



MIDTERM EXAM ACADEMIC YEAR 2020/2021

Subject : Geostatistics 1.
Study Program/Class : Statistics/ A
Day/ Date : Wednesday, November 4, 2020
Waktu : 14.30-15.00 WIB
Lecturer : Achmad Fauzan,S.Pd.,M.Si
Test Form : Project.
Online Media : Google Classroom

A. RULES

1. Start doing the Mid-Semester Examination [UTS] by praying.
2. Answers to exam questions are collected through the google classroom page that has been provided, make sure to press the "submit" button
3. Work on questions may not be sequential, do what you feel is easy first.
4. Cheating in any form with a UTS value of 0 (the script can know the pattern).
5. Softcopy is sent to Google Classroom for a maximum of 30 minutes during UTS Geostatistics 1 (file is stored in RAR form and ALL DATA (SHP, R, etc.) INSIDE)
6. Worksheets are adjusted to the templates provided in Google Classrooms along with the scripts which are saved in a separate RAR file.

B. QUESTIONS

LO : Mastering several statistical methodologies (methods and models) to be used in solving problems in several fields.

Score: Maximum 70

CO:

- Students can explain the concept of Spatial Correlation.

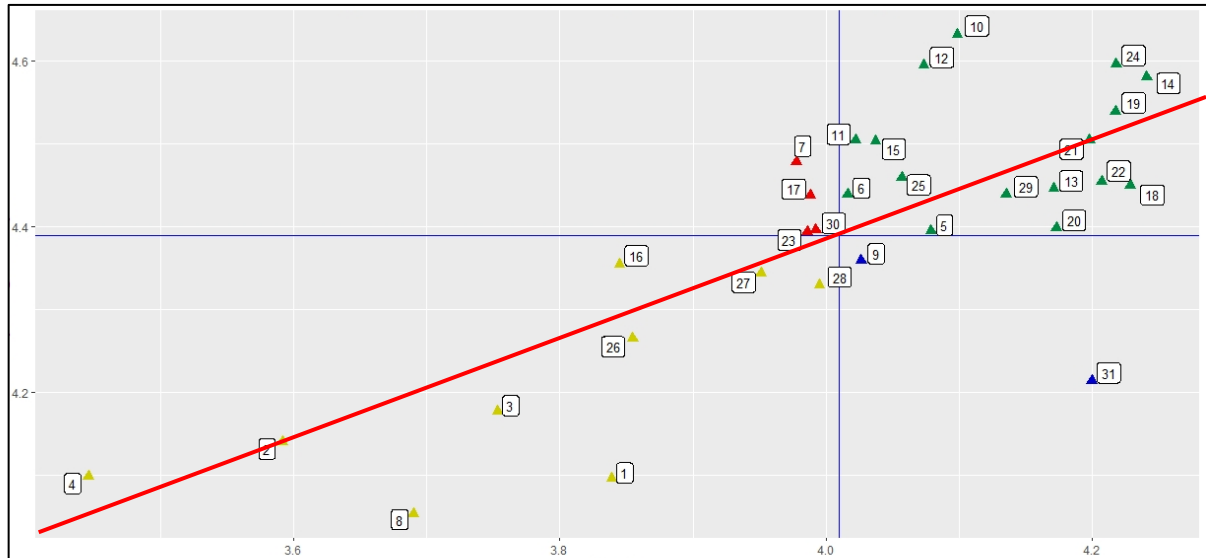
Indicator:

- Students can explain the definition of spatial correlation.

1. Have data on district information in East Java and maps per district/city in East Java. Do the following!
 - a. Form a neighboring matrix with the modified Queen Contiguity concept so that all districts on the island of Madura are considered neighbors to the city of Surabaya, even though they do not have borders.
 - b. Form a neighbor list object with code R, so that it can be used to form WY , where W is the spatial weighting matrix that has been formed and Y is the GRDP per capita of each existing district/city.
 - c. Then after that, calculate the value of the Moran Index along with its significance test.
2. Have data on the number of unemployed per district along with the value of each location.

(district division is included in the appendix in google classrooms). Based on this data, test your skills with the following activities:

- Merge the shp file with the attached files
- Make a spatial weighting matrix (neighborhood) with the division according to the attachments in google classrooms.
- Calculate the Moran Index using the R and Excel programs.
- From the value of Z_count give an interpretation of the results you have.
- Visualize the Moran Scatter plots that you have using the "ggplot" package, as the illustration is as follows.



Reminders:

- The picture above is just an illustration (not the real Moran Scatterplot), but try to do it so that the original Moran Scatterplot using the R package was manual by using the ggplot package so that the visualization is clearer.
- The X axis represents Y (response) and the Y axis represents Spatial Lag (WY)
- Blue line (horizontal and vertical are mean of each axis)
- The number on each object represents the id of each location.
- The red line is the gradient that represents the value of the Moran index [remember the Moran index is from -1 to 1]
- The color of each quadrant does not need to be different, but for example you can make it different then you can add value (hint: use looping)

Score: Maximum 30
<p>CO:</p> <ul style="list-style-type: none"> ○ Students can explain the concept of Spatial Correlation. <p>Indicator:</p> <ul style="list-style-type: none"> ○ Students can explain the concept of Spatial Data

Have data on poverty at the following link: https://s.id/data_kemiskinan.

- Make a visualization map using R for the province of Yogyakarta based on the value of Y. (please search the shp file on the Internet or use existing data)
- Add visualization of the midpoint of each district.
- Make the coloring based on the Moran Scatterplot that you got above.
- Beautify your visualization with a basemap/layer, road or river

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23. Say, 'O Prophet,' "He is the One Who brought you into being and gave you hearing, sight, and intellect. 'Yet' you hardly give any thanks."
 – [Al-Mulk ayat 23] –

Verification of the 2020/2021 Mid-Semester Exam Questions				
The suitability of the question material with CO	Completeness question information	Verifier	Verification date	Initials
Suitable	Complete	Study program secretary	3/11/2020	