Lab: Health Geography and Networks in Central Falls

Purpose

Learn how to implement health geography and network analysis tools in QGIS using the Central Falls dataset.

Outcomes

Worked examples of the health geography and network analysis tools.

Data

It's Central Falls!

You will also need to digitize a layer of park entrances, recalling what you learned in the third lab of the semester.

Methods

- ❑ Follow the video tutorials
- ❑ See conceptual background and guidance for the Origin-Destination matrix on the next page.
- ❑ Fill in the table for at least two zones of data for the Origin-Destination matrix.

Am I Done?

Check the following Central Falls results with an instructor:

- ❑ Mean population center (unweighted)
- ❑ Mean population center (weighted)
- ❑ Delaunay triangulation
- ❑ Voronoi polygons, clipped to Central Falls
- ❑ Shortest Path (point to point)
- ❑ Shortest Path (point to layer)
- ❑ Service Area (from Layer), represented as lines
- ❑ Service (from Layer), represented as the convex hull around flat-end buffered lines
- ❑ Nearest park to each zone and travel time, derived from origin-destination matrix

Also, remember to:

- ❑ Back up work to W:\ drive
- ❑ Complete Conceptual Manual

ORIGIN/DESTINATION MATRIX

Origin-Destination Matrix

- What is the nearest park entrance to each centroid of the zone?.
- The QNEAT3 network tool to use is OD-MATRIX FROM LAYERS AS LINES
  - **Network Layer**: `roads`
  - **Input Point Layer (origin points)**: `zone_centroids`
  - **Input Unique ID field**: `zone` (becomes `Input_ID` in ouput matrix)
  - **Target Point Layer (destination points)**: `parkEntrances`
  - **Target Unique ID field**: ParkName (becomes `Target_ID` in output matrix)
  - **Path type to calculate**: S*hortest Path*
  - **`Speed field:`**
  - **`Default speed:`**
- **Notes:**
  - `network_cost` contains the solution of time along the network, measured in seconds
  - `min_network_cost` per origin can be calculated in FIELD CALCULATOR as:
  - `min("network_cost", group_by:="origin_id")`

origin_id	destination_id	network_cost	min_network_cost
NW	Blackstone		
NW	Spintex		
NW	Macomber		
NW	Jenks		
NW	FC		
NE	Blackstone		
NE	Spintex		
NE	Macomber		
NE	Jenks		
NE	FC		
SW	Blackstone		
SW	Spintex		
SW	Macomber		
SW	Jenks		
SW	FC		
SE	Blackstone		
SE	Spintex		
SE	Macomber		
SE	Jenks		
SE	FC		

- With this result, can you select one result for each zone, where the result is the closest park to that zone's centroid? How? Try it!