Mayor Kenneth Wilber, Chairman

NASHVILLE AREA
Metropolitan Planning Organization

Regional Bicycle and Pedestrian Study
Evaluation Tools

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MPO Executive Board Meeting
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Evaluation Tools

- Bicycle and Pedestrian Levels of Service
- Bicycle and Pedestrian Latent Demand Model
- Physical Activity Data
- Congested Roadways
- Bicycle and Pedestrian Crashes
- Health Priority Areas

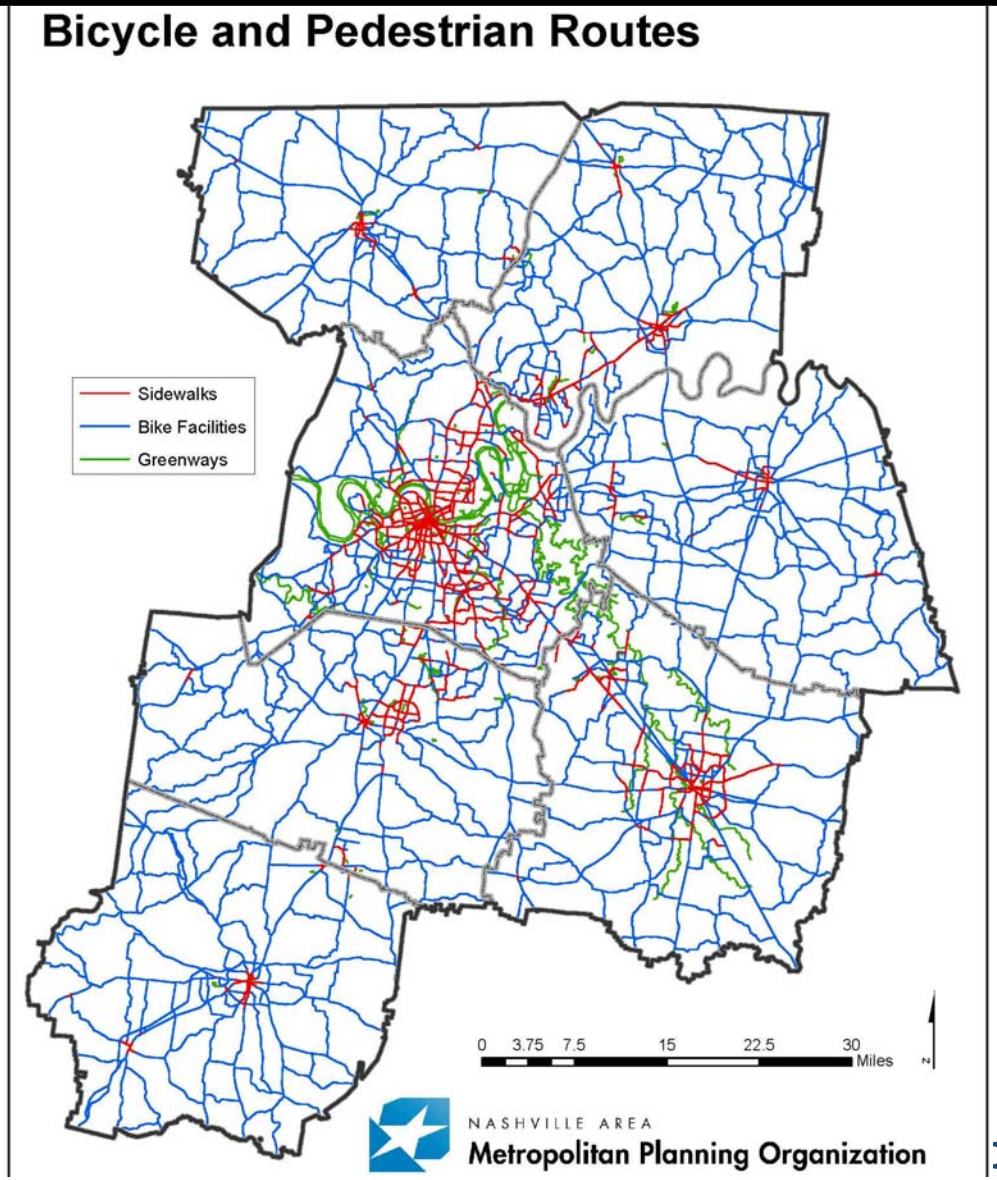
Bikeways, Sidewalks Greenways

<u>2009 to 2014</u>

Sidewalks – 57% increase
322 miles to 505 miles

Bikeways – 19% increase
354 miles to 423 miles
(bike lanes, buffered bike lanes, bike routes and sharrows)

Greenways – 36% increase
136 miles to 185 miles
(greenways, multi-use trails and park trails)



Bicycle Level of Service (BLOS) Model

In the Bicycle LOS Model, bicycle levels of service are based on the following five variables:

- Average effective width of the outside thru lane
- Motorized vehicle volumes
- Motorized vehicle speeds
- Heavy vehicle (truck) volumes
- Pavement condition

BLOS Relationships

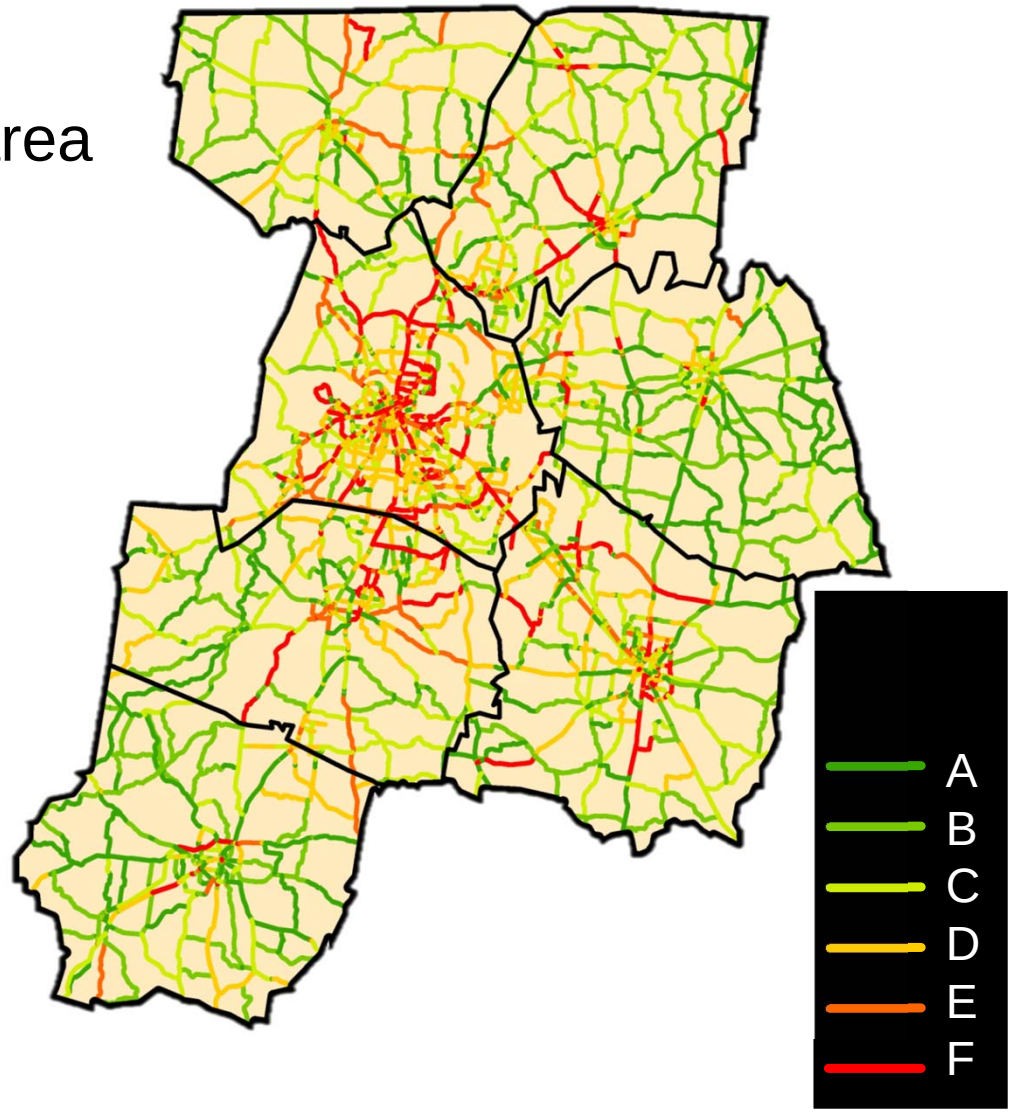
Traffic Volumes	↑	↓ BLOS
Speed Limit	↑	↓ BLOS
Width of Bike Facility	↑	↑ BLOS
Width of Shoulder	↑	↑ BLOS
Percent Heavy Vehicles	↑	↓ BLOS
Lane Widths	↑	↑ BLOS

BLOS Results

There are over 400 miles of bicycle facilities in the MPO area including bike lanes, multiuse paths, and shared routes.

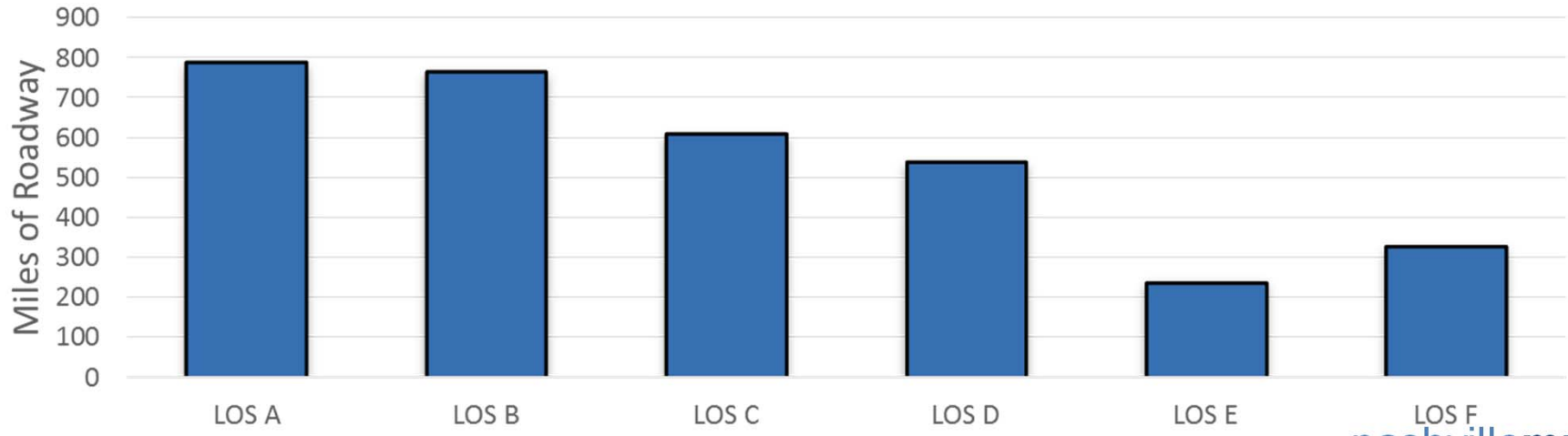
66% of all inventoried roads (2,164 miles) have a BLOS of C or better.

Correspondingly, 1,106 miles of inventoried roadways have a BLOS of D or worse.



BLOS Results – Miles of Roadway by LOS

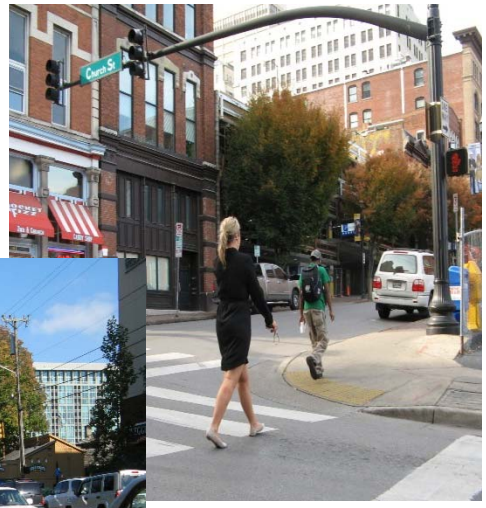
	Davidson	Maury	Robertson	Rutherford	Sumner	Williamson	Wilson	Total
LOS A	41	174	76	84	124	90	199	**788**
LOS B	77	127	97	109	131	70	155	**766**
LOS C	119	75	65	95	82	115	59	**610**
LOS D	194	31	33	114	43	94	30	**539**
LOS E	64	41	18	33	40	38	5	**239**
LOS F	152	14	21	54	30	49	8	**328**



Pedestrian Level of Service (PLOS) Model

In the Pedestrian LOS Model, pedestrian levels of service are based on the following four variables:

- Existence of a sidewalk
- Lateral separation of pedestrians from motorized vehicles
- Motorized vehicle volumes
- Motorized vehicle speeds



PLOS Relationships

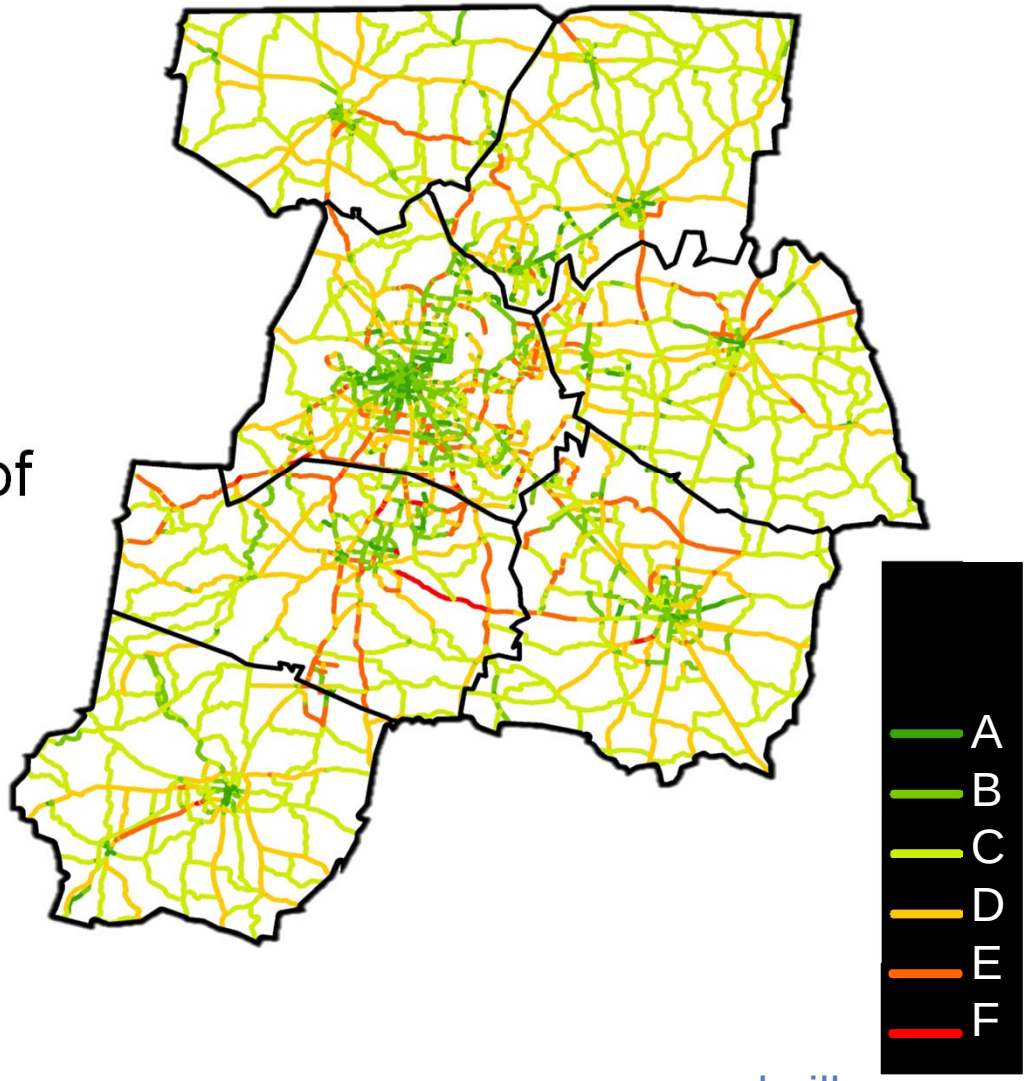
Traffic Volumes	↑	↓ PLOS
Speed Limit	↑	↓ PLOS
Width of Sidewalks and Buffers	↑	↑ PLOS
Width of Shoulder	↑	↑ PLOS
Percent Heavy Vehicles	↑	↓ PLOS
Lane Widths	↑	↑ PLOS

PLOS Results

There are over 500 miles of sidewalks in the MPO area.

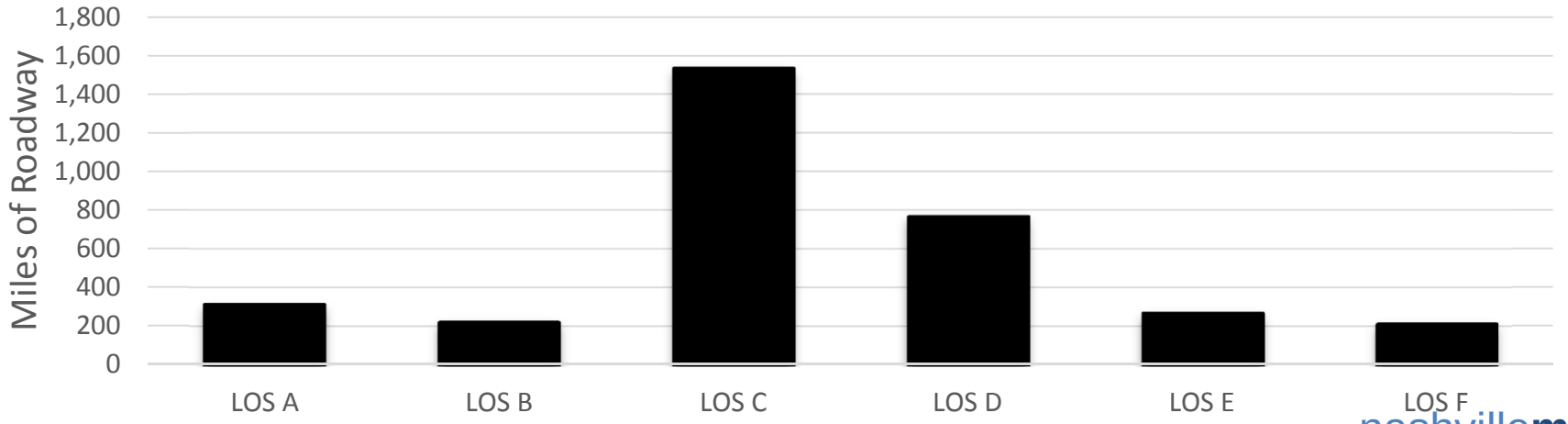
63% of all inventoried roads (2,044 miles) have a PLOS of C or better.

Correspondingly, 1,225 miles of inventoried roadways have a PLOS of D or worse.



PLOS Results – Miles of Roadway by LOS

	Davidson	Maury	Robertson	Rutherford	Sumner	Williamson	Wilson	Total
LOS A	129	9	14	52	26	48	27	**305**
LOS B	45	24	18	39	40	21	25	**212**
LOS C	169	285	158	193	242	149	331	**1,527**
LOS D	142	106	96	133	93	143	47	**760**
LOS E	84	12	12	51	20	69	13	**261**
LOS F	78	26	10	23	27	26	14	**204**

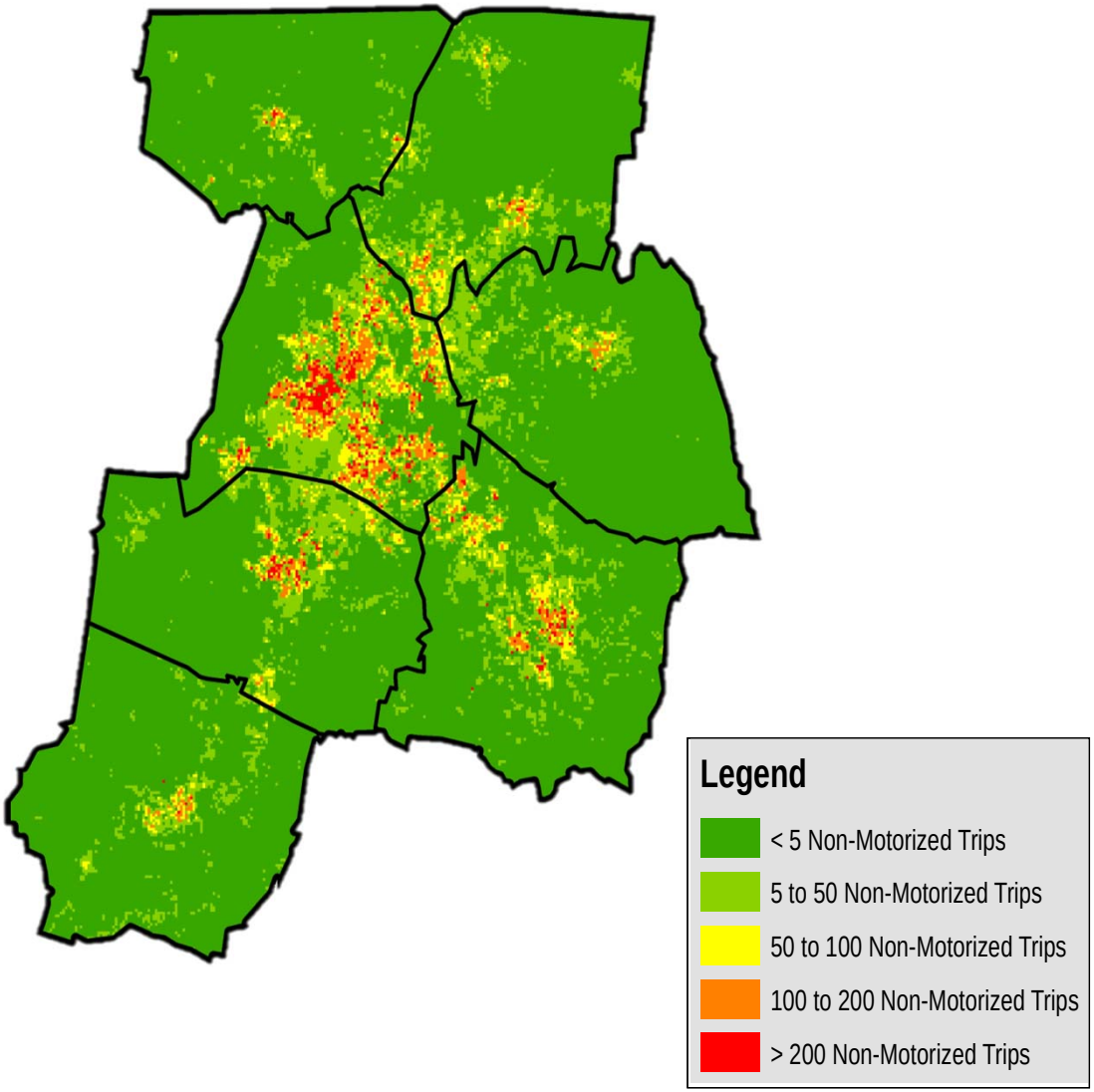


Parcel-Based Non-Motorized Demand Model

The proximity of land uses such as residential housing, employment, shopping, schools, transit, parks, and other activities influence walking and bicycle travel demand.

The Non-Motorized Model accounts for eight trip types for both walk & bicycle travel:

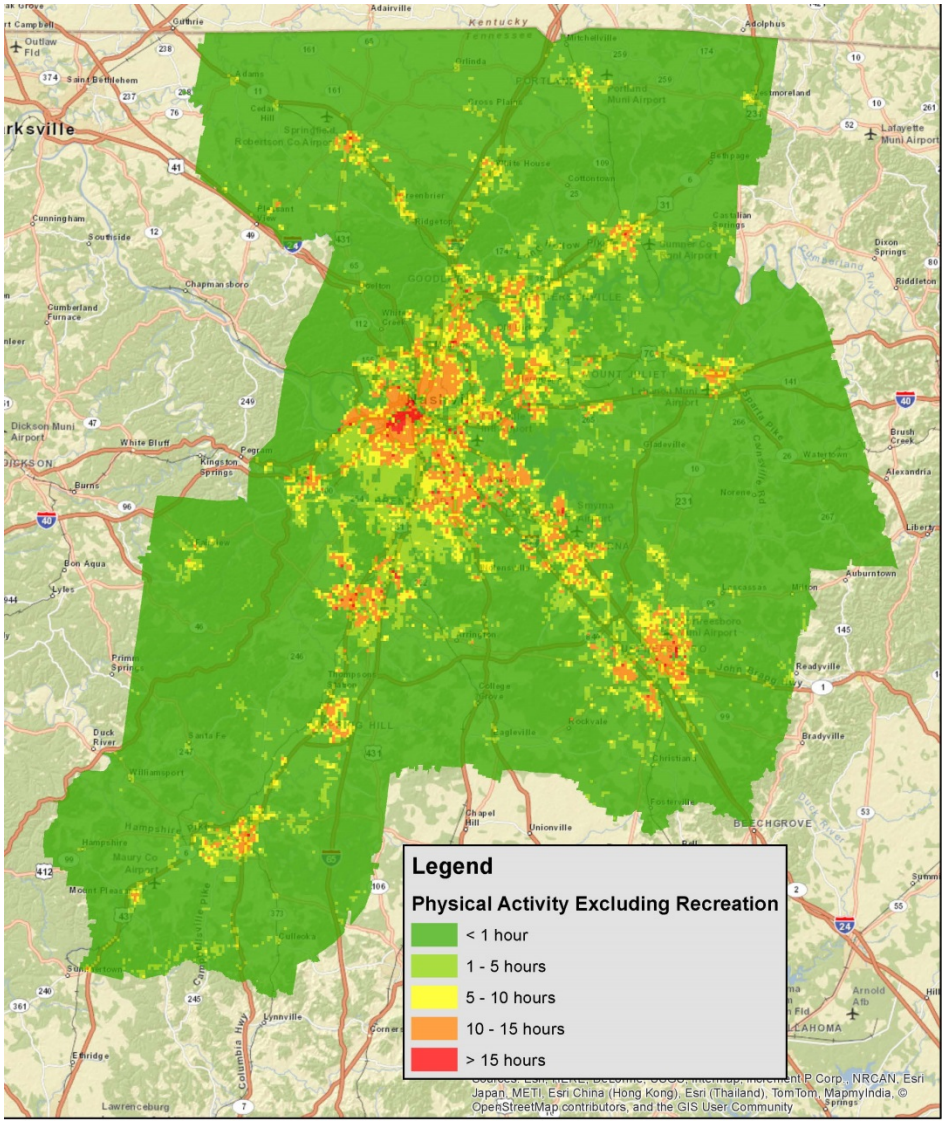
- School
- Work
- Transit (to)
- Errand
- Shop
- Recreation
- Transit (from)
- Parking (CBD)



Aspects of Non-Motorized Demand Procedures

- Parcel-based
- Determines daily, one-way trips
- Assumes ideal facilities and connectivity
- Specifies multiple trip types
- Origin (generator) driven
- No real assignment after generation

Physical Activity from Active Transportation



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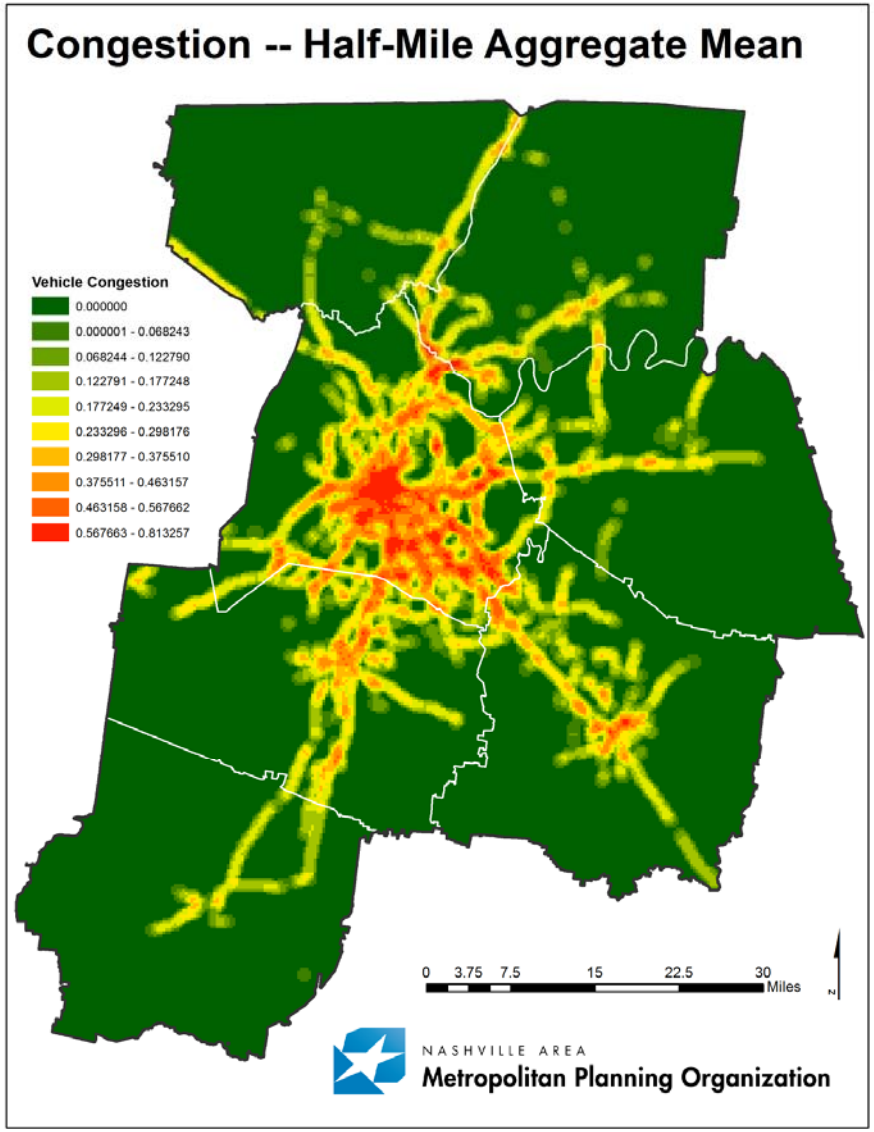
Congestion



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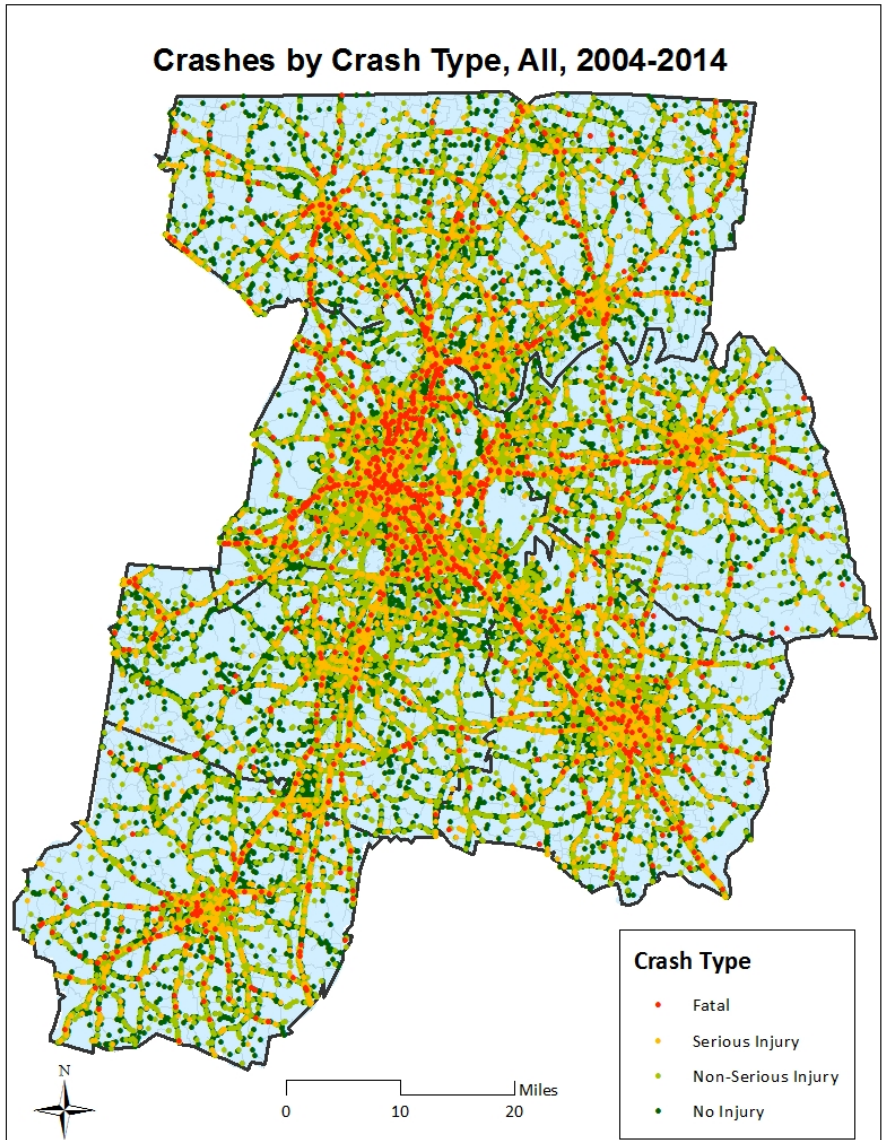
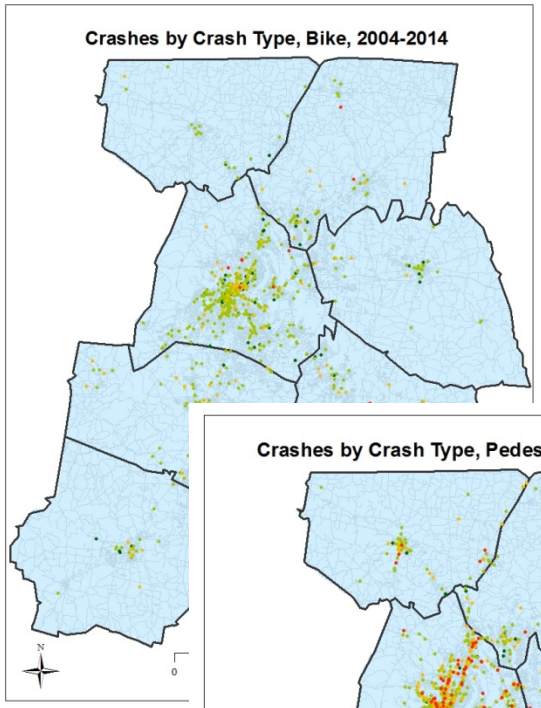
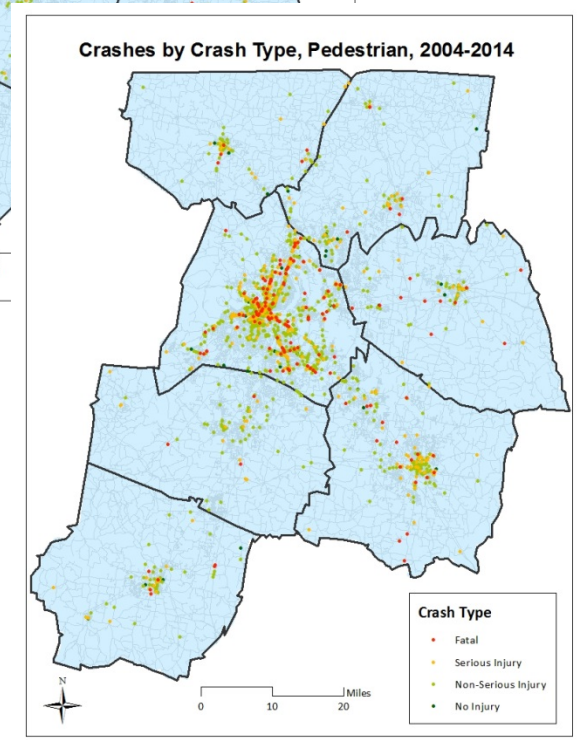
Bicycle and Pedestrian Crashes







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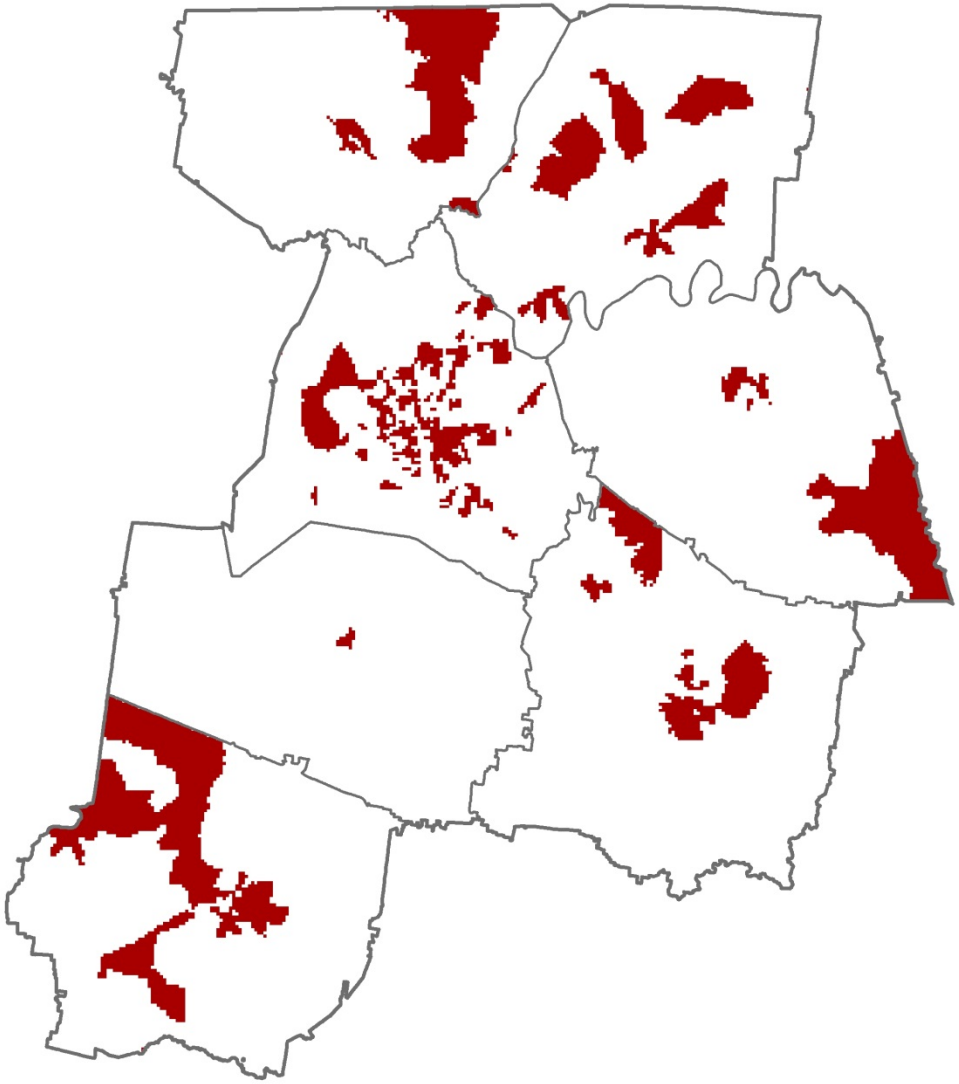
Health Priority Areas

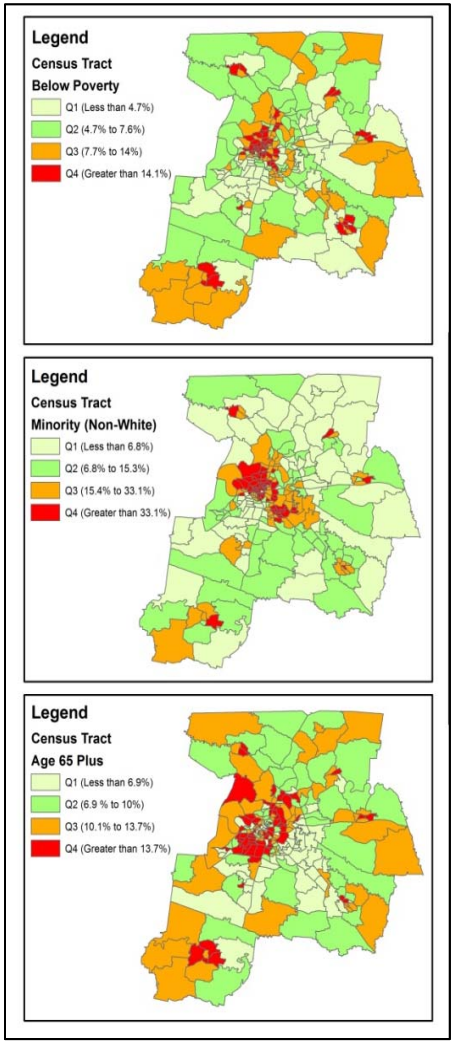


Health Priority Areas

3 out of 4:

- Poverty
- Unemployment
- Carless Household
- Aging (over age 65)

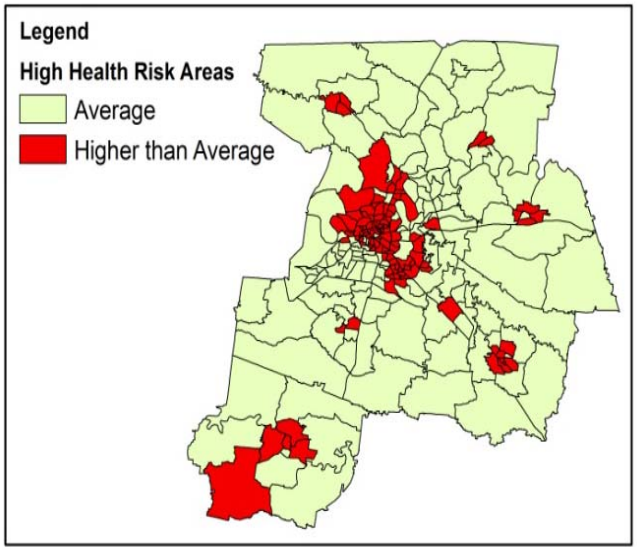
2009 Health Analysis



There is a strong link between the lack of physical activity and health (e.g. heart disease, obesity, and other chronic conditions).

Research has also shown certain population groups have a higher disparity. These groups include:

- Low Income
- Minority
- Older Adults (over 65)



BPAC Weighted Priorities

RESULTS:

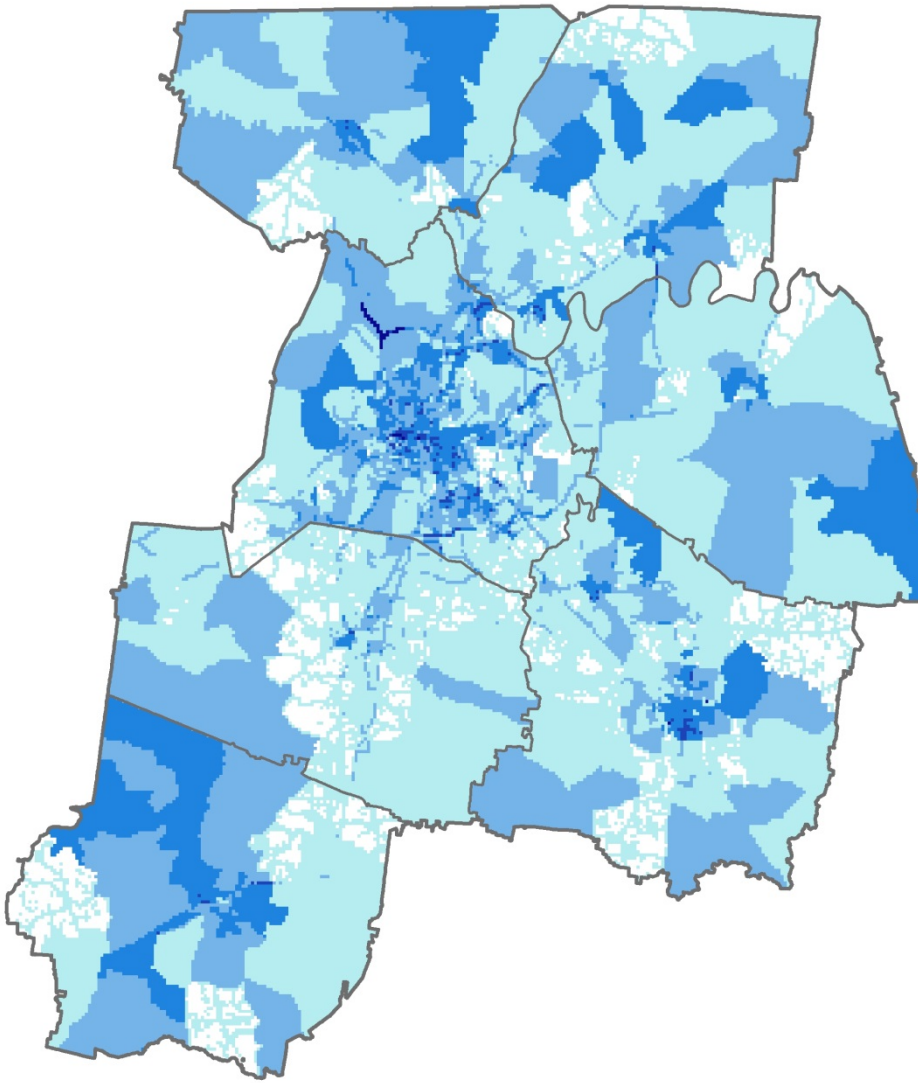
1. Bike/Ped Trip Demand
2. BLOS and PLOS
3. Health
4. Congestion
5. Safety

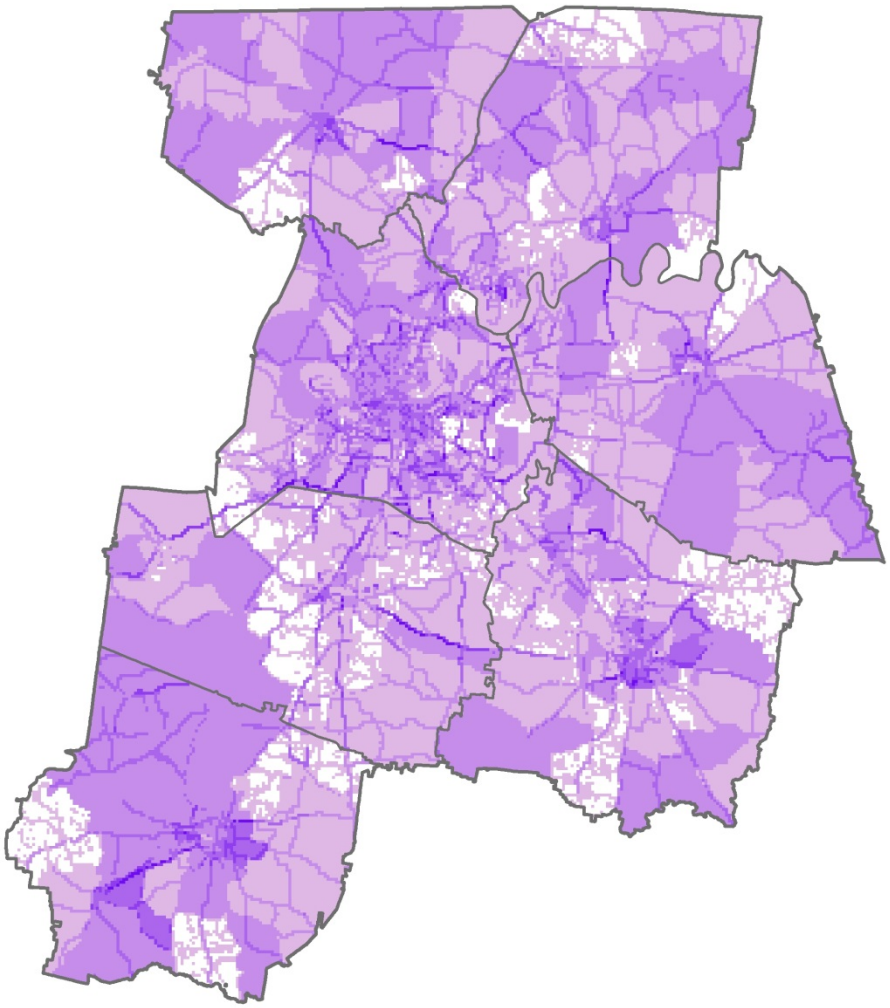
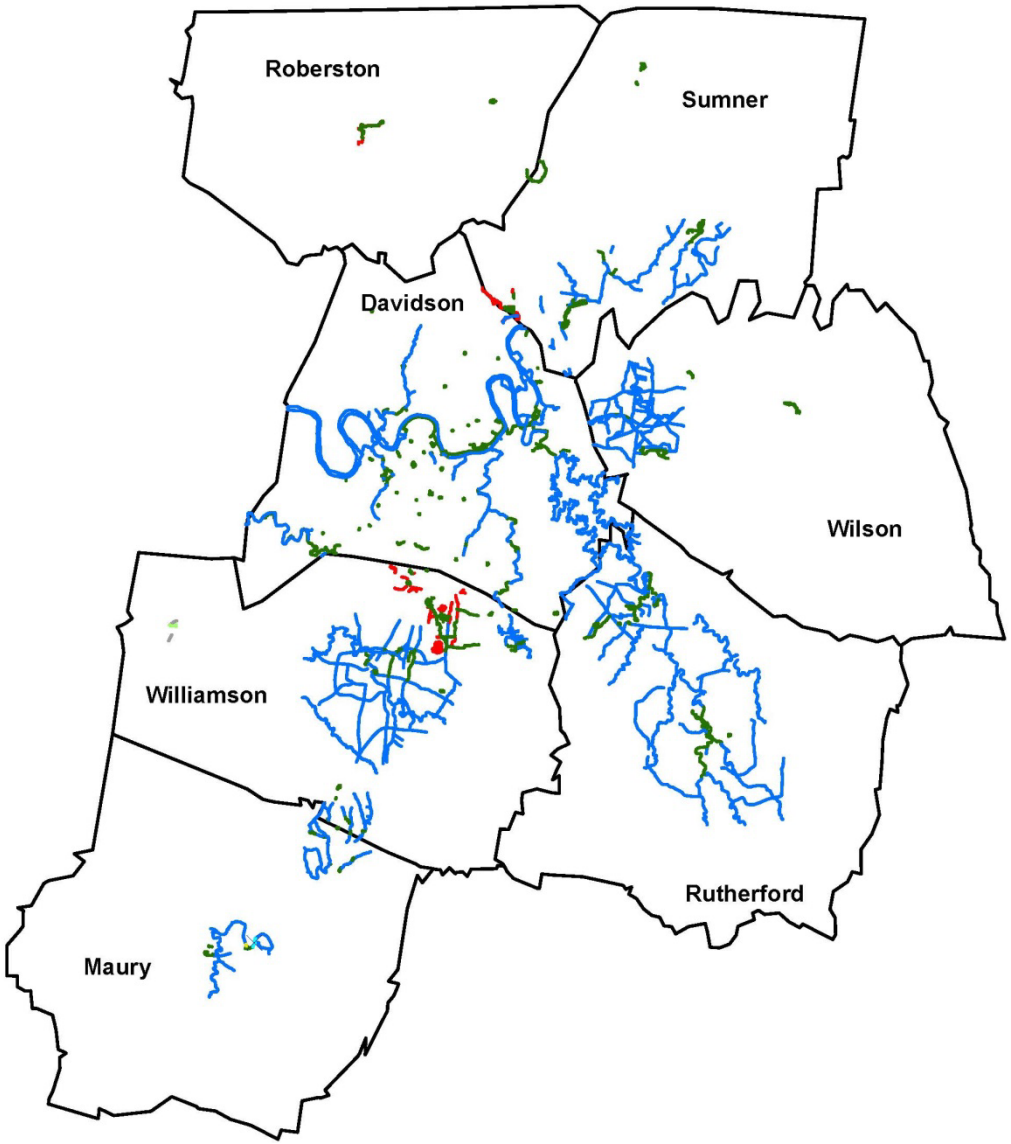
Pair Wise Survey

Example:

TOOLS	B. Level of Service	C. Congestion	D. Connectivity	E. Health	F. Crashes
A. Demand	B	A	A	E	A
B. Level of Service		C	B	E	B
C. Congestion			D	C	C
D.Connectivity				E	D
E. Health					F

Composite Bike/Ped Priority Areas





Regional Greenways Vision