Take-home Exercise 2: Urban Applications of Vector-based GIS Analysis

This handout provides the context, the task, the expectation and the grading criteria of Take-home Exercise 2. Students must review and understand them before getting started with the take-home exercise.

Contents

Setting the scene

On September 10, 2021, a new way to calculate school-home distance was annouceed by Ministry of Education (MOE) and published at New Strait Time (NST). It aims to enable more children to qualify for Primary 1 places in schools near where they live. As a socially conscious GIS analyst, you have decided to conduct a study to reveal the impact of the new school-home distance calculate method. The study aims to provide policy makers as well as general public analytical-centric information for supporting inclusive and participatory planning process.

The Tasks

The specific tasks of the study are as follows:

- assemble GIS data needed to perform the study. Three main data sets have been identified. They are: the latest primary school location and Primary 1 capacity, cadastral land lot and building footprint of

residential. Other useful GIS data sets can be added if they are necessary,

- using appropriate GIS analysis methods to delineate the catchment areas of school base on the old and new ways to calculate school-home catchment areas.
- prepare large-scale GIS maps (i.e. 1:5000) for selected schools your choice to show the complexity of school-home catchment areas,
- derive appropriate statistics (i.e. statistical tables and graphics) to complement the GIS maps analysis, and
- Critically evaluate the issue revealed by the map and suggest appropriate alternative planning approach for school-home catchment areas delineation.

Take-home Exercise Artefact

GIS data repository

The GIS repository includes but not limited to geospatial data compiled and derived, QGIS project file and data dictionary. It must be in a single zipped file (i.e. .zip). The geospatial data must be stored in a GeoPackage database format. The data dictionary can be in either MS Word document or edited into the GIS data.The project artefact must be uploaded onto eLearn.

Take-home Exercise Report

You are required to edit your take-home exercise report in MS Word format. The take-home exercise report, beside others, should include all the thematic and choropleth maps prepared and their respective discussion.

More importantly, the report must provide a **reproducible** step-by-step guide on the following process:

- data compilation, extraction and integration,
- data cleaning, preparation and wrangling,
- GIS analysis (including tabular and graphical analysis), and
- GIS maps design.

> *Note: **Reproducible** means that readers are able to perform the same analysis and obtain similar results by using the same data sets and by following the step-by-step guide.*

The title of the report should be in the form of *SMT201_AY2021-22T1_Ex2*.

> *Note: This is an individual exercise. You are required to work on the take home exercise and prepare*

> *submission individually.*

Grading

- Quality of the GIS data model built (including metadata) (20 marks),
- Appropriateness of the GIS methods used (20 marks),
- Quality of GIS maps prepared (20 marks),
- Reproducibility of the GIS processes (20 marks), and
- Ability to provide correct interpretation of the analysis results and to recommend appropriate alternatives (20 marks).

Submission Date

The take-home exercise artefact must be uploaded on eLearn by the submission deadline stated below.

Due Date: 6th October 2021, 11:59pm (mid-night).