Edexcel Geography A-Level

Fieldwork Section 4 - Data Analysis and Critical Evaluation

Essential Notes

Introduction

One of the **highest marking** sections of your coursework, the analysis of your data and evaluation of your methods of data collection is far more important than the rest of your investigation! However, it is also one of the hardest sections to write - take a few attempts at **drafting**, make sure someone else **proofreads** it, be open to making changes and amendments as you continue to write the rest of your report.

Data Analysis

There is no set method for analysing data, but it is important that within your analysis you include:

- How the data shown links to your **hypotheses** or **sub-questions**.
- **Thorough** analysis. Comment on what your data actually **shows** about the subject you are investigating, such as patterns or frequent opinions.
- **Quoted** numerical data and qualitative data rather than **only** describing the overall trend.
- Do not leave any **gaps** in your analysis, e.g. **do not ignore anomalies or points that disprove your hypotheses**.
- Comments on the **accuracy** of your data. Comment on how **precise** your data is as this will make your conclusions more **believable** and **confident**. For example, comment on the **degree of accuracy** of your graph (e.g to 4 significant figures) so that you can prove your data is not missing harder to spot trends.
- Comments on the extent to which your data is **representative**. If you have used a lot of **investigation sites** - for example - then comment on this, because it shows your data represents your locational context realistically and wholly.
- Links to the **theory** behind your data. Give reasons as to why **data patterns** have arose using geographical theory. The purpose of the investigation is to **extend your geographical understanding** so show that it has been extended.

Using Context

It is important that, within your investigation, your **deductions** from your data are **supported** with **geographical theory** and **locational context**.

Rather than just **describing** trends, you should **explain why** these trends occur. This may include **geographical context** from your **exam specification**, or it could be **wider knowledge** that you have **researched** (and referenced). Geographical theory is important as it proves that your **conclusions have a valid reasoning** behind them. For example, if you were investigating why there are more wildfires in an area of Manchester than in an area of northern Scotland, explain your data using theory of how climate affects wildfire prevalence.

Locational context is just as important to include in your analysis, as your location's **external and internal factors** will impact upon your data. For example, if your location is close to a coal burning factory, you could explain that the poor air quality in your Environmental Quality Survey (EQS) is

most likely due to this. Locational context could also be useful for **explaining trends that do not match your hypothesis**. An external factor could cause the **geographical theory to not correlate with your data trends**, so rather than ignoring this, you could explain how a locational factor could cause these trends.

How to Write an Analysis

It is recommended that you analyse in **hypotheses order** rather than **presentational technique order**. Using this structure, **one** hypothesis is analysed first using all of your different sets of data, then **another** hypothesis is analysed. This may lead to **repeats** in your **figures** if the data overlaps into different hypotheses, but you can always **reference** the figures later on in your analysis even if you have included it in a prior paragraph (e.g. see Figure 9).

Example analysis

In this example enquiry, the student is investigating **how deforestation in the Carlisle area could have been a contributing factor to 2018 flooding in Carlisle.** Here is a **brief** example of an acceptable way to set out analysis of data. For clarity, only one figure is analysed.

Hypothesis 2: Deforestation in Carlisle causes a surplus of water in the drainage basin.

Clear link to hypothesis.

In order to conclude **whether there was a surplus of water in the drainage basin,** the saturation of the soil was measured in 11 different sites, and the trees in a 100m² were counted. This soil saturation reading was taken from an **average of 10 separate readings,** meaning the data is an **accurate representation** of soil water content. **Figure 1 shows the saturation content has a clear relationship with the number of trees.** In **general,** as the number of trees increases, the saturation content of the soil decreases, **showing that the trees decrease the saturation content in the soil,** therefore possibly showing that **deforestation increases saturation content** (which may cause flooding). For example, where there were **2 trees** the saturation content was high at **70%,** however where **23** trees were present, the saturation content was only **19%,** showing a **51% decrease** in soil saturation from 2 trees to 23 trees. There is a **disruption to the pattern** at 8 trees, because the soil saturation content is only 32% which is unusually low. However, this may be because the **soil content is less permeable clay and the relief is around 17° steeper than the other sites (secondary source author, date),** perhaps giving reason as to why there is less infiltration in this area. **Overall,** Figure 1's negative correlation between the number of trees and soil moisture content proves that in areas of Carlisle, the lack of dense forestry causes water surplus.

Accuracy comment.

General comment on relationship. trend.

Graphical

Explaining trend using data from figure and manipulating data.

Identifying anomalies.

Reasons behind anomalies using geographical theory.

Summary.

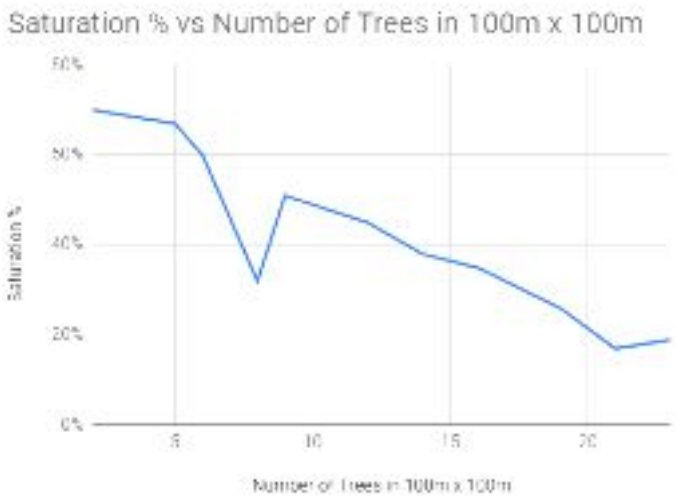

Figure 1 - A graph showing saturation content of soil vs number of trees in 11 sites in Carlisle.

You would be required to talk about **more than one figure**, and higher level students could talk about the figures **interchangeably** to spot more trends. For example, a candidate could have performed a tree count and referenced areas of deforestation within their analysis of Figure 1 to prove the areas of water surplus were in areas of deforestation.

Critical Evaluation

This section focuses on how your approach and conduct may have altered the results or validity of your findings. You must evaluate your own actions - the data collection strategies used, the ethicality of the data you collected, the environment you've investigated - and determine how best to improve your investigation.

Ethical Issues

When conducting your fieldwork it is essential to **consider the ethical issues** surrounding your investigation - what was the impact of your fieldwork? Always **aim to benefit the area you are investigating** and at least ensure that you leave it in the state you found it in. If you are visiting a beach, could you **help pick up litter** that would otherwise pose a fatal threat to sea life? If you are visiting an urban area, could you **help a local charity** supporting the homeless? Could you send your investigation (once the remark date for the fieldwork has passed) to a local group who may be able to use your findings, and could you work with local authorities? Whilst you are not expected to go to these lengths, it would be **beneficial to your fieldwork and give it a greater purpose**.

The **countryside code** is aimed at rural areas and its guidance is **appropriate to follow for all students** and can be accessed through this link: Countryside Code. You should also:

- Tell the locals about your investigation and its purpose
- Gain consent with people before conducting questionnaires/interviews
- Be polite and use good manners

- Show respect for other people and their views
- Be objective
- Avoid leading questions (e.g. Do you agree that Poole needs additional flood defences?)
- Be aware of any social or cultural issues you may encounter

Writing Up - Critical Evaluation

There are three main areas to consider when writing your critical evaluation:

- **Ethical Issues -** Did you ask individuals for sensitive or personal information? How did you keep your data secure (if it's personal information, GDPR could be considered)? Were you asking insensitive questions?
- **Timing/ Frequency of Observations -** Did the time or season affect your results or sampling? (Rain reduces people walking around, measuring tourism at a beach in winter won't consider peak season, etc) Did you repeat observations/ data collection enough times to identify anomolies? Could you have repeated and calculated a mean?
- **Any specific flaws in data collection methods -** Were there any questions that didn't get your expected results? Could you have asked a different question to improve your results? Did you choose an area too quiet or dangerous for you to conduct your fieldwork properly?

Finally, you should **suggest any changes** or modifications; if someone else repeated your investigation, they would not make the same mistakes as you did. It is important to maintain a **balanced view** of an investigation - no one's investigation will be total nonsense, or completely perfect.