Tools for Assessing an Area’s Potential to Support Active Transportation

October 2015
Active Living Places Index (ALI)
Origin: Capitol Region Sustainable Communities project

- Project carried out by consortium of governments, businesses, and non-profit organizations
- Vision: Healthy and flourishing place for all
Origin: Capitol Region Sustainable Communities project

- Building Blocks: healthy ecosystems, economic competitiveness, housing choice, efficient transportation, healthy food and farms, etc.
- Goals – developed for each building block
- Priority Challenges – identified for each goal
Efficient, Effective Transportation System – Priority Challenges

- Increase opportunities for active transportation
- Connect region with regional transit system
- Minimize household transportation costs
- Ensure access for all to healthy fresh food
Regional Indicators – Provide Framework for Change

- Developed for priority challenges
- Active Living Index developed as indicator for active transportation opportunities
Plan4Health

- Capitol Region received an APA – CDC Plan4Health grant to promote healthy communities and active living places
- Collaboration between Capital Area Regional Planning Commission, City of Madison/Dane County Health, and the MPO
Goal: Improve health outcomes for communities through:

- Better access to healthy food
- Addressing physical inactivity
- Changes to built environment
- Increased community engagement
Active Living Index – Concept & Design

- What is it?
- Methodology
- Uses
Interactive Mapping Tool Based on ArcGIS Online

- Designed to provide a unique score to a given small geographical area similar to WalkScore
- Aggregated measure
Advantages over WalkScore

- Transparent
- Uses local data
- Local control over components and their weighting
ALI Components and Weights

75%  Walkability
   40% Destination Density
   30% Intersection Density
   5% Population Density

15%  Bikeway System Accessibility & Level of Service
   12% Density of “Premium” Bicycle Facilities
   3% Average Bicycle Level of Service (for Arterial/Collector Streets)

10%  Transit System Accessibility & Level of Service
   5% Access to Bus Stop & Service Frequency
   5% Accessibility to Jobs by Transit
ALI Destination Classes

- Primary: Those that meet daily needs and found to be highly correlated to walking/bicycling for different age groups

- Secondary: Those needed for weekly errands or activities or for recurrent specific needs
ALI Categories and Weighting

Primary Destinations (67 of 100 Total Possible Points)

- Food (27)
- Education (20)
- Greenery/Parks (20)

Secondary Destinations (33 of 100 Total Possible Points)

- Recreation/Entertainment (20)
- Shopping/Services/Health (13)
Destination Density – Measured by Service Area

- Generally 1,320 feet or ¼ mile; ½ mile for high school and university buildings

Limitation – Only partially captures magnitude of number of destinations, but does capture the variety of destinations
Destination Density
Destination Density
Intersection Density – Used as Proxy for Walkability of the Built Environment

- Includes multi-use paths
- Weighting system used
- Score set to zero for areas within 250’ of freeways/expressways
Intersection Density
Premium Bikeway Density
Uses for the ALI Tool

- Evaluation of the current built environment for any location, neighborhood, municipality
- Education on the factors that make places supportive of healthy, active living
Uses for the ALI Tool

- Tool to aid in the land use/transportation planning process
- Also being used for study to analyze the correlation of the components and composite index with certain health outcomes
Current key limitation of the Active Living Places Index Tool:

- Not set up to be easily used for scenario planning purposes to analyze the impact of future land use and transportation networks or analyze the impact of a proposed project.
ALI Interactive Mapping Tool

http://goo.gl/xd3rHx
Sugar Access for ArcGIS Application by Citilabs
Application for ArcGIS that allows calculation and mapping of multi-modal accessibility metrics.

Metrics include:

1. Travel time to jobs or important destinations
   Options:
   - Mode of travel or overall accessibility by all modes
   - Time of day

2. Accessibility score
Examples of Accessibility Calculations

- Number of jobs within 30 minutes by public transit during weekday peak travel period
- Number of full service grocery stores within 15 minute drive during the off-peak period
Examples of Accessibility Calculations

- Number of recreation and entertainment destinations within 10 minute walk

- Number of school-age children within 20-minute bicycle ride of elementary school

Accessibility of different population groups can also be measured (e.g., number of low-income workers within 30 minutes of important employment center(s) by public transit
Types of Accessibility Maps

- Travel time: Contour map of minimum travel times to jobs/destinations
  - Auto travel times by time period based on HERE travel time data
  - Walk and bicycle speeds – default value, but can change
- Accessibility score (absolute or relative, scaled to maximum value)
Transportation Networks

- HERE (formerly known as NAVTEQ) roadway network used for the auto, walk, and bike networks
  - Attributes of the network include whether part of walk and/or bike network
  - HERE network includes shared-use paths, but that part of network not comprehensive and up to date
- Transit network developed from GTFS data
- Sugar network editor allows modification of existing network and coding of future network
Points of Interest

- Data from HERE
  - Selected set of destinations with some quirks (e.g., includes ATM locations)
- Local destination data can be substituted, which we plan to do
### Sugar Access Destination Categories and Weighting for Accessibility Score

<table>
<thead>
<tr>
<th>Description</th>
<th>Target #</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Restaurant/Coffee Shop/Bar/Nightlife</td>
<td>8</td>
<td>40</td>
</tr>
<tr>
<td>Shopping/Bookstore/Dept. Stores</td>
<td>4</td>
<td>15</td>
</tr>
<tr>
<td>Cultural/Entertainment/Museums</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Grocery Store</td>
<td>2</td>
<td>15</td>
</tr>
<tr>
<td>Errands (Banks, Pharmacies, Hardware)</td>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td>Parks and Recreation Areas</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>Schools</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100</strong></td>
<td></td>
</tr>
</tbody>
</table>

Note: Scoring depends upon proximity of destinations to the origin.
Accessibility by Bicycle

- Citilabs working on improvement to the bicycle routing algorithm, which allows users to take into account variables such as elevation change, bicycle right of way, and opposing traffic

- Interest in modification that would allow routing via defined “low stress level” bicycle facility network
  - High volume arterials without bike lanes are being excluded from our local network
Bill Schaefer
Transportation Planning Manager
wschaefer@cityofmadison.com