UNB
EST. 1785
UNIVERSITY OF NEW BRUNSWICK

Assignment 3

(10% of final mark)

GGE5404: Online Spatial Data Handling

INSTRUCTIONS

Analysis of crime data in Toronto

For this assignment, you will access crime data in Toronto, available on the Toronto Public Service Public Safety Data Portal: https://data.torontopolice.on.ca

You will explore patterns of point pattern analysis and density of crimes. In the final question, you will explore other datasets, such as age, employment, income of the neighborhood, etc. to see if any of these might contribute to or explain the patterns of crime.

From the Toronto Public Service Public Safety Data Portal, access at least 6 months of data of the crime dataset of your choosing; you can explore any of the categories and select the major crime indicator (MCI) of your choosing, for an area of interest. It may be the entire city of Toronto, or a particular neighborhood(s) you are interested in analyzing.

You may query and download a file from the Toronto Public Service Public Safety Data Portal and load that into your assignment. If you select this option, ensure that the query is described in detail in the assignment submission. Bonus points will be considered if the API is accessed directly in your Notebook.

Your submission should include answers to the following:

Part A

1. Are the crimes clustered? Is there Central Tendency? Create a density map showing the local density (quadrat or kernel method may be used) and describe the results (< 100 words).

2. Are there spatial outliers or trends in the data you've selected? Discuss (include any tests run, figures, and maps generated) (200 - 400 words).

Part B

3. What are some other factors that might influence the location of these types of crimes? Use plots or graphs as necessary to support your response. (200 - 400 words) You might explore data from the City of Toronto, https://www.toronto.ca/city-government/data-research-maps/open-data/, or datasets from other providers, e.g.: https://open.canada.ca/en

EXPECTATIONS

You will need to submit:

a) Jupyter Notebook (ipynb) file (for me to view/run) and
b) A PDF or HTML of the Jupyter notebook which contains the output as run by you

The Notebook document should read like a report where you include Markdown to supplement the code, including the two sections of the assignment.
At the top of the submission, you should include:

- The assignment name and description
- Your information (name, student number)
- The date

The submission should include runnable code cells and a brief description, in Markdown, of:

- The description and objective of the assignment
- Answers to the questions in Part A and Part B
- The steps you performed, libraries and functions used and why
- Links and references to any data used

Where appropriate, you may include charts, graphs and formatted text to present/summarize the results of each of the questions presented above.

I intend to run the submitted Notebook, so ensure all libraries and necessary files are included/referenced.

The assignment will be graded based on the rubric below.

Assignments - Grading Rubric					
Criteria	Level 1	Level 2	Level 3	Level 4	Level 5
Code Functionality (4%)	None of the code runs successfully	The code partially runs successfully	The code produces incorrect results	The code generally produces the right results	The code works well and meets all specifications
	0 point	1 point	2 points	3 points	4 points
Readability and Compactness (2%)	The code is poorly organized, lots of unnecessary lines and is incomplete	The code is poorly organized and difficult to read, lots of unnecessary lines of code	The code is only readable by someone who knows what it should do, unnecessarily long	The code is fairly easy to follow, but not well organized, a little verbose	Exceptionally well organized, easy to follow, concise
	0 point	0.5 point	1 points	1.5 points	2 points
Overall Assignment Organization	No comments in code and	Only comments embedded in	Limited use of Markdown to explain the	The assignment objective is	The assignment objective is

and Documentation (4%)	no use of Markdown	the code and little to no use of Markdown	assignment objectives and support the work completed	included, project is described, but there are missing method/tools used, figures, references	well described, including all steps. The code is supplemented with description of methods, figures, references to resources used, etc.
	0 point	1 point	2 points	3 points	4 points

D2L DROPBOX SUBMISSION INSTRUCTIONS

1. In the top-navigation bar on the course screen, select 'Assessments' and then 'Assignments'.
2. Select the assignment title and follow the instructions to upload your document.