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| School of Geography and  Environmental Science |  |

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| GGES6016 | GIS for Analysis of Health | Assignment 1 |

Assignment 1

Structured literature review of use of disease clustering methods in practice

Background

Many of the cluster detection techniques reviewed in this unit were developed relatively recently and some are still unavailable in standard GIS software. This assignment evaluates the extent to which the techniques are used in practice and explores reasons for differing patterns and trends in their uptake and application.

Task

**For a particular disease, or for a particular technique or cluster test, identify and evaluate trends in the application of cluster detection techniques for the spatial and/or spatio-temporal investigation of human health data.**

Identify studies relevant to your topic (at least some of which should be in academic literature) that detect spatial or spatio-temporal clusters in human health data. The number of studies that you review will vary depending on the topic that you choose – some topics will be associated with a broader literature than others.

You can use this assignment to research one of several topics about cluster studies and you should choose a topic which you find interesting. Examples might include:

* You could investigate cluster detection studies of a particular disease (e.g. breast cancer) and see how far people investigating that disease have followed the same method and used the same cluster detection techniques (e.g. have the methods people have used got more sophisticated over time?)
* You could investigate one particular technique or cluster test (e.g. Cuzick and Edwards’ test) and explore the contexts and diseases where it has been used (e.g. is there a tendency for such studies to concentrate on certain types of disease, to use certain types of data, or to be based in certain parts of the world?)

**In a report of no more than 2,000 words**:

* Briefly describe how you searched for and identified the studies that you have included in your review. You do not need to present a full systematic literature review but you should briefly summarise your methods e.g. How did you search for the studies - search terms, search engines? What studies did you include or exclude? How did you refine or filter the results of your queries?
* In a table, summarise the characteristics of the studies included in your review. The Excel spreadsheet provided on the module Blackboard site (under Assignments > Assignment 1) contains an illustrative set of study characteristics. For each relevant study that you identify in your literature review, enter its characteristics into the Excel spreadsheet (as an example, characteristics have been entered into the spreadsheet for the article by Green et al. below). You should adapt the spreadsheet to suit your own purposes and your topic, for example, you can add other characteristics which you think are useful, and/or delete ones which are not. Be sure to include the location of the study population as part of the spreadsheet.
* Either by geocoding or by adding an attribute field (with a count of studies in that area) to a map of country boundaries, produce a map showing the locations of the study populations participating in the studies included in your review. Include the map in your report.
* For your selected disease or technique, evaluate trends in the application of cluster detection techniques for the spatial and/or spatio-temporal investigation of human health data.

The key to doing this exercise well is not simply to report what each study found, but to provide your own synthesised critical appraisal and commentary on your chosen disease/techniques and studies. Given what you have learnt elsewhere in this unit, what would you conclude about the way that cluster detection techniques are used in practice? For example, you might consider how the nature of the data, types of study designs or methods affected the design and potentially findings of the study. Or you might discuss opportunities and barriers to the uptake of techniques in specific parts of the world or for certain diseases. What differences in findings, methods and data do you see looking across all studies?

Deadline and submission arrangements

Deadline: **4pm, 30 April 2025**

Submission arrangements: Upload your assignment using **eAssignments**. Please ensure that your assignment is **anonymous** i.e. include your student number but not your name on the document.

Faculty word count policy

**Only work which falls within the word limit will be marked.** Please see the table below for confirmation of what is/is not included in the word limit:

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| **Item** | **Does it count?** |
| Title | NO |
| Abstract | NO |
| Introduction | YES |
| Methods | YES |
| Results | YES |
| Discussion | YES |
| Conclusion | YES |
| Bibliography | NO |
| Reference List | NO |
| In-text citations | YES |
| Tables – contents | NO |
| Tables – titles | YES |
| Figures – contents | NO |
| Figures – captions | YES |
| Table of contents | NO |
| Headings / sub-headings | YES |
| Executive summary | NO |

Referencing and Academic Responsibility and Conduct

Remember to use appropriate referencing techniques: Geography and Environmental Science uses the **Harvard** style of referencing, so please make sure that you familiarise yourself with this and use it consistently (useful resources can be found at: <http://library.soton.ac.uk/sash/referencing>, <http://library.soton.ac.uk/online-skills>, and <http://library.soton.ac.uk/geography>).

All submitted work must conform to the [University Academic Responsibility and Conduct regulations](https://www.southampton.ac.uk/about/governance/regulations-policies/student-regulations/academic-responsibility-conduct). All students must ensure that they read these regulations thoroughly as they will need to confirm that their work conforms to them when submitting assignments. Written assignments will be screened for plagiarism using the University’s TurnitinUK plagiarism software.

**Use of Artificial Intelligence tools**

Use of Artificial Intelligence tools for the preparation or production of materials to be submitted is NOT permitted in this module and will be considered a breach of the University’s Academic Integrity regulations. Please read the guidelines under Assignments on the GGES6013 Blackboard site on the responsible use of Artificial Intelligence tools.

Marking criteria

Assignments will be graded according to the SoGES marking criteria for Level 7 (MSc PGT). These can be found on the module Blackboard site under Assignments. This assignment will be graded using all criteria except for ‘practical and technical competence’, which is not relevant in this case.

Release of grades and feedback

Provisional grades and individualised feedback will be released via eAssignments. General feedback to the class will be provided via Blackboard.

Important: hints for this task

The following paper, by colleagues from the University of Southampton, provides a really useful example of how you might approach this task. Obviously, this is a full peer-reviewed journal article by an accomplished research team, so you are not expected to undertake such a comprehensive and exhaustive review(!), but it should provide some useful ideas and methods which you might be able to adapt and implement on a more limited scale:

Collins R, Spake R, Brown K, Ogutu B, Smith D, Eigenbrod F (2020) A systematic map of research exploring the effect of greenspace on mental health, Landscape and Urban Planning, 201, 103823 <https://doi.org/10.1016/j.landurbplan.2020.103823>

You may find general search engines such as Google Scholar useful. And specific journals, such as the International Journal for Health Geographics might be a good starting place to browse for ideas.

References

Collins R, Spake R, Brown K, Ogutu B, Smith D, Eigenbrod F (2020) A systematic map of research exploring the effect of greenspace on mental health, Landscape and Urban Planning, 201, 103823 <https://doi.org/10.1016/j.landurbplan.2020.103823>

Green, C., Hoppa, R. D., Kue, Y. T., Blanchard, J. F. (2003) Geographic analysis of diabetes prevalence in an urban area. Social Science and Medicine 57, 551-560.

Google Scholar is available from here: <http://scholar.google.com/>

The International Journal of Health Geographics is available through: <https://ij-healthgeographics.biomedcentral.com/>