earlier than scheduled. I arrived a good 15 minutes early at 24th ave e only to observe the bus pulling out of the turnaround as I was approaching superior street, leaving me to walk alone to my destination after dark. Others in the neighborhood have reported similar issues. The DTA also must figure out how to shovel the bus stops during the winter. Making senior citizens try to navigate high snowbanks when entering or exiting the bus is a big safety issue. I once had a fare card and rode the bus often, but won't do so again until these issues are addressed.

- Extended hours for employment transportation
- Service is good. The options to and from superior make any trip almost an hour
- People with walkers need the ramp down. They also need to have seating so they don't have to disassemble their walkers and remove all their shopping. People with disabilities don't have the energy and strength to do all that. Also, why not make it easier for people to use stride? The process is way too time consuming. Also have drivers make people without disabilities move to accommodate those who do. Also, people using walkers and wheelchairs need to be let out on the street when sidewalks are not shovelled. For safety that is best done at the corner, not at the bus stop. Please try to be more disability friendly. Otherwise, we just won't ride the bus. It's way too hard. Like for shopping now I just get stuff delivered. I have up on riding the bus. It was just too dangerous and difficult.
- Its fine were its at
- Keep bus stops on busy roads accessible, especially in winter. Too many people standing in roads or deep snow waiting on bus because no access to place to stand for bus at the stop.
- Respectful dta drivers
- I think bus stops should have heaters during the winter that actually work. I also think the bus drivers need to think more about the riders.
- It would be cool if 30-day passes were cheaper, and if there were later buses during the weekend. I know a lot of people who like to visit the bars in Superior on weekends. Taxis can get expensive and aren't always available. You guys are doing a good job, overall.
- Would be nice if the bus ran a little longer on weekends
- Keep up the good work!
- I really appreciate that the dta is available here in Duluth. I usually use the bus during the winter. I know that the dta is a valuable resource for this community. There are many people in the community that depend on the dta.
- Bring back reduced mass rides. Even if you raise it from 25 to 50 cents. I would also raise the general fare to \$1 a ride, and maybe 2\$ for peak. If you keep the monthly pass the same for now it will encourage more to get passes. Right now you have to ride a lot to make it worth getting a monthly pass. If you ride to and from work non peak 5 days a week all month it's only 30\$.
- The DTAs reaction to COVID was poor. Drivers were taking their own actions to protect themselves by having people enter the bus at the rear. However, after doing this several times, when I tried to enter the rear of the bus, the driver thought I was walking away and drove off. This is because of poor communication between management and drivers, and eventually became standard for the DTA probably because of my own complaints. Schedule and service changes were handled poorly throughout the pandemic and staff shortages. There were times where the schedules were changed, but we were only notified through notifications on the app and website, the online schedules were not changed, this is inexcusable. I have signed up for route notifications through the DTA website to be informed directly about service changes or interruptions for my specific routes. I have never received a single notification/email, so this feature seems useless. Loading an EZ card is difficult, error prone and redundant. And as I found out recently you can't even do this at the mall anymore? You can only load \$20 max at any given time, and if you load two \$20s back to back it seems only one will load and the other will be canceled. Many times I've had to travel all the way downtown just to get this fixed, only to be told that no one down there can do this, so I have to call and speak

to someone, only to head back downtown again to have it loaded onto my card. This has happened to me at least 3 times. Why can't I just reload my card online? Why can't I pay for bus rides with my cellphone, or credit card directly? This is wasting my time, and DTA employees time to fix all these problems. This needs to be upgraded. I see the podiums in the busses have been updated, however it doesn't seem to have changed anything.

- I'm thankful I don't have to ride the bus anymore I got so sick of people swearing on the bus people on drugs and smelling like they didn't take a bath in a month
- I work at umd and would frequently see the 23 running empty. Maybe only have it run during peak times or only one direction
- public transit should be free
- I think in the colder months the bus stops need to be cleared out. So one is not standing on a giant snowbank or dropped off in one. It would also help the handicapped passengers.
- What about senior discount on the 31 day pass..???
- Tutorials on how to use the bus
- I catch the bus 5 or more days a week to and from work in the area of Haines Road/Maple Grove Road. I would love to see more frequent bus trips maybe something like MASH in that area. Due to the fact that the drivers do not allow you to stay on the bus at the layover stop in order to continue your trip. I often find myself walking the rest of the way from Super One to work in very cold or wet weather. When I leave work the buses often leave the layover stop late or sometimes they don't come at all because the drivers take their breaks at Super One and bypass the layover all together. I work with disabled people and trying to get to/from somewhere like Walmart for instance is a real hassle. Especially during the week when you have to transfer buses at the mall.
- As more of a pedestrian now, I have noticed the bus traveling way too fast along 9 th St.
- There are too many transfers to make taking the bus efficient. The app for the DTA is not useful for beginners. I would like an option to pay fares via mobile app.
- Students getting around in superior to stores and people without reliable transportation to job centers
- More direct routes in Superior to the superior hospital
- I don't don't know how you require Riders to wear masks and rant and rave about his personal problems in the front seat and He doesn't say anything too the Rider? It's the opposite of your requirements!
- When I was working on site for my employer there were no busses to get me to work early enough on weekends. I had to get a ride or call a cab. I work at 6:30 a.m. some weekends and I live near Plaza downtown and worked in West Duluth.
- I hope I win
- I think that either the 6 or 7 should drop down to London Road at least once an hour headed both ways. It is a tough walk up the hill to Superior St to catch the bus.
- I basically stopped riding when the UHC route was canceled. I worked in the Air Park and at UHC- once thr #17 was discontinued I had to leave my house an hour earlier to make the 6 am bus, take 3 busses while paying fares 2 or 3x because a transfer of 1 hr was not long enough for the connecting bus, walk a half mile, and didn't get home until 7 30 pm. I really loved riding the bus, but it was no longer economical when 4 hrs of my day was spent commuting to some where less than 15 miles away.
- I would take the bus more often, I think if it didn't so much longer than driving my car. I can get downtown to work, much quicker if I just drive.
- I think the service is great for the resources they have available. I hope that their service can become more available and usable so fewer people need vehicles to get places.
- Have more machines to purchase fare cards, like at the grocery stores.
- **It is a HUGE positive for me that I can load my bike onto the bus. I'm surprised you didn't ask about that feature. However, I'm always a nervous wreck when biking/bussing to Superior for work b/c I'm afraid the bike rack will already be full and then I'll be late for work if I have to wait for the next bus. Thank you for your service. Sorry I haven't been riding during the pandemic; it was amazing that you were offering free rides for a

while. Improved access to the bus for those who can't drive or access a vehicle is something I will always be glad to see!

- I looked into taking the bus. My work is in west Duluth from central / north superior. It takes me 10-15 min to drive to my job. The last time I looked into the bus it took over an hour and I would have arrived almost an hour early. Needless to say I'm not taking the bus. It would be nice to see a bus or shuttle going from superior to West Duluth to cut down on travel Time. I would consider taking DTA transport in this scenario.
- I rode the bus while I was in college a decade ago. Loved it. Now, with 3 kids under 5 it just doesn't make sense. Shifting away from car culture is extremely difficult living in Superior and working near Hermantown
- Great ride
- Please consider expanding the Saturday and Sunday schedules! This would be very helpful, especially for anyone taking Greyhound/Jefferson Lines in the evening.
- Faster service
- I have been riding the bus to and from work for 20 plus years, very relaxing and reliable. Bus drivers know me.
- The DTA is awesome!
- A great value and exceptional service.
- Should have 2 buses running late at night one going west one going east. Back and forth once a hour. It would be much safer for people to take a bus then walk in rougher neighborhoods.any can't afford taxi's so they have to walk late at night.
- I sincerely do appreciate the DTA what They do what they have to offer for public transportation. It is hard to please every customers needs to communicate around town. And how often to run the roads with All the buses being on the roads and try to be on time it is impossible to do all this sometimes just because of the riders don't have the right payment at the time when the bus is pulling up to the stop. Or there might be a problem before the next stop depending on how accurate they can be to be on time for each stop. It is hard to please the public, and they public doesn't understand how much work it goes into planning and getting the all the needs of the services to Twin port area. It is very hard to understand what the DTA company has to go through just to make sure everybody is pleasant besides the drivers and doing everything that they can to serve the community as well Best to the system off services. But I totally understand that there's a lot behind the scenes to get things done with the DTA operation and services that people just don't see everything that has to do with the DTA to make it run efficient. But I sincerely do appreciate everything that DTA can provide for all of us in the Twin port area and try to be pleasant between drivers and ridership is not easy Thank you
- Ranked questions did not include my reasons. Would like to answer myself.
- Thank you for being heros!
- Maybe hours for bus going back Superior from Duluth. Also if the bus can drop off closer to the corner by Wessman arena coming back from Duluth. That would be so helpful because I use a cane and sometimes my walker asthma thank you
- Maybe lower the adult bus passes as well some people can't always afford 40 in a bus pass or if its couples that pay 80 plus paying for a child one as well. I think there should be a program for family's that are low income and that are on ssi
- Put garbage cans at every bus stop especially the North end of superior. Have the buses run on time w/o any stopping cuz they are early and have early morning bus run on Sundays.
- Bring back Ramsey Raleigh and have it run later than 6 and maybe go further than the zoo
- Change all buses to electric! We need to save the environment!!
- Lower the 31 day bus fares masks need to be required at all times I see people taking the bus and they have the mask only covering their mouth and not the nose or sometimes people don't have a mask and the driver doesn't say anything
- It would be very nice if the could be more trips out to fond du lac in the day and putting a stop at mont du lac.

- Busses on top of each other 2f/2x in a.m are a great idea until quickly downtown and not able to move forward from there waiting for connection busses to off load. The adherence should NEVER be early! Offer a m-f pass or pick your 5 days a week pass.
- The driver's are very friendly
- When taking 2 to 16, it's either a two hour bus ride (from morgan park to WITC) or it's a stressful time game of getting to Garfeild Ave before the 16 does (bus drivers don't always seem accommodating to it, either). If the times could be adjusted by just a couple minutes to ensure that the 2 always gets to Garfeild before 16 that would be really appreciated. And the addition of the 5 route is really nice! It's a lot more convenient to be able to have a second route that goes through the far west neighborhoods.
- Love the bus. I usually cycle around, and while no distance is too far to cycle, it's always great knowing I have a backup option, especially in the winters
- I wish the 12:25 2 new Duluth bus would run again it's really an inconvenience after working to have to walk from downtown all the way to Morgan park because my only way to travel is the bus
- Superior needs better service. Only a small portion is serviced and times are too far apart
- Extended hours to and from Superior. Otherwise I'm very pleased with DTA service.
- I appreciate the bus drivers than are enforcing the mask requirement. I know it's a tough job. I wish more drivers would make sure riders have their masks on while boarding. Often a rider comes on with mask in hand like they are going to put it on and then never do.
- I would like to see the DTA add a mini transit center near 58th Ave W & Grand. Then there could be more frequent buses going between this mini center and the DTC. The DTA could then add a route that goes from Proctor to this mini center and then on to Gary / Fond du Lac. Proctor and Fond du Lac are still serviced, they just require a transfer at the mini center. This would allow the buses that run between the mini center and the DTC to have more consistent arrival times at every stop in between. So then someone getting picked up at 3rd st and 24th Ave W could have bus times of 8:02, 8:12, 8:22, 8:32, 8:42, 8:52 etc. instead of the current chaotic 7:58, 8:12, 8:17, 8:22, 8:28, 8:48. This mini transit center would not have to be anything more than a slightly nicer bus stop. Or if the West Duluth Library / police dept / fire dept / senior center can spare 200 square feet for a ticket kiosk and two benches, all the better. So the 1.2.3 Mainline would be replace by 1 route that goes from the DTC to this West Duluth Transit Center. Then there would be one route that goes from Proctor to Fond du Lac with this West Duluth Transit Center as its midpoint. I would like to see the DTA double down on the routes that are successful as a way of increasing ridership. So if the DTA can create a corridor between a West Duluth Transit Center and the UMD Transit Center, with the DTC in the center - if that route has high frequency buses- a large portion of the bus-riding public would be served with a large portion of preferred destination covered.
- I do not take the bus and feel a bus stop at every corner in the downtown district is taking away from businesses, which is why buses run these areas. It's a waste of funding these huge buses that rarely have riders need to be so big. Use small shuttle vehicles to save on gas, funding and energy, etc.
- I feel the DTA is a good service. I am confused about some things like the changes at the DTC on the bus. It is a bit confusing knowing if the bus I am on will be the same as the last time I was on that bus meaning will it change to the same number as the last time I was on it at the DTC. When a bus goes by me I look at the back and it has a number on it that is confusing. I would expect to see the number of the route it is on so I know if I missed the bus I wanted but I think it is the bus it will turn into at some point most likely at the DTC. How is that helpful for me knowing if I just missed the one I wanted. I need to look at a hard copy schedule and totally understand it to find if I missed it so I just wait and see what happens. More bus service times to areas of Duluth have less income, some are further away from more crowded neighborhoods but they need more service to help shorten my total trip time. I count total trip with time I need to kill waiting for a bus and that is a loss of time in my day making my day less productive for me and my family
- Bring back DASH and MASH. Stop at Superior St and 3rd Ave E , NOT 4th, where no apartments, jobs or shops are and it is often not shoveled.

- Consider non-bus vehicle/transit where appropriate. e.g. up the hill; across the Bay/River.
- I'm a senior that took the number 11 before we moved this fall. There is a new senior complex on London Road and it would be nice if the bus could come down to London road for a couple blocks on the return trip and up 40th Avenue East. This would benefit seniors at Ecumen Zvago and the Chateau
- Invest in bus rapid transit along the city's lower neighborhoods (Gary-Lakeside)
- I live in Superior and work in Duluth. I mainly ride the bus when the weather is bad and I'm nervous crossing the bridge. However I would ride more frequently and maybe even be a daily rider if the busses were more frequent so it works with my schedule. I can't ride Saturdays because I end up having to wait almost an hour in Downtown Duluth for the next Superior bus.
- I rode with a group of young adults to teach them how to ride the bus. It was a very good experience for them.
- The last bus from Superior to Duluth is too early.
- Until we can secure more funding at a federal and state level I don't think you will have much change. People can do all of their shopping online and have it delivered partially because of Covid. The routes haven't really changed in 50 years that I know of and now there are fewer places to go. Retail stores are on the decline and the best you could hope for is Superior Residents taking the bus to Duluth to work. Ridership was much higher when people were a one car family. Get funding for smaller buses
- I work with folks with disabilities, some who love taking the bus especially the Duloooper. I think it's important to keep the Duloooper going as well as making sure drivers have good training on how to work with folks with disabilities
- More express route for every route, every 30 min. It shouldn't take 45-hour to get anywhere by bus. Later route times in some of the furthest reaches of the DTA (Lakeside stops running at 7-8 certain nights). What I mean by more express routes is instead of it taking 45-60 min to get from Lakeside to Downtown or Woodland to West Duluth, there should be some kind of express that goes from the farthest part of the route (within reason) to the DTC and out to other parts of the network. Times might be exaggerated, but the point is. More people would ride the bus if certain trips from extreme points didn't 3-4 times as long as in a car.
- I think that upgrading to credit/debit card payments would help to. I have been stuck with giving a \$5 at boarding because I had no other change, or walking because I never carry cash.
- I live at the beginning of a route and I don't go very far. I frequently board very early in the morning, one of the first two busses leaving Gary. The bus driver said that starts the route late so that he does not show up to the end of the route early. This makes it difficult to know when to get to the bus, and Sucks when I end up in -20 degree weather for ten minutes waiting. Coming home, the bus is frequently early (getting better Over the years I've noticed) and At least once a month or so get driven right past and have to wait for the next bus. It seems that after a certain point on grand Ave they are not expecting to pick anyone up so they don't look, and don't care about getting ahead of schedule. All while they speed through Morgan park like they are playing Mario kart. I appreciate that you guys get me to work during snowstorms and I have a lot of respect for the drivers. They put up with a lot. Its a hard job, I know. Because of this I try not to complain to much about this issue but in the 12 years I've been riding this route it's always been a bit of an issue.
- Bike racks at bus stops, and bus stops cleared of snow in the winter.
- There used to be a bus that ran from East high school to UMD and beyond. Could a limited version of that route be reinstated? It was really helpful for kids at East and Ordean to get to UMD and CSS.
- Did not like question 10 - it forced me to rank factors that do not affect my decision to ride. Better as a multiple choice, i.e., "Which of these factors affect your decision to ride the bus?" Also question 11 was difficult to rank factors I don't completely understand - like performance measures, and "efficiency" would seem to be embedded in many of the other choices like "serve all households." Please consider our time and expertise as general public survey-takers, in devising your questions and answers.
- I primarily bike and walk everywhere because I live near almost everything I need in daily life. The mall area is really the only place that is too far to walk/bike, but in that case my second choice would be drive, because bus would require transfers, and going way out of the way to transfer at the downtown transit center, making

a 15 minute trip take nearly an hour. We need BRT, please (generally - that comment not specific to the mall area). Please focus on frequency over coverage. Thank you for being willing to try new things - electric buses, pilot projects, etc. Would love to see route 13 go all the way to Ordean Middle School - middle schoolers who live less than 1.5 mi. from school do not qualify for the school bus, so public transit would be ideal!

- The DTA should run more efficiently like the Twin Cities Metro. This system works on the places and events the customers need to go to rather than what the Authority what the customer to adapt to. If the DTA ran better hours and went where I need it to on my hours, I would use it more. I feel if the DTA created a USABLE bus route for the workers at GSC and the Courthouse (a stop at GSC every work day at least two times a day in a.m. and p.m.), a lot more employees would take the bus. I know I would. And a more usable route from the west to the Mall area. Route 5 just doesn't work for most mall area employees.
- I would like the 16 Superior Itasca bus to run later in East End. The last bus from Duluth to Superior to go into East End is 550pm. Would like to see a 620pm bus. I think the cut off time to East End is too early. I know ridership makes a difference. But in the winter time I don't want to walk from Burger King to my house miles away.
- Always, always consider accessibility for riders when strategic planning or offering surveys. There was not one question on the accessibility of the DTA!! Shame
- Make a Billings park to south superior between the hours of 6-9 instead of just having it be from 9-4
- I wish ALL the drivers would follow the same rules such as I've seen some drivers not kick off loud and swearing people whereas some drivers do, etc.
- I do not drive and the DTA is fantastic! All the drivers are so great and friendly. You are my life line!!!
- It would help to have more frequent busses, as well as busses that run later into the evenings and earlier in the mornings on weekends for folks that work in retail or at the bars).
- I take the bus to work and back home 5 days a week. You folks do an awesome job in my opinion.
- I take the bus for work and weekends are hard since the buses don't run earlier in the morning and later in the evening (I work for a call center out west and live in the east)
- (1) I know this can't be changed, but I wish the DTC was in a more central location - feels isolated and out of the way (and therefore less safe) on Michigan Street. I much preferred the Superior Street location! (2) Why is the DTC so close to the Skywalk and yet so disconnected from it? You can easily find the parking ramp but you have to KNOW the transit center is there and even then you have to search for an entrance. (3) Why is there a deserted police station located inside the transit station? It would add to a sense of security if it had a visible police presence. As it is, it initially communicates "transit riders are criminals who can't be trusted" followed closely by "transit riders, who cares?" Might as well open a coffee shop right there instead. (4) Why are the westbound buses so hard to catch in the main transit center? The first time I went down there I missed my bus because I couldn't see where you even caught it (compared to the eastbound buses in the front, which you can easily see arriving, through all the floor-to-ceiling windows and multiple doors to get in and out of). This setup perpetuates, and is probably grounded in, this town's bias against West Duluth. Seriously, it's like old-school "colored only" accommodations to place a single, small, out-of-the-way door for everyone who travels to West Duluth, Proctor, and Superior to squeeze in and out of. EQUITY MY ARSE! (5) Why can't you offer normal waiting room features like TV news, electric and USB plug-ins, and wi-fi? (Oh, right, as above, either "transit users are criminals who can't be trusted" or "transit users, who cares?") If you're not just blowing smoke about the idea of equity and inclusion - take a hard look at how all the points above embody institutionalized bias!
- Would be great to see a mall of America bus
- One thing that has kept me from using the DTA is ease of use and efficiency. I used the bus nearly every day when I lived in st cloud because the routes were fast, easily accessible, and very straightforward. I've been put off of using public transportation here because it just isn't serving in the ways I personally need.
- Please have clean buses many times the buses are full of trash on the floors, or someone has vandalized the bus seats or walls.

- I strongly believe that the buses are very Assessable in the Duluth and Superior area. I believe that there has been some drug problems on bus that should be handled more quickly. I can say that most drivers are on time but there are a few that are not on time and that makes it harder to catch other Connecting buses. I believe that the price is ok to talk bus but with the covid stuff I believe rates should of went down. I think all bus drivers should get the covid shot to protect them and the public. The dta is not a safe place at all and the Security guard should have sensitive training on what to do in a bad situation with people with mental. I feel that the dta was safe when the police were in there. The Security guards could do a whole lot better with safety. I hope that my response will help make the dta a safer place that people can catch there bus not in fear.
- For the love of God, bring back the DuLooper and start running the 6 Mainline/7 Lakeside on 2nd Street.
- Please bring back route 15! Park point has been without bus access for far to long. There are loyal bus riders there and need access to the bus!
- I would love to see more bike spots on the buses - I have been skunked more than once when trying to catch a bus back up the hill. I also think it would be great to integrate more bike-sharing (e-bikes???) around town - maybe even with some bus ticket discounts. I also think a gondola from the library up the hill would be fantastic!!!
- Generally it's a very good service, given the size of Duluth. Keep up the good work!
- To drop bus 7 going up 19th east to 3rd so essentia health workers can get dropped off at 545 am closer to work than walking uphill in the dark from superior street. Not user friendly. One coworker the 608 bus drops him at the casino not even at the Sheraton. So he has to walk even further. Havent ridden since that this inconvenience because there will be another issue this summer. Woukd gave been nice I bad weather to be dropped off on 3rd st. Not user friendly
- I think people like myself are scared of catching covid this si why they aint riding a bus right now. Maybe once we have the vaccine more will ride. You all are doing awesome tho Thank you!
- Return the bus stop on 28th Ave west !! Please ! To dark at other bus stops !
- I'd like to see route 12 have a longer running span. I work a lot later in the evening shifts and getting home after 6pm requires either trying to leave work 10 minutes earlier to catch a transfer bus to get me closer to my residence or I'd have to walk a very long distance to my residence. Same goes with weekends
- i'm not asking for faster service, I'm asking for better availability, Why should I be forced to walk a mile to catch a bus that runs every 15 minutes rather than the one closer to home. When those sidewalks aren't shoveled, it can be quite scary traversing the roads to get to a bus stop. So this happens if the bus is early that day, not a great experience. Can't wait an hour for the next one. So ya got twenty minutes to run down the hill for over a mile of icy sidewalks.
- #4 serviced employees at Menards Perkins udac to name a few... Bri ng it back. Same with glensheen
- Also if people can not afford the bus they should not be allowed to get a free ride. Seen way to many drivers letting drunk people on the bus who did not have fare.
- Clean up your bus stop daily in front of caribou coffee daily
- My biggest issue with the DTA is buses leaving scheduled stops before they are scheduled to leave. I get on the bus at Grand and 57th W, and have watched countless buses skip the stop or leave early while I'm running down the road, a few minutes early, trying to catch it. I also had an incident where a man was assaulting a woman on a bus, and nobody tried to help her until I, a young 5 foot 2 inch tall woman had to physically pull the guy off of her while the other passengers just watched. I've also been literally caught between two fighting women in the back of the bus, and while the driver did pull over and wait for the cops, it took about 15 minutes for them to get there while we all waited for this fight to stop. I'm not sure what the solution would be, but security can be a big issue while riding the bus.
- Very pleased with the service in general
- Work with employers on coordinating bus & shift start/ end times. The port area & airpark/ aviation jobs need more bus access for low income people to access better paying jobs.
- Get 14 & 25 EVENING, SATURDAY AND SUNDAY SERVICE.

- All the stops with shelters need a seat and lighting, especially in winter. Sitting far back on the bus is difficult to see where to get off. Also no lighting feels less secure
- Better weekend/holiday coverage. Myself and friends often cannot get to and/or from jobs on the weekends/holidays because of the reduced hours
- Please make buses run later to west duluth from downtown. 1125pm is not late and some people do get off work at 12 midnight so now we have to walk or take a expensive taxi. Why would you take buses away when people use them?
- Thank you for your service.
- The Lakeside/UMD express service you tested was awesome and it was the most I used the bus. Alas, I'd rather see the bus invest in poorer neighborhoods to help those folks get back on their feet.
- I'd like to see a more efficient route service to the Lester Park/Lakeside neighborhood. The use of London Road by a past trial route proved to be very effective for users who are primarily targeting downtown area, and there service is drastically impacted by multiple stops through the east hillside which is unnecessary for most users. (i.e. we have a more local grocer, and limited destination prior to the medical district that anyone would ride for.)
- I live in Midway Township and work in downtown Duluth. I have tried finding a way to ride the bus but there are no pick up spots in my area.
- All rides are more pleasant when the driver is more pleasant. The face of the bus driver as you step on sets the tone for your trip. I don't think drivers recognize the power of their attitude on their customers. Heck, I don't think some even care what their customers think. They're just there to drive a bus.
- Make the service more efficient with a transfer point system including a new transfer point in Spirit Valley and a regular (every 30 minute) express route direct from downtown to the transfer point via I-35. Then have one mainline route between the Transportation Center and Spirit Valley, and separate routes starting from Spirit Valley to points west and north (Gary, Proctor, etc.), timed so they meet each other at the transfer point (look to Madison, WI as an example). Also increase the frequency of mainline service and make the west mainline buses (current Routes 1, 2, and 3) alternate every 5-10 minutes instead of all coming within 5 minutes of each other and then having gaps of 25-40 minutes between buses. I should be able to just stand at a bus stop for no more than 10 minutes any time between 7 am and 7 pm to get downtown on a bus.
- The primary reason I don't use the bus is because the schedule in the Lakeside neighborhood departing for downtown is so unreliable. The bus is often tens of minutes later or early and was once >30 minutes early which meant I had to scramble to find a ride downtown to get to work on time. Not being able to rely on the bus's arrival times is a disappointment.
- Focus on reliably getting people who don't have other means of transportation where they want to go. Only emphasize "eco-friendly" when it will improve reliability without increasing costs.
- Most of the drivers are great. I do find the peak fair times starting at 2:30 to be early. Costs me twice to get on a nearly empty bus to go downtown from UMD. Get rid of peak fares or start later.
- I know there is room for improvement, but I am happy with the services the DTA provides. Thank you.
- I would like to use the bus more as a safe option when drinking alcohol, mostly from downtown area on weekend evenings but they aren't terribly convenient and end early.
- On-demand options with the smaller electric autonomous vehicles potentially arriving in next decade or so.
- I was a daily bus rider for 13 years pre Covid, using it to commute to job downtown. Once our office reopens I will resume using the bus. Myonky hesitancy is in bad weather waiting for the bus at the transit center is feeling was feeling less safe. If weather was so bad I couldn't wait outside on Superior street I often got an uber. It had me considering just driving to work and paying for parking.
- I think it would be nice if the bus drivers were aware of where the bus stops were, meaning that when I get off work and stand at the bus stop. I have the bus driver not realize that I am at the bus stop and drive past and realize that I am there and then usually stop in the next block and then get mad at me because I don't run to the bus. Because I have a disability and also, I don't feel like I am in the wrong.

- I immediately went from using DTA buses for my daily commute to never using DTA at all because of the cancellation of Route 21. I am happy to take a 15 minute drive commute and extend it to a 25 minute bus commute, but I simply cannot extend it to a 45 or 1 hour commute by transferring in downtown Duluth. That is not effective transit. As soon as a direct route is returned from Lakeside to UMD/CSS area, I will start using DTA again regularly. But, the current options are simply too poor.
- Earlier bus service on the #13 route on Sunday and Saturday. Please have more stops within the Miller Hill Mall besides door 8. Shovel out the bus stops so we are not standing in the street. More glass enclosed bus shelters with longer seats.
- ENFORCE MASK USAGE!!!! THE DRIVERS REFUSE TO DO IT!!! I am disabled and at high risk for covid complications so make them enforce masks worn and worn correctly (none of this chin strap or nose showing bs I see) so I can start riding again. I only use the bus twice a month down from almost daily now. More people like me would use the bus if they didnt feel like it was a great place to catch covid because the drivers are too wussy to tell riders to mask up right or get off. (In Austin they literally call the cops if a rider refuses to mask on the bus or get off) I have anxiety attacks when I have to use the bus because of the people who aren't wearing them. I feel very unsafe because of the lax enforcement which is why I marked it unsafe.
- Bring #21 back
- The DTA hub downtown is an achilles heel sometimes. It takes 90+ minutes to get across town sometimes. We need some express croww-town routes. Likewise, we fight to get tourists to travel from Canal Park to Lincoln Park - they don't want to wait in a parking garage for the next bus. Extending the trolley route or having a direct connector would be ideal, especially during the next many years of construction.
- Because of the geography of the city I think it would be a good goal to have a transit system in place where a rider can get from one end of the city to another in under 30 minutes. The biggest thing holding me back from using the bus more is the amount of time it takes to get places. Right now driving, biking, or walking are easier and more convenient most of the time. I think there are a lot of easy improvements Duluth can make to have a better transit system.
- Buses running more often to/from far west areas. The buses are almost always packed (especially first bus in the am on weekends and holidays). More frequent holiday times (945am on a day where there are still some people who have to work or ending early. Again people have to work all hours week days and weekends. Credit card readers for the fare box!!!! If a candy bar vending machine can accept cc why can't our buses!? I was sooo excited about the new fare box but still can't take cards... Especially now in times of COVID a cc reader would be efficient.....
- I am very happy with the DTA. Will ride again when the pandemic is over with. If I could change 3 things, I would get rid of peak fair and make it same fare all the time. Reason is, if you are a regular user you will have a pass so you are not collecting any more revenue. If you are an occastional user, it is just an annoyance and added expense especially if you are going a mile or less. Then there is always those that debate time with the drivers of what time it is and when the bus left or due at the transit center to which fare it is going to be which just adds time to your trip. Get rid of it, you have happier riders, happier drivers, faster routes. Secondly, extend transfers to 90 minutes from 60 minutes. Many expire before you are able to transfer, especially on weekend routes. For Example, East End Superior to DTC to get a connection - it expires before you are able to transfer. Lastly I would have the emergency vents open as much as possible to get fresh air in the bus since the windows dont open. It is healthier and will smell better. Don't believe me, sit in the back of a full bus - the way the air flow is designed your are breathing in 50-70 people's "exhaust" as the fans draw it toward you. God have mercy.
- I find the "routes and schedules" part of the website not so quick and easy to use. Would it be possible to have a not-so-computer savvy layperson (not an employee) try looking up things on that part of the website to find out how it might be tweaked a bit? Also, I very much appreciate that your drivers have been working through this pandemic and thank them very much! It's not an easy time for them at all. DTA service availability is just as important and necessary to so many people at this time.

- I live in Gary-New Duluth, and travel to the Itasca/Allouez neighborhood in Superior frequently. It's typically a 2 1/2 to 3 hour commute between the two places, being especially long on weekends. I'd really appreciate having more options for quickly going between these areas.
- How are inappropriate behaviors handled on the busses? It is good to see drivers wait for passengers to be seated, if seating is available, before leaving the bus stop.
- No 11 question not able to click on anything to answer question. Use smaller buses/vans in areas where there is less ridership like Park Point route. Run later hours at Walmart Costco were people who work there can take the bus. Community needs to offer less expensive CDL training opportunities...too expensive right now at LSC to get a job.
- DTA should consider using alternative transit service modes such as demand response for hard to serve and low ridership neighborhoods, using uber, taxi service, etc.
- A few high frequency express routes with well aligned transfers from lower frequency localized buses is one thought on how to improve transit times and make then a feasible alternative to driving.
- I didn't like the ranked question that asked about riding more. I didn't want to choose many of the things on the list. I think the busses are clean, comfortable, on time and inexpensive. Those things are already happening and I don't think they need to improve on what is already being done well. I have always had excellent service with the DTA and all of the drivers I have encountered have been friendly and helpful.
- Consider paying for public transit thru a tax (e.g. water tax, such as in Corvallis Oregon) that would give DTA a better budget to transition the Duluth/Superior to a more efficient and effective transit system. Would allow upgrading transit mobility infrastructure and provide a resilient operational funding. DTA is a tool to improve people's mobility and thereby increasing quality-of-life and economic security.
- Better and quicker snow removal at bus stops.
- I am in favor of reducing the number of bus stops. Every block is not necessary. I know in St Paul it is more like every 2 blocks or less on some rapid routes.
- DTC is not a welcoming environment. Security presence and design make it feel like a place of crime.
- Some of the bus stops the signs not shelters should have the time tables for the routes they serve and there should be route maps so u can see where routes go for shelters and regular stops
- Consider purchasing some smaller buses to use on routes for which a full size bus is inefficient.
- I live in Getchell Road in Hermantown and the nearest bus stop in Piedmonet and Haines Road – about three miles away; I could park at the Mall I suppose too and catch the bus from there – that is about four miles away. Bottom Line: I can't walk to a bus stop from my home so would not really use the DTA.
- As someone working at the College of St. Scholastica, I feel extremely excluded when the ONLY bus line (#18) near my place only runs when UMD is open. This is not only affecting me but also the students because the two schools don't have the same academic calendars.
- Service is reliable and bus drivers very helpful and courteous
- Enforce the mask mandate. Don't let obvious anti maskers on the bus.
- I have always been so impressed by the professionalism and how friendly the drivers are! It has been a wonderful experience when I have used the bus with my preschooler. She loves riding the bus and spotting them in the neighborhood (we live a little over a block from the Lakeside route). The one thing I would change was how dark it was in the bus when we had a stop/break at the DTC (we didn't get off the bus, rather the driver did, and then got back on to get us to our stop which was down the line). The driver turned off the lights when he went in for break and the bus was quite dark. It was fine, but definitely made me think that some people wouldn't feel very comfortable sitting on the half empty, dark bus with strangers.
- Park Point needs ridership development along with evening and weekend buses.
- A greater issue than a lack of locations served is the amount of service in many occasions. When the bus only comes once an hour or stops running early in the evening, it becomes too cumbersome to consider. I would also love to see the DTA explore more potential express options or routes with lower stop frequency during

peak hours. As someone who does not live in that area, the meandering slogs through the hillsides at these times wear me out.

- I try to take the lake side bus to UMD with my bike and the bus always misses the transfer to the bus up 24th ave east by 5 min. If it was min before then I could easily transfer up the hill. VErY inefficient
- Having to carefully plan and look at the schedule to use the bus is prohibitive, we need way more frequent buses so you can just go to a stop and know there will be a bus within 15 or fewer minutes. I used to take the bus to go grocery shopping and had to hustle through the store to catch the bus back home or else I'd be stuck there, waiting with my groceries in a crappy parking lot, for an hour for the next bus. People who don't NEED to do that, won't tolerate that and will just take their car. Fares don't cover the cost of the service anyway and this is a public service. Take my money - I'll pay more taxes to have more buses running on each route even if I don't use the bus daily. Eliminate fares altogether or at least transfers should be longer (or there should be more frequent buses) - a transfer should cover a round trip, not just one way.
- You didn't provide an option for this: I would like you to focus on building a system that helps meet our greenhouse gas emissions goals. That is not just green buses but a transportation system that makes it easy for people to drive less.
- I have been a faithful passenger for 20 plus years, the DTA drivers know me, respect me as I respect them.
- I live out in Lakeside and have taken the bus my whole life. I have troubles now getting to work on time as the Lakeside bus has been going Mainline through town since last May while second street was being worked on and I have trouble making the connection to get to Miller-Dwan. It used to go up 10th Avenue East to 3rd and then downtown after that. I could easily get off on 5th Avenue East and 3rd street and walk down. I could also go out in front of Miller-Dwan and catch my bus home. Now, especially because of some leg/knee issues, I have to take four buses, versus two, to get back and forth to work. Also, at certain parts of the day, there is only one bus an hour. I am grateful to have a 5:30 a.m. bus to get into work, however. I just wish there was an easier way to get to the medical district in general without having to take an extra bus or walk further from a bus stop. At the end of the day, I appreciate having the DTA and I know they work hard to get us where we are are going safely, especially as I do not drive. Thanks for how hard you all work.
- I like to support the DTA and hope you can continue to support those of us not on the main route.
- There should be a free loop or trolley downtown or canal park to the breweries in Lincoln Park. Cause there no parking in Lincoln park
- Takes too long to ride from lakeside downtown then up to colleges- I just don't have that much time.
- DTA drivers I met do exceptional job (routes 16, 17), we really appreciate warm clean buses and ability to rely on public transportation
- It would be nice to have a hut at the Belknap St and Ogden from Duluth bus stop by the Superior library for bus 16. And maybe see some benches at some of the stops that don't have them.
- I would like more directness and frequency overall along the major bus routes, especially to Superior and to the Miller Hill Mall area. I would like to see the bus stay on the major streets, where you expect to catch a bus and not end up on the side streets and parking lots and also reach major destinations that aren't directly served, like Ordean East Middle School. More frequency and later service is needed to Superior. Better bus stops, making them more inviting and comfortable with plants, trees and public art are needed. Good crosswalks at the bus stops are needed as well, especially along Central Entrance. The Miller Hill Mall and UMD Kirby transit centers are confusing and hard to figure which bus is going where. The Miller Hill Mall transit center has a comfortable waiting area, but how the buses pull up, especially with the shelter part of it and having to walk through the driveway to reach the shelter is ridiculous. That must be made better. Finally, sidewalks are needed along all bus routes!!!
- The bus stop at the end of burning tree road behind hobby lobby and petsmart is really important for my health and appointments. I can only get to that stop going one way now and I'm hoping that stop doesn't get taken away. Thank you.
- Hermantown

- With the current hub and spoke system, it is easy to get to/from downtown, but incredibly time consuming to get to destinations that are not downtown. Therefore, I take the bus to work, which is convenient, but not to any other destination. I would like to see Duluth move to a system based more around the grid, with high frequency buses following the major streets, rather than trying to directly connect major destinations. I would be willing to make more transfers, as long as wait times were low (i.e. bus frequency high). This would allow people to more efficiently get all around the city, and also make the system much less confusing.
- I wouldn't use the bus for everyday transportation purposes, but I think it would be fun to use the bus for more recreational things (like visiting other neighborhoods and their shops). Considering my ridership would be more recreational, I don't feel like the bus is worth the discomfort of having to deal with questionable cleanliness, bad smells (cigarette, body odor), and ultimately other riders. The idea of riding the bus is fun, but the practice of riding the bus seems uncomfortable.
- Appreciate the DTA!
- Please remove the loop at the end of 7. It adds significant travel time when you are at "the back of the loop" and uncertainty when you don't know where/when driver is going to lay over. Also large area NE of Crosley not covered. Further, there is one question you did not ask: what exactly would make me ride more. For me, frequency is important, but wi-fi would be HUGE and reduce my concerns about frequency if I could work on the way to and from the office.
- I wanted to clarify my answers regarding safety. I have felt unsafe on the bus, and at the DTA on occasion, but for the most part, I think the DTA is doing a great job. I did ride the bus in January for the first time in 9 months and it did not feel safe-- people took masks off in the bus, and one guy was just drinking pop with his mask down, and then coughing. This seems particularly unfair to the drivers. I just got off the bus and walked the rest of the way home to avoid feeling worried about germs. Also, without blocking off some of the seats, it seems difficult to ensure a safety-bubble of social distancing around oneself on the bus. Fortunately for me, I can now work from home. I do look forward to seeing my 'bus pals' in a post-pandemic world. I like to ride my bike to work, and put it on the bus for a lift up the hill on my way home. I am glad this service is taking off, but sometimes the bus bike rack is full at the end of the work day, so wanted to mention that in case in the future it was ever a possibility to expand the number of bikes that can fit on a rack. Thanks, DTA! Thanks for helping provide service during the pandemic.
- I like being able to ride 1 bus to and from 1 destination to another with out having to transfer. also I am able to do this now for about 80 plus percent. thank you keep up the good job
- I want the bus to make a regular stop at the fitness center entrance at the mall so I can go earlier without having to walk around the whole mall when it hasn't opened yet and door 8 is locked.
- Just hoping the #4 route will be back as it would make my riding easier. Thank you!
- I don't care for the bus driver's break coming after I've already boarded the bus in Lakeside.
- More frequent bus, every 30 minutes for a mainline is too long. It would be nice if it was every 10-15 minutes
- Having grown up in the twin cities, the DTA is a far friendlier, safer service; just wish it reached some of the above noted places more conveniently.

Appendix C: Copy of Driver Survey

DTA Better Bus Blueprint Driver Survey

Introduction

Thank you for taking the time to fill out this survey! Over the next 12 months, we will be working together on the DTA Better Bus Blueprint. This is a plan to refresh and restructure the DTA system to keep up with transit needs of the Twin Ports. Once complete, the number and length of routes may look a little different as service is rearranged to better connect riders to their destinations.

Before making any changes, the first part of this process is to gather information about DTA and its service area from a variety of sources. A lot of this information is simple nuts and bolts stuff (things like busiest bus routes and stops, slow zones, where people live and work, etc.), but an important body of information requires input from you. The following, 13-question survey is to collect your firsthand experience as a front-line employee of DTA on what works well and what could be improved. This should only take about 5 to 10 minutes of your time.

Note: Remember to think about comments/concerns you had pre-COVID, as well as now.

DTA Better Bus Blueprint Driver Survey

General Questions

* 1. How long have you worked for the DTA? (Choose one)

- Less than 1 year
- 1 to 3 Years
- 4 to 6 years
- 7 to 10 years
- Over 10 years

* 2. What route(s) are you driving with the current pick? (Choose all that apply)

- | | | |
|-----------------------------------|------------------------------------|------------------------------------|
| <input type="checkbox"/> Route 1 | <input type="checkbox"/> Route 10 | <input type="checkbox"/> Route 16 |
| <input type="checkbox"/> Route 2 | <input type="checkbox"/> Route 10H | <input type="checkbox"/> Route 17 |
| <input type="checkbox"/> Route 3 | <input type="checkbox"/> Route 10E | <input type="checkbox"/> Route 17B |
| <input type="checkbox"/> Route 4 | <input type="checkbox"/> Route 11 | <input type="checkbox"/> Route 17S |
| <input type="checkbox"/> Route 5 | <input type="checkbox"/> Route 11K | <input type="checkbox"/> Route 18 |
| <input type="checkbox"/> Route 6 | <input type="checkbox"/> Route 11M | <input type="checkbox"/> Route 23 |
| <input type="checkbox"/> Route 7 | <input type="checkbox"/> Route 12 | <input type="checkbox"/> Route 25 |
| <input type="checkbox"/> Route 8 | <input type="checkbox"/> Route 13 | <input type="checkbox"/> Route S1 |
| <input type="checkbox"/> Route 9 | <input type="checkbox"/> Route 14 | <input type="checkbox"/> X-List |
| <input type="checkbox"/> Route 9M | <input type="checkbox"/> Route 15 | |

3. Why did you pick this/these route(s)?

* 4. What is your least preferred route to drive? (Choose one)

5. Why do you avoid this route?

DTA Better Bus Blueprint Driver Survey

User Experience Questions

* 6. What do riders tell you are their biggest challenges using the system? (Choose all that apply)

- Schedules are difficult to understand
- Routes are indirect
- Not enough service in Superior
- Have to connect to routes through DTC
- Routes do not operate late enough
- Service is too slow
- Routes don't go where passengers need to go
- Other issue (fares, shelters, on time performance, ease of transfers, etc.)

* 7. What areas do YOU think most need improvement? (Choose top two)

- Later weekday service
- Later weekend service
- More frequent weekday service
- More frequent weekend service
- Add service to places it does not go now
- More routes that do not go downtown
- Stops are too close together
- Other issues (fares, shelters, on-time performance, ease of transfers, etc.)

* 8. Many of the routes in the DTA system have a number of patterns and route deviations. Which of the two choices below do you think is more correct?

- DTA routes should be direct and consistent, with all trips serving the same pattern.
- DTA routes should be tailored to serve multiple neighborhoods/destinations, even if only a couple of trips a day deviate into these areas.

3

* 9. As we start to take a deeper dive into potential service changes, what routes need the most attention?
(Choose up to 3)

Route 1

Route 2

Route 3

Route 4

Route 5

Route 6

Route 7

Route 8

Route 9

Route 9M

Route 10

Route 10H

Route 10E

Route 11

Route 11K

Route 11M

Route 12

Route 13

Route 14

Route 15

Route 16

Route 17

Route 17B

Route 17S

Route 18

Route 23

Route 25

Route S1

DTA Better Bus Blueprint Driver Survey

Operational Questions

10. Are there locations/routes that have too much slack in the schedule that force you to slow down or hold at timepoints? If so, please list up to three of these locations where you think the schedule could be revised to avoid a slowdown

Location 1	<input type="text"/>
Location 2	<input type="text"/>
Location 3	<input type="text"/>

11. Are there bus stop locations that are unsafe (poor lighting, passengers standing in blind spots, etc.)? Please list your top three locations with issues.

#1 Most Unsafe Stop	<input type="text"/>
#2 Most Unsafe Stop	<input type="text"/>
#3 Most Unsafe Stop	<input type="text"/>

12. Duluth's terrain can sometimes result in tight turns for your bus. Are there specific turns/intersections where this is especially problematic? If so, please list the top three (Please be specific, i.e. "Right turn from Northbound State to Eastbound Main")

#1 Problem Intersection	<input type="text"/>
#2 Problem Intersection	<input type="text"/>
#3 Problem Intersection	<input type="text"/>

13. In the current DTA network are there places where transfers are often attempted, but are difficult to make? This could be because route directions are mistimed, connections do not have sidewalks, locations are too far apart to walk, etc. Please list up to three locations and route pairs (i.e. "Routes 17 and 10 at 74th & State")

Location 1	<input type="text"/>
Location 2	<input type="text"/>
Location 3	<input type="text"/>

Appendix D: Driver Survey Data

How long have you worked for the DTA?		
Answer Choices	Responses	
Less than 1 year	14.81%	4
1 to 3 Years	40.74%	11
4 to 6 years	14.81%	4
7 to 10 years	11.11%	3
Over 10 years	18.52%	5
	Answered	27
	Skipped	0

Q2. What route(s) are you driving with the current pick? (Choose all that apply)		
Answer Choices	Responses	
Route 13	51.85%	14
Route 1	48.15%	13
Route 10H	44.44%	12
Route 2	40.74%	11
Route 7	37.04%	10
Route 3	33.33%	9
Route 6	33.33%	9
Route 10	29.63%	8
Route 11K	25.93%	7
Route 9M	22.22%	6
Route 16	22.22%	6
Route 11	14.81%	4
Route 12	14.81%	4
X-List	14.81%	4
Route 8	11.11%	3
Route 9	7.41%	2
Route 11M	7.41%	2
Route 4	3.70%	1
Route 5	3.70%	1
Route 10E	3.70%	1
Route 14	3.70%	1
Route 15	3.70%	1
Route 17	3.70%	1
Route 17B	3.70%	1
Route 17S	3.70%	1
Route 18	3.70%	1
Route S1	3.70%	1
Route 23	0.00%	0

Route 25	0.00%	0
	Answered	27
	Skipped	0

Q3. Why did you pick these routes?

- It was available and less split shifts
- I like doing something different every day.
- It was the start /end time of the run that was appealing
- I get weekends off.
- I choose based on days off.
- return from medical leave
- Fits my schedule Hoping for lesser riders due to covid and that's true except for 3 route of course
- It had the best ending time available to me at my seniority level.
- Convenience, easier to make doctor appointments with the pullouts
- Picked this work because of work time. 2-9:30 pm. Busy work, east & west mainline
- No mall traffic.
- It's not too busy.
- It was in the pick I had to choose from.
- Change and was getting burnt out on the late nights
- Nice layovers, quieter routes this time of night.
- Specifically I'm the reg 1 position I cover anything needed starting between 1pm and 9pm. The schedule fit my at home needs. I like being able to help wherever it is needed when it is needed and to chill if nothing is needed.
- I like driving through woodland

Q4. What is your least preferred route to drive?		
Answer Choices	Responses	
Route 17	48%	13
Route 16	7%	2
Route 10H	7%	2
Route 2	7%	2
Route 25	7%	2
Route 9M	4%	1
Route 10	4%	1
Route 11K	4%	1
Route 13	4%	1
Route 14	4%	1
Route 17B	4%	1
Route 1	0%	0
Route 3	0%	0
Route 4	0%	0
Route 5	0%	0
Route 6	0%	0

Route 7	0%	0
Route 8	0%	0
Route 9	0%	0
Route 10E	0%	0
Route 11	0%	0
Route 11M	0%	0
Route 12	0%	0
Route 15	0%	0
Route 17S	0%	0
Route 18	0%	0
Route 23	0%	0
Route S1	0%	0
	Answered	27
	Skipped	0

Q5. Why do you avoid this route?

- Limited bathroom availability & recovery time for me personally
- Not enough time built into routing
- No time for bathroom breaks
- Not many people ride so it's easy to run ahead of schedule and crossing mesaba ain't fun.
- No bathrooms or hard to get at.
- No time
- Very short, little to no break, bathroom a long walk away
- Short layovers and no toilet facilities
- Long, difficult to stay on time.
- The breaks are terrible and there aren't great restroom options available.
- not enough time to do route. very limited or no breaks due to being behind schedule, especially on weekends
- Too many people and with that, you run late Lots of maneuvering
- Timing is off, so the schedule is hard to stick to. The passengers are a bit difficult to deal with.
- Traffic, sometimes hard to make connections coming into downtown.
- Passengers seem ruder
- Most of the "trouble" passengers ride westbound buses. Second worst would be the 16 & 17 due to route configurations and tight connections.
- No extra time or breathing room for a break/comfort stop.
- Too busy
- Busy
- No break time, bathroom issue. When you fall behind it's hard to get caught up. What would help if more stride Van's in superior to take care the wheelchair people.
- Short break, no convenient comfort area
- Tends to be busier, route has some difficult turns, too twisty-turny, short layover.
- 17 and it's variations. I avoid because the lack of any reasonable break time to say eat something or use a restroom. It is extremely tight on times and has regular passengers requiring additional assistance due to accessibility needs
- Monotonous. Same route over and over.

- No time, no breaks, very tight connections to the 16, heavy wheelchair passenger usage and no dependable place for a bathroom break except mid-route. This applies to 17s & 17B as well.
- No breaks.

Q6. What do riders tell drivers are their biggest challenges using the system?		
Answer Choices	Responses	
Other issues	52.00%	13
Not enough service in Superior	36.00%	9
Schedules are difficult to understand	32.00%	8
Routes are indirect	12.00%	3
Routes don't go where passengers need	8.00%	2
Routes do not operate late enough	4.00%	1
Service is too slow	4.00%	1
Have to connect through DTC	0.00%	0
	Answered	25
	Skipped	2

Other Responses:

- Don't get many complaints
- The biggest complaint I hear is the quality of passengers that ride the bus. Too many of them are stinky drunk on drugs and decent people are uncomfortable around them. They are both scared and offended by these degenerates
- Drivers can't always contact the bus that they need
- Everchanging Flashing sign indicating bus route hard for them to understand,....no change for overpaying, transfers issues
- The majority of customers do not look close enough at schedules and miss read them, bus destination signage can be confusing
- Difficult passengers. I. E. Unruly, surly or rude riders make trip unpleasant.
- The main issue I see is people not understanding the schedules and inbound/outbound routing. People have issue with the cost of fare and the length of the transfers.
- on time performance
- Passengers complain if buses get behind on schedule, but don't have their fares ready, or have a lot of questions to be answered that they could have looked up themselves. Shelters in winter, not being shoveled.
- Transfers should be an hour and a half instead of an hour. Some connections at night are over an hour and the transfer is not valid. Fare should be a \$1 off peak \$2 peak. For a quicker boarding and let's change digging
- Unable to make their connecting bus.
- Transfers expiring before the next connecting route, buses running late, missing connections. Complicated route system - getting to hermantown Walmart at certain times of day, and on weekdays vs. weekends for example
- Transfer time. Transfers should be 90 minutes not 60 minutes. Otherwise passengers have to play detective to catch just the right bus to make their connection within 60 minutes.

Q7. What areas do drivers think most need improvement?		
Answer Choices	Responses	
Stops are too close together	64.00%	16
Other issues	52.00%	13

Add service to places it does not go now	28.00%	7
More routes that do not go downtown	16.00%	4
More frequent weekday service	12.00%	3
Later weekday service	0.00%	0
Later weekend service	0.00%	0
More frequent weekend service	0.00%	0
	Answered	25
	Skipped	2

Other Responses:

- Too many passengers do not have fare ready IN CONSIDERATION of other's passengers who are well prepared & show some sense of urgency without fumbling around searching for what should already be in hand or at hand if too cold. Don't worry I dont say anything to them about it. I just wait while gnashing my teeth. I don't to be accused of being a bully. I heard that previously a program to educate passengers on these matters was attempted but there was a community outcry that we were being mean or something like that.
- Get rid of transfer tickets. People just use them as a free ride. If you regularly need to use multiple busses get a bus pass.
- I would eliminate transfers
- Fare changes. Riders often confused. Why not simply make it one dollar all the time? And regarding question #8, route deviations (particularly on weekends): I understand the reasoning - combing reduced service to keep coverage - but riders AND operators find them confusing. ESPECIALLY part time or casual riders
- Inconsistency in the amount of time given between time points. Some work is near impossible to stay on time. Other work has way too much time. Longer layovers on some of the work would be better for time to rest and eat as well.
- route 17 more time to make on-time performance. not enough break time as they are most used to catch up on time due to being late and inappropriate driving times. electric bus seats, pedals, and steering wheel are not in correct positions in which causes back pain and back problems. weekday and weekend routes are inconsistent port a potty placed at more lay-overs , such as woodland, gary new duluth, and haines. leaving bus unattended (especially during winter as passengers do not like to wait out in the cold) is unsafe. walking distances to use bathrooms at businesses in unattainable to maintain on time schedules.
- Dont see need for any improvements in those areas or any other area
- Drivers need a refresher on what is and isn't allowed as far as transfers. I hear different rules from different sources. It gets confusing.
- Get rid of transfers, people misuse transfers
- The biggest downfall of our system is having a stop every block In most places. It is absolutely ridiculous, and slows us down. They have been trying to rectify this over the last couple years, but it is very slow going.
- Trees that block the sign, or sign can't be seen from road.
- Driver retention of new hires seems to be a challenge to maintain an adequate driver roster
- Time point adjustments. Most routes need less time some need more time. Personally, I'd rather have less run time and longer breaks on either end. This way you have recovery time if you do run late and you don't have to drag your feet so much through out the route.

Q8. Which of the two choices below do you think is more correct? (All Drivers)		
Answer Choices	Responses	
DTA routes should be direct and consistent, with all trips serving the same pattern.	52.00%	13

DTA routes should be tailored to serve multiple neighborhoods/ destinations, even if only a couple of trips a day deviate into these areas.	48.00%	12
	Answered	25
	Skipped	2

Q9. As we start to take a deeper dive into potential service changes, what routes need the most attention? (Top 4)		
Answer Choices	Responses	
Route 17	48%	12
Route 16	40%	10
Route 10	16%	4
Route 17S	16%	4
Route 7	12%	3
Route 17B	12%	3
Route 25	12%	3
Route S1	12%	3
Route 2	8%	2
Route 4	8%	2
Route 10H	8%	2
Route 10E	8%	2
Route 13	8%	2
Route 15	8%	2
Route 1	4%	1
Route 3	4%	1
Route 5	4%	1
Route 8	4%	1
Route 9M	4%	1
Route 14	4%	1
Route 6	0%	0
Route 9	0%	0
Route 11	0%	0
Route 11K	0%	0
Route 11M	0%	0
Route 12	0%	0
Route 18	0%	0
Route 23	0%	0
	Answered	25
	Skipped	2

Appendix E: Pre and Post Pandemic Rider Behavior Sankey Chart Data

Pre-Pandemic Response	Post Pandemic Response	Magnitude	% (n = 562)
Almost daily	Almost daily	155	28%
Occasionally/seasonally	Occasionally/seasonally	68	12%
A few times a week	A few times a week	50	9%
Rarely or when no other option exists	Rarely or when no other option exists	40	7%
Almost daily	A few times a week	37	7%
A few times a month	A few times a month	36	6%
Never	Never	35	6%
Never	Rarely or when no other option exists	18	3%
A few times a month	Occasionally/seasonally	11	2%
Rarely or when no other option exists	Occasionally/seasonally	11	2%
A few times a week	Almost daily	10	2%
Almost daily	Occasionally/seasonally	10	2%
A few times a week	A few times a month	9	2%
A few times a month	A few times a week	8	1%
Occasionally/seasonally	A few times a month	8	1%
A few times a week	Occasionally/seasonally	7	1%
Never	Occasionally/seasonally	7	1%
Almost daily	A few times a month	6	1%
Occasionally/seasonally	Rarely or when no other option exists	4	1%
Rarely or when no other option exists	Never	4	1%
A few times a month	Almost daily	3	1%
Occasionally/seasonally	Almost daily	3	1%
Never	Almost daily	3	1%
Occasionally/seasonally	A few times a week	3	1%
Rarely or when no other option exists	A few times a week	3	1%
Never	A few times a week	3	1%
Rarely or when no other option exists	A few times a month	3	1%
Never	A few times a month	2	0%
A few times a week	Rarely or when no other option exists	2	0%
Almost daily	Rarely or when no other option exists	1	0%
A few times a month	Rarely or when no other option exists	1	0%
Occasionally/seasonally	Never	1	0%
Rarely or when no other option exists	Almost daily	0	0%
Almost daily	Never	0	0%
A few times a week	Never	0	0%
A few times a month	Never	0	0%