

Accessibility Index

Using St Louis, Missouri



OVERVIEW

East West Gateway Council serves as the Metropolitan Planning Organization (MPO) for St. Louis region which looks after almost 3 million residents. Traditionally, an accessibility map would look at travel times between large Traffic Analysis Zones (TAZs). EWG wanted to enhance this type of analysis to see how many key destinations are accessible by public transit and walking, within a specified time. This allowed multiple destinations to be analysed simultaneously and to add a weighting to each destination type to provide a different view of accessibility. To do this, they used TRACC software provided by Basemap.

How It Works

After a calculation has been completed an accessibility function is utilized, which measures the ease in which an individual can travel from the origins to destination. A catchment is used from each origin to destination based on travel mode and maximum journey time (Walk 40 minutes and PT 60 Minutes) and this is used to create an index for each census block. This data is easily created within TRACC, as every origin to destination is given a travel time, creating hundreds of millions of possible journeys which are extracted as an O/D matrix file.

Calculating the Score

The score is created using four main inputs which are customizable in TRACC. For this project, it was decided to look at Census block centroids to define the origins. The destinations were split into 8 different types of POI (See Table 1) The next element was travel mode - Public transit (PT) and walking were utilized, although cycling is a consideration for future analysis.

St Louis Courthouse, Missouri



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The Challenge

The O/D matrix files created in TRACC were used to find out how many POIs are within the catchment. Each POI within the catchment area contributes to the accessibility score of the origin. The accessibility value is between 0 and 1 and is calculated with an exponential decay function. This means that if the point of interest is in the exact vicinity of the origin then the value will be 1. As the point gets farther from the origin based on travel time, its value approaches 0.

In summary the public transport provided a less than desired Accessibility report. The South, East and Northern areas of St Louis show high walking accessibility in contrast to a low public transport accessibility score. These results have helped provide a working demonstration to remedy St. Louis' transit accessibility.

Table 1. Saturation and weights for different point of interest categories and modes of travel

POI Categories	Walk		PT	
	Saturation (# POI's)	Weight	Saturation	Weight
Education	5	2.4	-	0.1
Entertainment and Recreation	10	1	-	0.05
Food and Drink	20	0.5	-	0.02
Grocery Stores	3	10	-	0.1
Hospitals	1	6	-	1
Pharmacies	3	2	-	0.1
Public Services and Banks	20	0.8	-	0.05
Shopping	20	0.5	-	0.02

Table 1 shows the saturation for different POI's when walking. There is no saturation for PT (no limit to the maximum accessibility score) as all POI's within catchment are important. The weighting values for PT reflect this. The formulae will apply these weightings and walk saturation values to each POI category when undertaking a calculation.

Feedback

01

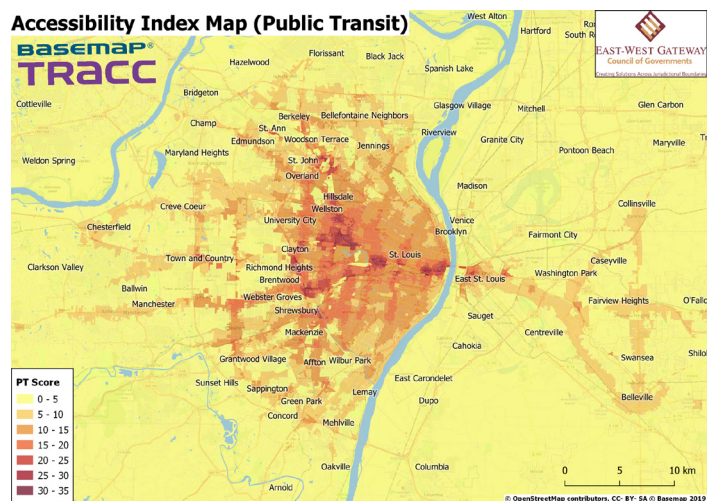
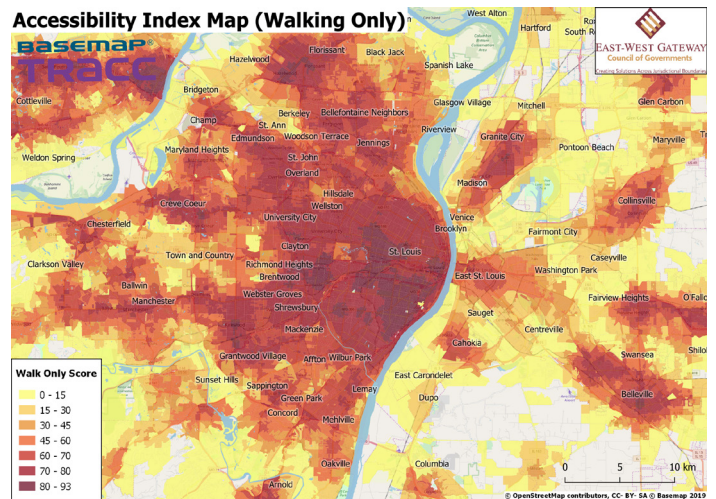
"TRACC's helped us estimate travel times and accessibility better than any other platform."
Amir, Poorfakhræi, East West Gateway, St Louis

02

"The calculations highlighted how poor the transit accessibility is in the East and North of St. Louis".

03

"These is a large population of low income households, racial minorities, and households with zero vehicle ownership live." TRACC has allowed EWG to very quickly get a view of accessibility in their region. highlighting both low accessible areas.



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