**Project Guideline & Rubric**

**DATA\*6500**

**Summer 2025**

This document outlines my expectations for the project in this course. The rubric for each component **is subject to change** prior to the due date. If this occurs, you will be notified via an announcement prior to the deadline of that component.

**Project description**

**In groups of 2 or 3,** students will complete an original project involving the analysis of spatial/spatiotemporal data. There are two graded components to the project, the presentation and the Final Report. Each of these has its own rubric on a following page. The instructor will provide feedback after each stage.

Students should choose a topic that is ambitious, such that it will require them to learn new skills, and even go beyond what we have covered in the course. Ambitiousness of a project will be judged based on the following criteria:

* The size, complexity, and availability of the data. For example, large spatial/spatiotemporal datasets pulled from a variety of sources, with many variables that were hard to download/process, would be the most ambitious. However, don’t overdo it. Choose something that is challenging but manageable in the timeframe allotted.
* Complexity of the modelling methods that are required to complete the analysis. **The complexity should be related to the geospatial aspect of the problem**.

If in your project proposal, your project deemed not sufficiently ambitious, you may be asked to add additional elements, or change the project entirely. It is a good idea to confirm your project idea well in advance of the presentation. Note that groups of 3 have a slightly higher expectation than groups of 2.

**Some notes:**

Different components have different target audiences:

* Presentation: the audience is your classmates.
* Final Report: Target audience is your instructor.

References for the report can be done in any standard format but please be consistent (MLA, APA, Chicago, etc.).

**Presentation - 10% of final grade**

**Presentation materials due at midnight the night before your presentation.**

Presentations will be conducted in the **last week of classes**. Presentation materials will be submitted to me the night before your presentation. If you are using slides, .pdf, .ppt, .key, are all examples of acceptable file formats. If you are using some other materials in your presentation (like a video or interactive map), please use your best judgement on how to submit these. You can always ask me ahead of time. **Please note that your project need not be complete prior to your presentation.** However, significant progress should be shown, and a plan for completing the project should be outlined in the presentation.

For groups of 2, presentations can be 10-12 minutes in length, for groups of 3, they should be 12-15 minutes in length. Each group member should aim to speak for roughly the same amount of time.

Presentation materials (slides) will be assigned 1 grade for the whole group. Oration and question response will be judged individually. If a student had no/minimal chance to respond to questions, the weight of that component will be shifted to oration.

**Presentation materials (slides) [20 marks]:**

Tip: Slides shouldn’t be overly wordy; you should try to convey your ideas using visuals and brief bullet-points.

* The presentation materials (e.g slides) clearly and succinctly described the motivation, methods, results, conclusions, and future work of the project [10 marks]
* Data visualizations were clear and comprehensible for all members of the audience. [5 marks]
* The slides are not overly wordy, contain an appropriate amount of information for the time allotted, and are aesthetically pleasing [5 marks]

**Oration and presentation skills [7 marks]:**

Below are statements that are consistent with different grades for this section:

7 - The student’s volume was loud enough for everyone to hear given the size of the audience. The student spoke with enthusiasm about the material they were presenting. The student undulated their voice and spoke at an understandable pace. The student made eye contact with the audience. The presentation was clearly rehearsed.

5 – The student’s volume was adequate, but the pace was slightly fast. They made a reasonable amount of eye-contact with the audience. What they were saying as mostly clear. The presentation was rehearsed.

2- The student spoke too softly in a monotone voice, showing little enthusiasm or understanding of the material being presented. The presentation appeared unrehearsed. There was a disconnect between what the student was saying and what was on the slides.

**Response to questions [3 marks]:**

The student responded well from questions in the audience.

[30 marks total]

**Final report – 30% of final grade (Due August 12th at 11:59pm)**

The final report should describe the major findings in the analysis as they pertain to the project objectives. There is no page limit or minimum for the report. Please be brief, and don’t feel the need to include every analysis/model that you used throughout the process. If you are unsure about including certain details, feel encouraged to put them into an appendix.

Code files and associated .pdf should be handed in along with your dataset (or appropriate code to construct/pull data), and anything else that is needed to reproduce your analysis. If I can reproduce your file with a reasonable amount of effort, then this should be fine.

You may structure the report in any reasonable way that is appropriate for your project. Some examples of section structures:

* *Introduction, data, methods, results, discussion*
* *Background and data, analysis for objective 1, analysis for objective 2, discussion.*

Note that you don’t need to structure the report to match the grading scheme in the rubric, but your report should address each element in the rubric.

**Final report Rubric**

Below is a rubric with a breakdown for each element of the report. For each element, mark ranges are listed with statements that are consistent with that mark range. Note that these statements are just guidelines, and mark allocations are ultimately decided at the discretion of the instructor. Furthermore, although these statements are applicable to all groups, groups with 3 members will generally be held to a higher standard than those with 2.

Ambitiousness (/5)

4-5 – The project involved interesting data/methods that were beyond what we covered in class. The geospatial component of the project was very substantial and challenging.

2-3 - The project involved routine analysis methods and/or data that were highly like those covered in class. The geospatial aspect of the project was substantial but not too challenging.

0-1 – The project involved a toy dataset (e.g from a textbook) and/or used very rudimentary methods of analysis. The geospatial aspect of the project was secondary or uninteresting.

Background/introduction/motivation (/10)

9-10 – Extensive background information is given to the reader, with appropriate references (if required). A gap in knowledge is clearly identified, and it is clear how this project will help fill that gap. The project is very well motivated.

7-8 – Background knowledge is provided with some appropriate references. It is mostly clear why the project is being conducted, and the motivation for the project is appropriately outlined.

5-6 – Limited background knowledge is provided. Some references are provided but may be from irrelevant sources. The motivation for the project is stated but is generally not clear.

<5 - Inadequate

Data description exploration and visualization (/15)

13-15 – The data being used in the project is clearly described and cited. Key features of the data are highlighted, and major decisions pertaining to the data are clearly outlined. Highly attractive and clear visualizations are given to show the reader what the different data elements look like. It is clear how these data will be used for modelling and analysis. There are no unnecessary details pertaining to data cleaning that is not directly relevant to modeling or interpretation.

10-12 – The data in the project is adequately described and cited. Data visualizations are mostly clear, and most of the key features of the data are highlighted and interpreted correctly, with 1 or 2 significant inaccuracies. There may be some unnecessary details pertaining to data cleaning that is not relevant to analysis.

8-9 – The data used in the project is described. Key features of the data are ignored or misunderstood. It is unclear how the data will be used for statistical analysis. Visualizations are unattractive and/or unclear.

<8 inadequate.

Analytical methods and results (/30)

26-30 – The methods used in the analysis are very clearly described, are highly appropriate in the context of the research question(s)/objective(s) and show strong understanding of the course material/geospatial analysis. The geospatial nature of the problem was a strong focus of the analysis and was appropriately accounted for. The results are clearly presented using visualizations/tables or other appropriate means.

20-25 – The methods used in the analysis are described with a few significant mistakes or misunderstandings. The methods applied are mostly appropriately, demonstrating a good understanding of course material. The geospatial nature of the problem was considered but may have been handled with minor inaccuracies. The results are mostly clearly presented.

15-19 – The methods used in the analysis have major flaws or show significant gaps in the students understanding of the material. Geospatial elements of the project were handled poorly (inappropriate CRS, ignoring autocorrelation, etc). There are many unclear aspects of the results and their interpretation.

<15 inadequate.

Critical discussion and analysis of methods used, limitations, and future work? (/15)

13-15 – The results of the analysis are interpreted in the context of the project objectives/research questions. Analytical/data limitations are accurately identified and contextualized. A discussion of future work shows genuine interest in the problem.

10-12 – The results of the project are mostly interpreted well but may lack context or be inaccurate. Some model/data limitations are identified, but some were missed. Reasonable suggestions for future work are made.

8-9 – Some major results of the model(s) are misinterpreted or not contextualized. Model limitations are inaccurately identified or are irrelevant to the research question. Little to no insightful discussion of future work is made.

<8 inadequate.

Report structure/presentation (/5)

4-5 –The report is clearly written, well structured, and is generally attractive.

2-3 –The report has elements of disorganization which negatively impacted clarity of the report. Raw R output was present in the pdf.

0-1 – The report was poorly organized and hard.

Presentation of code and Reproducibility (/5)

4-5 The report is reproducible with minimal effort. Code is clear, well structured, and well commented.

2-3 The report is reproducible, but substantial effort was required to do so. Code is messy and lacks structure.

* 1. The report was not reproducible. There were discrepancies between the code submitted and the pdf.

[85 marks total]