Public Transportation Design and Road Network Analysis of Byblos

Johny Khalifeh

INTRODUCTION

Issue: Extensive Traffic
Solution: Design a new Public Transportation System

Project Proposal

- Combination of buses, cars, tuk-tuks, bikes and pedestrians.
- Utilize existing road ⇒ Cost Effective
- Customized to the city's residential areas, local amenities, and touristic destinations

Programs and Sites Used

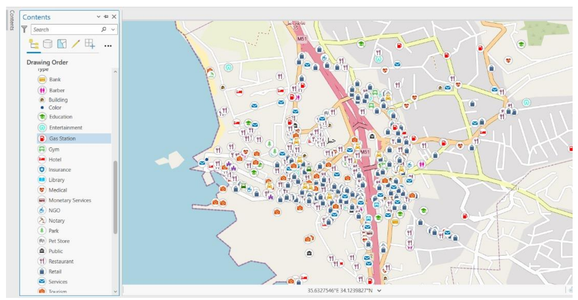
- ArcGIS Pro
- Google Earth Pro
- GADM Website
- GeoFabric Open-Source Website

METHODS

1. Local Amenities: Google Earth

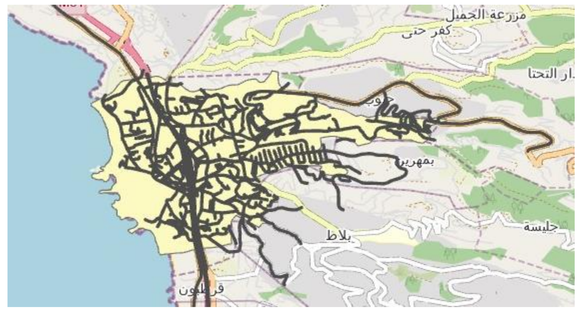
- Adding pins on Google Earth Pro and saving the file as .kml
- Convert kml file to features on ArcGIS Pro

"KML to Layer" Tool & Customizing attribute table and Symbology

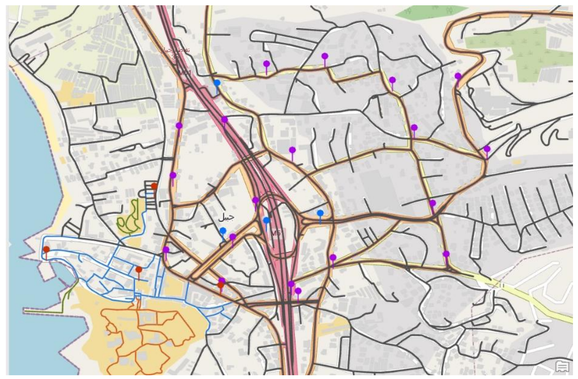


2. Add road network

- Roads .shp file retrieved from the Geofabric website.
- Administrative boundaries of Byblos retrieved from the GADM Website

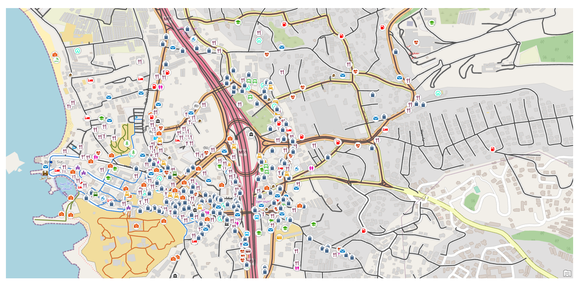


3. Adding Bus, Pedestrians and Tuk-Tuks routes/Stops.



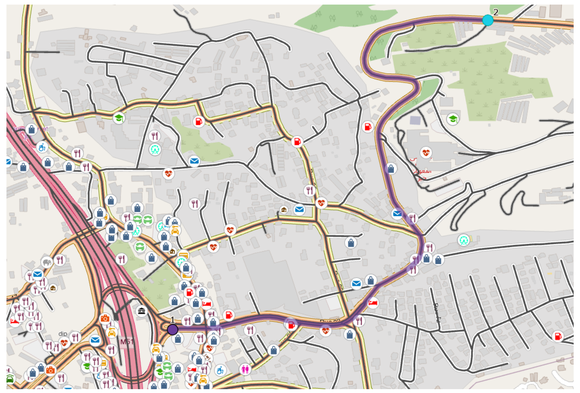
4. Build 3 Road Networks

- 1 network for Cars.
- 1 network for Buses.
- 1 network for Pedestrians/Bikes/Tuk-tuks.



RESULTS: Analysis

Shortest Route between 2 points



Limitations

- The road file retrieved from Geofabric has some roads not connected ⇒ The network does not consider these roads to be connected.
- The one_way field in the attribute table of the roads file needs to be refined and optimized.

Future Work

- Implement elevations into the network and consider slopes in the analysis.
- Optimize the one_way field and connect not connected roads.
- Implement cost of travel in the several modes used, and "closest facility" option to one of the nearest stops added.