2024 Title VI Service Monitoring Study

In Compliance with FTA Circular 4702.1B

April 2025

Prepared for:

Metro Transit

Prepared by:

SRF

EXECUTIVE SUMMARY

This report satisfies the Federal Transit Administration (FTA) Title VI requirement to monitor transit system performance relative to system-wide service standards and policies at least once every three years. FTA requires recipients of federal funding who provide fixed-route service, including Metro Transit, to **develop and monitor quantitative system standards and policies to guard against discrimination toward racial and ethnic minorities and low-income communities related to the quality of and access to fixed-route public transit service and facilities.**

While Metro Transit continually monitors its route and system-wide performance using a variety of measures (including incorporation of racial and socioeconomic equity), formal Title VI service monitoring to meet FTA requirements last occurred in fall 2021.

This Title VI Service Monitoring Study is one element of Metropolitan Council and Metro Transit's ongoing Title VI work. Further, Title VI compliance is one component of the broader equity and inclusion framework that Metro Transit uses to foster a community that thrives because each individual has access to their destination and feels welcomed.

Title VI and Environmental Justice

Title VI of the Civil Rights Act of 1964 prohibits discrimination on the basis of race, color, or national origin in programs receiving federal financial assistance. *Executive Order 12898 - Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, extends these protections to low-income communities as well.[1] **Title VI was identified as one of several Federal laws that should be applied "to prevent minority communities and low-income communities from being subject to disproportionately high and adverse environmental effects."[2]**

Purpose

The purpose of the Title VI service monitoring requirement is to ensure that prior decisions related to the distribution of fixed-route transit service and facilities have not resulted in a disparate impact on the basis of race, color, or national origin. If such is found, "the transit provider shall take corrective action to remedy the disparities to the greatest extent possible."[3] While not specifically required by FTA, Metro Transit expands its service monitoring to include assessment of disproportionate burden on low-income populations.

To meet the Title VI service monitoring requirement, Metro Transit fixed-route service and facilities data from fall 2023, as well as the latest residential and rider demographic data, are compiled and analyzed relative to Metro Transit's established service standards and policies. Documented in the

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[1] U.S. President, Proclamation, *Executive Order 12898: Federal Actions To Address Environmental Justice in Minority Populations and Low-Income Populations*, Feb. 11, 1994, https://www.archives.gov/files/federal-register/executive-orders/pdf/12898.pdf. Accessed February 12, 2025. This executive order was revoked in President Donald Trump's January 21, 2025 *Executive Order 14173: Ending Illegal Discrimination and Restoring Merit-Based Opportunity*. However, FTA guidance has not changed; nor has the Civil Rights Act of 1964.

[2] Federal Transit Administration, *Circular 4702.1B Title VI Requirements and Guidelines for Federal Transit Administration Recipients,* October 1, 2012, page I-6, https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/FTA_Title_VI_FINAL.pdf.

[3] FTA, *Circular 4702.1B,* page IV-10.

Metropolitan Council's current Title VI Program (adopted in early 2020), Metro Transit's service standards and policies address the following:

- Vehicle load: To prevent overcrowding
- Vehicle headway: How often service comes
- On-time performance: To prevent early and late service
- Service availability: Through route spacing, midday service, and stop spacing
- Distribution of transit amenities: To ensure fair access to bus shelters, customer information, and other facility amenities
- Vehicle assignment: To ensure access to newer vehicles is fairly distributed

To meet the Title VI service monitoring requirement, service outcomes and compliance rates for each of these standards and policies are compared between routes (or stops or areas) designated as Black, Indigenous, and People of Color (BIPOC) and those designated as non-BIPOC, and similarly between low-income routes (or stops or areas) and those designated as non-low-income.

Extent of Analysis

This analysis includes all regular fixed routes directly operated by Metro Transit and those operated under contract to the Metropolitan Council (including METRO Red Line) under the Metro Transit brand in fall 2023. Metro Transit historically uses data from the most recent fall schedule for service monitoring and broader analysis performed throughout the agency, as this time of year is most representative of transit demand and typical service levels. Any routes that were suspended in 2023 are thus not included in the analysis.

Title VI Definitions and Concepts

Racial and Ethnic Minorities

FTA defines a "minority" person as one who self-identifies as American Indian/Alaska Native, Asian, Black or African American, Hispanic or Latino, and/or Native Hawaiian/Pacific Islander. However, as part of efforts to use respectful and inclusive language, **Metro Transit and the Metropolitan Council prefer to use the term Black, Indigenous, and People of Color (BIPOC) rather than "minority" when referring to people who identify as one or more of the above racial or ethnic groups.** References to BIPOC in this report should be interpreted to mean the same thing as "minority."

For the purposes of this evaluation, "non-minority" or "non-BIPOC" persons are defined as those who self-identify as non-Hispanic white. All other persons, including those identifying as two or more races and/or ethnicities, are defined as BIPOC.

Low-Income Population

This Title VI service monitoring analysis uses 185 percent of the 2022 U.S. Census Bureau poverty thresholds to determine low-income status. The Council uses 185 percent of poverty thresholds to define poverty in its place-based equity research, regional policies, and other initiatives, and this Title VI analysis mirrors that approach.

Discrimination, Disparate Impact, and Disproportionate Burden

In *Circular 4702.1B*, FTA defines **discrimination** as referring to:

> any action or inaction, whether intentional or unintentional, in any program or activity of a federal aid recipient, subrecipient, or contractor that results in disparate treatment, disparate impact, or perpetuating the effects of prior discrimination based on race, color, or national origin.[4]

Disparate impact, a key concept for understanding Title VI regulations, is defined in the *Circular* as:

> a facially neutral policy or practice that disproportionately affects members of a group identified by race, color, or national origin, where the recipient's policy or practice lacks a substantial legitimate justification and where there exists one or more alternatives that would serve the same legitimate objectives but with less disproportionate effect on the basis of race, color, or national origin.[5]

Similarly, FTA defines **disproportionate burden** as:

> a neutral policy or practice that disproportionately affects low-income populations more than non-low-income populations.[6]

Per FTA guidance, Metro Transit uses its disparate impact and disproportionate burden thresholds as evidence of impacts severe enough to meet the definition of disparate impact or disproportionate burden.

Metro Transit has defined its **disparate impact and disproportionate burden policies** and thresholds using the "90 percent rule," which states that there may be evidence of disparate impact if:

- *Benefits* are being provided to BIPOC (minority) populations at a rate less than 90 percent of the benefits being provided to white populations, or
- *Adverse effects* are being borne by white populations (non-minority) at a rate less than 90 percent of the adverse effects being borne by BIPOC populations.

Metro Transit uses the same framework when evaluating whether low-income populations would experience disproportionate burden relative to the impacts on non-low-income populations.

The 90 percent rule represents a modification of Metro Transit's previous practice, which drew on the 80 percent rule originating in employment law.[7] The percentage threshold is a practical way to identify adverse impacts that require mitigation or avoidance. Dozens of transit agencies, including some of the largest in the country, use a similar framework when defining their disparate impact and disproportionate burden policies.

The most recent Title VI Program update changed the threshold of disparate impact and disproportionate burden from 80 to 90 percent in order to further Metro Transit's equity goals. Metro

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[4] Federal Transit Administration, *Circular 4702.1B Title VI Requirements and Guidelines for Federal Transit Administration Recipients,* October 1, 2012, page I-2, https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/FTA_Title_VI_FINAL.pdf.
[5] FTA, *Circular 4702.1B*, page I-2
[6] FTA, *Circular 4702.1B*, page I-2
[7] Section 60-3.4(D), *Uniform Guidelines on Employee Selection Procedure* (1978); 43 FR 38295, August 25, 1978, https://www.ecfr.gov/current/title-41/subtitle-B/chapter-60/part-60-3.

Transit's decision to use the 90 percent rule for its disparate impact and disproportionate burden thresholds was subject to a formal public outreach process before being adopted by the Metropolitan Council in 2022. Additional information about the policies and their applications can be found in the Council's current Title VI Program.[8]

Route, Stop, and Area Designations

This analysis uses U.S. Census Bureau 2018-2022 American Community Survey 5-year estimates in the following ways:

- Designate each census block group within the Metro Transit service area as either a BIPOC area or a non-BIPOC area and either a low-income area or a non-low-income area.
- Designate each route as either BIPOC or non-BIPOC and either low-income or non-low-income depending on the block groups it crosses. (Route designations are further refined using route-specific ridership data from the Metropolitan Council's Transit Behavior Inventory On-Board Survey.)
- Designate each stop and station as either BIPOC or non-BIPOC and either low-income or non-low-income depending on the block group(s) in its walkshed.

Doing so enables comparison of service outcomes and service standard and policy compliance rates between BIPOC and non-BIPOC routes/stops/areas and between low-income and non-low-income routes/stops/areas and subsequent determination of disparate impact and disproportionate burden.

Service Standards and Policies: Analysis Results

Table i summarizes the service standards and policies Metro Transit uses to meet FTA requirements and the high-level results of the evaluations completed in this report. All analyses were performed on service data from fall 2023.

[8] Metropolitan Council, *Title VI Program*, October 2022, https://metrocouncil.org/About-Us/Publications-And-Resources/EQUAL-OPPORTUNITY-DOCUMENTS/TITLE-VI-DOCUMENTS/Title-VI-Compliance-and-Implementation-Plan.aspx.

Table i. Summary of Service Standards and Policies and their Analysis Results

Standard/Policy	What does it address?	What are the results?
Vehicle Load	Metro Transit's standards for what constitutes an "overloaded" (too crowded) vehicle accounts for seated and standing passengers and differs by route type and vehicle type	Trips scheduled on BIPOC routes were only slightly less often within applicable load standards than those on non-BIPOC routes (99.7% versus 99.9%). Consistent overload was minimal on both BIPOC and non-BIPOC routes. Therefore, this analysis identifies **no disparate impact based on vehicle load**. Trips scheduled on low-income routes were slightly less often within load standards than those on non-low-income routes (99.7% versus 99.8%). Consistent overload was minimal on low-income and non-low-income routes. Therefore, this analysis identifies **no disproportionate burden based on vehicle load.**
Vehicle Headway	Metro Transit is required to set standards for how frequent service should be, given certain parameters, to ensure frequent service is not benefitting only certain people. Metro Transit's vehicle headway standards are based on the route type, day period, and Transit Market Area.	BIPOC routes overall had higher vehicle headway compliance rates than non-BIPOC routes. Off-peak bus headways were 93% compliant on BIPOC routes compared with 95% for non-BIPOC routes. Therefore, this analysis identifies **no disparate impact based on vehicle headway**. Low-income routes similarly had overall higher compliance rates than non-low-income routes, with lower off-peak bus compliance (93% versus 100%). Therefore, this analysis identifies **no disproportionate burden based on vehicle headway.**

Standard/Policy	What does it address?	What are the results?
On-Time Performance	Metro Transit measures whether a bus or train was on time for each instance it serves or passes a route's scheduled timepoint by comparing the arrival time to that in the schedule. Bus service is considered "on-time" if it arrives at scheduled timepoints between 1 minute early and 5 minutes late. Light rail and commuter rail service is considered on-time if it arrives at stations between 1 minute early and 4 minutes late.	On-time performance on BIPOC routes (with 79% of all timepoint observations on time) was 4% lower than on-time performance on non-BIPOC routes (83%). Therefore, this analysis identifies **no disparate impact based on on-time performance**. Similarly, low-income routes had 5% lower on-time performance compared to non-low-income routes (80% of timepoint observations versus 84%). Therefore, this analysis identifies **no disproportionate burden based on on-time performance**.
Service Availability: Route Spacing	Route spacing guidelines seek to balance service coverage with route productivity and transit demand. Routes spaced too closely together will have overlapping service areas and compete for riders, reducing the productivity of both routes. Routes spaced too far apart will lead to coverage gaps. Are BIPOC areas well-covered by routes, or are there large gaps in service? How does this coverage compare to that of non-BIPOC areas? How does this differ between low-income areas and non-low-income areas, if at all?	Route spacing results indicated that both Market Area I and Market Area II are well covered by the existing local bus network according to the route-spacing standard. Coverage was near 100% for both market areas, and tended slightly higher for BIPOC and low-income populations than for non-BIPOC and non-low-income populations. Therefore, this analysis identifies **no disparate impact nor disproportionate burden based on route spacing.**
Service Availability: Midday Service	Midday service that operates frequently enough to meet the demand is crucial to developing a network that supports a transit-oriented lifestyle – one where transit is useful for more than a 9-to-5 work commute. Are BIPOC areas and low-income areas well-covered by midday service that meets vehicle headway standards? How does this coverage compare to that of non-BIPOC areas and non-low-income areas, respectively?	Universally across market areas, BIPOC and low-income populations were served by transit compliant to the midday service standard at higher rates than non-BIPOC and non-low-income populations. Therefore, this analysis identifies **no disparate impact nor disproportionate burden based on midday service availability.**

Standard/Policy	What does it address?	What are the results?
Service Availability: Stop Spacing	Stop spacing standards must balance the competing goals of providing greater access to service with faster travel speeds. More stops spaced closer together reduce walking distance and improve access to transit but tend to increase on-board travel time. What percentage of stops along BIPOC routes have stops spaced too closely or too far apart, relative to the applicable standard range? How does this compare to stops along non-BIPOC routes? What are the dynamics based on income status?	BIPOC routes and low-income routes each had stop spacing compliance rates 94% those of non-BIPOC routes and non-low-income routes. Therefore, this analysis identifies **no disparate impact nor disproportionate burden based on stop spacing.**
Distribution of Amenities: At Bus Stops, Transit Centers, and Stations	Metro Transit has developed policies for the distribution of customer information, seating, shelter, shelter lighting and heaters, and trash receptacles at the stops it serves. These policies differ by stop type, with standard and optional features varying for bus stops, stops at transit centers, and stops (platforms) at light rail, BRT, and commuter rail stations.	For both BIPOC and low-income designated stops and stations, amenity placement at transit centers and at light rail, BRT, and commuter rail stations was equal to or better than placement at non-BIPOC and non-low-income stops and stations. Bus stop additionally had indices generally above 0.90, the one exception being disparate impacts and disproportionate burdens for *unwarranted* heating in shelters. These result from the redesignation of stops as unwarranted following post-pandemic ridership changes and are not understood to require mitigation. Therefore, this analysis **finds no disparate impacts or disproportionate burdens identified for amenities warranted by Metro Transit service standards.**

Standard/Policy	What does it address?	What are the results?
Vehicle Assignment	Metro Transit maintains a fleet of about 1,000 vehicles across five bus garages and two light rail and one commuter rail depots. Vehicle age is used as the standard measure for determining equitable vehicle assignment. Are newer and older vehicles distributed equitably throughout the system? Are newer vehicles assigned to non-BIPOC routes more often than BIPOC routes? Are low-income routes assigned older vehicles than non-low-income routes?	Among bus routes, BIPOC routes were assigned older vehicles than non-BIPOC routes but did not reach the 90% threshold for disparate impact. When considered relative to the available fleet, vehicles assigned to BIPOC routes were newer on average. Therefore, **this analysis identifies no disparate impacts based on vehicle assignment**. Low-income trips were assigned vehicles slightly newer than those assigned to non-low-income trips. However, when considered relative to the available fleet, vehicles assigned to non-low-income routes were newer on average (2.62 years newer than the fleet average, compared to 1.99 for low-income route assignments). Because low-income routes are already assigned newer vehicles on average than non-low-income routes, there are diminishing returns to ensuring assigned vehicles are newer than the available fleet. Therefore, this analysis identifies **no disproportionate burden based on vehicle assignment**.

Conclusions

All measures of compliance with Metro Transit's service standards and policies showed that BIPOC and low-income populations received outcomes above the 90 percent threshold at which they are judged equivalent to non-BIPOC and non-low-income populations. In some cases, outcomes were better for BIPOC and low-income populations. Neither disparate impacts nor disproportionate burdens were identified for any metric, with the exception of *unwarranted* heating in bus shelters. This resulted from post-pandemic ridership changes rather than any action inconsistent with Metro Transit's policies, and it does not require mitigation. A summary of the findings is shown in Table ii.

Table ii. Disparate Impact and Disproportionate Burden Results Summary

Standard/Policy	Disparate Impact on BIPOC Population	Disproportionate Burden on Low-Income Population
Vehicle Load	No	No
Vehicle Headway	No	No
On-Time Performance	No	No
Service Availability		
Route Spacing	No	No
Midday Service	No	No
Stop Spacing	No	No
Distribution of Amenities		
At Bus Stops	No*	No*
At Transit Centers	No	No
At Stations	No	No
Vehicle Assignment	No	No

*No disparate impacts or disproportionate burdens identified for amenities warranted by Metro Transit service standards.

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Metropolitan Council

The Metropolitan Council (The Council) is the regional policy-making body, metropolitan planning organization (MPO), and provider of essential services for the Twin Cities metropolitan region. The Council's mission is to foster efficient and economic growth for a prosperous region.

The 17-member Metropolitan Council is a policy board, which has guided and coordinated the strategic growth of the metro area and achieved regional goals for more than 50 years. The Council also provides essential services and infrastructure – Metro Transit's bus and rail system, Metro Mobility, Transit Link, wastewater treatment services, regional parks, planning, affordable housing, and more – that support communities and businesses and ensure a high quality of life for residents.

Metro Transit

Metro Transit offers an integrated network of buses, light rail transit, and commuter trains, as well as resources for those who carpool, vanpool, walk, or bike. The largest public transit operator in the region, Metro Transit served nearly 45 million bus and rail passengers in 2023 with award-winning, energy-efficient fleets.

Title VI Commitment

The Metropolitan Council pledges that the public will have access to all its programs, services, and benefits without regard to race, color, or national origin, in accordance with Title VI of the Civil Rights Act of 1964. This pledge applies to Metro Transit, an operating division of the Metropolitan Council.

CHAPTER 1: INTRODUCTION

Title VI of the Civil Rights Act of 1964 prohibits discrimination on the basis of race, color, or national origin in programs receiving federal financial assistance. This report satisfies the Federal Transit Administration (FTA) Title VI requirement to monitor transit system performance relative to system-wide service standards and policies at least once every three years. This report, and Title VI compliance more generally, is one component of the broader equity and inclusion framework that Metro Transit uses to achieve its goals.

Purpose

The purpose of the Title VI service monitoring requirement is to **ensure that prior decisions related to the distribution of fixed-route public transit service and facilities have not resulted in discrimination and a disparate impact on the basis of race, color, or national origin.** If such is found, "the transit provider shall take corrective action to remedy the disparities to the greatest extent possible, and shall discuss in the Title VI Program these disparate impacts and actions taken to remedy the disparities."[9]

While not specifically required by FTA, Metro Transit expands its service monitoring to include assessment of disproportionate burden on low-income populations.

To meet the Title VI service monitoring requirement, **service and facilities data from fall 2023, together with recent Census data, are compiled and analyzed relative to Metro Transit's established service standards and policies.**[10] Documented in its current Title VI Program (adopted in early 2020), Metro Transit's service standards and policies relate to:

- Vehicle load: To prevent overcrowding
- Vehicle headway: How often service comes
- On-time performance: To prevent early and late service
- Service availability: To ensure fair route spacing, midday service, and stop spacing
- Distribution of transit amenities: To ensure fair access to bus shelters, customer information, and other facility amenities
- Vehicle assignment: To ensure access to newer vehicles is fairly distributed

To meet the Title VI service monitoring requirement, service outcomes and compliance rates for each of these standards and policies are compared between routes (or stops or areas) designated as Black, Indigenous, and People of Color (BIPOC) and those designated as non-BIPOC, and similarly between low-income and non-low-income routes (or stops or areas).

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[9] Federal Transit Administration, *Circular 4702.1B Title VI Requirements and Guidelines for Federal Transit Administration Recipients,* October 1, 2012, page IV-10, https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/FTA_Title_VI_FINAL.pdf.

[10] In its capacity as regional policy-making body and metropolitan planning organization (MPO), the Metropolitan Council has established a set of service standards and policies to guide the provision of transit service in the region. Many of these standards and policies are outlined in Appendix G of the Metropolitan Council's 2040 Transportation Policy Plan. In most instances, Metro Transit maintains the same service standards and policies established by the Metropolitan Council for the region's multiple transit providers. However, Metro Transit has set and monitors additional standards and policies that are specific to its service delivery and requirements as a large urban transit provider. Metro Transit's service standards and policies have the approval of the Metropolitan Council.

The following report addresses Title VI legislation; FTA requirements to meet Title VI obligations; the Council's Title VI Program, including its service standards and policies; recent performance relative to service standards and policies; and determinations of whether there is disparate impact to BIPOC populations and/or disproportionate burden to low-income populations based on service monitoring results.

Extent of Analysis

This analysis includes all regular fixed routes directly operated by Metro Transit and those operated under contract to the Metropolitan Council under the Metro Transit brand in fall 2023. Metro Transit uses data from the most recent fall schedule for service monitoring and broader analysis performed throughout the agency, as this time of year is most representative of transit demand and typical service levels. The analysis thus does not include any routes that were suspended in fall 2023.

The Metro Transit/Metropolitan Council service area (the outlined area in Figure 1) is defined as the Transit Capital Levy Communities, minus the communities served by the region's suburban transit providers: Minnesota Valley Transit Authority (MVTA), SouthWest Transit, and the cities of Maple Grove and Plymouth. Transit Capital Levy Communities are those within the seven-county region where a property tax is levied to pay for transit capital needs. The Transit Capital Levy Communities are established in state law but have changed in response to the growing region.

CHAPTER 2: LEGISLATION AND GUIDANCE

Title VI of the Civil Rights Act of 1964 prohibits discrimination on the basis of race, color, or national origin in programs receiving federal financial assistance. Title VI states, "no person in the United States shall, on the ground of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance."[11]

Moreover, FTA guidance recognizes the inherent overlap between Title VI and environmental justice principles, which extend protections to low-income populations. In 1994, President Clinton issued *Executive Order 12898 - Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, which states that each federal agency

> "shall make achieving environmental justice part of its mission by identifying and addressing disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations."[12]

Title VI was identified as one of several federal laws that should be applied "to prevent minority communities and low-income communities from being subject to disproportionately high and adverse environmental effects."[13]

To provide direction to recipients of federal funding, FTA issued *Circular 4702.1B Title VI Requirements and Guidelines for Federal Transit Administration Recipients* in 2012.[14] FTA *Circular 4702.1B* outlines Title VI evaluation procedures for recipients of FTA-administered transit program funds and includes guidance for a variety of equity evaluations, including service monitoring.

Requirement to Conduct Service Monitoring

FTA requires recipients of federal funding who provide fixed-route service, including Metro Transit, to **develop quantitative system standards and policies to guard against discrimination toward racial and ethnic minorities related to the quality of and access to transit service and facilities.**

FTA *Circular 4702.1B* provides the following as basis for the requirement:

> Appendix C to 49 CFR part 21 provides in Section (3)(iii) that "[n]o person or group of persons shall be discriminated against with regard to the routing, scheduling, or quality of service of transportation service furnished as a part of the project on the basis of race, color, or national origin. Frequency of service, age and quality of vehicles assigned to routes, quality of stations

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[11] U.S. Department of Labor, *Title VI, Civil Rights Act of 1964,* https://www.dol.gov/agencies/oasam/regulatory/statutes/title-vi-civil-rights-act-of-1964.

[12] U.S. President, Proclamation, *Executive Order 12898: Federal Actions To Address Environmental Justice in Minority Populations and Low-Income Populations*, Feb. 11, 1994, https://www.archives.gov/files/federal-register/executive-orders/pdf/12898.pdf. Accessed February 12, 2025. This executive order was revoked in President Donald Trump's January 21, 2025 *Executive Order 14173: Ending Illegal Discrimination and Restoring Merit-Based Opportunity*. However, FTA guidance has not changed; nor has the Civil Rights Act of 1964.

[13] Federal Transit Administration, *Circular 4702.1B Title VI Requirements and Guidelines for Federal Transit Administration Recipients,* October 1, 2012, page I-6, https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/FTA_Title_VI_FINAL.pdf.

[14] FTA, *Circular 4702.1B*.

> serving different routes, and location of routes may not be determined on the basis of race, color, or national origin."[15]

In response to this directive, FTA *Circular 4702.1B* continues:

> All fixed route transit providers shall set service standards and policies for each specific fixed route mode of service they provide…. These standards and policies must address how service is distributed across the transit system, and must ensure that the manner of the distribution affords users access to these assets.[16]

Further, large urban fixed-route transit providers, including Metro Transit, are **required to monitor performance relative to their system-wide service standards and policies at least once every three years.** While Metro Transit continually monitors its route and system-wide performance using a variety of measures (including incorporation of racial and socioeconomic equity), formal Title VI service monitoring to meet FTA requirements last occurred in fall 2021.

Title VI Definitions of Minority and Low-Income Populations

Racial and Ethnic Minorities

FTA defines a "minority" person as one who self-identifies as American Indian/Alaska Native, Asian, Black or African American, Hispanic or Latino, and/or Native Hawaiian/Pacific Islander.[17] However, as part of efforts to use respectful and inclusive language, **Metro Transit and the Metropolitan Council prefer to use the term Black, Indigenous, and People of Color (BIPOC) rather than "minority" when referring to people who identify as one or more of the above racial or ethnic groups.** References to BIPOC in this report should be interpreted to mean the same as "minority."

For the purposes of this evaluation, "non-minority" or "non-BIPOC" persons are defined as those who self-identify as non-Hispanic white. All other persons, including those identifying as two or more races and/or ethnicities, are defined as BIPOC (equivalent to "minority").

FTA requires transit providers to evaluate service using this dichotomy between "minority" and "non-minority" populations. Focusing on the global "minority" or BIPOC category (versus using disaggregated race and ethnicity data) obscures the racial and ethnic diversity of the many identities within it, treating BIPOC residents as interchangeable. To remedy this, Metro Transit and the Metropolitan Council are now using and providing more detail on race and ethnicity in their evaluations and data products. For example, as part of regular monitoring of route and system-wide performance (outside of the realm of Title VI), Metro Transit disaggregates transit performance by race and ethnicity.

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[15] Federal Transit Administration, *Circular 4702.1B Title VI Requirements and Guidelines for Federal Transit Administration Recipients,* October 1, 2012, page IV-4, https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/FTA_Title_VI_FINAL.pdf.

[16] FTA, *Circular 4702.1B*, page IV-4

[17] More specifically, Title VI *Circular 4702.1B* (page I-4) defines minority persons as including the following identities: (1) American Indian and Alaska Native, which refers to people having origins in any of the original peoples of North and South America (including Central America), and who maintain tribal affiliation or community attachment; (2) Asian, which refers to people having origins in any of the original peoples of the Far East, Southeast Asia, or the Indian subcontinent, including, for example, Cambodia, China, India, Japan, Korea, Malaysia, Pakistan, the Philippine Islands, Thailand, and Vietnam; (3) Black or African American, which refers to people having origins in any of the Black racial groups of Africa; (4) Hispanic or Latino, which includes people of Cuban, Mexican, Puerto Rican, South or Central American, or other Spanish culture or origin, regardless of race; and (5) Native Hawaiian or Other Pacific Islander, which refers to people having origins in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Islands.

Low-Income Population

While low-income populations are not an explicitly protected class under Title VI, FTA recognizes the inherent overlap between Title VI and environmental justice principles. Consequently, FTA encourages transit providers to conduct service monitoring with regard to low-income populations in addition to minority populations, and to identify any disproportionate burden placed on low-income populations.

FTA defines a low-income person as one whose household income is at or below the poverty guidelines set by the Department of Health and Human Services (HHS). HHS poverty guidelines are based on family/household size. However, FTA *Circular 4702.1B* also allows for low-income populations to be defined using other established measures that are at least as inclusive as those developed by HHS.

Correspondingly, this Title VI service monitoring analysis uses 185 percent of the U.S. Census Bureau poverty thresholds to determine low-income status. U.S. Census Bureau poverty thresholds use a more sophisticated measure of poverty that considers not only family/household size, but also the number of related children present, and, for one- and two-person family units, whether one is elderly or not. The U.S. Census Bureau's poverty thresholds are used for statistical purposes, while HHS's poverty guidelines are used for administrative purposes.[18]

The Metropolitan Council uses 185 percent of poverty thresholds to define poverty in its place-based equity research, regional policies, and other initiatives, and this Title VI analysis mirrors that approach. Table 1 lists 185 percent of the 2022 U.S. Census Bureau poverty thresholds that are used in this analysis.

[18] The distinctions between poverty thresholds and guidelines are described further at https://aspe.hhs.gov/frequently-asked-questions-related-poverty-guidelines-and-poverty.

Table 1. 2022 U.S. Census Bureau Poverty Thresholds (185%) in Dollars

By Size of Family Unit and Number of Related Children Under 18 Years of Age

Size of Family Unit	Weighted Average Poverty Thresholds ($)	No Children	One Child	Two Children	Three Children	Four Children	Five Children	Six Children	Seven Children	Eight Children or More
One Person (Unrelated Individual)	27,528									
Under 65 Years	28,176	28,166								
65 Years & Over	25,974	25,967								
Two People	34,965									
Householder Under 65 Years	36,427	36,254	37,318							
Householder 65 Years & Over	32,764	32,725	37,176							
Three People	43,068	42,350	43,579	43,619						
Four People	55,408	55,844	56,756	54,904	55,097					
Five People	65,694	67,344	68,324	66,232	64,613	63,623				
Six People	74,296	77,458	77,765	76,163	74,627	72,342	70,990			
Seven People	84,527	89,126	89,682	87,764	86,426	83,936	81,030	77,841		
Eight People	94,369	99,680	100,560	98,749	97,164	94,912	92,056	89,083	88,328	
Nine People or More	111,555	119,908	120,489	118,887	117,542	115,333	112,293	109,544	108,863	104,669

Source: U.S. Census Bureau; 100% of the 2022 poverty thresholds are available at https://www.census.gov/data/tables/time-series/demo/income-poverty/historical-poverty-thresholds.html.

Discrimination, Disparate Impact, and Disproportionate Burden

In *Circular 4702.1B*, FTA defines **discrimination** as referring to:

> any action or inaction, whether intentional or unintentional, in any program or activity of a federal aid recipient, subrecipient, or contractor that results in disparate treatment, disparate impact, or perpetuating the effects of prior discrimination based on race, color, or national origin.[19]

Disparate impact, a key concept for understanding Title VI regulations, is defined in the *Circular* as:

> a facially neutral policy or practice that disproportionately affects members of a group identified by race, color, or national origin, where the recipient's policy or practice lacks a substantial legitimate justification and where there exists one or more alternatives that would serve the same legitimate objectives but with less disproportionate effect on the basis of race, color, or national origin.[20]

Similarly, FTA defines **disproportionate burden** as:

[19] Federal Transit Administration, *Circular 4702.1B Title VI Requirements and Guidelines for Federal Transit Administration Recipients*, October 1, 2012, page I-2, https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/FTA_Title_VI_FINAL.pdf.
[20] FTA, *Circular 4702.1B*, page I-2

a neutral policy or practice that disproportionately affects low-income populations more than non-low-income populations.[21]

Per FTA guidance, Metro Transit uses its disparate impact and disproportionate burden thresholds as evidence of impacts severe enough to meet the definition of disparate impact or disproportionate burden.

Metro Transit has defined its **disparate impact and disproportionate burden policies** and thresholds using the "90 percent rule," which states that there may be evidence of disparate impact if:

- *Benefits* are being provided to BIPOC (minority) populations at a rate less than 90 percent of the benefits being provided to white populations, or
- *Adverse effects* are being borne by white populations (non-minority) at a rate less than 90 percent of the adverse effects being borne by BIPOC populations.

Metro Transit uses the same framework when evaluating whether low-income populations would experience disproportionate burden relative to the impacts on non-low-income populations.

The 90 percent rule represents a modification of Metro Transit's previous practice, which drew on the 80 percent rule originating in employment law.[22] The percentage threshold is a practical way to identify adverse impacts that require mitigation or avoidance. Dozens of transit agencies, including some of the largest in the country, use a similar framework when defining their disparate impact and disproportionate burden policies.

The most recent Title VI Program update changed the threshold of disparate impact and disproportionate burden from 80 to 90 percent in order to further Metro Transit's equity goals. Metro Transit's decision to use the 90 percent rule for its disparate impact and disproportionate burden thresholds was subject to a formal public outreach process before being adopted by the Metropolitan Council in 2022. Additional information about the policies and their applications can be found in the Council's current Title VI Program.[23]

In this analysis, if the quantitative results indicate that service standard/policy compliance for BIPOC/ low-income routes (or stops or areas) is less than 90 percent of the compliance rate for non-BIPOC/ non-low-income routes (or stops or areas), this could be evidence of disparate impact/ disproportionate burden. In these cases, additional analysis will be conducted, and potential mitigation measures will be identified if necessary.

Additional information about how disparate impact and disproportionate policies are applied in this study can be found on page 32.

[21] FTA, *Circular 4702.1B*, page I-2

[22] Section 60-3.4(D), *Uniform Guidelines on Employee Selection Procedure* (1978); 43 FR 38295, August 25, 1978, https://www.ecfr.gov/current/title-41/subtitle-B/chapter-60/part-60-3.

[23] Metropolitan Council, *Title VI Program*, October 2022, https://metrocouncil.org/About-Us/Publications-And-Resources/EQUAL-OPPORTUNITY-DOCUMENTS/TITLE-VI-DOCUMENTS/Title-VI-Compliance-and-Implementation-Plan.aspx.

CHAPTER 3: SERVICE MONITORING CONCEPTS AND DEFINITIONS

The following section establishes concepts and definitions used to guide and evaluate transit service, including those:

- used by the Metropolitan Council to establish regional transit design guidelines and performance standards and by Metro Transit to establish Title VI service standards and policies; and those
- used by Metro Transit to evaluate compliance with its Title VI service standards and policies, following FTA guidance documented in the Title VI *Circular 4702.1B*.

These concepts and definitions are critical context for understanding Metro Transit's service standards and policies and are referenced throughout this report.

Concepts and Definitions to Establish Standards and Policies

Route Types

For the purposes of developing regional transit design guidelines and performance standards, the Metropolitan Council coordinates the classification of routes in the regional transit network (including Metro Transit's) based on their mode and role within the overall network. Metro Transit incorporates these route types into several of its service standards and policies.

Route types represented among the 95 Metro Transit fixed routes evaluated in this report include:

- Core Local Bus
- Supporting Local Bus
- Suburban Local Bus
- Commuter and Express Bus
- Arterial Bus Rapid Transit
- Highway Bus Rapid Transit
- Light Rail
- Commuter Rail

Each regular fixed route is assigned one route type, though most routes serve multiple route purposes. Route types were assigned to individual routes based on their primary purpose. For example, a route assigned the commuter and express route type may have one or more segments that act more like one of the local route types (e.g., local service in a suburban neighborhood before or after serving a park & ride), but that are not reflective of the primary purpose of the route.

Appendix A: Route Types includes detailed route type definitions. A list of Metro Transit fixed routes by route type is included in Appendix B: Route Designations.

Transit Market Areas

Metro Transit's service standards related to vehicle headway and service availability differ by Transit Market Area. The Metropolitan Council and Metro Transit use Transit Market Areas as a tool used to guide transit planning decisions and help ensure that the types and levels of transit service provided, in particular fixed-route bus service, match the expected demand in a given area. Expected demand for transit service varies across the region. While this variation is driven by a number of factors, in the

Twin Cities region it is primarily due to differences in development density, urban form, and demographics. To account for these differences in the planning and evaluation of transit service, the region is divided into five distinct Transit Market Areas – I, II, III, IV, and V – representing different levels of potential transit demand.

Transit Market Area I represents urban center communities that have a more traditional urban form with a street network laid out in grid form. Market Area I has the potential transit ridership necessary to support the most intensive fixed-route transit service, typically providing higher frequencies, longer hours, and more options available outside of peak periods. At the other end of the spectrum, Transit Market Area V tends to be primarily rural communities and agricultural uses. General public dial-a-ride service may be appropriate here, but due to the very low-intensity land uses these areas are not well-suited for fixed-route transit service. All five market areas are represented in the Metro Transit service area.

This analysis uses the Transit Market Areas as they were defined in the Metropolitan Council's *2040 Transportation Policy Plan*, [24] which would have been in effect in Fall 2023. The then-current map of Transit Market Areas in the region is included in Appendix C: Transit Market Areas of this report.

Future service planning will be guided by the adjusted Transit Market Area map in the *2050 Transportation Policy Plan*, which was adopted in early 2025.[25]

Concepts and Definitions to Evaluate Compliance with Standards and Policies

As described in preceding chapters, the Title VI standards and policies that apply to Metro Transit are evaluated using set measures. Each of these measures requires the designation of a given route, stop/station, or geographic area as being either BIPOC or non-BIPOC and either low-income or non-low-income. For example, the passenger load standard is applied to route-level average loads, so it relies on the designation of each route in the system.

Table 2 lists each of the metrics used in this analysis alongside the designation used to compare outcomes by race and income. Each designation method is then described in detail. The standards it is used for are also briefly described but will be defined and discussed further in Chapter 4: Analysis Standards, Methods, and Results.

[24] Metropolitan Council (2015) *2040 Transportation Policy Plan*. https://metrocouncil.org/Transportation/Planning-2/Key-Transportation-Planning-Documents/Transportation-Policy-Plan/The-Adopted-2040-TPP-(1).aspx

[25] Metropolitan Council (2025) *2050 Transportation Policy Plan*. https://metrocouncil.org/Transportation/Planning-2/Key-Transportation-Planning-Documents/Transportation-Policy-Plan.aspx

Table 2. Title Measures and Corresponding Designation Methods

Title VI Measure	Designation Used
Route spacing	Demographic area
Midday service availability	Demographic area
Passenger load	Route
Vehicle headway	Route
On-time performance	Route
Stop/station spacing	Route
Vehicle assignment	Route
Distribution of amenities	Stop/station

Demographic Area Designations

FTA *Circular 4702.1B* establishes the following concept that is critical for conducting service monitoring in compliance with FTA requirements:

> *Predominantly minority area* means a geographic area, such as a neighborhood, Census tract, block or block group, or traffic analysis zone, where the proportion of minority persons residing in that area exceeds the average proportion of minority persons in the recipient's service area.[26]

This "predominance" concept applies similarly to low-income areas. The concept is incorporated into the methodology for designating each Metro Transit fixed route as either BIPOC or non-BIPOC and either low-income or non-low-income (described in the following section).

Data and Methods

This study uses U.S. Census Bureau 2018-2022 American Community Survey 5-year estimates at the block group level to determine the Metro Transit service area averages for percent BIPOC residents (33.5 percent) and percent low-income residents (20.5 percent).

In keeping with Metro Transit's preferred terminology, **"predominantly minority areas" are herein referred to as "BIPOC areas,"** and are defined as census block groups where BIPOC residents make up at least 33.5 percent of residents, the average across Metro Transit's service area as a whole. BIPOC areas within the Metro Transit service area are shown in Figure 1. BIPOC areas make up 34 percent of census block groups and 19 percent of the geographic (surface) area of the Metro Transit service area and are home to 37 percent of the service area's total population (regardless of race and ethnicity).

Similarly, **"predominantly low-income areas" are herein referred to as "low-income areas,"** and are defined as census block groups where low-income residents make up at least 20.5 percent of residents, the average across Metro Transit's service area. Low-income areas within the Metro Transit service area are shown in Figure 2. Low-income areas make up 35 percent of census block groups

[26] FTA, *Circular 4702.1B*, page I-5. Service area in this context refers to the geographic area in which a transit agency is authorized by its charter to provide service to the public

and 23 percent of the geographic area of the Metro Transit service area and are home to 36 percent of the service area's total population.

Service Standards

The demographic area designation applies to route spacing and midday service availability. Route spacing is an entirely geographic measure: it identifies locations where parallel routes of the same type are spaced out according to standards, and locations where the distance between routes does not meet standards. Midday service availability similarly identifies locations where standards for midday frequency are met and where they are not met.

Figure 1. BIPOC Areas Within the Metro Transit Service Area

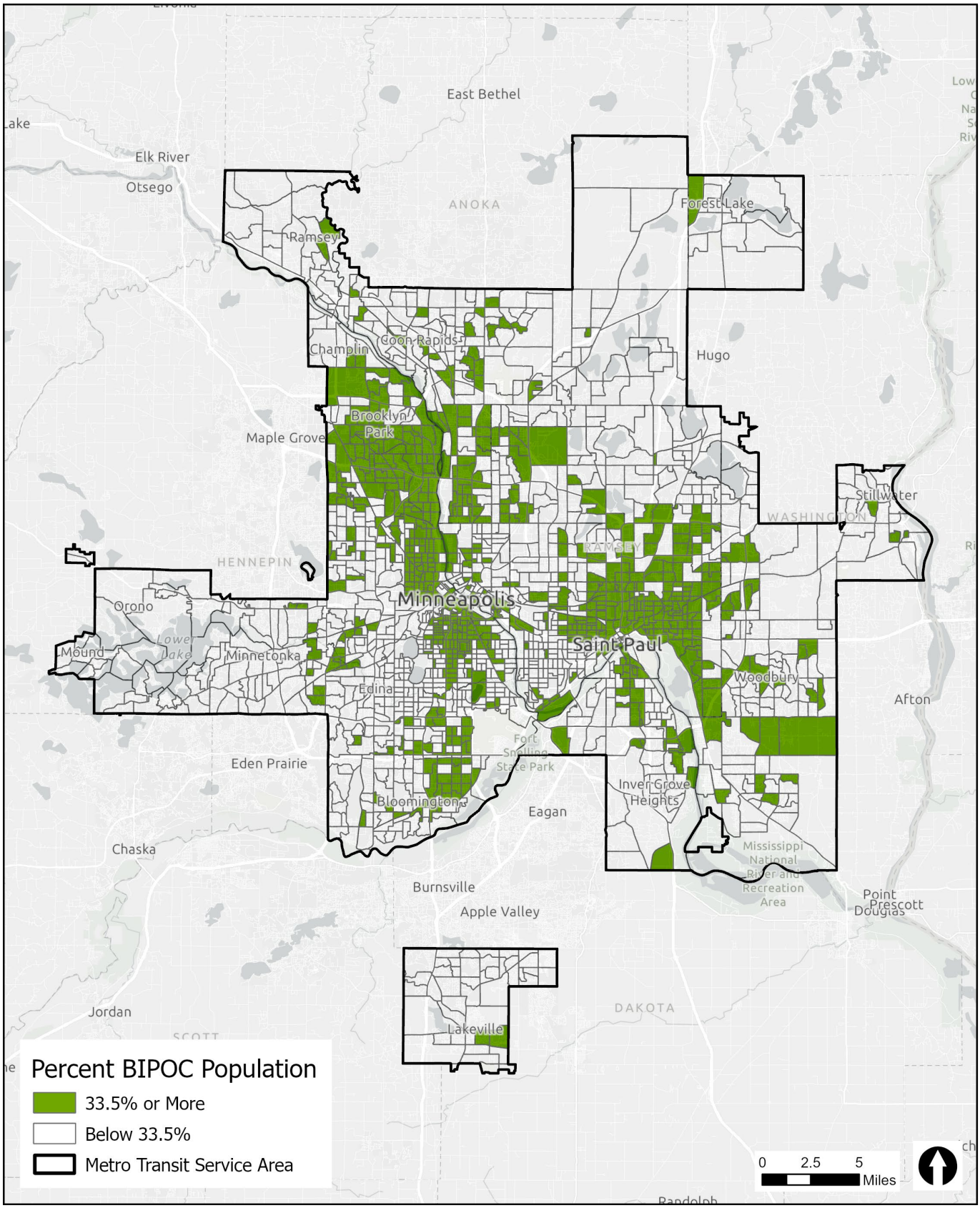
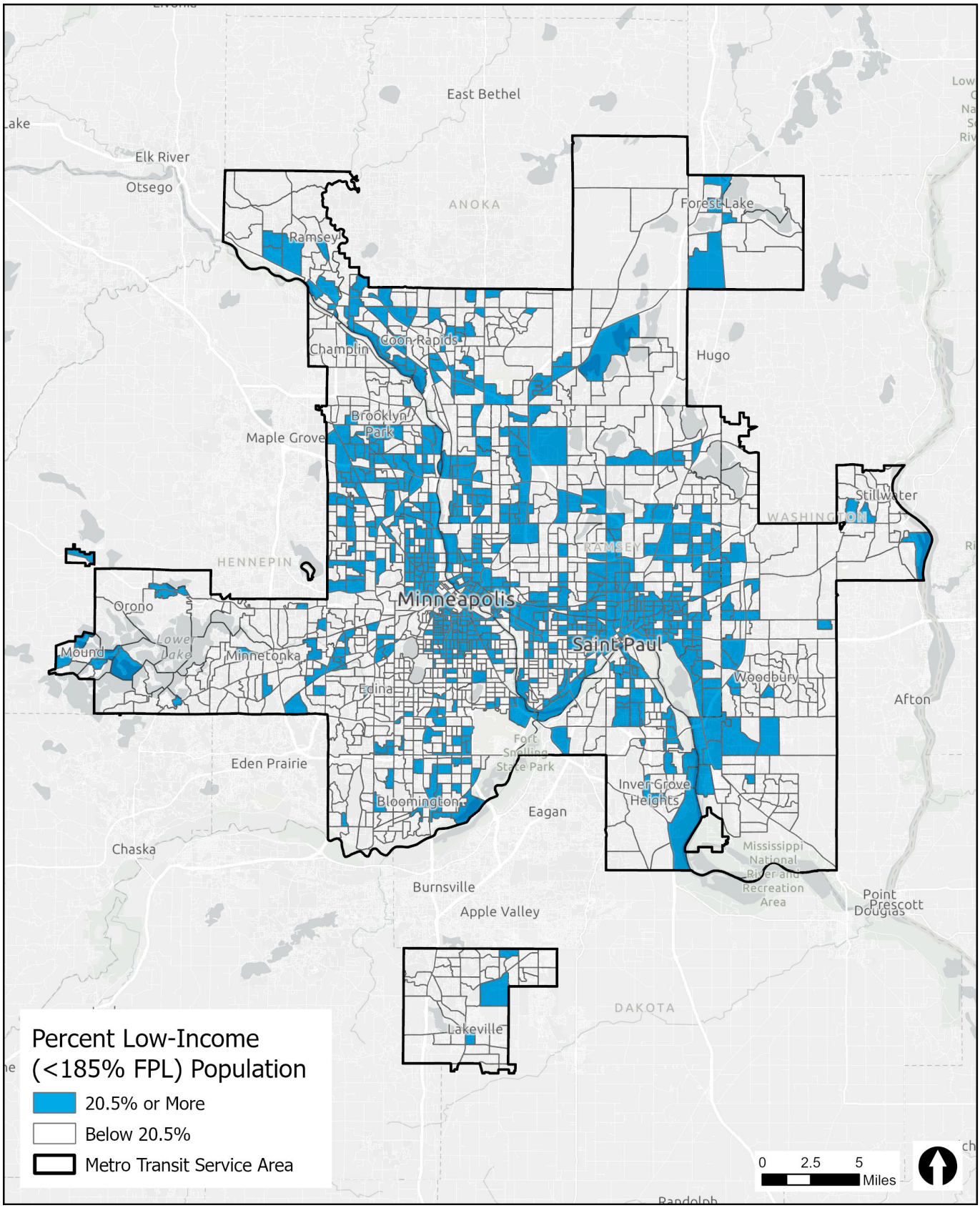


Figure 2. Low-Income Areas Within the Metro Transit Service Area



Route Designations

FTA *Circular 4702.1B* also establishes the concept of a minority transit route:

> *Minority transit route* means a route that has at least 1/3 of its total revenue mileage in a Census block or block group, or traffic analysis zone(s) with a percentage of minority population that exceeds the percentage of minority population in the transit service area.[27]

For the purposes of this analysis, **each route is designated as either BIPOC or non-BIPOC and either low-income or non-low-income.** Doing so enables comparison of service outcomes and service standard and policy compliance rates between BIPOC and non-BIPOC routes and between low-income and non-low-income routes and subsequent determination of disparate impact and disproportionate burden.

Data and Methods

FTA provides guidance on how routes are to be designated for service monitoring purposes. Central to the FTA methodology is the relationship between the demographics of the population living within a route's service area and those of the population living in the system-wide service area (described in the previous section, shown in Figure 1 and Figure 2). FTA's methodology states that if one-third of a route's service area is in areas with BIPOC population greater than the system-wide service area average, then that route is to be designated as a BIPOC route. The same methodology is applied for designating routes as either low-income or non-low-income.

FTA Circular 4702.1B states that agencies "may supplement this service area data with route-specific ridership data in cases where ridership does not reflect the characteristics of [the service area]" and adjust route designations accordingly.[28] Metro Transit used route-specific ridership data from the Metropolitan Council's Transit Behavior Inventory (TBI) On-Board Survey to refine route designations in this study, such that routes are designated as BIPOC routes if their ridership is greater than or equal to the service area average of 33.5 percent BIPOC, and likewise as low-income routes if their ridership is greater than or equal to the service area average of 20.5 percent low-income. FTA's route designation methodology was also modified to eliminate non-stop route segments. A detailed description of the methodology used to designate routes in this study is included in Appendix D: Route Designation Methodology.

As summarized in Table 3, 78 percent of the 95 routes included in this study are considered BIPOC routes, while 84 percent are considered low-income routes. Local routes – particularly core local bus and suburban local bus route types – are more likely to be designated as either BIPOC or low-income (80-100 percent of routes) compared to commuter and express routes (54-81percent of routes).

Figure 3 and Figure 4 display maps of all BIPOC/non-BIPOC and low-income/non-low-income route designations, respectively. See Appendix B: Route Designations for a list of all 95 routes analyzed in this study alongside their designations.

[27] FTA, *Circular 4702.1B*, page I-4.

[28] FTA, *Circular 4702.1B*, page I-4.

Table 3. Summary of Route Designations by Route Type

Route Type	Number of Routes	BIPOC	Non-BIPOC	Low-Income	Non-Low-Income
Core Local	25	96%	4%	100%	0%
Supporting Local	10	80%	20%	100%	0%
Suburban Local	26	58%	42%	92%	8%
Commuter and Express	26	81%	19%	54%	46%
Arterial BRT	3	67%	33%	100%	0%
Highway BRT	2	50%	50%	100%	0%
Light Rail	2	100%	0%	100%	0%
Commuter Rail	1	100%	0%	0%	100%
All Routes	95	78%	22%	84%	16%

Service Standards

The route designation applies to standards for passenger load, vehicle headway, on-time performance, stop/station spacing, and vehicle assignment. The standards for a given route will vary based on the route's type and market area.

Figure 3. BIPOC Route Designation

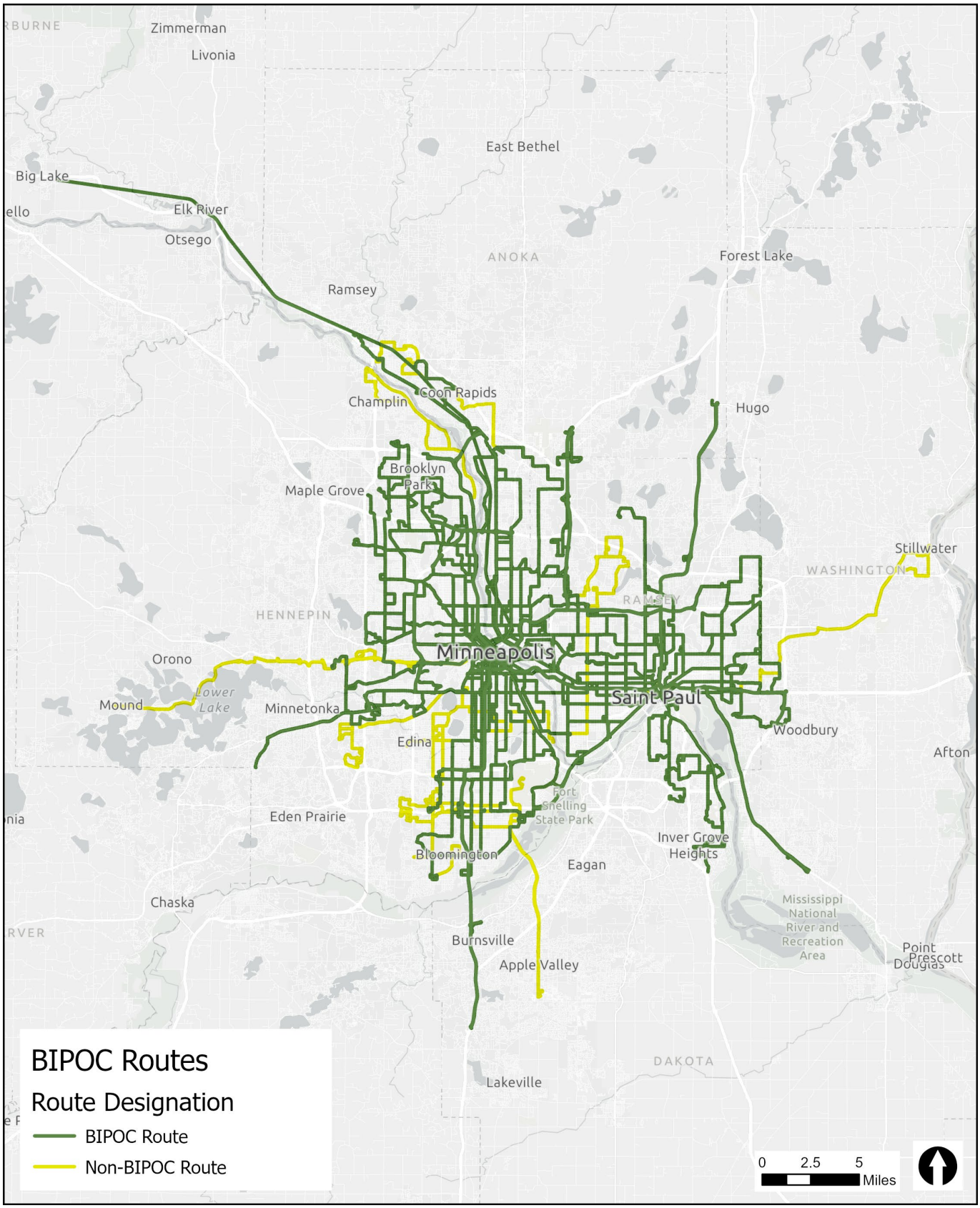
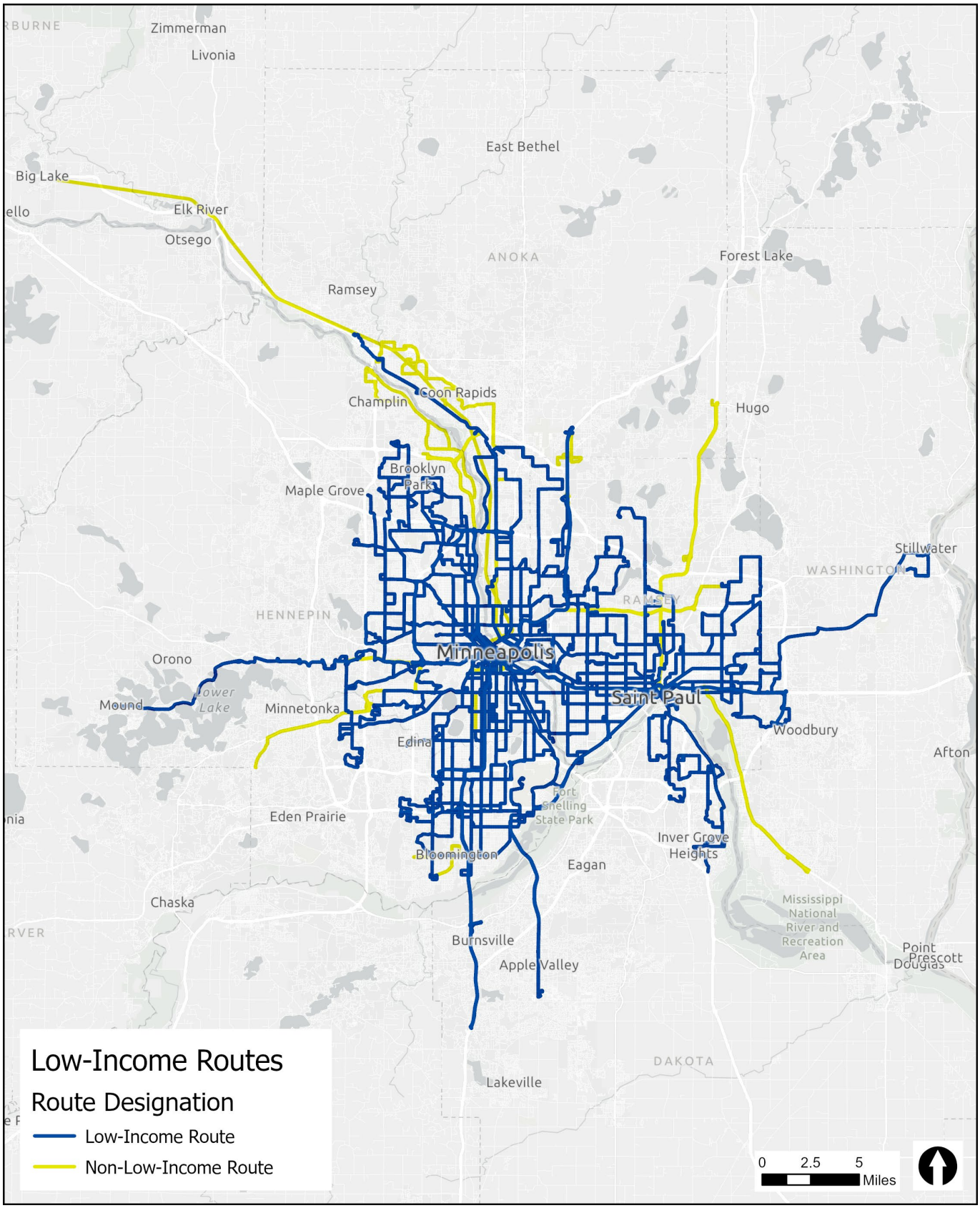


Figure 4. Low-Income Route Designation



Stop Designations

Finally, FTA requires agencies to include the distribution of transit amenities in service monitoring. In the absence of more detailed guidance, Metro Transit applies its amenity standards to individual stops and stations.

Metro Transit maintains thousands of stops that are served by one or more of its fixed routes. Stops in this study are defined as permanent or semi-permanent marked locations where passengers can get on and/or off a fixed-route vehicle, according to public route schedules. Stops include bus stops as well as station platforms served by BRT, light rail, or commuter rail lines. Further, stops can be located at various facility types, including park & rides, transit centers, and stations.

This analysis considers the **8,409 stops served by Metro Transit routes in fall 2023. Each stop is designated as either BIPOC or non-BIPOC and either low-income or non-low-income.** This enables comparison of policy compliance rates and subsequent determination of disparate impact and disproportionate burden.

Data and Methods

FTA does not prescribe a particular method for designating stops; the method used in this study categorizes stops based on their relationship to the demographics of the area they serve. Specifically, if the proportion of BIPOC residents within a 10-minute walk from a given station is at or above the service area average (33.5 percent in this study), it is designated as a BIPOC stop. So too if the proportion of low-income residents within a ten-minute walk is at or above the service area average (20.5 percent in this study), it is designated as a low-income stop. Forty-eight percent of stops included in this study are considered BIPOC stops, while 54 percent are considered low-income stops.

The proportion of each demographic group served by a given station or stop is determined by apportioning block-group level census data from the 2018-2022 American Community Survey to ten-minute walksheds calculated using the existing street and sidewalk network. Walksheds are calculated for a hexagonal grid across the Metro Transit service area with each cell measuring 150 feet in diameter. Each station or stop is considered in isolation, with no regard to the routes that serve it or to any other nearby stops. This method only considers the demographics for the station or stop as a residential starting point and does not reflect the demographics of riders for whom the station or stop is a non-home destination.

Service Standards

The stop designation applies to standards for transit amenities. These standards are defined separately for separate facility types, and they help the agency plan and prioritize investments. They are described in detail in Chapter 4: Analysis Standards, Methods, and Results.

CHAPTER 4: ANALYSIS STANDARDS, METHODS, AND RESULTS

The following sections describe the analysis and results for the evaluation of each of the service standard and policy types required by FTA.

The study includes all 95 fixed routes and 8,409 stops and stations that operated in fall 2023. This includes 30 routes provided by the Metropolitan Council under the Metro Transit brand. These are contracted routes overseen by the Council's Metropolitan Transportation Services (MTS), including the METRO Red Line (highway BRT). These routes are sometimes referred to as "MTS routes," but are fully integrated into Metro Transit's service and facility planning functions.

In keeping with FTA guidance, service monitoring results are reported by mode; that is, separately for bus (all bus route types, including arterial BRT and highway BRT), light rail (METRO Blue Line and METRO Green Line), and commuter rail (Northstar).[29]

Route-level results for light rail and Northstar are shown primarily for informational purposes and comparison with other route types. Metro Transit has only one commuter rail route, and both of the light rail lines are identified as both BIPOC and low-income routes. It is therefore impossible to make comparisons between BIPOC and non-BIPOC and low-income and non-low-income routes within the light rail and commuter rail route types. While route designations do not vary between light rail routes, individual stop designations still differ based on the demographics in the surrounding area. Thus, comparison indices are calculated for light rail stations where analysis is conducted at the stop level (e.g. amenities distribution).

Comparison Index

For each service standard and policy, determinations of disparate impact and disproportionate burden are made by calculating a comparison index between the BIPOC and non-BIPOC results and between the low-income and non-low-income results. **The comparison index is the tool used by Metro Transit to apply its disparate impact and disproportionate burden policies (see page 19).**

In cases where the results measure an *adverse impact* (e.g., route spacing), the comparison index is measured as the ratio between the non-BIPOC/non-low-income results and the BIPOC/low-income result. A higher ratio is better and indicates relatively less negative impact on BIPOC/low-income people.

Alternatively, in cases where the results measure a *positive impact* (e.g., compliance with vehicle headway standards), the comparison index is measured as the ratio between the BIPOC/low-income results and the non-minority/non-low-income results. A higher ratio is better and indicates more benefit to BIPOC/low-income people.

In either case, **a comparison index less than 0.90 indicates the potential for disparate impact/disproportionate burden.**

[29] These mode classifications – bus, light rail, and commuter rail – mirror how Metro Transit reports to the National Transit Database (NTD).

Vehicle Load

Standards

Vehicle load refers to the number of passengers aboard an in-service transit vehicle at a given time. Metro Transit's vehicle load standards are defined by route type and vehicle type for peak (weekdays from 6:00 to 9:00 AM and 3:00 to 6:30 PM) and off-peak periods (Table 4). The numerical standards represent the maximum number of passengers (seated and standing combined) allowable before an "overload" occurs. In addition to route type, vehicle type, and day period, the standards were developed considering the average seating capacity of vehicles. In many cases, the off-peak load standard represents the number of seats available for that vehicle type (see *Vehicle Assignment* for more information on vehicle types).

While the availability of seating is a contributing factor to a pleasant transit experience, it is not always feasible during peak periods. Standing loads – that is, a vehicle load in excess of the seating capacity – are considered acceptable in some instances, such as on light rail vehicles and during peak service. The primary exception to this is peak loads on commuter and express routes with more than four miles of travel on freeways, where the load standards are equal to seating capacity regardless of time of day. This difference is due to safety needs of highway travel, as well as the relative lack of seat turn-over and greater distances traveled by passengers compared to other route types.

Table 4. Vehicle Load Standards

Load standards represent the maximum number of passengers (seated and standing combined) allowable.

Route Type	Vehicle Type	Peak Load Standard	Off-Peak Load Standard
Core Local	Standard 40′ bus	48	38
	Articulated 60′ bus	71	57
Supporting Local	Standard 40′ bus	48	38
	Articulated 60′ bus	71	57
	30′ bus	35	28
	Cutaway	21	21
Arterial BRT	Arterial BRT 40′ bus	48	38
	Arterial BRT 60′ bus	71	57
Highway BRT	Standard 40′ bus	44	38
	Articulated 60′ bus	66	57
Commuter and Express (> 4 Miles on Freeway)	Standard 40′ bus	38	38
	Articulated 60′ bus	57	57
	Coach bus	57	57
Commuter and Express (< 4 Miles on Expressway)	Standard 40′ bus	44	38
	Articulated 60′ bus	66	57
Suburban Local	Standard 40′ bus	48	38
	Articulated 60′ bus	71	57
	30′ bus	35	28
	Cutaway	21	21
Light Rail	Light rail vehicle (per car)	132	132

Methods

Vehicle load data are continuously collected aboard buses using automatic passenger counter (APC) equipment. However, similar vehicle load data are not available for all light rail or Northstar commuter rail trips. Periodic in-person spot checks of the light rail system are conducted by Metro Transit staff to assess ridership and vehicle load patterns. Vehicle loads on Northstar commuter rail vehicles are monitored by conductors. No significant overload issues were identified for either route type during standard (non-event-related) service since the last service monitoring report in fall 2021.

This analysis considers weekdays during fall 2023. Weekdays are used given the reduced demand and rarity of overloads on weekend days. The unit of analysis is a scheduled weekday trip. The maximum passenger load is identified for each trip observation. Overloaded trips are identified by comparing the observed maximum passenger load to the appropriate load standard (Table 4) based on the trip attributes (i.e., route type, vehicle type, and peak versus off-peak). The number of total trips and overloaded trips are then aggregated by route and scheduled trip number. On average, each scheduled trip (e.g., the hypothetical weekday trip on Route 99 departing at 7:45 AM) had load observations for 72 weekdays across fall 2023.

Occasional overloads are to be expected due to natural variations in transit demand and special events. Metro Transit considers trip overloads to be an issue needing to be addressed if they are "consistently overloaded." Individual route trips (e.g., the hypothetical weekday trip on Route 99 departing at 7:45 AM) are considered to be consistently overloaded if they experience an overload on two or more days per five weekdays. Because a trip has an equal probability of being sampled on any weekday, this review considers a trip that was overloaded 40 percent or more of the time (two days per five-day week) to be consistently overloaded.

In summary, compliance with the vehicle load standards is measured in two ways:

- Percent of trip observations that are not *overloaded*, i.e. the proportion of all observed completed trips that do not exceed overload standards at some point during the trip; and
- Percent of scheduled trips that are not *consistently overloaded,* such that an individual route trip has no more than 40 percent of its observed completed trips (e.g., 23 out of 55 trip observations) overloaded at some point during the trip.

Each of these measures is calculated by race/ethnicity and income route designations. Trips are first aggregated by route designation (e.g., total trips scheduled on BIPOC routes), then the aggregate is evaluated.

Results

Over the course of fall 2023, just 0.26 percent of all observed bus trips are overloaded. The analysis results by route designation are summarized in Table 5. Vehicle load results by route are included in Appendix E: Vehicle Load.

The percentage of trips on BIPOC routes that are within the load standard is slightly lower than that of non-BIPOC routes (99.7 percent compared to 99.9 percent), but the resulting comparison index of 1.00 **indicates no disparate impacts based on vehicle load for overall trip observations**. Similarly, the percentage of trips on low-income routes that are within the load standard is slightly lower than that of

non-low-income routes (99.7 percent compared to 99.8 percent). The resulting comparison index of 1.00 also **indicates no disproportionate burdens based on vehicle load for overall trip observations**.

Scheduled trips with consistent overload are exceptionally few. Across 5,651 scheduled trips observed in this analysis, only three exceed the 40 percent threshold for consistent overload. All three of these trips were on BIPOC and low-income routes. For BIPOC routes, 99.9 percent of scheduled trips saw no consistent overload, compared to 100 percent of non-BIPOC routes. The resulting comparison index of 1.00 would indicate that **there are no disparate impacts associated with consistent overloads**. Similarly for low-income routes, 99.9 percent of scheduled trips see no consistent overload compared to 100 percent of non-low-income routes, giving a comparison index of 1.00 that also indicates **there are no disproportionate burdens associated with consistent overload**.

Table 5. Vehicle Load Standards Results

Mode	Route Designation	Percent of Weekday Trip Observations within Load Standard	Percent of Scheduled Weekday Trips Consistently within Load Standard
Bus	BIPOC Routes	99.7%	99.9%
	Non-BIPOC Routes	99.9%	100.0%
	DI Comparison Index	**1.00**	**1.00**
	Low-Income Routes	99.7%	99.9%
	Non-Low-Income Routes	99.8%	100.0%
	DB Comparison Index	**1.00**	**1.00**

*Both LRT lines are designated as BIPOC and low-income routes, thus, there is no comparison index
^The sole commuter rail line (Northstar) is designated as a BIPOC and non-low-income route, thus, there is no comparison index

Vehicle Headway

Standards

Metro Transit measures the frequency of a route based on vehicle headway, which is defined as the average number of minutes between transit vehicles on a given route traveling in the same direction. A smaller headway equates to more transit vehicles, higher frequency, and a greater level of service along a corridor. Routes serving areas of higher transit demand will tend to have smaller/shorter headways (higher frequency service).

Metro Transit's vehicle headway standards represent the minimum level of service allowable to meet the standard. Shown in Table 6, vehicle headway standards differ by route type, day period (peak, off-peak, and weekend), and Transit Market Area. Peak is defined as weekday trips mainly occurring between 6:00 and 9:00 AM or between 3:00 and 6:30 PM. Off-peak encompasses trips mainly occurring during the remaining time during weekdays, and weekend applies to all trips throughout the day on Saturdays and Sundays.

Table 6. Vehicle Headway Standards

Route Type	Day Period	Market Area I	Market Area II	Market Area III	Market Area IV	Market Area V
Core Local	Peak	15′	30′	60′	--	--
	Off-peak	30′	60′	60′	--	--
	Weekend	30′	60′	60′	--	--
Supporting Local	Peak	30′	30′	60′	--	--
	Off-peak	30′	60′	60′	--	--
	Weekend	30′	60′	60′	--	--
Suburban Local	Peak	NA	30′	60′	--	--
	Off-peak	NA	60′	60′	--	--
	Weekend	NA	60′	60′	--	--
Arterial BRT	Peak	15′	15′	15′	--	--
	Off-peak	15′	15′	15′	--	--
	Weekend	15′	15′	15′	--	--
Highway BRT	Peak	15′	15′	15′	--	--
	Off-peak	15′	15′	15′	--	--
	Weekend	15′	15′	15′	--	--
Light Rail	Peak	15′	15′	15′	--	--
	Off-peak	15′	15′	15′	--	--
	Weekend	15′	15′	15′	--	--
Commuter and Express	Peak	30′	30′	3 Trips each peak	3 Trips each peak	--
Commuter Rail	Peak	--	--	30′	30′	30′

Methods

Vehicle headways are calculated using general transit feed specification (GTFS) schedule data from a representative week in October of 2023. For each route and stop combination in the system, the total number of trips arriving and departing is calculated by service day (e.g. weekday, Saturday, Sunday) and time period (e.g. peak, off-peak). Trip counts for each route and stop are categorized under three representative periods:

- Peak: Weekday trips occurring between 6:00 and 9:00 AM and between 3:00 and 6:30 PM
- Off-Peak: Weekday trips occurring between 11:00 AM and 2:00 PM
- Weekend: Saturday and Sunday trip occurring between 11:00 AM and 2:00 PM

Each route-stop combination is classified by the type of route serving it and the Transit Market Area in which it is located, in order to compare it against the vehicle headway standards defined by Metro Transit. The number of trips by route at each stop within a given time period is divided by the length of the period in minutes, producing an estimate of the average headway experienced at that stop.

This calculation is compared against Metro Transit's vehicle headway standards to assign a value of "compliant" if the average headway is less than or equal to the appropriate standard, or "non-compliant" is the average headway is greater than the standard. For route type – market area

combinations that do not have a defined standard (e.g. commuter rail stops within Market Area I), stops are considered compliant if any trips serve the stop within the given period.

Results are then aggregated to the route level and route designation (e.g. BIPOC route versus non-BIPOC route) as the percent of stops on the route that are considered compliant with the associated headway standard. This analysis evaluates the headways for each route independently of all other transit service, per Metro Transit's headway standards. A single stop or station may be used by multiple routes and have a combined headway that is much better than the headway of each individual route.

Results

Table 7 summarizes the percent of route-stop combinations meeting vehicle headway standards by mode, route designation, and service period for fall 2023.

Table 7. Vehicle Headway Standards Results

Mode	Route Designation	Peak	Off-Peak	Weekend	Total
Bus	BIPOC Routes	41%	93%	43%	55%
	Non-BIPOC Routes	41%	95%	28%	50%
	DI Comparison Index	**1.00**	**0.98**	**1.52**	**1.11**
	Low-Income Routes	44%	93%	42%	56%
	Non-Low-Income Routes	9%	100%	0%	22%
	DB Comparison Index	**4.88**	**0.93**	**121.71**	**2.50**
Light Rail*	BIPOC Routes	100%	100%	100%	100%
	Low-Income Routes	100%	100%	100%	100%
Commuter Rail^	BIPOC Routes	0%	-	-	0%
	Non-Low-Income Routes	0%	-	-	0%

*Both LRT lines are designated as BIPOC and low-income routes, thus, there is no comparison index
^The sole commuter rail line (Northstar) is designated as a BIPOC and non-low-income route, thus, there is no comparison index

In 2023, BIPOC bus routes had higher compliance rates than non-BIPOC routes in the peak and weekend periods, as well as in total. BIPOC routes saw slightly lower compliance rates in the off-peak service period than did non-BIPOC routes but were well above the 0.9 threshold and so did not result in disparate impacts. Low-income routes similarly saw higher compliance rates than non-low-income routes in the peak and weekend periods, as well as overall. Low-income routes had lower compliance rates than did non-low-income routes in the off-peak period but were above the 0.9 threshold and so did not result in disproportionate burdens.

On-Time Performance

Standards

On-time performance standards are consistent between bus and rail service. Service is considered on-time if it arrives at scheduled timepoints (for bus) or at stations (for rail) between 1 minute early and 5 minutes late. Metro Transit's on-time performance goal for each service mode is updated quarterly to account for seasonal factors and specific construction activity.

Methods

On-time performance data for bus routes are continuously collected using automated vehicle locator (AVL) equipment aboard vehicles. The supervisory control and data acquisition (SCADA) system is the source of on-time performance data for rail service.

Data from fall 2023 are used in this analysis. The dataset used for analysis includes the number of on-time timepoint crossing observations, according to the on-time definition, and total timepoint crossing observations by route and day type. On-time timepoint crossings and total timepoint crossings are summed by route and route designation to determine the percentage of on-time timepoint crossings.

Results

Table 8 summarizes the percent of timepoint crossings considered on-time for each mode by route designation in fall 2023. Appendix F: On-Time Performance includes a table of on-time performance by route.

Table 8. On-Time Performance Standards Results

Percent of timepoint crossings or station arrivals meeting on-time performance standards

Mode	Route Designation	On-Time Performance
Bus	BIPOC Routes	79%
	Non-BIPOC Routes	83%
	DI Comparison Index	**0.96**
	Low-Income Routes	80%
	Non-Low-Income Routes	84%
	DB Comparison Index	**0.95**
Light Rail*	BIPOC Routes	75%
	Low-Income Routes	75%
Commuter Rail^	BIPOC Routes	70%
	Non-Low-Income Routes	70%

*Both LRT lines are designated as BIPOC and low-income routes, thus, there is no comparison index
^The sole commuter rail line (Northstar) is designated as a BIPOC and non-low-income route, thus, there is no comparison index

Among bus routes, BIPOC routes had lower on-time performance than non-BIPOC routes in 2023, with 79 percent of trip timepoint crossings on time compared to 83 percent, respectively (Table 8). The resulting comparison index of 0.96 (0.79/0.83 = 0.96) is greater than the disparate impact threshold of 0.90. **Therefore, this analysis identifies no disparate impact based on on-time performance.**

Low-income bus routes had lower on-time performance (80 percent) than non-low-income routes (84 percent) in 2023. The resulting comparison index of 0.95 (0.80/0.84 = 0.95) is greater than the disproportionate burden threshold of 0.90. **Therefore, this analysis identifies no disproportionate burden based on on-time performance.**

Service Availability: Route Spacing

Standards

Route spacing refers to the distance between routes. Route spacing guidelines seek to balance service coverage with route productivity and transit demand. Routes spaced too closely together will have overlapping service areas and compete for riders, reducing the productivity of both routes. Routes spaced too far apart will lead to coverage gaps. Generally, areas with lower transit demand will have routes spaced farther apart.

Table 9 shows the route spacing standards, which differ by route type and Transit Market Area. Route spacing standards for commuter and express bus, highway and arterial BRT, light rail, and commuter rail routes are determined on a case-by-case basis according to specific transit market conditions.

Table 9. Route Spacing Standards

Route Type	Market Area I	Market Area II	Market Area III	Market Area IV	Market Area V
Core Local	0.5 miles	1 mile	Specific*	n/a	n/a
Supporting Local	1 mile	1-2 miles	Specific*	n/a	n/a
Suburban Local	n/a	2 miles	Specific*	Specific**	n/a

* Specific indicates that route structure is adapted on an ad-hoc basis to the demographics, geography, and land use of the specific area.

Metro Transit defines route spacing standards for core local, supporting local, and suburban local bus routes within Market Areas I and II. The functions of these route classifications relate to the demand and geography of each market:

- **Core local** routes typically serve the denser urban areas of Market Areas I and II, usually connecting downtown cores and major trip generators along important arterial and collector roads. They form the base of the Metro Transit bus network and are generally the most productive bus routes in the system.
- **Supporting local** routes comprise crosstown and feeder routes that typically connect areas of Market Areas I and II outside of the downtown cores. These routes generally connect to core local routes and ensure coverage for trips outside of traditional commuter patterns.
- **Suburban local** routes typically operate in Market Areas II and III in lower-density suburban areas and are often less productive than other route classifications. These routes serve to ensure riders in suburban areas have a baseline of mobility within their own communities.

The classification of individual routes is defined by Metro Transit and maintained in its production transit route data. Transit data from 2024 are used to define route classification for 2023, with no routes having changed classification in that time.

Methods

Analysis of compliance with route spacing standards is conducted using route shape data from GTFS data for a typical week in October 2023, as well as block group level demographic data from the 2018-2022 American Community Survey. Block groups are designated according to methodology outlined in the section Demographic Area Designations Block groups are additionally clipped to each market area, and the size of each block group is calculated in acres.

The total acreage of block groups within each market area is calculated by BIPOC and low-income designation, giving the denominator for later percentage calculations. Rather than evaluate route spacing individually between local route subclasses, this analysis considers route spacing for all local routes combined using the most stringent standard for each market area. Bblock groups in Market Area I are considered to be within the route spacing standard if any local route is within half a mile from the block group, and likewise within one mile for block groups in Market Area II. For each market area, block groups are clipped to the corresponding route buffers and market area boundary and have their acreage recalculated. The total acreage of the block groups within the route buffer is then divided by the total acreage of the block groups in the corresponding market area, filtering for each BIPOC and low-income designation. This process yields the percent of BIPOC, non-BIPOC, low-income, and non-low-income areas that fall within the route spacing standard. These percentages are then compared to assess disparate impact and disproportionate burden.

Results

The results of the route spacing analysis are shown in Table 10. Maps showing the coverage areas are included in Appendix G: Route Spacing.

Table 10. Route Spacing Results

Route Type	Designation	Market Area I	Market Area II
All Local Bus	BIPOC	100.0%	99.8%
	Non-BIPOC	99.0%	97.4%
	DI Comparison Index	**1.01**	**1.03**
	Low-Income	100.0%	98.8%
	Non-Low-Income	98.8%	97.9%
	DB Comparison Index	**1.01**	**1.01**

In Market Area I, local routes provide slightly more coverage to BIPOC and low-income populations, with nearly 100 percent of BIPOC and 100 percent of low-income residents falling within the half-mile service standard, giving a comparison index of 1.01 in both measures. **Therefore, no disproportionate burdens nor disparate impacts are identified for local routes in Market Area I.**

In Market Area II, local routes provided slightly more coverage to BIPOC and low-income populations than to non-BIPOC and non-low-income populations, giving indices of 1.01 and 1.03, respectively. **Therefore, no disparate impacts nor disproportionate burdens are identified for local routes in Market Area II.**

Service Availability: Midday Service

Standards

In addition to route and stop spacing standards, Metro Transit reviews service availability based on the presence of transit service that meets vehicle headway standards during the midday period. This standard is used as another means to ensure that service during the off-peak period is distributed equitably between BIPOC and non-BIPOC areas and between low-income and non-low-income areas.

As discussed previously, vehicle headway standards are defined by service type, market area, and day period (Table 6). Metro Transit uses its off-peak vehicle headway standards to assess service availability during midday between weekday peak periods. Midday vehicle headway standards are summarized in Table 11.

Table 11. Off-Peak Vehicle Headway Standards

Route Type	Market Area I	Market Area II	Market Area III	Market Area IV	Market Area V
Core Local	30′	60′	60′	--	--
Supporting Local	30′	60′	60′	--	--
Suburban Local	--	60′	60′	--	--
Arterial BRT	15′	15′	15′	--	--
Highway BRT	15′	15′	15′	--	--
Light Rail	15′	15′	15′	--	--
Commuter and Express	--	--	--	--	--
Commuter Rail	--	--	--	--	--

Methods

The availability of midday service is evaluated based on the relative area served by stops compliant with the off-peak service standard. Similar to the methodology used in the vehicle headway analysis, GTFS data for a representative weekday in October 2023 is used to calculate the average headway experienced at each stop by taking the total number of trips served at each stop between 11:00 AM and 2:00 PM, then dividing 180 minutes by that total. In contrast to the method employed for the vehicle headway analysis, average headway is not calculated for each distinct route class, but rather for simplified categories of local bus and the grouping of arterial BRT, highway BRT, and LRT routes given that midday service standards only differ across these two categories. A stop is marked as compliant if its average off-peak headway is less than or equal to the corresponding service standard for its market area.

Compliant stops are then buffered one-quarter-mile for bus stops and one-half-mile for BRT, LRT, and commuter rail stations, based on the general propensity of users to walk farther for LRT and BRT stations. Block group level demographic data from the 2018-2022 ACS are clipped to these stop buffers, with each clipped block group then having its area recalculated. The total acreage of BIPOC, non-BIPOC, low-income, and non-low-income block groups within the buffer is compared to the corresponding total acreages of its market area. This process gives the percentage of BIPOC, non-BIPOC, low-income, and non-low-income areas served by transit compliant with the midday service standard.

Results

The results of the midday service analysis are shown in Table 12. Universally across market areas, BIPOC and low-income populations are served by transit compliant to the midday service standard at higher rates than non-BIPOC and non-low-income populations, with all comparison indices well over 1.00. **Therefore, this analysis identifies no disparate impact nor disproportionate burden based on midday service availability.**

Table 12. Midday Service Availability Results

Designation	Market Area I	Market Area II	Market Area III	Total
BIPOC	96%	79%	59%	69%
Non-BIPOC	83%	67%	42%	48%
DI Comparison Index	**1.15**	**1.17**	**1.40**	**1.42**
Low-Income	95%	78%	65%	73%
Non-Low-Income	81%	68%	41%	47%
DB Comparison Index	**1.18**	**1.15**	**1.60**	**1.56**

Service Availability: Stop Spacing

Standards

When considering stop spacing, service must balance the competing goals of maximizing access and minimizing travel times. A shorter distance between stops will reduce the average rider's walking distance to a stop but will generally increase the overall travel time of the route. A common standard for passengers' willingness to walk is one-quarter-mile for local bus service and one-half-mile for BRT and LRT services.

Metro Transit's recommended standards for stop spacing are shown in Table 13. These represent generalized goals as opposed to hard minimums or maximums, as various exceptions may be made based on conditions of the area served. For example, a BRT route may reduce stop spacing within central business districts or around major trip generators.

Table 13. Stop Spacing Standards

Route Type	Typical Stop Spacing
Core Local	1/8 to 1/4 mile
Supporting Local	1/8 to 1/4 mile
Suburban Local	1/8 to 1/2 mile
Arterial BRT	1/4 to 1/2 mile
Highway BRT	1/2 to 2 miles
Light Rail	1/2 to 1 mile
Commuter and Express	Market specific*
Commuter Rail	5 to 7 miles

* In downtowns and local pickup areas, stop spacing will follow the standards for local routes. Along limited stop or non-stop portions of the route stop spacing will be much greater.

The classification of individual routes is defined by Metro Transit and maintained in its production transit route data. Transit data from 2024 are used to define route classification in 2023, with no routes having changed classification in that time.

Methods

Analysis of stop spacing standards compliance uses stops and schedules derived from Metro Transit's schedule data in GTFS format from a representative week in fall 2023. The schedule data include a calculation of the distance between consecutive stops along a route line, which is often defined by the street network. The route line segment between two consecutive stops in the same direction from the same route is defined in this analysis as a route-stop link.

Street networks or other geographic features may not allow for stop spacing precisely within the appropriate stop spacing standard range. Further, Metro Transit must consider site-specific characteristics before placing stops, including consideration of near-side versus far-side stop placement. To account for these real-world situations, the allowable stop spacing ranges are modified by +/-100 feet from the prescribed range for all route types. For example, core local routes have a typical stop spacing standard of 1/8 to 1/4 miles, equal to 660 to 1,320 feet; a range of 560 to 1,420 feet is used in this analysis as evidence of meeting the stop spacing standard for stops served by core local routes. Commuter and express routes are excluded from analysis, as this route type has no numerical stop spacing standards.

Results

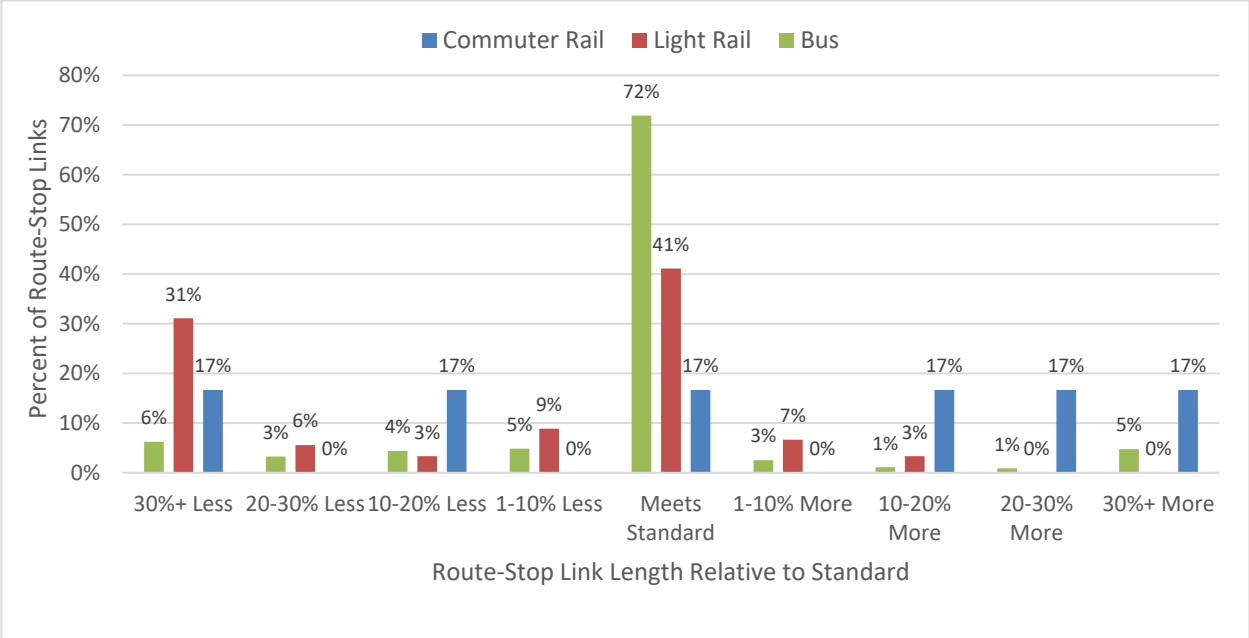
Stop spacing compliance is highest among bus routes, with 72 percent of route-stop links falling within their respective standard. The remaining 28 percent of bus links vary in length, but tend to fall below the standard (i.e. stop distances are more closely spaced) rather than above the standard (i.e. stop distances are more distantly spaced).

Only 41 percent of light rail route-stop links fall within the stop spacing standard, with 31 percent falling 30 percent or more below the recommended stop spacing minimum. These shorter links are most associated with segments in downtown Minneapolis and downtown Saint Paul, where shorter stop distances are appropriate to serve the higher density of land use and transit activity. The remaining 28 percent of light-rail route-stop links are distributed both above and below the stop spacing standard.

Commuter rail route-stop links vary considerably in their length relative to the stop spacing standard, with only 17 percent meeting the recommended distance. About 50 percent of commuter rail route stop links are longer than the stop spacing standard, with stop placement along the sole commuter rail line following a more *ad hoc* placement based on land use and traffic considerations than a generalized standard.

Figure 5 shows the distribution of route-stop links by their length relative to the stop spacing standards, separated by mode. A route-stop link is defined as the distance along a route between two of its stops in a single direction.

Figure 5. Systemwide Route-Stop Link Lengths Relative to Stop Spacing Standards



A summary of stop spacing compliance rates by BIPOC and low-income route designation is shown in Table 14. Since route designations do not differ among light rail routes, and since there is only one operating commuter rail line, no comparison index is calculated for these modes.

Both BIPOC and low-income bus routes see slightly lower stop spacing compliance rates than do non-BIPOC and non-low-income bus routes, with comparison indices both at 0.94. As this exceeds the threshold of 0.9, **this analysis identifies neither disparate impacts nor disproportionate burden associated with stop spacing.**

Table 14. Stop Spacing Standard Results: Route-Stop Links Meeting Standards

Mode	Designation	*Less than Standard*	Compliant with Standard	*More than Standard*
Bus	BIPOC Routes	*19%*	71%	*10%*
	Non-BIPOC Routes	*17%*	76%	*7%*
	DI Comparison Index		**0.94**	
	Low-Income Routes	*18%*	72%	*10%*
	Non-Low-Income Routes	*22%*	77%	*1%*
	DB Comparison Index		**0.94**	
Commuter Rail	BIPOC Routes	*33%*	17%	*50%*
	Non-Low-Income Routes	*33%*	17%	*50%*
Light Rail	BIPOC Routes	*49%*	41%	*10%*
	Low-Income Routes	*49%*	41%	*10%*

Distribution of Amenities

Policies

Metro Transit offers a range of features at customer facilities to improve the customer experience. Features include those that address pedestrian connections and accessibility, offer customer information in static and real-time signage, shelter, shelter lighting and heaters, trash and recycling receptacles, and seating, among others.

Metro Transit uses guidelines[30] to prioritize the locations where investments are made and the types of facilities it can install and maintain across the system. It has developed policies for the distribution of **customer information, seating, shelter, shelter lighting and heaters, and trash receptacles at the stops it serves with fixed routes**. Summarized in Table 15, these policies differ by stop type, with standard and optional features varying for bus stops, stops at transit centers, and stops (platforms) at light rail, BRT, and commuter rail stations.

Table 15. Customer Amenities at Transit Stops Policies

Amenity	Stop Type		
	METRO (LRT, BRT) & Commuter Rail Stations*	**Transit Centers**	**Bus Stops**
Route Description/Map	Standard feature	Standard feature	Standard feature at bus stops with 10+ daily boardings
Detailed Timetable**	Standard feature	Standard feature	Standard feature in all Metro Transit-owned shelters
Real-Time Arrival Sign	Standard feature	Optional feature	Optional feature
Seating	Standard feature	Standard feature	Standard feature in all Metro Transit-owned shelters (benches may also be provided by others)
Shelter	Standard feature	Standard feature	Optional feature, prioritized for bus stops with 30+ daily boardings
Lighting	Standard feature	Standard feature	Optional feature, prioritized for bus stops with high boardings during dark hours
Heaters	Standard feature	Standard feature	Optional feature, prioritized for bus stops with 100+ daily boardings
Trash Receptacles	Standard feature	Standard feature	Not provided at transit stop by Metro Transit (may be provided by others)

*Some arterial BRT stations, namely those near the end of the line with mostly people alighting the bus, not boarding the bus, may not have shelters or features typically provided in shelters, such as heat, route description/map, or detailed timetable.
**Timetables will be considered at bus stops that meet the shelter placement boarding warrants but where a shelter is not installed due to space constraints or other limitations.

Metro Transit provides service information to its customers through a variety of means, including route maps and descriptions, detailed timetables, and real-time arrival signs, depending on the type of stop, ridership, and availability of space and/or utility connection. All stops served by Metro Transit include signage identifying the pick-up location, a listing of the routes serving that stop, and

[30] The guidelines described here reflect those in place during the analysis period of fall 2023. In 2024, Metro Transit updated its amenity guidelines to reduce the boarding thresholds for shelter placement, shelter replacement/removal, and heating. These guidelines will apply to future analyses.

instructions on how to use NexTrip, Metro Transit's real-time departure feature available online, via mobile application, telephone, or text message. Enhanced information is available at transit centers, stations, and bus stops with 10 or more daily boardings.

Sheltered waiting places for Metro Transit customers come in many forms, including an interior waiting space or alcove integrated into a building, a park & ride with a sheltered waiting area, a transit center building, a shelter at a rail or BRT station, or a shelter at a bus stop. Shelters provide a package of features for transit customers, including weather protection, detailed schedules, seating, and sometimes lighting and radiant heaters. Shelters further create an identifiable waiting place for transit customers. Shelters are typically provided by Metro Transit, though sometimes by local government or private property owners.

Metro Transit primarily uses ridership when determining where to place shelters and shelter lighting and heaters. Further, priority locations include areas where more households do not have cars and near hospitals, healthcare clinics, social service providers, housing for people with disabilities or older adults, and major transit transfer points. During the analysis period of fall 2023, Metro Transit used the following to prioritize the addition of new shelters:

- Highest priority: 100+ daily boardings and priority location
- High priority: 100+ daily boardings
- Medium priority: 30+ daily boardings and priority location
- Lower priority: 30+ daily boardings

Existing shelters at stops with at least 15 daily boardings were considered for replacement; shelters at stops with fewer than 15 daily boardings were eligible for removal.

Importantly, in addition to these policies for prioritization of optional features, site factors determine if certain amenities can be placed at a stop. Site factors such as available space, slope, and obstructions determine if a shelter can be located at a bus stop. Site factors related to power source and electrical connections affect placement of lighting and heaters within shelters. Additionally, personal security factors are considered when prioritizing lighting.

Methods

This analysis considers the presence of customer amenities at the 8,409 stops served by Metro Transit routes in fall 2023. Each stop is designated as either BIPOC or non-BIPOC and either low-income or non-low-income based on the demographics of those living near the stop relative to service area averages (see *Stop Designations* for additional details).

Per Metro Transit's amenities standards (Table 15), analyses are completed separately for stops at light rail, BRT, and commuter rail stations (these stops are otherwise known as platforms; n=252); stops at one of 24 transit centers (n=51 stops); and all other bus stops (n=8,106 stops).[31] Table 16 summarizes the stops considered in this analysis by stop type and by BIPOC and low-income designation.

[31] Stops that are light rail or BRT station platforms that are within a transit center (e.g., 46th Street Station, Mall of America, etc.) are subject to the more stringent amenities policies for stations, rather than the less stringent policies for stops at transit centers.

Table 16. Summary of Stops Analyzed

Stop Type	BIPOC Stops	Non-BIPOC Stops	Low-Income Stops	Non-Low-Income Stops	All Stops
LRT, BRT & Commuter Rail Stations	139	113	167	85	252
	55%	45%	67%	33%	100%
Transit Centers	31	20	36	15	51
	61%	39%	71%	29%	100%
Bus Stops	3,905	4,201	4,298	3,808	8,106
	48%	52%	53%	47%	100%
Total	4,075	4,334	4,501	3,908	8,409
	48%	52%	54%	46%	100%

For each amenity type, at each of the stop types, amenity placement rates are calculated and compared between BIPOC stops and non-BIPOC stops, and between low-income stops and non-low-income stops. For example:

- 12.9 percent of all low-income bus stops have shelters, compared to 4.9 percent of all non-low-income bus stops (Table 17);
- 87.1 percent of all BIPOC stops at Transit Centers have a real-time arrival sign, compared to 75.0 percent of all non-BIPOC stops at Transit Centers (Table 18);
- 100 percent of low-income stops at stations have a detailed timetable, equal the rate for non-low-income stops at stations (Table 19).

These placement rates are used to calculate a comparison index to determine if there is disparate impact or disproportionate burden in access to amenities.

For amenities with a daily boarding threshold for consideration – such as 100+ boardings a day for shelter heating – analysis is conducted for warranted stops, unwarranted stops, and overall (regardless of the warrant).

Additionally, the following assumptions and methods are used in the analysis:

- Amenity warrants based on ridership (e.g., shelter) use average weekday daily boarding data from 2023, collected from APCs and summarized to the stop level.
- The warrant applied to calculate unwarranted shelter placement is the 15-boarding standard for shelter replacement or removal, not the 30-boarding standard for new shelter placement.
- Lighting at a transit stop means electrified or solar-powered lighting installed within a shelter.
- Bus stops with shelter owned by an entity other than Metro Transit and the Metropolitan Council are excluded from analysis of warranted and unwarranted placement of lighting and heaters within shelter. Metro Transit has limited influence over the placement of lighting and heaters within shelters it does not own.
- Metro Transit does not track certain amenities including trash receptacles (assumed to be included at transit stations and centers); detailed timetables at transit centers (assumed to be at all transit center stops); or real-time signs on METRO Red Line, METRO Orange Line, Northstar commuter rail, and LRT platforms (assumed as a standard feature).

- FTA *Circular 4702.1B* states that the requirement to establish policies for the distribution of transit amenities "is not intended to impact funding decisions for transit amenities. Rather, [the policies apply] after a transit provider has decided to fund an amenity."[32] Therefore, this analysis considers only amenities that have already been distributed throughout the fixed route system. Specifically, the analysis does not address unplaced amenities that may be warranted based on the policies, except for when considering disparate impact and disproportionate burden.

Results

Table 17, Table 18, and Table 19 summarize the results of the distribution of amenities analyses for bus stops, stops at transit centers, and stops at light rail, BRT, and commuter rail stations, respectively. Comparison indices are generally above 1.00 for all transit centers, BRT and rail platforms, and above 0.90 for all warranted stop amenities. Therefore, **no disparate impacts or disproportionate burdens are identified for amenities warranted by Metro Transit service standards**.

The results are discussed in more detail below.

Bus Stops

Placement rates for different amenity types at bus stops and their comparison indices are shown in Table 17. Results show that when warranted by ridership, Metro Transit provides amenities at higher rates for BIPOC and low-income bus stops than non-BIPOC and non-low-income bus stops, respectively. As indicated in Table 17, when warranted by ridership:

- Shelters are placed at BIPOC bus stops at a rate nine percent greater than non-BIPOC stops (55.0 percent versus 50.5 percent).
- Shelters are placed at low-income bus stops at a rate 16 percent greater than non-low-income stops (55.2 percent versus 47.4 percent).
- Heaters within shelters are placed at BIPOC bus stops at a rate seven percent greater than at non-BIPOC stops (34.9 percent versus 32.7 percent).
- Heaters within shelters are placed at low-income bus stops at a rate nine percent greater than at non-low-income stops (34.5 percent versus 31.6 percent).

Metro Transit considers adding lighting to shelters at bus stops with high boardings during dark hours. As indicated in Table 17:

- Lighting within shelters is placed at BIPOC bus stops at a rate 14 percent greater than non-BIPOC stops (47.3 percent versus 41.6 percent).
- Lighting within shelters is placed at low-income bus stops at a rate 38 percent greater than non -low-income stops (48.4 percent versus 35.1 percent).

While most amenities at regular bus stops are placed at BIPOC and low-income stops at a greater or equal rate compared to non-BIPOC and non-low-income stops, one potential disparate impact and one potential disproportionate burden are identified for *unwarranted* heat in bus stop shelters.

- Unwarranted heating within shelters is placed at BIPOC stops at a rate 15 percent lower than at non-BIPOC stops (13.3 percent versus 15.5 percent).

[32] FTA, *Circular 4702.1B*, page IV-6

- Unwarranted heating within shelters is placed at low-income stops at a rate 12 percent lower than at non-low-income stops (13.6 percent versus 15.6 percent).

Many such shelter heaters were warranted in the previous service monitoring study, which identified no disparate impacts or disproportionate burdens, but have since been redesignated as unwarranted due to ridership losses associated with the COVID-19 pandemic. As of 2023, ridership regionwide has continued to return, thus rather than remove existing shelter heaters where they are now unwarranted but may return to warranted status, Metro Transit has opted to maintain these amenities.

Given the potential for disparate impact and disproportionate burden as ridership recovers unevenly, Metro Transit should continue to monitor ridership rebound at stops with currently unwarranted heaters. Should ridership at these locations stop returning, Metro Transit can relocate or remove heaters accordingly. Metro Transit's 2024 update to its bus amenity placement guidelines will likely also mitigate potential for disparities in unwarranted heaters, as it lowered the warrants for heating in shelters from 100 to 70.[33]

Data quality is another factor to consider. Many of the bus shelters with unwarranted heaters are at stops where the bus boardings data are incomplete. For example, the shelters with heaters on Marquette and 2nd Avenues serve riders waiting for other transit service providers and those boardings are not included in Metro Transit's ridership data.

Table 17. Customer Amenity Placement Rates at Bus Stops

Amenity	BIPOC Stops	Non-BIPOC Stops	DI Comp. Index	Low-Income Stops	Non-Low-Income Stops	DB Comp. Index
Shelter (n=735)	11.5%	7.0%	**1.64**	12.9%	4.9%	**2.63**
Warranted (n=612)	55.0%	50.5%	**1.09**	55.2%	47.4%	**1.16**
Unwarranted (n=123)	2.0%	1.7%	**1.18**	2.2%	1.4%	**1.54**
Heat within Shelter (n=132)	17.3%	18.8%	**0.92**	18.1%	17.2%	**1.05**
Warranted (n=47)	34.9%	32.7%	**1.07**	34.5%	31.6%	**1.09**
Unwarranted (n=85)	13.3%	15.5%	**0.85**	13.6%	15.6%	**0.88**
Light within Shelter (n=331)	47.3%	41.6%	**1.14**	48.4%	35.1%	**1.38**
Route Description/Map (n=626)	9.7%	6.0%	**1.61**	10.3%	4.9%	**2.09**
Warranted (n=536)	34.9%	32.4%	**1.08**	33.9%	33.8%	**1.00**
Unwarranted (n=90)	1.8%	1.1%	**1.63**	1.7%	1.1%	**1.60**
Detailed Timetable within Shelter (n=682)	92.6%	93.1%	**0.99**	92.7%	93.0%	**1.00**
Real-Time Arrival Sign (n=129)	1.7%	1.5%	**1.09**	2.2%	0.9%	**2.37**

[33] Metro Transit. *Bus Stop Improvement Guidelines*. August 2024. https://www.metrotransit.org/Data/Sites/1/media/about/improvements/better-bus-shelters/placementguidlines_2024.pdf

Transit Centers

The amenities placement results for stops at transit centers are generally favorable. For all amenity types:

- amenity placement rates at BIPOC stops at transit centers were greater than or equal to those at non-BIPOC stops at transit centers, and;
- amenity placement rates at low-income stops at transit centers were greater than or equal to those at non-low-income stops at transit centers.

Placement rates for different amenity types at transit center stops and their comparison indices are shown in Table 18. For all amenity types, the resulting comparison indices are greater than or equal to 1.00, indicating equal or greater placement rates at BIPOC stops and low-income stops compared to non-BIPOC stops and non-low-income stops, respectively. **Therefore, this analysis identifies no disparate impact or disproportionate burden based on the distribution of amenities at transit center stops.**

Table 18. Customer Amenity Placement Rates at Stops at Transit Centers

Amenity	BIPOC Stops	Non-BIPOC Stops	DI Comp. Index	Low-Income Stops	Non-Low-Income Stops	DB Comp. Index
Shelter (n=51)	100.0%	100.0%	**1.00**	100.0%	100.0%	**1.00**
Heat within Shelter (n=45)	93.5%	84.2%	**1.11**	94.4%	78.6%	**1.20**
Light within Shelter (n=45)	93.5%	84.2%	**1.11**	94.4%	78.6%	**1.20**
Seating (n=51)	100.0%	100.0%	**1.00**	100.0%	100.0%	**1.00**
Trash Receptacle (n=51)	100.0%	100.0%	**1.00**	100.0%	100.0%	**1.00**
Detailed Timetable (n=51)	100.0%	100.0%	**1.00**	100.0%	100.0%	**1.00**
Real-Time Arrival Sign (n=42)	87.1%	75.0%	**1.16**	88.9%	66.7%	**1.33**
Route Description/Map (n=51)	100.0%	100.0%	**1.00**	100.0%	100.0%	**1.00**

Light Rail, BRT, and Commuter Rail Stations

All standard amenities are present at each of Metro Transit's light rail, BRT, and commuter rail stations, per customer amenities policies (Table 15). Therefore, all amenities have placement rates of 100 percent (Table 19). For all amenity types:

- amenity placement rates at BIPOC stops at stations are equal to those at non-BIPOC stops at stations, and;
- amenity placement rates at low-income bus stops at stations are equal to those at non-low-income stops at stations.

Therefore, this analysis identifies no disparate impact or disproportionate burden based on the distribution of amenities at light rail, BRT, and commuter rail stations.

Table 19. Customer Amenity Placement Rates at Stops at Light Rail, BRT, and Commuter Rail Stations

Amenity (Number Deployed)	BIPOC Stops	Non-BIPOC Stops	DI Comp. Index	Low-Income Stops	Non-Low-Income Stops	DB Comp. Index
Shelter (n=233)	100.0%	100.0%	**1.00**	100.0%	100.0%	**1.00**
Heat within Shelter (n=233)	100.0%	100.0%	**1.00**	100.0%	100.0%	**1.00**
Light within Shelter (n=233)	100.0%	100.0%	**1.00**	100.0%	100.0%	**1.00**
Seating (n=233)	100.0%	100.0%	**1.00**	100.0%	100.0%	**1.00**
Trash Receptacle (n=233)	100.0%	100.0%	**1.00**	100.0%	100.0%	**1.00**
Detailed Timetable (n=233)	100.0%	100.0%	**1.00**	100.0%	100.0%	**1.00**
Real-Time Arrival Sign (n=233)	100.0%	100.0%	**1.00**	100.0%	100.0%	**1.00**
Route Description/Map (n=233)	100.0%	100.0%	**1.00**	100.0%	100.0%	**1.00**

Two stations do not have a detailed timetable, shelter, lighting, heaters, nor real-time arrival signs: northbound Xerxes & 56th arterial BRT station in Brooklyn Center, served by the METRO C Line, and northbound Washington & 2nd Avenue, served by the METRO Orange Line. These stations are the last northbound stations before the end of each line, where most activity is from passengers getting off the bus and few passengers board the bus. Metro Transit's policies for customer amenities at BRT stations explicitly state that certain amenities are not expected in situations like this. Thus, these stations are excluded from analysis of detailed timetables, shelters, lighting, heaters, and real-time arrival signs.

Vehicle Assignment

Policies

The Metropolitan Council adopted *Fleet Management Procedures*[34] in 2012. These procedures are designed to facilitate compliance with FTA and Title VI standards, assure that vehicles purchased meet minimum standards, and create efficiencies and improve flexibility in the deployment/reassignment of vehicles to the extent feasible. In select situations, a specific bus type or size is assigned to a route or geographic area.

Metro Transit has five bus garages, along with two light rail operations and maintenance facilities and one commuter rail facility. Many routes are operated out of multiple garages and serve a large geographic area. For MTS contracted fixed routes, the Metropolitan Council owns the buses and leases them to the operating contractor under a master vehicle lease. MTS routes are operated out of four garages.

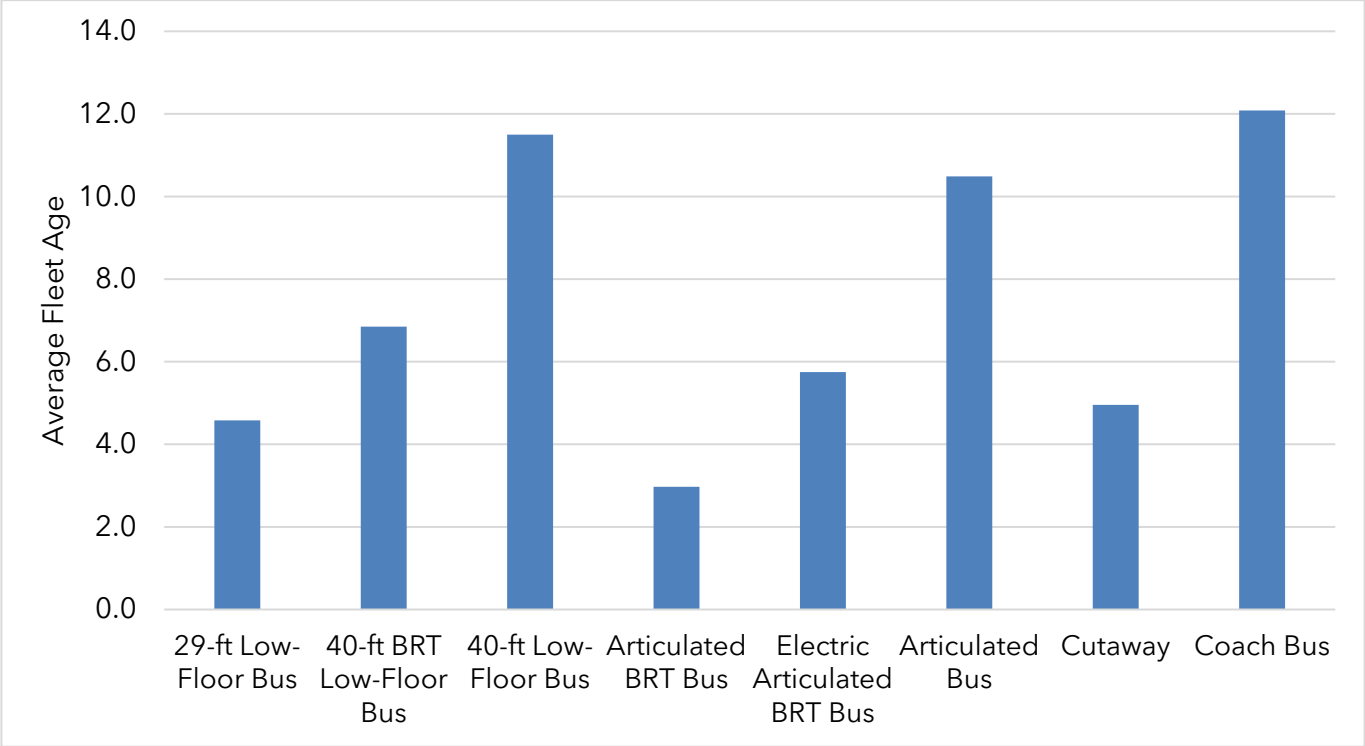
Vehicle Types

Metro Transit's primary vehicle type for fixed-route bus service is a low-floor, 40-foot bus. The following is a summary of the other vehicle types used for fixed-route service, which includes vehicles operated by Metro Transit as well as vehicles operated by providers under contract to the

[34] Metropolitan Council, *Fleet Management Procedures*, April 2012. https://metrocouncil.org/Transportation/Services/Regional-Vehicle-Fleet-Policy/FleetPolicyFleetManagementProcedures-pdf.aspx

Metropolitan Council through MTS. Figure 6 shows the average age of each vehicle type in Metro Transit's fleet.

Figure 6. Average Age by Vehicle Type



Commuter Coach Buses

Coach buses may be used on express trips carrying riders on a one-way trip length of 15 miles or longer and duration of more than 30 minutes. Although coach buses are accessible and lift-equipped, an effort is made to avoid using them on trips with regular wheelchair users due to the narrow aisle configuration and length of time it takes to deploy the lift. Coach buses are assigned to specific blocks based on ridership patterns and trip distance.

Hybrid Buses

Through agreement with the City of Minneapolis, all routes operating regular schedules on Nicollet Mall in downtown Minneapolis must use hybrid buses. This includes Routes 10, 11, 17, 18, and 25. Numerous other routes were also assigned hybrid buses during the data collection period for this study. Because of the expanded assignment of hybrid buses among routes, the hybrid bus type is not distinguished from other 40-foot low-floor buses in determining available fleet age.

Articulated Buses

Articulated buses are used on a variety of routes with heavy ridership including local and commuter and express. Articulated buses are assigned to specific blocks based on ridership patterns and maximum loads. Assignments are reviewed at least once each quarter.

Small Buses

Buses that are 30 feet or smaller, such as 'cutaway' buses, are sometimes used by contractors to provide service on lower-ridership routes.

BRT Buses

BRT buses are specially marked buses that help brand BRT routes. They are used exclusively on the METRO A, C, D, Orange and Red Lines. METRO A, C, D, and Orange Line buses have no on-board fare collection. BRT buses have fewer seats to allow for better passenger circulation.

Articulated BRT Buses

Currently, the METRO C, D, and Orange Lines use articulated BRT buses. These buses have no on-board fare collection. All BRT buses are specially marked to help brand BRT routes; they have fewer seats to allow for better passenger circulation.

Electric Articulated BRT Buses

Currently, the METRO C Line is the only route using electric articulated BRT buses. METRO C Line buses have no on-board fare collection. All BRT buses are specially marked to help brand BRT routes; they have fewer seats to allow for better passenger circulation. These buses are assigned only to the METRO C Line due to the characteristics noted above and the location of on-route charging infrastructure at the Brooklyn Center Transit Center.

Contracted Provider Fleet Management

MTS assigns vehicles to a specific contracted provider garage as part of the contract; those buses normally do not transfer to another provider during the life of the contract. If a new provider is awarded a service contract, the buses follow the service. Buses are moved from one contract to another only occasionally as service levels are adjusted, routes are added to or eliminated from a contracted service portfolio, vehicle issues arise, etc. Buses are replaced as they reach the end of their useful life per the *Regional Vehicle Fleet Policy*, which applies to all Council-owned buses in public transit service in the region.

The contractor can assign any bus to any route as long as it is the correct size and type of bus. As a matter of practice, private providers prefer to assign the same vehicle to the same operator on a regular basis to track vehicle maintenance and condition concerns.

Title VI Evaluation

Bus age is used as the standard measure for determining equitable vehicle assignment. The average age of vehicles assigned to BIPOC and/or low-income routes should be approximately equal to the average age of vehicles assigned to non-BIPOC and/or non-low-income routes.

Methods

This evaluation uses vehicle age as a proxy for condition, reported two ways:

- average age of vehicles assigned by route designation; and
- difference between the average age of vehicles assigned to a route designation and the average age of the vehicle fleet eligible for that designation, where the vehicle fleet represents

the universe of available vehicles that could have been assigned to a specific route designation (e.g. electric articulated BRT buses can only be assigned to METRO C Line, a BIPOC route).

Average age of vehicles assigned by route designation is calculated by averaging the age of vehicles that operated all trips completed for each route then averaging again by route designation.

To generate a report of the average age of vehicles assigned and available (fleet age) by route designation, it is first necessary to determine what vehicle type was assigned to each route trips during the fall of 2023. This information is generated primarily using automatic vehicle location (AVL) data. If AVL data are not available for a route trips, secondary sources are used, including farebox data and dispatcher-recorded assignments.

The evaluation does not include LRT or commuter rail modes given their limited fleets, constraints on vehicle assignment, and route designations. Both of the LRT lines are designated as BIPOC and low-income routes, and Northstar commuter rail is designated as BIPOC and non-low-income.

Results

Table 20 summarizes average vehicle age assigned, the average age of the fleet available, and the average difference between the two, by route designation for trips operated in fall 2023. A route-by-route summary of vehicle assignment results is provided in Appendix I: Vehicle Assignment

Among bus routes, BIPOC routes were assigned older vehicles than non-BIPOC routes, at 7.70 years and 7.00 years, on average, respectively (Table 20). This difference results in a comparison index of 0.91, above the threshold for disparate impact.

BIPOC trips were assigned vehicles newer than the available fleet average compared to non-BIPOC routes (2.24 years newer versus 1.56 years newer). The comparison index for this measure is 1.44, above the 0.90 threshold for disparate impact. **Therefore, this analysis identifies no disparate impacts based on vehicle assignment.**

Table 20. Vehicle Assignment Policy Results, Measured by Average Vehicle Age (Years)

Mode	Route Designation	Assigned	Available	Difference
Bus	BIPOC Route Trips	7.70	9.95	-2.24
	Non-BIPOC Route Trips	7.00	8.56	-1.56
	DI Comparison Index	**0.91**	**--**	**1.44**
	Low-Income Route Trips	7.52	9.52	-1.99
	Non-Low-Income Route Trips	7.64	10.26	-2.62
	DB Comparison Index	**1.02**	**--**	**0.76***

*Not considered a disproportionate burden as vehicle age assigned is favorable to low-income riders and mitigation would yield diminishing returns

Low-income route trips were assigned newer vehicles than those assigned to non-low-income trips, on average (7.52 years versus 7.64 years).

The average non-low-income route was assigned a vehicle that was 2.62 years newer than the average age of the available vehicles that could have operated the route. Conversely, low-income route trips were, on average, assigned vehicles 1.99 years newer than the average age of the available

vehicles that could have operated the trip. Shown in Table 20, the ratio of average vehicle age assigned relative to available fleet was 0.76, below the threshold of 0.90 and indicating more advantageous results for non-low-income routes. However, because Metro Transit is already assigning newer vehicles to low-income routes than to non-low-income routes there are diminishing returns to mitigation. **Therefore, this analysis identifies no disproportionate burden based on vehicle assignment.**

Summary of Results

Table 21 lists the disparate impact and disproportionate burden comparison indices results of all analyses of Metro Transit's Title VI standards and policies in fall 2023.

Most comparison indices in Table 21 are above the 0.90 minimum threshold for avoiding disparate impact and disproportionate burden, indicating equal or better results for BIPOC and low-income residents and riders compared to non-BIPOC and non-low-income residents and riders, respectively. Several comparison indices are below the 0.90 threshold, however these only occur for unwarranted amenities and for relative age of vehicles compared to available fleet, neither of which are considered to necessitate mitigation. **Therefore, this analysis identifies no disparate impact and disproportionate burden based on Metro Transit's Title VI standards and policies.**

Table 21. Summary of Analysis Results

Standard/Policy	Measure	DI Comp. Index	DB Comp. Index
Vehicle Load	Trips Overloaded	1.00	1.00
	Trips Consistently Overloaded	1.00	1.00
Vehicle Headway	Peak	1.00	4.88
	Off-Peak	0.98	0.93
	Weekend	1.52	121.71
	Total	1.11	2.50
On-Time Performance	Timepoint Obs. On Time	0.96	0.95
Route Spacing	Combined Market Area I	1.01	1.01
	Combined Market Area II	1.03	1.01
Midday Service	Market Area I	1.15	1.18
	Market Area II	1.17	1.15
	Market Area III	1.40	1.60
Stop Spacing	Route-Stop Links Meeting Standards	0.94	0.94
Distribution of Amenities	Route Description/Map	1.61	2.09
At Bus Stops	Warranted	1.08	1.00
	Unwarranted	1.63	1.60
	Detailed Timetable	0.99	1.00
	Real-Time Arrival Sign	1.09	2.37
	Shelter	1.64	2.63

Standard/Policy	Measure	DI Comp. Index	DB Comp. Index
	Warranted	1.09	1.16
	Unwarranted	1.18	1.54
	Lighting within Shelter	1.14	1.38
	Heaters within Shelter	0.92	1.05
	Warranted	1.07	1.09
	Unwarranted	**0.85***	**0.88***
Distribution of Amenities At Transit Centers	Route Description/Map	1.00	1.00
	Detailed Timetable	1.00	1.00
	Real-Time Arrival Sign	1.16	1.33
	Seating	1.00	1.00
	Shelter	1.00	1.00
	Lighting within Shelter	1.11	1.20
	Heaters within Shelter	1.11	1.20
	Trash Receptacle	1.00	1.00
Distribution of Amenities At Stations	Route Description/Map	1.00	1.00
	Detailed Timetable	1.00	1.00
	Real-Time Arrival Sign	1.00	1.00
	Seating	1.00	1.00
	Shelter	1.00	1.00
	Lighting within Shelter	1.00	1.00
	Heaters within Shelter	1.00	1.00
	Trash Receptacle	1.00	1.00
Vehicle Assignment	Age of Vehicles Assigned	0.91	1.02
	Age of Vehicles Assigned Relative to Available	1.44	**0.76****

*Not considered a disparate impact or disproportionate burden requiring mitigation.

**Not considered a disproportionate burden as vehicle age assigned is favorable to low-income riders and mitigation would yield diminishing returns.

CHAPTER 5: CONCLUSIONS

This report satisfies the FTA Title VI requirement to monitor transit system performance relative to system-wide service standards and policies at least once every three years. This effort replaces the previous service monitoring study, completed in fall 2021.

In almost all compliance measures, BIPOC and low-income populations show equivalent, or better, outcomes compared to non-BIPOC and non-low-income populations. The sole exception is for unwarranted heating in shelters, which is a result of stop redesignation following the COVID-19 pandemic and is not considered to require mitigation. Therefore, **this analysis identifies no potential for disparate impact on BIPOC populations or potential for disproportionate burden on low-income populations based on Metro Transit's Title VI standards and policies (Table 22).**

Table 22. Disparate Impact and Disproportionate Burden Results Summary

Standard/Policy	Disparate Impact on BIPOC Population	Disproportionate Burden on Low-Income Population
Vehicle Load	No	No
Vehicle Headway	No	No
On-Time Performance	No	No
Service Availability		
Route Spacing	No	No
Midday Service	No	No
Stop Spacing	No	No
Distribution of Amenities		
At Bus Stops	No*	No*
At Transit Centers	No	No
At Stations	No	No
Vehicle Assignment	No	No

*No disparate impacts or disproportionate burdens identified for amenities warranted by Metro Transit service standards.

Continuing Work

Title VI is one piece of the broader strategic framework that Metro Transit uses to meaningfully advance equity in the region. Broader equity work, including additional quantitative analysis, is ongoing and continuous at Metro Transit. Equity is not achieved through one sole program, project, policy, or procedure, but in the integration of equity work throughout the agency.

Metro Transit continues to evaluate its service and improve equity of inputs and outcomes and will continue to evaluate service for disparate impact and disproportionate burden outside of triennial FTA Title VI service monitoring.

APPENDIX A: ROUTE TYPES

Core Local Bus

Core local routes typically serve the denser urban areas of Market Areas I and II, usually providing access to a downtown or major activity center along important commercial corridors. They form the base of the core bus network and are typically some of the most productive routes in the system.

Some core local bus routes are supplemented with a limited stop route designed to serve customers wishing to travel farther distances along the corridor. Limited stop routes make fewer stops and provide faster service than the core local routes.

Supporting Local Bus

Supporting local routes are typically designed to provide crosstown connections within Market Areas I and II. Typically, these routes do not serve a downtown but play an important role connecting to core local routes and ensuring transit access for those not traveling downtown.

Suburban Local Bus

Suburban local routes typically operate in Market Areas II and III in a suburban context and are often less productive that core local routes. These routes serve an important role in providing a basic-level of transit coverage throughout the region. Provider-specific variations on suburban local bus include community routes and feeder routes.

Commuter and Express Bus

Commuter and express bus routes primarily operate during peak periods to serve commuters to downtown or a major employment center. These routes typically operate non-stop on highways for portions of the route between picking up passengers in residential areas or at park & ride facilities and dropping them off at a major destination.

Arterial Bus Rapid Transit

Arterial BRT lines operate in high demand urban arterial corridors with service, facility, and technology improvements that enable faster travel speeds, greater frequency, an improved passenger experience, and better reliability.

Highway Bus Rapid Transit

Highway BRT lines operate in high demand highway corridors with service, facility, and technology improvements providing faster travel speeds, all-day service, greater frequency, an improved passenger experience, and better reliability.

Light Rail

Light rail operates using electrically powered passenger rail cars operating on fixed rails in dedicated right-of-way. It provides frequent, all-day service stopping at stations with high levels of customer amenities and waiting facilities.

Commuter Rail

Commuter rail operates using diesel-power locomotives and passenger coaches on traditional railroad track. These trains typically only operate during the morning and evening peak period to serve work commuters.

APPENDIX B: ROUTE DESIGNATIONS

Table 23. Service Monitoring Routes by Type and Designations

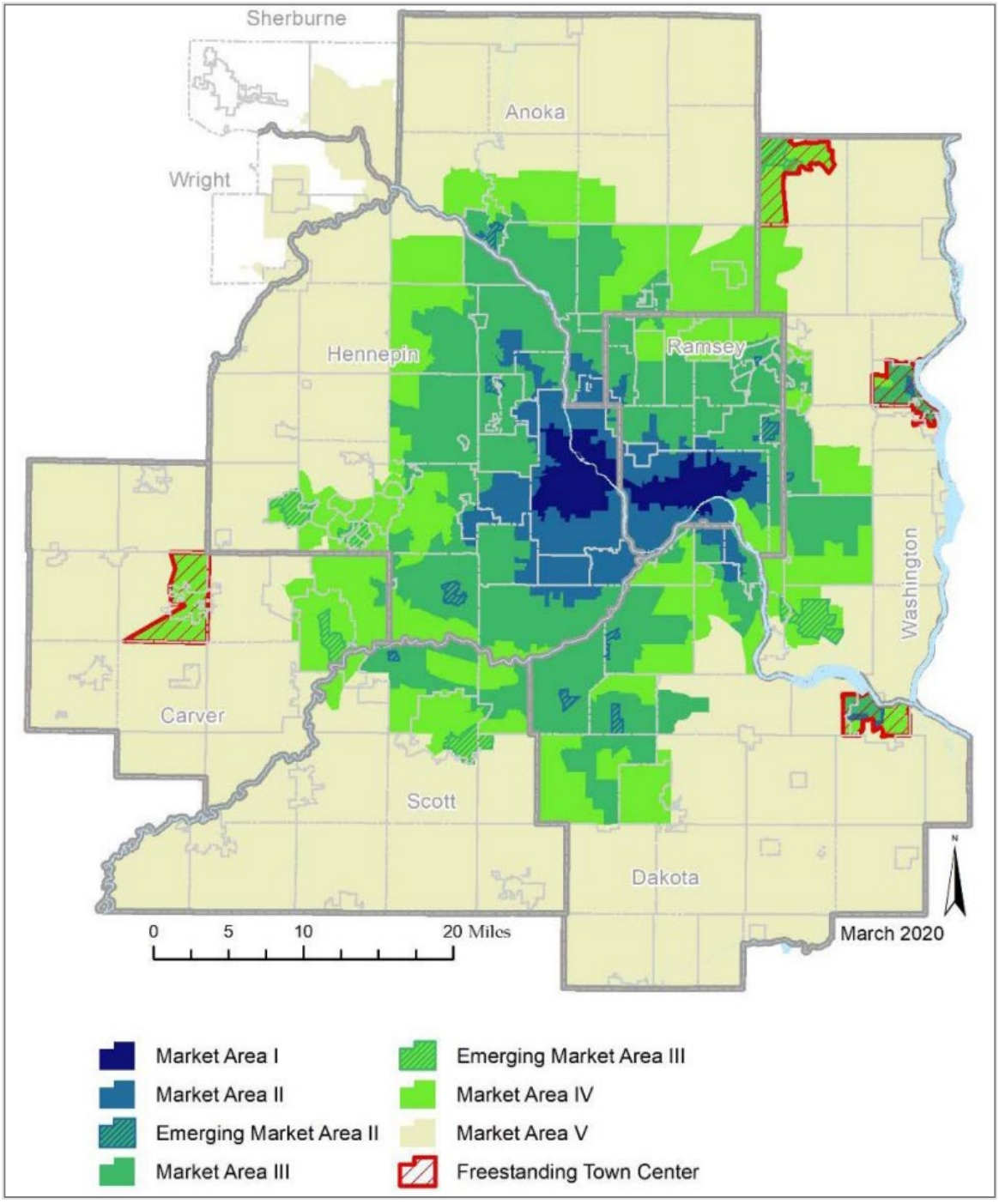
Route	Route Type	Race/Ethnicity Designation	Income Designation
2	Core Local	BIPOC	Low-Income
3	Core Local	BIPOC	Low-Income
4	Core Local	BIPOC	Low-Income
5	Supporting Local	BIPOC	Low-Income
6	Core Local	Non-BIPOC	Low-Income
7	Core Local	BIPOC	Low-Income
9	Core Local	BIPOC	Low-Income
10	Core Local	BIPOC	Low-Income
11	Core Local	BIPOC	Low-Income
14	Core Local	BIPOC	Low-Income
17	Core Local	BIPOC	Low-Income
18	Core Local	BIPOC	Low-Income
21	Core Local	BIPOC	Low-Income
22	Core Local	BIPOC	Low-Income
23	Supporting Local	Non-BIPOC	Low-Income
25	Core Local	BIPOC	Low-Income
30	Supporting Local	BIPOC	Low-Income
32	Supporting Local	BIPOC	Low-Income
33	Supporting Local	BIPOC	Low-Income
46	Supporting Local	Non-BIPOC	Low-Income
54	Core Local	BIPOC	Low-Income
61	Core Local	BIPOC	Low-Income
62	Core Local	BIPOC	Low-Income
63	Core Local	BIPOC	Low-Income
64	Core Local	BIPOC	Low-Income
65	Supporting Local	BIPOC	Low-Income
67	Core Local	BIPOC	Low-Income
68	Core Local	BIPOC	Low-Income
70	Core Local	BIPOC	Low-Income
71	Core Local	BIPOC	Low-Income
74	Core Local	BIPOC	Low-Income
75	Core Local	BIPOC	Low-Income
80	Supporting Local	BIPOC	Low-Income
83	Supporting Local	BIPOC	Low-Income

Route	Route Type	Race/Ethnicity Designation	Income Designation
87	Supporting Local	BIPOC	Low-Income
94	Commuter and Express	BIPOC	Low-Income
113	Commuter and Express	BIPOC	Non-Low-Income
114	Commuter and Express	Non-BIPOC	Non-Low-Income
219	Suburban Local	BIPOC	Low-Income
225	Suburban Local	Non-BIPOC	Low-Income
227	Suburban Local	Non-BIPOC	Low-Income
250	Commuter and Express	BIPOC	Non-Low-Income
252	Commuter and Express	BIPOC	Low-Income
264	Commuter and Express	BIPOC	Low-Income
270	Commuter and Express	BIPOC	Non-Low-Income
275	Commuter and Express	BIPOC	Non-Low-Income
294	Commuter and Express	Non-BIPOC	Low-Income
323	Suburban Local	BIPOC	Low-Income
353	Commuter and Express	BIPOC	Low-Income
355	Commuter and Express	Non-BIPOC	Low-Income
363	Commuter and Express	BIPOC	Non-Low-Income
467	Commuter and Express	BIPOC	Low-Income
501	Suburban Local	Non-BIPOC	Low-Income
515	Suburban Local	BIPOC	Low-Income
534	Suburban Local	BIPOC	Low-Income
537	Suburban Local	Non-BIPOC	Low-Income
538	Suburban Local	Non-BIPOC	Low-Income
539	Suburban Local	BIPOC	Low-Income
540	Suburban Local	Non-BIPOC	Low-Income
542	Suburban Local	Non-BIPOC	Low-Income
546	Suburban Local	Non-BIPOC	Non-Low-Income
578	Commuter and Express	BIPOC	Low-Income
612	Suburban Local	Non-BIPOC	Low-Income
615	Suburban Local	BIPOC	Low-Income
645	Suburban Local	Non-BIPOC	Low-Income
667	Commuter and Express	BIPOC	Non-Low-Income
673	Commuter and Express	Non-BIPOC	Non-Low-Income
705	Suburban Local	BIPOC	Low-Income
716	Suburban Local	BIPOC	Low-Income
717	Suburban Local	BIPOC	Low-Income
721	Suburban Local	BIPOC	Low-Income
722	Suburban Local	BIPOC	Low-Income
723	Suburban Local	BIPOC	Low-Income

Route	Route Type	Race/Ethnicity Designation	Income Designation
724	Suburban Local	BIPOC	Low-Income
755	Commuter and Express	BIPOC	Low-Income
760	Commuter and Express	BIPOC	Low-Income
761	Commuter and Express	BIPOC	Low-Income
763	Commuter and Express	BIPOC	Low-Income
764	Commuter and Express	BIPOC	Low-Income
766	Commuter and Express	Non-BIPOC	Non-Low-Income
768	Commuter and Express	BIPOC	Non-Low-Income
801	Suburban Local	BIPOC	Low-Income
804	Suburban Local	BIPOC	Low-Income
805	Suburban Local	Non-BIPOC	Non-Low-Income
824	Commuter and Express	BIPOC	Non-Low-Income
850	Commuter and Express	BIPOC	Non-Low-Income
852	Commuter and Express	BIPOC	Low-Income
Northstar (888)	Commuter Rail	BIPOC	Non-Low-Income
METRO Blue Line (901)	Light Rail	BIPOC	Low-Income
METRO Green Line (902)	Light Rail	BIPOC	Low-Income
METRO Red Line (903)	Highway BRT	Non-BIPOC	Low-Income
METRO Orange Line (904)	Highway BRT	BIPOC	Low-Income
METRO A Line (921)	Arterial BRT	Non-BIPOC	Low-Income
METRO C Line (923)	Arterial BRT	BIPOC	Low-Income
METRO D Line (924)	Arterial BRT	BIPOC	Low-Income

APPENDIX C: TRANSIT MARKET AREAS

Figure 7. Transit Market Areas in the Region



APPENDIX D: ROUTE DESIGNATION METHODOLOGY

In order to define routes as BIPOC and low-income, route patterns and stops in service during fall 2023 were used, as well as demographic data from the 2018-2022 5-Year American Community Survey (ACS) at the block group level. Each route pattern was buffered by 100 feet to account for instances in which routes run on the border of two census block groups, so that the demographics of both block groups are accounted for in determining route demographics. These route pattern buffers were then clipped to only represent the lengths of the routes within a quarter-mile of their respective stops. Long non-stop segments were thus omitted from the buffer and any analysis performed on it. This allows for a more accurate representation of limited-stop and express services, which pass through many block groups without necessarily serving them. The total acreage of each resulting route pattern buffer was then calculated for use in comparing demographics.

Two demographic layers were created according to service area averages: a layer of BIPOC block groups in which the percent BIPOC population was greater than the service area average of 33.5 percent, and a layer of low-income block groups in which the percentage of persons making 185 percent or less of the federal poverty threshold was greater than the service area average of 20.5 percent. For each route pattern buffer, the total acreage of the buffer overlapping BIPOC and low-income blocks was calculated. By comparing these areas to the route pattern buffer's total acreage, one can calculate the percentage of each route's service area that is BIPOC or low-income. A weighted average of each route's BIPOC and low-income area was calculated, weighted by the number of weekly trips on each route pattern. A route was then designated BIPOC if, on average, at least one-third of its area overlapped BIPOC block groups, and so on for low-income designation.

This process resulted in some route designations differing from those of the previous service monitoring exercise, according to the census-based methodology.

One limitation of the census-based methodology is its usage of a particular service date in which a route may be experiencing rare detours or service changes that do not reflect its regular service throughout the year. This analysis considers service for the month of October 2023, during which time certain service modifications were present that may affect some routes' BIPOC and low-income designations.

In order to reduce the impact of these limitations on the designation of transit routes, ridership data from the 2022 Onboard Survey is used to supplement the spatial demographics used in route designation. Specifically, route designations were modified where the ridership demographics of a given route in the Onboard Survey differed considerably from the average demographics of the area it serves. For example, Route 6 is designated as a non-BIPOC and non-low-income route according to the census methodology, but Onboard Survey data shows that both BIPOC and low-income riders considerably exceed their respective service area averages of 33.5 percent and 20.5 percent. Likewise, all routes for which BIPOC ridership in the Onboard Survey is above the service area average are designated as BIPOC routes, and all routes for which low-income ridership is above the service area average are designated as low-income routes.

Table 24. Routes with Race/Ethnicity Designation Modified Based on Ridership

Route	Route Type	Percent of Area Served Located in Census Block Groups Where the Percentage BIPOC Population Exceeds the Percentage BIPOC Population in the Service Area	Percent BIPOC Riders from On-Board Survey (Avg.=46.3%)
4	Core Local	32.4%	44.7%
6	Core Local	18.0%	40.1%
23	Supporting Local	29.4%	45.3%
25	Core Local	28.4%	47.9%
33	Supporting Local	22.9%	43.9%
46	Supporting Local	15.5%	41.6%
83	Supporting Local	30.3%	48.2%
87	Supporting Local	23.2%	53.5%
225	Suburban Local	10.9%	46.5%
227	Suburban Local	21.1%	52.8%
250	Commuter and Express	42.0%	11.0%
252	Commuter and Express	23.6%	50.0%
264	Commuter and Express	18.0%	46.0%
270	Commuter and Express	40.5%	21.7%
275	Commuter and Express	50.3%	4.3%
294	Commuter and Express	17.0%	50.8%
363	Commuter and Express	54.0%	11.6%
537	Suburban Local	0.0%	44.3%
540	Suburban Local	15.7%	58.9%
542	Suburban Local	30.2%	56.1%
612	Suburban Local	22.1%	34.6%
645	Suburban Local	26.3%	41.5%
717	Suburban Local	12.9%	70.6%
766	Commuter and Express	32.7%	25.4%
768	Commuter and Express	54.2%	32.0%

Route	Route Type	Percent of Area Served Located in Census Block Groups Where the Percentage BIPOC Population Exceeds the Percentage BIPOC Population in the Service Area	Percent BIPOC Riders from On-Board Survey (Avg.=46.3%)
824	Commuter and Express	81.0%	32.3%
852	Commuter and Express	64.2%	43.2%
901	Light Rail	26.3%	56.7%
903	Highway BRT	32.1%	64.6%
921	Arterial BRT	29.3%	53.3%

Table 25. Routes with Income Designation Modified Based on Ridership

Route	Route Type	Percent of Area Served Located in Census Block Groups Where the Percentage Low-Income Population Exceeds the Percentage Low-Income Population in the Service Area	Percent Low-Income Riders from On-Board Survey (Avg.=39.9%)
6	Core Local	40.1%	18.0%
23	Supporting Local	45.3%	29.4%
46	Supporting Local	41.6%	15.5%
114	Commuter and Express	21.3%	23%
225	Suburban Local	46.5%	10.9%
227	Suburban Local	52.8%	21.1%
250	Commuter and Express	11.0%	42.0%
252	Commuter and Express	50.0%	23.6%
270	Commuter and Express	21.7%	40.5%
353	Commuter and Express	40.4%	71%
363	Commuter and Express	11.6%	54.0%
537	Suburban Local	44.3%	15.7%
538	Suburban Local	42.2%	46%
540	Suburban Local	58.9%	30.2%
542	Suburban Local	56.1%	22.1%
546	Suburban Local	32.7%	30%
578	Commuter and Express	74.3%	42%
612	Suburban Local	34.6%	26.3%

Route	Route Type	Percent of Area Served Located in Census Block Groups Where the Percentage Low-Income Population Exceeds the Percentage Low-Income Population in the Service Area	Percent Low-Income Riders from On-Board Survey (Avg.=39.9%)
645	Suburban Local	41.5%	12.9%
667	Commuter and Express	27.4%	29%
755	Commuter and Express	56.0%	43%
763	Commuter and Express	79.4%	92%
764	Commuter and Express	81.8%	58%
766	Commuter and Express	25.4%	54.2%
768	Commuter and Express	32.0%	81.0%
805	Light Rail	23.2%	20%
850	Highway BRT	25.6%	26%
888	Commuter Rail	6.2%	12%
903	Highway BRT	64.6%	29.3%
921	Arterial BRT	53.3%	14.8%

APPENDIX E: VEHICLE LOAD

Table 26. Vehicle Overloads by Route

Route type abbreviations: CL = core local; Supp L = supporting local; Sub L = suburban local; C & E = commuter & express; ABRT = arterial BRT; BRT = highway BRT

Race/ethnicity designation abbreviations: B = BIPOC; NB = non-BIPOC
Income designation abbreviations: LI = low-income; NLI = non-low-income

Route	Route Type	Race/Ethnicity Designation	Income Designation	Pct. of Weekday Trip Observations with an Overload	Weekday Sched. Trips Consistently Overloaded	Pct. of Weekday Sched. Trips Consistently Overloaded
2	CL	B	LI	0.8%	1	0.6%
3	CL	B	LI	2.5%	2	1.1%
4	CL	B	LI	0.2%	0	0.0%
5	Supp L	B	LI	0.0%	0	0.0%
6	CL	NB	LI	0.1%	0	0.0%
7	CL	B	LI	0.0%	0	0.0%
9	CL	B	LI	0.0%	0	0.0%
10	CL	B	LI	0.6%	0	0.0%
11	CL	B	LI	0.0%	0	0.0%
14	CL	B	LI	0.0%	0	0.0%
17	CL	B	LI	0.0%	0	0.0%
18	CL	B	LI	0.5%	0	0.0%
21	CL	B	LI	1.0%	0	0.0%
22	CL	B	LI	0.2%	0	0.0%
23	Supp L	NB	LI	0.0%	0	0.0%
25	CL	B	LI	0.0%	0	0.0%
30	Supp L	B	LI	0.0%	0	0.0%
32	Supp L	B	LI	0.0%	0	0.0%
33	Supp L	B	LI	0.0%	0	0.0%
46	Supp L	NB	LI	0.0%	0	0.0%
54	CL	B	LI	0.5%	0	0.0%
61	CL	B	LI	0.1%	0	0.0%
62	CL	B	LI	0.0%	0	0.0%
63	CL	B	LI	0.2%	0	0.0%
64	CL	B	LI	0.1%	0	0.0%
65	Supp L	B	LI	0.0%	0	0.0%
67	CL	B	LI	0.0%	0	0.0%
68	CL	B	LI	0.0%	0	0.0%
70	CL	B	LI	0.0%	0	0.0%

Route	Route Type	Race/Ethnicity Designation	Income Designation	Pct. of Weekday Trip Observations with an Overload	Weekday Sched. Trips Consistently Overloaded	Pct. of Weekday Sched. Trips Consistently Overloaded
71	CL	B	LI	0.0%	0	0.0%
74	CL	B	LI	0.2%	0	0.0%
75	CL	B	LI	0.0%	0	0.0%
80	Supp L	B	LI	0.0%	0	0.0%
83	Supp L	B	LI	0.0%	0	0.0%
87	Supp L	B	LI	0.0%	0	0.0%
94	C & E	B	LI	0.1%	0	0.0%
113	C & E	B	NLI	0.8%	0	0.0%
114	C & E	NB	NLI	0.4%	0	0.0%
219	Sub L	B	LI	0.0%	0	0.0%
225	Sub L	NB	LI	0.0%	0	0.0%
227	Sub L	NB	LI	0.0%	0	0.0%
250	C & E	B	NLI	0.6%	0	0.0%
252	C & E	B	LI	0.0%	0	0.0%
264	C & E	B	LI	0.0%	0	0.0%
270	C & E	B	NLI	0.0%	0	0.0%
275	C & E	B	NLI	0.0%	0	0.0%
294	C & E	NB	LI	0.0%	0	0.0%
323	Sub L	B	LI	0.0%	0	0.0%
353	C & E	B	LI	0.6%	0	0.0%
355	C & E	NB	LI	0.0%	0	0.0%
363	C & E	B	NLI	0.0%	0	0.0%
467	C & E	B	LI	0.0%	0	0.0%
501	Sub L	NB	LI	0.0%	0	0.0%
515	Sub L	B	LI	0.0%	0	0.0%
534	Sub L	B	LI	0.0%	0	0.0%
537	Sub L	NB	LI	0.0%	0	0.0%
538	Sub L	NB	LI	0.0%	0	0.0%
539	Sub L	B	LI	0.0%	0	0.0%
540	Sub L	NB	LI	0.0%	0	0.0%
542	Sub L	NB	LI	0.0%	0	0.0%
546	Sub L	NB	NLI	0.0%	0	0.0%
578	C & E	B	LI	0.0%	0	0.0%
612	Sub L	NB	LI	0.0%	0	0.0%
615	Sub L	B	LI	0.0%	0	0.0%
645	Sub L	NB	LI	0.0%	0	0.0%

Route	Route Type	Race/Ethnicity Designation	Income Designation	Pct. of Weekday Trip Observations with an Overload	Weekday Sched. Trips Consistently Overloaded	Pct. of Weekday Sched. Trips Consistently Overloaded
667	C & E	B	NLI	0.0%	0	0.0%
673	C & E	NB	NLI	0.0%	0	0.0%
705	Sub L	B	LI	0.0%	0	0.0%
716	Sub L	B	LI	0.0%	0	0.0%
717	Sub L	B	LI	0.0%	0	0.0%
721	Sub L	B	LI	0.0%	0	0.0%
722	Sub L	B	LI	0.0%	0	0.0%
723	Sub L	B	LI	0.0%	0	0.0%
724	Sub L	B	LI	0.0%	0	0.0%
755	C & E	B	LI	0.0%	0	0.0%
760	C & E	B	LI	0.0%	0	0.0%
761	C & E	B	LI	0.0%	0	0.0%
763	C & E	B	LI	0.0%	0	0.0%
764	C & E	B	LI	0.0%	0	0.0%
766	C & E	NB	NLI	0.0%	0	0.0%
768	C & E	B	NLI	0.3%	0	0.0%
801	Sub L	B	LI	0.0%	0	0.0%
804	Sub L	B	LI	0.0%	0	0.0%
805	Sub L	NB	NLI	0.0%	0	0.0%
824	C & E	B	NLI	0.0%	0	0.0%
850	C & E	B	NLI	0.5%	0	0.0%
852	C & E	B	LI	0.0%	0	0.0%
903	BRT	NB	LI	0.0%	0	0.0%
904	BRT	B	LI	0.0%	0	0.0%
921	ABRT	NB	LI	0.7%	0	0.0%
923	ABRT	B	LI	0.0%	0	0.0%
924	ABRT	B	LI	0.3%	0	0.0%

APPENDIX F: ON-TIME PERFORMANCE

Table 27. On-Time Performance by Route

Percent of timepoint crossings considered on-time

Route type abbreviations: CL = core local bus; Supp L = supporting local bus; Sub L = suburban local bus; C&E = commuter & express bus; ABRT = arterial BRT; BRT = highway BRT; CR = commuter rail; LR = light rail

Race/ethnicity designation abbreviations: B = BIPOC; NB = non-BIPOC
Income designation abbreviations: LI = low-income; NLI = non-low-income

Route	Route Type	Race/Ethnicity Designation	Income Designation	Weekday	Saturday	Sunday	Total
2	CL	B	LI	80%	73%	74%	79%
3	CL	B	LI	72%	69%	67%	71%
4	CL	B	LI	74%	74%	74%	74%
5	Supp L	B	LI	76%	83%	80%	78%
6	CL	NB	LI	81%	82%	81%	81%
7	CL	B	LI	74%	76%	74%	74%
9	CL	B	LI	78%	76%	78%	78%
10	CL	B	LI	69%	65%	66%	68%
11	CL	B	LI	80%	81%	72%	80%
14	CL	B	LI	81%	67%	78%	79%
17	CL	B	LI	80%	76%	78%	79%
18	CL	B	LI	80%	74%	81%	80%
21	CL	B	LI	76%	71%	72%	75%
22	CL	B	LI	74%	60%	67%	71%
23	Supp L	NB	LI	83%	79%	81%	82%
25	CL	B	LI	69%	-	-	69%
32	Supp L	B	LI	87%	83%	85%	86%
46	Supp L	NB	LI	91%	-	-	91%
54	CL	B	LI	79%	76%	70%	78%
61	CL	B	LI	76%	71%	-	76%
62	CL	B	LI	89%	86%	88%	88%
63	CL	B	LI	69%	77%	73%	71%
64	CL	B	LI	82%	80%	74%	81%
68	CL	B	LI	82%	85%	86%	83%
71	CL	B	LI	87%	90%	95%	88%
74	CL	B	LI	83%	85%	90%	84%
83	Supp L	B	LI	71%	-	-	71%
94	C&E	B	LI	83%	-	-	83%
113	C&E	B	NLI	89%	-	-	89%
114	C&E	NB	NLI	87%	-	-	87%

Route	Route Type	Race/Ethnicity Designation	Income Designation	Weekday	Saturday	Sunday	Total
250	C&E	B	NLI	85%	-	-	85%
252	C&E	B	LI	86%	-	-	86%
264	C&E	B	LI	74%	-	-	74%
270	C&E	B	NLI	80%	-	-	80%
275	C&E	B	NLI	93%	-	-	93%
294	C&E	NB	LI	97%	-	-	97%
353	C&E	B	LI	70%	-	-	70%
355	C&E	NB	LI	86%	-	-	86%
363	C&E	B	NLI	71%	-	-	71%
501	Sub L	NB	LI	94%	-	-	94%
515	Sub L	B	LI	93%	92%	93%	93%
578	C&E	B	LI	80%	-	-	80%
612	Sub L	NB	LI	83%	82%	76%	82%
645	Sub L	NB	LI	85%	80%	80%	84%
667	C&E	B	NLI	77%	-	-	77%
673	C&E	NB	NLI	82%	-	-	82%
721	Sub L	B	LI	90%	86%	89%	90%
722	Sub L	B	LI	92%	94%	94%	92%
723	Sub L	B	LI	93%	88%	93%	92%
724	Sub L	B	LI	91%	96%	94%	92%
755	C&E	B	LI	71%	-	-	71%
760	C&E	B	LI	80%	-	-	80%
761	C&E	B	LI	97%	-	-	97%
763	C&E	B	LI	91%	-	-	91%
766	C&E	NB	NLI	80%	-	-	80%
768	C&E	B	NLI	89%	-	-	89%
850	C&E	B	NLI	83%	-	-	83%
888	CR	NB	NLI	70%	-	29%	70%
901	LRT	B	LI	-	-	-	84%
902	LRT	B	LI	-	-	-	66%
904	BRT	B	LI	88%	84%	85%	87%
921	ABRT	NB	LI	83%	82%	82%	82%
923	ABRT	B	LI	88%	85%	85%	87%
924	ABRT	B	LI	85%	84%	87%	85%

APPENDIX G: ROUTE SPACING

Route spacing results by Transit Market Areas and route type are shown in Figure 8 through Figure 11. Market Area II includes portions of both Stillwater and Hastings which are shown in inset form.

Figure 8. Market Area I – Local Route Spacing for BIPOC Block Groups

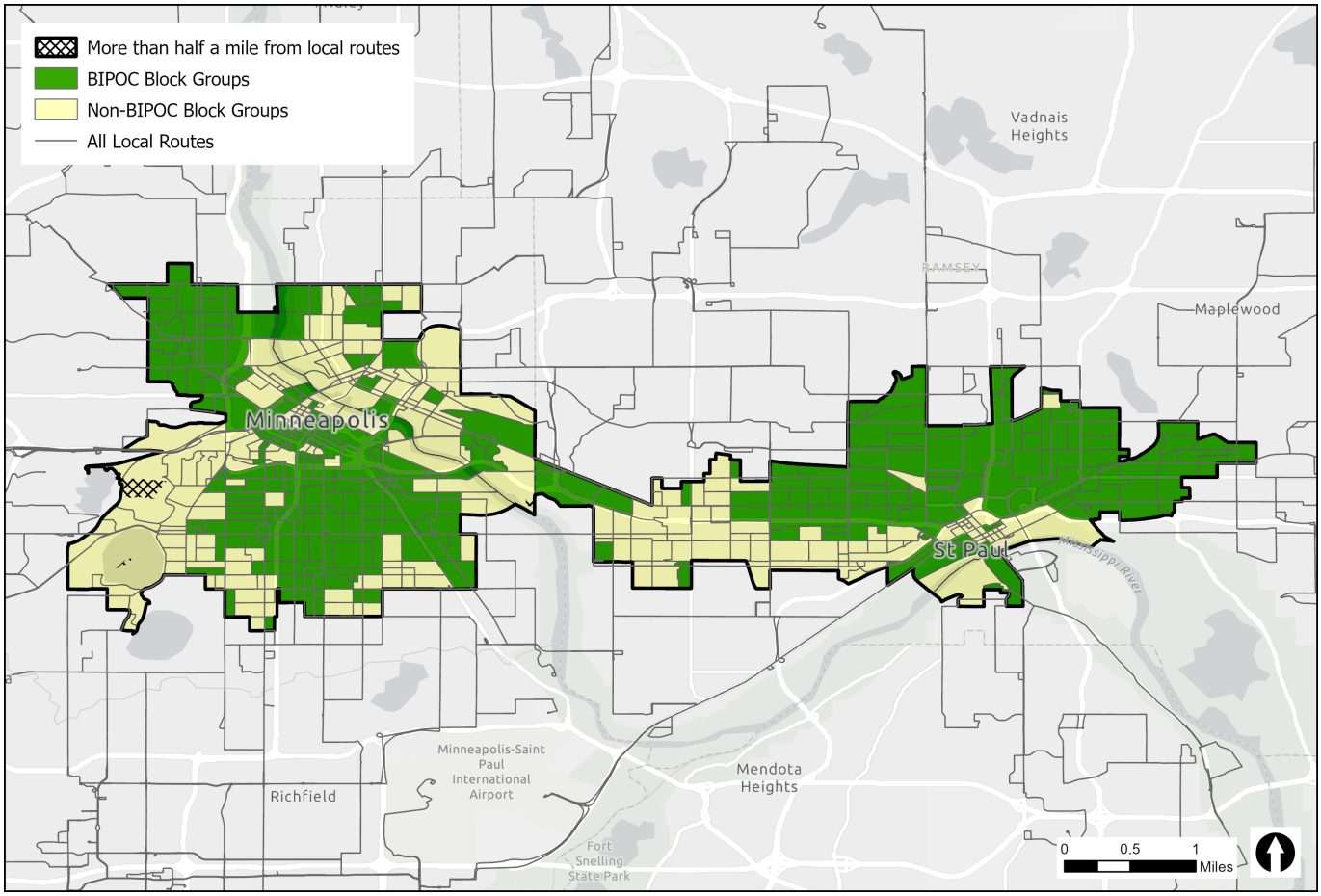


Figure 9. Market Area I – Local Route Spacing for Low-Income Block Groups

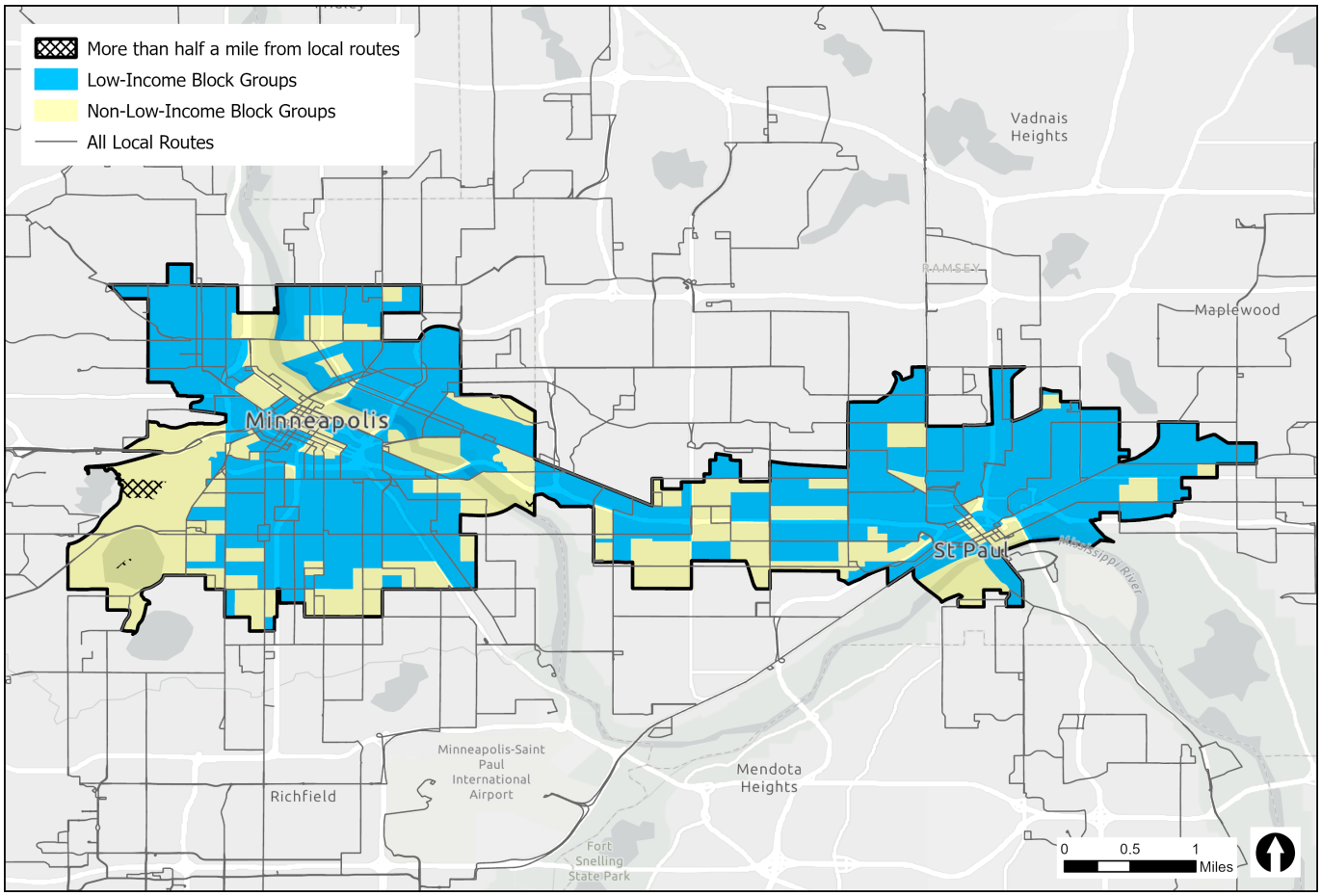


Figure 10. Market Area II – Local Route Spacing for BIPOC Block Groups

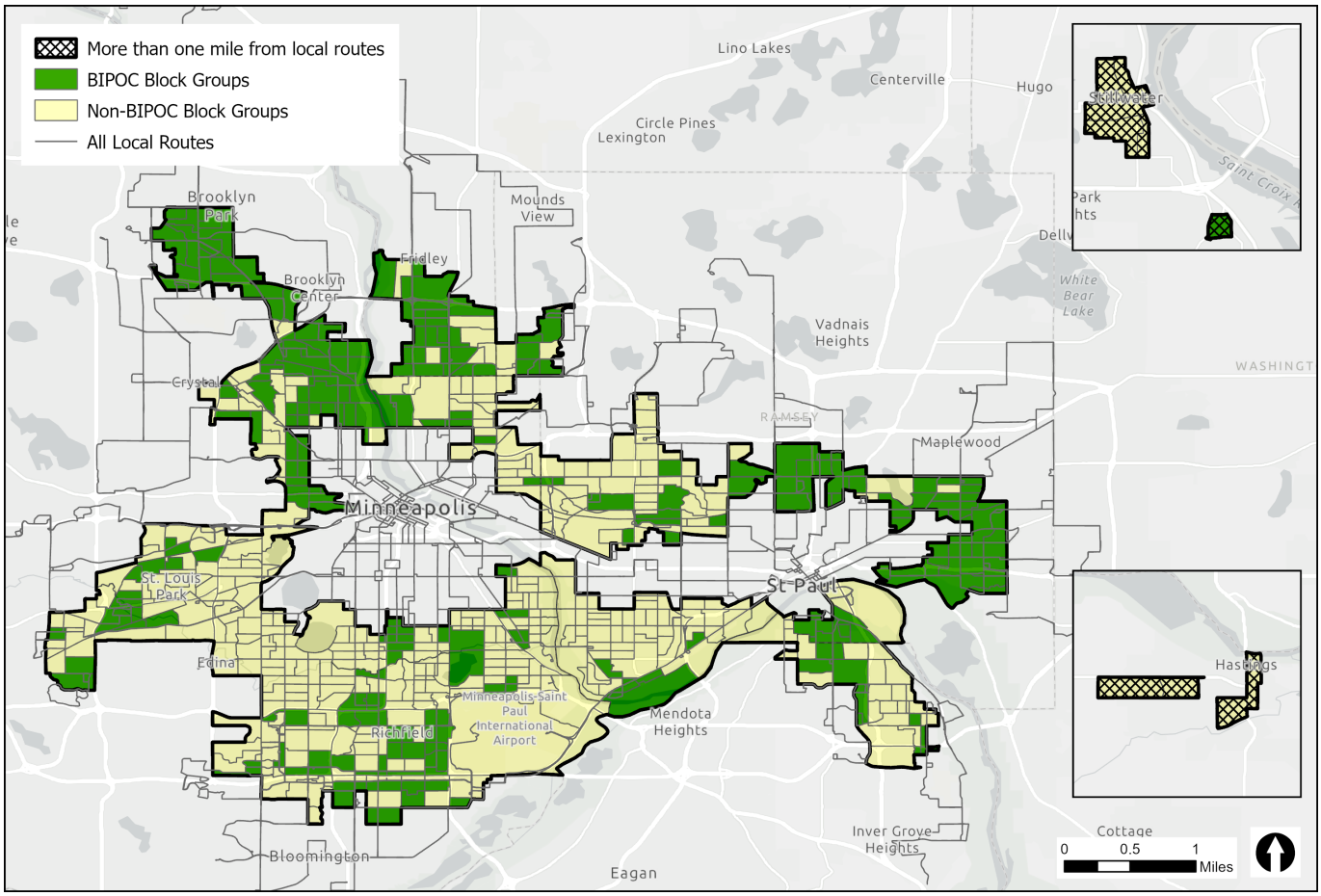
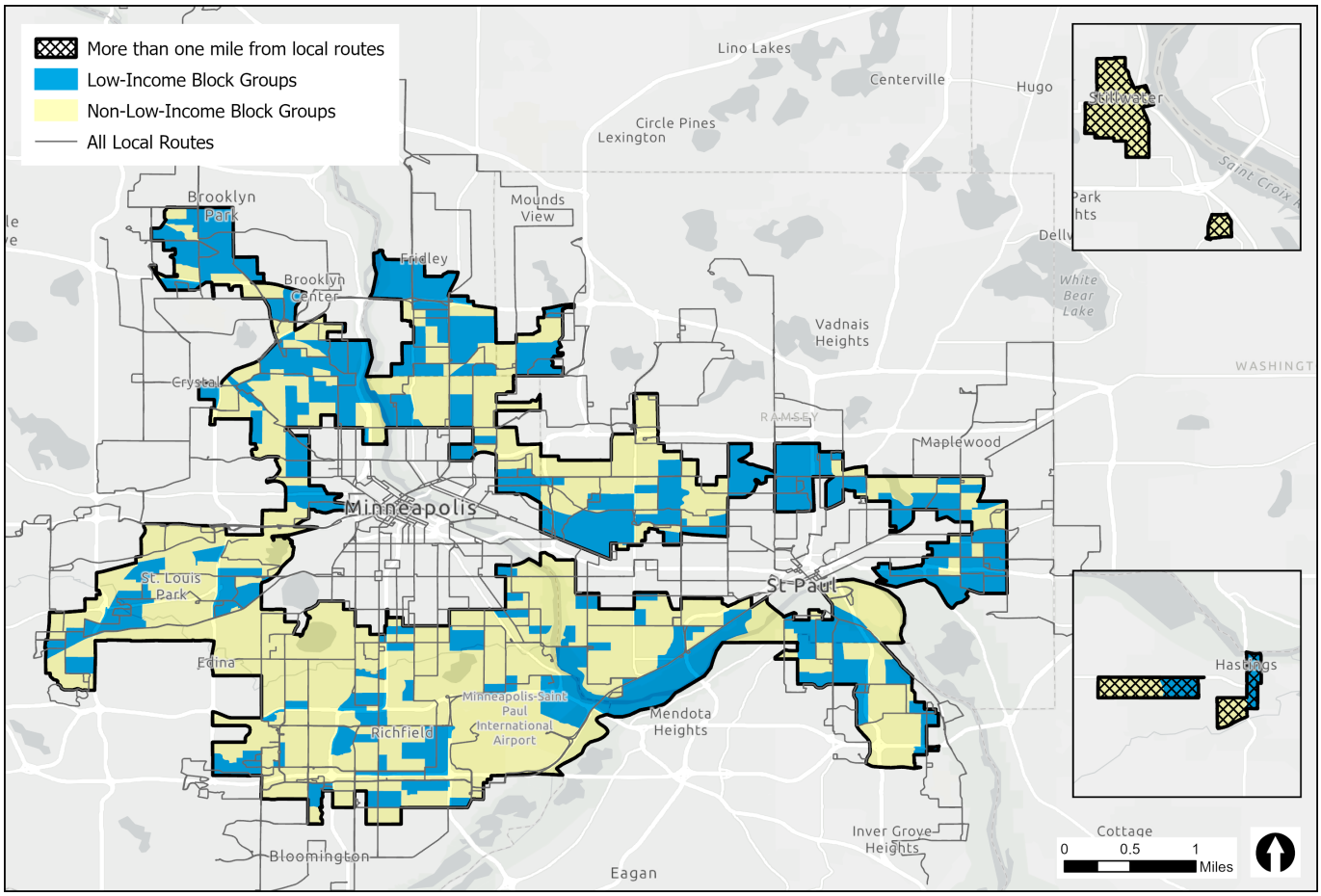


Figure 11. Market Area II – Local Route Spacing for Low-Income Block Groups



APPENDIX H: MIDDAY SERVICE AVAILABILITY

Midday service availability for Market Areas I, II, and III in fall 2023 is shown in Figure 12 and Figure 13, for BIPOC and low-income block groups respectively. Stops in Market Area III have low adherence to midday headway standards, and as a result the combined map shows good coverage at the core and limited coverage at the system margins.

Figure 12. Midday Service Standards Compliance in Market Areas I, II and III – BIPOC Block Groups

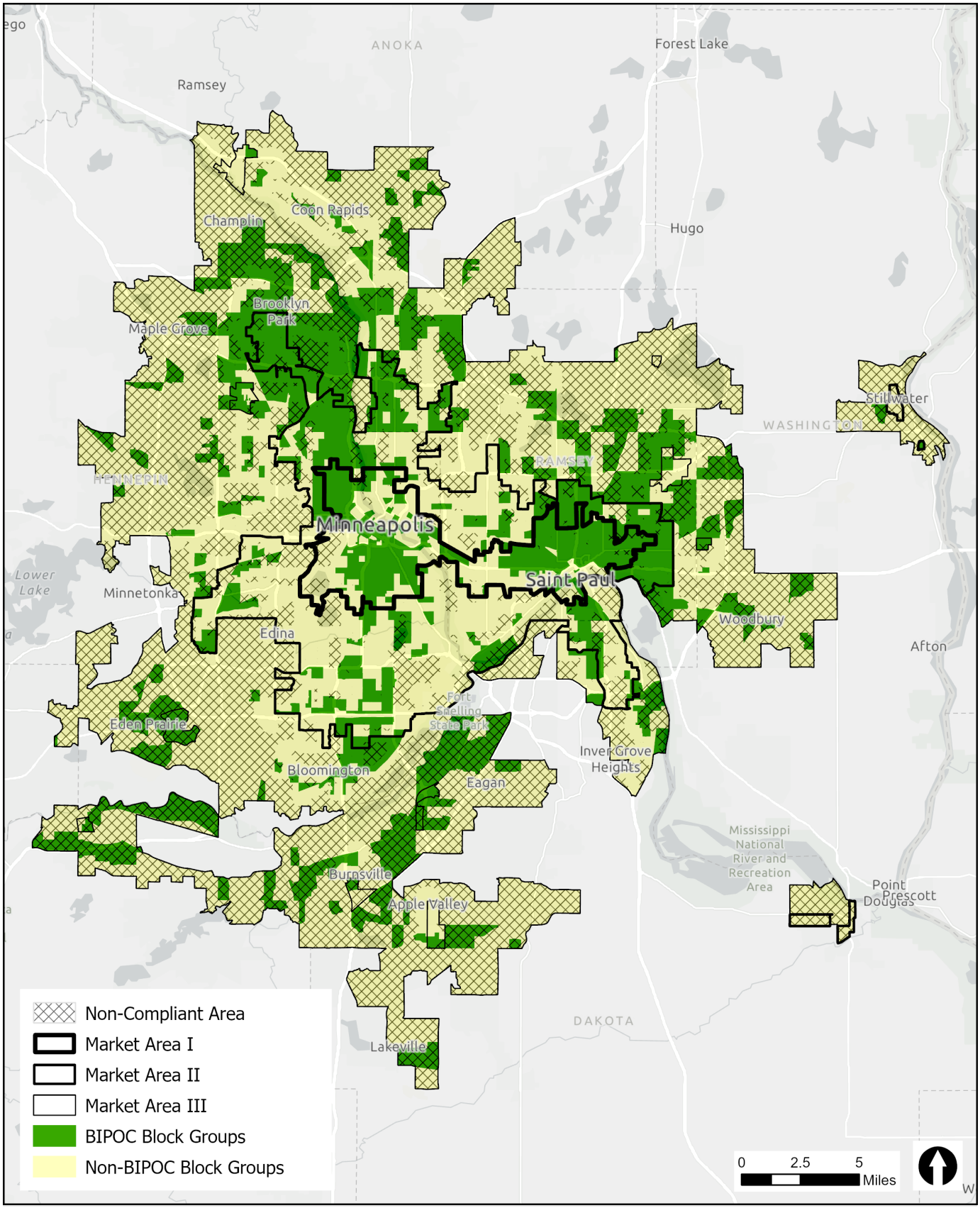
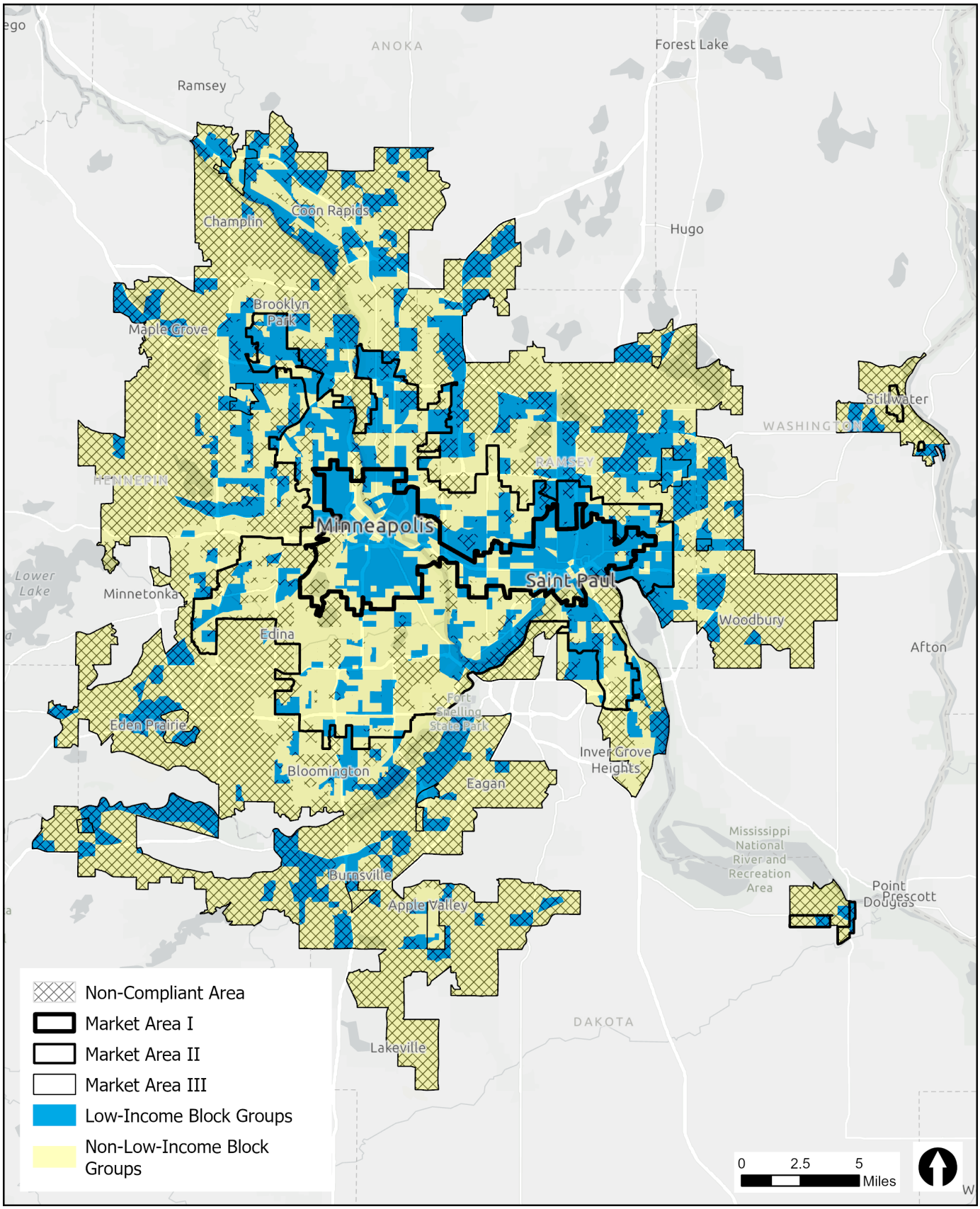


Figure 13. Midday Service Standards Compliance in Market Areas I, II and III – Low-Income Block Groups



APPENDIX I: VEHICLE ASSIGNMENT

Table 28. Vehicle Age in Years by Route

Route type abbreviations: CL = core local; Supp L = supporting local; Sub L = suburban local; C&E = commuter & express; ABRT = arterial BRT; BRT = highway BRT

Race/ethnicity designation abbreviations: B = BIPOC; NB = non-BIPOC
Income designation abbreviations: LI = low-income; NLI = non-low-income

Route	Route Type	Race/Ethnicity Designation	Income Designation	Assigned Avg.	Assigned Std.	Available Avg.	Difference if Older	Assigned Relative to Available
2	CL	B	LI	9.2	2.7	11.5		Newer
3	CL	B	LI	5.7	4.6	10.6		Newer
4	CL	B	LI	9.4	2.0	11.3		Newer
5	Supp Loc	B	LI	9.8	2.2	10.6		Newer
6	CL	NB	LI	9.4	2.5	10.4		Newer
7	CL	B	LI	10.1	1.8	10.4		Newer
9	CL	B	LI	8.8	2.4	11.5		Newer
10	CL	B	LI	9.9	2.1	10.6		Newer
11	CL	B	LI	9.3	2.7	11.5		Newer
14	CL	B	LI	8.7	1.8	10.4		Newer
17	CL	B	LI	9.4	2.6	11.5		Newer
18	CL	B	LI	9.0	3.1	10.4		Newer
21	CL	B	LI	8.8	2.6	10.6		Newer
22	CL	B	LI	9.9	1.7	10.6		Newer
23	Supp Loc	NB	LI	9.2	2.7	11.5		Newer
25	CL	B	LI	8.8	2.0	10.6		Newer
30	Supp Loc	B	LI	1.7	2.4	10.8		Newer
32	Supp Loc	B	LI	8.5	1.7	11.5		Newer
33	Supp Loc	B	LI	5.0	0.0	5.0	0.0	More than 1 std. older
46	Supp Loc	NB	LI	8.6	2.7	11.5		Newer
54	CL	B	LI	9.7	2.0	10.4		Newer
61	CL	B	LI	8.9	2.0	10.6		Newer
62	CL	B	LI	9.7	1.9	10.6		Newer
63	CL	B	LI	9.8	2.0	10.6		Newer
64	CL	B	LI	10.1	1.8	10.6		Newer
65	Supp Loc	B	LI	6.6	2.6	4.6	2.0	Not sig. older

Route	Route Type	Race/Ethnicity Designation	Income Designation	Assigned Avg.	Assigned Std.	Available Avg.	Difference if Older	Assigned Relative to Available
67	CL	B	LI	4.7	3.9	10.8		Newer
68	CL	B	LI	9.8	1.8	10.6		Newer
70	CL	B	LI	1.1	0.6	10.8		Newer
71	CL	B	LI	9.8	1.9	10.6		Newer
74	CL	B	LI	9.7	2.0	10.6		Newer
75	CL	B	LI	7.0	1.9	4.6	2.4	More than 1 std. older
80	Supp Loc	B	LI	4.2	4.0	10.8		Newer
83	Supp Loc	B	LI	5.0	0.2	11.2		Newer
87	Supp Loc	B	LI	6.5	2.7	4.6	1.9	Not sig. older
94	C&E	B	LI	9.5	2.2	10.6		Newer
113	C&E	B	NLI	9.7	2.3	10.4		Newer
114	C&E	NB	NLI	9.6	2.5	10.6		Newer
219	Sub Loc	B	LI	5.0	0.1	5.0	0.0	Not sig. older
225	Sub Loc	NB	LI	5.0	0.1	5.0	0.0	Not sig. older
227	Sub Loc	NB	LI	5.0	0.1	5.0	0.0	Not sig. older
250	C&E	B	NLI	7.7	4.5	10.7		Newer
252	C&E	B	LI	6.6	5.1	10.7		Newer
264	C&E	B	LI	8.6	4.3	10.7		Newer
270	C&E	B	NLI	6.9	4.0	10.6		Newer
275	C&E	B	NLI	9.0	1.5	10.7		Newer
294	C&E	NB	LI	8.9	2.6	10.6		Newer
323	Sub Loc	B	LI	8.5	1.9	10.8		Newer
353	C&E	B	LI	7.2	4.1	10.7		Newer
355	C&E	NB	LI	7.1	3.7	10.6		Newer
363	C&E	B	NLI	8.9	1.8	10.7		Newer
467	C&E	B	LI	11.0	0.0	12.1		Newer
501	Sub Loc	NB	LI	9.4	2.3	10.6		Newer
515	Sub Loc	B	LI	10.4	1.7	10.4		Newer
534	Sub Loc	B	LI	6.8	2.3	4.6	2.2	Not sig. older
537	Sub Loc	NB	LI	6.8	2.3	4.6	2.2	Not sig. older

Route	Route Type	Race/Ethnicity Designation	Income Designation	Assigned Avg.	Assigned Std.	Available Avg.	Difference if Older	Assigned Relative to Available
538	Sub Loc	NB	LI	7.1	2.4	4.6	2.6	More than 1 std. older
539	Sub Loc	B	LI	6.8	1.9	4.6	2.2	More than 1 std. older
540	Sub Loc	NB	LI	6.1	3.8	4.6	1.5	Not sig. older
542	Sub Loc	NB	LI	7.1	3.4	4.6	2.5	Not sig. older
546	Sub Loc	NB	NLI	7.4	2.0	4.6	2.8	More than 1 std. older
578	C&E	B	LI	9.8	2.2	10.4		Newer
612	Sub Loc	NB	LI	8.8	2.8	11.5		Newer
615	Sub Loc	B	LI	4.9	0.3	5.0		Newer
645	Sub Loc	NB	LI	9.1	3.2	10.6		Newer
667	C&E	B	NLI	10.1	2.1	10.6		Newer
673	C&E	NB	NLI	3.3	4.4	10.6		Newer
705	Sub Loc	B	LI	2.4	3.1	10.8		Newer
716	Sub Loc	B	LI	4.9	0.3	5.0		Newer
717	Sub Loc	B	LI	5.0	0.2	5.0	0.0	Not sig. older
721	Sub Loc	B	LI	9.9	1.7	10.6		Newer
722	Sub Loc	B	LI	10.0	1.6	10.6		Newer
723	Sub Loc	B	LI	10.0	1.6	11.5		Newer
724	Sub Loc	B	LI	10.0	1.7	10.6		Newer
755	C&E	B	LI	8.9	1.9	11.5		Newer
760	C&E	B	LI	9.8	1.9	10.6		Newer
761	C&E	B	LI	9.8	2.1	11.5		Newer
763	C&E	B	LI	9.3	2.0	11.5		Newer
764	C&E	B	LI	10.3	2.2	10.6		Newer
766	C&E	NB	NLI	9.0	3.4	10.6		Newer
768	C&E	B	NLI	7.0	4.8	10.7		Newer
801	Sub Loc	B	LI	1.1	1.0	10.8		Newer
804	Sub Loc	B	LI	1.1	0.8	10.8		Newer

Route	Route Type	Race/Ethnicity Designation	Income Designation	Assigned Avg.	Assigned Std.	Available Avg.	Difference if Older	Assigned Relative to Available
805	Sub Loc	NB	NLI	1.2	1.1	10.8		Newer
824	C&E	B	NLI	9.8	2.0	11.5		Newer
850	C&E	B	NLI	7.5	4.7	10.7		Newer
852	C&E	B	LI	8.5	1.8	10.8		Newer
888	CR	B	NLI	-	-	Combination Missing		-
901	LRT	B	LI	-	-	Combination Missing		-
902	LRT	B	LI	-	-	Combination Missing		-
903	BRT	NB	LI	2.0	0.0	6.8		Newer
904	BRT	B	LI	2.8	2.1	10.4		Newer
921	ABRT	NB	LI	7.0	2.1	10.4		Newer
923	ABRT	B	LI	3.9	3.2	10.5		Newer
924	ABRT	B	LI	2.9	2.2	10.4		Newer