Title VI Service Equity Analysis:
Core Bus Service, Summer 2021
Service Change

Approval date: August 27, 2021

Prepared with assistance from:

FOURSQUARE INTEGRATED TRANSPORTATION PLANNING
I have received, considered, and approve the Maryland Transit Administration (MDOT MTA) Title VI Service Equity Analysis for Summer 2021 Core Bus services changes.

Holly Arnold, Acting Administrator  
Maryland Transit Administration  
08/27/2021  
Date
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Introduction

This analysis was conducted in accordance with FTA Circular 4702.1B, Title VI Requirements and Guidelines for Federal Transit Administration Recipients. The Circular requires, under Title VI of the Civil Rights Act of 1964, that the Maryland Department of Transportation’s Maryland Transit Administration (MDOT MTA) undertake an evaluation of any proposed service change to determine whether it has a disparate impact onTitle VI protected minority populations or presents a disproportionate burden on low-income populations. Any and all service changes, including elimination of routes, creation of new routes, or modification to alignments, headways, or span of service of existing routes are evaluated as meeting or exceeding the operator’s Major Service Change policy. Any transit operator with at least 50 vehicles in peak service is required to conduct a Service Equity Analysis on Major Service Changes.

The analysis is to be completed and approved by MDOT MTA’s Administrator in accordance with MDOT MTA’s Title VI Program, before the change is implemented, and will be submitted to FTA as a part of the Title VI Program update submission. In summary, the FTA Circular states that the analysis should include:

- A statement of the agency’s “Disparate Impact” and “Disproportionate Burden” policies and how the public was engaged in developing the policies.
- A clear explanation of how the proposed service changes meets or exceed the operator’s Major Service Change policy. Changes that exceed the Major Service Change policy must be analyzed for Disparate Impact and Disproportionate Burden.
- A description of the public engagement process for setting the Major Service Change policy.
- Inclusion of a copy of MDOT MTA’s Administrator’s approval demonstrating the Administrator’s consideration, awareness, and approval of the Major Service Change policy (Figure 1).
- An analysis that takes into effect any adverse effects related to a Major Service Change. Demonstration that the operator has analyzed service between the existing and proposed service and has considered the degree of adverse effects when planning service changes.
- Description of data and methodology used in service equity analysis.
- Overlay maps and tables showing how the proposed service changes would impact minority and low-income populations. If a Disparate Impact is found, the operator will clearly demonstrate substantial legitimate justification for the proposed service change and analysis of alternatives for Disparate Impacts or that they have sought to avoid, minimize, or mitigate the impacts of a finding of Disproportionate Burden.
2020 – 2023 TITLE VI PROGRAM APPROVAL
SIGNATURE PAGE

I have received, considered, am aware of, and approve the Maryland Department of Transportation Maryland Transit Administration (MDOT MTA) major service change policy, disparate impact policy, and disproportionate burden policy.

Digitally signed by
Kevin B. Quinn, Jr.
Date: 2020.05.15

Kevin Quinn, Jr., Administrator
Maryland Transit Administration

05/15/2020
MDOT MTA Title VI Policies

As part of its overall Program to comply with Title VI, the Maryland Department of Transportation’s Maryland Transit Administration (MDOT MTA) conducts a Service Equity Analysis whenever the agency proposes a Major Service Change. Equity analyses are conducted regardless of whether proposed changes would consist of a service reduction or service increase. Per FTA regulations (FTA C.4702.1B), the policies outlined in this section are applied uniformly, regardless of mode.

While the definition of Major Service Change varies slightly across modes, the Disparate Impact/Disproportionate Burden (DI/DB) thresholds are the same for each mode. However, the thresholds are applied independently for each market when conducting equity analyses. In other words, the percentage of minorities affected by a change in a particular market will be compared to the overall percentage of minorities in that market, not to the Maryland minority average for the entire statewide service area. For this analysis, the market is MDOT MTA’s Core Bus service area. The Core Bus service category consists of 64 fixed-alignment bus routes: 43 LocalLink, 12 CityLink, and 9 Express BusLink routes. The Core Bus service area is defined as all Census Block Groups within three-quarters of a mile (0.75 miles) of MDOT MTA Core Bus stops.

Major Service Change

As described in MDOT MTA’s 2020-2023 Title VI Program, MDOT MTA routinely conducts a Title VI analysis when Major Service Changes are proposed. By Maryland State law (COMAR Transportation Article §7-506), MDOT MTA is required to conduct public hearings prior to the implementation of any of the following service changes:

- Establish or abandon any bus or rail route listed on a published timetable.
- Change bus or rail route alignment listed on a published timetable, unless the change is needed because of temporary construction or changes in the road network.
- Reduce the frequency, number of days, or days of service for a commuter bus or commuter rail route without substituting a comparable level of service, unless the reduction is temporary or a result of:
  - A natural disaster.
  - Weather or other emergency conditions.
  - Schedule adjustments required by third party that operates service on the same right-of-way.
  - Other circumstance beyond the control of the Administration.
- Establish or abandon a rail transit station.

The Code of Maryland does contain one exception: “The Administration may add service on a new alignment branching off of an existing route without holding a public hearing, if the addition of the new alignment does not alter the existing route.”

Because existing statutes already regulate when MDOT MTA must conduct public hearings prior to service change implementation, the Title VI Major Service Change definition was established to incorporate these
existing elements, but to also include other elements that are in the spirit of the protections afforded under Title VI.

The following service changes are exempt from the Major Service Change policy:

- Seasonal service changes.
- Creation, modification, or discontinuation of a demonstration route within the first 12 months of operation (however, Code of Maryland requirements will still apply).
- Diversions, frequency changes, or span modifications due to local events, construction, weather, and emergencies.
- Emergency service changes, including changes in routes or service frequencies, which may be necessitated due to a disaster, which severely impairs public health or safety, changes in access to public streets, or the ability of MDOT MTA equipment to travel on public streets. Emergency service changes may be implemented immediately without a public hearing provided that a finding identifying the circumstances under which the change is being taken is made by the Administrator and a subsequent public hearing is held and equity analysis is conducted, if the temporary change is to remain in effect longer than 12 months.
- The demonstration route is a new route implemented specifically on a trial basis for less than one year for purposes of study and evaluation of new alignment, line, service model, or segment.

Title VI service equity analyses are only required if Major Service Changes are proposed. MDOT MTA’s Title VI Major Service Change policies are defined by fixed route mode. For the Core Bus market, the definition of a Major Service Change is as follows:

- Alteration of a route’s revenue miles or revenue hours on a given service day by twenty-five percent (25.00%) or more, including establishment or abandonment of a route.
- Change to the span of service on a route by ninety (90) minutes or more on a given service day.

**Disparate Impact and Disproportionate Burden**

MDOT MTA’s policies for *Disparate Impact* and *Disproportionate Burden* adhere to FTA requirements. When assessing a proposed service change for a potential Disparate Impact or Disproportionate Burden, changes to routes are assessed cumulatively.

*Disparate Impact* (DI) refers to a facially neutral policy or practice that disproportionately affects members of a group identified by race, color, or national origin. A DI occurs when the difference between minority riders and non-minority riders affected by a proposed fare or service change is 10 percent (10.00%) or greater.

*Disproportionate Burden* (DB) refers to a neutral policy or practice that disproportionately affects low-income populations more than non-low-income populations. A DB occurs when the difference between low-income riders and non-low-income riders affected by a proposed fare or service change is 10 percent (10.00%) or greater.
Major Service Change, Disparate Impact, and Disproportionate Burden Policy Outreach
From October through December 2019, MDOT MTA conducted an extensive public engagement effort to solicit feedback on policies for evaluation of service and fare changes. Each meeting followed the same format: MDOT MTA provided a presentation discussing an overview of Title VI and evaluation of service and fare changes; a comparison of previous versus proposed Major Service Change policies for each mode; a proposal for Disparate Impact and Disproportionate Burden thresholds, including examples of how each are employed in Equity Analyses; and time for questions, answers, and general feedback. Outreach efforts are summarized below.

Community Based Organizations
MDOT MTA, staff and consultants, held both in-person and virtual (webinar) focus groups with representatives from and constituents of community-based organizations in the agency’s service area. To encourage attendance, MDOT MTA sent an email blast to hundreds of representatives from organizations in the Baltimore region (for the in-person presentation) and from organizations outside the Baltimore region (for the virtual presentation).

In-Person Focus Group
The in-person community-based organization focus group consisted of a breakfast meeting held on October 16, 2019. Representatives from the following organizations were in attendance:

- People Encouraging People
- The League for People with Disabilities
- Laurel Armory Anderson & Murphy Community Center
- Governor's Office of Community Initiatives (GOCI)
- Bon Secours Hospital
- St. Peter's Adult Learning Center.

Webinar Focus Group
The virtual webinar community-based organization focus group consisted of a webinar presentation held on October 16, 2019. Representatives from the following organizations were in attendance:

- The ARC Central Chesapeake Region
- Accessible Resources for Independence
- The Arc of Frederick County
- The Arc of Prince George's County
- Athelas Institute
- Howard County Office of Workforce Development
- Anne Arundel Workforce Development Corporation.

MARC Riders Advisory Council
MDOT MTA presented proposed policies to the MDOT MTA MARC Riders Advisory Council at their regular meeting on November 14, 2019.
Citizens Advisory Committee
MDOT MTA presented proposed policies to the MDOT MTA Citizens Advisory Committee at their regular meeting on November 19, 2019.

Citizens Advisory Committee on Accessible Transportation
MDOT MTA presented proposed policies to the MDOT MTA Citizens Advisory Committee on Accessible Transportation at their regular meeting on November 21, 2019.

Online Survey
To obtain final feedback on proposed policies, MDOT MTA conducted an online survey from November 21, 2019 through December 21, 2019. Supplemented by reference material (a PDF) outlining proposed Major Service Change, Disparate Impact, and Disproportionate Burden policies, the survey asked participants to provide the following:

- Insight on whether theoretical service changes should qualify as “major.”
- Insight on whether proposed Disparate Impact and Disproportionate Burden policies were appropriate.
- Any additional feedback.

The survey was sent by email to various community-based organizations and promoted through MDOT MTA’s website and social media. The survey received a total of 14 responses.
Service Equity Analysis

METHODOLOGY

All Summer 2021 service changes were evaluated to ascertain which ones meet the criteria of MDOT MTA’s Major Service Change definition. MDOT MTA’s 2020-2023 Title VI Program defines Core Bus Major Service Changes as follows:

- Alteration of a route’s revenue miles or revenue hours on a given service day by twenty-five percent (25.00%) or more, including establishment or abandonment of a route.
- Change to the span of service on a route by ninety (90) minutes or more on a given service day.

MDOT MTA analyzes the potential for a Disparate Impact or Disproportionate Burden through service equity analyses based on cumulative proposed service changes. This service equity analysis first reviewed the proposed service increases and service reductions for each effect, for each time period, and for each affected Census Block Group. Then, the sum of impacted populations and the sum of impacted households for each metric, for each time period, for all affected Census Block Groups for each effect/time period, was analyzed to determine if proposed Major Service Changes would result in a potential Disparate Impact or Disproportionate Burden.

To evaluate whether proposed service changes could result in a Disparate Impact or Disproportionate Burden, this service equity analysis employed the methodology first developed for the BaltimoreLink full-system redesign service equity that occurred in 2017. This methodology was reviewed by the Federal Transit Administration (FTA) on a conference call and web presentation with MDOT MTA that was held on March 17, 2016.1 On the call, MDOT MTA understood the methodology to be “properly documented” per FTA requirements.

In lieu of a route-level analysis, this methodology employs a level-of-service based analysis at the Census Block Group level, analyzing changes at each stop. This methodology was selected for use in this service equity analysis given the number and diversity of changes occurring within this singular change, and to allow for an analysis of all changes that would constitute an adverse effect. MDOT MTA has determined that discontinuation of service, significant reductions in frequency, and/or significant reductions in the span of service could have adverse effects on minorities and low-income populations.

Based on MDOT MTA’s Major Service Change policy and adverse effects definition, three types of service changes were analyzed at the Census Block Group level for this Service Equity Analysis: span of service, trip frequency, and total service addition or discontinuation.

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1 March 17, 2016 conference call and web presentation participants included Bart Plano, Kevin Quinn, and Marjorie Nesbitt of MTA; Lynn Bailey, Jonathan Ocana, Aida Douglas, Kathleen Zubrzycki, and Jay Fox of FTA; and Shana Johnson and Katie List of Foursquare ITP.
Data Sources
For this analysis, the primary data source was the U.S. Census American Community Survey (ACS) five-year estimates from 2015 to 2019, measured at the Census Block Group level. Geographic data provided by MDOT MTA was used to determine the service areas for the current Core Bus Network.

For the Disparate Impact (minority) analysis, the ACS table utilized was Table B03002, “Hispanic or Latino Origin by Race.” To determine the percentage of the population that is minority for the service area, total population estimates and minority population estimates (total population minus non-Hispanic White population) for block groups were used along with bus stop point data and route line data within R, a software environment for statistical computing.

Using R, a three-quarter mile buffer was placed around each CityLink, LocalLink, and Express BusLink bus stop affected by a Major Service Change. Census Block Groups containing either partially or wholly within the service area were used when calculating the effects of service changes on a Census Block Group.

For the Disproportionate Burden (low-income) analysis, the ACS table utilized was Table B19001, “Household Income in the Past 12 Months (In 2018 Inflation-Adjusted Dollars).” To determine the percent of low-income households for the Core Bus service area, the total number of households and the total number of households reporting incomes of $45,000 or less (aggregate of all income categories under $45,000) for block groups were used along with bus stop point data and route line data within R.

Using R, a three-quarter mile buffer was placed around each CityLink, LocalLink, and Express BusLink bus stop affected by a Major Service Change. Census Block Groups containing either partially or wholly within the service area were used when calculating the effects of service changes on a Census Block Group.

Adverse Effects
Table 1 summarizes service changes categorized as significant enough to potentially result in an adverse effect (via a service increase or service reduction) by MDOT MTA.

<table>
<thead>
<tr>
<th>Service Change Type</th>
<th>Service Increase Threshold</th>
<th>Service Reduction Threshold</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Span of Service</strong></td>
<td>Span of bus service in a Census Block Group is proposed to increase by 90 minutes or more in a day.</td>
<td>Span of bus service in a Census Block Group is proposed to decrease by 90 minutes or more in a day.</td>
</tr>
<tr>
<td><strong>Trip Frequency (Measured in Buses per Hour; Assessed on Peak/Off-Peak Basis)</strong></td>
<td>Trip frequency in a Census Block Group is proposed to increase by 25 percent or more.</td>
<td>Trip frequency in a Census Block Group is proposed to decrease by 25 percent or more.</td>
</tr>
<tr>
<td><strong>New Service/Service Discontinuation</strong></td>
<td>New service in a Census Block Group (where there previously was none).</td>
<td>Service discontinuation in a Census Block Group.</td>
</tr>
</tbody>
</table>
For each service change type, an appropriate time period is used when conducting a service equity analysis:

- Span of Service changes (as measured by span of service available in a day) were analyzed for Weekdays, Saturdays, and Sundays.
- Trip Frequency (as measured in buses per hour) was measured during weekday peak times, weekday off-peak times, Saturdays, and Sundays.
- Service Discontinuation/New Service was analyzed for Weekdays, Saturdays, and Sundays.

SUMMER 2021 SERVICE CHANGES

MDOT MTA’s Summer 2021 service change regards changes that were implemented in April 2020 following the onset of the COVID-19 pandemic, where all routes of the Express BusLink service class were temporarily discontinued in response to drastically changing commuting patterns. It has been greater than one year since those temporary changes were put into effect, and thus the Summer 2021 service change encompasses the discontinuation of the following routes:

- Express BusLink 103
- Express BusLink 104
- Express BusLink 105
- Express BusLink 115
- Express BusLink 120
- Express BusLink 150
- Express BusLink 154
- Express BusLink 160
- Express BusLink 164

MDOT MTA is not proposing the addition of any routes through this service change. All Express BusLink routes were temporarily discontinued in response to drastic changes in commuting patterns during the COVID-19 pandemic. MDOT MTA will consider re-introducing Express BusLink service in the future as travel patterns change as pandemic evolves and ends. No CityLink or LocalLink routes were similarly temporarily discontinued as part of this service change.
SUMMARY

Service Area Demographics
In the Core Bus service area, minorities make up approximately fifty-four percent (54.2%) of the overall population within three-quarters of a mile of MDOT MTA Core Bus stops. After applying MDOT MTA’s Disparate Impact policy, the threshold for a Disparate Impact is approximately sixty-four percent (64.2%) (fifty-four percent (54.2%) system-wide, plus ten percent (10.00%)) for service reductions and approximately forty-four percent (44.2%) (fifty-four percent (54.2%) system-wide, minus ten percent (10.00%)) for service increases.

Low-income households make up approximately thirty-four percent (34.0%) of the households within three quarters of a mile of MDOT MTA Core Bus stops. After applying MDOT MTA’s Disproportionate Burden policy, the threshold for a Disproportionate Burden is forty-four percent (44.0%) (thirty-four percent (34.0%) plus ten percent (10.00%)) for service reductions and twenty-four percent (24.0%) or less (thirty-four percent (34.0% minus ten percent (10.00%)) for service increases.

Table 2 shows the ACS 2015-2019 estimates for populations and households residing within the Core Bus service area, and the corresponding thresholds for Disparate Impact and Disproportionate Burden. The map used to illustrate the routes in the Maps section is symbolized based on the service area minority and low-income percentages, and whether the relevant service area block groups exceed either threshold.

Table 2 | Minority and Low-Income Populations in the Core Bus Service Area

<table>
<thead>
<tr>
<th></th>
<th>Disparate Impact</th>
<th>Service Reduction</th>
<th>Service Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total Population</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Population</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minority Population</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Percent Minority</td>
<td>54.2%</td>
<td>64.2%</td>
<td></td>
</tr>
<tr>
<td>Disparate Impact</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Service Reduction</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disparate Impact</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Service Increase</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Disproportionate Burden</th>
<th>Service Reduction</th>
<th>Service Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total Households</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Households</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low-income Households</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Percent Low-income</td>
<td>34.0%</td>
<td>44.0%</td>
<td></td>
</tr>
<tr>
<td>Disproportionate Burden</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Service Reduction</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disproportionate Burden</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Service Increase</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2 Service area demographics are recalculated for every Service Equity Analysis based on the service area of the existing Core Bus system, as well as the most recent survey data available from American Community Survey (ACS) 5-Year Estimates. Service area demographics may therefore vary by Service Equity Analysis.
Results
To determine whether each proposed service change for each time period complies with MDOT MTA Title VI policies, the total population and households and total minority populations and low-income households were determined for each metric, for each time period, for the sum of all Census Block groups affected for each proposed service reduction and service increase. Because there were no service increases made during this service change, there were no analyses for service increases conducted in this Service Equity Analysis. Table 3 and Table 4 display the summary-level results for each service reduction tables in the Disparate Impact and Disproportionate Burden sections display the individual results for each metric, for each time period.

<table>
<thead>
<tr>
<th>Service Reduction</th>
<th>Weekday (All Day)</th>
<th>Saturday (All Day)</th>
<th>Sunday (All Day)</th>
<th>Weekday Peak</th>
<th>Weekday Off-Peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>Service Discontinuation</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Span of Service Reduction (by 90 minutes or more)</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Trip Frequency Reduction (by 25 percent or more)</td>
<td>n/a</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

Table 4 | Service Equity Analysis Metrics – Potential Disproportionate Burdens

<table>
<thead>
<tr>
<th>Service Reduction</th>
<th>Weekday (All Day)</th>
<th>Saturday (All Day)</th>
<th>Sunday (All Day)</th>
<th>Weekday Peak</th>
<th>Weekday Off-Peak</th>
</tr>
</thead>
<tbody>
<tr>
<td>Service Discontinuation</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Span of Service Reduction (by 90 minutes or more)</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Trip Frequency Reduction (by 25 percent or more)</td>
<td>n/a</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

None of the proposed service changes resulted in potential Disparate Impacts for minority populations or Disproportionate Burdens for low-income households currently served by MDOT MTA Core Bus service.
DISPARATE IMPACT

Table 5 through Table 7 in this section provide details on the analysis for Disparate Impacts. For each effect and time period, the absolute number as well as the percentage of impacted minority populations were calculated, then compared to MTA’s Disparate Impact threshold for service reductions, as detailed in Table 2.

Discontinued Service

Weekday

Table 5 | Weekday Discontinued Service – Disparate Impact

<table>
<thead>
<tr>
<th>Service Change Type</th>
<th>Non-Minority</th>
<th>Minority</th>
<th>Total Population</th>
<th>Minority Percent of Population</th>
<th>MTA’s DI Threshold for Service Change Type</th>
<th>Meets MTA’s DI Threshold?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Service Discontinuation</td>
<td>172,244</td>
<td>215,777</td>
<td>388,021</td>
<td>55.6%</td>
<td>More than 64.2%</td>
<td>No</td>
</tr>
</tbody>
</table>

Trip Frequency Reduction

Weekday Peak

Table 6 | Weekday Trip Peak Frequency Reduction – Disparate Impact

<table>
<thead>
<tr>
<th>Service Change Type</th>
<th>Non-Minority</th>
<th>Minority</th>
<th>Total Population</th>
<th>Minority Percent of Population</th>
<th>MTA’s DI Threshold for Service Change Type</th>
<th>Meets MTA’s DI Threshold?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trip Frequency Reduction</td>
<td>248,823</td>
<td>324,215</td>
<td>573,038</td>
<td>56.6%</td>
<td>More than 64.2%</td>
<td>No</td>
</tr>
</tbody>
</table>

Weekday Off-Peak

Table 7 | Weekday Trip Off-Peak Frequency Reduction – Disparate Impact

<table>
<thead>
<tr>
<th>Service Change Type</th>
<th>Non-Minority</th>
<th>Minority</th>
<th>Total Population</th>
<th>Minority Percent of Population</th>
<th>MTA’s DI Threshold for Service Change Type</th>
<th>Meets MTA’s DI Threshold?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trip Frequency Reduction</td>
<td>126,364</td>
<td>123,237</td>
<td>249,601</td>
<td>49.4%</td>
<td>More than 64.2%</td>
<td>No</td>
</tr>
</tbody>
</table>
Span of Service Increase/Reduction
No stops were affected by a span change greater than 90 minutes in this service change. Per the Major Service Change policy, changes to span of service were therefore not analyzed for Disparate Impact or Disproportionate Burden.

DISPROPORTIONATE BURDEN

Table 8 through Table 10 in this section provides details on the analysis for potential Disproportionate Burdens. For each effect and time period, the absolute number as well as the percentage of impacted low-income households were calculated, then compared to MTA’s Disproportionate Burden threshold for service reductions, as detailed in Table 2.

Discontinued Service
Weekday

Table 8 | Weekday Discontinued Service – Disproportionate Burden

<table>
<thead>
<tr>
<th>Service Change Type</th>
<th>Non-Low-income</th>
<th>Low-income</th>
<th>Total Households</th>
<th>Low-Income Percent of Households</th>
<th>MTA’s DB Threshold for Service Change Type</th>
<th>Meets MTA’s DB Threshold?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Service Discontinuation</td>
<td>100,779</td>
<td>54,440</td>
<td>155,219</td>
<td>35.1%</td>
<td>More than 44.0%</td>
<td>No</td>
</tr>
</tbody>
</table>

Trip Frequency Reduction
Weekday Peak

Table 9 | Weekday Trip Peak Frequency Reduction – Disproportionate Burden

<table>
<thead>
<tr>
<th>Service Change Type</th>
<th>Non-Low-income</th>
<th>Low-income</th>
<th>Total Households</th>
<th>Low-Income Percent of Households</th>
<th>MTA’s DB Threshold for Service Change Type</th>
<th>Meets MTA’s DB Threshold?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trip Frequency Reduction</td>
<td>146,534</td>
<td>81,114</td>
<td>227,648</td>
<td>35.6%</td>
<td>More than 44.0%</td>
<td>No</td>
</tr>
</tbody>
</table>

Weekday Off-Peak

Table 10 | Weekday Trip Off-Peak Frequency Reduction – Disproportionate Burden

<table>
<thead>
<tr>
<th>Service Change Type</th>
<th>Non-Low-income</th>
<th>Low-income</th>
<th>Total Households</th>
<th>Low-Income Percent of Households</th>
<th>MTA’s DB Threshold for Service Change Type</th>
<th>Meets MTA’s DB Threshold?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trip Frequency Reduction</td>
<td>72,065</td>
<td>29,624</td>
<td>101,689</td>
<td>29.1%</td>
<td>More than 44.0%</td>
<td>No</td>
</tr>
</tbody>
</table>
Span of Service Increase/Reduction

Weekday
No stops were affected by a span change greater than 90 minutes in this service change. Per the Major Service Change policy, changes to span of service were therefore not analyzed for Disparate Impact or Disproportionate Burden.
Maps

The maps in Figure 2 through Figure 4 provide a general guide to the location of Census Block Groups with high or low numbers of impacted populations and households in the service area impacted by major service changes. Because MDOT MTA completes service equity analyses based on cumulative changes, the most accurate reflection of the absolute number and percentage of impacted populations and households can be found in Table 5 through Table 7 and Table 8 through Table 10. The map in this section uses Minority and Low-Income symbologies to designate Census Block Groups as either exceeding the Minority or Low-Income thresholds (i.e., high concentrations of minority populations and/or low-income households, relative to the service area average). Table 11 provides definitions for each symbology used in the maps.

Table 11 | Service Reduction Maps – Symbology/Legend Definitions

<table>
<thead>
<tr>
<th>Legend Label</th>
<th>Criterion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exceeds Minority Threshold</td>
<td>Census Block Group has a higher percentage of minority population than the service area average (fifty-four percent (54.2%))</td>
</tr>
<tr>
<td>Exceeds Low-Income Threshold</td>
<td>Census Block Group has a higher percentage of low-income households than the service area average (thirty-four percent (34.0%))</td>
</tr>
<tr>
<td>Exceeds Low-Income and Minority Threshold</td>
<td>Census Block Group minority population percentage and low-income households’ percentage both exceed the respective service area averages (fifty-four percent (54.2%) and thirty-four percent (34.0%))</td>
</tr>
</tbody>
</table>
SERVICE REDUCTIONS

Figure 2 | Weekday Discontinuation of Service
Figure 3 | Weekday Peak Reduction in Frequency
Figure 4 | Weekday Off-Peak Reduction in Frequency