Bicycle and Pedestrian Planning in a Historically Car-Centric Culture:

A Focus on Connectivity, Safety, & Accessibility

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Date: October 19, 2017

Memphis MPO - Background

- Bi- State MPO – TN and MS
  - **Planning Area:** 2 full counties and 2 partial counties
  - Coordination with AR (West Memphis MPO)
- 18 Municipalities

Quick Facts:

- Population approx. 1.1 million
- Land Area: 1348 sq. miles
- 3,703 center-line miles in the region
- Primary Means of Transportation (2015, ACS 1 Year Estimate:

Memphis MSA

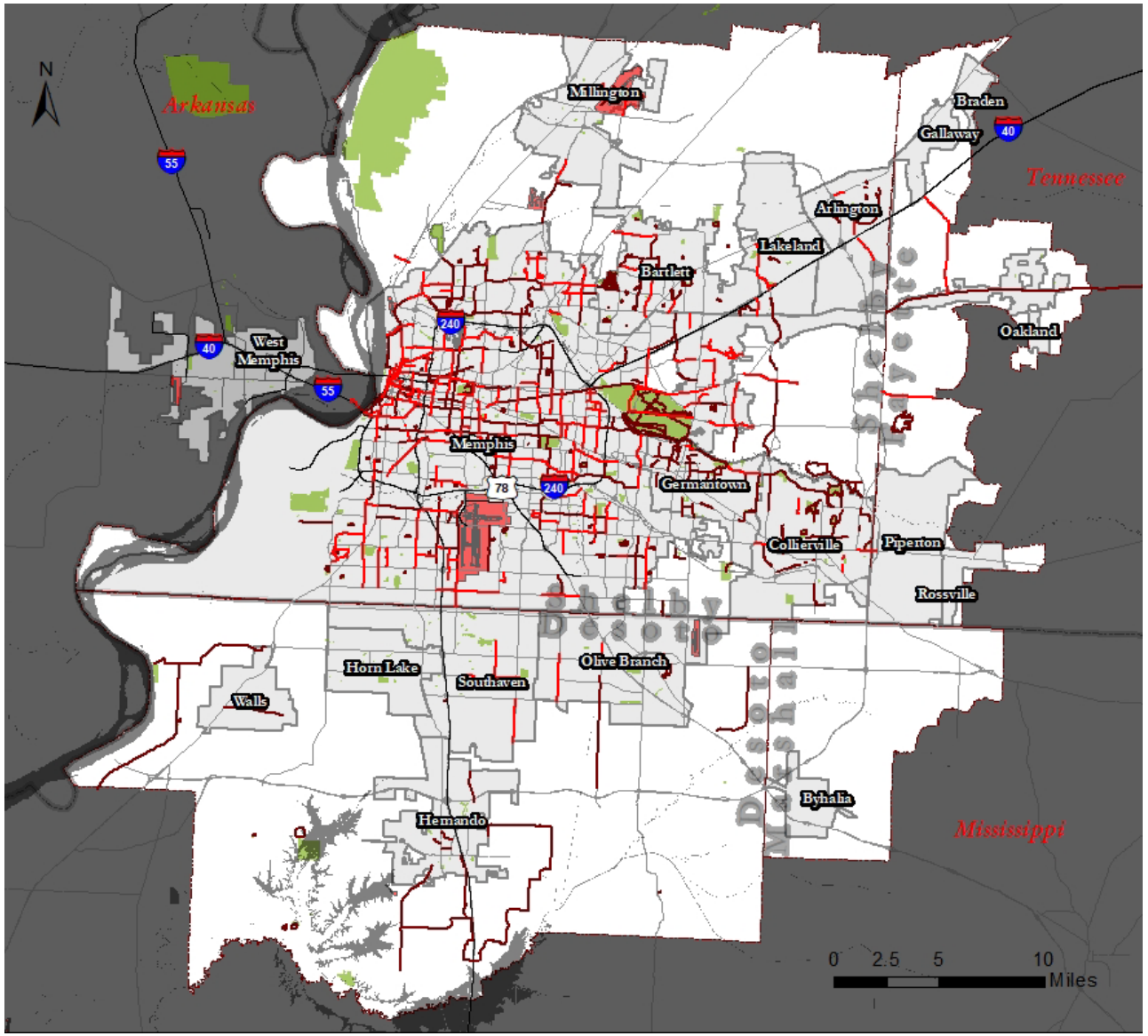
- 84.4% - Drive Alone
- 8.84% - Carpooled
- 3.1% – Work at Home
- 1.1% - Walked
- 0.054% - Bicycle

United States

- 76.6% – Drive Alone
- 9% - Carpooled
- 4.6% - Work at Home
- 2.8% - Walked
- 0.6% - Bicycle

Memphis MPO – Bicycle & Pedestrian Overview

- **Bicycle and Pedestrian Facilities**
  - Bike Lanes
  - Shared-Use Paths
  - Greenways/Trails
  - Paved Shoulder
  - Marked-Shared Roadway
  - Cycle Tracks



Legend

Bike/Ped Facilities

Existing

Programmed

Memphis MPO – Bicycle & Pedestrian Overview

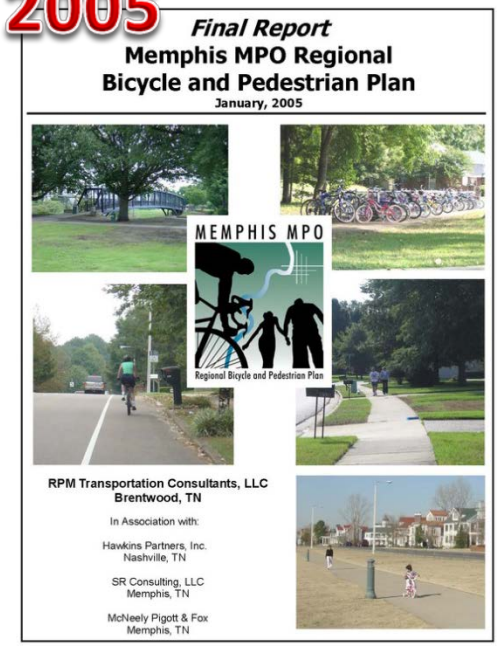
- Public and Stakeholder Involvement:
  - **Active Transportation Advisory Committee (ATAC)**
    - Formed in 2013
    - Meet on Quarterly Basis
    - Provide Guidance on Issues Related to:
      - Bicycling, Walking, Public Transportation, Accessibility for Persons with Disabilities
    - Membership from Broad Range of the Regional Community:
      - Greenways & Trails Groups, Municipalities (planners/engineers), Transit Providers, Advocacy Groups, State DOT
    - Review Transportation Alternatives Applications

  - **MPO Staff Involvement – Bicycle and Pedestrian:**
    - Safety Committees
    - Task Force Boards
    - Advocacy Groups
    - Representation throughout the Region

  - **Public Outreach (Specific to Plans/Events etc.)**

Memphis MPO – Bicycle & Pedestrian Overview

2005



- Initial Plan for MPO
- **2004** - Bicycle and Pedestrian Advisory Committee Formed (BPAC)
- **2008/2010** - *Bicycling* magazine named Memphis one of the "Worse Cities for Cycling"

2014

- **2013** - Active Transportation Advisory Committee (ATAC) Formed
- **2014** –Bicycle and Pedestrian Data Collected
  - **1,100+surveys**
  - **40 manual count locations**

2011

- Extensive Public Outreach: **2,100+** surveys submitted
- **2010** – Create Grouping and Set-Aside Funding for Bicycle and Pedestrian Projects (FY 2011-14 TIP)
- **2012 -** *Bicycling* magazine named Memphis the "Most Improved City for Cycling"

Memphis MPO
METROPOLITAN PLANNING ORGANIZATION

2014 Plan – Method of Analysis

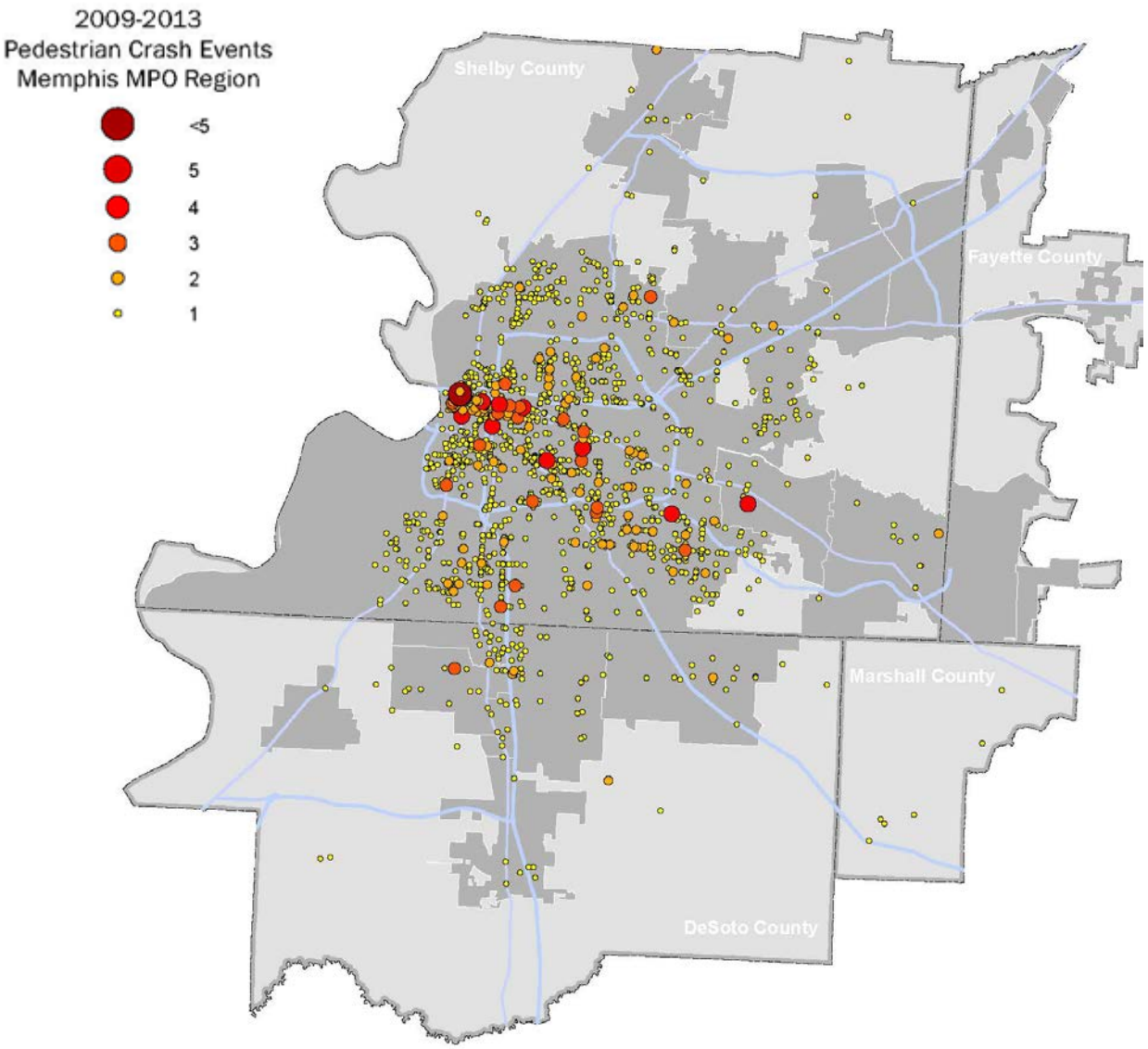
- **Ranking Criteria:** Focus Around 4 Themes of Plan:
  - **Safety** – Crash Analysis
  - **Connectivity** –Bike/Ped LOS, Connected Node Ratio,
  - **Accessibility** – Shortest Path Analysis
  - **Mode Shift Potential** – Shift to Bicycle or Pedestrian Travel

SAFETY	
Quantitative Crash Analysis	The higher the score, the more crashes that occur in that area (applied by Census Tract per person).
CONNECTIVITY	
Block Length	The higher the score, the higher the block lengths are in that area (applied by Census Tract).
Link-Node Ratio	The higher the score, the fewer links there are to nodes in that area (applied by Census Tract).
Level of Service	The higher the score, the less that location supports bicycle/pedestrian travel in its current condition (applied by network segment).
ACCESSIBILITY	
Shortest Path	The higher the score, the more that location is used, or, alternatively, in demand (applied by network segment).
MODE SHIFT	
Projected Mode Shift	The higher the score, the greater potential that location offers to shift trips to bicycle or pedestrian travel (applied by census Tract).

- Composite Score – All Roadway Segments
  - Composite Score = 4 Planning Theme Scores
- Individual Projects Overlaid on Segments
  - Identified: 2011 Bike/Ped Plan, Local Bike/Ped Plans
- Used Project Prioritization TIP

Method of Analysis - SAFETY

- **Safety and Comfort**
  - **Two Sections of Analysis**
    - Quantitative Crash Analysis
    - Qualitative Pedestrian Comfort Analysis
  - **Key Safety Issues**
    - Roadway Barriers
    - Signalized Intersections
    - Unsignalized Crossings
    - Walkways (Sidewalks)
    - Bikeways
    - Lack of Accessibility for Person with Disabilities
    - Behavior Patters that Impact Pedestrian and Bicycle Safety
      - Motorist Behavior
      - Bicyclist/Pedestrian

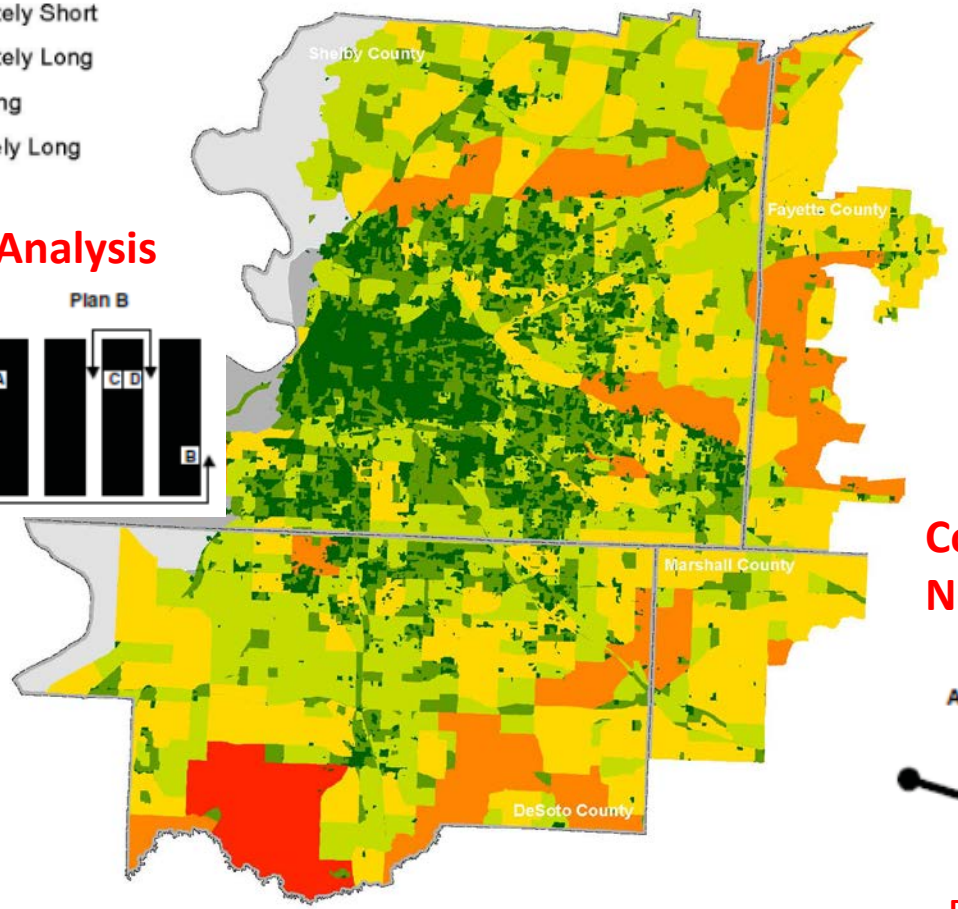


Method of Analysis - CONNECTIVITY

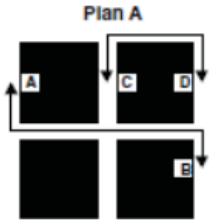
Block Length Analysis
Memphis MPO Region

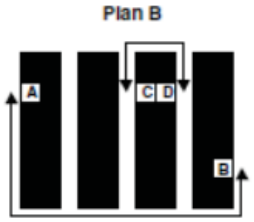
- Extremely Short
- Very Short
- Moderately Short
- Moderately Long
- Very Long
- Extremely Long

Pedestrian Block Length Analysis



Block Length Analysis

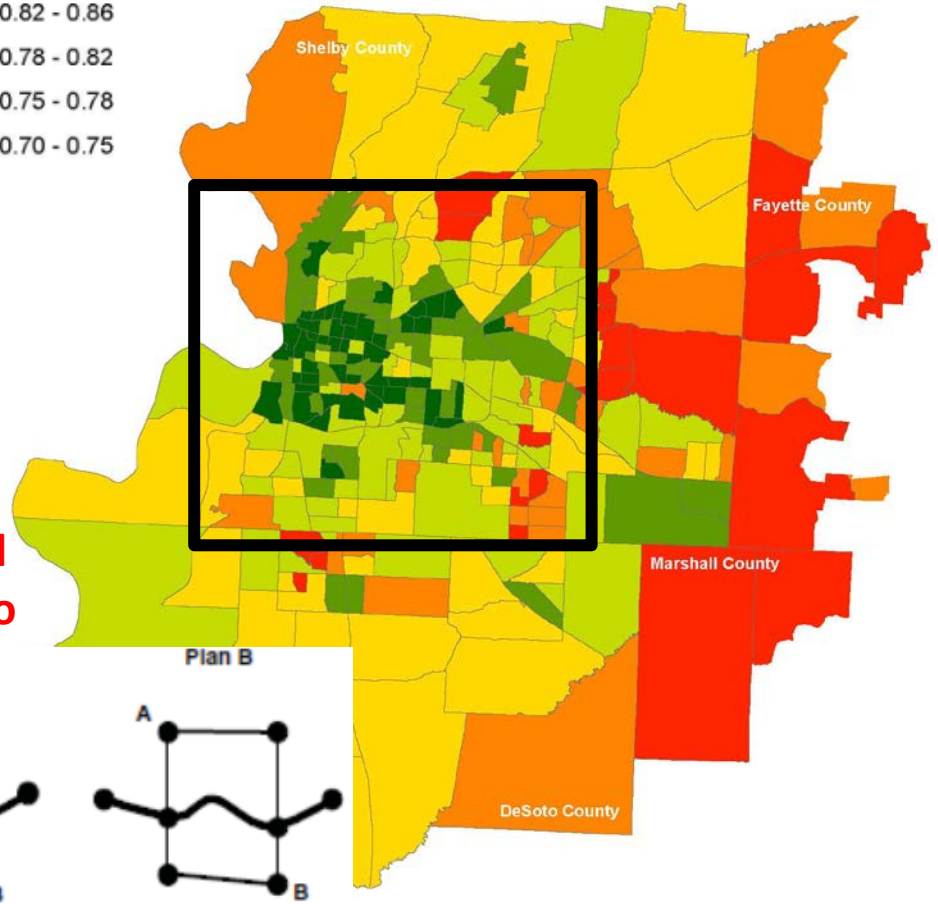




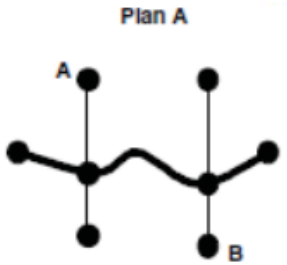
Connected Node Ratio
Memphis MPO Region

- 0.91 - 1.00
- 0.86 - 0.91
- 0.82 - 0.86
- 0.78 - 0.82
- 0.75 - 0.78
- 0.70 - 0.75

Pedestrian Connected Node Ratio Analysis



Connected Node Ratio



Plan A: 0.25 –
Lack of Connectivity

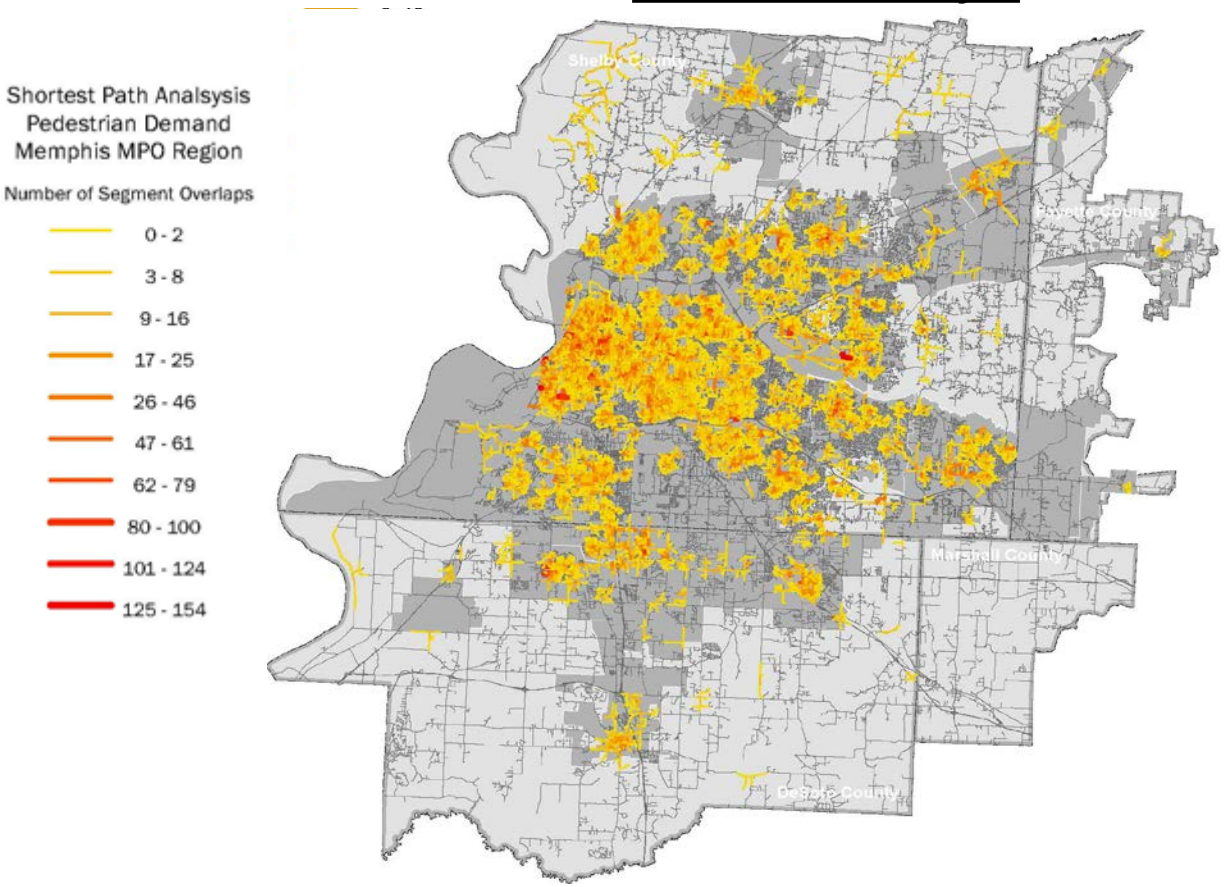
Plan B: 0.75 –
Well Connected Network

Method of Analysis - ACCESSIBILITY

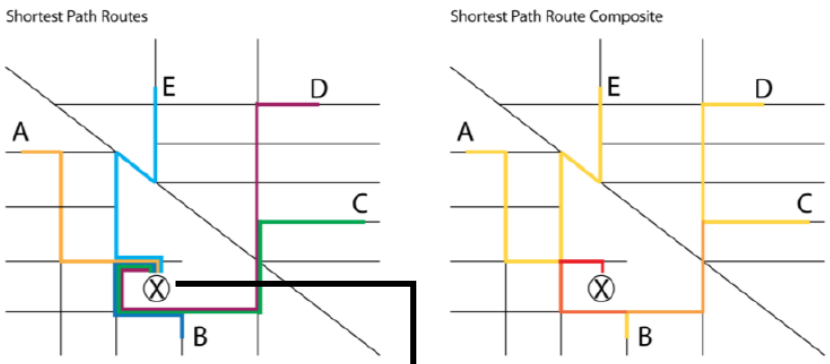
Continued Measure of Connectivity: *Achieving Greater Access to Common Destinations*

- **Creating an Accessible System**
  - **Eliminate gaps** in the network.
  - Identify **"high demand"** routes or pieces of the network that are likely to see the highest level of use.
  - Design projects where users feel **safe** navigating the network.

Shortest Path Analysis



Shortest Path Analysis



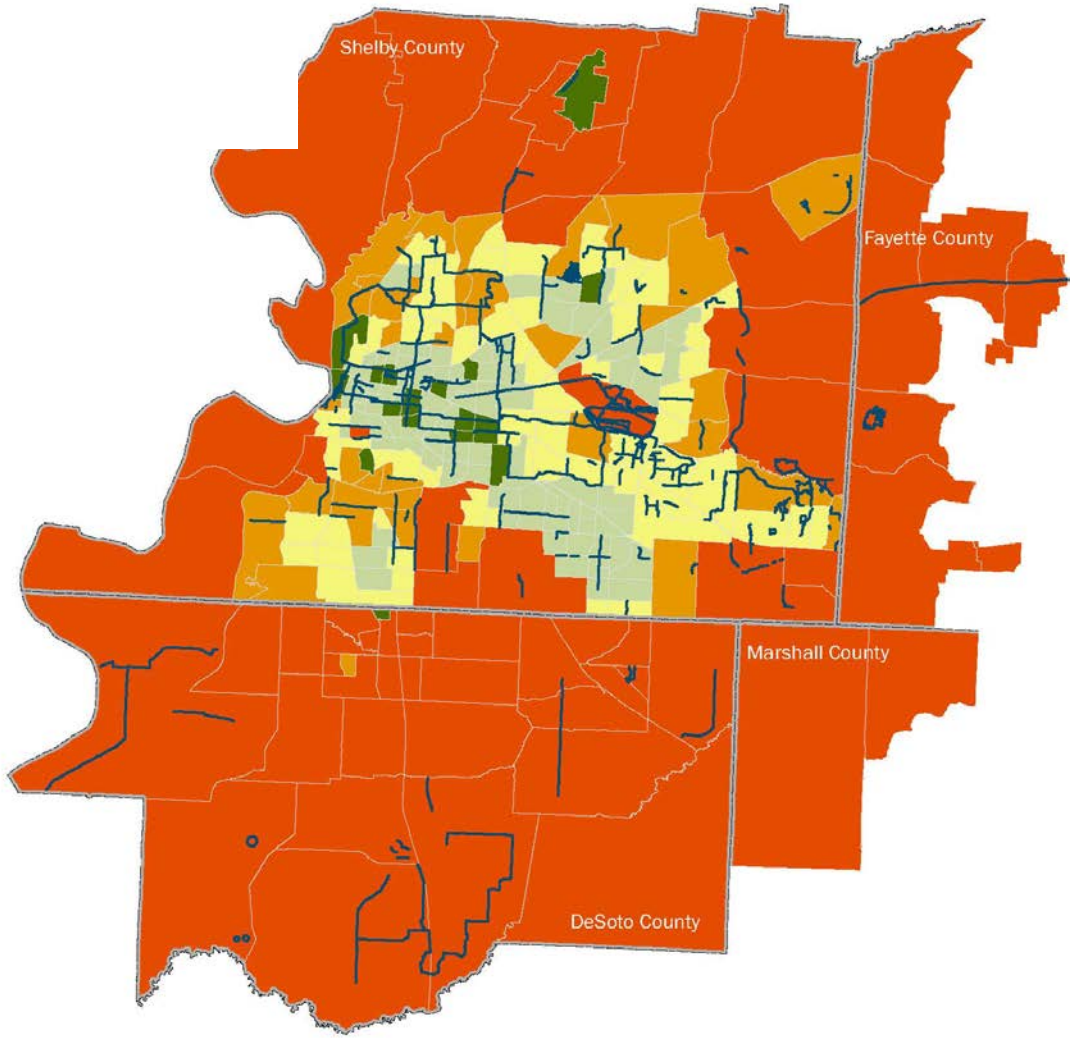
Common Destinations (Schools, Parks, Markets)

Method of Analysis – MODE SHIFT

Shifting from Motor Vehicle to Bicycle and Pedestrian Travel

- Mode Shift dependent on density
  - Increase in density allows potential for mode shift within networks
- Where public transportation is utilized is the highest potential locations for mode shift
  - Need for greater investment in public transportation
- Non-Infrastructure Programs
  - Expand Public Campaigns (rights and responsibilities of users)
  - Bicycle and Pedestrian Safety Education (TN Highway Safety Campaign)
  - Enforcement Campaigns
  - Local Development Guidelines
  - Shared Use Systems (Implementation)

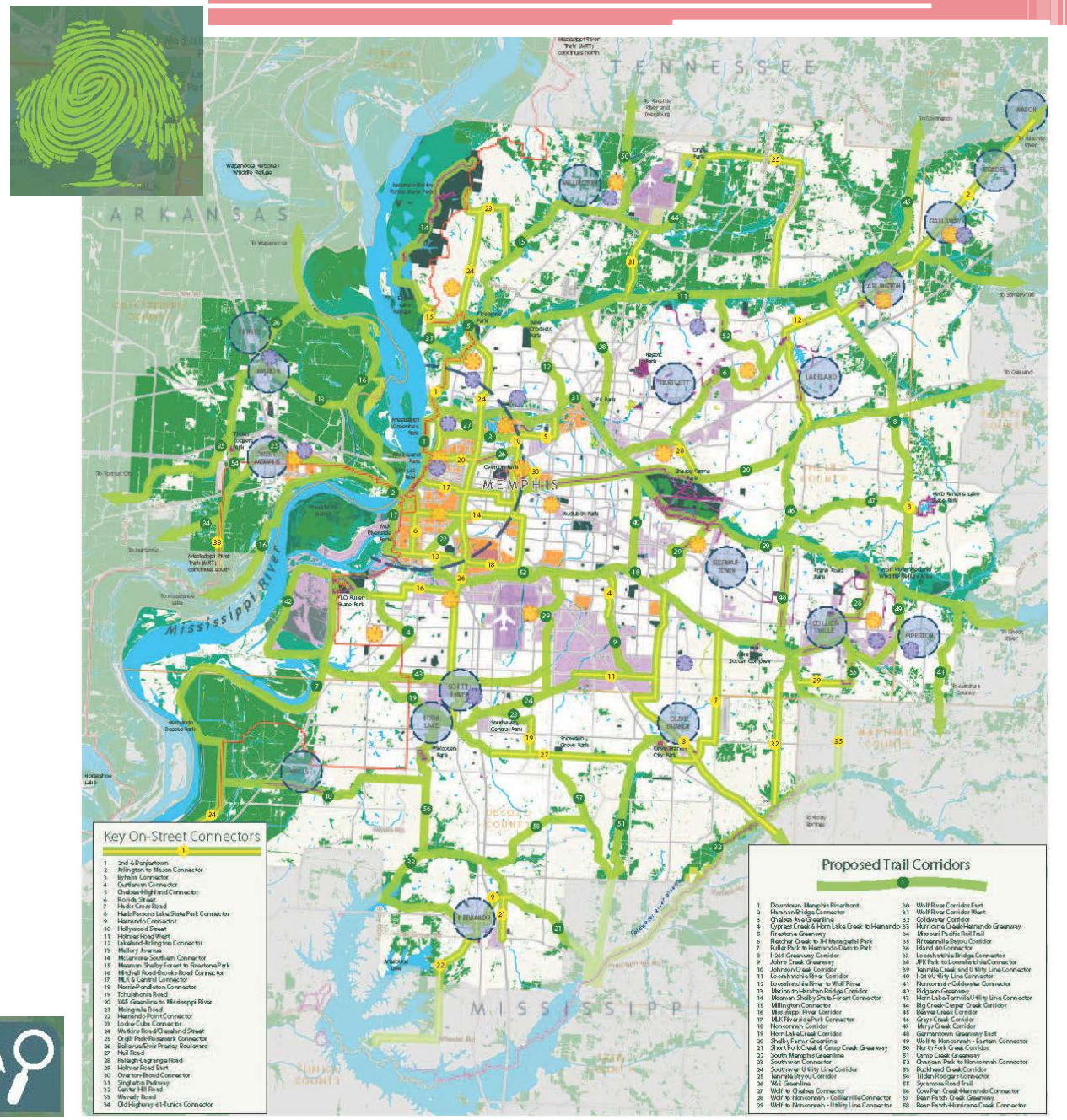
Mode Shift Potential



Regional Collaboration

Mid-South Regional Greenprint

- 2011 - HUD Sustainable Communities Regional Planning Grant - $2.6 M
- Unified Vision for Region-Wide Network of Greenspace
- Defined geographically by Memphis MPO & West Memphis MPO Boundary
- 2016 - Unanimous regional adoption by all local jurisdictions (22 total)

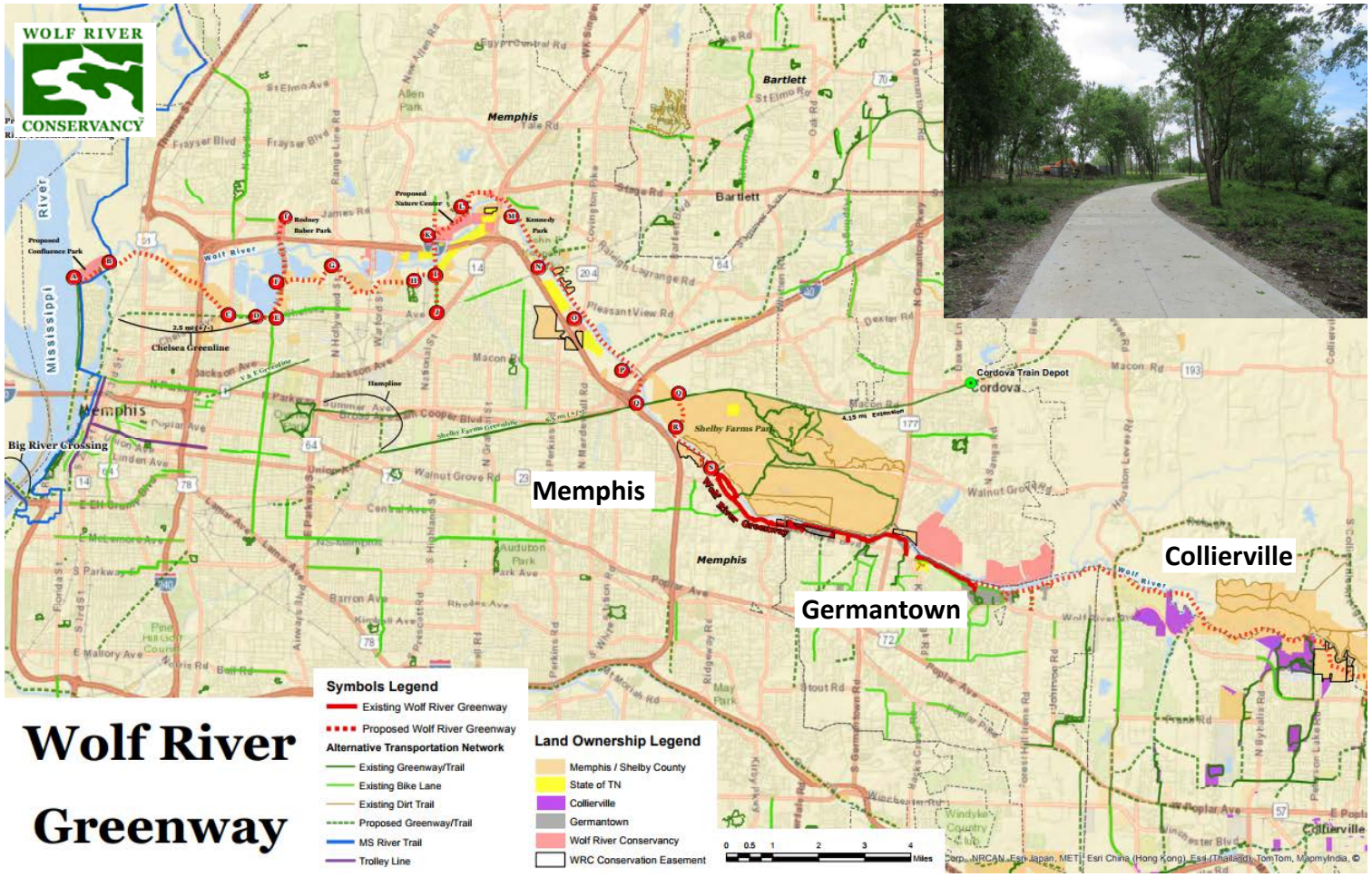


Memphis MPO
METROPOLITAN PLANNING ORGANIZATION

Regional Collaboration

Wolf River Greenway

- Greenway – 36 miles from Memphis to Collierville
- Built in Phases
  - First phase completed 2010 (2.6 miles)
  - Currently Developing Four Phases
  - Goal completed by 2020
  - Intersects with other trail systems including the Shelby Farms Greenline



Regional Collaboration

Harahan Bridge/Big River Crossing

- 2012 – TIGER IV Grant Award ($15 M)
- Longest Public Pedestrian/Bike Bridge across Mississippi River
- 2016 (October) – Opened to Public
  - 20,000 visitors crossed first week of operation
- Public/Private Partnership:
  - Memphis, TN & West Memphis, AR
  - TDOT, MDOT, USDOT
  - FedEx, AutoZone, many others

Data Driven

MPO's Selected for Pilot Program

- **Implementation**
  - **Automated Count Bike/Ped Pilot Program**
    - $20,000 Grant from FHWA to Purchase Counters
      - Infrared (3) and Pneumatic Tube Counters (3)
    - 2015 – 1 of 10 MPO's selected
    - Bike/Ped Counting Program – Check-out Equipment
  - **Programmed FY 2017-20 TIP**
    - Funding Set-Aside: Bike/Ped Grouping
    - Bike/Ped Projects = 25%+
      - MPO managed funds
    - Project Ranking Criteria:
      - Road Projects/Grouping – Bike/Ped Improvements
      - Priority Ranking in the MPO's Regional Bike/Ped Plan

On-going Initiatives

- **Tennessee Highway Safety Office**
  - 5-Year Demonstration Grant – Improving Safety for Cyclists and Pedestrians

- **Bicycle and Pedestrian Report**
  - Updates to the Plan Since 2014 (Safety, Agency Reports, Mapping)
  - Questionnaire sent out to Jurisdictions/Agencies

- **Coordination & Collaboration**
  - State DOT's (TN & MS) – Coordination Efforts & Safety Data
  - Member Jurisdictions & Agencies – Serve on advisory councils, task forces, committees

- **Implementation**
  - Construction of New Bicycle and Pedestrian Facilities
  - Incremental Steps

- **Incremental Steps**
  - Change in the Culture for Active Transportation

Exponential Growth for Shared-Use Facilities
(bike lanes, shared lanes, paved shared-use paths, etc.)

City of Memphis: **1.5 miles** 2010 → **400 miles** 2017

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