

Note: This description of the proposed Transit Accessibility Index supersedes the description provided in the Draft Indicator Selection Report for the GO TO 2040 Plan Update, dated October 25, 2013. This reflects the information presented to the CMAP Transportation Committee on November 15, 2013.

Transit Accessibility Index

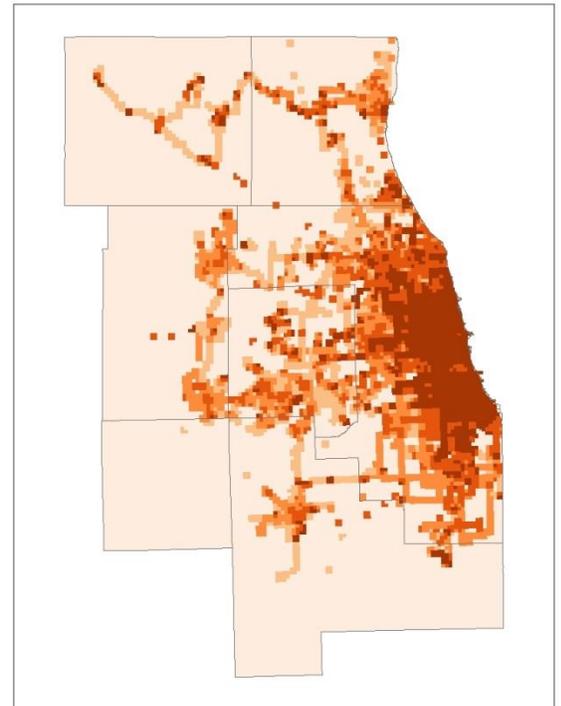
The proposed Transit Accessibility Index is a metric that takes into account transit service frequency, the pedestrian-friendliness of the environment, the network-based distance to transit stops, and the number of subzone connections available from an origin. Each component factor is measured individually at the subzone level and an index value is assigned to each subzone. The Transit Accessibility Index is then the average of these four factor indices that have been assigned to each subzone. The results of each component index are displayed using the color scheme shown at the right. Express transit services that run only on special occasions, such as during sports events and concerts, are excluded from the analysis. Transit service information is derived from General Transit Feed Specification files developed by the transit operators.



1. Transit Service Frequency

This factor is measured for each subzone by counting the number of times during a week that a transit service vehicle makes a stop in the subzone. Each stop in the subzone is weighted based on the combined average weekday ridership for all transit routes that visit the stop. Ridership is used to reflect the relative demand for the service. Routes are ranked based on their ridership: the top 20% receive a weight value of five, the next 20% receive a weight value of four, etc. The resulting measurement for each subzone is the ridership-weighted average number of times a stop in the subzone is visited by a transit service vehicle, within a week. The assigned index values are shown below.

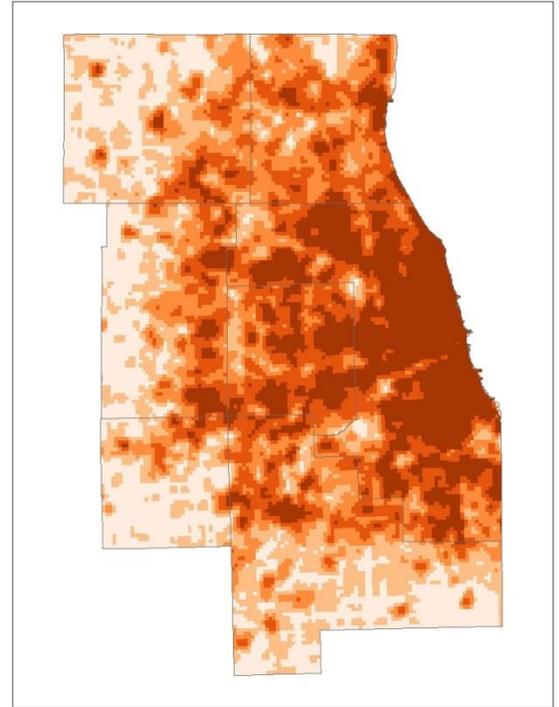
INDEX VALUE	WEIGHTED AVERAGE FREQUENCY
1	0.0
2	0.1 – 23.7
3	23.8 – 77.8
4	77.9 – 194.6
5	194.7 – 2147.0



2. Pedestrian Environment Factor

The Pedestrian Environment Factor (PEF) is the same measure of walkable street density that is used in CMAP’s Trip Generation model. Street segments identified as being not suitable for walking are not included in the calculation. Subzones are assigned index values based on their PEF score, as shown below.

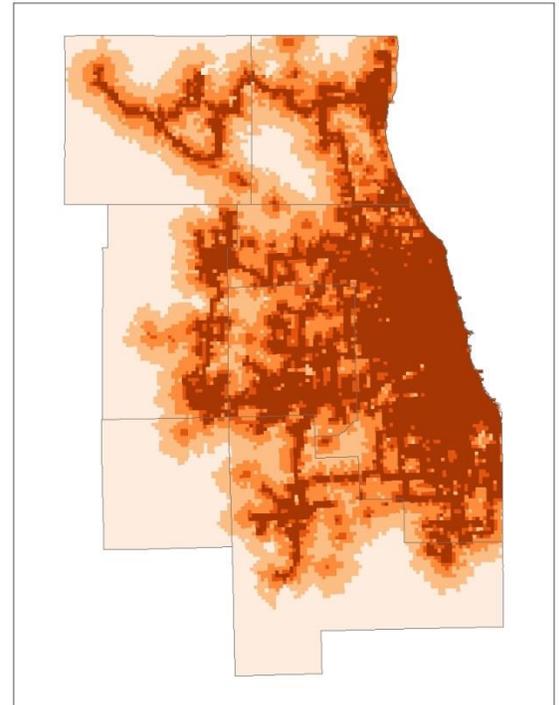
PEF_index	Value_Range	Subzone_Count
1	0 - 2.88	3285
2	2.881 - 7.49	3249
3	7.491 - 15.87	3297
4	15.871 - 25.73	3301
5	25.731+	3311



3. Proximity to Nearest Transit Stop

This factor is measured differently depending on whether or not the subzone being measured contains transit stops. For subzones containing transit stops, the measurement for each stop is the longest network distance one must travel to reach that stop without encountering a closer stop. Aggregated to the subzone level, this value represents the average longest distance to a stop within the subzone, with distances weighted by each stop’s service frequency. For subzones that do not contain transit stops, the measurement is simply the shortest network distance from the subzone centroid to the nearest transit stop. Index values are assigned to subzones as in the table below; the “Value_Range” field represents miles.

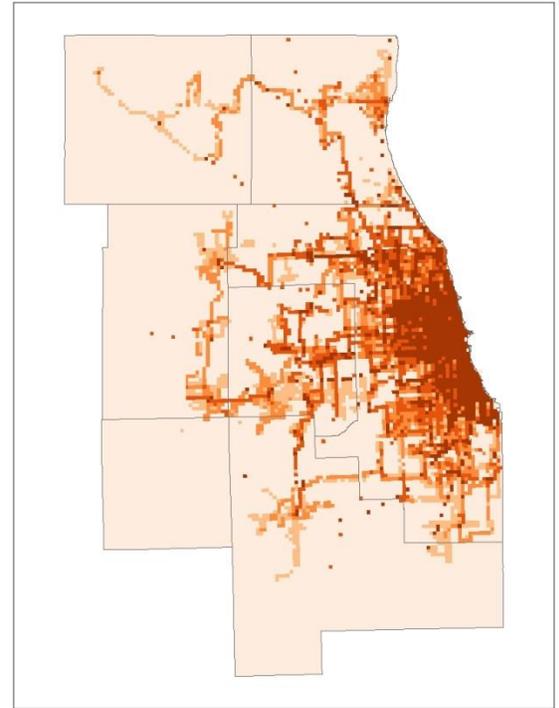
Proximity_Index	Value_Range	Subzone_Count
1	5+	4865
2	2.50001 - 5	2889
3	1.00001 - 2.5	3048
4	0.50001 - 1	1413
5	0 - 0.5	4228



4. Transit Connectivity

Transit connectivity is measured in terms of the activities that can be reached from a subzone using a direct transit route. Activities are defined as the sum of the number of people residing in a subzone and the number of jobs located in a subzone. It is calculated for each subzone by first finding all other subzones that can be reached from the origin subzone using a direct transit route. For each origin subzone, the connectivity value is the activity density; i.e., the total activities that can be reached in the destination subzones divided by the total area of the destination subzones. The result is reported as connected activities per acre. The index values are assigned according to the map legend below.

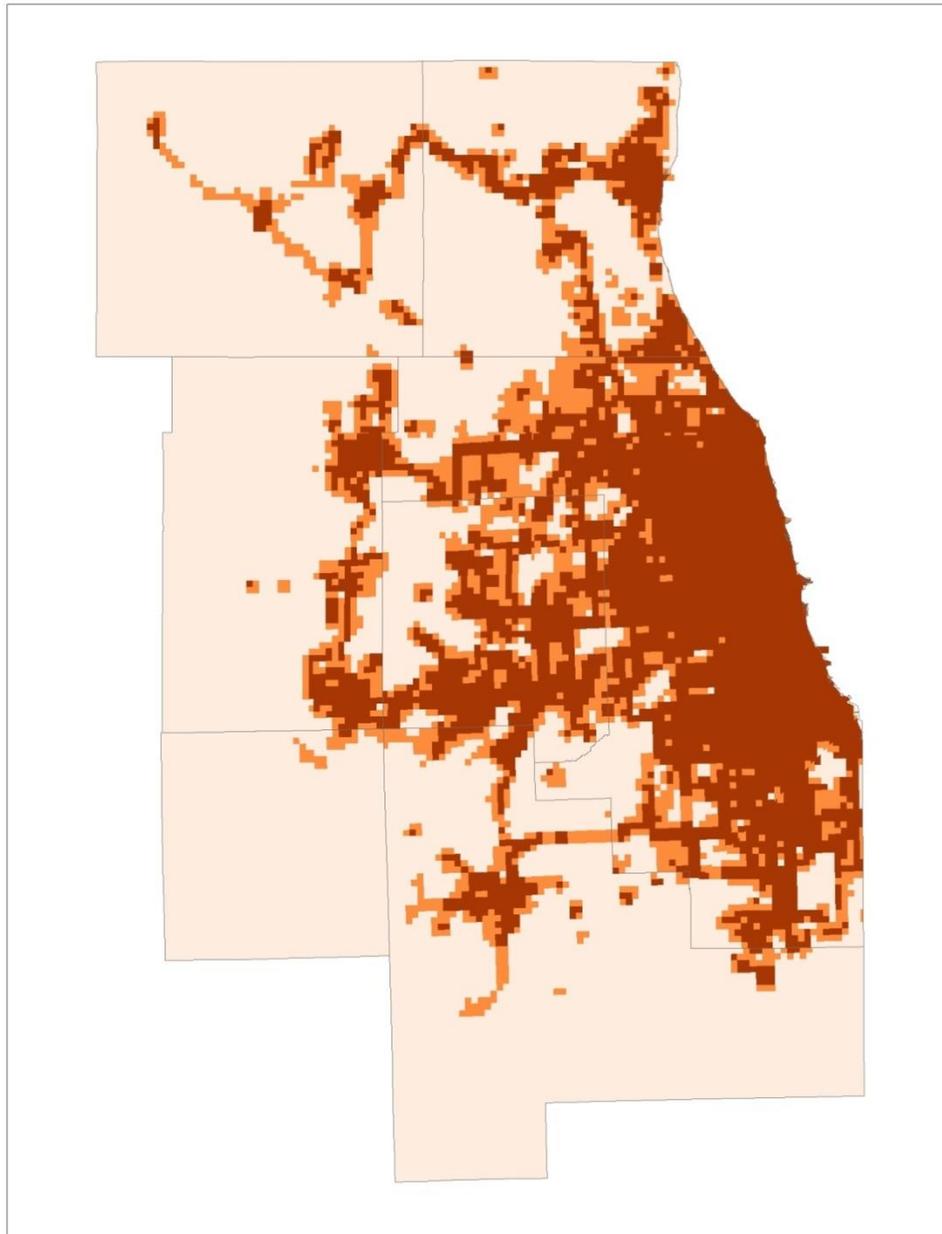
INDEX VALUE	CONNECTED ACTIVITY DENSITY
1	0.0
2	0.1 – 170.8
3	170.9 – 360.3
4	360.4 – 786.1
5	786.2 – 18843.9



Overall Transit Accessibility Index

The index values for each of the four components described above are averaged to determine the overall Transit Accessibility Index of each subzone. This is displayed on the following page, categorized by areas with High Transit Accessibility (an overall index value of four or five), Moderate Transit Accessibility (an overall index value of three) and Low Transit Accessibility (an overall index value of one or two). A table highlighting the regional population and employment totals (based on 2010 Census and employment data) covered by each of these categories is also included.

Overall Transit Accessibility Index



Index Range	Population (2010)	% Total Population	Employment (2010)	% Total Employment
High Accessibility (4, 5)	5,675,698	68.5	2,835,552	74.6
Moderate Accessibility (3)	1,145,478	13.8	487,291	12.8
Low Accessibility (1, 2)	1,469,707	17.7	480,790	12.6

Comparison to GO TO 2040 Indicator

The images below show a comparison between the regional 2010 population and jobs with accessibility to transit determined using the simple proximity-based method used in GO TO 2040 (green) and using the proposed method for the plan update (dark red; limited to subzones with High Transit Accessibility). Note that the original method apportioned subzone population and employment figures based on buffers around transit stops/stations, while the proposed method uses the entire subzone population and employment values.

