Bicycle and Pedestrian Planning in a Historically Car-Centric Culture: A Focus on Connectivity, Safety, & Accessibility

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Transportation Planners
Memphis MPO
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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% - Carpoled
    - 3.1% - Work at Home
    - 1.1% - Walked
    - 0.054% - Bicycle
  - United States
    - 76.6% - Drive Alone
    - 9% - Carpoled
    - 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
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

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

- **Extensive Public Outreach:** 2,100+ surveys submitted

[Image of Regional Bicycle & Pedestrian Plan for Memphis MPO]
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

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
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<tbody>
<tr>
<td>SAFETY</td>
<td>The higher the score, the more crashes that occur in that area (applied by Census Tract per person).</td>
</tr>
<tr>
<td>CONNECTIVITY</td>
<td>The higher the score, the higher the block lengths in that area (applied by Census Tract).</td>
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<tr>
<td></td>
<td>The higher the score, the fewer links there are to nodes in that area (applied by Census Tract).</td>
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<tr>
<td></td>
<td>The higher the score, the less that location supports bicycle/pedestrian travel in its current condition (applied by network segment).</td>
</tr>
<tr>
<td>ACCESSIBILITY</td>
<td>The higher the score, the more that location is used, or, alternatively, in demand (applied by network segment).</td>
</tr>
<tr>
<td>MODE SHIFT</td>
<td>The higher the score, the greater potential that location offers to shift trips to bicycle or pedestrian travel (applied by census Tract).</td>
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- **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 Patterns 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

Connected Node Ratio
Memphis MPO Region
- **0.91 - 1.00**
- **0.88 - 0.91**
- **0.82 - 0.86**
- **0.78 - 0.82**
- **0.75 - 0.78**
- **0.70 - 0.75**

Pedestrian Connected Node Ratio Analysis

- **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.

**Method of Analysis - ACCESSIBILITY**

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**Shortest Path Analysis**

**Common Destinations (Schools, Parks, Markets)**

**Method of Analysis - ACCESSIBILITY**

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

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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)
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)
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

- **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

MPO’s Selected for Pilot Program
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

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

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<th>City of Memphis:</th>
<th>1.5 miles</th>
<th>2010</th>
<th>400 miles</th>
<th>2017</th>
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