2c – A Guide to
Data Collection Techniques

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The way a researcher goes about collecting their data is very much dictated by the focus of their research and the specific research questions that require answering. The data collection methods they employ may also be designed with the particular research site in mind, as well as the time and resources they have available to them.

There is no such thing as a definitive way of collecting a particular piece of data: each piece of research is individual and while certain techniques (such as those suggested below) are well used by geographers, they should also be adapted to suit the specific conditions and needs of the investigation.

Surveys

Surveys are personal studies that the researcher undertakes in the field. Using their own judgement and opinion the researcher observes the geographical phenomenon in question and records information or formulates a score that summarises what they are seeing. There are many different types of survey, and individual surveys can be designed with specific research needs in mind. Where appropriate, consider using apps like Survey123 for ArcGIS, Collector for ArcGIS and Fieldwork GB. The following three types of survey are commonly used by geographical researchers.

An **Environmental Impact Assessment (EIA)** measures the current or future possible impact a development may have or be having on a landscape. At a municipal level, their undertaking is now a statutory requirement before any major new development can be built, but in a more informal manner they can be used by geographers to compare different management options for a particular need (such as flooding or unemployment).

Commonly, EIAs are a matrix with two parts: firstly, a range of possible causes of impacts (such as traffic) against the different aspects of the environment which could be affected by any impacts (such as local people).

	Works Traffic	Location of Raw Materials	Disposal of Waste	Building Processes	Proposed Site	Comments
Plants	0	0	-2	-2	-3	
Animals	-1	0	-1	0	-2	
Noise	-3	-1	0	-2	-1	
Air Quality	-3	-3	-1	-1	0	
Water Quality	0	0	-3	-2	- 2	
People	-1	+3	-1	0	+3	

In each part of the matrix a score is given to show the perceived intensity of the impact felt, normally on a -3 (high negative impact) to 0 (no impact) to +3 (high positive impact). It is a good idea to also leave space for a comment to be made: the researcher may observe something in the field which explains a particularly high or low score and want to make note for it for further investigation.

The outside perspective of the researcher to the new development can be both a benefit and a problem to the undertaking of an EIA. As an outsider, the researcher can give a relatively impartial opinion of how they view the situation. However, they may also not have the full understanding of the phenomenon in question and so may not give a true representation of the real impacts a development may have.

A **Bipolar Analysis** is similar to an EIA but only takes into account a set number of criteria against which the researcher gives a score. This means that the researcher can use it to compare one location with another, or the same location over a set time frame.
For each criteria, paired, opposing words are used to create a scale on which the researcher places their opinion. The criteria used should also relate to the type of location that the researcher is investigating. For example, if the researcher is looking into the quality of different residential areas they may wish to comment on the upkeep of the pavements, while a woodland in a National Park will require different criteria. In the former, the two paired words may be 'smooth' (showing a positive score) and 'cracked' (showing a negative score).

		+3	+2	+1	0	-1	-2	-3	
Pavements	Smooth			✓					Cracked
Air Quality	Fresh		✓						Foul
Gardens	Well maintained				✓				Poorly maintained
Buildings	Well maintained			✓					Poorly maintained
Litter	Spotless					✓			Major
Street Furniture	Well maintained					✓			Poorly maintained
Noise	Quiet				✓				Loud
								Total Score	+2

Once the bipolar analysis has been completed a total value can be calculated by adding together all the scores generated, thus allowing the researcher to more easily compare one location with another. This is especially true if the researcher were to then plot the total scores onto a GIS map.

One challenge that comes with bipolar analysis is that the scores given are highly subjective to the researcher's own viewpoint. They have to ensure that their grading is consistent across all the field locations so that true comparisons can be made. It is possible that a researcher may grade an area with the lowest score possible only to move onto a new area and discover that it is dramatically worse than the last.

A **Land Use Survey** is a way of recording what geographical phenomena appear on the ground which cannot be understood from a map alone. Most often researchers use a Goad map to carry out a land use survey. A Goad map is a detailed street map that shows individual buildings and their plots, and is usually needed for land registry and insurance purposes. They can be purchased through online sources.

The job of the researcher is to note how different buildings are used (for example, municipal, residential, parkland or commercial) or how more natural landscapes might be categorised (for example, woodland, heath, grassland or moorland). This information might then be used to draw conclusions as to whether a particular dominant land use in an area corresponds to a particularly high or low value in another factor such as noise or air pollution.

Researchers may decide to survey a small area of a map, noting down the land use at a particular grid reference, for example, or as part of a team where they could map the land use of a much larger area. The use of GIS is especially good in conducting land use surveys as, with the design of a simple key, one can annotate an online map with the correct land use whilst in the field.