JB: THE NEW FRONTIER?

User Guide

IS415: GEOSPATIAL ANALYTICS AND APPLICATIONS
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Introduction

JB: The New Frontier? is a Shiny web application designed to explain prices of properties in Johor Bahru, Malaysia (JB).

User can make use of the application to identify Point of Interests (POIs) as well as analyse the prices of the properties in the respective districts (Mukims) within JB. For them to make a more informed decision when purchasing a property in JB.

Packages Used

The following packages are currently used in this application.

Packages	Link
shiny	https://cran.r-project.org/web/packages/shiny/index.html
bslib	https://cran.r-project.org/web/packages/bslib/index.html
shinydashboard	https://cran.r-project.org/web/packages/shinydashboard/index.html
shinythemes	https://cran.r-project.org/web/packages/shinythemes/index.html
rsconnect	https://cran.r-project.org/web/packages/rsconnect/index.html
olsrr	https://cran.r-project.org/web/packages/olsrr/index.html
ggstatsplot	https://cran.r-project.org/web/packages/ggstatsplot/index.html
sf	https://cran.r-project.org/web//packages/sf/index.html
tmap	https://cran.r-project.org/web/packages/tmap/index.html
tidyverse	https://cran.r-project.org/web/packages/tidyverse/index.html
gtsummary	https://cran.r-project.org/web/packages/gtsummary/index.html
performance	https://cran.r-project.org/web/packages/performance/index.html
see	https://cran.r-project.org/web/packages/see/index.html
sfdep	https://cran.r-project.org/web/packages/sfdep/index.html
spdep	https://cran.r-project.org/web/packages/spdep/index.html
tidygeocoder	https://cran.r-project.org/web/packages/tidygeocoder/index.html
RColorBrewer	https://cran.r-project.org/web/packages/RColorBrewer/index.html

Data

Following datasets are used for the application.

Processed

| Data	Description	Raw
amenities.rds	POIs data in Johor Bahru	Point of Interest (POI) data
property.rds	Property data in Johor Bahru	Property Transaction Data
study_area.rds	Boundary data of Johor Bahru	Johor Bahru, Malaysia boundary data

Raw

The processed datasets are derived by processing of the raw data obtained from the following sources.

| Data	Source	Processing method / tool used
Johor Bahru, Malaysia boundary data	geoBoundaries	Filtered out boundaries within Johor Bahru
Point of Interest (POI) data	OpenStreetMap	OSM Overpass Turbo API is used to extract POIs within Johor Bahru
Property Transaction Data	Portal Pusat Maklumat Harta Tanah Negara (NAPIC)	Extract relevant data within Johor Bahru, drop null values

UI and Tabs

User can navigate through the different tabs for the analysis of the property prices in JB. More detailed explanation of each tab is available in the subsequent sections.

The navigation bar of the application is as shown below.
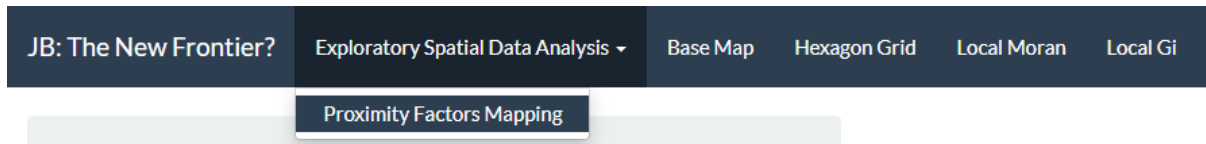
Proximity Factors Mapping
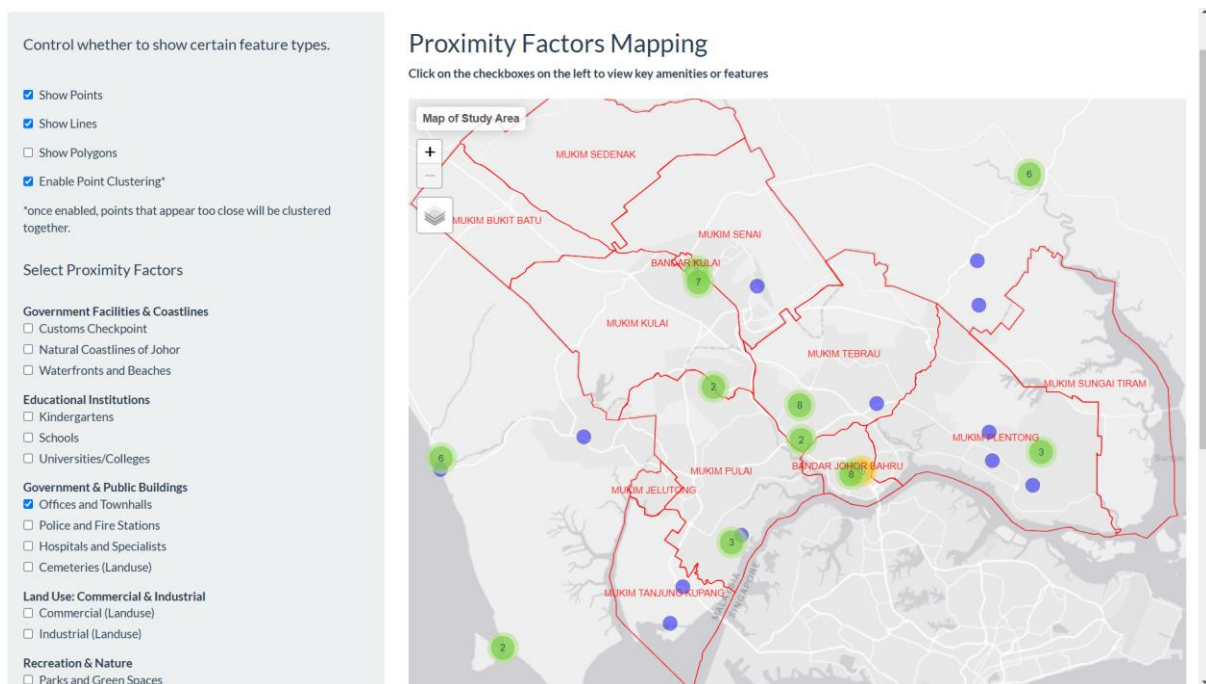
Select Proximity Factors

Government Facilities & Coastlines
- [ ] Customs Checkpoint
- [ ] Natural Coastlines of Johor
- [ ] Waterfronts and Beaches

Educational Institutions
- [ ] Kindergartens
- [ ] Schools
- [ ] Universities/Colleges

Government & Public Buildings
- [x] Offices and Townhalls
- [ ] Police and Fire Stations
- [ ] Hospitals and Specialists
- [ ] Cemeteries (Landuse)

Land Use: Commercial & Industrial
- [ ] Commercial (Landuse)
- [ ] Industrial (Landuse)

Recreation & Nature
- [ ] Parks and Green Spaces
- [ ] Theme Parks and Resorts

Places of Worship
- [ ] Buddhist Temples
- [ ] Churches
- [ ] Hindu Temples
- [ ] Mosques

Commercial & Public Services
- [ ] Marketplace and Malls
- [ ] Restaurant, Cafe, and Fast Food Restaurants
- [ ] Supermarket and Convenience Stores
- [ ] Petrol Stations

Transport & Infrastructure
- [ ] Airport
- [ ] Bus Stops
- [ ] Bus Terminals
- [ ] Carparks

The left shows the POIs, sorted into different category, which the user can select. This allow users to ultimately filter down to the district(s) within JB that they are interested in purchasing a property. Which they can then run other analysis to make the most informed decision, when purchasing a property in JB.

Base Map

The base map allows the user to select the type of property, the price of property in the desired currency. With the choice of classifying the property prices via different methods.
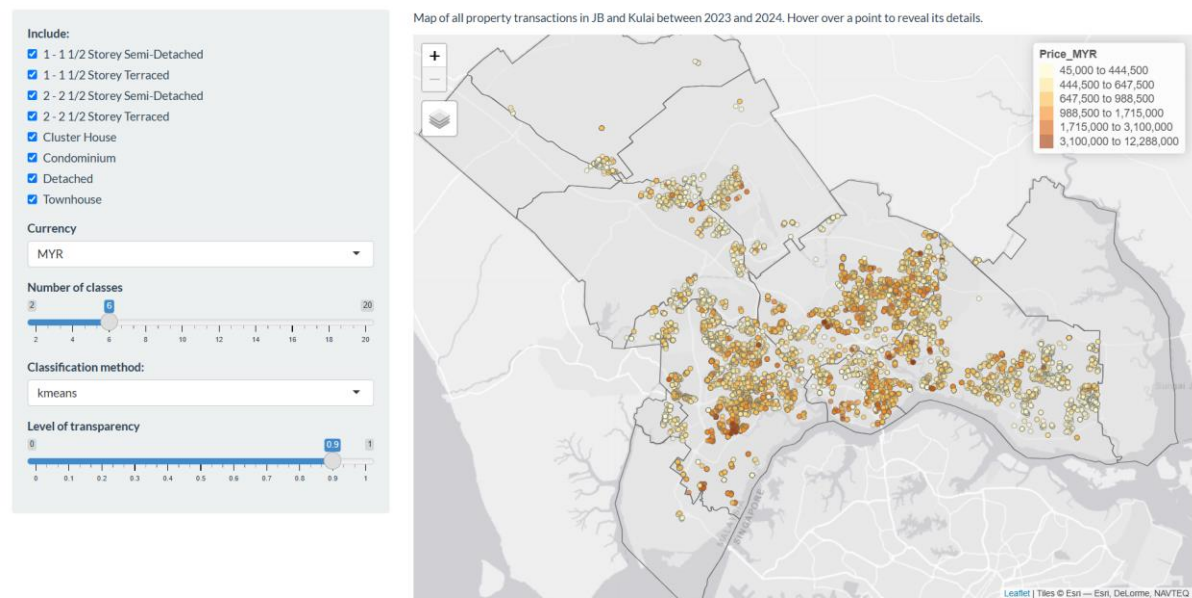

Clicking on a point also allow the user to see more information about the choosen property.
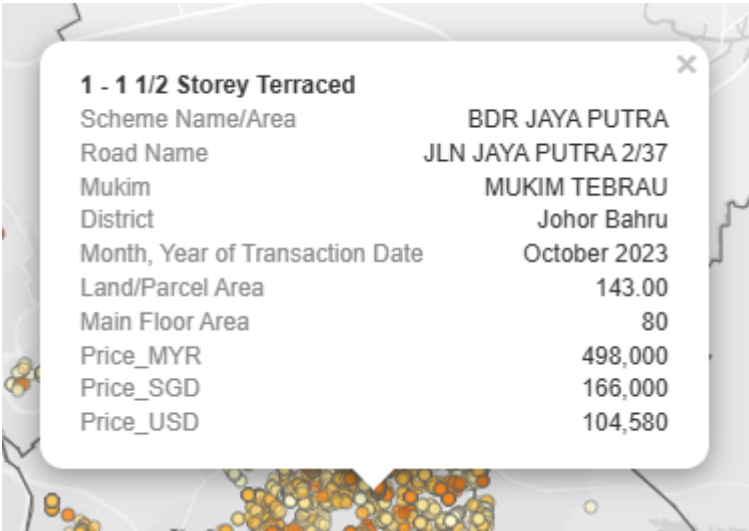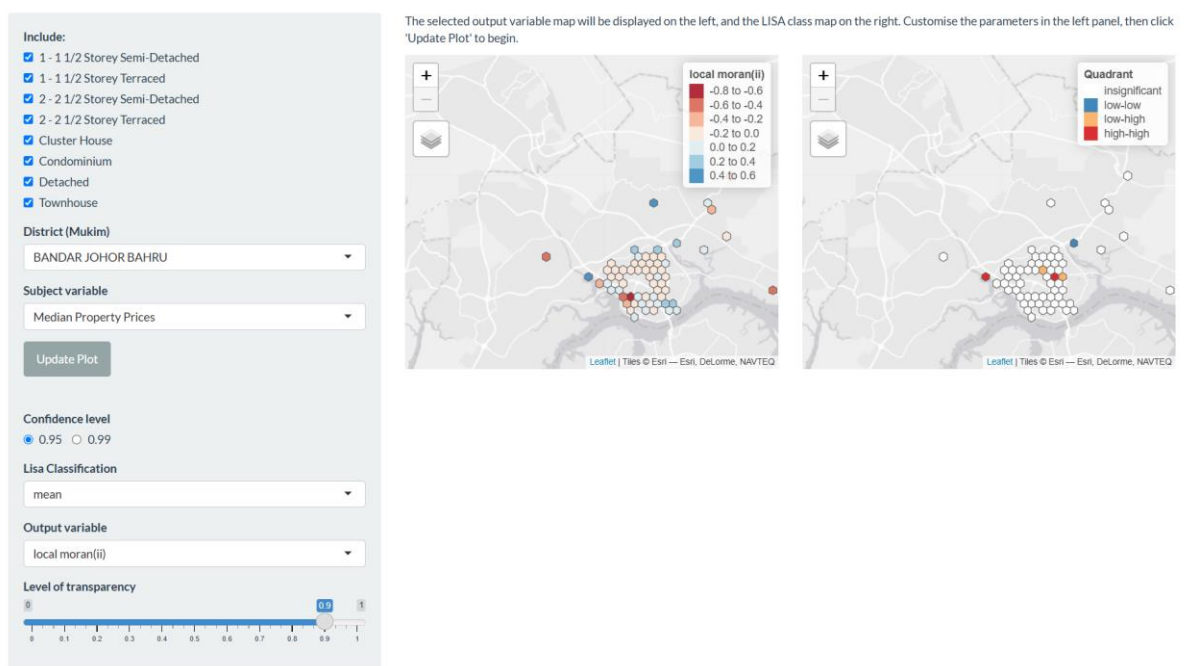
Hexagon Grid

The hexagon grid allow user to select the type of property, the property density or the mean, median or maximum property price split into smaller areas. Allowing user to analyse and scope down the district(s) within JB that they are interested in purchasing a property. Which they can then run other analysis to make the most informed decision, when purchasing a property in JB.
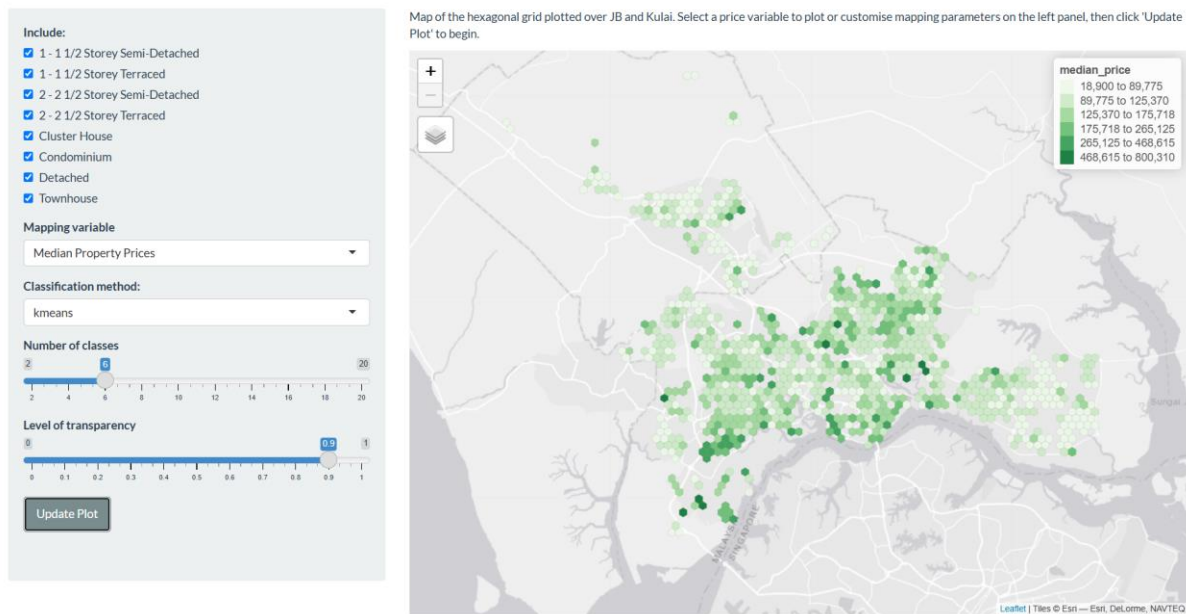
Local Moran

Adding on to the hexagon grid and scoping down into the district, user is able to analyse property prices with local moran(ii) and LISA class map.

Local Gi

Adding on to the hexagon grid and scoping down into the district, user is able to analyse hot and cold spots of property prices within the selected district. (Where hot spots refer to higher property prices and cold spots referring to lower property prices within the selected district)