metroplan orlando
A REGIONAL TRANSPORTATION PARTNERSHIP

2045

Metropolitan Transportation Plan

Technical Series #6

Prioritization Process -

Approach and Methodology

September 2020

What is in this document?

This technical series document describes the process for developing evaluation criteria for prioritizing transportation projects identified in the multimodal needs assessment of the 2045 Metropolitan Transportation Plan (MTP).

Informed by the 2045 MTP goals and objectives set by the MetroPlan Orlando Board, the project evaluation criteria are one element of a multistep process used to develop the revenue constrained multimodal transportation network for the MTP.

The quantitative methodology described within this document will be used as a basis for prioritization. Additional qualitative reviews will serve to check and balance these results based on existing MPO plans, FDOT and local government priorities, freight mobility plans, and transit plans.

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Project Prioritization Process

Consistent with FHWA's Transportation Performance Management (TPM) guidance, MetroPlan Orlando is using a data-driven and context-informed approach to identify and assess candidate transportation projects for prioritization in the 2045 MTP. The intent of this process is to identify, select, and fund projects which best address regional transportation goals, objectives, and targets. The use of comparative criteria and the evaluation process described in the following sections to select projects is not an end in itself. Rather, the process is intended be used as a guide to assist MetroPlan Orlando and its partner agencies in establishing the order in which projects may be implemented, based on forecasted funding levels; and ultimately, providing a basis for determining cost feasible projects for the 2045 MTP.

Approach

In developing a project prioritization framework for the 2045 MTP, a multimodal approach will be taken to assist in determining how well each transportation project, regardless of mode, reflects the planning goals and objectives. From the onset of the prioritization process, three fundamentals guided development, ensuring a structured decision-making process: replicable evaluation and assessment, clear and comprehensive criteria, and objective and quantitative scoring.

The following project prioritization process is intended to complement MetroPlan Orlando's regional planning, congestion management and overall decision-making process. While ultimate discretion is granted to the MPO Board, the quantitative and objective-driven results yielded from the project assessment phase will enable decision-makers to make the most informed selection and prioritization decisions consistent with Transportation Performance Management best practices.

The 2045 MTP project evaluation and prioritization process consists of three key phases:

1) **Multimodal Needs Assessment**

   Utilizing corridor-level needs based on system performance and future impacts caused by socio-economic and development changes, project solutions will be identified and added to the candidate project list as well as existing projects included in previous plans, priority lists and studies.

2) **Agency Review of Preliminary Needs**

   Following completion of technical needs assessment, MPO staff, Technical Advisory Committee (TAC), and Transportation Systems Management & Operations Advisory Committee (TSM&O) members will review preliminary findings. Feedback from agency partners and other stakeholders will be gathered and considered for incorporation. During this phase, MPO staff will also review candidate projects to ensure funding eligibility.

3) **Project Evaluation and Comparative Analysis**

   Utilizing the evaluation criteria documented in the Methodology section of this document, candidate projects will be evaluated and ranked using the established process. Rankings and associated project costs for all phases will be considered during the development of the 2045 Cost-Feasible Plan.

Methodology

The intention of this evaluation is to use comparative criteria to evaluate projects and their relationships to the planning goals listed below. It is important to note, while this methodology is being developed for the 2045 MTP, the criteria suggested in this process are not static and emphasis areas stressed by the federal and state government or special preferences by local governments and the MPO Board will change over time. This may lead to the addition of new factors and the elimination of others; these aspects can and will be considered in future updates of the MTP. As previously noted, the project assessment guidelines are intended to assist decision-makers in determining how well each transportation project, regardless of mode, reflects the planning objectives and values of our regional transportation vision.

Projects are being evaluated and prioritized consistent with the 2045 MTP's Goals and Objectives outlined in Technical Series #1. These long-range transportation system goals include:

Safety & Security

Provide a safe and secure transportation system for all users

Reliability & Performance

Leverage innovative solutions to optimize system performance

Access & Connectivity

Enhance communities and lives through improved access to opportunities

Health & Environment

Protect and preserve our region's public health and environmentally sensitive areas

Investment & Economy

Support economic prosperity through strategic transportation investment

By considering transportation industry evaluation best practices, local experience and professional judgment, the 2045 MTP's project prioritization process will use a Multiple Criteria Decision Analysis (MCDA) framework. MCDA is the term used to describe the formal approach of taking into account multiple criteria in helping individuals or groups of people make important decisions. In other words, it is a field of study that applies scientific methods and analysis to help decision-makers choose between a series of competing and sometimes conflicting options.

Did you know?

Studies have shown that when making decisions, on average, people can only hold 7(±2) criteria when comparing different options. For complex programmatic decision making, MCDA becomes even more important to ensure that influencing factors are not "forgotten," which could result in un-informed decisions and/or missed opportunities.

Project Evaluation Framework

The 2045 MTP will follow a funding program approach to project prioritization. Consistent with MetroPlan Orlando's existing Prioritized Project List and Transportation Improvement Program funding categories and allocation policies, this approach helps ensure funding eligibility and seamless implementation into FDOT's 5-Year Work Program.

Funding programs are summarized in Table 6.1.

Table 6.1 | MPO Funding Programs and Project Eligibility

Funding Program / Priority List Categories	Project Types / Eligibility
National Highway System (NHS) & State Roads	The National Highway and State Road lists of unfunded projects are prioritized based on their potential to help achieve targets set for Safety, Travel Time Reliability, Bridge, and Pavement Condition performance measures. The NHS list includes major capacity improvements to I-4 that involve adding four managed toll lanes along with six general use lanes. The State Roads list includes non-interstate projects on the State Highway System, including road widening, complete streets, Transportation Systems Management & Operations, and bicycle & pedestrian projects.
Multimodal System: Roadways & Complete Streets	The multimodal System Roadway and Complete Streets list includes projects off the state highway system that are functionally classified. The projects can include non-capacity multimodal Context Sensitive improvement that use a combination of bicycle & pedestrian, transit and intersection solutions to improve traffic flow on constrained roadways without adding lanes.
Multimodal System: Transportation Systems Management & Operations	TSMO projects are relatively low-cost improvements that alleviate traffic congestion on existing roadways without adding capacity and use such methods as adding turn lanes at intersections, computerized traffic signal systems, and dynamic message signs. The TSMO category includes projects pertaining to incident management, Transportation Demand Management, and other related activities.
Regional Trails & Safe Routes to Schools	Regional Trail and Safe Routes to Schools include local and regional trail projects that can be used by cyclists and pedestrians for recreation and/or commuting, on-street bicycle lanes, sidewalk improvements (particularly for safety purposes around elementary schools), and other projects that will improve overall bicycle and pedestrian mobility.
Transit Projects	The list of transit projects includes what are known as "premium transit" projects. These projects are defined by the Federal Transit Administration as "transit modes that provide higher comfort, capacity, speed and frequency than typical local bus operations or create a positive perception to users." Projects meeting this definition include commuter rail, light rail, bus rapid transit (BRT), streetcars, etc. The transit section also includes ongoing federal formula transit projects pertaining to the fixed-route bus service operated by LYNX, the local transit provider. Fixed-route bus service is not considered to be premium transit.

Source: MetroPlan Orlando Prioritized Project List and Transportation Improvement Program

Evaluation Criteria

MetroPlan Orlando's regional goals blended with the planning factors set forth in the federal FAST Act yielded 28 criteria, or scoring factors, consistent with board funding programs/policies, to serve as the basis for the comparative evaluation. In this way, new projects will be proposed, funded, and constructed, with their impacts measured for consistency with the 2045 MTP's goals and objectives. Although there are no "right" or "wrong" evaluation criteria, there are useful and less useful ones.

The characteristics of good evaluation criteria are:

- Accurate and unambiguous, meaning that a clear and accurate relationship exists between the criteria and the real impacts/consequences;
- Comprehensive but concise, meaning that they cover the range of relevant consequences but the evaluation framework remains systematic and manageable, with no redundancies;
- Direct and ends-oriented, meaning they report directly on the consequences of interest and provide enough information that informed value judgments can reasonably be made;
- Measurable and consistently applied to allow comparisons across alternatives. This means the criteria should distinguish the relative degree of impact across alternatives. It does not exclude qualitative characterizations of impact, or impacts that can't be physically measured in the field;
- Understandable, in that impacts and trade-offs can be understood and communicated by everyone involved;
- Practical, meaning that information can practically be obtained to assess them (i.e., data, models or expert judgment exist or can be readily developed);
- Sensitive to the alternatives under consideration, so that they provide information that is useful in comparing alternatives; and
- Explicit about uncertainty so that they expose differences in the range of possible outcomes (differences in risk) associated with different policy or project alternatives.

Weighting

Criteria weighting can be applied to represent the overall preference and significance of the MTP goal areas in relation to one another. Weighting is typically applied following the additive scoring and normalization. Based on public input from survey research conducted by MPO staff and their consultants, it was determined that goal area weighting should be applied equally across the five categories, as research findings yielded little variation. The "take away" was that all goals are important and transportation impacts everything.

Please note, a project's overall score does not indicate that funding will be received. Rather, the evaluation process will:

1. Assist local entities in regional collaboration to identify high impact and priority projects;
2. Align projects with national goals which are used during funding decisions in regional and statewide competitive processes; and
3. Emphasize the use of data collection and performance-based programming as required by FAST Act.

Overview of Evaluation Criteria

Table 6.2 outlines the project evaluation criteria to be considered per Category. It should be noted that while priority programming determines the order in which projects are pursued, various factors such as available funding and the need for additional analysis or design can influence the order in which projects are actually implemented.

Table 6.2 | Project Evaluation Criteria by Category

Goal Area	Evaluation Criteria	NHS & State Roads	Multimodal: Complete Streets	Multimodal: TSM&O	Trails & Safe Routes to School	Transit
Safety & Security	Crash Rate	✔	✔	✔	✔	✔
	Fatal & Serious Injury Crash Rates	✔	✔	✔	✔	
	Number of Pedestrian & Bicycle Crashes	✔	✔	✔	✔	
	Evacuation Route Designation	✔		✔		
Reliability & Performance	Travel Time Reliability (Auto)	✔	✔	✔		✔
	Unreliability on Constrained Corridor		✔	✔		
	Fiber Optic Presence	✔		✔		
	Segment Actively Monitored/Managed	✔		✔		
	Relative Change: Future Congested Speeds	✔	✔	✔		✔
Access & Connectivity	Transit System Headways		✔			✔
	Population: ½ Mile of Non-Transit Corridor		✔			✔
	Jobs: ½ Mile of Non-Transit Corridor		✔			✔
	Food & Healthcare Locations: ½ Mile of Corridor	✔	✔		✔	✔
	Cultural & Recreational Locations: ½ of Corridor	✔	✔		✔	✔
	Centrality Analysis Score (Critical Sidewalk Need)	✔	✔		✔	
Health & Environment	Bicycle Level of Traffic Stress		✔			
	Residential Density: ¼ Mile of Multimodal Facility		✔			✔
	Non-Residential Density: ¼ Mile of Multimodal Facility		✔			✔
	Public Health Indicator Rates	✔	✔	✔	✔	✔
	Intensity & Proximity: Environmental Justice Populations	✔	✔	✔	✔	✔
	Relative Change: Vehicle Miles Traveled		✔			✔
Investment & Economy	Percentage of Commercial Vehicle Traffic	✔		✔		
	Statewide Truck Bottlenecks	✔		✔		
	Intensity & Proximity: Freight Intensive Land Uses	✔		✔		
	Relative Change: Vehicle Hours Traveled	✔	✔	✔		✔
	Cost Burdened Households: ¼ Mile of Corridor	✔	✔	✔	✔	✔
	Percentage of Visitor Traffic	✔	✔			✔
	Cost of Congestion	✔	✔	✔		✔

Criteria and Scoring Logic

The Criteria and Scoring Logic applied to the region's corridors will provide a quantitative assessment that will serve as the foundation for project prioritization. This assessment will provide decision-makers with the best information available for qualitative reviews and will guide MetroPlan Orlando's investments through a data-informed and performance-based process. The following section (Tables 6.3 - 6.7) provides an overview of the method, logic, and data source of the evaluation criteria.

Each component of the Criteria and Scoring Logic is summarized below:

Performance Indicator –Defines the metric which was used to align with the objectives of each goal. This alignment is the basis of the quantitative assessment and will be used to identify needs and prioritize based on the performance.

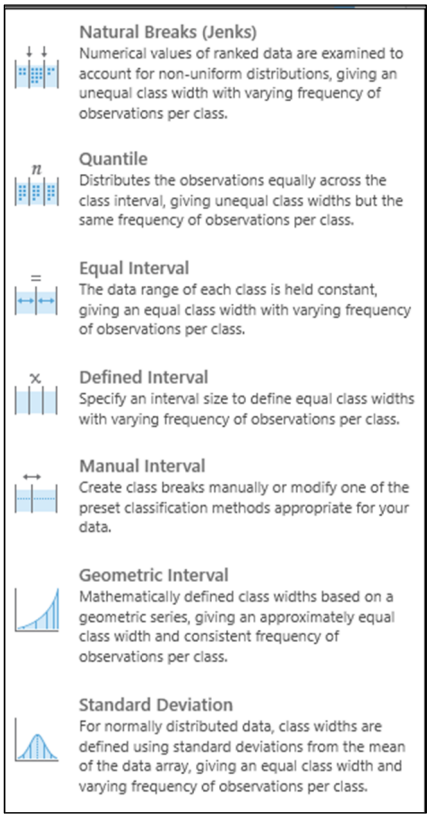
Data Sources – Provides the source of each indicator used within the data model. An in-depth explanation of each of the data sources can be found in Tech Series #2.

Method – Includes a brief methodology of how each indicator was derived and/or assigned to the corridors within the data model.

Logic – Ties the performance indicator back to the objective and explains the thought process on why the assessment will result in a priority need.

Scenario Planning – Shows the performance indicators which will be evaluated across all four scenario alternatives. The evaluation across the alternative's scenario is largely based on the timeframe of data and analyses of the indicators (existing versus future conditions)

Scoring Thresholds – To distribute the scores within the modeling process, individual buckets were identified per dataset, based on the regional analyses. The identification of these buckets can be done in a variety of ways based on statistical distribution of data, as shown at right. For this process, "Natural Breaks (Jenks)" were used to readily identify natural separation or "buckets" of data. These naturally occurring separators were also compared with standard deviation and quantile to verify that the natural breaks were indeed following a normalized approach. The individual values were rounded to the nearest whole number or decimal to present clear and logical buckets for each data set. Lastly, each performance indicator has a maximum value of 1 point. It should be noted that the number of indicators in each goal area will have an impact on the scoring of each indicator. For example, the four indicators in the Safety & Security Goal each comprise of 25% of the total goal score, whereas the five (5) indicators in the Reliability & Performance Goal each account for 20% of the total goal score. This process is necessary to equalize the scoring and limit goal areas with more performance indicators from skewing results.



Source: Microsoft, 2020

Table 6.3 | Safety & Security Criteria and Scoring Logic

<table>
<tr><th>Performance Indicator</th><th>Description</th><th>Scoring Thresholds</th></tr>
<tr><td>Crash Rate

Rate of vehicular crashes per 100 million vehicle miles traveled

Source: Signal 4 Analytics (2016-18)</td><td>Method: Three-year crash rates were collected and assigned to each corridor within the data model.

Logic: Corridors which exhibit high crash rates should be prioritized for improvements which eliminate the safety concerns. For example, a corridor with a crash rate over 6 indicates that its exposure to crashes has been higher than statewide averages for the past three years.

<u>Greater the crash rate, greater the need, greater the point allocation</u>

Scenario Planning: Existing measure, no impact to scenario planning</td><td><table><tr><th>Range</th><th>Score</th></tr><tr><td>0 - 2</td><td>0</td></tr><tr><td>2.01 - 4</td><td>0.5</td></tr><tr><td>4.01 - 6</td><td>0.75</td></tr><tr><td>Over 6</td><td>1</td></tr></table>Unit: Rate</td></tr>
<tr><td>Fatal and Serious Injury Crash Rates

Rate of crashes which result in a fatality or serious injury

Source: Signal 4 Analytics (2016-18)</td><td>Method: Three-year fatal and serious injury crash rates were collected and assigned to each corridor within the data model.

Logic: Corridors which exhibit a high rate of crashes involving a fatality or serious injury should be prioritized for improvements which eliminate the safety concerns.

<u>Greater the crash rate, greater the need, greater the point allocation</u>

Scenario Planning: Existing measure, no impact to scenario planning</td><td><table><tr><th>Range</th><th>Score</th></tr><tr><td>0 – 0.4</td><td>0</td></tr><tr><td>0.41 – 0.7</td><td>0.50</td></tr><tr><td>0.71 - 1</td><td>0.75</td></tr><tr><td>Over 1</td><td>1</td></tr></table>Unit: Rate</td></tr>
<tr><td>Number of Pedestrian and Bicycle Crashes

A crash which involves a pedestrian or a cyclist

Source: Signal 4 Analytics (2016-18)</td><td>Method: Three-year data for pedestrian and bicycle crashes were collected and assigned to each corridor within the data model.

Logic: Corridors which exhibit a high number of crashes involving a pedestrian or cyclist should be prioritized for improvements which eliminate the safety concerns.

<u>Greater the number of pedestrian and bicycle crashes, greater the need, greater the point allocation</u>

Scenario Planning: Existing measure, no impact to scenario planning</td><td><table><tr><th>Range</th><th>Score</th></tr><tr><td>0</td><td>0</td></tr><tr><td>1</td><td>0.25</td></tr><tr><td>2 - 3</td><td>0.50</td></tr><tr><td>4 – 5</td><td>0.75</td></tr><tr><td>Over 5</td><td>1</td></tr></table>Unit: Number</td></tr>
<tr><td>Evacuation Route Designation

A highway that is a specified route for an emergency evacuation

Source: Division of Emergency Management</td><td>Method: Corridors which serve as a designated evacuation routes were identified within the data model.

Logic: Corridors with evacuation route designations provide critical infrastructure to help prepare for, respond to, and recover from emergencies. Designated evacuation routes will receive point allocation.

<u>Corridors designated as an evacuation route will receive point allocation for prioritization</u>

Scenario Planning: Existing measure, no impact to scenario planning</td><td><table><tr><th>Range</th><th>Score</th></tr><tr><td>No</td><td>0</td></tr><tr><td>Yes</td><td>1</td></tr></table>Unit: N/A</td></tr>
</table>

Table 6.4 | Reliability & Performance Criteria and Scoring Logic

Indicator	Description	Scoring Thresholds
Travel Time Reliability (Auto) The consistency or dependability in travel times measured as a ratio of the 80th percentile travel time to the average travel time. *Source: Streetlight*	***Method:*** Travel time reliability (TTR) data was obtained from Streetlight for automobiles (non-commercial) and assigned to each corridor within the data model. ***Logic:*** To improve travel time reliability on the transportation system, corridors with unreliable travel times should be prioritized for improvement. For example, if the TTR is 1.5 and your work commute takes 30 minutes on average, you would need to plan 45 minutes to ensure an on-time arrival, 80 percent of the time. *Lesser the reliability, greater the need, greater the point allocation* ***Scenario Planning:*** Existing measure, no impact to scenario planning	Range / Score 0 – 1.10 / 0 1.11 – 1.25 / 0.25 1.26 – 1.5 / 0.50 1.51 – 1.8 / 0.75 Over 1.8 / 1 *Unit: Ratio*
Travel Time Reliability (Auto) on Constrained Corridors The consistency or dependability in travel times for automobiles on constrained corridors *Source: Streetlight*	***Method:*** Travel time reliability (TTR) data was obtained from Streetlight for automobiles (non-commercial) and assigned to constrained corridor within the data model. ***Logic:*** To improve travel time reliability on the transportation system, corridors with unreliable travel times for autos on constrained corridors should be prioritized for improvement. *Lesser the reliability on constrained corridor, greater the need, greater the point allocation* ***Scenario Planning:*** Existing measure, no impact to scenario planning	Range / Score 0 – 1.10 / 0 1.11 – 1.25 / 0.25 1.26 – 1.5 / 0.50 1.51 – 1.8 / 0.75 Over 1.8 / 1 *Unit: Ratio*
Fiber Optics Presence Indication of fiber availability along a corridor *Source: Maintaining Agencies*	***Method:*** Data provided by the Maintaining Agencies was used to determine the presence of fiber along a corridor. ***Logic:*** The presence of fiber allows the opportunity to implement active ITS solutions. For example, traffic signals which are connected via fiber allow operators and/or software to adapt and coordinate signal timings along a corridor. *No fiber optics, greater the need, greater the point allocation* ***Scenario Planning:*** Existing measure, no impact to scenario planning	Range / Score Yes / 0 No / 1 *Unit: N/A*
Segment Actively Monitored and Managed Indication if a corridor is actively monitored or managed *Source: Maintaining Agencies*	***Method:*** Data provided by the Maintaining Agencies was used to determine if the corridor met the characteristics of an actively monitored and managed corridor. These characteristics include those with fiber in place; those with coordinated or interconnected signals; those with CCTVs, Bluetooth devices, DMS, electronic display signs, or MVDS in place; and those that are included within the Integrated Corridor Management (ICM) system being managed by FDOT. ***Logic:*** A segment that is actively monitored and managed allows the opportunity for better reliability & performance. *No active management, greater the need, greater the point allocation* ***Scenario Planning:*** Existing measure, no impact to scenario planning	Range / Score Yes / 0 No / 1 *Unit: N/A*
Relative Change: Future Congested Speeds Comparison of the 2045 speed to the existing speed *Source: CFRPM V7*	***Method:*** The 2015 and 2045 travel demand model were evaluated to quantify the change in congested speeds along a corridor. ***Logic:*** Corridors which exhibit the greatest decrease in future travel speed should be prioritized for improvement. *Greater the decrease in speed, greater the need, greater the point allocation* ***Scenario Planning:*** This assessment will be conducted for each scenario using modified socioeconomic data reflective of each scenario's impact.	Range / Score Over 1 / 0 1.0 – 0.82 / 0.25 0.81 – 0.62 / 0.50 0.61 – 0.30 / 0.75 Less than 0.30 / 1 *Unit: Ratio*

Table 6.5 | Access & Connectivity Criteria and Scoring Logic

Indicator	Description	Scoring Thresholds
Transit System Headway The amount of time between transit vehicle arrivals at a stop *Source: LYNX*	***Method:*** GIS data was used to identify the transit headway along a corridor. An average headway was used when multiple transit lines were present. ***Logic:*** Increased transit frequency provides riders with greater flexibility and improves reliability and confidence of using transit as a travel mode. *Greater the headway, greater the need, greater the point allocation* ***Scenario Planning:*** Existing measure, no impact to scenario planning	Range / Score 0 - 30 / 0 31 - 45 / 0.50 46 - 60 / 0.75 Over 60 / 1 *Unit: Minutes*
Population within ½ mile of Non-Transit Corridor 2045 population totals from CFRPM TAZs in proximity to a corridor without transit *Source: CFRPM V7, LYNX*	***Method:*** Corridors without a transit stop were evaluated to determine the amount of population within ½ mile. ***Logic:*** To improve housing access to high frequency transit, corridors with the largest population and no transit should be prioritized for improvement. *Greater the population with no access to transit, greater the need, greater the point allocation* ***Scenario Planning:*** This assessment will be conducted for each scenario using modified socioeconomic data reflective of each scenario's impact.	Range / Score 0 – 2,000 / 0 2,001 – 7,000 / 0.50 7,001 – 11,000 / 0.75 Over 11,000 / 1 *Unit: Population*
Jobs within ½ mile of Non-Transit Corridor 2045 employment totals within CFRPM TAZs in proximity to a corridor without transit *Source: CFRPM V7, LYNX*	***Method:*** Corridors without a transit stop were evaluated to determine the amount of employment within ½ mile. ***Logic:*** To improve employment access to high frequency transit, corridors with the largest population and no transit should be prioritized for improvement. *Greater the jobs with no access to transit, greater the need, greater the point allocation* ***Scenario Planning:*** This assessment will be conducted for each scenario using modified socioeconomic data reflective of each scenario's impact.	Range / Score 0 – 3,400 / 0 3,401 - 7,000 / 0.50 7,001 - 11,000 / 0.75 Over 11,000 / 1 *Unit: Employees*
Food & Healthcare Locations within ½ mile of Corridor Proximity of land uses which provide food or healthcare opportunities *Source: LOTIS*	***Method:*** Proximity data for grocery stores, restaurants, markets, coffee shops, fast food restaurants, gyms, hospitals, pharmacies, and clinics was obtained from LOTIS. The number of these land uses within ½ mile of the corridor were totaled and scored (max score of 9 based on the 9 land use categories) ***Logic:*** To provide access to essential services across all modes of transportation, corridors which are in close proximity to food & healthcare locations should be prioritized for improvement. *Greater the food and healthcare locations, greater the need, greater the point allocation* ***Scenario Planning:*** Existing measure, no impact to scenario planning	Range / Score 0 - 2 / 0 3 - 4 / 0.25 5 - 6 / 0.50 7 - 8 / 0.75 9 / 1 *Unit: Number*

Table 6.5 | Access & Connectivity Criteria and Scoring Logic (Continued)

Indicator	Description	Scoring Thresholds
Cultural & Recreational Locations within ½ mile of Corridor Proximity of land uses which provide cultural & recreational opportunities *Source: LOTIS*	***Method:*** Proximity data for theme parks, golf courses, camping sites, libraries, and parks was obtained from LOTIS. The number of these land uses within ½ mile of the corridor were totaled and scored (max score of 5 based on the 5 land use categories) ***Logic:*** To provide access to essential services across all modes of transportation, corridors which are in close proximity to cultural & recreational locations should be prioritized for improvement. *Greater the cultural & recreational locations, greater the need, greater the point allocation* ***Scenario Planning:*** Existing measure, no impact to scenario planning	*Range* / *Score* 1 / 0.25 2 / 0.50 3 / 0.75 4 / 1 *Unit: Number*
Sidewalk Critical Needs Critical needs identified based on functional class, sidewalk gaps, and proximity to transit, schools and generators *Source: LOTIS*	***Method:*** Corridors where a sidewalk critical need has been identified were scored for improvement. ***Logic:*** To improve pedestrian connectivity, corridors with sidewalk critical needs should be prioritized for improvement. *Corridors where sidewalk critical needs are identified will receive point allocation for prioritization* ***Scenario Planning:*** Existing measure, no impact to scenario planning	*Range* / *Score* 1-4 / 0.5 5-12 / 0.75 Over 12 / 1 *Unit: Percent*

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Table 6.6 | Health & Environment Criteria and Scoring Logic

Indicator	Description	Scoring Thresholds
Bicycle Level of Traffic Stress Bicycle user's level of comfort when using the roadway or bicycle facility *Source: LOTIS*	***Method:*** Corridor Bicycle Level Traffic of Stress (LTS) average scores were based on presence and type of bicycle facility, roadway speed, number of lanes, and volume. ***Logic:*** To improve bicycle user's comfort, corridors with higher LTS scores should be prioritized for improvement. *Greater the LTS, greater the need, greater the point allocation* ***Scenario Planning:*** Existing measure, no impact to scenario planning	*Range* / *Score* Less than 2.75 – 0 2.76 – 3 – 0.50 3.1 – 3.5 – 0.75 Over 3.5 – 1 *Unit: Score*
Residential Density within ¼ Mile of Multimodal Facility 2045 residential dwelling unit totals from CFRPM TAZs in proximity to a corridor without multimodal facilities *Source: CFRPM V7, LYNX*	***Method:*** Corridors were evaluated to determine the amount of residential density (single family and multifamily dwelling units) within ¼ mile. The corridors were then compared to the availability of alternative modes of travel (transit, sidewalk, bike lane). If a corridor has less than 1,200 population, it will not be scored. ***Logic:*** To reduce delay and increase affordability for transportation and housing choices, corridors with the highest residential density should have access to a full range of travel modes. *Greater the residential density with a lack of multimodal options, greater the need, greater the point allocation* ***Scenario Planning:*** This assessment will be conducted for each scenario using modified socioeconomic data reflective of each scenario's impact.	*Range* / *Score* Greater than 1,200 3 modes – 0 2 modes – 0.5 1 mode – 0.75 0 modes – 1 *Unit: Population*
Non-Residential Intensity within ¼ Mile of Multimodal Facility 2045 Non-Residential totals within CFRPM TAZs in proximity to a corridor without multimodal facilities *Source: CFRPM V7, LYNX*	***Method:*** Corridors were evaluated to determine the amount of non-residential intensity (Employees for Commercial, Industrial, and Service) within ¼ mile. The corridors were then compared to the availability of alternative modes of travel (transit, sidewalk, bike lane). If a corridor has less than 1,400 employment, it will not be scored. ***Logic:*** To reduce delay and increase affordability for transportation and housing choices, corridors with the highest non-residential intensity should have access to a full range of travel modes. *Greater the non-residential intensity with a lack of multimodal options, greater the need, greater the point allocation* ***Scenario Planning:*** This assessment will be conducted for each scenario using modified socioeconomic data reflective of each scenario's impact.	*Range* / *Score* Greater than 1,400 3 modes – 0 2 modes – 0.5 1 mode – 0.75 0 modes – 1 *Unit: Employment*
Public Health Indicator Rates Risk score for chronic disease risk factors associated with physical inactivity along a corridor *Source: Healthy Mobility Tool*	***Method:*** Quantify rate of population with health indicators associated with physical inactivity (Asthma, Obesity, Diabetes) then compare to the availability of sidewalks and bike facilities ***Logic:*** To reduce the health impacts associated with physical inactivity, corridors that serve areas with a higher risk for the associated chronic diseases should be prioritized. *Greater the health risks, greater the need for active transportation facilities, greater the point allocation* ***Scenario Planning:*** Existing measure, no impact to scenario planning	*Range* / *Score* 0 - 0.4 – 0 0.41 – 0.65 – 0.50 0.66 – 0.83 – 0.75 Over 0.83 – 1 *Unit: Score*

Table 6.6 | Health & Environment Criteria and Scoring Logic (Continued)

Indicator	Description	Scoring Thresholds
Environmental Justice (EJ) Populations Percentage of seven traditionally underserved communities (low income, minority, aging population, people with disabilities, zero-car households, limited English proficiency persons, female head of household with child), measured at the census tract level. *Source: 5-year American Community Survey Data*	***Method:*** A GIS assessment was conducted to determine the corresponding EJ score for the area adjacent to the corridor. The EJ score represents the number of underserved communities which exceed the regional average within a particular census block. ***Logic:*** To ensure that transportation decisions do not cause disproportionately high and adverse effects on low-income and minority populations, corridors with higher EJ population will be prioritized for improvements. *Greater the EJ population, greater the need, greater the point allocation* ***Scenario Planning:*** Existing measure, no impact to scenario planning	*Range* / *Score* 1 / 0.25 2 - 3 / 0.50 4 / 0.75 Over 4 / 1 *Unit: Score*
Relative Change: Vehicle Miles Traveled (VMT) Comparison of a corridor's 2045 VMT to the existing VMT *Source: CFRPM V7*	***Method:*** The 2015 and 2045 travel demand model were evaluated to quantify the change in VMT along a corridor. ***Logic:*** Increased VMT results in increased greenhouse gas emissions, therefore corridors which exhibit the greatest increase in future VMT should be prioritized for improvements to other modes of travel that provide increased occupancy (transit) or active transportation (bike/ped facilities). *Greater the VMT increase, greater the need, greater the point allocation* ***Scenario Planning:*** This assessment will be conducted for each scenario using modified socioeconomic data reflective of each scenario's impact.	*Range* / *Score* 0- 1.10 / 0 1.11 - 1.3 / 0.25 1.31 - 1.6 / 0.50 1.61 - 2.5 / 0.75 Over 2.5 / 1 *Unit: Ratio*

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Table 6.7 | Investment & Economy Criteria and Scoring Logic

Indicator	Description	Scoring Thresholds
Percentage of Commercial Vehicles The number of heavy vehicles compared to the total traffic along a corridor *Source: LOTIS*	***Method:*** The truck volume was divided by the total volume to derive the percentage of commercial vehicles on each corridor. ***Logic:*** To promote transportation projects that expand and enhance economic prosperity, corridors which serve higher percentages of commercial vehicles should be prioritized for improvement. *Greater the truck percentage, greater the need, greater the point allocation* ***Scenario Planning:*** Existing measure, no impact to scenario planning	*Range* / *Score* 0 - 10 / 0 11 - 15 / 0.50 16 - 20 / 0.75 Over 20 / 1 *Unit: Percent*
Statewide Truck Bottlenecks Corridors ranked as Top 10 and Top 100 Statewide bottlenecks *Source: Truck Bottlenecks NPMRDS*	***Method:*** Top 10 and Top 100 truck bottlenecks within the MetroPlan Orlando region were reviewed and coded in the data model. ***Logic:*** To promote transportation projects that expand and enhance economic prosperity, corridors which have been identified as bottlenecks for commercial vehicles should be prioritized for improvement. Reduced congestion on these corridors will provide for efficient movement of goods and services throughout the region. *Greater the rank of truck bottleneck, greater the need, greater the point allocation* ***Scenario Planning:*** Existing measure, no impact to scenario planning	*Range* / *Score* Top 100 / 0.75 Top 10 / 1 *Unit: Rank*
Freight Intensive Land Use within 1-mile of Corridor 2045 industrial employment totals within CFRPM TAZs in proximity to a corridor *Source: CFRPM V7*	***Method:*** Corridors were evaluated to determine the amount of freight intensive land use (Industrial employment) within 1 mile ***Logic:*** To promote transportation projects that expand and enhance economic prosperity, corridors which serve as the last mile connection for freight should be prioritized for improvement. *Greater the freight intensive land use, greater the need, greater the point allocation* ***Scenario Planning:*** This assessment will be conducted for each scenario using modified socioeconomic data reflective of each scenario's impact.	*Range* / *Score* 0 - 50 / 0 51 - 100 / 0.50 101 – 200 / 0.75 Over 200 / 1 *Unit: Employees*
Relative Change: Vehicle Hours Traveled (VHT) Comparison of a corridor's 2045 VHT to the existing VHT *Source: CFRPM V7*	***Method:*** The 2015 and 2045 travel demand model were evaluated to quantify the change in VHT along a corridor. ***Logic:*** Corridors which exhibit the greatest increase in future VHT should be prioritized for improvements. For example, if a corridor is projected to have a 3.0 ratio of VHT increase, the existing time spent traversing the corridor will be three times higher in the future *Greater the VHT increase, greater the need, greater the point allocation* ***Scenario Planning:*** This assessment will be conducted for each scenario using modified socioeconomic data reflective of each scenario's impact.	*Range* / *Score* 0 – 1.10 / 0 1.11 – 1.4 / 0.25 1.4 – 1.75 / 0.50 1.76 – 2.8 / .75 Over 2.8 / 1 *Unit: Ratio*

Table 6.7 | Investment & Economy Criteria and Scoring Logic (Continued)

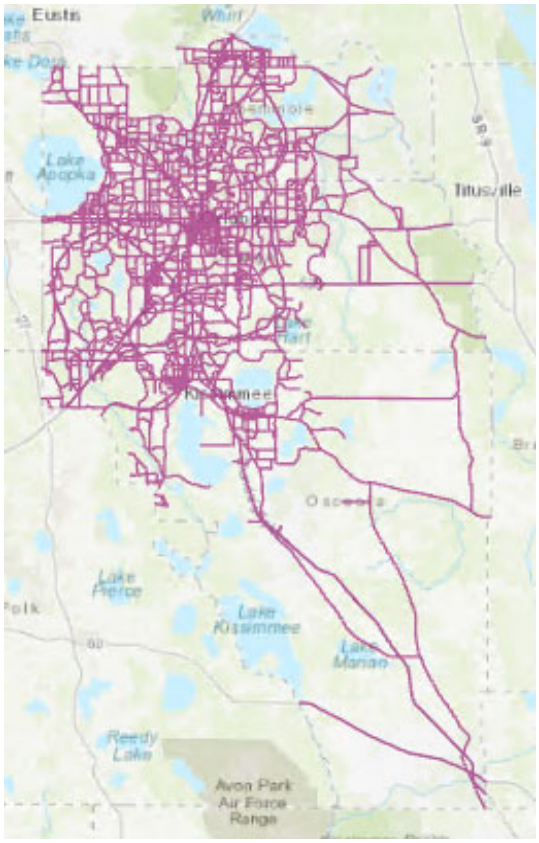
Indicator	Description	Scoring Thresholds
Cost Burdened Households within ¼ mile of Corridor The percentage of families which pay more than 30 percent of their income for housing. *Source: 5-year American Community Survey Data*	***Method:*** Corridors were evaluated to determine the percentage of cost burdened households within ¼ mile of the corridor. ***Logic:*** To ensure that transportation decisions do not cause disproportionately high and adverse effects on cost burdened households, corridors with higher percentages will be prioritized for improvements. *Greater the cost burdened households, greater the need, greater the point allocation* ***Scenario Planning:*** Existing measure, no impact to scenario planning	*Range* / *Score* 10 - 22 / 0.25 23 - 27 / 0.5 28 – 32 / 0.75 Over 32 / 1 *Unit: Percentage*
Percentage of Visitor Traffic The percentage of visitor traffic to total traffic along a corridor *Source: FDOT Central Florida Visitor Study - 2018*	***Method:*** The percentage of visitor traffic was assigned to each corridor within the data model. ***Logic:*** To improve the transportation experience for visitors and supportive-industry worker, corridors which exhibit a high percentage of visitor traffic should be prioritized. *Greater the percent of visitor traffic, greater the need, greater the point allocation* ***Scenario Planning:*** Existing measure, no impact to scenario planning	*Range* / *Score* 0 - 10 / 0 11 - 25 / 0.25 26- 40 / 0.5 41 - 60 / 0.75 Over 60 / 1 *Unit: Percentage*
Cost of Congestion Comparison of a corridor's cost of congestion between the 2045 cost and existing cost. *Source: CFRPM V7, Census Data*	***Method:*** The cost of congestion uses average delay along a corridor and multiplies by the estimated hourly income per county (average household income / average household occupancy / 2080 hours per year). ***Logic:*** To reduce per capita delay for residents, visitors, and businesses, corridors with the highest cost per congestion should be prioritized for improvement. For example, if a 30 minute work commute takes you one hour, the additional 30 minutes spent in congestion was measured as a cost. *Greater the cost of congestion, greater the need, greater the point allocation* ***Scenario Planning:*** This assessment will be conducted for each scenario using modified socioeconomic data reflective of each scenario's impact.	*Range* / *Score* 0-3 / 0 4-5 / 0.5 6-14 / 0.75 Over 14 / 1 *Unit: Ratio*

Analysis Tools

The prioritization process used several different tools for analysis, including an in-depth data model, to append multiple data, information, and performance measures onto a roadway; the VHB Healthy Community Model to include health considerations; and the CFRPM model for envisioning what future impacts may include.

Data Model

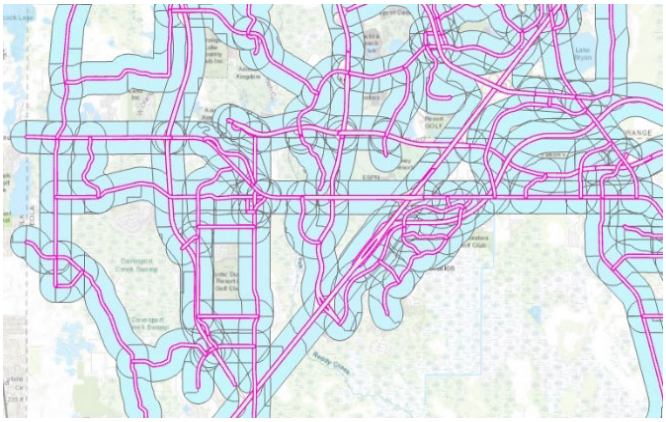
The development of the data model included combining multiple data sources and information into a singular base segmented roadway file that included the roads in the MetroPlan Orlando area. This roadway file served as the base for the creation and combination of all data and information used for analysis. The file was prepared by MPO staff and contained a common segmentation or breakdown between corridors, allowing for roadways to be compared along logical breaks.



A major aspect of the analysis performed along these roadways included conflation of the various data sources, a process to combine data sources which do not perfectly align. This conflation was achieved by using the roadway file as a base and then through various spatial and tabular processes appending the other data sets and information to the roadway network. Through the use of conflation techniques, various data and information were appended to the base segmented roadway. These various sources included:

- Primary Network with Reliability and Accessibility Performance Measures
- LOTIS 2.3
- CFRPM
- Signal 4 Crash Database/ FDOT CARS
- Census
- Additional partner or other provided data sources

A full list of data sources and model criteria is broken down in prior sections.

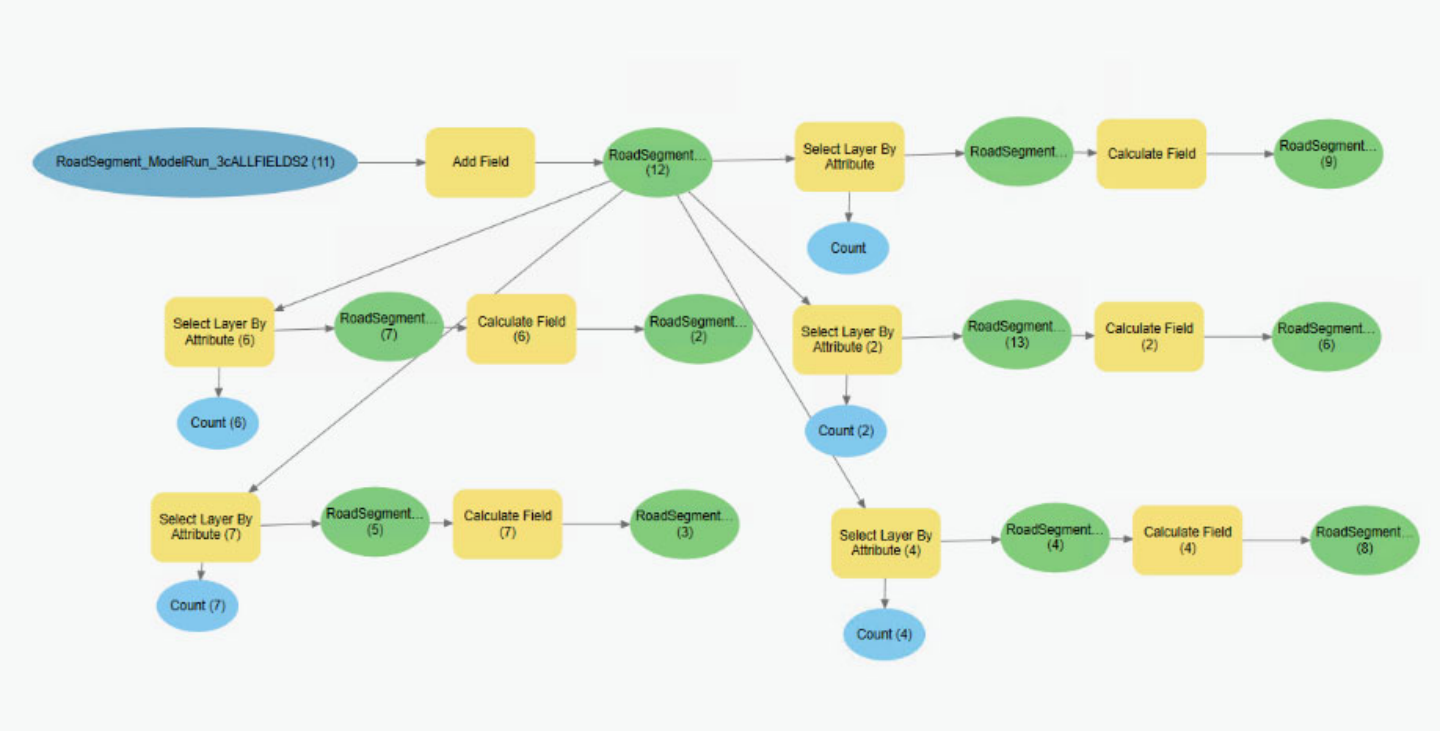


The process of conflation allowed these various data sources to be combined through spatial analytics. In some cases, the roadway segments were provided a buffer area in which select data was collected, such as the percent of population within ½ mile of the corridor; or in other cases used to identify which roadway segments have been identified as evacuation routes.

To calculate certain performance measures, these values were combined to assist in identifying underserved populations such as roadways which have a large population within a ¼ mile but only limited pedestrian and transit amenities.

After completing the conflation of these various data sets, GIS models were used to deliver automated and adjustable scoring mechanisms which could be changed by users to place additional emphasis on select characteristics. These GIS models programmatically evaluate each performance measure and deliver a score and value which corresponds to occurrence of the measure in relation to other roadway segments and the emphasis that performance measure has been given.

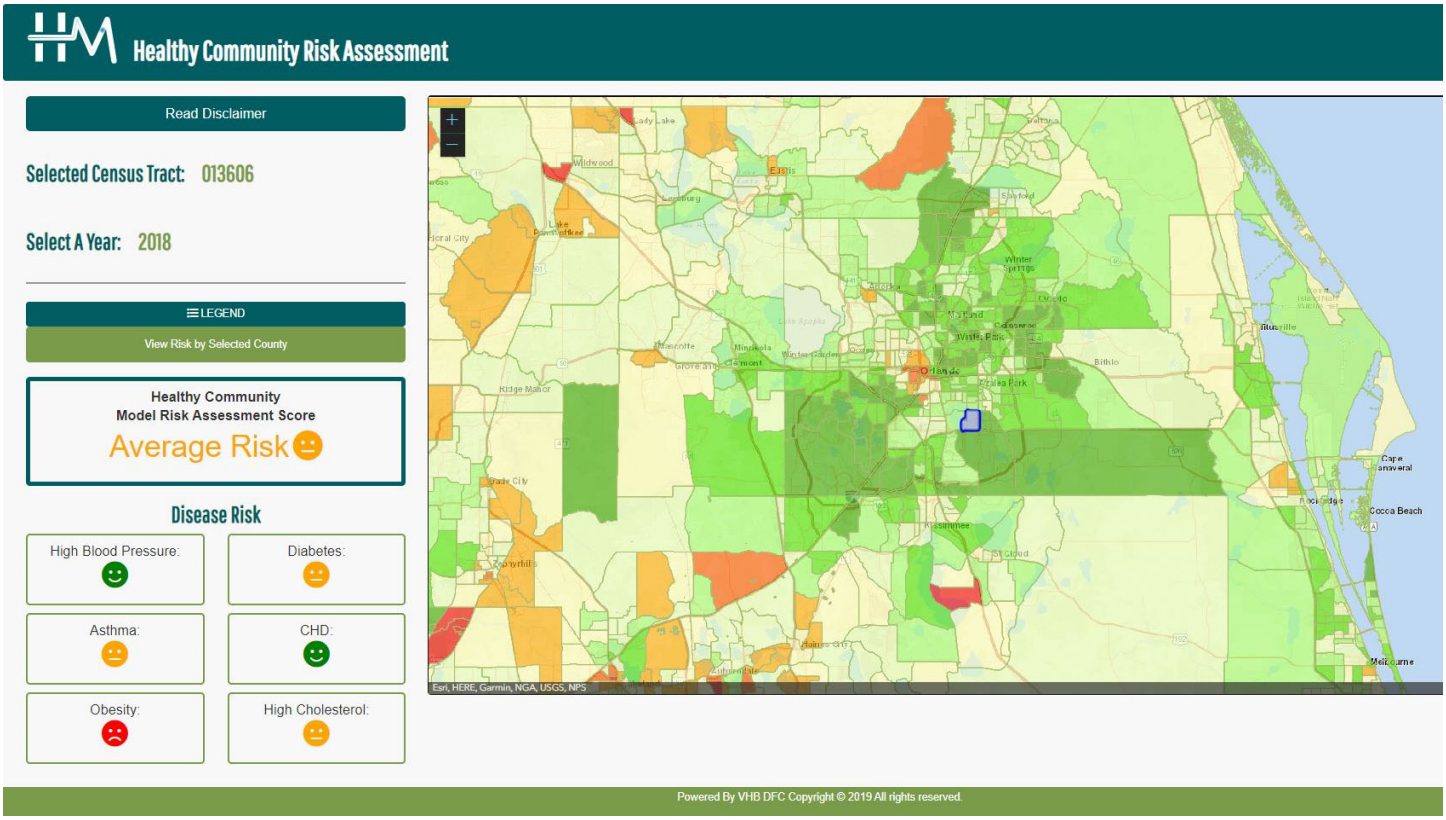
Figure 6.1 | GIS Automation Flow Chart



Healthy Mobility Tool

Health risk factors are heavily influenced by a community's built and social environment. The Healthy Mobility model is a GIS-based tool that correlates land use, urban design, and transportation data in assessing the built environment's impact on public health (Figure 6.2). This correlation also allows for a broader ability to factor health into community and transportation planning. The Healthy Mobility model uses evaluation factors associated with increasing mobility, providing a community health profile for a study area and identifies mobility and urban design enhancements to improve health outcomes. The Model can be added to the regional transportation planning process, allowing for consideration of a community's health when assessing and screening potential transportation improvements. Once the baseline community health profile is established, alternative scenarios can be modeled to determine if changes in design or mobility factors influence health outcomes.

Figure 6.2 | Screenshot of Healthy Mobility Tool



Source: VHB

Central Florida Regional Planning Model (CFRPM v7)

The trip-based model known as the Central Florida Regional Planning Model (CFRPM) includes nine counties: Brevard, Flagler, Lake, Marion, Orange, Osceola, Seminole, Sumter, and Volusia. CFRPM is an important tool used as the first step in the process of developing transportation projects used by FDOT, Metropolitan Planning Organizations (MPO/TPOs), and other agencies and consultants.

The CFRPM was used to evaluate the impact of socioeconomic data between the Base Year 2015 and Horizon Year 2045, as well as to quantify some of the impacts for alternative scenario futures. The evaluation of 2045 roadway conditions were based on an existing plus committed (E+C) "plus" network, which included committed roadway capacity projects from the latest FDOT Work Program plus capacity projects from the Prioritized Projects List (PPL) and the Central Florida Expressway Authority (CFX) Master Plan.

Next Steps

The projects identified within the 2045 MTP will be fully vetted through the comprehensive multimodal assessment and prioritized based on the contents within this document. This methodology differs from previous long range transportation plan assessments, so it is understood that qualitative checks and balances will also be a key process within the prioritization process. This qualitative process will include coordination with FDOT and local government partners, to address "grandfathered/legacy" projects with phases already funded in the TIP or other local priorities, which may have notable characteristics which were not reflected in the quantitative process.

Upon completing the quantitative and qualitative assessments, the Cost Feasible Plan will be developed based on the prioritized ranking of each corridor/project and revenue estimates.

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Appendix XA:
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