Infrastructure Mapper - Culinary Spots

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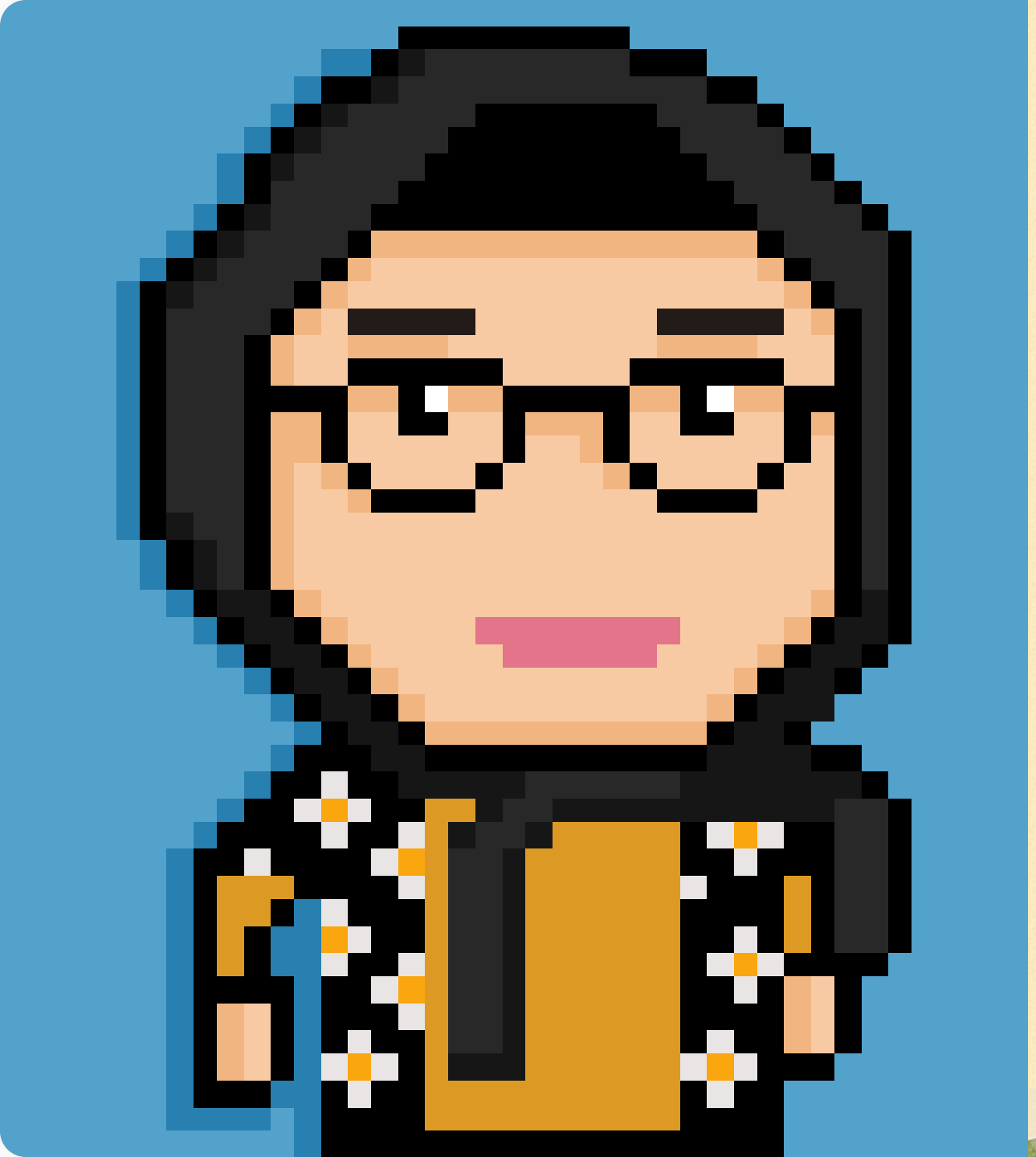


About Me

- Intern at **Kartoza**
- Bachelor of Engineering, majored in Geodetic Engineering
- Currently exploring GIS with a growing interest in open-source GIS. Passionate about GIS and map styling.

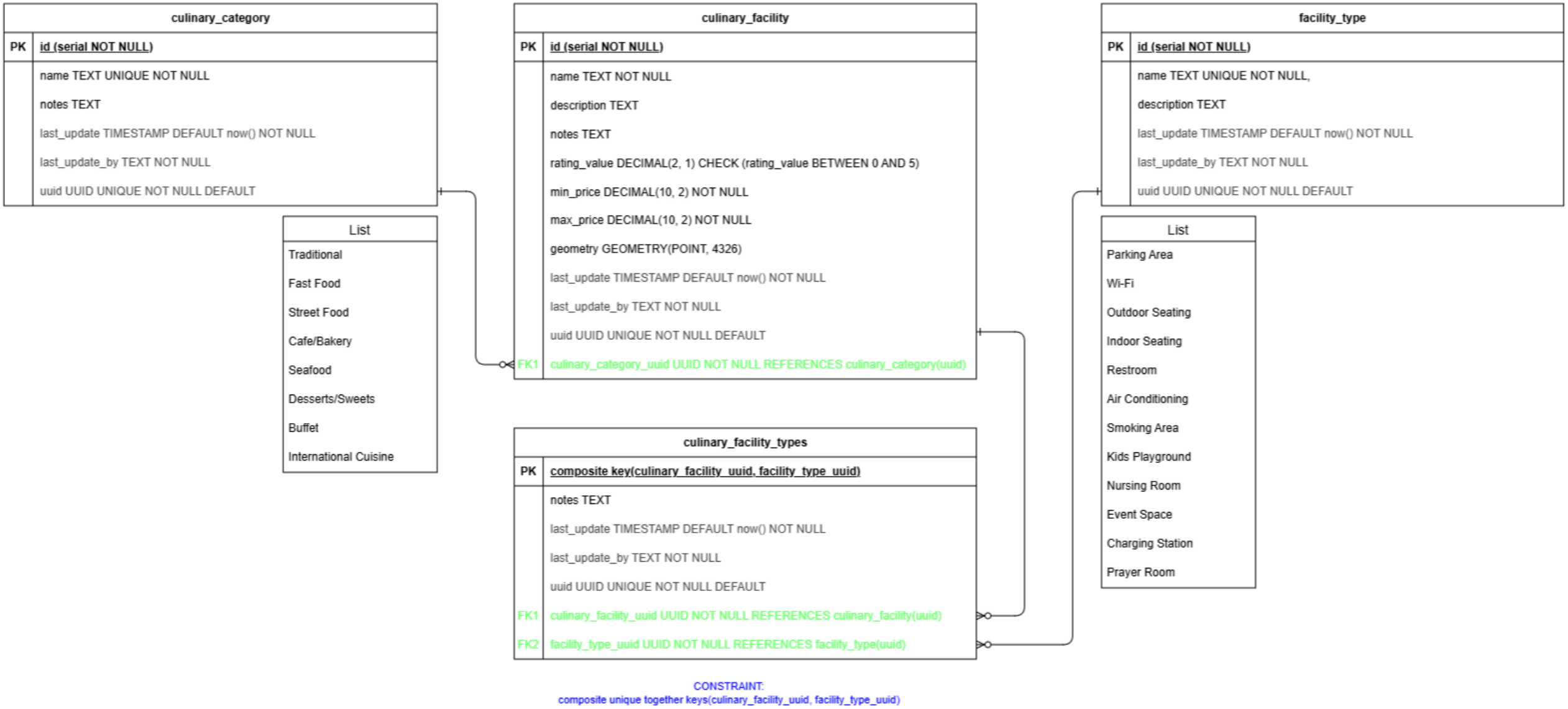
⚙ Tools Used

QGIS
QFieldCloud
PostgreSQL/PostGIS

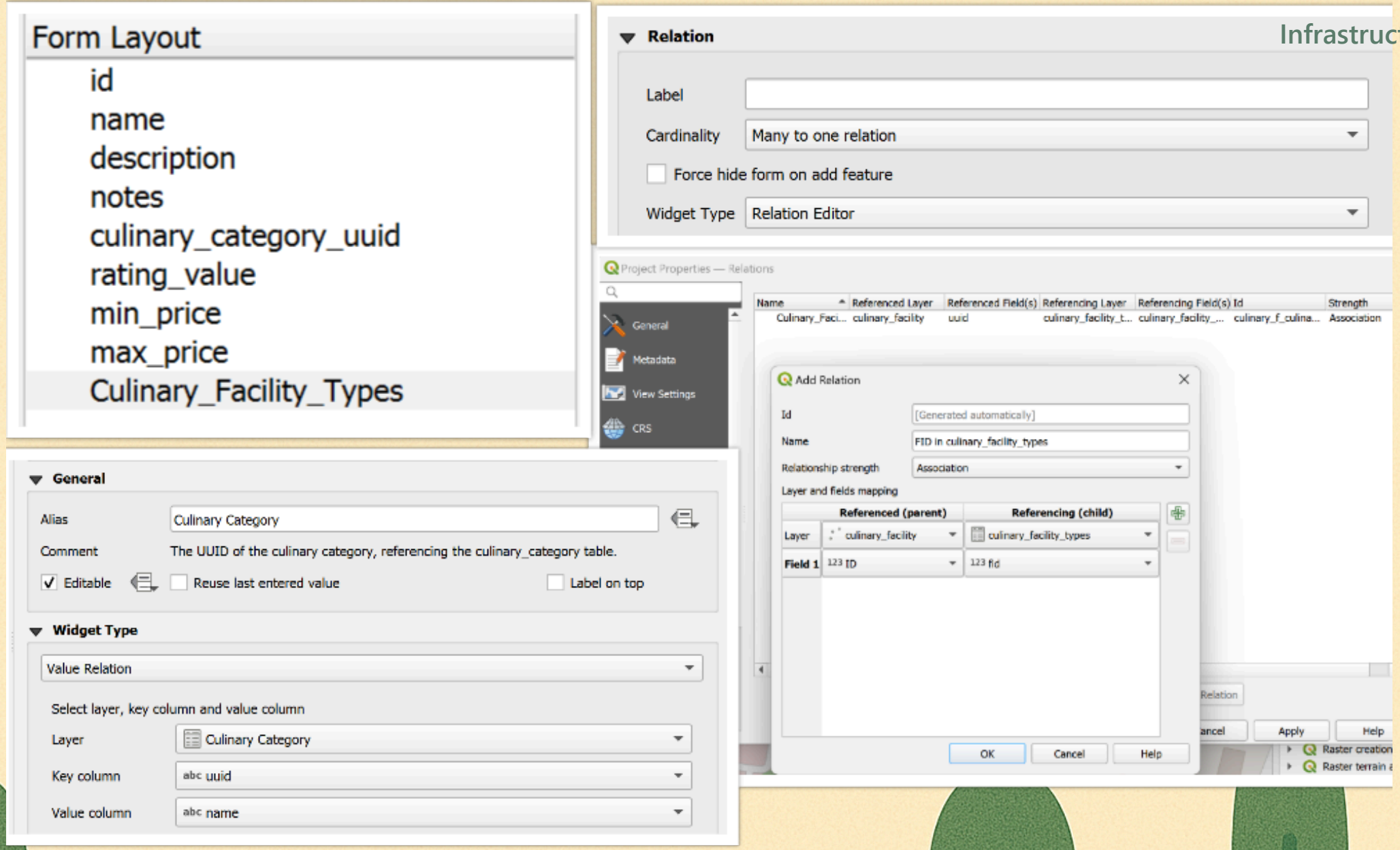
pgAdmin
VS Code
Marp
Git and GitHub

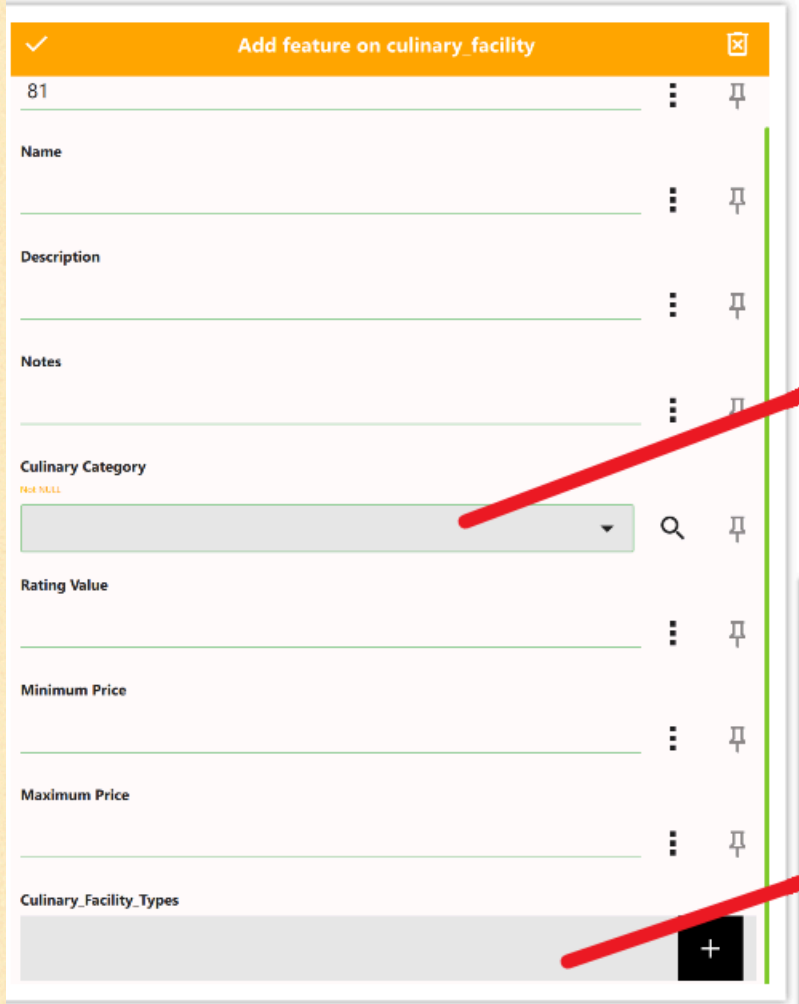
The Model

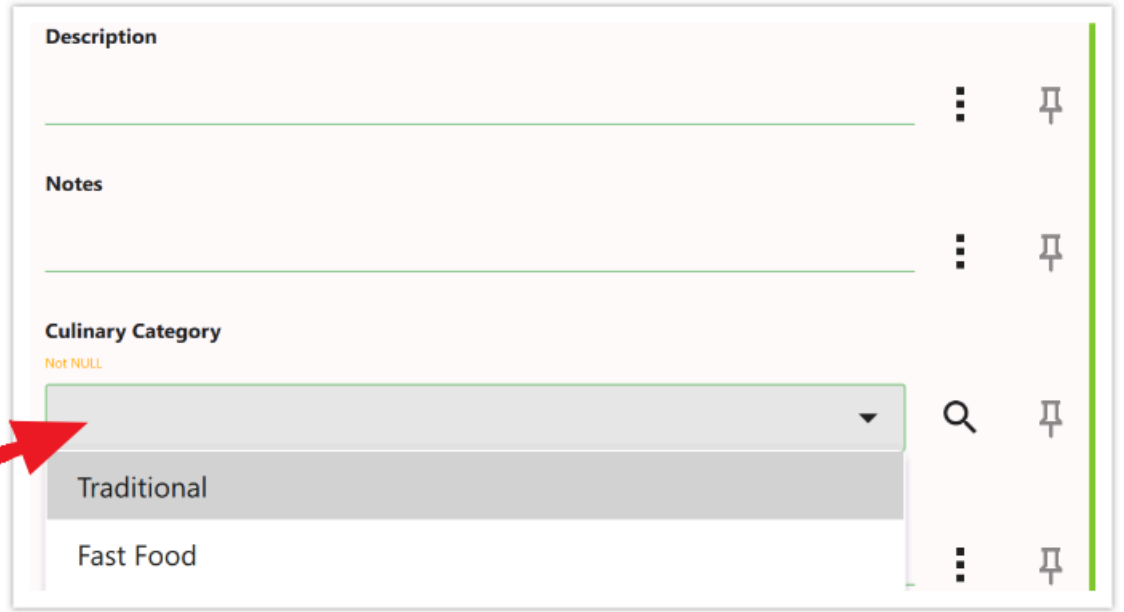
Culinary Facilities

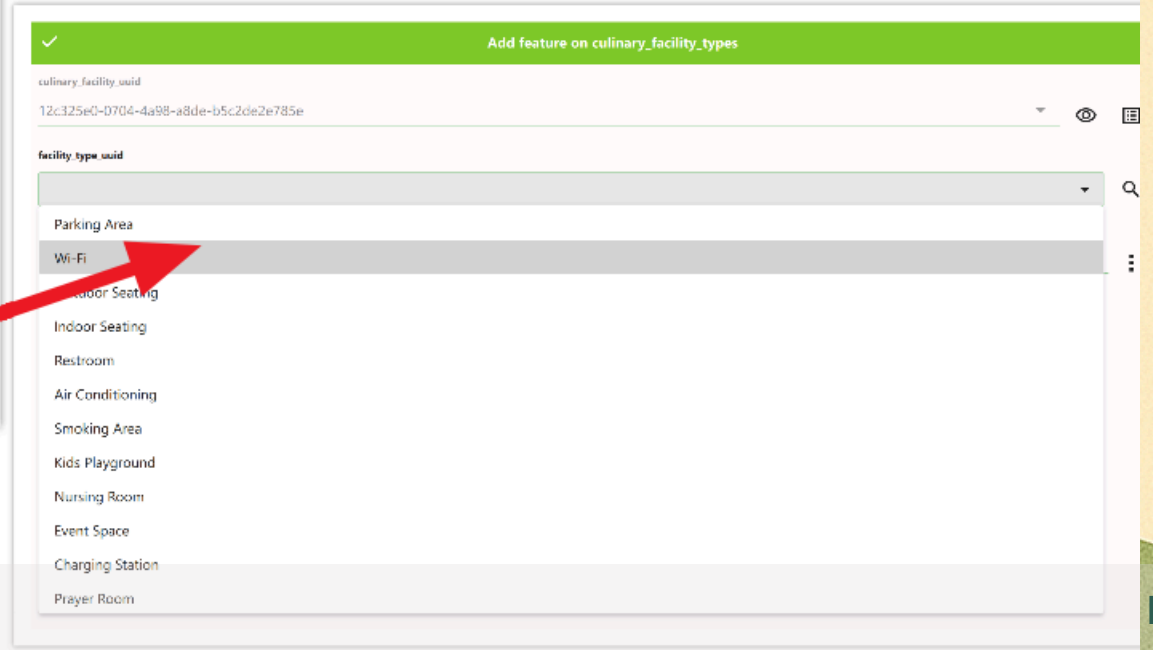


📋 The Forms


Form Layout
id
name
description
notes
culinary_category_uuid
rating_value
min_price
max_price
Culinary_Facility_Types
Relation
Label
Cardinality
Many to one relation
Force hide form on add feature
Widget Type
Relation Editor
Project Properties — Relations
General
Metadata
View Settings
CRS
Name
Referenced Layer
Referenced Field(s)
Referencing Layer
Referencing Field(s)
Id
Strength
Culinary_Faci...
culinary_facility
uuid
culinary_facility_t...
culinary_facility_...
culinary_f_culina...
Association
Add Relation
Id
[Generated automatically]
Name
FID in culinary_facility_types
Relationship strength
Association
Layer and fields mapping
Referenced (parent)
Referencing (child)
Layer
culinary_facility
culinary_facility_types
Field 1
ID
fid
OK
Cancel
Help
Relation
Apply
Help
Raster creation
Raster terrain
General
Alias
Culinary Category
Comment
The UUID of the culinary category, referencing the culinary_category table.
Editable
Reuse last entered value
Label on top
Widget Type
Value Relation
Select layer, key column and value column
Layer
Culinary Category
Key column
uuid
Value column
name


Add feature on culinary_facility
81
Name
Description
Notes
Culinary Category
Not NULL
Rating Value
Minimum Price
Maximum Price
Culinary_Facility_Types


Description
Notes
Culinary Category
Not NULL
Traditional
Fast Food

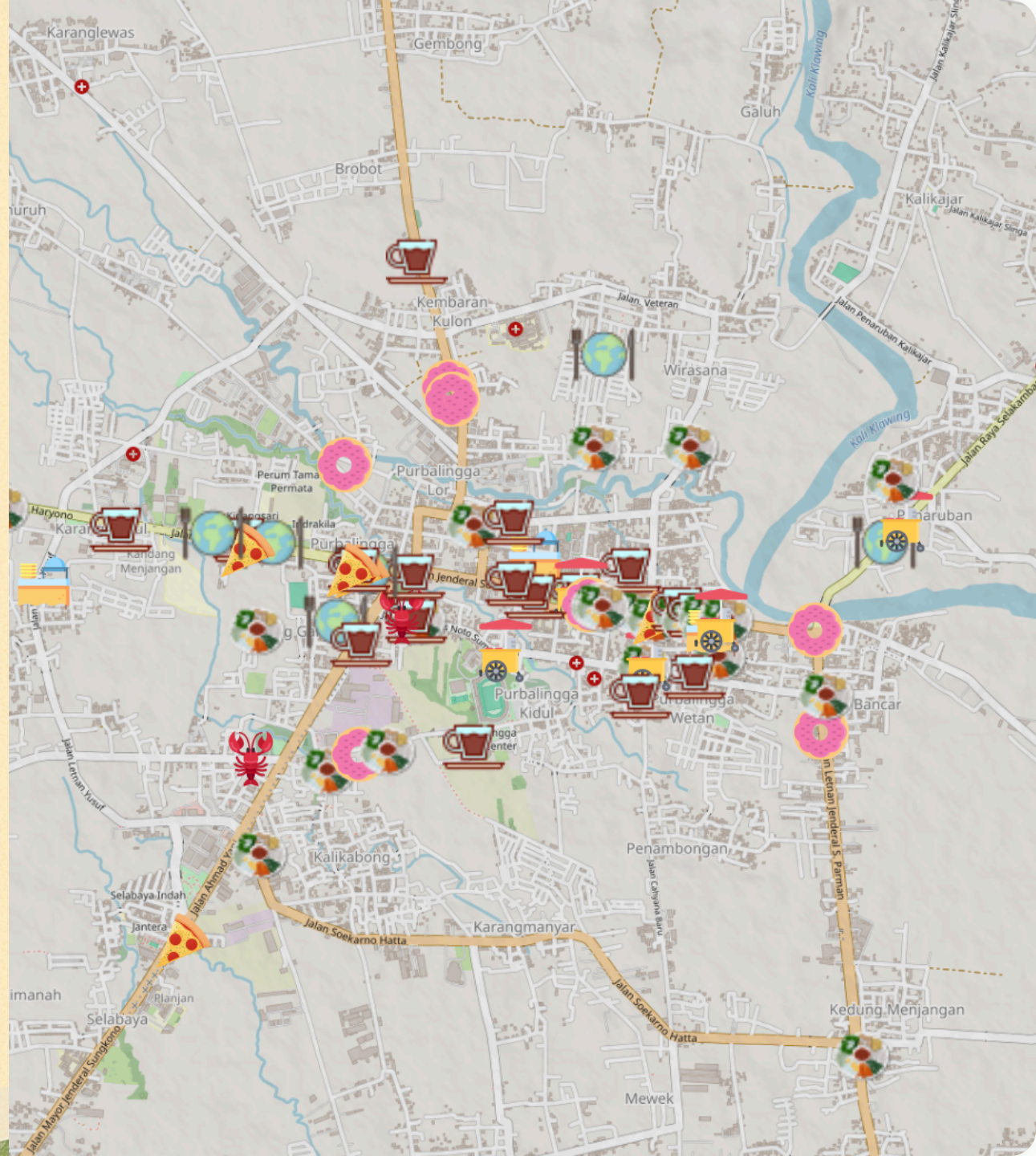

Add feature on culinary_facility_types
culinary_facility_uuid
12c325e0-0704-4a98-a8de-b5c2de2e785e
facility_type_uuid
Parking Area
Wi-Fi
Indoor Seating
Restroom
Air Conditioning
Smoking Area
Kids Playground
Nursing Room
Event Space
Charging Station
Prayer Room

Field Collection

Data collected in the field using mobile GIS apps and GPS-enabled devices.

🗺️ Collection Results

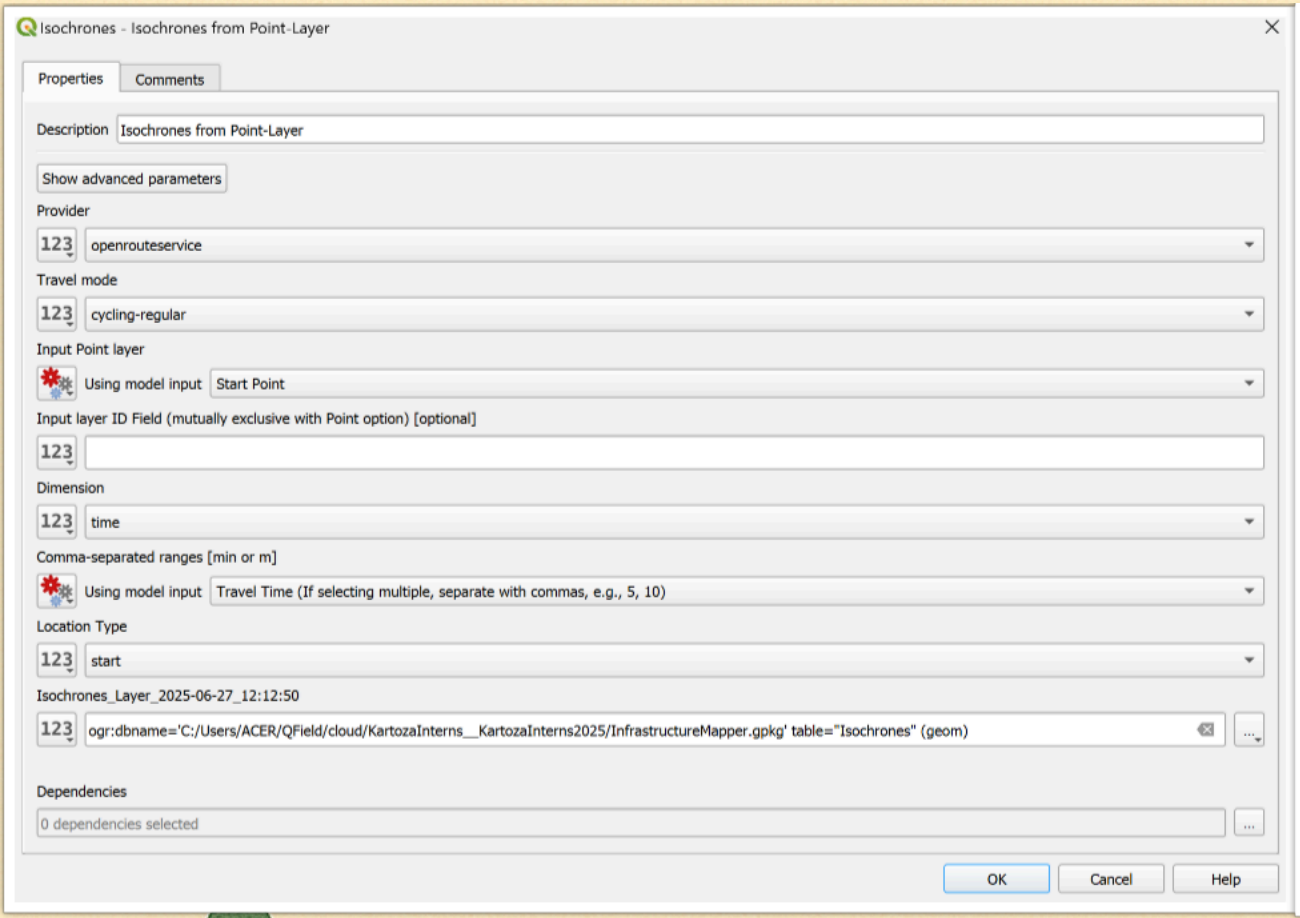
- **Total features collected:**
  - Points: 80
- **Area covered:** 15 km²

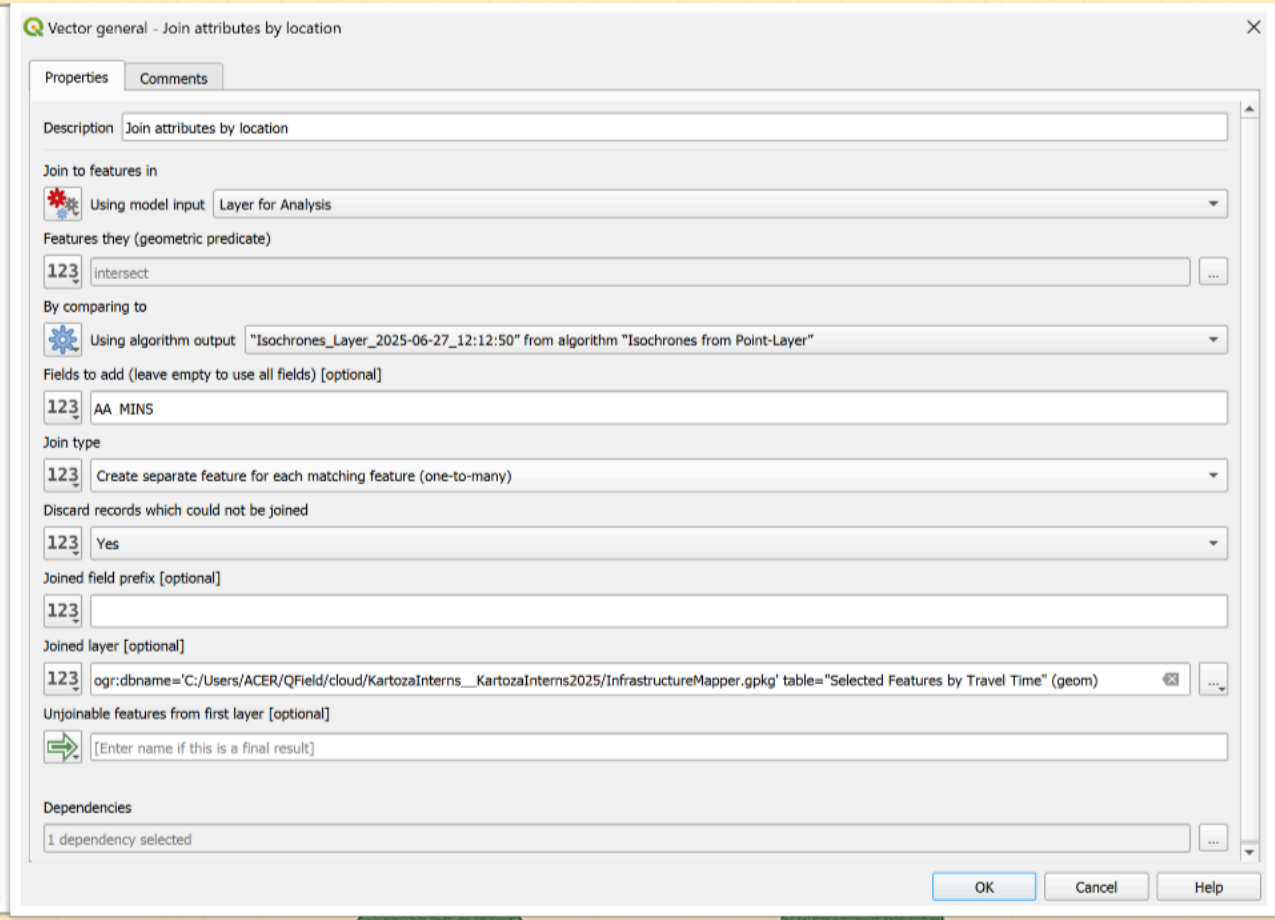


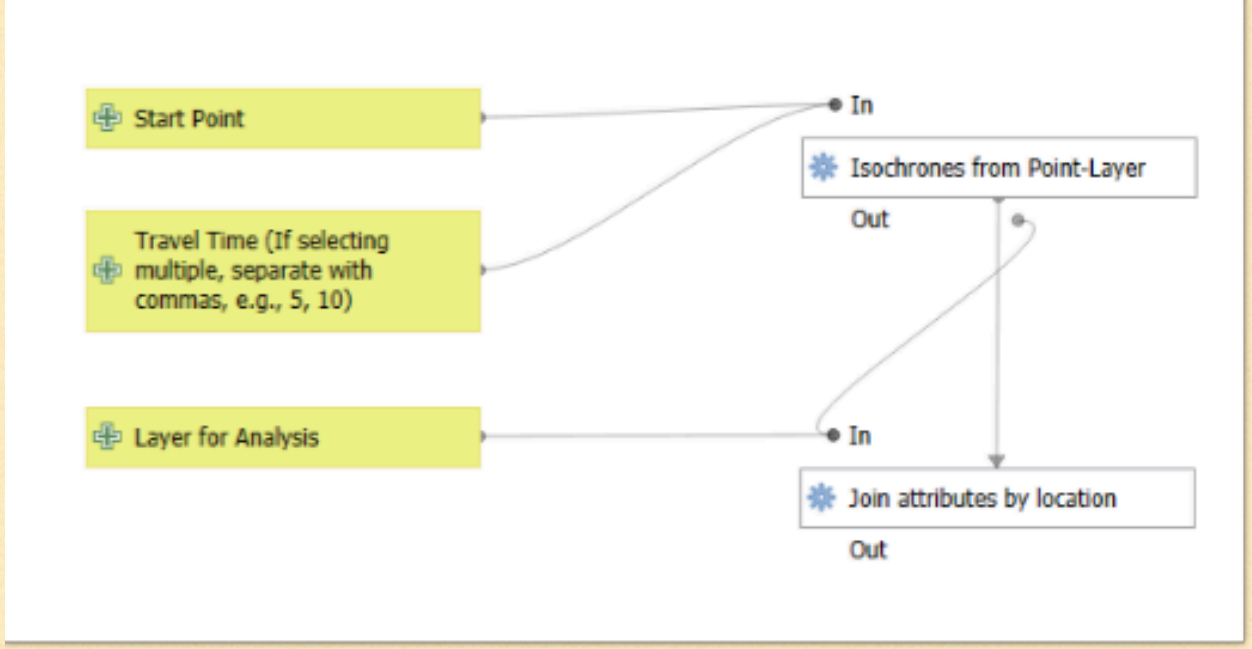
? Analysis Problem

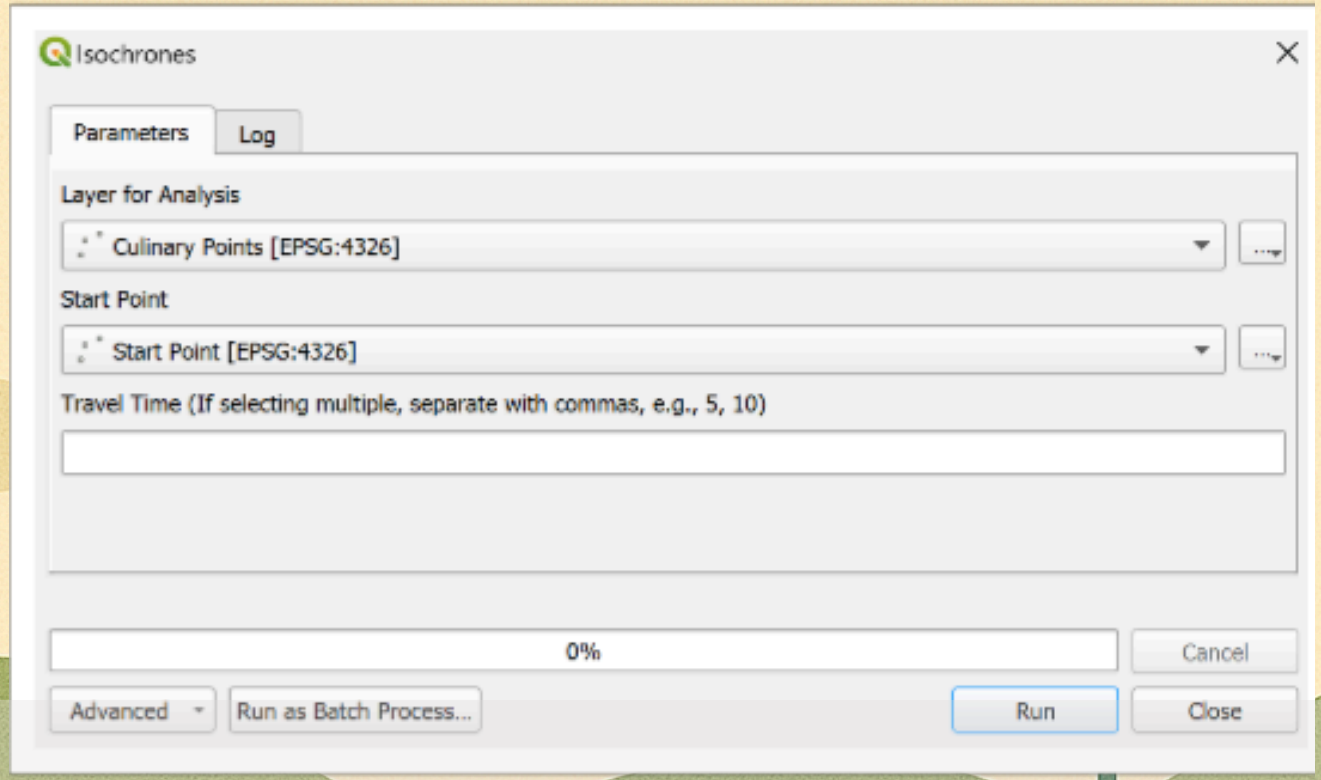
- How can we determine culinary facilities that are reachable within a specific travel time from a starting point?
- Which culinary facilities that can be reached within 8 minutes and offer the best combination of **low price**, **high ratings**, specific **facilities** like Wi-Fi and indoor seating, and specific **category** like Cafe/Bakery?

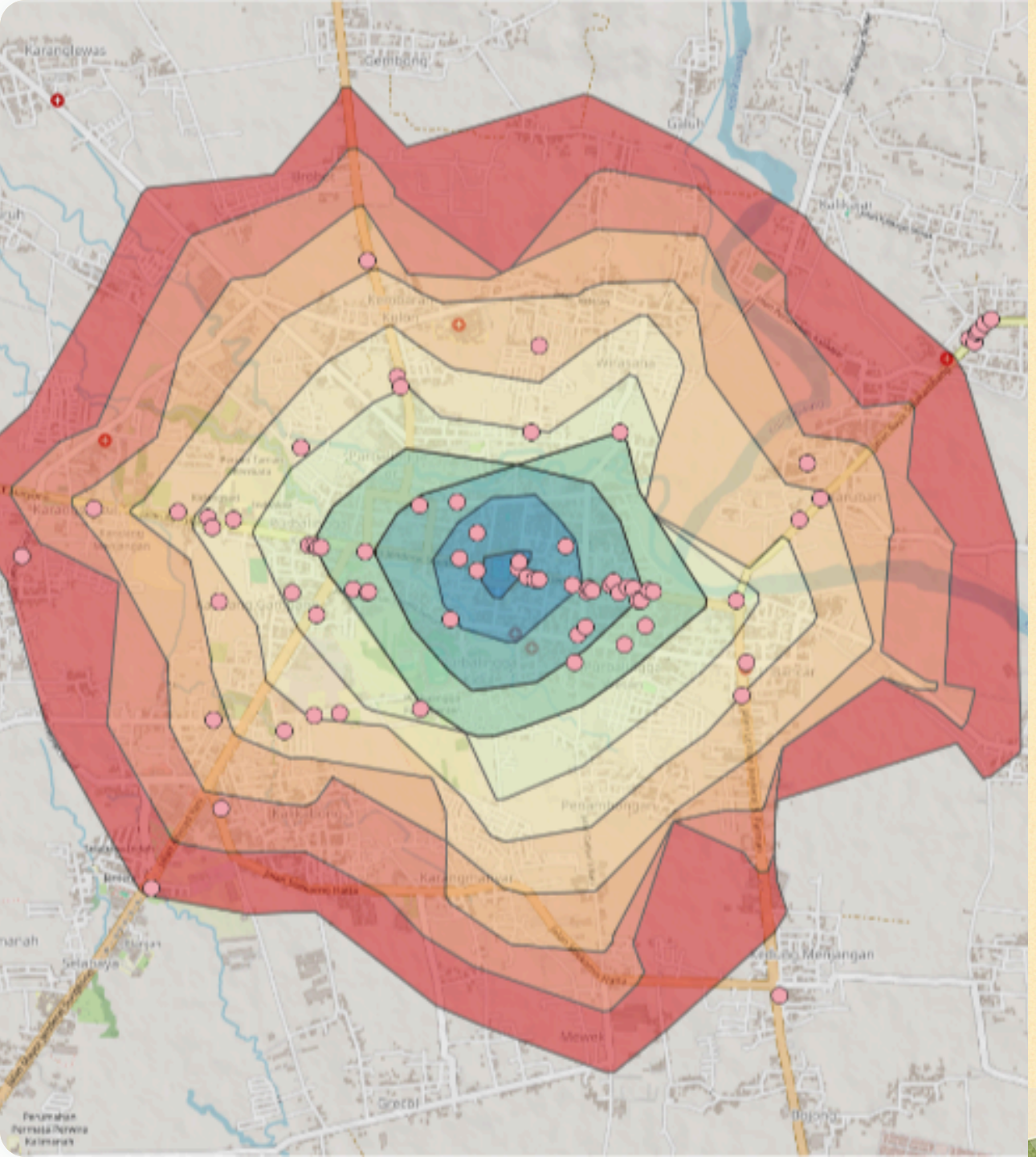
⚙ Methodology


Isochrones - Isochrones from Point-Layer
Properties
Comments
Description
Isochrones from Point-Layer
Show advanced parameters
Provider
openrouteservice
Travel mode
cycling-regular
Input Point layer
Using model input
Start Point
Input layer ID Field (mutually exclusive with Point option) [optional]
Dimension
time
Comma-separated ranges [min or m]
Using model input
Travel Time (If selecting multiple, separate with commas, e.g., 5, 10)
Location Type
start
Isochrones_Layer_2025-06-27_12:12:50
ogr:dbname='C:/Users/ACER/QField/cloud/KartozaInterns__KartozaInterns2025/InfrastructureMapper.gpkg' table="Isochrones" (geom)
Dependencies
0 dependencies selected
OK
Cancel
Help


Vector general - Join attributes by location
Properties
Comments
Description
Join attributes by location
Join to features in
Using model input
Layer for Analysis
Features they (geometric predicate)
intersect
By comparing to
Using algorithm output
"Isochrones_Layer_2025-06-27_12:12:50" from algorithm "Isochrones from Point-Layer"
Fields to add (leave empty to use all fields) [optional]
AA_MINS
Join type
Create separate feature for each matching feature (one-to-many)
Discard records which could not be joined
Yes
Joined field prefix [optional]
Joined layer [optional]
ogr:dbname='C:/Users/ACER/QField/cloud/KartozaInterns__KartozaInterns2025/InfrastructureMapper.gpkg' table="Selected Features by Travel Time" (geom)
Unjoinable features from first layer [optional]
[Enter name if this is a final result]
Dependencies
1 dependency selected
OK
Cancel
Help


Start Point
Travel Time (If selecting multiple, separate with commas, e.g., 5, 10)
Layer for Analysis
In
Isochrones from Point-Layer
Out
In
Join attributes by location
Out


Isochrones
Parameters
Log
Layer for Analysis
Culinary Points [EPSG:4326]
Start Point
Start Point [EPSG:4326]
Travel Time (If selecting multiple, separate with commas, e.g., 5, 10)
0%
Cancel
Advanced
Run as Batch Process...
Run
Close

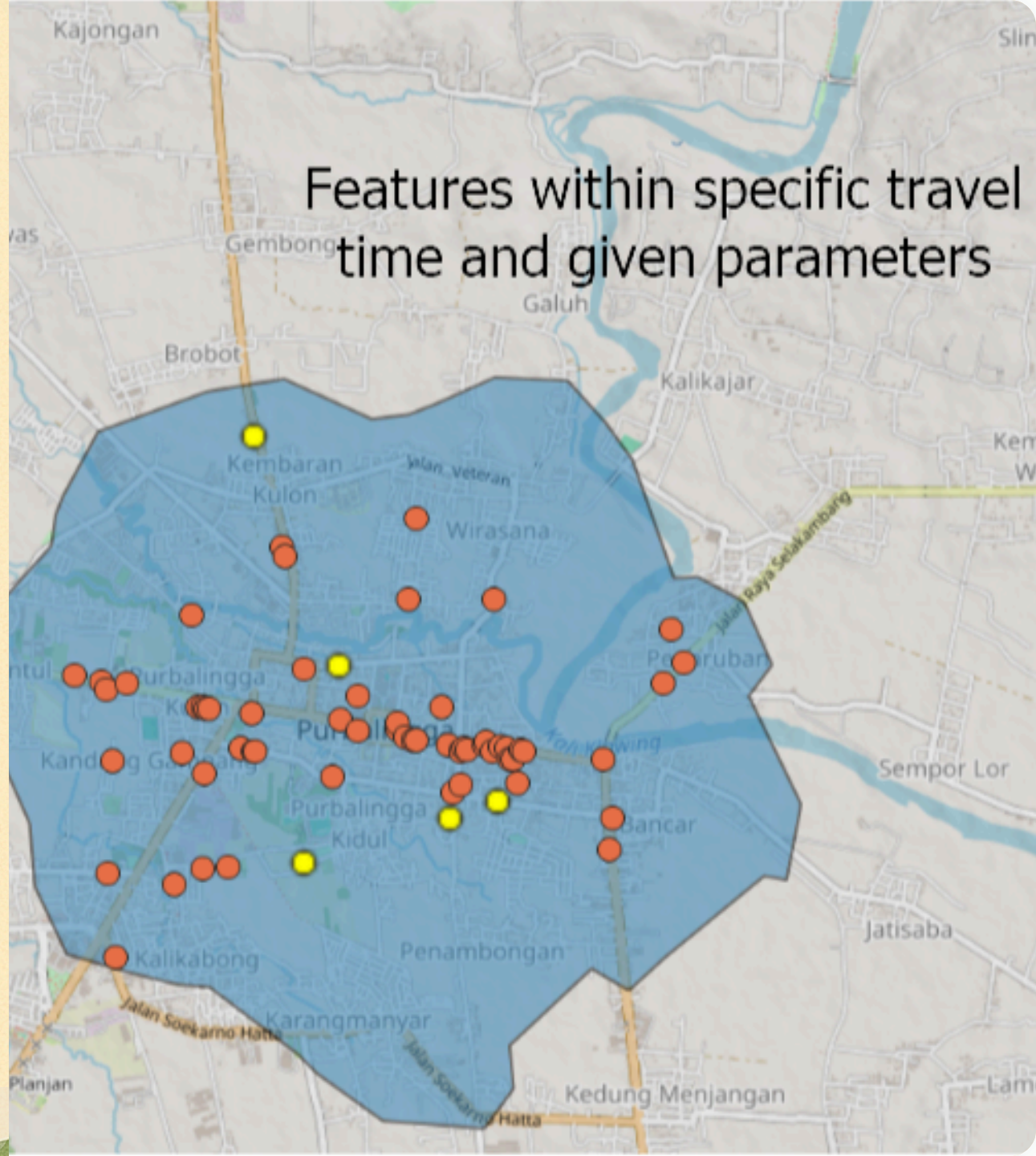


Results - 1

Isochrones showing location of culinary spots relative to travel time from the center.

Results - 2

- **Price Range:** 1.000–60.000
- **Rating:** above 4.5
- **Facilities:** Indoor Seating, Wi-Fi
- **Category:** Cafe/Bakery
- **Travel Time:** 8 minutes



Results - 3

Selected Features by Travel Time — Features Total: 65, Filtered: 5, Selected: 5

	fid	culinary_name	min_price	max_price	rating_value	facilities	category	Travel Time
1	22	Kopi Mbok Minah	10000	60000	5	Air Conditioning, Smoking Area, Restroom, Indoor Seating, Outdoor Seating, Prayer Room, Parking Area, Wi-Fi	Cafe/Bakery	8
2	26	Kopi Pojok Purbalingga	3000	20000	4.6	Indoor Seating, Parking Area, Wi-Fi	Cafe/Bakery	8
3	29	Black Gold Coffee	5000	30000	5	Air Conditioning, Indoor Seating, Parking Area, Wi-Fi	Cafe/Bakery	8
4	42	Kopi Bathok Purbalingga	1000	30000	4.6	Smoking Area, Restroom, Indoor Seating, Outdoor Seating, Prayer Room, Parking Area, Wi-Fi	Cafe/Bakery	8
5	52	Piknik Coffee Eatery	11000	30000	4.6	Air Conditioning, Restroom, Indoor Seating, Outdoor Seating, Prayer Room, Parking Area, Wi-Fi	Cafe/Bakery	8

Insights

- Top categories with high ratings

fid	category name	average rating
1	Desserts/Sweets	4.61 / 5
2	International Cuisine	4.58 / 5
3	Buffet	4.55 / 5

- Most common facility: Parking Area (69)
- Most common category: Traditional (27)

🔬 Further Research

If I had more time, I would:

- Develop a specific travel mode for motorcycles to better represent real conditions, possibly using custom routing technology.
- Improve the model so users can select facilities and categories using dropdowns connected to the lookup table, ensuring updates are reflected automatically.
- Increase the study area and collect more data to improve the analysis.

🧳 My Internship Experience

Highlights

- ✅ Mastered QGIS and explored various GIS tools and workflows
- 🔍 Contributed to impactful projects
- 🌟 Improved problem-solving, adaptability, and critical thinking
- ⏰ Enhanced time management while balancing multiple tasks and responsibilities
- 🌍 Improved English communication skills through professional and collaborative engagements

📧 Contact Me

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🤖 **Prompt:** Create a GIS related image for the Analysis Problem slide