

## Activities

### Exploring perceptions of place

Exploring perceptions of place with Spearman's Rank.

(Our classroom enquiry question is "How much do people like Ludlow?" but you could adapt this for your own local area)

Spearman's rank calculation

$$\rho = 1 - \frac{6 \sum d_i^2}{n(n^2 - 1)}$$

$\rho$  = Spearman's rank correlation coefficient

$d_i$  = difference between the two ranks of each observation

$n$  = number of observations

Image of Ludlow (full size image can be [downloaded here](#))



#### Length of time

Fieldwork should take between 15-30 minutes depending on how many people there are to collect data from, calculations between 45-60 minutes depending on pace and ability.

#### Suitable locations (school grounds, local streets, park, stream etc)

Anywhere to fit with the idea of exploring a sense of place or perceptions of place: can be rural or urban along a continuum or carried out along a transect at selected locations.

#### Description of the activity

Students will work in small groups to collect data which will then be used by the whole class.  
**Some familiarity with the use of Spearman's Rank would be helpful to avoid confusion.**

The requirement is that the whole class collectively have five records in five age group categories to be able to complete the task.

This task also introduces the idea of a 'stratified' sampling methods - stratified by age group.

#### Sequence:

- Remind the students about Null hypotheses and correlation and the value of a statistical test to support fieldwork at this point. The Null Hypothesis would be that people's views of a place do not change with their age.
- The class agrees an Alternate Hypothesis to be tested, which should be loosely based around the theme that "There is a relationship between age and the extent to which people like Ludlow".
- Age group categories can be decided by the group but would usually be: **0-18, 19-30, 31-49, 50-69 and 70+ or similar**. Students divide up the work of collecting at least five records from each age group. Discuss the implications of, and reasons for using small datasets for this statistical test.
- Students ask five people (this may occur during a supervised field visit off campus or asking staff /students/visitors/family for homework) which age category they fit into (by asking them to point to an age group – allows for discussion and learning around fieldwork ethics and politeness).

*It was even possible to do this in lockdown using the usual channels of Facebook, WhatsApp, Snapchat, and family phone calls to relatives, asking neighbours or others familiar with the chosen place. (Safeguarding briefing to students and parental support helps mitigate risk here).*

- After identifying their age, people taking part are asked to point to "How much they like Ludlow" on a scale of 1-5 (this Likert scale can be agreed by the class in advance e.g. 1 = **Not much** to 5 = **Love it**, or perhaps by using emoji faces that are turned to numerical data back in class.
- Students return to class and input findings into the template table.
- As a whole class, with the template table displayed on the board the students follow a step by step process of calculating the value of 'n', ranking the data, finding the difference from the mean, summing  $d^2$ , and finding ' $\rho\rho$ '.
- The critical value for 25 records is provided to students (learning / reminding students about % levels of certainty).
- Students accept or reject the null hypothesis "There is no relationship between age and liking Ludlow".

- Learning and discussion may follow around positive and negative correlations, comparing results on a scatter graph (this can be generated quickly if using Excel on the board for the table).
- Learning and discussion around the idea that **correlation is not causation** and a chance to discuss other factors that haven't been measured on this occasion but could do to extend the enquiry (these might include socio-economic data, lived experience, ethnicity, religion, attachment to place (resident/tourist)).
- Reward particularly good contributions.

#### Ways in which pupils can record and showcase their responses / findings

A step-by-step box-filling template for the Spearman's Rank calculation helps students follow the process of ranking, finding difference, squaring, finding 'n', and eventually ' $\rho\rho$ '.

Allowing students time to 'write up their own instructions for someone else' helps to consolidate learning, also allowing students to support each other before offering teacher help has good results, with teacher intervention as a last resort.

For weaker students it helps to revisit as an intervention, perhaps on one-to-one basis a few days/weeks later, re-doing the steps.

#### Follow up suggestions

A follow up study investigating perceptions of place based on environmental quality or sensory mapping goes well with this.

Practicing an exam question linked to familiar or unfamiliar fieldwork using this fieldwork as an example is a useful revision exercise that I tend to do just prior to exams.

#### Any other comments/ suggestions you wish to add

I find it helpful (and time saving) to prepopulate a spreadsheet with the rankings as we already know the stratified data is going to have equal ranks in blocks of 5 records. (We rank earthquake magnitude and deaths data in our Tectonics topic earlier in the year, so the students are familiar with this process. I show them the Tectonics spreadsheet at the same time to help remind them, then we talk about equal ranks and how to do this).

In six years of teaching A level we have not yet had a year with a null result. There has always been a positive relationship between age and liking Ludlow. Students find this lesson one of their most memorable.