Active Transportation Plan Network Analysis Methodology

Introduction

The Active Transportation Plane (ATP) was created as part of the 2016-2040 Columbus Area Metropolitan Transportation Plan to help communities identify regionally significant projects that include pedestrian, bicycle, and transit accommodations – "or complete streets." MORPC staff and a combination of three advisory bodies (ATP Team) identified 12 Key Regional Corridors in the MORPC Metropolitan Planning Organization (MPO) area as the focus of the plan. The ATP aims to give communities the tools to incorporate complete streets into their planning and development efforts.

The ATP Story Map combines information on walking, biking, and transit within an interactive map. The story map not only depicts regionally-significant corridors and trails, but allows users to zoom in on particular areas of interest and add layers of data and information at will. This Story Map has a wide range of uses for a variety of people– from politicians to professionals to pedestrians.

The Network Analysis follows a five-step process - the first two steps were GIS-based mapping activities . The last three steps reviewed and validated those activities and offered subjective conclusions of the analysis.

Step 1 - Network Identification

The network identification process started with the MORPC MPO area and isolated roadways based on classification, identifying only arterial roadways and any roadways that crossed two or more jurisdictions. The Working Group asked for assistance with coordinating projects at jurisdictional boundaries. Using Arc GIS, staff identified roads that are arterials and above (Shown in Figure 1). The identification provided a list of potential corridors for the analysis that included Principal and Minor Arterials and Freeway Expressways that connect at least 2 cities or villages (Shown in Figure 2).

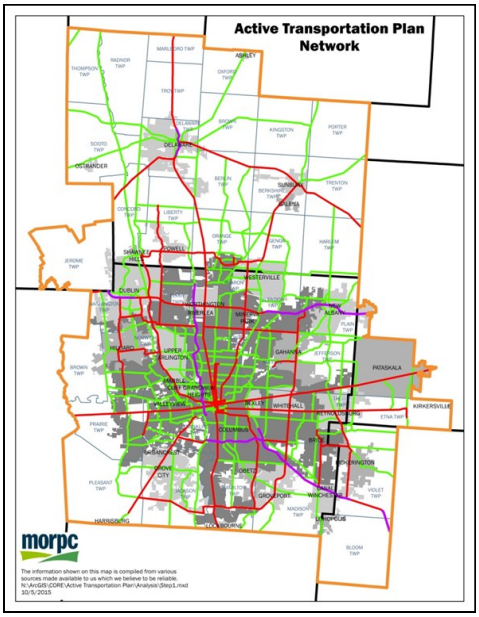

Figure 1. Road Functional Classification
(Click the map for a larger image)

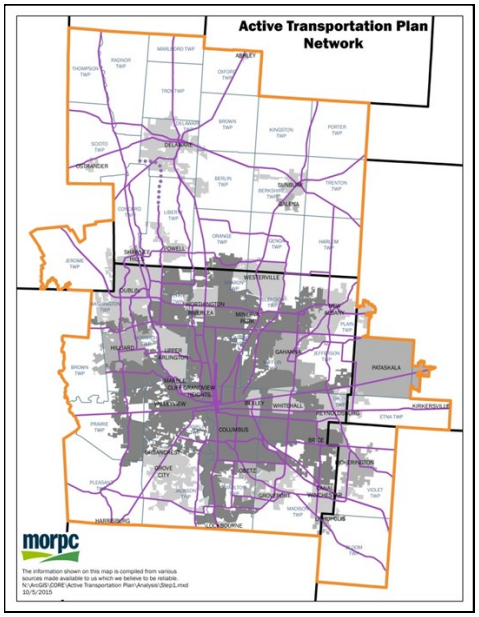

Figure 2. Potential Analysis Corridors
(Click the map for a larger image)

Step 2 - Network Analysis

The next round of analysis looked at the roadways from the Network Identification and identified current and future jobs and housing densities around them. Data was the assigned to buffers around all potential corridors in ¾ mile walking distance and 2 mile biking distance. Data included:

- Number of future households
- Number of future jobs
- Land use type
- Number of points of interest:

- Libraries
- Schools
- Hospitals
- Police Stations
- Fire Stations
- Parks
- Airports
- Hotels
- Senior Centers
- Shopping Centers
- Government buildings (includes post offices)
- Office Parks/Urban Office Buildings
- Community/Recreation Centers
- Entertainment Centers (theaters, sport venues, museums, casinos, fairgrounds, convention centers)

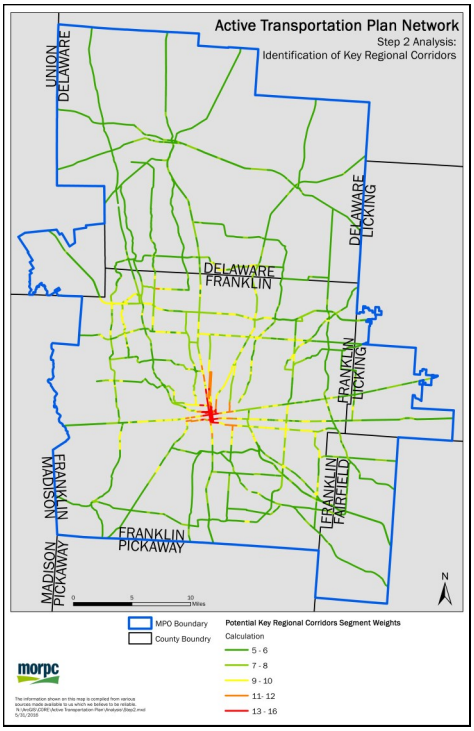

Figure 3. Key Regional Corridors Calculation
(Click the map for a larger image)

The data was then assigned to each segment to establish values from each corridor based on the Network Analysis Weighting Conventions.

The higher the value the more likely they were to be part of a Key Regional Corridor.

These segment weights are the sum of all the variable weights for each of the buffer areas. The technical committee then used these scores to identify the 12 Key Regional Corridors (Shown in Figure 3)

Step 3 - Identification of Key Regional Corridors

With input from the Technical Committee, the ATP team analyzed the information that had been produced about these roadways and began to identify Key Regional Corridors. Corridors are the roadways plus the area within a 1,000-foot buffer on all sides of them.

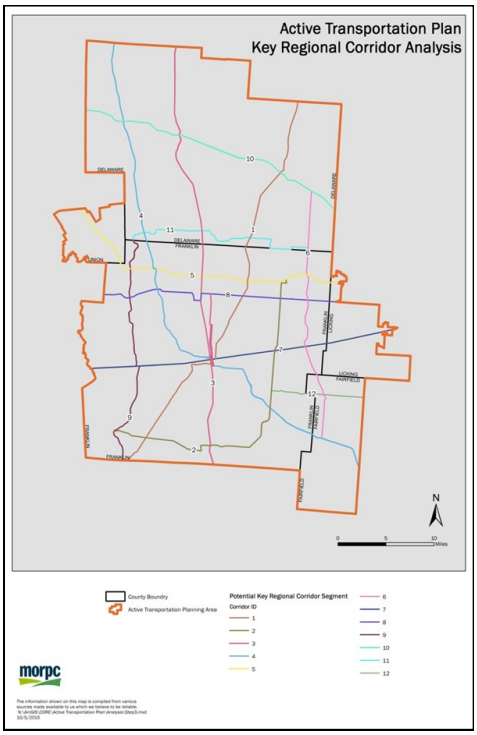

Figure 4. Identification of Key Regional Corridors
(Click the map for a larger image)

Step 4 - Validation

The ATP team and the Technical Committee further refined the Key Regional Corridors based on their general knowledge of the area. They added the 12th corridor.

Step 5 - Identification of Segment Typologies

The final step of the process was to break the Key Regional Corridors into segments based on surrounding land uses. The Insight 2050 place types and MORPC land use forecasting data was applied to the corridors and added an additional Limited Access segment type. Then, with the guidance of the Technical Committee, reviewed typology assignments segment-by-segment using forecasting data, aerial photographs, and basic knowledge of the areas to make changes to the typologies accordingly.

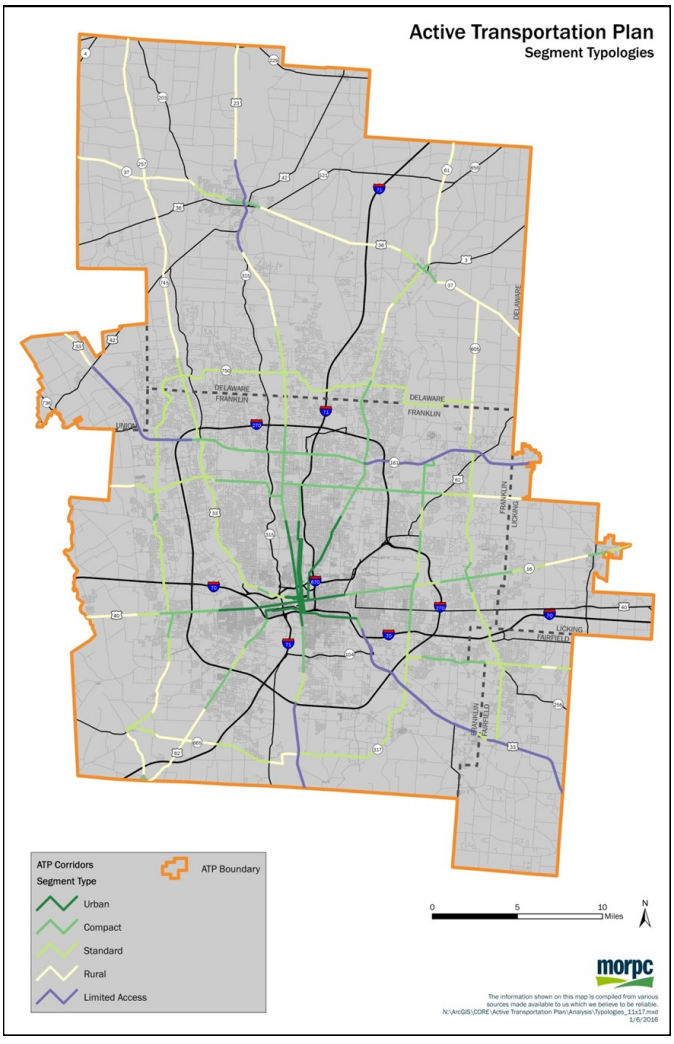

Figure 5. Final Segment Typologies
(Click the map for a larger image)