



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

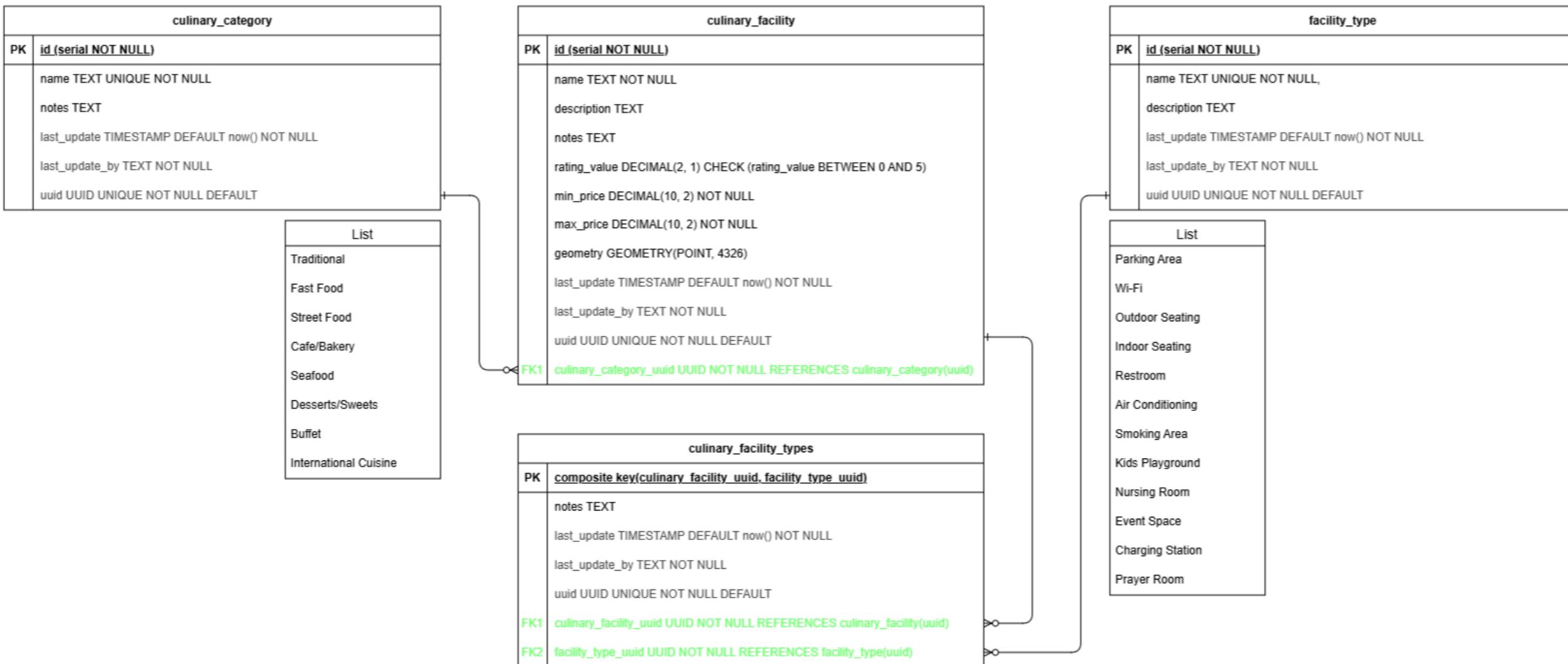




The Model



Culinary Facilities





The Forms



Form Layout

id
name
description
notes
culinary_category_uuid
rating_value
min_price
max_price

Culinary_Facility_Types

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 abc_uuid
Value column abc_name

Relation

Label
Cardinality Many to one relation
 Force hide form on add feature
Widget Type Relation Editor

Project Properties — Relations

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 1 123 ID	123 fid

OK

Cancel

Help

Add feature on culinary_facility

81

Name

Description

Notes

Culinary Category

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_uid: 12c325e0-0704-4a98-a8de-b5c2de2e735e

facility_type_uid:

Parking Area

Wi-Fi

Indoor Seating

Indoor Seating

Restroom

Air Conditioning

Smoking Area

Kids Playground

Nursing Room

Event Space

Charging Station

Prayer Room

✓ Add feature on culinary_facility

81

Name

Description

Notes

Culinary Category

Rating Value

Minimum Price

Maximum Price

Culinary_Facility_Types

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Culinary Category

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Field Collection

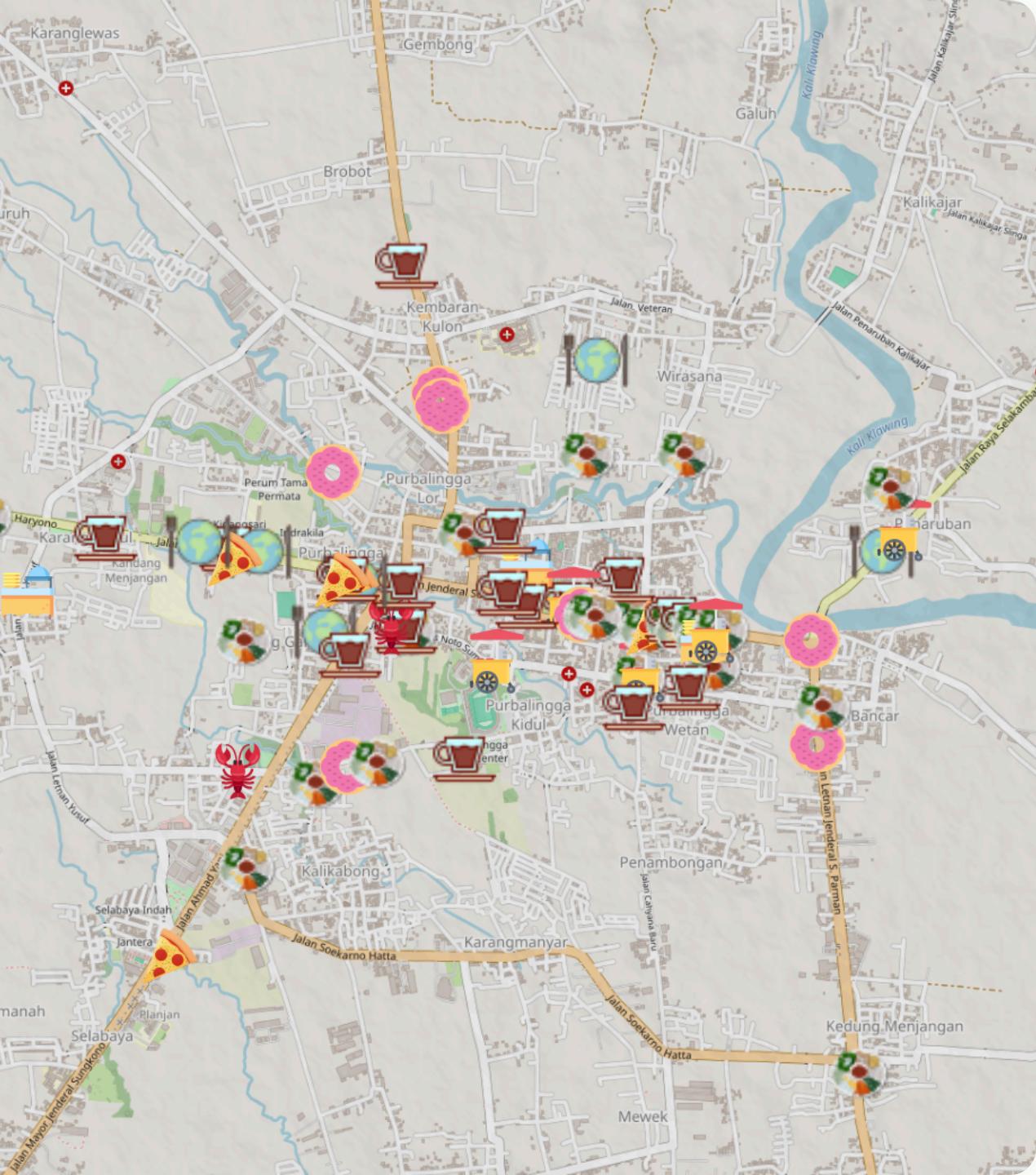
Data collected in the field using mobile GIS apps and GPS-enabled devices.





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 123 openrouteservice

Travel mode 123 cycling-regular

Input Point layer

Using model input Start Point

Input layer ID Field (mutually exclusive with Point option) [optional]

123

Dimension

123 time

Comma-separated ranges [min or m]

Using model input Travel Time (If selecting multiple, separate with commas, e.g., 5, 10)

Location Type

123 start

Isochrones_Layer_2025-06-27_12:12:50

123 ogr:dbname='C:/Users/ACER/QField/cloud/KartozaInterns__KartozaInterns2025/InfrastructureMapper.gpkg' table='Isochrones' (geom)

Dependencies

0 dependencies selected

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)

123 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]

123 AA MINS

Join type

123 Create separate feature for each matching feature (one-to-many)

Discard records which could not be joined

123 Yes

Joined field prefix [optional]

123

Joined layer [optional]

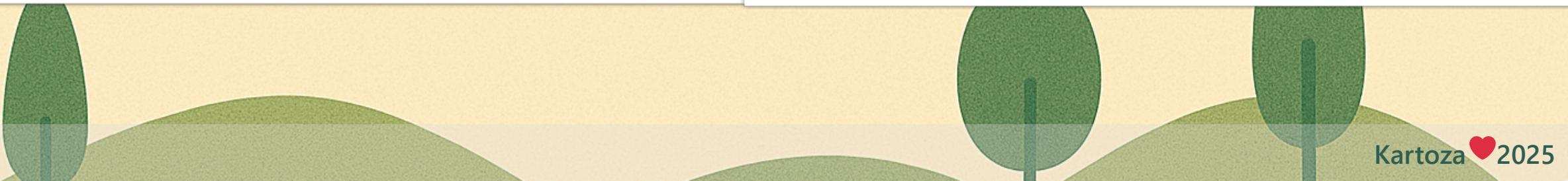
123 ogr:dbname='C:/Users/ACER/QField/cloud/KartozaInterns__KartozaInterns2025/InfrastructureMapper.gpkg' table='Selected Features by Travel Time' (geom)

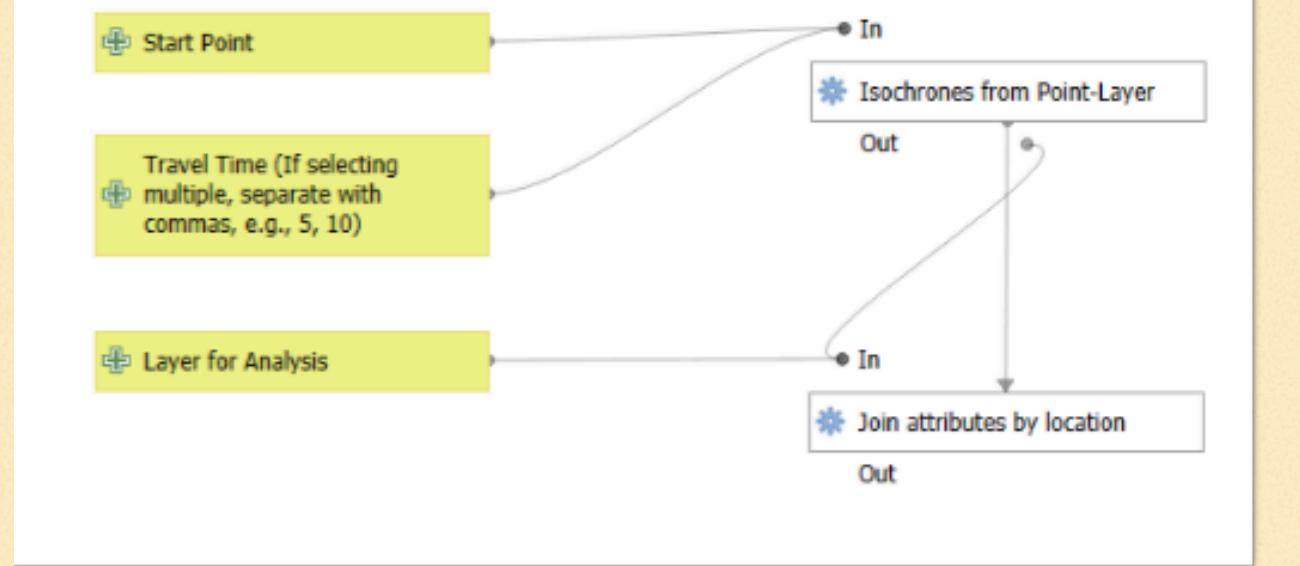
Unjoinable features from first layer [optional]

[Enter name if this is a final result]

Dependencies

1 dependency selected





Isochrones

Parameters Log

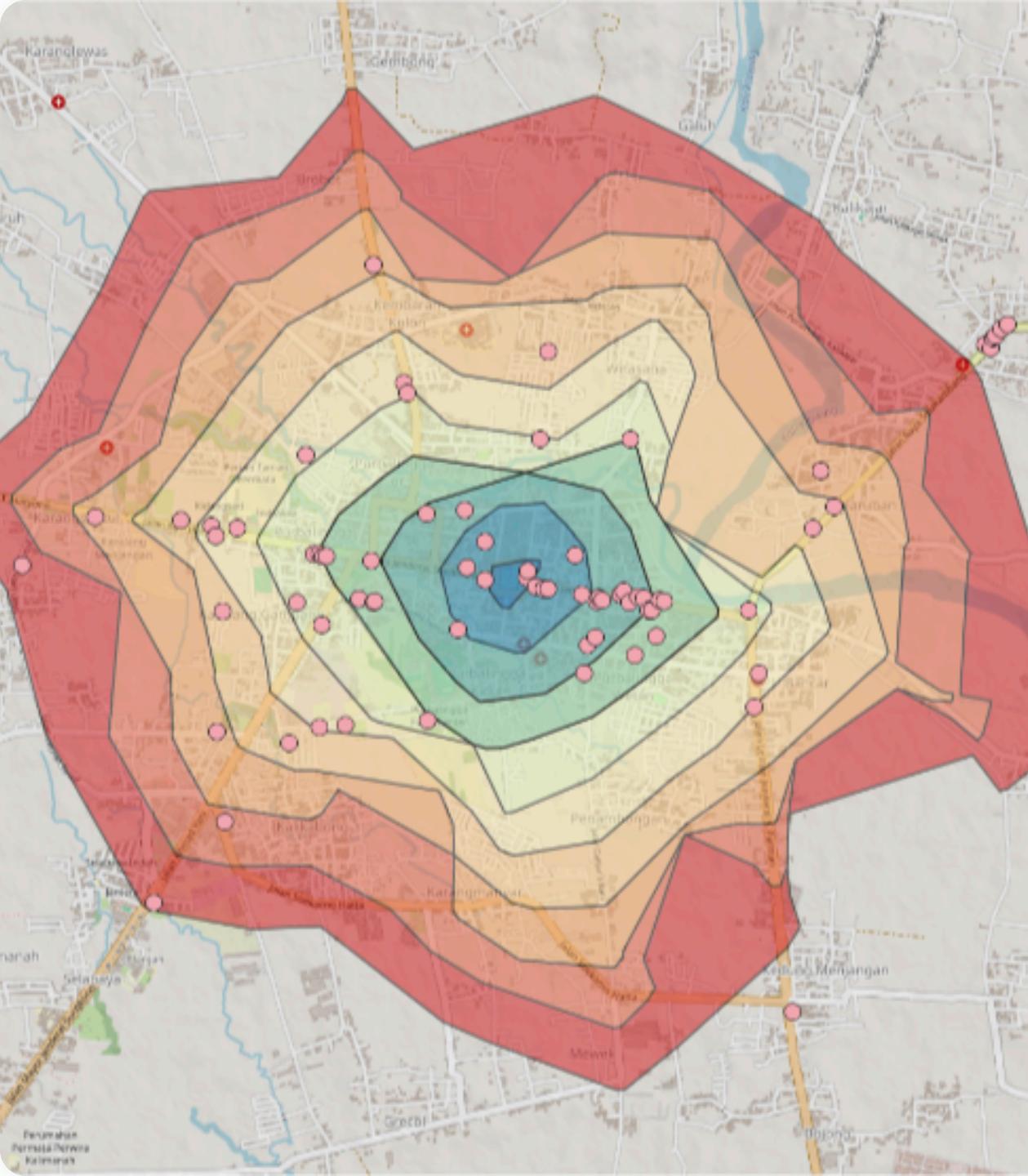
Layer for Analysis
Culinary Points [EPSG:4326]

Start Point
Start Point [EPSG:4326]

Travel Time (If selecting multiple, separate with commas, e.g., 5, 10)

0% Advanced Run as Batch Process... Run Cancel Close

This dialog box allows users to define parameters for generating isochrones. It includes fields for selecting the 'Layer for Analysis' (Culinary Points in EPSG:4326), the 'Start Point' (also in EPSG:4326), and the 'Travel Time' (multiple values separated by commas). The 'Run' button at the bottom right is highlighted in blue, indicating it is the active button.



Results - 1

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

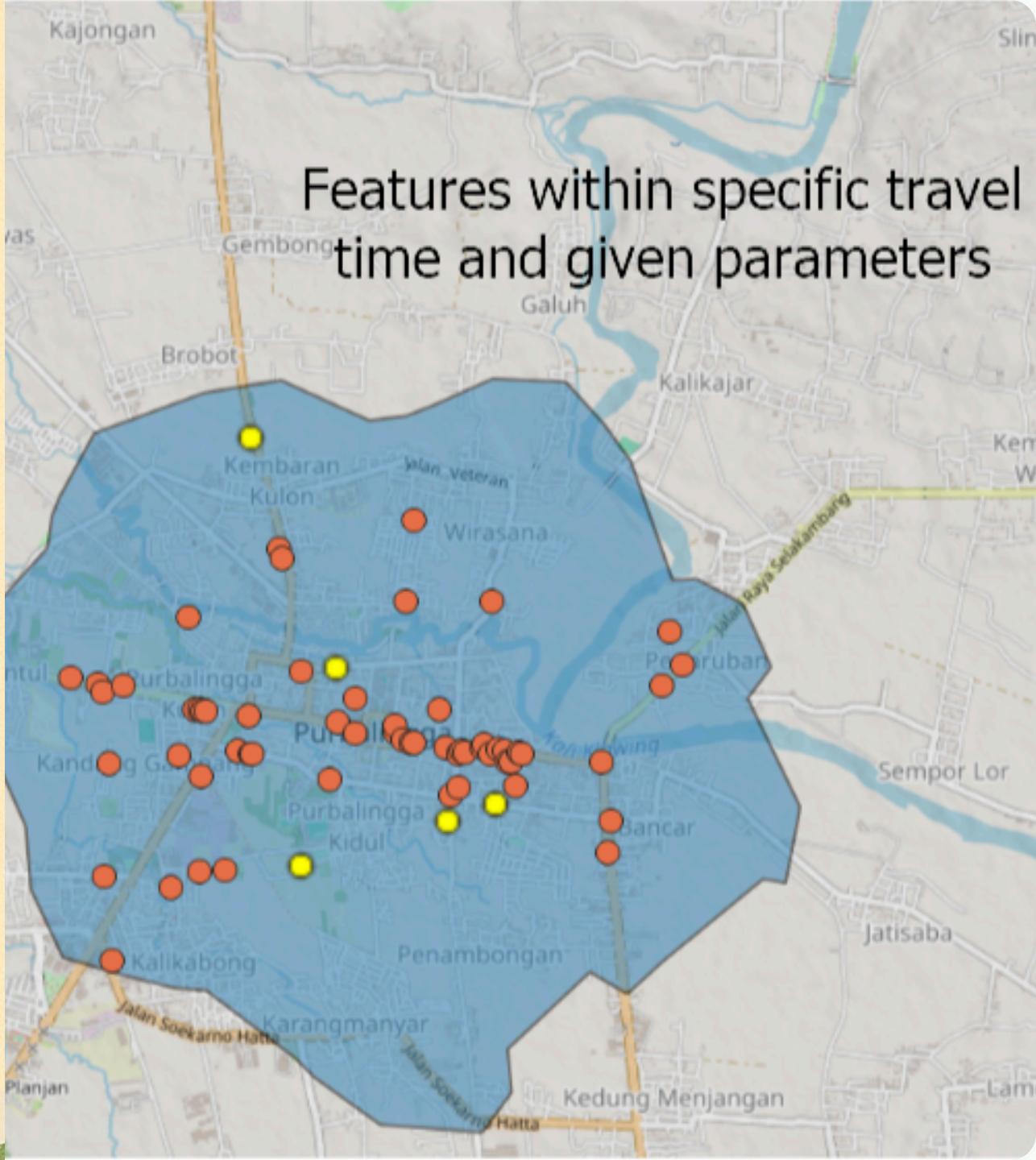




Results - 2

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

Features within specific travel time and given parameters





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

