

Transportation Planning Equity Assessment Equity Score Calculation Methodology

Revised December 2018



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Our Mission: To collaboratively plan, prioritize, and fund the delivery of diverse transportation options.

Our Vision: Our work will have measurable positive impact by ensuring transportation projects are well selected, funded, and delivered.

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Section 1 Introduction

The Broward Metropolitan Planning Organization (Broward MPO) is developing a process to more consistently and comprehensively evaluate its plans and programs against Title VI and other federal and state nondiscrimination authorities, including Environmental Justice (EJ). This effort is driven by the following goals, designed to develop a systemic process that:

- **Consistently evaluates** transportation plans and programs against federal and state nondiscrimination authorities.
- **Improves efficiency** in planning processes and programs.
- **More effectively satisfies** federal Title VI and EJ requirements.
- **Produces meaningful outcomes** for the community through MPO transportation planning programs, particularly for Title VI and EJ populations.
- **Identifies adverse impacts early** at the planning level rather than later at the project funding and delivery level

One of the initial steps in this process is preparing a methodology that provides a consistent approach for identifying areas of Broward County that have a higher proportion of populations protected under Title VI and other federal and state nondiscrimination authorities. This methodology is not intended to definitively identify areas of concern or satisfy EJ requirements; it is intended to be an initial method to identify such areas as part of a broader EJ assessment process. This process should be complemented with local knowledge of the community and fact checking and discussion with the Broward MPO's Citizens Advisory Committee (CAC), local stakeholders/community organizations, and others, as appropriate, to confirm or refute quantitative data findings.

This methodology is not intended to definitively identify areas of concern or satisfy EJ requirements; it is intended to be an initial method to identify such areas as part of a broader EJ assessment process.

This report documents the methodology used to define equity areas in Broward County based on the concentration of populations protected under Title VI and other federal and state nondiscrimination authorities. Equity areas are defined by an equity score, which is calculated using a methodology contained in an Excel-based data analysis file ("Data Analysis File") described herein. The methodology used to develop the Data Analysis File has been reviewed and approved by the Broward MPO Working Group. The Working Group was established for the duration of this effort and consists of a diverse mix of staff responsible for various MPO functions and core products, such as the Metropolitan Transportation Plan, Transportation Improvement Program, public outreach, data and information systems, etc.

1.1 Overview of Title VI & Environmental Justice

Environmental Justice is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. [Executive Order \(EO\) 12898](#) calls on each federal agency to achieve "environmental justice ... by identifying and addressing, as

appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations....” [U.S Department of Transportation \(DOT\) Order 5610.2\(a\)](#) and [Federal Highway Administration \(FHWA\) Order 6640.23A](#) sets forth the DOT policy to consider EJ in all DOT programs, policies, and activities. As a recipient of U.S. DOT funds, the Broward MPO is required to comply with EO 12898 and U.S. DOT Order 5610.2(a) and FHWA Order 6640.23A by incorporating EJ principles into its transportation decision-making processes.

[Title VI of the Civil Rights Act of 1964](#) states that “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.”

As a recipient of federal funds, the Broward MPO is required under the Federal Transit Administration (FTA) [Title VI Circular 4702.1B](#) to prepare a Title VI Program demonstrating compliance with federal regulations. The Broward MPO also is responsible for monitoring any subrecipients to ensure their compliance with Title VI concerning federal funds received through the Broward MPO. The Broward MPO’s current [Title VI Program](#) update was approved by the MPO Board on October 12, 2017.

Title VI and EJ are similar, in that they both:

- Address non-discrimination
- Identify minorities as a protected population
- Are rooted in the constitutional guarantee that all citizens are created equal
- Address involvement of affected community members in the decision-making process

Although similar, there are some distinctive differences between Title VI and EJ (see Figure 1). Title VI is a federal statute that prohibits discrimination based on race, color, national origin (as well as gender, age, and persons with disability through other federal and state nondiscrimination authorities), whereas EJ is directive to federal agencies to achieve environmental justice by addressing disproportionately high and adverse effects of activities on minority and low-income populations. Title VI prohibits discrimination by law, and EJ mandates a process for inclusive decision-making.

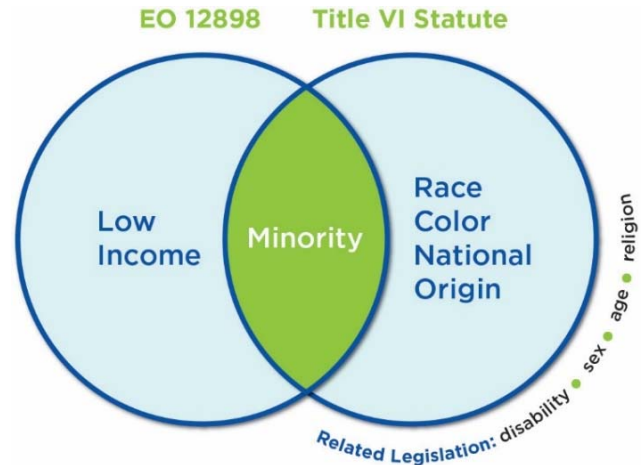


Figure 1: Relationship between Title VI & Environmental Justice

Source: Federal Highway Administration (FHWA)

1.2 Current Title VI & Environmental Justice Efforts

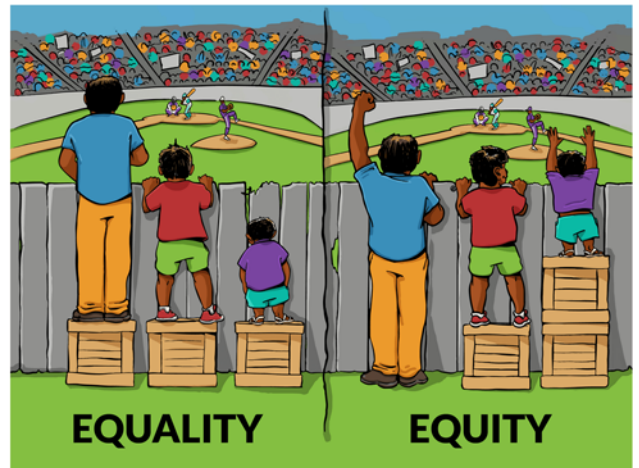
As a requirement to receive federal funding and in good planning practices, the Broward MPO has incorporated Title VI requirements and EJ principles into its various planning programs. However, the methods used and extent to which this has been done varies by plan, program, or project, depending on the scope of work or the leading agency (Broward MPO staff, consultant, other agency, etc.). Upon completion of this effort, the Broward MPO will have established a consistent process to evaluate Title VI/EJ principles across its different plans and programs, demonstrating nondiscrimination and providing a process that is equitable for all communities. This process will also consider how impacts, both positive and negative, are distributed. This process and supporting deliverables will also be available for use by municipalities and other agencies in Broward County and beyond.

Upon completion of this effort, the Broward MPO will have established a consistent process to evaluate Title VI/EJ principles across its different plans and programs.

Prior to developing this initial assessment methodology, it is important to understand the historical context of Title VI/EJ analysis or evaluations previously undertaken by the Broward MPO. This section summarizes related highlights noted by Broward MPO Working Group members at the initial project meeting held on October 11, 2017.

Long-Range Transportation Plan (LRTP)/ Metropolitan Transportation Plan (MTP)

- The 2040 LRTP included a ½-mile buffer to identify potential impacts on low-income, minority, and Limited English Proficiency (LEP) populations.
- Actions were taken if adverse impacts were identified and prompted the MPO to either look further into the project to resolve impacts, not include the project, or flag for more analysis later.
- The LRTP/MTP is not the appropriate planning level to identify detailed impacts that may result from environmental assessments, potential takings, etc. However, the LRTP/MTP does provide opportunities to eliminate, alter, or reprioritize projects whose adverse impacts are presumed.
- This current process for EJ assessment will be considered in the 2045 LRTP development.



*Credit: Interaction Institute for Social Change |
Artist: Angus Maguire*

Transportation Improvement Program (TIP)

- The FY 2018–2022 TIP includes an EJ analysis section that maps line and point projects over block groups containing various demographic information (minority, low income, etc.). The threshold used to identify if a block group is “above average” for each demographic variable mapped is the county average.
- A “distribution of investment” approach was used to determine where projects fall in relation to identified EJ communities and the investment resulting from these projects within EJ communities versus non-EJ communities. It was noted that public outreach conducted for projects included in the TIP had separate EJ assessments to varying degrees to help determine if community needs are addressed by these projects.

Complete Streets

- The Bicycle/Pedestrian Safety Action Plan has a formula that correlates identified areas of high EJ populations with crash hot spots.
- The Complete Streets Master Plan is using the same methodology as the Bicycle/Pedestrian Safety Action Plan and uses a statistically-driven calculation of selected demographic indicators to produce a four-tier concentration scale for identifying historically-vulnerable populations at the block group geography. The Complete Streets Master Plan methodology has been reviewed in detail as part of this methodology development process.

Complete Streets and other Localized Initiatives Program (CSLIP)

- Project selection for CSLIP grant funds incorporates equity and nondiscrimination principles by using the presence of low-income populations in the project area as part of the evaluation process.
- Cities are required to conduct outreach and identify impacts of proposed CSLIP projects.
- City policy leaders are required to adopt a resolution demonstrating support for the project prior to receiving funds.

Multimodal Corridor Studies

- Past corridor studies have included Title VI/EJ in the project prioritization process (although no standardized approach has been used).
- Some corridor studies have used Title VI/EJ areas to evaluate the project’s public outreach success (e.g., Hollywood Pines Corridor Project and State Road 7 Multimodal Improvements Corridor Study).
- Projects resulting from these studies may have both positive and adverse impacts on a community. How the range of impact can be determined and addressed to assess overall benefit and general community consensus should be addressed as part of this methodology.

Public Outreach

- The Broward MPO has a robust program with different types of outreach (e.g., in-person, social media-based, project-based, etc.).
- [Speak Up Broward](#), led by the Broward MPO, was developed and branded as an outreach effort to engage people in a conversation about transportation issues in Broward as well as raise the awareness of the Broward MPO.
- The Broward MPO has a traveling booth that goes to different communities. Reaching all communities is attempted, but a challenge remains that, outreach into some communities, especially smaller ones with limited staff resources is difficult. Partnering with agencies is a key to success in getting into a new community.
- The Broward MPO uses its website, which was recently redesigned to be more user-friendly, and social media to engage stakeholders.
- The Broward MPO recently acquired the My Sidewalk to initially develop a safety dashboard that will be integrated into the MPO's website. Discussion of how the equity scores can be integrated into My Sidewalk and how My Sidewalk can further support Broward MPO's EJ assessment efforts is ongoing.
- The Broward MPO mapped outreach locations in its last two annual reports. These data were also mapped over minority/LEP data in the Title VI Program and identified communities that can be emphasized for future engagement by the Communications and Outreach team. The data can be an important resource, as they are collected and maintained over time.

My Sidewalk is an interactive online platform that tracks and analyzes data and communicates this information to the public through user-friendly visual reports and dashboards.

Section 2 Methodology and Data Analysis File Development

This section documents potential approaches evaluated during this process and the methodology used to develop the Data Analysis File. Examples illustrating potential applications of the final methodology also are provided.

2.1 Potential Methodological Approaches

Based on research conducted at the start of this process, three primary methodologies for locating population-based areas of concern were identified and evaluated – threshold-based approach, population-weighted approach, and community-based approach.

Threshold-Based Approach

The threshold-based approach is the most common approach for identifying a concentration of a specific population within a certain geographic area (such as a Census tract or block group) relative to a larger reference area (such as a county or region); however, there is no standard method to follow for determining the threshold. The most common methods encountered include:

- Identifying areas with populations above the reference area average. For example, if a block group contains 25% low-income population and the county, as the reference area, has an overall average of 20% low income-population, then the block group has a higher percentage of low-income population than the county and the block group would be identified as such.
- Identifying areas with majority ($\geq 50\%$) of a given population present.
- Identifying areas with a percentage of the population greater than a statistically-derived number (e.g., percentage greater than standard deviation greater from the reference area average)

Results derived from this approach are only as accurate as the data used. Certain demographic variables can contain significant inconsistencies and should be verified through a detailed analysis and further vetted using local knowledge of the community.

Composite indices also can be used as an extension of the threshold method, which combines multiple demographic variables, or indicators, into a single measure or score. Although this method can be effective in identifying areas of particular concern, it risks obscuring the needs of individual demographic groups. Therefore, it is important that a potential methodology using this approach has the ability to evaluate individual demographic variables as well as the overall composite index.

Population-Weighted Approach

The population-weighted approach does not identify discrete geographic areas, such as Census tracts or block groups. Rather, the outcome for a particular group is calculated as the weighted mean of that demographic variable over all areas. The methods used in this approach are more limited and less subjective than the threshold approach.

Community-Based Approach

The community-based approach involves talking to community members and stakeholders to identify the locations of specific population groups. Challenges to this method are that it does not rely on a standardized quantitative process and it risks biased identification of population groups or other communities; however, it can serve as a crucial part of involving and co-empowering these communities.

2.2 Methodology Objectives

Prior to developing the Data Analysis File, five objectives for the methodology were identified and vetted with the Working Group. These objectives served as a guideline and checklist during the methodology development to ensure that it meets the broader project goals described in the introduction. The five methodology objectives and discussion of how each were met is provided below.

The Working Group identified five key objectives to serve as guidelines during the Data Analysis File development process in support of the overall project goals.

- **Objective 1: Use available and accessible data** from standard, easily-obtainable, and frequently-updated sources such as the U.S. Census, the American Community Survey (ACS), etc. All selected indicators are data obtained from the American Community Survey (ACS) Five-Year Estimates.
- **Objective 2: Be flexible for MPO/local plans and programs** where resulting outputs can be modified to accommodate different planning efforts, if needed. The methodology can be used to develop either an overall composite equity index or an index based only on selected variables. The Data Analysis File also can be scaled to other geographies, including by Census tract or other defined regions/subareas comprising a specific collection of block groups or tracts, if appropriate for a particular plan or program.
- **Objective 3: Be simple to use**, providing a methodology and analysis file that is user-friendly and easy to understand. The Data Analysis File was designed with simplicity and user-friendliness in mind with clear instructions so that anyone will be able to use it.
- **Objective 4: Be objective** so results are transparent and cannot be manipulated by the perspective or opinion of the person developing the model or by the user. The Data Analysis File does not require any scores or weights be input by the developer/user. Outside of using statistical analysis or other similar approaches,

developing and applying scores and weights can be subjective. The Data Analysis File uses statistical analyses to derive all scores, eliminating user subjectivity.

- **Objective 5: Be open-sourced** such that MPO staff can maintain, update, or modify the data as necessary. The Data Analysis File is an Excel-based file that can be modified/updated by MPO staff or others in the future.

2.3 Methodology Overview

Following review of the potential approaches, it was determined that a quantitative, statistically-driven threshold-based approach would best satisfy the methodology objectives previously presented. Since this overall effort is looking at a range of potential equity indicators, it also was determined that a methodology to develop a composite score comprising multiple indicators (with Broward County as the reference area) would be most appropriate. As previously stated any results produced by the Data Analysis File will be fact checked and discussed using local knowledge of the community.

The Data Analysis File uses a threshold-based approach, building on a methodology used in Florida transportation and transit plans since 1995.

The Transportation Planning Equity Data Analysis File methodology presented to the Working Group is based on the Transit Orientation Index (TOI) methodology. This methodology was first developed by the University of South Florida's Center for Urban Transportation Research (CUTR) and has since been enhanced by Tindale Oliver and used in transportation and transit projects (including Transit Development Plans) throughout Florida and beyond over the last 20 years.

Using the TOI methodology as a framework, the methodology used to develop the Data Analysis File includes the following five steps:

1. Calculate the countywide average threshold for each indicator.
2. Assign indicator categories to block groups based on the standard deviation of the indicator's dataset.
3. Calculate the comparative score for each indicator.
4. Calculate the equity composite score.
5. Assign the equity composite score category to each block group.

This methodology was designed to meet the five methodology objectives, as described in Section 2.2 on page 8.

2.4 Indicator Selection

This section documents the preliminary equity indicators initially considered, the process for evaluating the potential indicators, and the final equity indicators to be used in the methodology.

Preliminary Equity Indicators

As part of the methodology review process completed with the Working Group, preliminary equity indicators (presented in Table 1) were identified based on Title VI/EJ and related non-discrimination authorities, a review of the MPO's existing plans and programs, and data available from sources such as the ACS.

Table 1: Preliminary Equity Indicators

Equity Indicator	Countywide Average (Source)
Minority Population ⁽¹⁾	59.6% (ACS)
Non-Hispanic Minority Population	32.7% (ACS)
Low-Income Households	14.5% (ACS)
Household and Transportation (H + T) Affordability	See individual indicators through (H + T Affordability Index)
Older Adult Population (65+)	15% (ACS)
Limited English Proficiency (LEP) Population	15.3% (ACS)
Female Head of Household with Children	13% (ACS)
Single Parent Household	16.4% (ACS)
Persons with a Disability	8.3% (ACS)
Households Receiving Food Stamps	13.5% (ACS)
Population without a High School Diploma	11.8% (ACS)
Zero Vehicle Households	7.7% (ACS)
Zero Vehicle + Low-Income Households (multiple indicators)	See individual indicators (ACS)
Limited English Proficiency (LEP) + Low-Income Households (multiple indicators)	See individual indicators (ACS)
Population Below Poverty with a Disability	2.2% (ACS)

ACS=American Community Survey

(1) Based on race and ethnicity; minority defined as non-White, non-Hispanic

Each indicator from this list was initially identified as primary or secondary. Primary indicators provide overall information related to the demographic category being considered and secondary indicators provide information about a subset of the primary indicator. For example, minority population is considered the primary indicator when quantifying the minority population of an area. Non-Hispanic minority population is a secondary indicator, as these data are a subset of the minority population data (the primary indicator).

The primary single indicators were initially explored for inclusion in the methodology, as noted in Table 2. Multiple indicators are not recommended for inclusion, as they are already represented by other single indicators. Final preliminary indicators were selected for the methodology when they tie back to the Title VI statute or DOT Order 5610.2(a) and FHWA Order 6640.23A, or when they could potentially enhance the representation of traditionally transportation-dependent populations not included under these requirements.

Table 2: Evaluation of Preliminary Indicators

Category	Indicator	Primary/ Secondary	Potential Inclusion in Methodology?
Income	Households defined as below poverty level	Primary	Yes
	Household and transportation affordability	Secondary	No
	Households receiving food stamps	Secondary	No
Minority Population	Minority population (defined as non-White)	Primary	Yes
	Non-Hispanic minority population	Secondary	No
Age	Older adults (65+ years)	Primary	Yes
	Independent youth (10-17 years) *Span of years noted above based on age categories available in ACS	Primary	Yes
Limited English Proficiency (LEP)	LEP population	Primary	Yes
Vehicle Access	Zero vehicle households	Primary	Yes
Educational Attainment	Population without a high school diploma	Primary	Yes
Disability Status	Persons with a disability	Primary	Yes
Household Composition	Female head of household with children	Primary	Yes
	Single parent household	Secondary	No
Multiple Indicators Combined	LEP + low-income households	N/A	No
	Zero vehicle + low-income households	N/A	No
	Population below poverty with a disability	N/A	No

Final Equity Indicators

The preliminary indicators were then further assessed to determine if appropriate to include in the final methodology. This evaluation included:

- Examining the indicator’s relationship to Title VI or EJ (and related nondiscrimination authorities).
- Understanding any potential correlation between indicators to avoid unintentional weighting of the data.
- Reviewing historical use of indicators included in previous Broward MPO plans and programs.
- Discussions with Working Group members.
- Discussions with peer agencies conducting similar efforts to understand and consider the indicators used and rationale for inclusion.
- Examining the margin of error data provided by the ACS for each indicator.

The final equity indicators in the Data Analysis File include two sets. The core indicators tie directly to Title VI & EJ. Other optional indicators are available for use on a case-by-case basis.

Based on the comprehensive assessment completed, the following recommendations were made to guide inclusion of the indicators:

- **Identify a “core” set of indicators that tie directly to Title VI and other federal and state nondiscrimination authorities.** Other indicators will then be identified as “optional” and available for use in the Data Analysis File on a case-by-case basis.
- **Examine ACS margin of error data to maintain integrity of the data.** This examination should include a periodic calculation of the percentage of block groups where the margin of error exceeds 100% or more of the block group estimate. If a core indicator has more than 30% of the block groups where this occurs, then it should be moved to the “optional” indicator list to be used on a case-by-case basis with caution, as the data may not be as reliable.
- **Include separate race and ethnicity indicators in the model rather than a combined minority indicator.** Including both race and ethnicity data as separate indicators allows more flexibility in the model for how minorities can be defined and allows the analysis and scoring methodology to account for race (i.e., Black, White, Asian, American Indian/Alaska Native, Native Hawaiian/Other Pacific Island, Other Race) separately from ethnicity (Hispanic or Latino). This addresses concerns by Working Group members as to how “minority” should be defined within Broward County, which is a minority-majority county. A comparison of the Data Analysis File outputs including both the race and ethnicity indicators as opposed to the consolidated minority indicator confirms there is no significant change to the analysis.
- **Use a consistent denominator across all core indicators.** Although the methodology presented in the next section normalizes the indicator’s dataset regardless of the denominator, it is recommended that all core indicators have a population-based denominator for consistency purposes. A comparison of the model outputs using the individuals below poverty indicator rather than households below poverty confirms there is no significant change to the analysis results.

Table 3 summarizes the final core versus optional indicators recommended for inclusion in the Data Analysis File, followed by a discussion of the legislation governing the protected class(es) identified for each core indicator.

Table 3: Transportation Planning Equity Areas – Final Indicators

Core Indicators	Core Indicator Protected Class	Optional Indicators
Racial Minority	Race and minority	Zero Vehicle Household
Ethnic Minority	Minority and national origin	Female Head of Household
Youth (age 10–17 years)	Age	No High School Diploma (25 years & older)
Older Adults (65 years & older)	Age	Minority (both race/ethnicity combined)*
Population Below Poverty	Low-income	
LEP Population	Minority and national origin	
Population with a Disability	Disability	

*This indicator should be used only if the racial and ethnic minority indicators under the core indicator category are not used.

- The racial minority, ethnic minority, and LEP indicators tie to protected classes of race and ethnicity, as detailed in [Title VI of the Civil Rights Act of 1964](#).
- The youth and older adult indicators address inclusion of these populations as protected classes to not discriminate based on age under related nondiscrimination legislation, the [Age Discrimination Act of 1975](#). The Federal Highway Administration (FHWA) has also published [EJ guidelines](#) to include children and older adults as “traditionally underserved” population groups when conducting equity analyses.
- The low-income indicator relates to the requirements of [DOT Order 5610.2\(a\)](#) and [FHWA Order 6640.23A](#) to consider impacts on low-income populations.
- Persons with disabilities are protected under related nondiscrimination legislation, the [Americans with Disabilities Act \(ADA\) of 1990](#).

Indicator Data Sources

All selected core and optional indicators are data obtained from the ACS Five-Year Estimates. A summary of the final indicators and their data tables are provided in Table 4.

Table 4: Final Indicator Data Sources

Indicator	ACS Data Table
Core Indicators:	
Racial Minority	B03002: Hispanic or Latino Origin by Race
Ethnic Minority	B03002: Hispanic or Latino Origin by Race
Youth	B01001: Sex by Age
Older Adults	B01001: Sex by Age
Population Below Poverty	B17021: Poverty Status of Individuals in Past 12 Months by Living Arrangement
LEP population	B16004: Age by Language Spoken at Home by Ability to Speak English for the Population 5 Years and Over
Population with a Disability	B23024: Poverty Status in Past 12 Months by Disability Status by Employment Status for the Population 20 to 64 Years
Optional Indicators:	
Zero Vehicle Households	B25044: Tenure by Vehicles Available
No High School Diploma	B15003: Educational Attainment for Population 25 Years and Over
Female Head of Household	B11003: Family Type by Presence and Age of Own Children Under 18 Years
Minority	B03002: Hispanic or Latino Origin by Race

2.5 Index Methodology

The methodology used to calculate the composite scores to identify Transportation Planning Equity Areas in Broward County consists of five steps, as previously noted. These steps are further explained in this section, with example applications provided for illustrative purposes.

Step 1: Calculate the countywide average for each indicator.

A benefit of this methodology is that it does not rely on establishing an arbitrary threshold (i.e., anything $\geq 50\%$ or over the countywide average for an indicator is flagged as an area of concern). Rather, the methodology relies on calculating standard deviations so that resulting scores are based on the extent to which an indicator in any given block group conforms or diverges with the countywide norms. Since the data determine the breakpoints, this eliminates any potential subjectivity.

The countywide average threshold for each indicator was calculated and are shown in Table 5.

Table 5: Countywide Average Threshold by Indicator

Equity Indicator	Countywide Average Threshold
Core Indicators:	
Race	31.04%
Ethnicity	25.67%
Youth	9.02%
Older Adults	17.01%
Below Poverty	14.83%
Limited English Proficiency	14.98%
Persons with a Disability	8.87%
Optional Indicators:	
No High School Diploma	12.41%
Female Head of Household	12.54%
Zero Vehicle Households	7.64%
Minority	55.69%

Source: ACS 2012–2016 Five-Year Estimates for Broward County.
 *Threshold is calculated by averaging block group estimates.
 Averages may differ from estimates calculated at County level.

Step 2: Assign indicator categories to block groups based on standard deviation.

In this step, one of four categories is assigned to each block group for each indicator based on the standard deviation (distance from countywide average) of the indicator’s dataset.

- Category 4 (Very High) = equal to or greater than +2 standard deviation from countywide average
- Category 3 (High) = equal to or greater than +1 standard deviation but less than +2 standard deviation from countywide average
- Category 2 (Medium) = equal to or greater than countywide average but less than +1 standard deviation from countywide average
- Category 1 (Low) = less than countywide average

Using the *population with a disability* indicator as an example, the resulting percentages based on the countywide dataset used to assign the categories for this indicator are:

- Category 4 (Very High) = equal to or greater than **21.58%**
- Category 3 (High) = equal to or greater than **15.23%** but less than **21.58%**
- Category 2 (Medium) = equal to or greater than **8.87%** but less than **15.23%**
- Category 1 (Low) = less than countywide average of **8.87%**

Using four block groups in Broward County as an example, the resulting indicator categories assigned for the *population with a disability* indicator are shown in Table 6.

Table 6: Category Assignment Determination (Example Application)

Block Group	% Population with a Disability	Category Assigned
1021	7.49%	Low
1042	12.90%	Medium
9021	21.06%	High
3052	26.93%	Very High

Step 3: Calculate the comparative score for each indicator.

This step assigns discrete numerical scores to each of the four indicator categories assigned to the dataset. These scores serve two purposes – to provide a uniform ranking for all block groups and to numerically differentiate among the four categories for each indicator.

To calculate the comparative score for each indicator, first, the total number of block groups that fall within each category under Step 2 is divided by the total number of block groups in the dataset to determine the comparative percentages of the categories (see Table 7). For example, of the 940 block groups in Broward County, 44 are assigned to the “very high” category for the *population with a disability* indicator. This results in a comparative percentage of 4.68% for the “very high” category in Broward County for this specific indicator. The results of this analysis may indicate that the transportation needs of Broward County may be vastly different than a neighboring community.

Table 7: Comparative Percentage Determination (Example Application)

Category	Count of Block Groups Assigned	Comparative Percentage
Low	550	58.51% (550/940)
Medium	255	27.13% (255/940)
High	91	9.68% (91/940)
Very High	44	4.68% (44/940)

Then using the percentage of block groups included under the “low” category in the numerator and the percentage specific to the indicator category assigned to the block group in the denominator (from Table 7), the comparative score for each block group is determined. This ensures that a block group categorized as “low” will always have a base score of 1.00.

Using the *population with a disability* indicator, the four example block groups are assigned one of four comparative scores, as shown in Table 8.

Table 8: Comparative Score Determination (Example Application)

Block Group	Category Assigned	Comparative Percentage Based on Category Assigned*	Comparative Score
1021	Low	58.51%	1.00 (58.51/58.51)
1042	Medium	27.13%	2.16 (58.51/27.13)
9021	High	9.68%	6.04 (58.51/9.68)
3052	Very High	4.68%	12.50 (58.51/4.68)

*Note: Sum of comparative percentages for all four categories should equal 100%, as in this example.

Step 4: Calculate the equity composite score.

To calculate the composite equity score for each block group, the scores for each core indicator are summed. Carrying forward the example from the previous step, the individual indicator scores and resulting composite equity score for the four selected block groups are shown in Table 9.

Table 9: Composite Equity Core Indicator Score Determination (Example Application)

Block Group	Individual Core Indicator Score							Composite Score
	Race	Ethnicity	Youth	Age 65+	LEP	Disability	Below Poverty	
1021	1.00	1.00	1.00	3.37	1.99	1.00	1.00	10.35
1042	1.00	1.00	1.00	12.47	1.00	2.16	2.31	20.94
9021	8.95	1.00	1.41	3.37	1.99	6.04	2.31	25.06
3052	3.28	1.00	1.00	12.47	5.76	12.50	5.38	41.40

Note: Composite score may be off by 0.01 due to rounding

Step 5: Assign equity composite score category to each block group.

Using the same methodology as in Step 2, an equity composite score category is assigned to each block group based on the standard deviation from the average composite score for all block groups in the dataset. The final composite equity score categories are assigned as follows:

- Category 4 (Very High) = equal to or greater than +2 standard deviation from average composite score for all block groups
- Category 3 (High) = equal to or greater than +1 standard deviation but less than +2 standard deviation from average composite score for all block groups
- Category 2 (Medium) = equal to or greater than countywide average but less than +1 standard deviation from average composite score for all block groups
- Category 1 (Low) = less than average composite score for all block groups

Following are the resulting final equity composite score categories assigned to the block groups based on a standard deviation of 11.20 from the average countywide score:

- Category 4 (Very High) = greater than **32.54**
- Category 3 (High) = equal to or greater than **24.48** but less than **32.54**
- Category 2 (Medium) = equal to or greater than **16.41** but less than **24.48**
- Category 1 (Low) = less than countywide average composite score of **16.41**

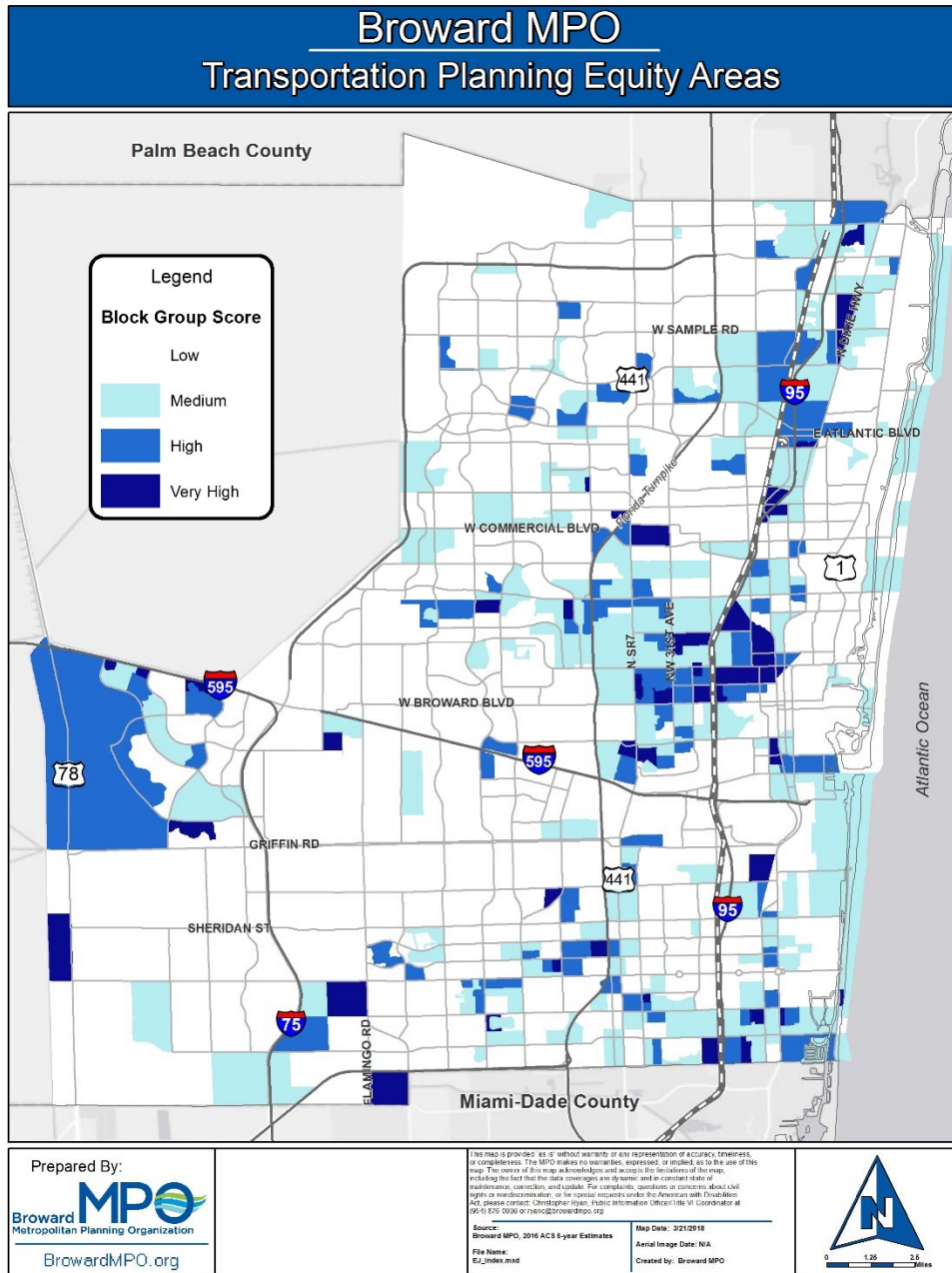
The final categories assigned to the four example block groups, based on the equity composite scores previously identified, are presented in Table 10.

Table 10: Final Equity Composite Score Categories (Example Application)

Block Group	Equity Composite Score	Final Composite Score Category Assigned
1021	10.35	Low
1042	20.94	Medium
9021	25.06	High
3052	41.40	Very High

Map 1 shows the final Transportation Planning Equity Area composite score for all block groups within Broward County based on the core indicators identified herein.

Map 1: Transportation Planning Equity Areas

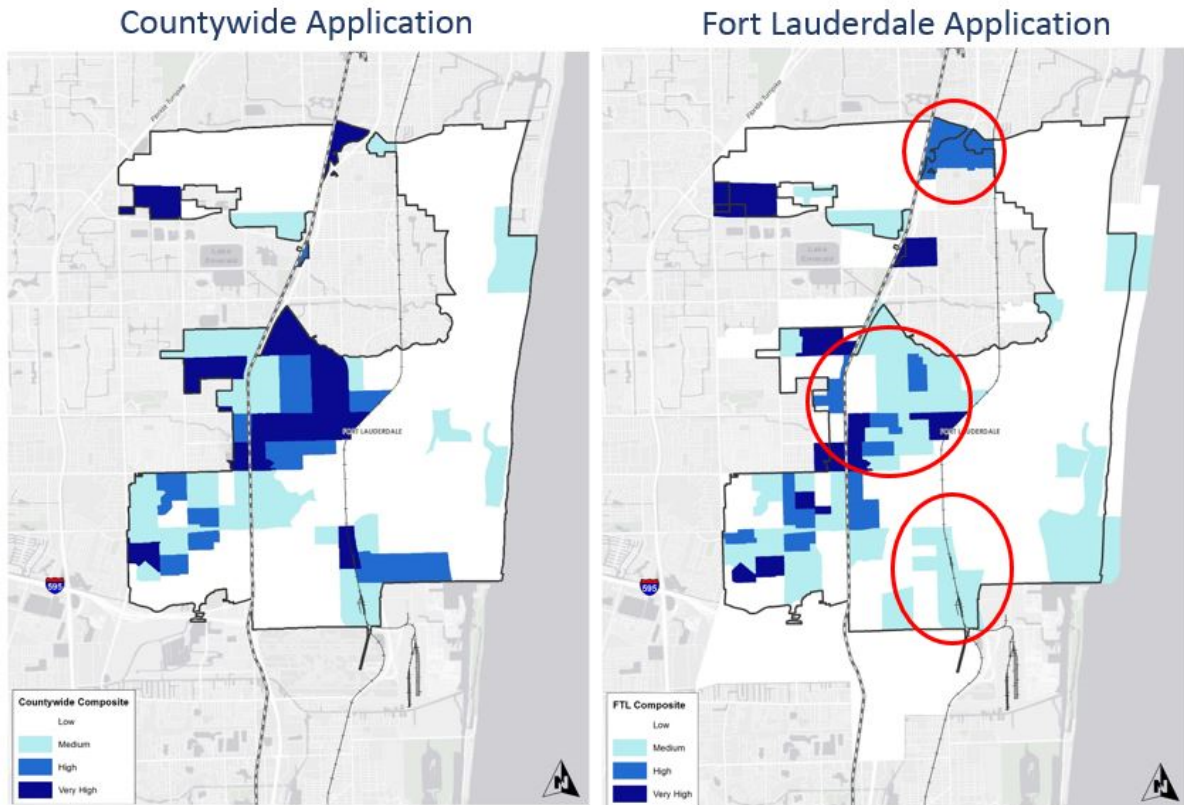


2.6 Subarea Application

Consistent with the methodology goals previously outlined, the Data Analysis File is also flexible in that it can recalculate scores based on a new defined dataset. For example, if a city-level analysis were to be completed for Fort Lauderdale, the composite equity scores will be calculated based on only the block groups within the city instead of the countywide data. Figure 2 shows how scores will differ between the countywide application and the city-level application. The red circles highlight major changes in block group scores.

The Data Analysis File can easily be applied at a sub-county geography, such as a city or other sub-area.

Figure 2: Countywide vs. City-Level Application (Example)





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