

Appendix K: Title VI Service Equity Analysis

Service Improvement Plan

Metro Transit



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Introduction

The Metro Transit Service Improvement Plan (SIP) is a service expansion plan that builds on the existing Metro Transit bus network and identifies opportunities to add new routes and improve the frequency and span of existing service out to the year 2030. It is a prioritized vision for how Metro Transit will seek to improve the local and express bus service over the next 10 to 15 years.

The plan combines outcomes and principles from the region's long range development plan, Thrive MSP 2040, goals and objectives from the 2040 Transportation Policy Plan (TPP), transit planning fundamentals, and significant public input to guide service improvement priorities that require additional operating funds. Goals include transportation system stewardship, safety and security, access to destinations, competitive economy, healthy environment, and leveraging transportation investment to guide land use. Improved bus services would be operated by Metro Transit or by private providers under contract to the Metropolitan Council.

The SIP is not intended to be a complete transit improvement or investment plan. It does not include cities outside of Metro Transit's service area and does not include associated capital investments (vehicles, customer and support facilities, technology enhancements, etc.). Metro Transit is the largest of five public transit providers in the Twin Cities region. The TPP requires each transit provider to develop its own SIP, then work together to combine projects in the initial years of each SIP into the Regional Service Improvement Plan (RSIP). The RSIP is a four- to five-year plan that guides bus service improvements for all transit providers in the region, and will be updated in 2015.

The Federal Transit Administration (FTA) requires recipients of federal funding, including Metro Transit, to conduct a Title VI Service Equity Analysis for any proposed service change that meets the agency's major service change threshold. Although not required at this stage of the planning process since there are no major service changes being implemented, Metro Transit has chosen to conduct this review. This analysis fulfills this requirement as it relates to the service changes and additions within the SIP.

Title VI Principles and Definitions

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.”

In 1994, President Clinton issued Executive Order 12898, 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.” Through this Executive Order, 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.”

To provide direction to recipients of federal funding, the FTA issued Circular 4702.1B, *Title VI Requirements and Guidelines for Federal Transit Administration Recipients*, in 2012, which replaced Circular 4702.1A issued in 2007. This document outlines Title VI evaluation procedures for recipients of FTA-administered transit program funds and includes guidance for a variety of equity evaluations.

Minority

The 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. For the purposes of this evaluation, non-minority persons were defined as those who self-identify as white and not-Hispanic or Latino. All other persons, including those identifying as two or more races and/or ethnicities, were defined as minority persons. The distribution of minority populations within one half-mile of the existing and proposed route alignments is shown in Figure 1.

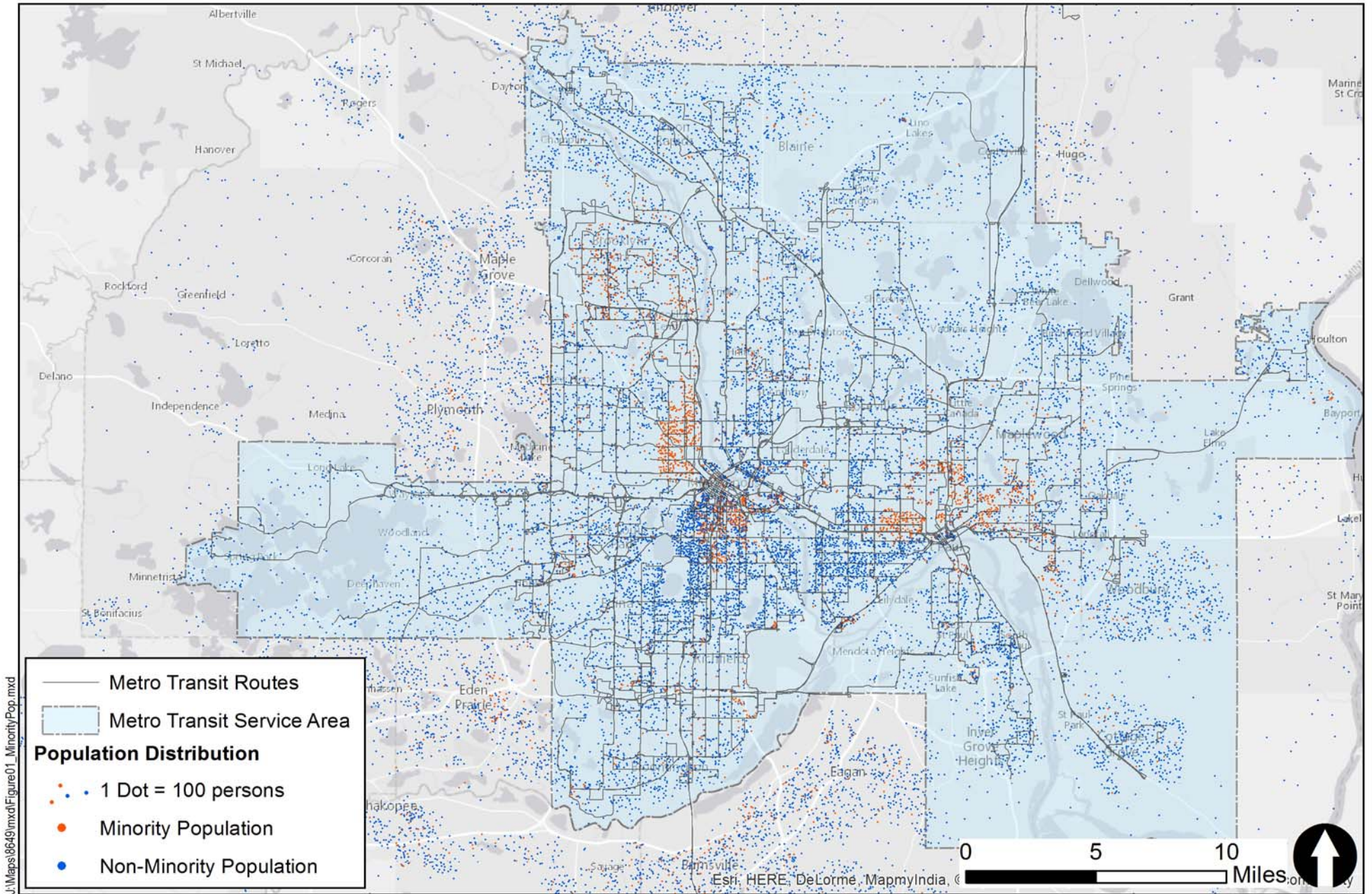
Low-Income

While low-income populations are not an explicitly protected class under Title VI, the FTA recognizes the inherent overlap between Title VI and Environmental Justice principles and requires transit providers to evaluate the impact of service and fare changes to low-income populations and to identify any disproportionate burden placed on those populations by the proposed changes. The 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 (DHHS). DHHS poverty thresholds are based on household size and the number of related children less than 18 years of age. The 2012 poverty thresholds used for the data in this evaluation are summarized in Table 1. The distribution of low-income and non-low-income populations within the service change area is shown in Figure 2.

Table 1. 2012 DHHS Poverty Thresholds

Persons in Family	Threshold for 48 Contiguous States and D.C.
1	\$11,170
2	\$15,130
3	\$19,090
4	\$23,050
5	\$27,010
6	\$30,970
7	\$34,930
8	\$38,890
For each additional person, add	\$3,960

Source: U.S. Department of Health and Human Services (<http://aspe.hhs.gov/poverty/12poverty.shtml>)



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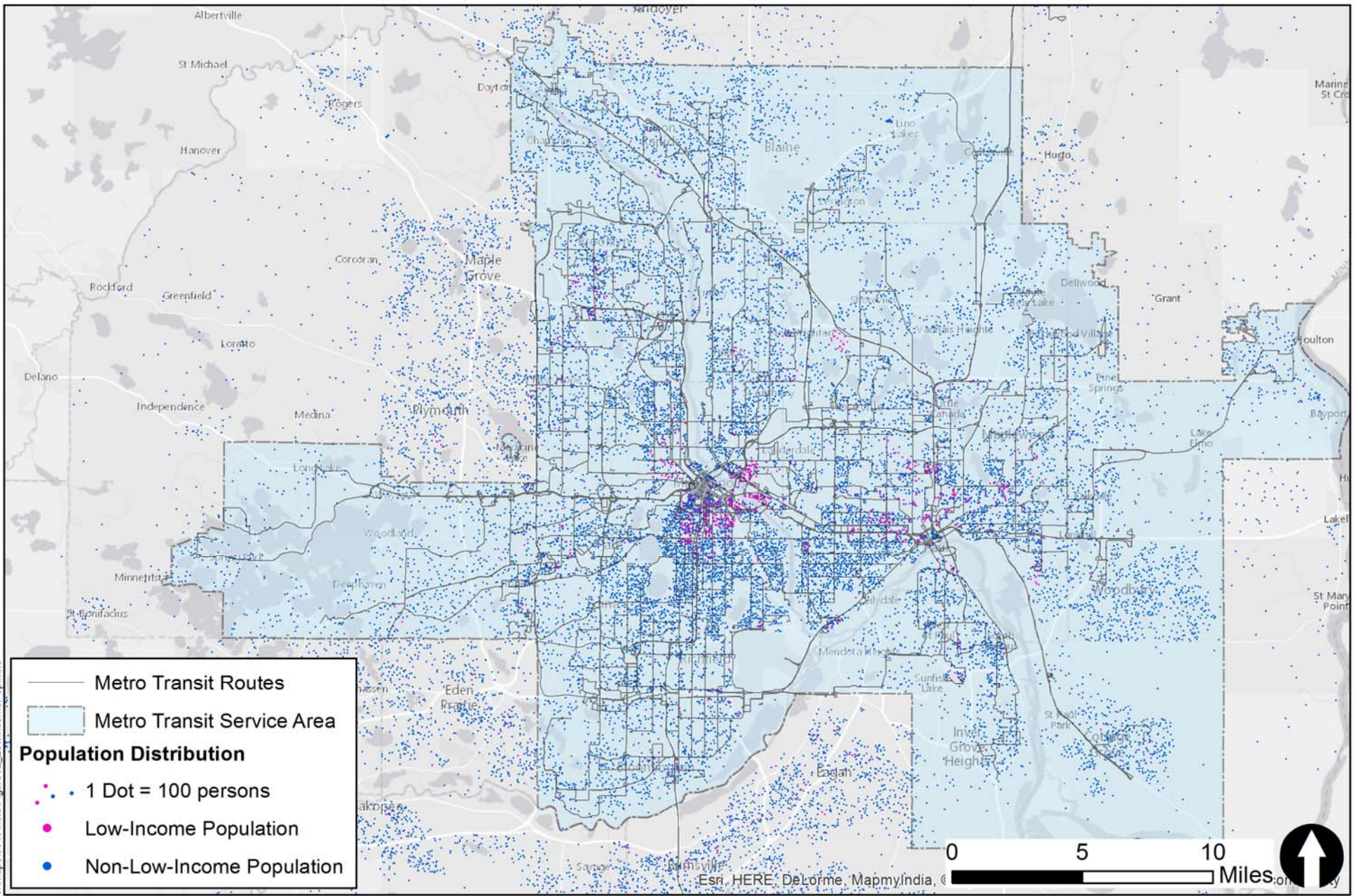


Figure 2

Disparate Impact, Disproportionate Burden, and the Four-Fifths Threshold

The Federal Transit Administration defines “disparate impacts” as facially neutral policies or practices that disproportionately affect members of a group identified by race, color, or national origin, and the recipient’s policy or practice lacks a substantial legitimate justification. If the results of the analysis indicate a potential for disparate impacts, further investigation is required. Metro Transit has defined its disparate impact threshold using the “four-fifths rule.” The four-fifths rule states that there may be evidence of disparate impacts if:

- Benefits are being provided to minority populations at a rate less than 80 percent (four-fifths) of the benefits being provided to non-minority populations, or
- Adverse effects are being borne by non-minority populations at a rate less than 80 percent (four-fifths) of the adverse effects being borne by minority populations.

The four-fifths rule originates from employment law, but is applied in this setting to compare the distribution of benefits and/or adverse impacts among various population groups. The four-fifths rule suggests that a selection rate for any racial, ethnic, or gender group that is less than four-fifths or 80 percent of the rate for the group with the highest selection rate will be regarded as evidence of adverse impact. Although it is a “rule of thumb” and not a legal definition, it is a practical way for identifying adverse impacts that require mitigation or avoidance.

In this analysis, if the quantitative results indicate that the projects in the SIP show evidence of adverse effects to minority populations, this could be evidence of a disparate impact and would require additional analysis. A service change that results in a disparate impact may only be implemented if:

- There is a substantial legitimate justification for the proposed service change, and
- There are no alternatives that would have a less disparate impact while still accomplishing the transit provider’s legitimate program goals.

Metro Transit uses a similar approach when comparing the distribution of benefits and adverse impacts for low-income and non-low-income populations. However, when the distributions for low-income populations fall outside of the four-fifths threshold, this is referred to as a disproportionate burden rather than a disparate impact.

Service Equity Analysis Methodology

A geographic information systems (GIS)-based approach was employed in this analysis to measure the location and magnitude of proposed service changes and compare the distribution of impacts and benefits to minority, non-minority, low-income, and non-low-income populations. The analysis consists of five steps:

1. Model current and proposed service levels.
2. Spatially allocate current and proposed transit service levels to population groups based on intersection between service buffer and census block centroid.
3. Calculate the percent change in service between the current and proposed service levels for each census block.
4. Calculate the average percent change in service for all minority/low-income and non-minority/non-low-income populations within the service area buffer for the current and proposed transit service.
5. Determine whether the proposed service will result in disparate impacts by applying the disparate impact and disproportionate burden policies.

This analysis used the number of trips available to each census block as a measure of overall transit service levels. Common improvements to transit service, such as increased frequency and increased span of service, will result in an increase in the number of trips available. The addition of service to a new area will also result in an increase in the number of trips available to the surrounding areas.

Modeling Current and Proposed Service Levels

Two networks were modeled to represent the current service levels and the proposed service levels. The current service level network represents the conditions as of December 2014. The proposed service level network represents the conditions after the SIP service changes are implemented by 2030.

The service changes included in this evaluation are those projects in the SIP ranked as High or Medium. It does not include Arterial Bus Rapid Transit corridors.

It should be noted that some components of the SIP were contradictory (e.g., one SIP change added service on the 9H, but another change eliminated this service). The majority of these conflicting improvements were related to the implementation of the Southwest Light Rail Transit (LRT) project (METRO Green Line Extension). In cases of conflict, it was assumed that the changes related to the Southwest LRT would override any conflicting changes.

Assigning Transit Trips to Census Blocks

Information on minority populations is available at the census block level from the 2010 U.S. Decennial Census. However, information on low-income populations is available only at the census block group level from the 2012 American Community Survey 5-year Estimates. Census block groups and blocks differ in their geographic makeup. Census blocks are the smallest geographic unit used by the U.S. Census Bureau and are bounded by roadways or water features in urban areas. A census block group is typically made up of a cluster of approximately 40 blocks.

To estimate the low-income populations at the census block level, the total population of each block was multiplied by the percentage of low-income population for its parent block group. This approach assumes that the percentage of low-income population is uniform throughout the block group, but allows for a more precise analysis than an analysis using the block groups as a whole.

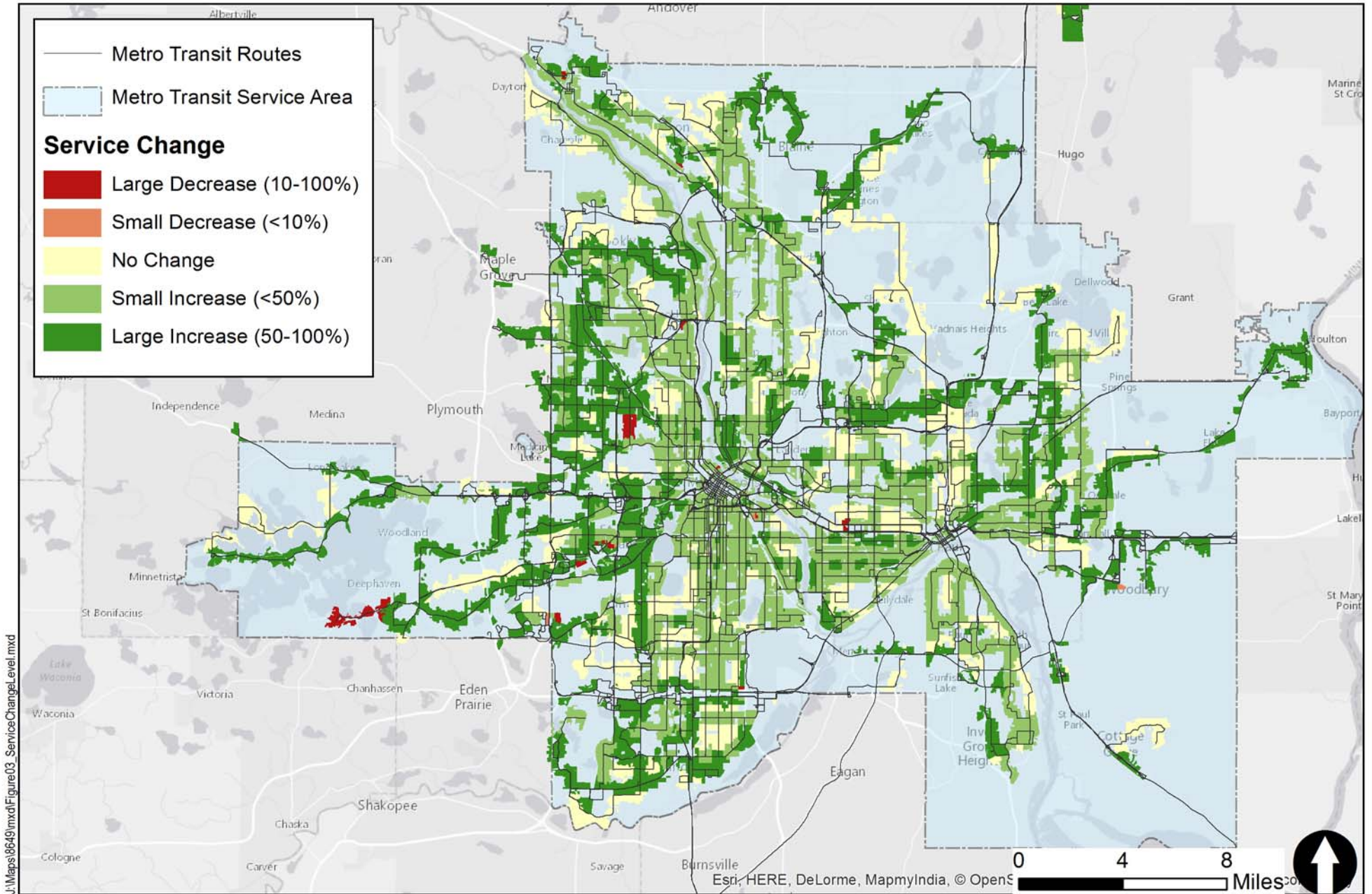
The trips for each route pattern were allocated to all census blocks with a centroid located within one quarter-mile of that pattern. All population groups within those census blocks were assumed to be served by those trips. The quarter-mile distance is a standard maximum walking distance to access transit services for local bus service.

The geographic extent of this analysis is limited to those census blocks with centroids that are within the service area of either the existing or the proposed service.

Calculating Change in Service Level by Census Block

The absolute change in service level was calculated for each census block by subtracting the current number of weekly trips available from the proposed number of weekly trips available. After the absolute change was calculated, the percent change in service was calculated by dividing the absolute change in weekly trips by the existing number of weekly trips. To minimize artificial skewing from newly served areas, all percent changes greater than 100 percent, including those that are incalculable due to zero existing service, were adjusted to a maximum value of 100 percent.

The percent change in service level by census block is shown in Figure 3.



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Figure 3

Determining Average Percent Change in Service

The average percent change in service for each target population was calculated by weighting the percent change in each census block by the target population served in that census block. For example, the average percent change in service for minority populations was completed by multiplying each census block's minority population by the percent change in service for that block, summing the results for the blocks in the service change area, and dividing that sum by the total minority population for the blocks in the service change area.

The formula used for these analyses is shown below:

$$Avg \% \Delta = \frac{\sum Population_i \times Percent\ Change_i}{\sum Population_i}$$

Where:

Population_i = Target population of census block *i*.

Percent Change_i = Percent change in service levels for census block *i*.

In this manner, the weighted percent change was calculated individually for the total population, minority population, non-minority population, low-income population, and non-low-income population. Using this method, the impacts of the service changes for each census block are proportionate to both the demographics of the census blocks and the degree of service level change.

Evaluation of Impacts

In total, 1,405,599 people live in census blocks within the area that is experience a change in service. This population includes 380,865 minority persons, 1,024,734 non-minority persons, 227,044 low-income persons, and 1,178,555 non-low-income persons. The average percent change in service levels for each target population group is summarized in Table 2.

Table 2. Average Service Level Change by Population Group

Population Group	Population of Service Change Area	Average Percent Service Change	Four-Fifths Threshold (Minimum)
Minority	380,865	36.5%	31.4%
Non-Minority	1,024,734	39.2%	-
Low-Income	227,044	35.9%	31.2%
Non-Low-Income	1,178,555	39.0%	-
Total	1,405,599	38.5%	-

All population groups experience an overall increase in transit service availability as a result of the proposed service changes. The average individual in the service change area experiences a 38.5 percent increase in transit service.

The average minority individual in the service change area experiences a 36.5 percent increase in transit service. This value is less than the average increase of 39.2 percent for non-minority individuals, but is greater than the four-fifths threshold of 31.4 percent. No potential for disparate impact to minority populations is identified.

The average low-income individual in the service change area experiences a 35.9 percent increase in transit service. This value is less than the average increase of 39.0 percent for non-low-income individuals, but is greater than the four-fifths threshold of 31.2 percent. Therefore, no potential for disproportionate burden to low-income populations is identified.

While the analysis above investigates the change in service level for each population group resulting from the SIP changes, it is also important to evaluate the cumulative impacts of previous service changes. Table 3 displays the total number of bus trips available to each population group following the implementation of the SIP changes.

Table 3. Average Number of Trips Available by Population Group

Population Group	Average Number of Weekly Bus Trips within 1/4 Mile	
	Current Conditions	Proposed Conditions
Minority	1,127	1,480
Non-Minority	873	1,166
Low-Income	1,359	1,776
Non-Low-Income	862	1,151
Total	942	1,251

The previous analysis showed that both minority and low-income populations receive slightly smaller percent increases in service due to the SIP changes. However, Table 3 shows that the average number of bus trips within one-quarter mile of minority individuals under the SIP is 1,480 weekly trips, higher than the average for non-minority individuals at 1,166. Likewise, the average number of bus trips available to low-income individuals is 1,776, higher than the average for non-low-income individuals at 1,151.

It is important to note that this trip count does not include METRO trips such as LRT and BRT service. This average count does also not take into account populations located within the boundaries of Metro Transit’s service area which are not located within one quarter-mile of the existing or proposed service.

Summary and Next Steps

Under the guidance of FTA Circular 4702.1B, federal funding recipients such as Metro Transit are required to conduct a Title VI Service Equity Analysis prior to the implementation of any service change that meets the transit agency's major service change threshold. This analysis reviewed the impacts of the Service Improvement Plan service changes on minority and low-income populations.

This review find that the service changes outlined in the SIP will not result in disparate impacts to minority populations or disproportionate burdens to low-income populations. The Service Improvement Plan, including the results of this Service Equity Analysis, will be presented for approval to the Metropolitan Council in April 2015.