



Transport Modeling Tool: EMME

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Introduction

- Transport planning is defined as planning required in the **operation, provision and management** of facilities and services for the modes of transport to achieve *safer, faster, comfortable, convenient, economical and environment-friendly movement* of people and goods.¹
- Transport demand forecasting is to predict future transport demand when establishing transport plans within a given budget.²

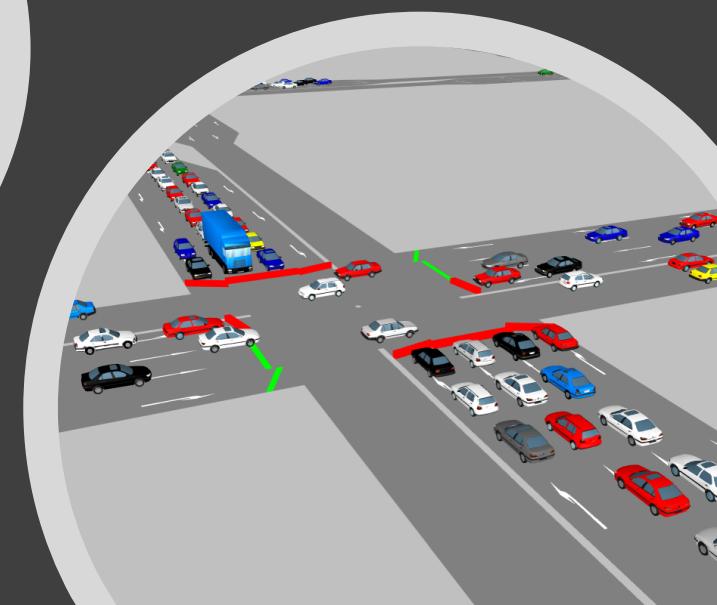


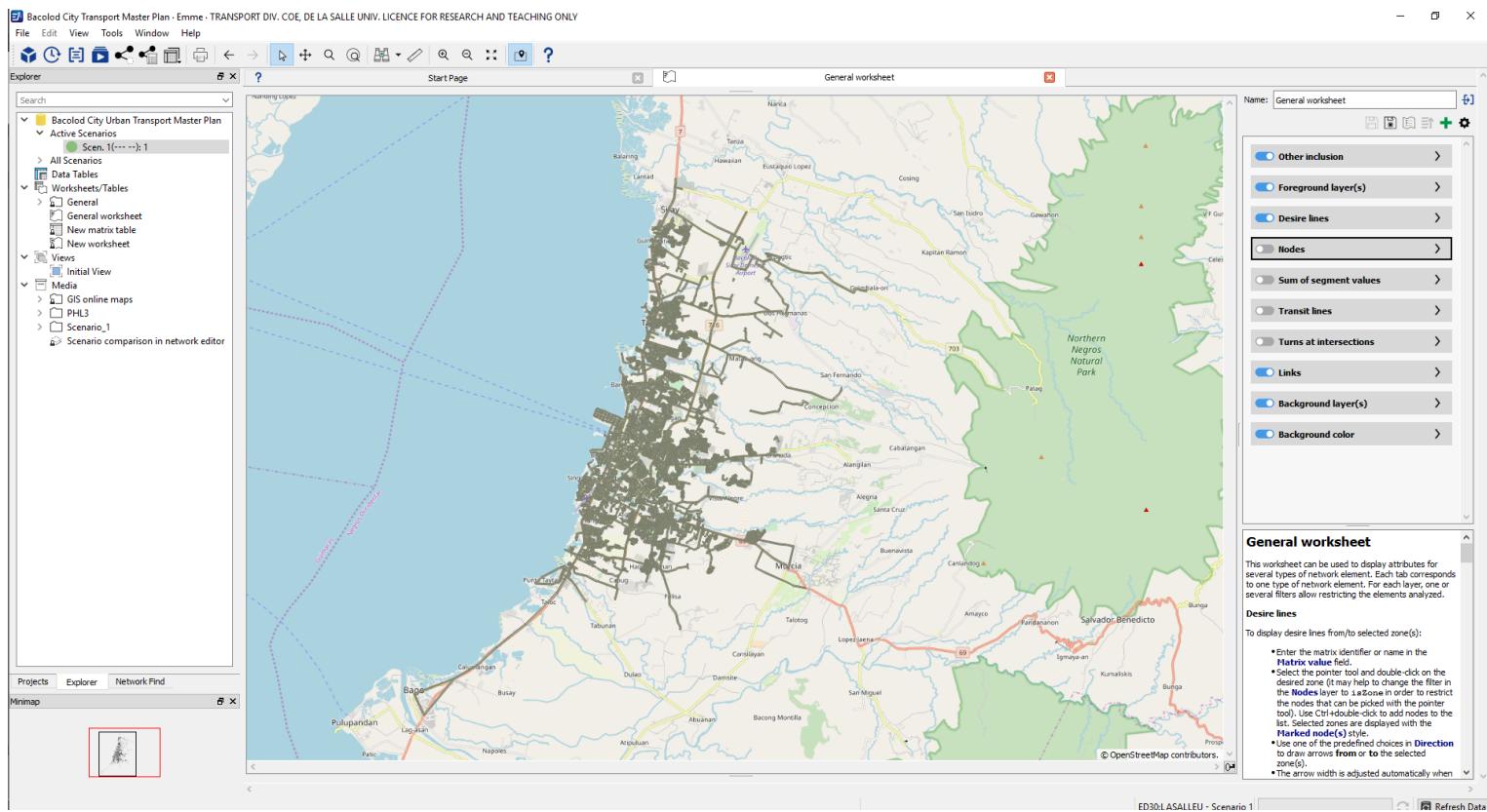
¹<https://economictimes.indiatimes.com/definition/transport-planning>

²<https://www.ktdb.go.kr/eng/contents.do?key=264>

Transportation
models generally can
be classified into:

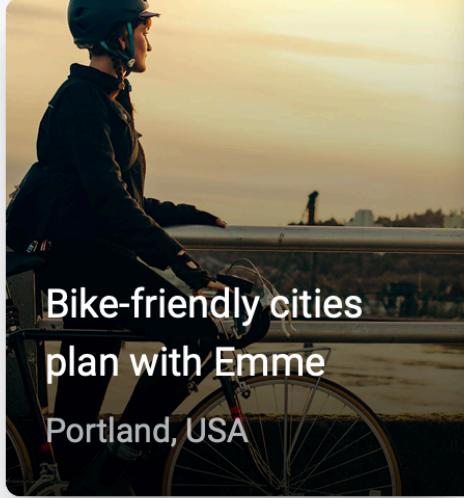
- Macroscopic
- Mesoscopic
- Microscopic





EMME

Emme is a complete transportation forecasting system for planning the urban, regional and national movement of people.



Bike-friendly cities
plan with Emme

Portland, USA



Liveable cities plan
with Emme

Vancouver, Canada



Megacities plan with
Emme

Shanghai, China



Sustainable cities
plan with Emme

Stockholm, Sweden



The busiest metros in
the world plan with
Emme

São Paulo, Brazil

Multimodal Transport Planning Software

FOUR STEP MODEL

Trip Generation

Commonly a spatial interaction model estimates movements (flows) between origins and destinations and which can consider constraints such as distance. The output is a flow matrix between spatial units.

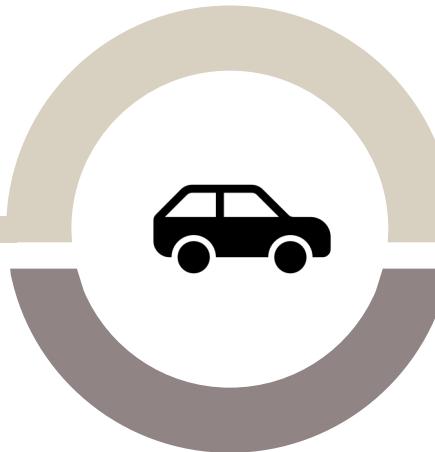


For each discrete spatial unit, it is estimated the extent to which it is an origin and destination for movements. The output is usually the number of trips generated and attracted by a given spatial unit.



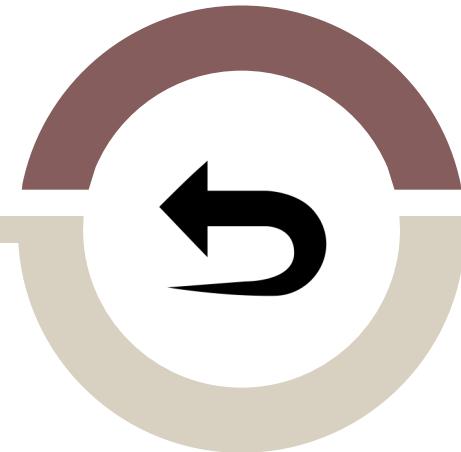
Trip Distribution

Modal Split



Movements between origins and destination are then disaggregated by modes. This function depends on the availability of each mode, their respective costs, and also social preferences.

All the estimated trips by origin, destination and mode and then “loaded” on the transportation network, mainly with the consideration that users want to minimize their travel time or have to flow through existing transit networks.



Traffic Assignment



Explorer

Start Page General worksheet Network Editor - Scenario 1: Base

Domain: Links Replace Selection Transit mode: b (bus)

Region 6
Active Scenarios
Scen. 1(---): Base
All Scenarios
Data Tables
Worksheets/Tables
General
New matrix table
New worksheet
Views
Initial View
Media
Online map layers
Scenario_1
Scenario comparison

Other inclusion
Foreground layer(s)
Nodes
Transit lines
Transit links
Intersections
Links
Background layer(s)

Editor worksheet
(For complete description, refer to 'Desktop Manual -> Editing the network -> Network Editor'.)

Modes
Select Modes in the Domain drop-down list of the worksheet toolbar, click the modes tab at the bottom of the worksheet or press the shortcut key M to make the mode table active.
To create a new mode, press the Add button. The New Mode window is opened. Specify the mode identifier (one letter), the mode description (max. 10 characters) and the mode

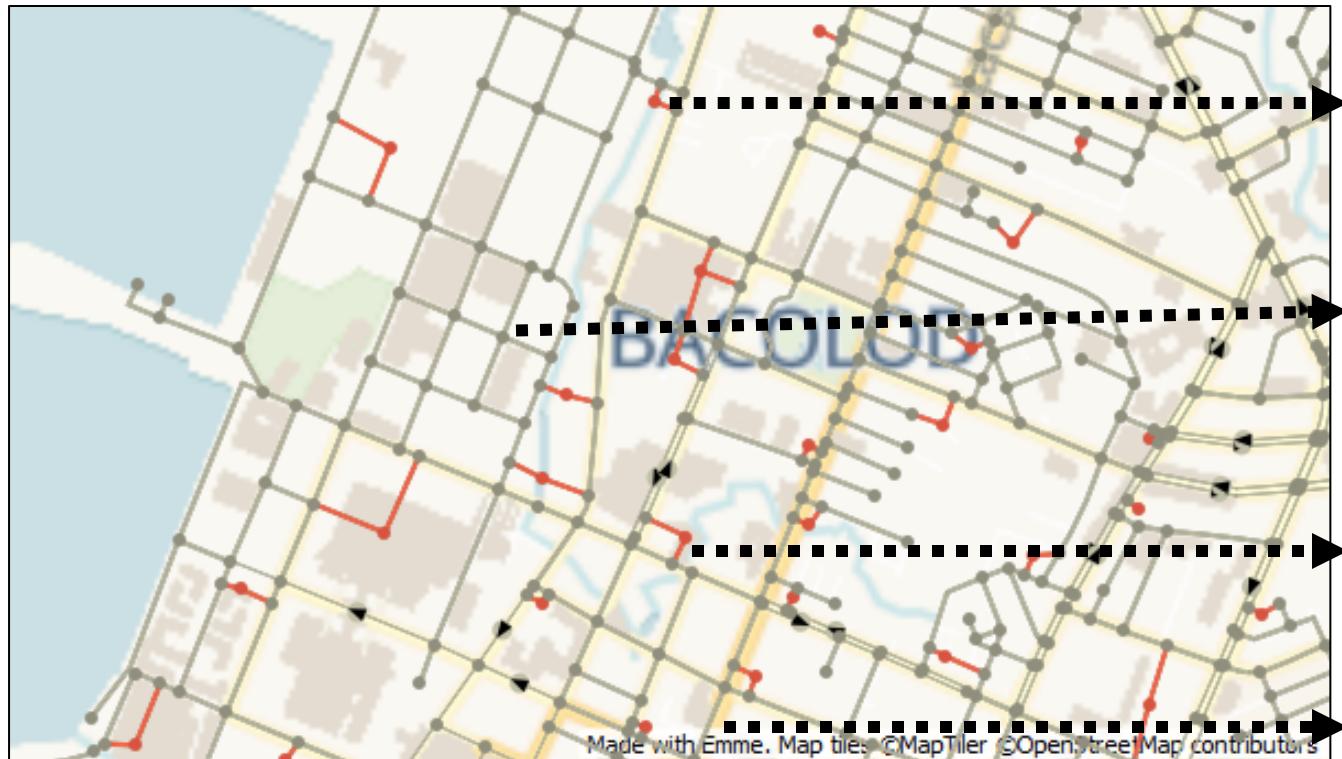
i	j	length	type	modes	lanes	vdf	ul1	ul2
500	501	184.643	4	a	0	0	0	0
500	502	161.075	4	a	0	0	0	0

modes / transit vehicles / nodes / links / turns / transit lines / transit segments

Project Explorer Network Editor

ED30:LASALLEU - Scenario 1 Refresh Data

Network Development



Centroids

Zones

Gates

Junctions

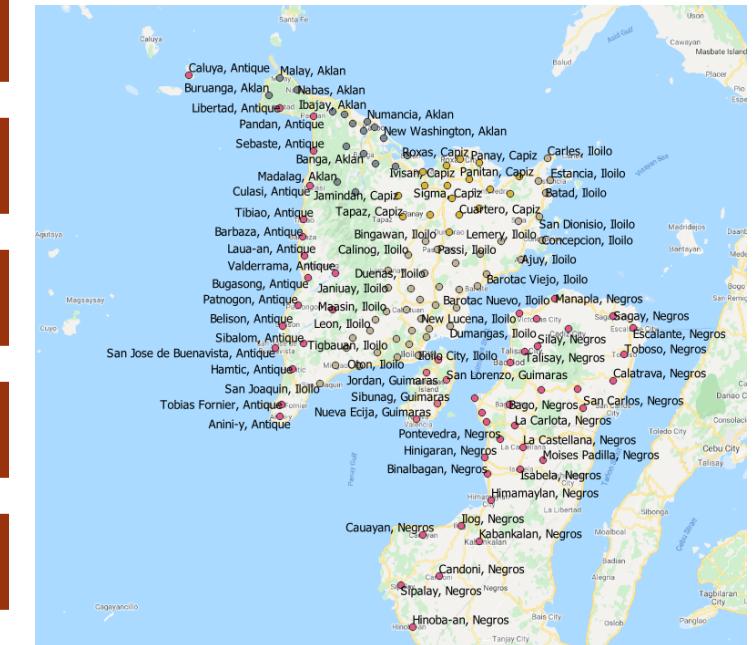
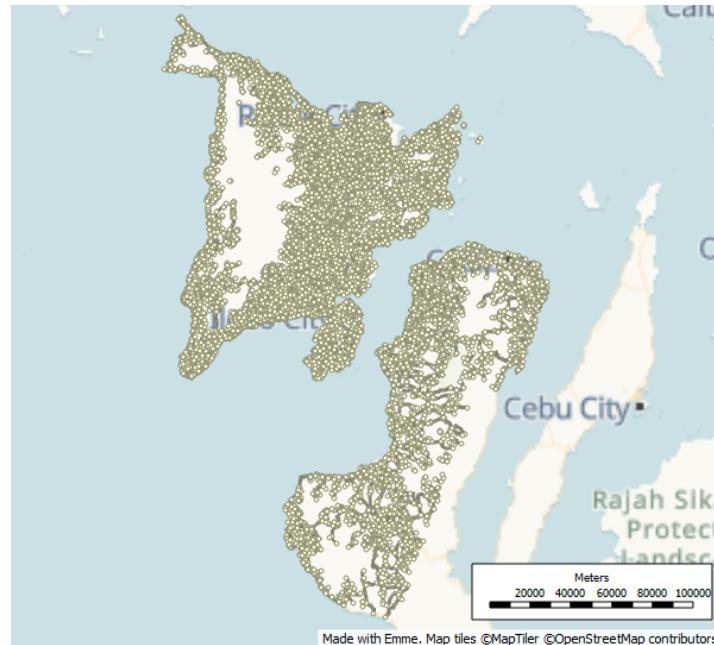
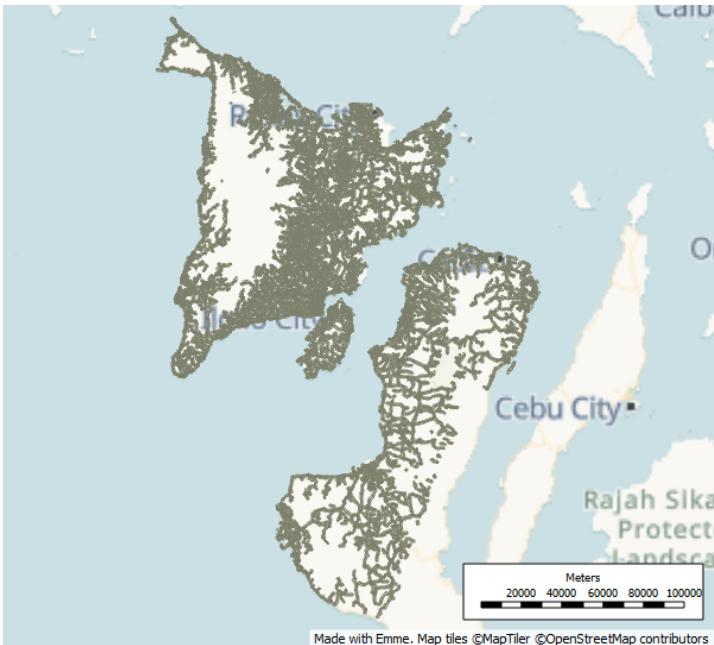
Intersections

Nodes

Connectors

Links

REGION 6 MACRO MODEL



Ease of developing physical road network from Open Street Maps

Can be modeled hand in hand with GIS (shapefiles)

Transportation Network Model (Provincial)

Aklan



Antique



Guimaras



Negros Occidental



Capiz

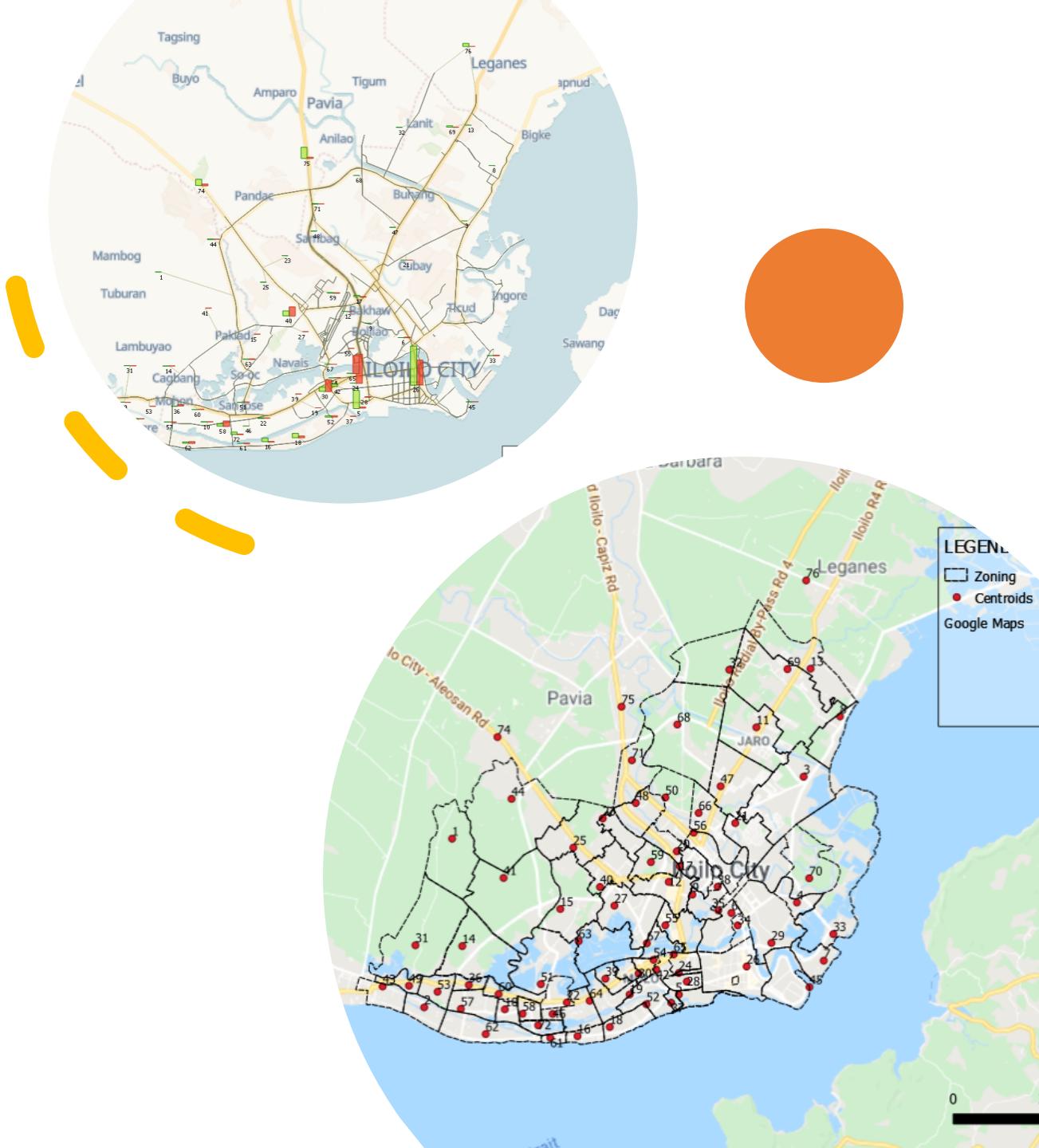


Iloilo



Zoning

- Origin-Destination(OD) Matrix
 - In transport planning, we start by dividing the study area into zones (i.e. barangays).
 - This is where the passenger trips travel in the morning from our house (Origin Zone) to the office (Destinations zone).



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File Edit View Tools Window Help

Explorer Start Page General worksheet Volumes (on links and turns) Traffic volume and times (on links)

Traffic volume and times (on links)
By default, one-way links are shown in red.

Link filter: [road network no connectors] isAuto && not(isConnector)

From	To	Length	Modes	Type	Lanes	VDF	Time	Speed	AutoVol	AddlVol	TotVol	VDT	VHT
1019	1018	0.08	acmTvbptJ	7	1.0	7	0.24	20.00	0	0	0	0.00	0.00
1020	1008	0.09	acmTvbptJ	7	1.0	7	0.28	20.00	0	0	0	0.00	0.00
1020	1016	0.11	acmTvbptJ	7	1.0	7	0.33	20.00	0	0	0	0.00	0.00
1020	1024	0.05	acmTvbptJ	7	1.0	7	0.14	20.00	0	0	0	0.00	0.00
1020	3983	0.29	acmTvbptJ	7	1.0	7	0.87	20.00	0	0	0	0.00	0.00
1021	1011	0.06	acmTvbptJ	7	1.0	7	0.19	20.00	0	0	0	0.00	0.00
1021	1012	0.09	acmTvbptJ	7	1.0	7	0.28	20.00	0	0	0	0.00	0.00
1021	9600	0.04	acmTvbptJ	7	1.0	7	0.13	20.00	0	0	0	0.00	0.00
1022	1023	0.19	acmTvbptJ	7	1.0	7	0.57	20.00	0	0	0	0.00	0.00
1022	3985	0.16	acmTvbptJ	7	1.0	7	0.49	20.00	0	0	0	0.00	0.00
1023	1017	0.23	acmTvbptJ	7	1.0	7	0.70	20.00	0	0	0	0.00	0.00
1023	1022	0.19	acmTvbptJ	7	1.0	7	0.57	20.00	0	0	0	0.00	0.00
1023	1029	0.05	acmTvbptJ	7	1.0	7	0.16	20.00	0	0	0	0.00	0.00
1024	1009	0.10	acmTvbptJ	7	1.0	7	0.30	20.00	0	0	0	0.00	0.00
Min:		3.85e-04		2	1.0	2	6.2e-04	11.61	0	0	0		
Max:		5.47		10	2.0	10	13.14	45.00	1604	321	1875		
Sum:		2879.5					7405.7					132337.2	3416.21
Avg:		0.11					0.29	22.53	29	3	32		

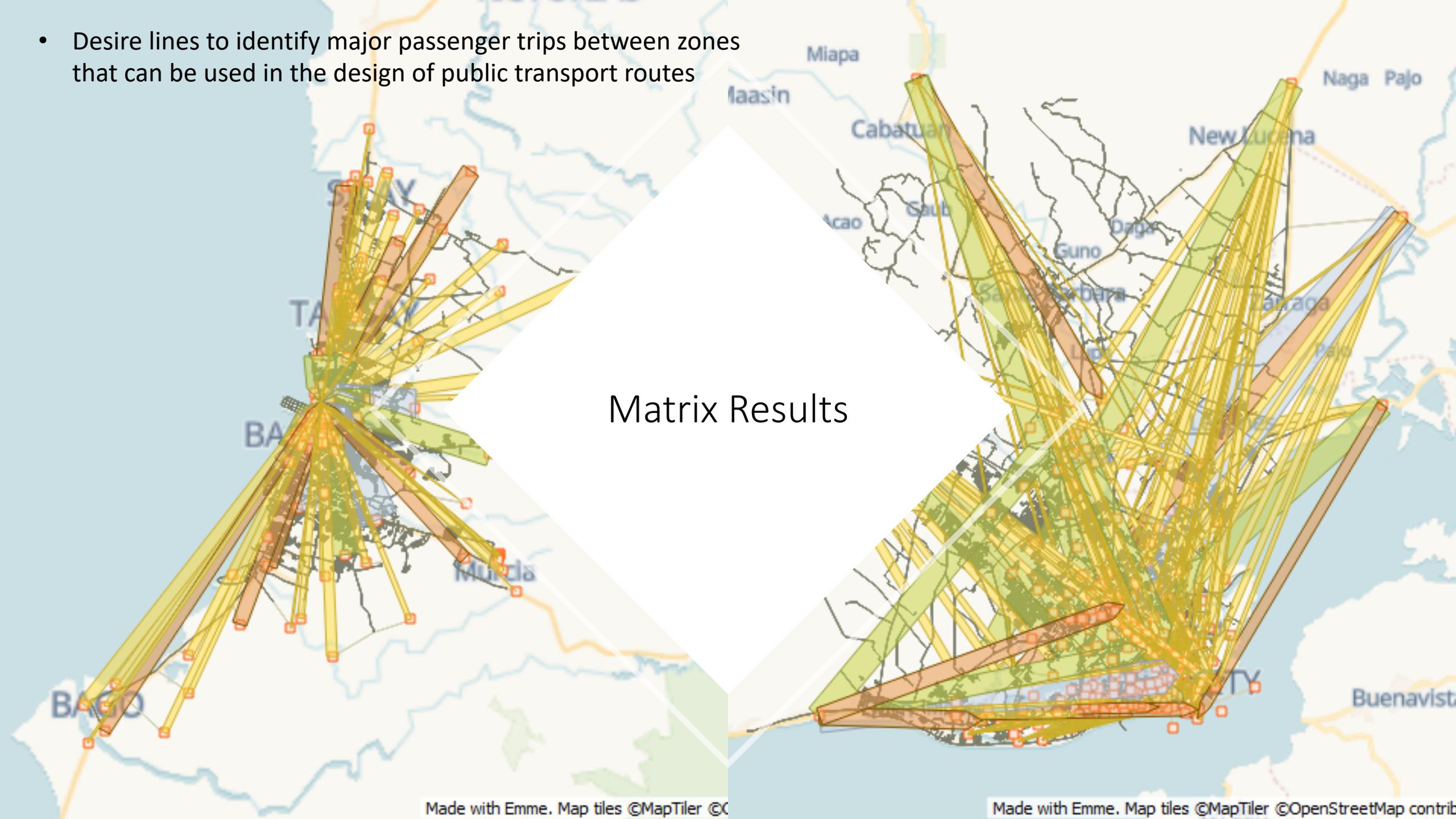
25945 of 26641 links retained

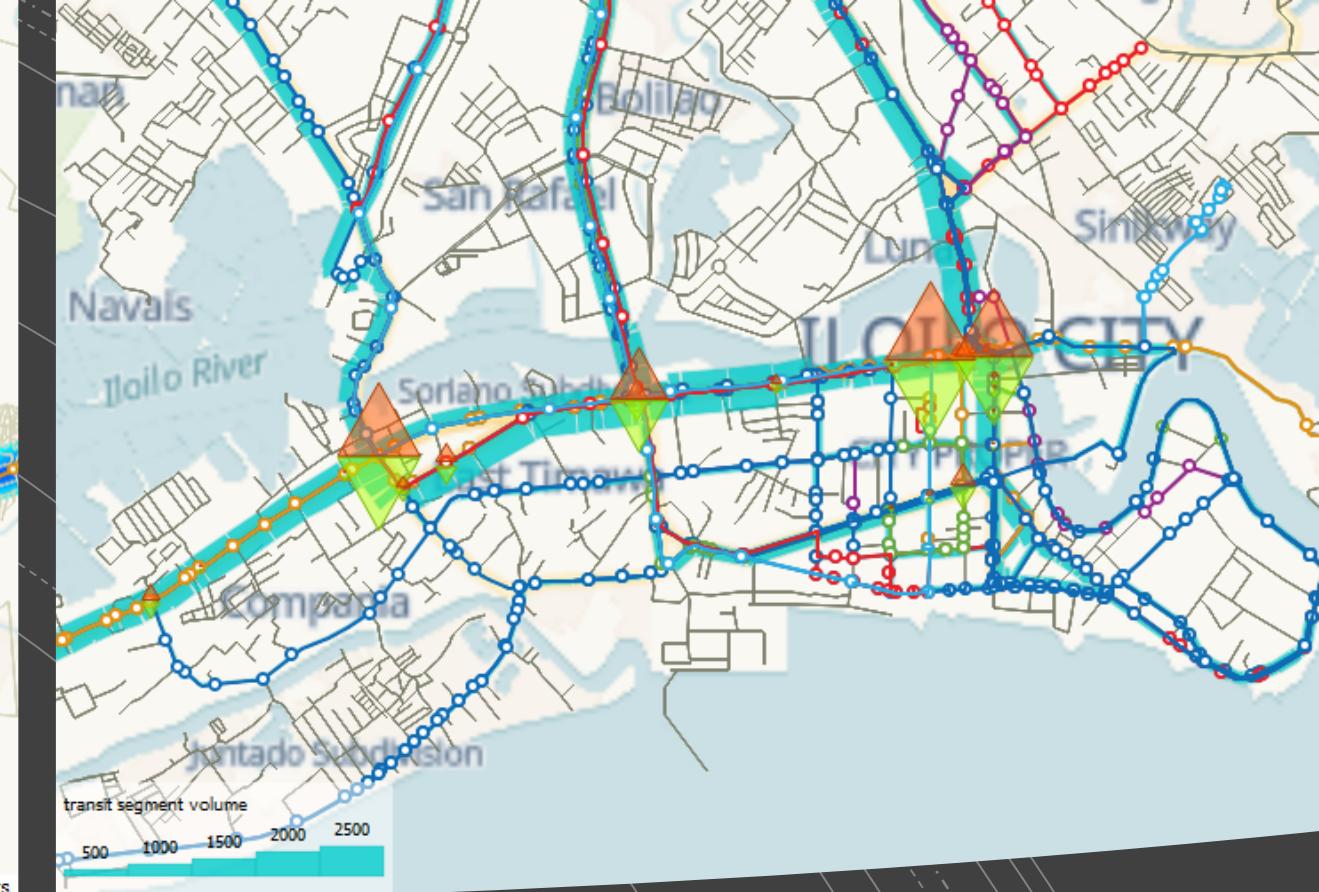
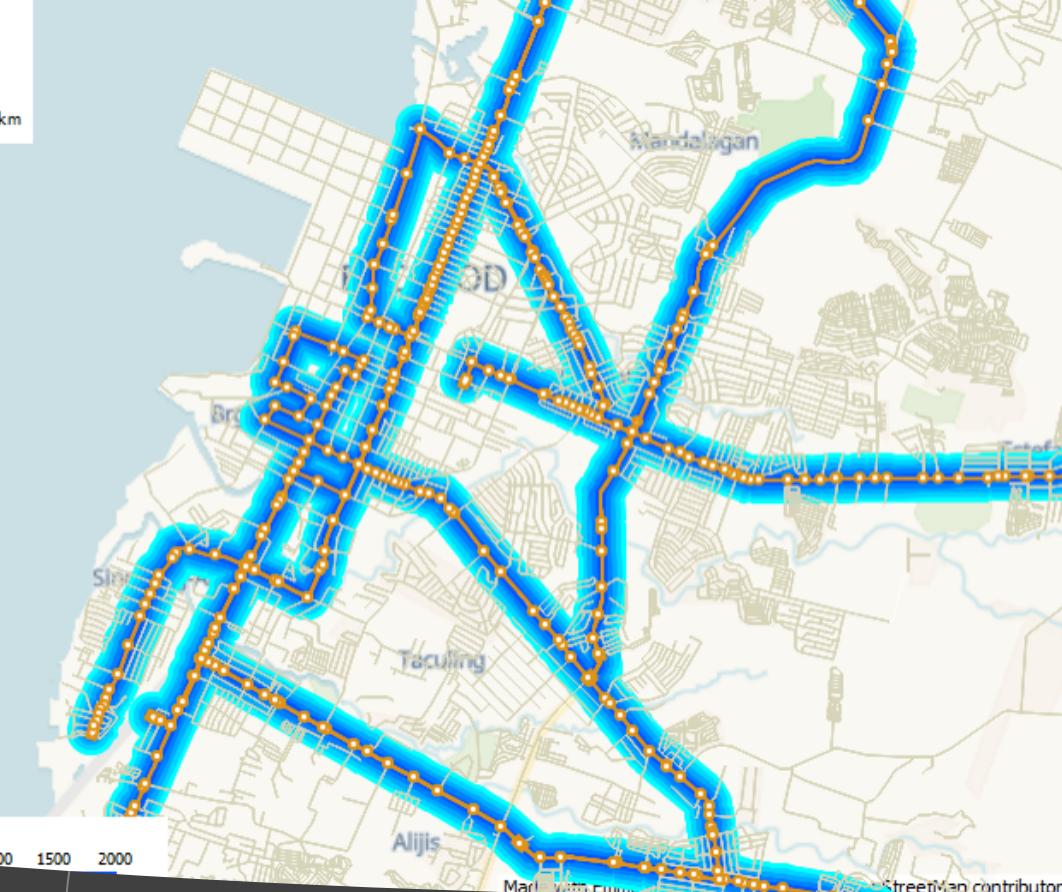
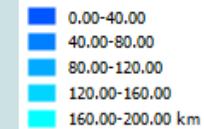
ED30:LASALLEU - Scenario 3 Refresh Data

Made with Emme. Map tiles ©MapTiler

- Desire lines to identify major passenger trips between zones that can be used in the design of public transport routes

Matrix Results



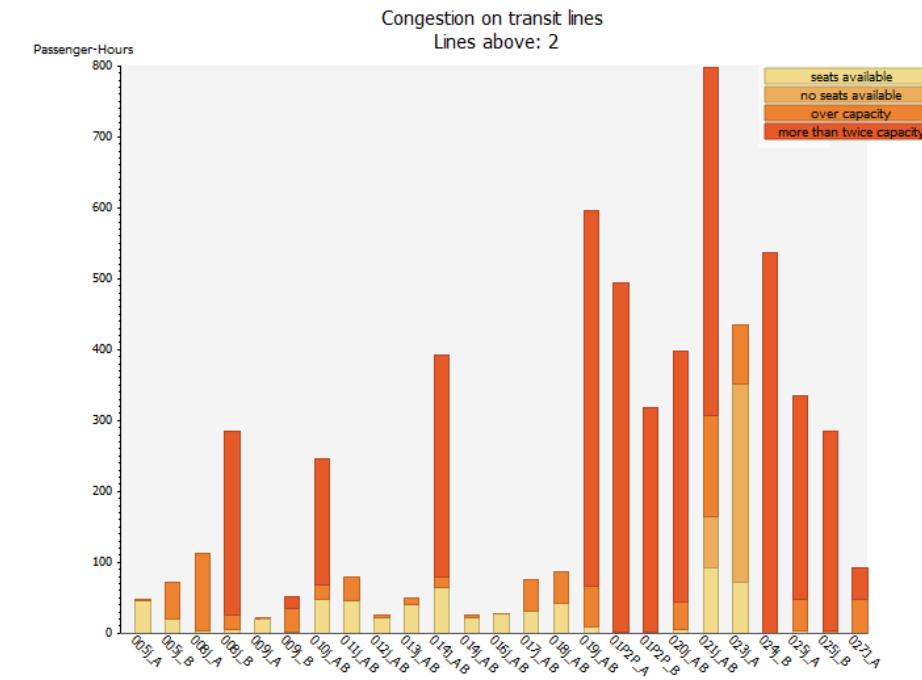
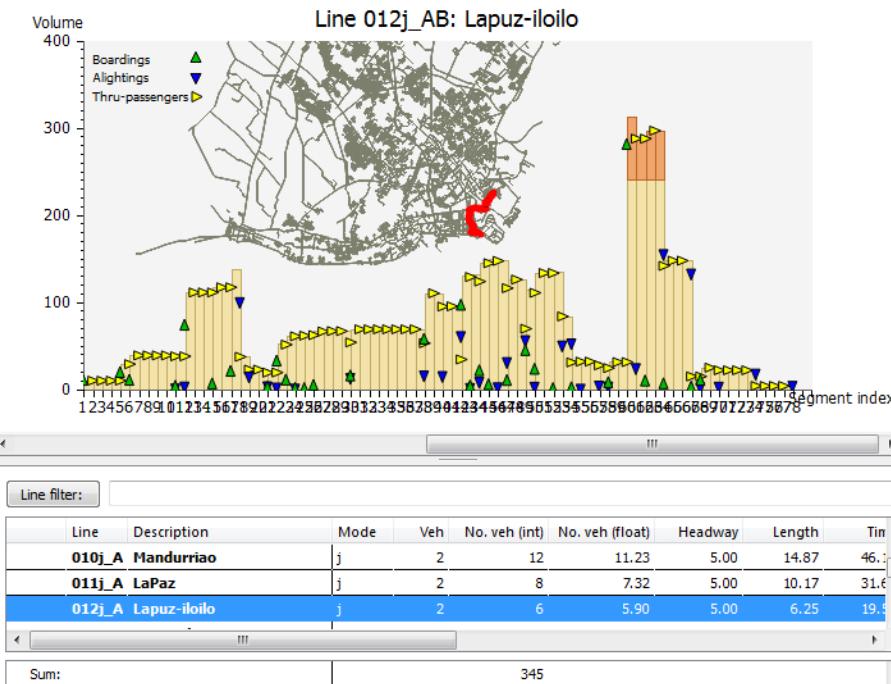


This is to identify location of major stops, potential for a transfer terminal.

- Transit Impact/Catchment Area
- Link results along Itineraries (Boarding/Alighting)

Transit Results

- Line Profile to identify congestion on transit lines and sections where alighting and boarding is prominent or not.



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