Guide to completing research in geography

We hope that you enjoy performing research in geography and are excited about performing more fieldwork on your geography degree.

Our students have lots of opportunities to perform fieldwork on our degrees, including:

- An expedition that has been to a range of locations, including China, South Africa, Iceland, and Kenya.
- [A research programme into water security issues in countries like Uganda and Peru](#).

If you would like to find out more about the geography degrees that we offer please come along to one of our [open days](#) or visit our [webpages](#).

These are the stages that you should work through when performing research in geography. Click on the diagram to get guidance on each stage.

Set your research questions and hypotheses

Plan your method:

Measurement techniques

Sampling strategy

Data analysis graphs

Data analysis statistics

Carry out your method

Write your report:

Introduction

Study location(s)

Method

Results

Discussion

Conclusion

You can also view examples of research questions, listed by topic here.

Links not working? Open using Adobe Acrobat Reader

Set your research questions and hypotheses

An investigation needs one or more clear questions that it aims to answer about a particular aspect of geography. To create your questions you should do the following:

1. Pick an aspect of geography that you want to complete your investigation about (e.g. infiltration). It should be:
    a) Something that you find interesting
    b) Something that it is realistic for you to collect primary data about.

2. Choose your location(s) for investigating your topic.

3. Choose what type of questions you want to ask.
    *   *Comparison question* - How do values of Y for A compare with values of Y for B? (e.g. How do infiltration rates in woodland compare to infiltration rates on grassland)
    *   *Relationship question* - How do values of Y relate to values of X? (e.g. How do perceptions of safety relate to distance from Bristol City centre?)

    You can see example questions grouped by topic [here].

4. Decide on your hypotheses – what you think the answer to each of your research questions will be.

You can try to combine multiple connected questions within your research project.

Plan your method: Measurement techniques

Your measurement techniques are the things that you use to collect the data you need to answer your research questions. There are lots of different measurement techniques that you could use within your investigation, including:

- Using a tape measure to measure distance
- Using an infiltration cylinder to measure infiltration rate
- Using a quadrat to measure vegetation cover or vegetation diversity
- Using a rain gauge to measure rainfall
- Using astroturf mats to measure aeolian transport rate
- Using a measuring pole to measure wave height
- Using calipers or a ruler to measure pebble size
- Using a clinometer and ranging poles to measure slope angle
- Using a clinometer, tape measure and Pythagoras's Theorem to measure height of large objects
- Using an observational survey to count people
- Using a questionnaire with a Likert scale to measure people's opinions
- Using an observational survey to count vehicles

You can get more ideas for measurement techniques that you could use within the example research questions provided here.
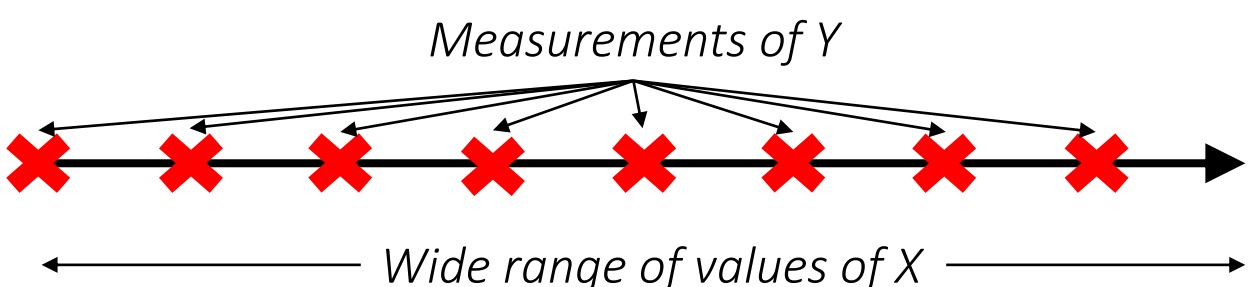
Plan your method: Sampling strategy

Your sampling strategy is how many measurements you take and where and when you take them. The appropriate sampling strategy depends on which type of research questions you are asking

In order to answer a **comparison question** of the form "How do values of Y for A compare with values of Y for B?" you should take a selection of measurements (minimum 10, ideally 30+) of Y that are representative of A, and an equivalent selection of measurements of Y that are representative of B.

Measurements of Y

A   *B*
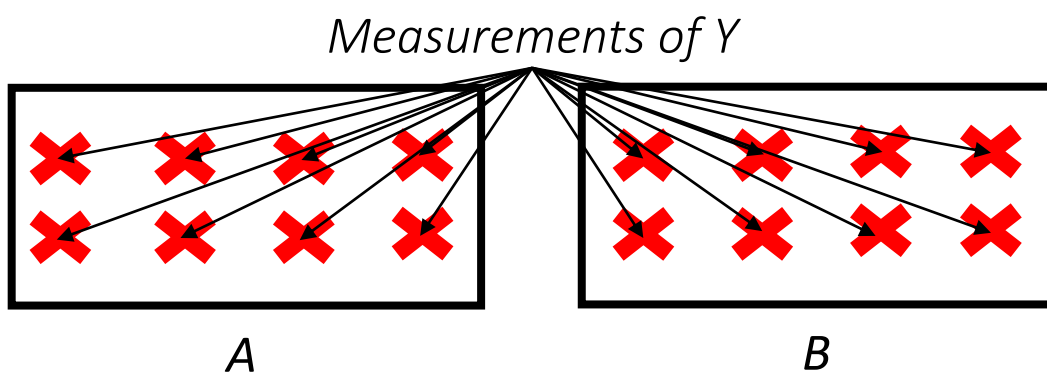
In order to answer a **relationship question** of the form "How do values of Y relate to values of X?" you should use a *systematic sample* that takes measurements (minimum 10, ideally 30+) of Y that are representative of a range of different values of X.

Measurements of Y

← Wide range of values of X →

You can see examples of sampling strategies within the example research questions provided here.

Main menu

Plan your method:
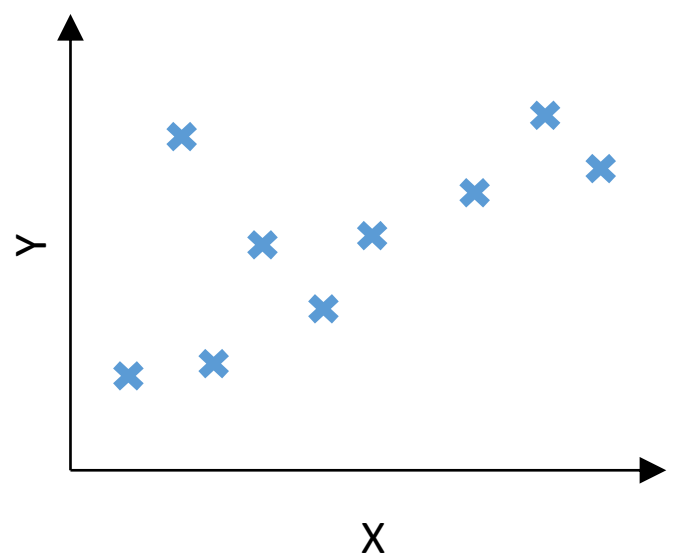# Data analysis - graphs

Data analysis is how you convert the data you have collected into an answer to your research questions using graphs and statistics.

The type of graphs you should use depends on which type of research questions you are asking.

In order to answer a *comparison question* you should compare the values of Y between A and B by drawing an individual value plot like the example on the right.
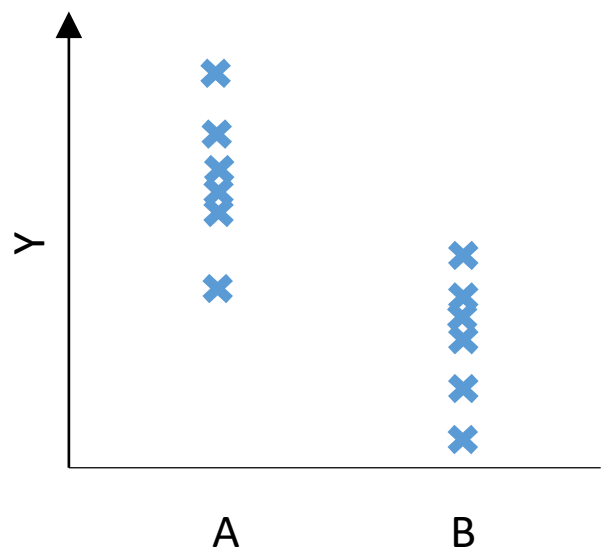
In order to answer a *relationship question* you should describe how your Y variable relates to your X variable by drawing a scatter plot like the example on the right.

You can see examples of how to use these data analysis techniques within the example research questions provided here.

Plan your method:
Data analysis - statistics

The type of statistics you should use depends on which type of research questions you are asking.

In order to answer a **comparison question** you should compare the values of Y for A with the values of Y for B by performing a Mann-Whitney U Test

- The *p-value* tells you the probability that the values for A and B are only different due to random chance. If your p-value is <= 0.05 then you can be at least 95% confident that A and B are different. If your p-value is >0.05 then you cannot be sure that A and B are different.

In order to answer a **relationship question** you should describe how your Y variable relates to your X variable by performing a Spearmans Rank Test.

- The *r-value* tells you the direction and strength of the correlation. For example, a *r-value* of 0.7 indications a strong positive correlation whilst a *r-value* of -0.3 indicates a weak negative correlation.
- The *p-value* tells you the probability that the correlation between X and Y might be due to random chance. If your p-value is <= 0.05 then you can be at least 95% confident that there is a correlation. If your p-value is >0.05 then you cannot be sure that there is a correlation.

You can see examples of how to use these data analysis techniques within the example research questions provided here.   Main menu

Carry out your method

Before you start collecting any data you should make sure you know the following:

1. [What your research questions are and what you hypothesise the answers will be](#)
2. [What your measurement techniques are](#)
   What equipment do you need and how are you going to use it to take your measurements?
3. [What your sampling strategy is](#)
   How many measurements do you need to take and where and when will you take them?
4. [What data analysis techniques you will use](#)
   What graphs and statistics will you create with your data? What do you hypothesise the graphs will look like?
5. That your tutor has checked your method and confirmed what you need to do to ensure that what you are planning is both safe and ethical.

When carrying out your data collection, keep reminding yourself of all of the above points to make sure that the data you collect is going to be appropriate, and that you are not going to cause harm to yourself or others.

Write your report: Introduction

In this section you should cover the following:

Aim and research questions

Describe your aim, which should be to investigate a particular aspect of geography in (a) particular location(s), and then list the research question(s) that you are attempting to answer, which should all be linked to your chosen aspect of geography. For example:

"This project aims to investigate infiltration rates as part of the water cycle within Ashton Court in Bristol by answering the following research questions:

1. How do infiltration rates compare between natural woodland and managed grassland within Ashton Court in Bristol?

2. How do infiltration rates compare between saturated and unsaturated soils within Ashton Court in Bristol?"

Theoretical context

Your research question(s) need(s) to be well-supported by thorough use of relevant literature sources. You should do this by:

1. Using the content of your textbooks to describe the theory related to your research questions.

2. Expand upon this using other credible sources that you find – peer-reviewed research papers are best.

3. Finish by outlining your hypothesis for each of your research questions. For example:

   "The hypothesis for this question is that infiltration rates will be higher in natural woodland compared to grazed grassland"

Write your report: Study location(s)

In this section you should cover the following:

Describe where your study location(s) are

Your investigation will need to based on a particular place or pair of places. Describe the location within the wider area (e.g. position within the country and/or county) using a map. We recommend using either Digimap for Schools or ArcGIS Online for Schools for this.

Describe the relevant characteristics of your study location

Dependent on what your research questions are, there may be relevant secondary data that helps to provide useful context for your study. For example:

- For a study about the water cycle it would be useful to provide secondary precipitation data for your study location from the Met Office.
- For a study comparing the social and economic characteristics of two places it would be useful to provide 2011 census data for each place from nomis.

Other useful sources of secondary data include:

- National River Flow Archive
- Environmental Information Platform
- Consumer Data Research Centre
- Datashine
- Police crime statistics

You should also include a detailed map of your study location(s). We recommend using Digimap for Schools or ArcGIS Online for Schools for this.

Write your report: Method

In this section you need to cover the following *for each of your research questions*:

Measurement techniques

Describe how you measured each of your variables. For each measurement technique explain how you made sure that it gave as accurate an measurement as is possible.

Sampling strategy

Describe how many measurements you took and when and where you took them. You should use a map to show the locations of your measurements - we recommend using [Digimap for Schools](#) or [ArcGIS Online for Schools](#) for this. Make sure it is clear how you made sure that your *sample* was as *representative* as possible of the *population* and how you avoided bias.

Data analysis

Describe what type of graph you used and why. Also, describe what statistical test you used and how it works.

Write your report: Results

You should do the following *for each of your research questions*:

Present and describe your graph

- For comparison questions, present your individual value graph and describe how the values from the two groups compare in terms of their average and their spread.
- For relationship questions, present your scatter graph and describe how the Y variable changes in relation to the X variable.

Describe the results from your statistical test

- For comparison questions, provide the p-value from your Mann-Whitney U test and use it to describe whether there is a statistically significant difference between the two groups (if the p-value <= 0.05 it means you can be at least 95% sure there is a difference). You should be able to confirm that the results of the Mann Whitney test support what your individual value graph shows.
- For relationship questions:
    - Provide the r-value from your Spearmans Rank test and use it to describe the direction and strength of correlation (e.g. r-value of -0.7 is a strong negative correlation).
    - Provide the p-value from your Spearmans Rank test and use it to describe whether there is a statistically significant correlation between your X and Y variables (if the p-value <= 0.05 it means you can be at least 95% sure there is a real correlation).

    You should be able to confirm that the results of the Spearmans Rank test support what your scatter graph shows.

Write your report: Discussion

You should do the following *for each of your research questions:*

Describe whether or not your result matches your hypothesis

For comparison questions:
- Did you find a significant difference between the two groups? (Was your Mann-Whitney test p-value <= 0.05?)
- Was the group that was higher the same as that expected by your hypothesis?

For relationship questions:
- Did you find a significant correlation between your variables? (Was your Spearmans Rank test p-value <= 0.05?)
- Was the direction of the correlation the same as that expected by your hypothesis?

Explain why your result does or does not match your hypothesis
- Where you found that there is a significant difference / correlation, and the difference / correlation matches your hypothesis then you should use the theory behind your hypothesis to explain your result.
- Where you found that there is a significant difference / correlation, but the difference / correlation is the opposite to your hypothesis then you should try and describe possible reasons for this. Are there other factors that might have caused the unexpected difference / correlation?
- Where you found that there is not a significant difference / correlation, then you should try and describe possible reasons for this. For example:
  - Are there other factors that might be cancelling out what you were expecting?
  - Was your sample size was not big enough?
  - Does the theory behind your hypothesis not apply in your study location?

Write your report: Conclusion

In this section, you should do the following:

Summarise the findings from your research questions
- Briefly describe what you found the answers to your research questions were.

Describe the limitations of your research project
- Describe what might limit the accuracy of your answers to your research questions. In particular, consider:
    - Sampling strategy – How might your sample not be totally representative of the population? How could this have been improved?
    - Measurement techniques – How might your measurements not be completely accurate? How could this have been improved?
    - Limits of the study extent – Your findings will be specific to the geographic location and time period over which you took your measurements. How might this be improved in a future bigger study?

Identify the wider implications of your findings
How should society (e.g. landowners, government agencies) take note of your research findings? (e.g. local government should create more green space in areas with low social-economic status).

Identify the risk and ethical considerations you made
Describe how you ensured that you would not cause any physical or psychological harm to yourself, others, or the environment when collecting your data.

Example research questions

We have put together a collection of research questions that could be used as part of an investigation. You need to combine multiple connected questions within your investigation and then identify (a) suitable location(s) to carry them out. We have grouped the questions into the following topics:

- Water and carbon cycles

- Hot desert systems

- Coastal systems

- Glacial systems

- Hazards

- Ecosystems

- Global systems

- Changing places

- Urban environments

- Population and the environment

- Resource security

Example research questions:
Water and carbon cycles

How does the amount of precipitation relate to elevation within a landscape?

How does the amount of precipitation reaching the ground compare between woodland and grassland?

How does the amount of throughfall compare between deciduous and conifer woodland?

How do evaporation rates when temperature is low compare with evaporation rates when temperatures is high?

How do evaporation rates when wind speeds are low compare with evaporations rates when wind speeds are high?

How do evaporation rates when humidity is low compare with evaporation rates when humidity is high?

How do infiltration rates compare between natural woodland and grazed grassland?

How do infiltration rates compare between saturated and unsaturated soil?

How do infiltration rates relate to the volume of antecedent precipitation?

How do infiltration rates compare between sand-rich soil and clay-rich soil?

How does discharge relate to distance downstream along a river?

How does the vegetation biomass compare between a natural deciduous woodland and a managed conifer plantation?

Example RQ topics   Main menu

Example research question:

How does the amount of precipitation relate to elevation within a landscape?

UWE Bristol | University of the West of England

Theoretical background and hypothesis

Condensation, and therefore rainfall is more likely at higher elevations as the decrease in air pressure causes air temperature to fall. Therefore the hypothesis for this question is that precipitation would increase with elevation within a landscape.

Measurement technique

- Measure precipitation over a month using rain gauges made from large plastic bottles.
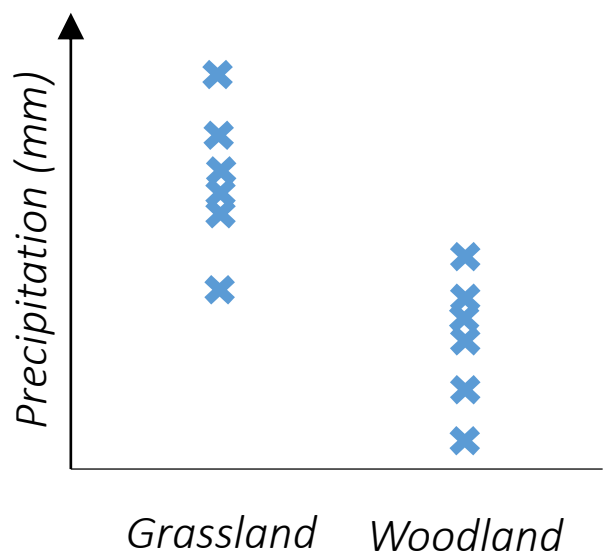- Measure elevation using a contour map.

Sampling strategy

For this *relationship question* you would use a systematic sample that takes measurements of precipitation at points that are equally spaced across a wide range of different elevations on a hillside.
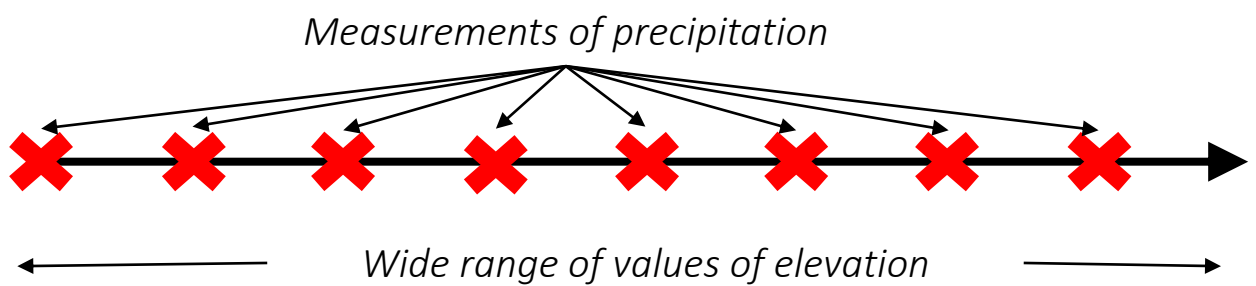
Measurements of precipitation

Wide range of values of elevation

Data analysis

In order to answer this *relationship question* you would describe how precipitation relates to elevation by drawing a scatter plot like the example on the right. You would also perform a Spearmans Rank Test.

Precipitation (mm)

Elevation (m)
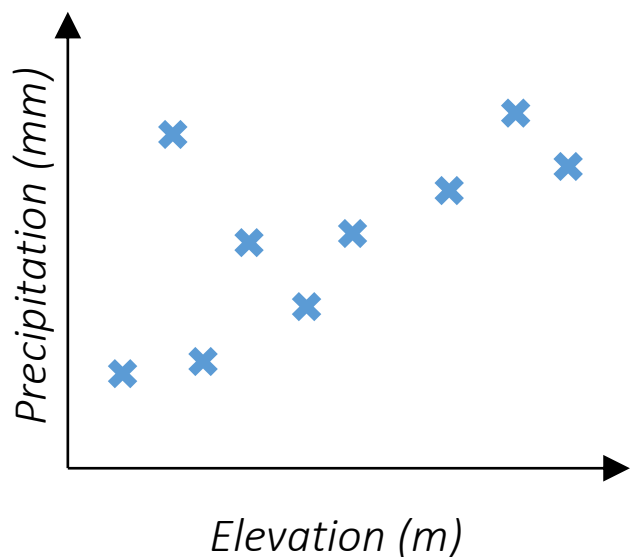
Example research question:

How does the amount of precipitation reaching the ground compare between woodland and grassland?

Theoretical background and hypothesis

Vegetation reduces the amount of water reaching the ground via the process of interception. Therefore the hypothesis for this question is that more precipitation would reach the ground in areas without tree cover.

Measurement technique

Measure precipitation over a month by using rain gauges made from large plastic bottles.

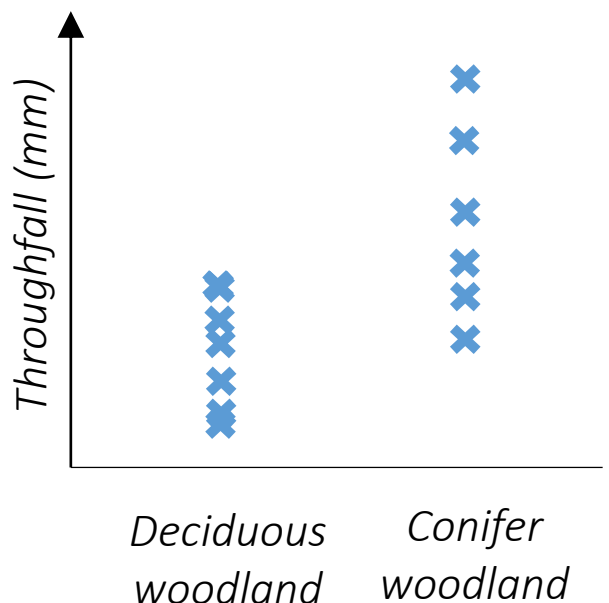## Sampling strategy

For this *comparison question* you would take measurements of precipitation at a selection of points within woodland, and measurements of precipitation at an equivalent selection of points within grassland.
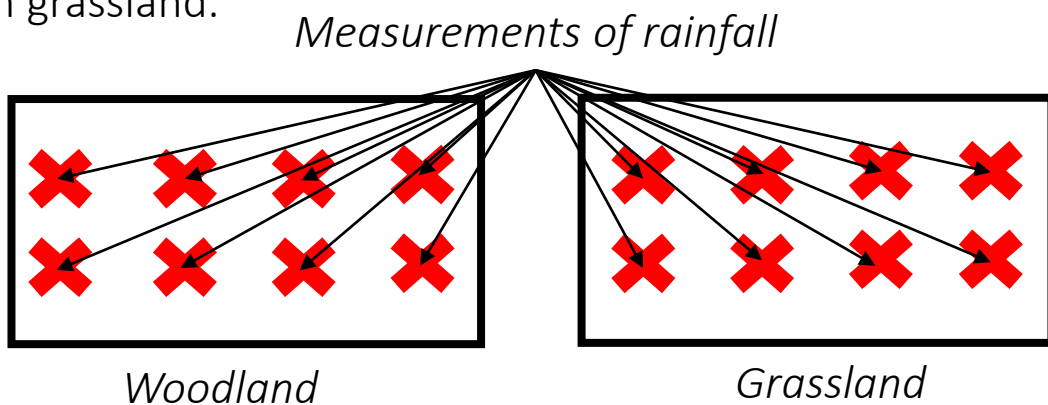
Measurements of rainfall

Woodland   *Grassland*

Data analysis

In order to answer this *comparison question* you would describe how precipitation reaching the ground compares between woodland and grassland by drawing an individual plot like the example on the right. You would also perform a Mann-Whitney U Test.

Precipitation (mm)

Grassland   Woodland

Example research question:

How does the amount of throughfall compare between deciduous and conifer woodland?

UWE Bristol | University of the West of England

Theoretical background and hypothesis

Different types of vegetation have different interception rates. Deciduous trees have large leaves than conifer trees so the hypothesis for this question is that more precipitation will reach the ground in conifer woodland than deciduous woodland.

Measurement technique

Measure throughfall over a month by using rain gauges made from large plastic bottles.

Sampling strategy

For this *comparison question* you should take measurements of throughfall at a selection of points within deciduous woodland, and measurements of precipitation at an equivalent selection of points within conifer woodland.

Measurements of throughfall

Deciduous Woodland   *Conifer Woodland*
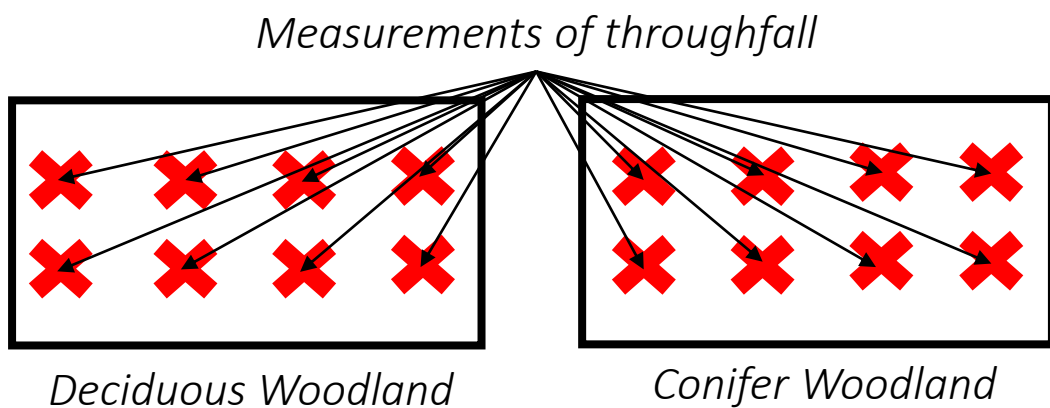
Data analysis

In order to answer this *comparison question* you should describe how throughfall compares between deciduous and conifer woodland by drawing an individual plot like the example on the right. You should also perform a Mann-Whitney U Test.

Throughfall (mm)

Deciduous woodland   *Conifer woodland*

Example RQ topics   Main menu

How do evaporation rates when temperature is low compare with evaporation rates when temperatures is high?

UWE Bristol | University of the West of England

Theoretical background and hypothesis

With higher temperatures water molecules have more energy and are therefore more likely to evaporate. Therefore the hypothesis for this question is that water will evaporate more quickly at higher temperatures.
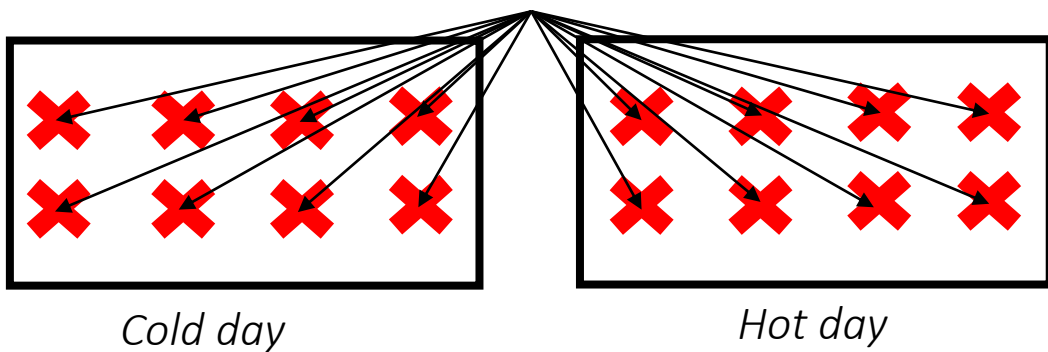
Measurement technique

Measure evaporation rate by measuring the volume of water lost from a bowl of water over the course of a day.
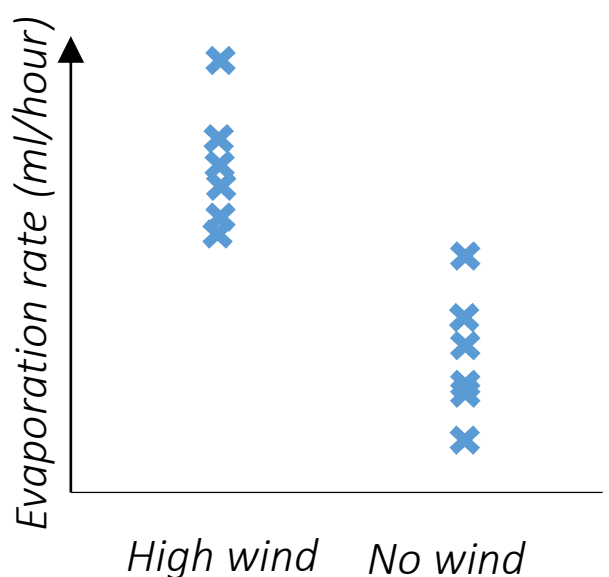
Sampling strategy

For this *comparison question* you should take measurements of evaporation rate on a cold day, and equivalent measurements of evaporation rate on a hot day.

Measurements of evaporation rate

Cold day   *Hot day*

Data analysis

In order to answer this *comparison question* you should describe how evaporation rate compares between cold and hot days by drawing an individual plot like the example on the right. You should also perform a [Mann-Whitney U Test](#).

Evaporation rate (ml/hour)

Cold day   *Hot day*

Example research question:

How do evaporation rates when wind speeds are low compare with evaporations rates when wind speeds are high?

UWE Bristol | University of the West of England
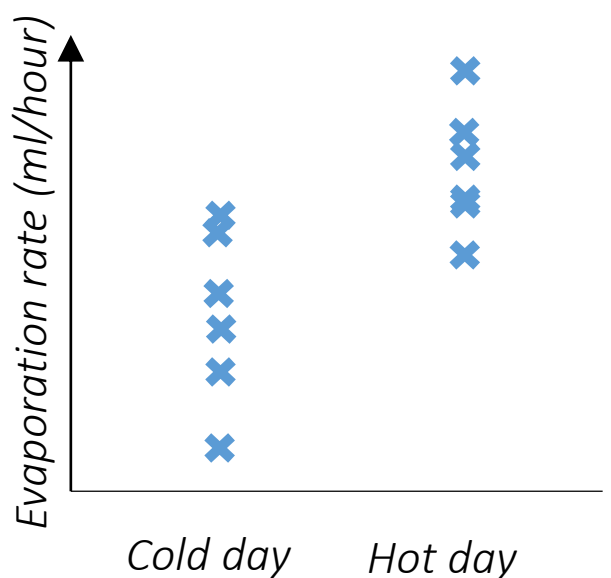
Theoretical background and hypothesis

With higher windspeed evaporating water molecules are removed from the surface of the water more rapidly. Therefore the hypothesis for this question is that water will evaporate more quickly where there are higher windspeeds.

Measurement technique

Measure evaporation rate by measuring the volume of water lost from a bowl of water over the course of a week.

Sampling strategy

For this *comparison question* you should take measurements of evaporation rate under high wind conditions (e.g. next to a fan), and equivalent measurements of evaporation rate with no wind.

Measurements of evaporation rate
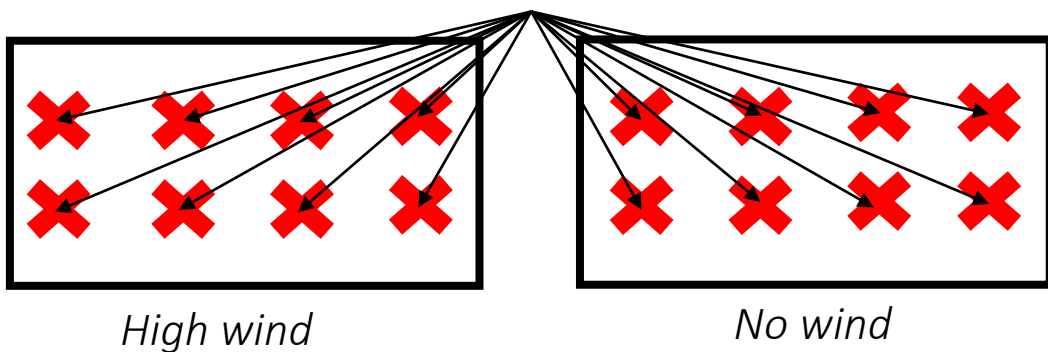
High wind   *No wind*

Data analysis

In order to answer this *comparison question* you should describe how evaporation rate compares between high and low wind conditions by drawing an individual plot like the example on the right. You should also perform a Mann-Whitney U Test.

Evaporation rate (ml/hour)

High wind   *No wind*

Example research question:

How do evaporation rates when humidity is low compare with evaporation rates when humidity is high?

UWE Bristol | University of the West of England

Theoretical background and hypothesis

When there are more water particles already in the air and so it is harder for additional water particles to be evaporated. Therefore the hypothesis for this question is that water will evaporate more quickly where there is less humidity.

Measurement technique

Measure evaporation rate by measuring the volume of water lost from a bowl of water over the course of a week.

Sampling strategy

For this *comparison question* you should take measurements of evaporation rate under high humidity (e.g. within a sealed box), and equivalent measurements of evaporation rate with low humidity.
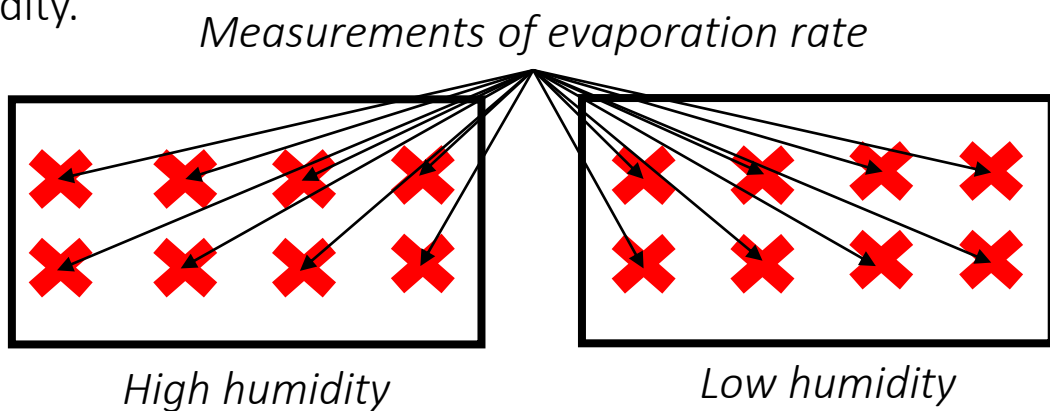
Measurements of evaporation rate

High humidity   *Low humidity*

Data analysis

In order to answer this *comparison question* you should describe how evaporation rate compares between high and low humidity by drawing an individual plot like the example on the right. You should also perform a [Mann-Whitney U Test](#).

Evaporation rate (ml/hour)

High humidity   *Low humidity*
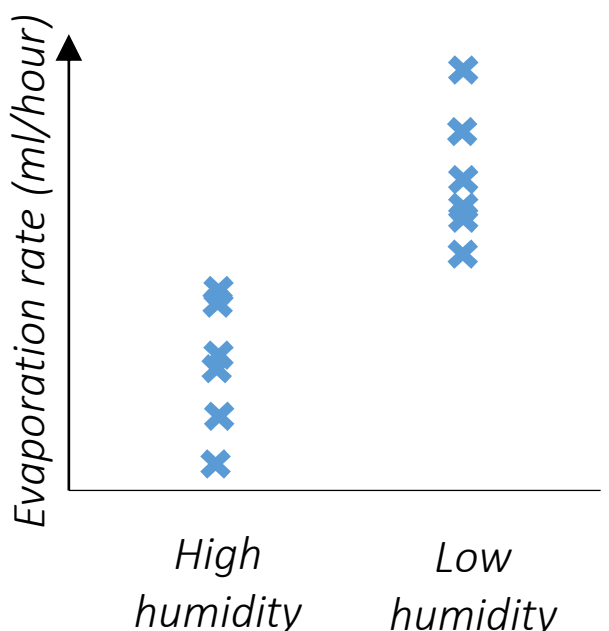
Example research question:

How do infiltration rates compare between natural woodland and grazed grassland?

Theoretical background and hypothesis

Soil in grazed grassland will be more compacted than that in natural woodland. Therefore the hypothesis for this question is that infiltration rates will be higher in natural woodland.

Measurement technique

Measure infiltration rate by measuring the time taken for a known volume of water to infiltrate down an infiltration tube made from plastic pipe.

Sampling strategy

For this *comparison question* you should take measurements of infiltration rate at a selection of points within natural woodland, and at an equivalent selection of points within grazed grassland..

Measurements of infiltration rate
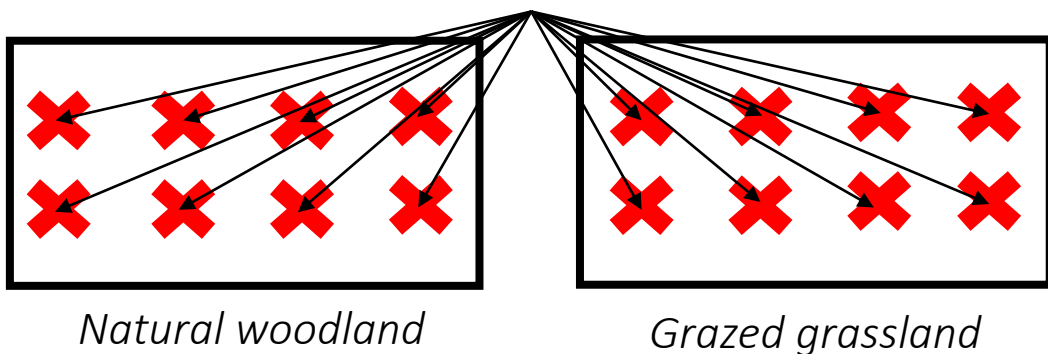
Natural woodland   *Grazed grassland*

Data analysis

In order to answer this *comparison question* you should describe how infiltration rate compares between natural woodland and grazed grassland by drawing an individual plot like the example on the right. You should also perform a [Mann-Whitney U Test](#).

Infiltration rate (ml/hour)

Natural woodland   *Grazed grassland*

[Example RQ topics](#)   [Main menu](#)
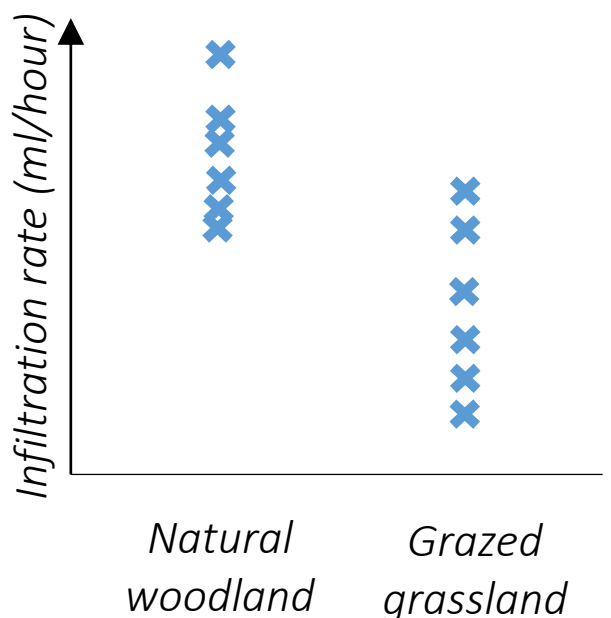
Theoretical background and hypothesis

Within saturated soil the air spaces between soil particles are already full of water. Therefore the hypothesis for this question is that infiltration rates will be higher in unsaturated soil.
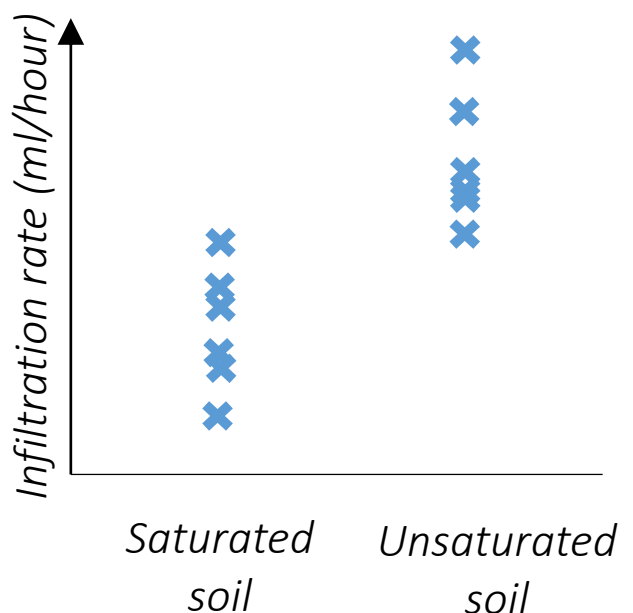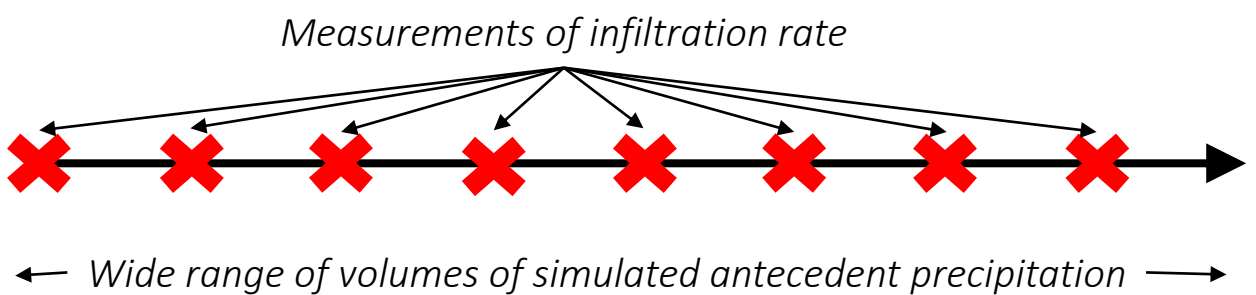
Measurement technique

Measure infiltration rate by measuring the time taken for a known volume of water to infiltrate down an infiltration ring made from plastic pipe..

Sampling strategy

For this *comparison question* you should take measurements of infiltration rate within soil that has been pre-soaked with water, and equivalent measurements of infiltration rate within dry soil..

Measurements of infiltration rate
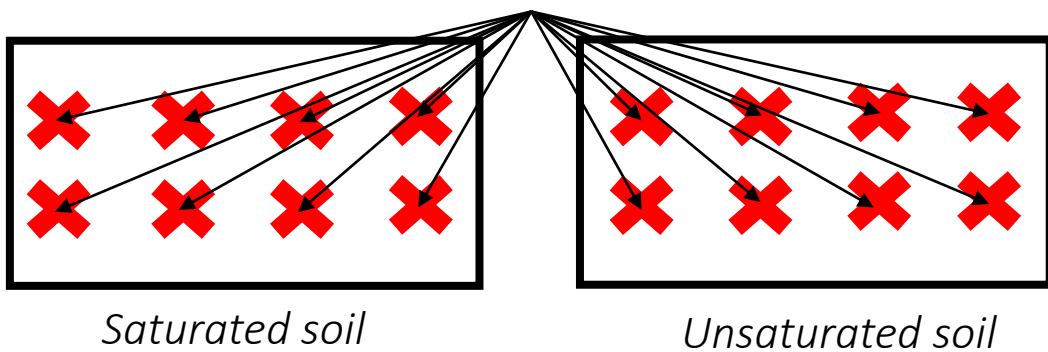
Saturated soil   *Unsaturated soil*

Data analysis

In order to answer this *comparison question* you should describe how infiltration rate compares between saturated and unsaturated soil by drawing an individual plot like the example on the right. You should also perform a Mann-Whitney U Test.

Example research question:

How do infiltration rates relate to the volume of antecedent precipitation?

Theoretical background and hypothesis

Within saturated soil the air spaces between soil particles are already full of water. Therefore the hypothesis for this question is that infiltration rates will decrease as antecedent precipitation increases.

Measurement technique

- Measure infiltration rate by measuring the time taken for a known volume of water to infiltrate down an infiltration ring made from plastic pipe.
- Simulate variation in antecedent precipitation by pouring different volumes of water onto different patches of ground.

Sampling strategy

For this *relationship question* you would use a systematic sample that takes measurements of infiltration rate from patches of ground that have had a wide range of equally spread volumes of simulated antecedent precipitation.

Measurements of infiltration rate

← *Wide range of volumes of simulated antecedent precipitation* →

Data analysis

In order to answer this *relationship question* you would describe how infiltration relates to simulated antecedent precipitation by drawing a scatter plot like the example on the right. You would also perform a Spearmans Rank Test.

Infiltration rate (mm/hour)

Antecedent precipitation (mm)

Example RQ topics   Main menu
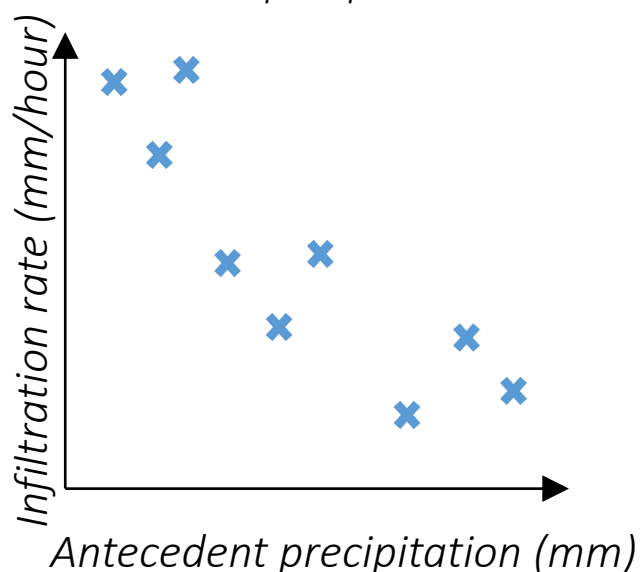
Example research question:

How do infiltration rates compare between sand-rich soil and clay-rich soil?

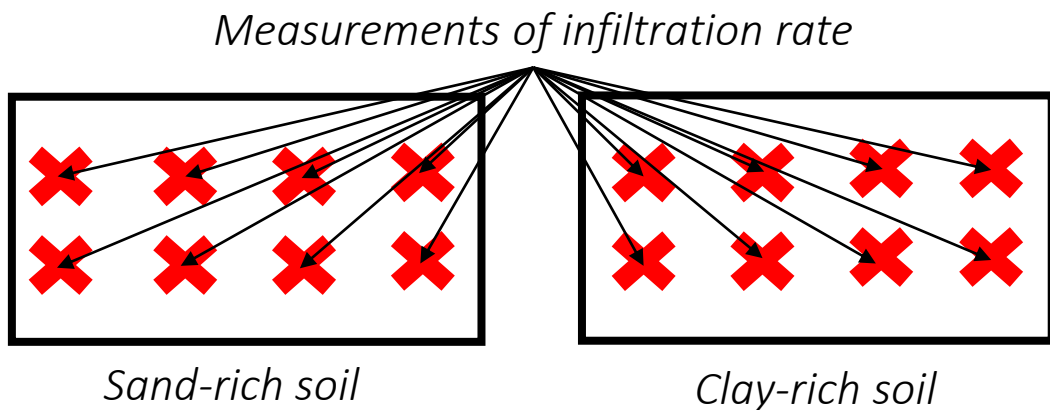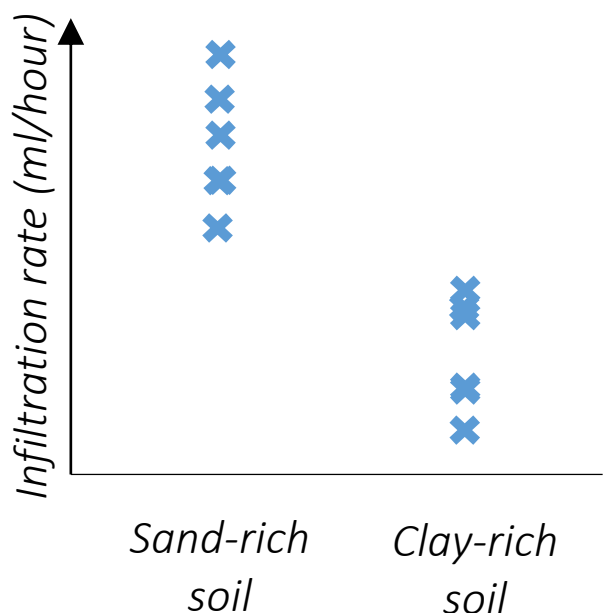## Theoretical background and hypothesis

Sandy soil is more permeable than clay-rich soil. Therefore the hypothesis for this question is that infiltration rates will be higher in sand-rich soil.

Measurement technique

Measure infiltration rate by measuring the time taken for a known volume of water to infiltrate down an infiltration ring made from plastic pipe..

Sampling strategy

For this *comparison question* you should take measurements of infiltration rate at a selection of points with sand-rich soil and at an equivalent selection of points with clay-rich soil ..

Measurements of infiltration rate

Sand-rich soil   *Clay-rich soil*

Data analysis

In order to answer this *comparison question* you should describe how infiltration rate compares between sand-rich soil and clay-rich soil by drawing an individual plot like the example on the right. You should also perform a Mann-Whitney U Test.

Infiltration rate (ml/hour)

Sand-rich soil   *Clay-rich soil*

Theoretical background and hypothesis

With increasing distance downstream a river drains a larger catchment area. Therefore the hypothesis for this question is that discharge levels will increase as distance downstream increases.

Measurement technique

- Measure discharge by measuring the velocity of the water (with an orange?) and multiplying this by the cross-sectional area of the water (width multiplied by average depth)
- Measure the distance downstream each point is from the source using a map.

Sampling strategy

For this *relationship question* you would use a systematic sample that takes measurements of infiltration rate from points along a river that are equally spaced along a wide range of distances downstream.

Measurements of discharge

✖ ✖ ✖ ✖ ✖ ✖ ✖ ✖

Wide range of distances downstream
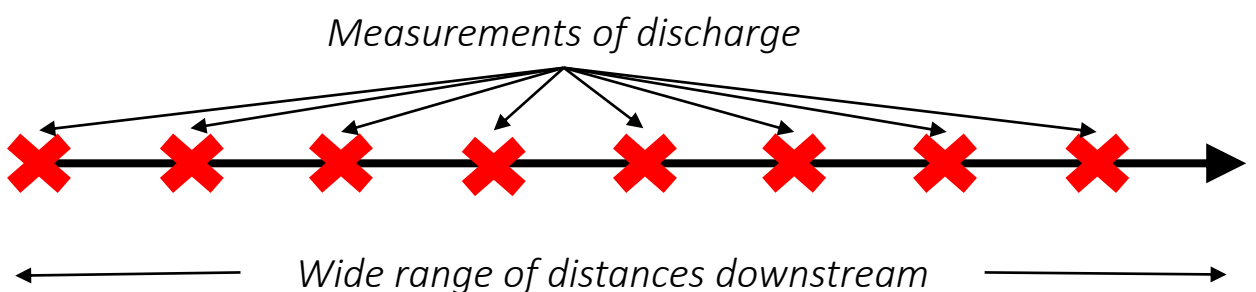
Data analysis

In order to answer this *relationship question* you would describe how discharge relates to distance downstream by drawing a scatter plot like the example on the right. You would also perform a Spearmans Rank Test.

Discharge (m³/s)

Distance downstream (m)
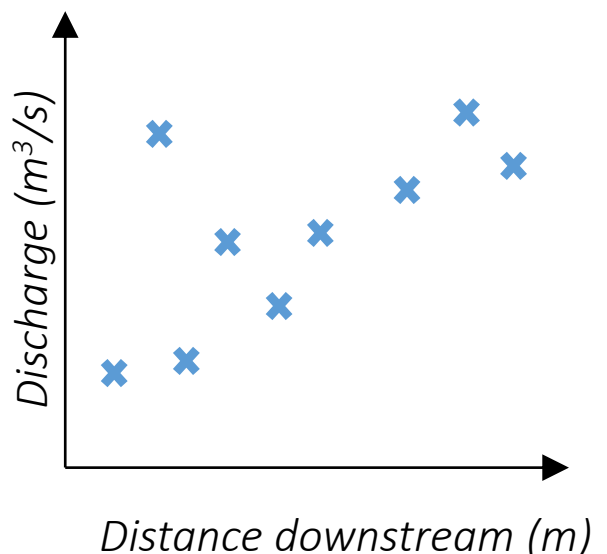
Example research question:

How does the volume of wood compare between a natural deciduous woodland and a managed conifer plantation?

Theoretical background and hypothesis

Managed conifer plantations are specially managed to maximise the amount of wood grown. Therefore the hypothesis for this question is that vegetation biomass will be higher in managed conifer plantation.

Measurement technique

Measure the volume of wood within a 5x5m area of woodland by measuring the volume of wood of each tree (height x pi x radius^2) within the area and adding them together.

Sampling strategy

For this *comparison question* you should take measurements of wood volume from a selection of 5x5m areas of natural deciduous woodland and an equivalent selection of 5x5m areas of managed confider plantation.

Measurements of wood volume
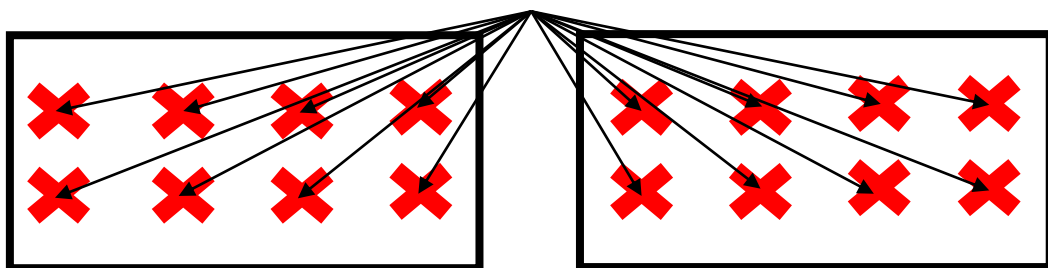
Natural deciduous woodland   *Managed conifer plantation*

Data analysis

In order to answer this *comparison question* you should describe how wood volume compares between the two woodland types by drawing an individual plot like the example on the right. You should also perform a [Mann-Whitney U Test](#).

[Example RQ topics](#)

[Main menu](#)
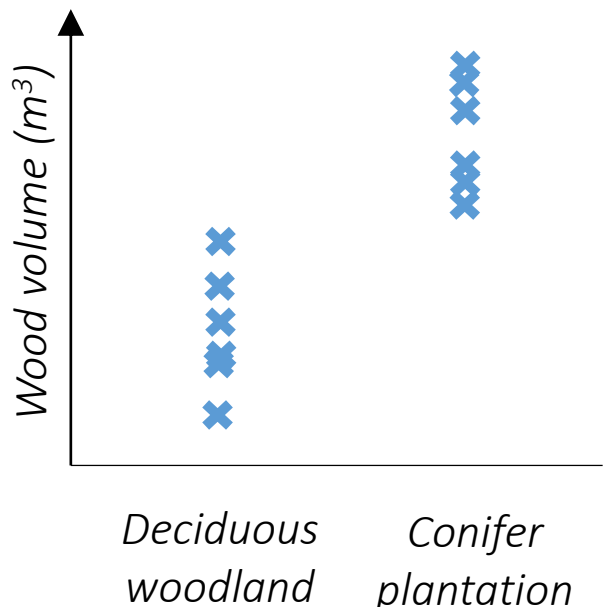
Example research questions:
Hot desert systems

How does aeolian transport rate on a windy day compare with aeolian transport rate on a calm day?

How does aeolian transport rate relate to grain size?

How does aeolian transport rate of coarse sand compare with aeolian transport rate of fine sand?

How does aeolian transport rate compare between vegetated and unvegetated parts of a sand dune?

Example research question:
How does aeolian transport rate on a windy day compare with aeolian transport rate on a calm day?

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Theoretical background and hypothesis

With increasing windspeed there are greater lift and drag forces to transport grains of sand. Therefore the hypothesis for this question is that aeolian transport rate will be higher on a windy day.

Measurement technique

Measure aeolian transport rate by timing how many seconds it takes to for a known mass of fine sand to be blown off a plastic sheet.

Sampling strategy

For this *comparison question* you should take measurements of aeolian transport rate on a windy day and equivalent **measurements of aeolian transport rate on a calm day**.

Measurements of aeolian transport rate
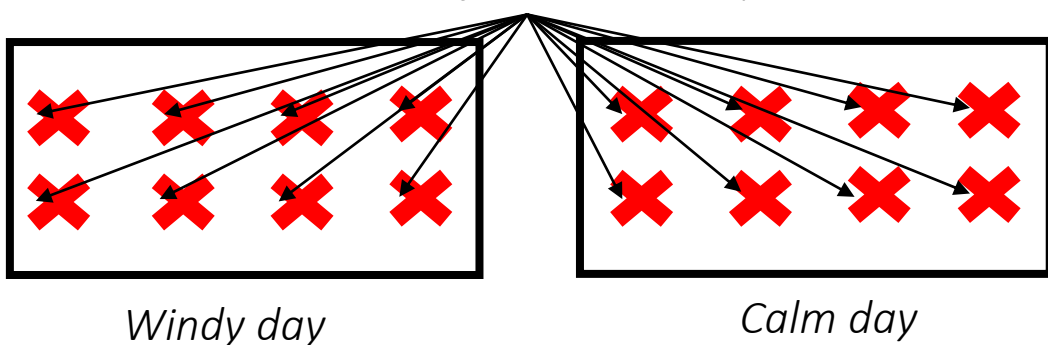
Windy day   *Calm day*

Data analysis

In order to answer this *comparison question* you should describe how aeolian transport rate compares between a windy day and a calm day by drawing an individual plot like the example on the right. You should also perform a Mann-Whitney U Test.

Transport rate (g/s)

Windy day   *Calm day*

Example research question:
How does aeolian transport rate relate to grain size?

UWE Bristol | University of the West of England
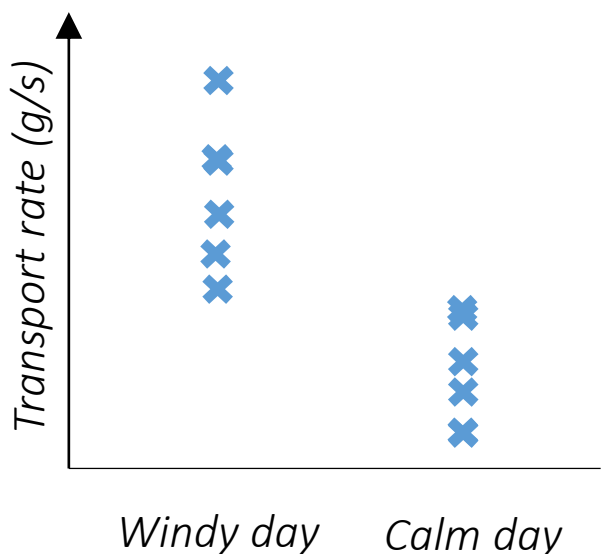
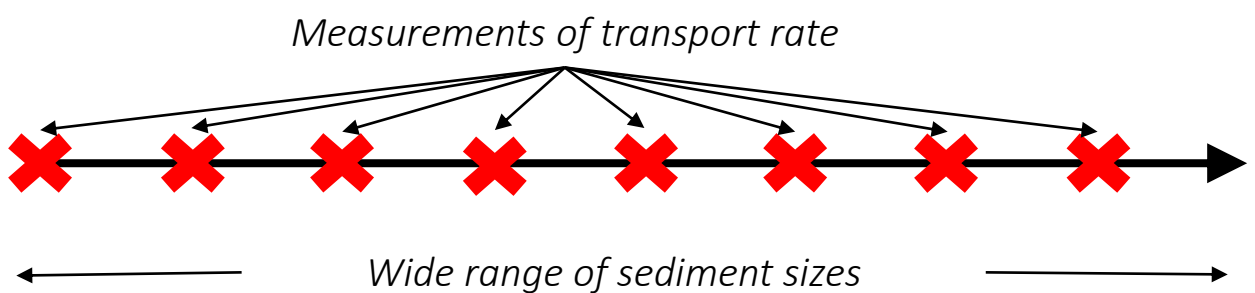## Theoretical background and hypothesis

With increasing grainsize more force is required to move individual grains of sediment. Therefore the hypothesis for this question is that aeolian transport rate will decrease as grainsize increases.

Measurement technique

- Measure aeolian transport rate by timing how many seconds it takes to for a known mass of sediment to be blown off a plastic sheet.
- Measure grainsize using a set of sieves or a grain size card

Sampling strategy

For this *relationship question* you would take measurements of aeolian transport rate using a wide range of sediment sizes and a constant windspeed.

Measurements of transport rate

Wide range of sediment sizes

Data analysis

In order to answer this *relationship question* you would describe how transport rate relates to sediment size by drawing a scatter plot like the example on the right. You would also perform a Spearmans Rank Test.

Transport rate (g/s)
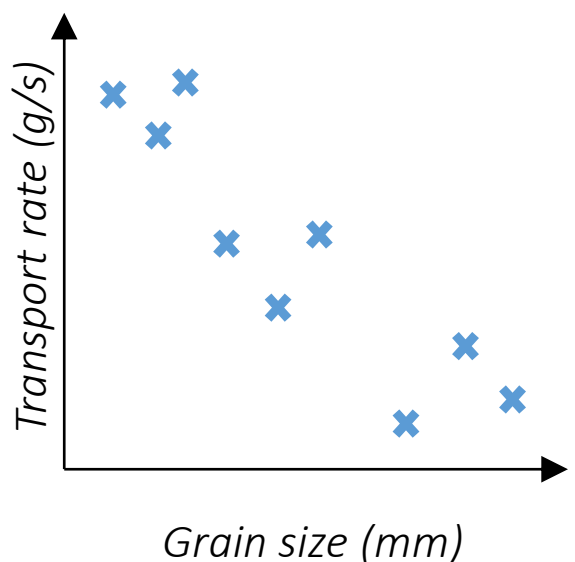
Grain size (mm)

Example research question:

How does aeolian transport rate of coarse sand compare with aeolian transport rate of fine sand?

Theoretical background and hypothesis

With increasing grainsize more force is required to move individual grains of sediment. Therefore the hypothesis for this question is that aeolian transport rate will be higher for the finer sand.
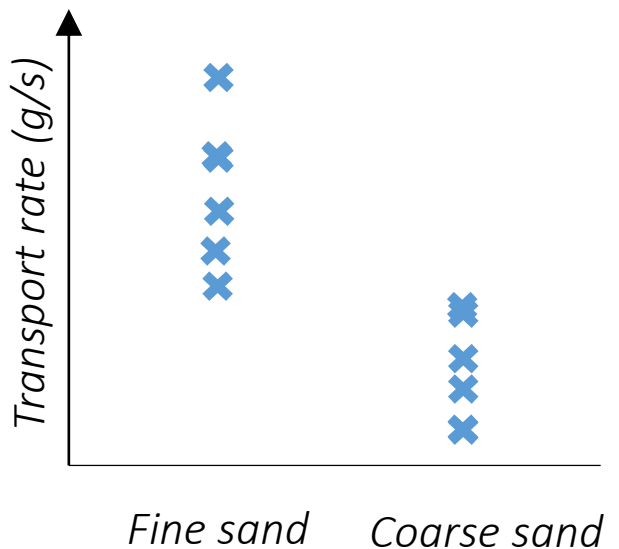
Measurement technique

Measure aeolian transport rate by timing how many seconds it takes to for a known mass of fine sand to be blown off a plastic sheet.

Sampling strategy

For this *comparison question* you should take measurements of aeolian transport rate using fine sand and equivalent measurements of aeolian transport rate using coarse sand.

Measurements of aeolian transport rate
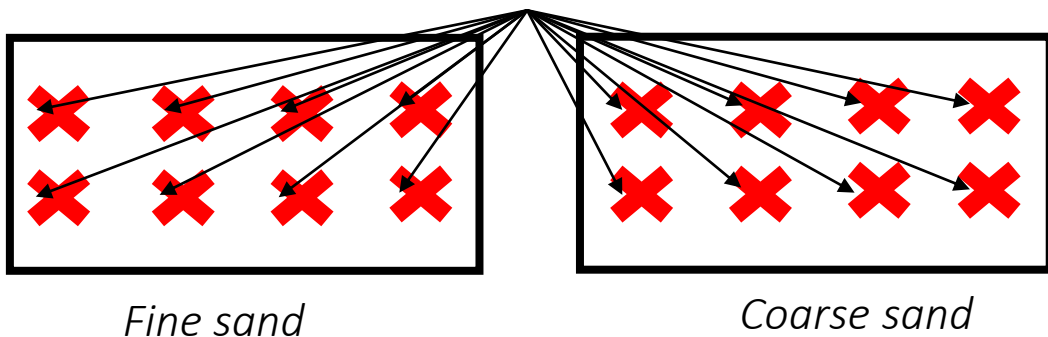
Fine sand

Coarse sand

Data analysis

In order to answer this *comparison question* you should describe how aeolian transport rate compares between find sand and coarse sand by drawing an individual plot like the example on the right. You should also perform a Mann-Whitney U Test.

Transport rate (g/s)

Fine sand

Coarse sand

Example research question:

How does aeolian transport rate compare between vegetated and unvegetated parts of a sand dune?

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Theoretical background and hypothesis

Vegetation reduces the windspeed at the ground level and also holds sediment together. Therefore the hypothesis for this question is that aeolian transport rate will be higher for the unvegetated sand.

Measurement technique

Measure aeolian transport rate by measuring the mass of sand that is blown onto a small astroturf mat placed on the surface of a dune over a month.

Sampling strategy

For this *comparison question* you should take measurements of aeolian transport rate on vegetated sand and equivalent **measurements of aeolian transport rate** on unvegetated sand.
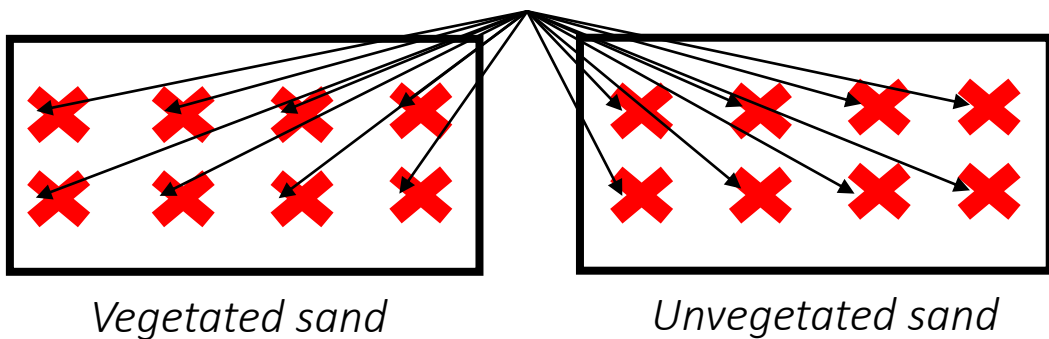
Measurements of aeolian transport rate

Vegetated sand   *Unvegetated sand*

Data analysis

In order to answer this *comparison question* you should describe how aeolian transport rate compares between vegetated and unvegetated sand by drawing an individual plot like the example on the right. You should also perform a [Mann-Whitney U Test](#).

Transport rate (g/month)

Vegetated sand   *Unvegetated sand*
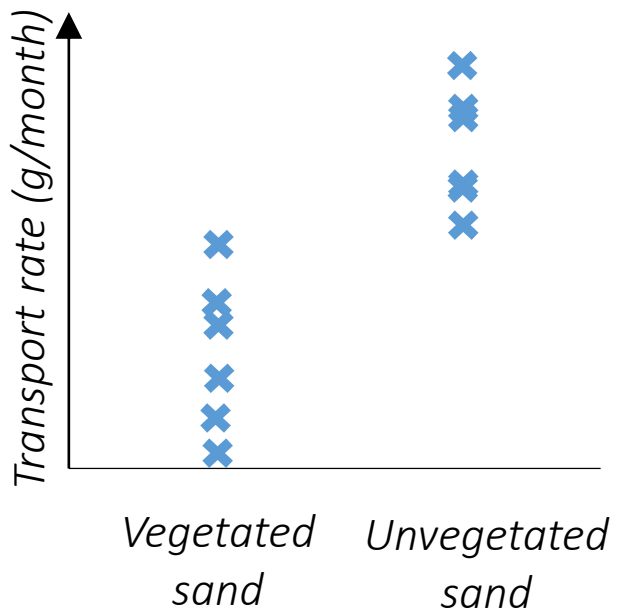
Example research questions:
Coastal systems

How does wave height compare between headlands and bays?

How do percolation rates compare between beaches with large grain sizes and beaches with small grain sizes?

How do slopes compare between beaches with coarse sediment and beaches with fine sediment?

How do slopes of beaches compare between after a period of calm weather and after a period of stormy weather?

How does pebble roundness relate to distance along a beach where longshore drift is assumed to occur?

How does pebble size relate to distance along a beach where longshore drift is assumed to occur?

How does beach height relate to distance along a beach where longshore drift is assumed to occur?

How does cliff angle compare between cliffs where rock layers dip inland and cliffs where rock layers dip seawards?

How does cliff angle compare between locations with beaches and locations without beaches?

Example research question:
How does wave height compare between headlands and bays?

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Theoretical background and hypothesis

Waves are concentrated around headlands due to refraction. Therefore the hypothesis for this question is that wave height will be higher for headlands.

Measurement technique

Measure wave height on a relatively calm day by fixing a large pole with height markers vertically into the sand and visually reading off the difference between the height of the wave crest and wave trough.

Sampling strategy

For this *comparison question* you should take measurements of wave height from a headland and equivalent measurements from a bay.

Measurements of wave height
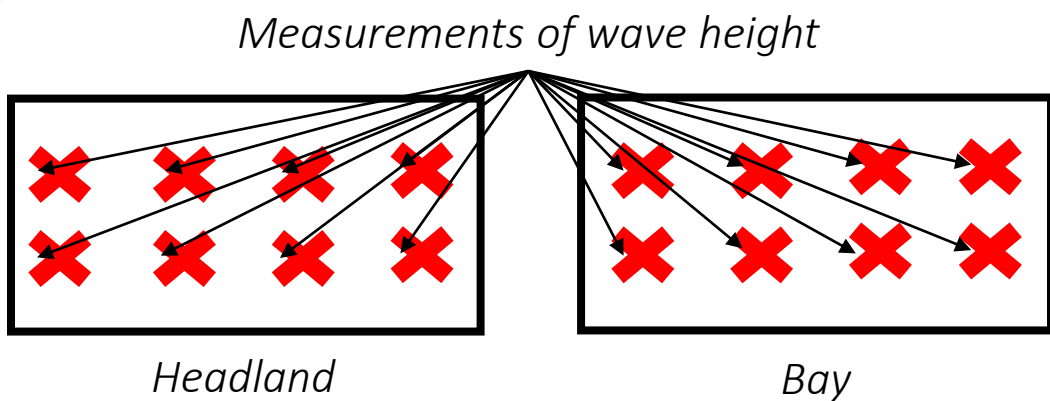
Headland   *Bay*

Data analysis

In order to answer this *comparison question* you should describe how wave height compares between a headland and a bay by drawing an individual plot like the example on the right. You should also perform a Mann-Whitney U Test.
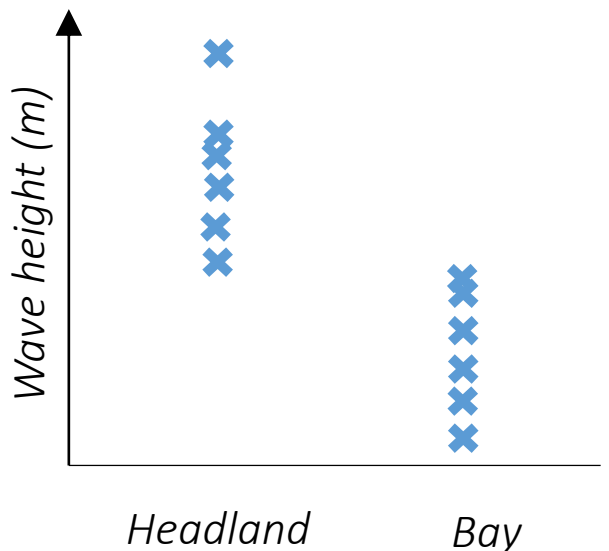
Example research question:

How do percolation rates compare between beaches with coarse sediment and beaches with fine sediment?

Theoretical background and hypothesis

Coarser beach sediments have more spaces for water to drain between. Therefore the hypothesis for this question is that percolation rates would be higher for beaches with larger grain sizes.

Measurement technique

Measure percolation rate by timing how long it takes a known volume of water to be poured through an infiltration tube that is inserted into the beach sediment.

Sampling strategy

For this *comparison question* you should take measurements of percolation rate from beaches with coarse sediment (e.g. pebbles) and equivalent measurements from beaches with fine sediment (e.g. sand).

Measurements of percolation rate

Coarse sediment   *Fine sediment*
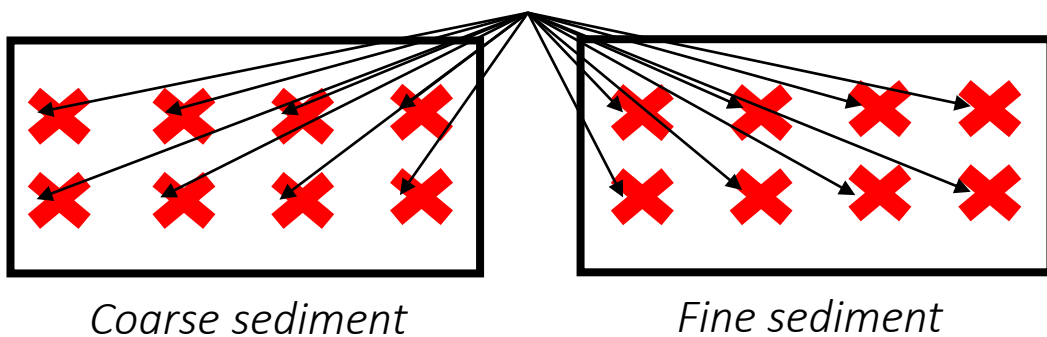
Data analysis

In order to answer this *comparison question* you should describe how percolation rate compares between coarse sediment and fine sediment by drawing an individual plot like the example on the right. You should also perform a Mann-Whitney U Test.

Percolation rate (ml/s)

Coarse sediment   *Fine sediment*

Example RQ topics   Main menu
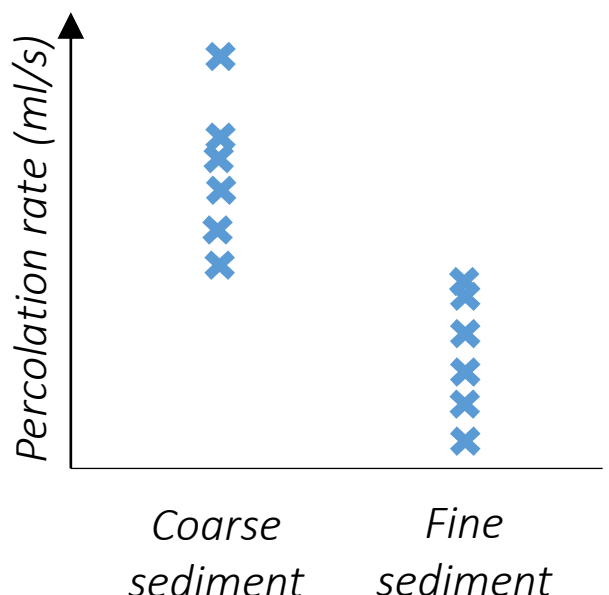
Example research question:
How does slope compare between beaches with large grain size and beaches with small grain sizes?

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Theoretical background and hypothesis

Beaches with larger sediment sizes have higher percolation rates and therefore weaker backwashes compared to their swashes. Therefore the hypothesis for this question is that beach slopes would be higher for beaches with larger grain sizes.
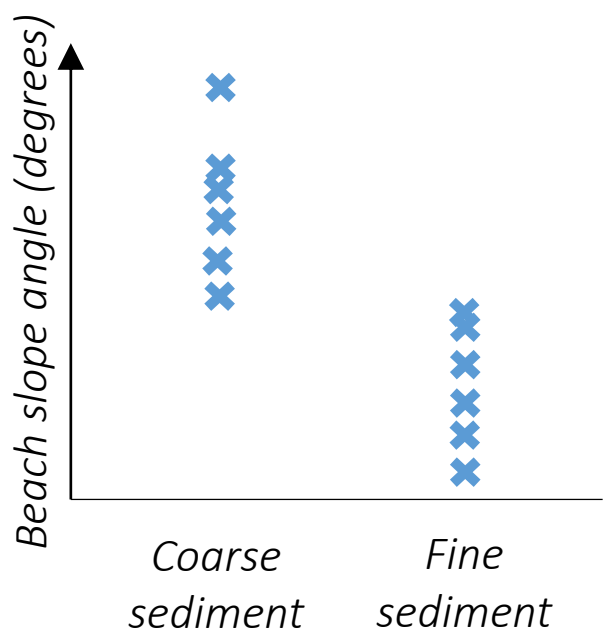
Measurement technique

Measure beach slope angle by fixing one ranging pole vertically at the high tide mark and one just up from the sea at low tide. Use a clinometer to measure the angle between equivalent points on the two ranging poles.

Sampling strategy

For this *comparison question* you should take measurements of beach slope angle from beaches with coarse sediment (e.g. pebble) and equivalent measurements from beaches with fine sediment (e.g. sand).

Measurements of beach slope angle
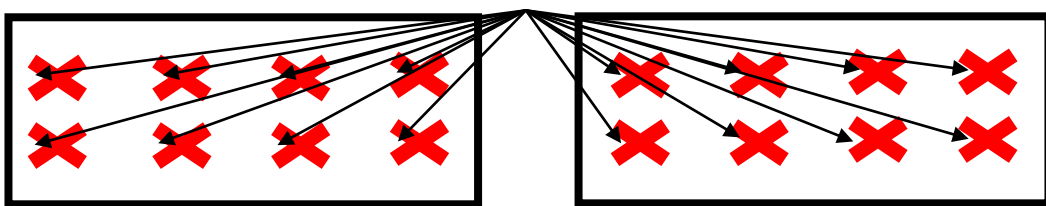
Coarse sediment   *Fine sediment*

Data analysis

In order to answer this *comparison question* you should describe how beach slope angle compares between coarse sediment and fine sediment by drawing an individual plot like the example on the right. You should also perform a Mann-Whitney U Test.

Beach slope angle (degrees)

Coarse sediment   *Fine sediment*

Example RQ topics   Main menu

Example research question:

How do slopes of beaches compare between after a period of calm weather and after a period of stormy weather?

Theoretical background and hypothesis

During stormy weather sediment destructive wave drag sediment down the beach. During calm weather constructive waves push sediment up the beach. Therefore the hypothesis for this question is that beach slopes would be higher following calm weather.

Measurement technique

Measure beach slope angle by fixing one ranging pole vertically at the high tide mark and one just up from the sea at low tide. Use a clinometer to measure the angle between equivalent points on the two ranging poles.

Sampling strategy

For this *comparison question* you should take measurements of beach slope angle from a beach after a period of calm weather and equivalent measurements from the same beach after a period of stormy weather.

Measurements of beach slope angle
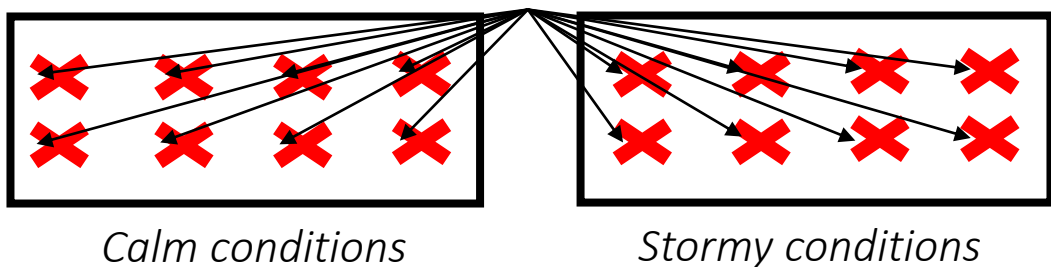
Calm conditions   *Stormy conditions*

Data analysis

In order to answer this *comparison question* you should describe how beach slope angle compares between calm conditions and stormy conditions by drawing an individual plot like the example on the right. You should also perform a Mann-Whitney U Test.

Beach slope angle (degrees)

Calm conditions   *Stormy conditions*
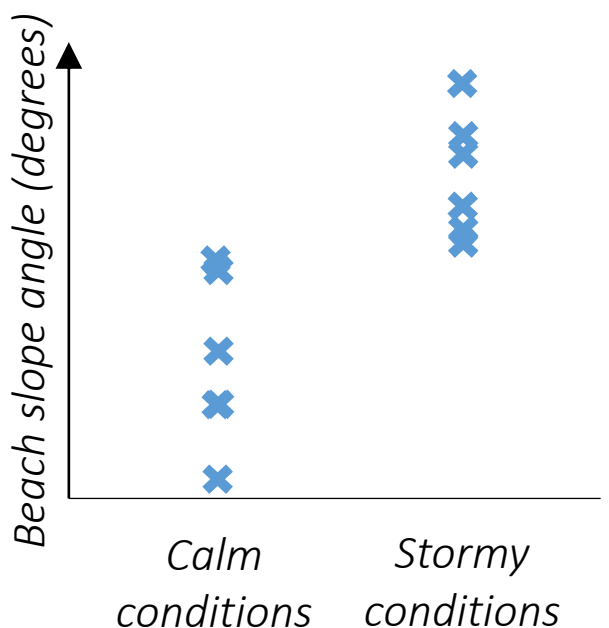
Example research question:

How does pebble roundness relate to distance along a beach where longshore drift is assumed to occur?

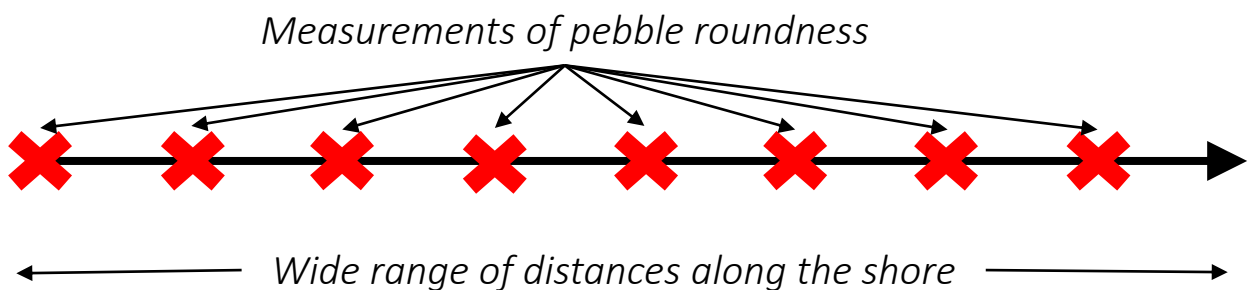## Theoretical background and hypothesis

As sediment is transported along a beach it is eroded by attrition and solution. Therefore the hypothesis for this question is that pebble roundness will increase with distance along the shore in the direction of longshore drift.

Measurement technique

- Measure pebble roundness using a Cailleux Roundness Chart
- Measure distance along the beach using a tape measure

Sampling strategy

For this *relationship question* you would take measurements of pebble roundness at a consistent point on the beach profile (e.g. 3m below the high tide mark) and a **wide** range of distances along the shore in the direction of longshore drift.

Measurements of pebble roundness

Wide range of distances along the shore

Data analysis

In order to answer this *relationship question* you would describe how pebbles roundness relates to distance along the shore in the direction of longshore drift by drawing a scatter plot like the example on the right. You would also perform a Spearmans Rank Test.

Pebble roundness
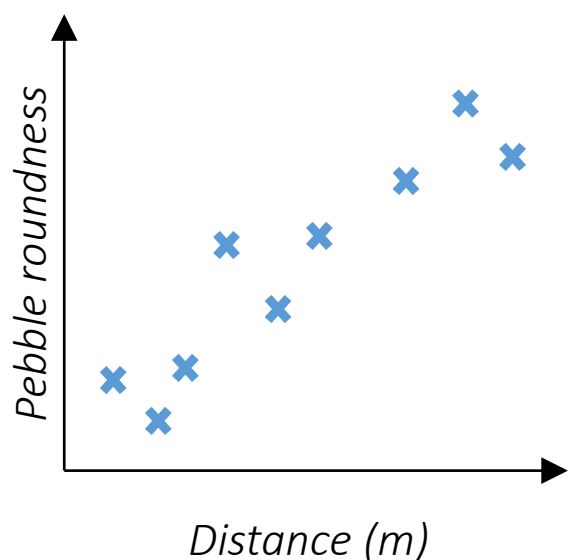
Distance (m)

Example research question:

How does pebble size relate to distance along a beach where longshore drift is assumed to occur?

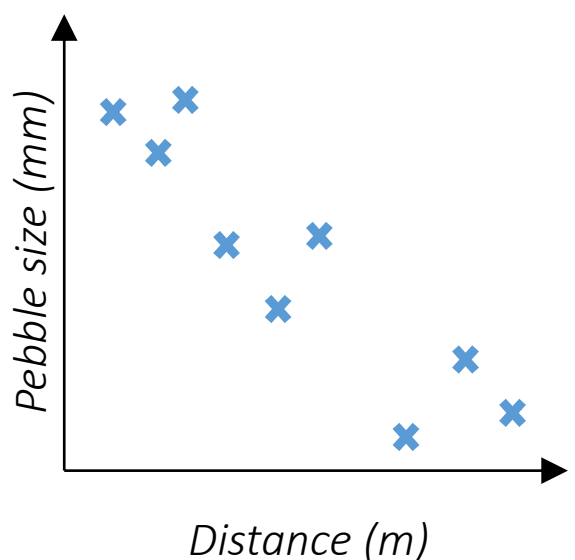## Theoretical background and hypothesis

As sediment is transported along a beach it is eroded by attrition and solution. Therefore the hypothesis for this question is that pebble size will decrease with distance along the shore in the direction of longshore drift.

Measurement technique

- Measure pebble size by using calipers or a ruler to measure the length of the intermediate axis.
- Measure distance along the beach using a tape measure

Sampling strategy

For this *relationship question* you would take measurements of pebble size at a consistent point on the beach profile (e.g. 3m below the high tide mark) and a wide range of distances along the shore in the direction of longshore drift.

Measurements of pebble size

Wide range of distances along the shore
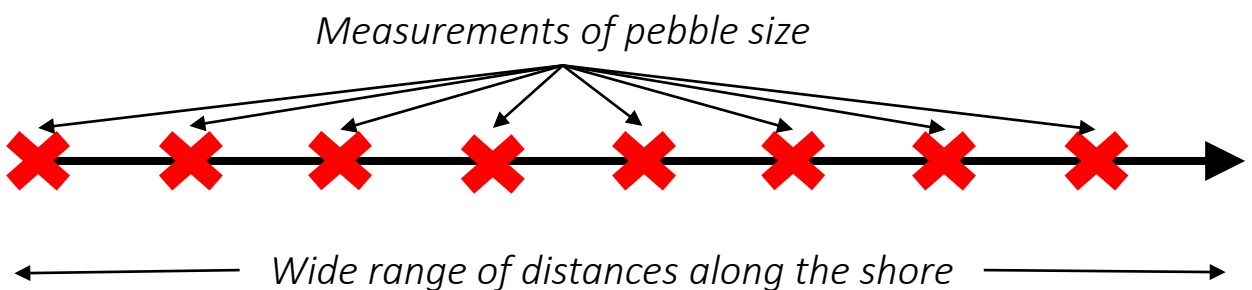
Data analysis

In order to answer this *relationship question* you would describe how pebbles size relates to distance along the shore in the direction of longshore drift by drawing a scatter plot like the example on the right. You would also perform a Spearmans Rank Test.

Pebble size (mm)

Distance (m)

Example RQ topics   Main menu

How does beach height relate to distance along a beach where longshore drift is assumed to occur?

### Theoretical background and hypothesis

Longshore drift moves sediment along the beach. Where sediment accumulates the height of the beach will grow. Therefore the hypothesis for this question is that beach height will increase with distance along the shore in the direction of longshore drift.

Measurement technique

- Measure beach height using beach slope angle, beach profile length, and Pythagoras's theorem: Height = Sin(Angle) x Length
- Measure distance along the beach using a tape measure

Sampling strategy

For this *relationship question* you would take measurements of beach height at a wide range of distances along the shore in the direction of longshore drift.

Measurements of beach height

Wide range of distances along the shore
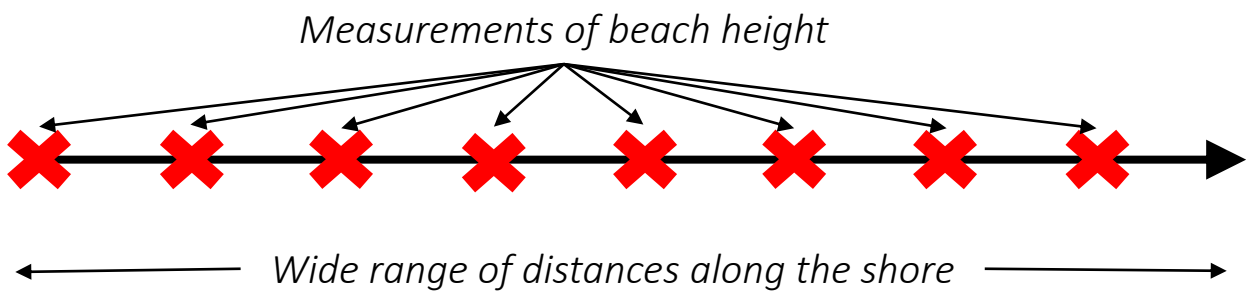
Data analysis

In order to answer this *relationship question* you would describe how beach height relates to distance along the shore in the direction of longshore drift by drawing a scatter plot like the example on the right. You would also perform a Spearmans Rank Test.

Beach height (m)

Distance (m)
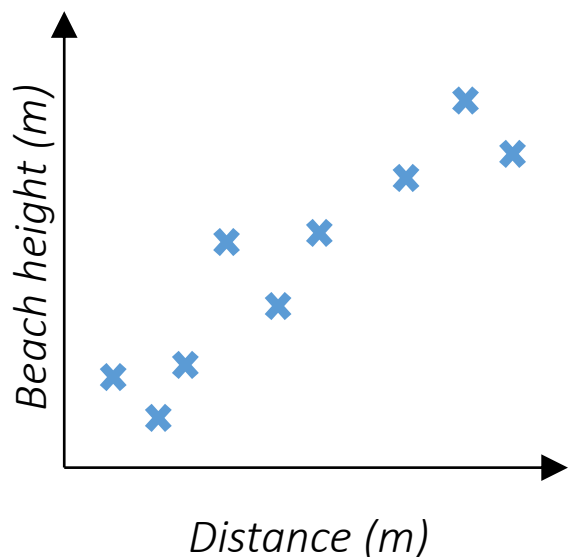
Example research question:

How does cliff angle compare between cliffs where rock layers dip inland and cliffs where rock layers dip seawards?

## Theoretical background and hypothesis

Rock layers that dip landwards tend to be undercut by waves action more than those that dip seawards. Therefore the hypothesis for this question is that cliff angles would be higher where rock layers dip landwards.

Measurement technique

Measure cliff angle by standing where you can see the side profile of the cliff and looking through a protractor.

Sampling strategy

For this *comparison question* you should take measurements of cliff angle from a selection of cliffs where rock layers dip landwards and measurements from an equivalent selection of cliffs where rock layers dip seawards
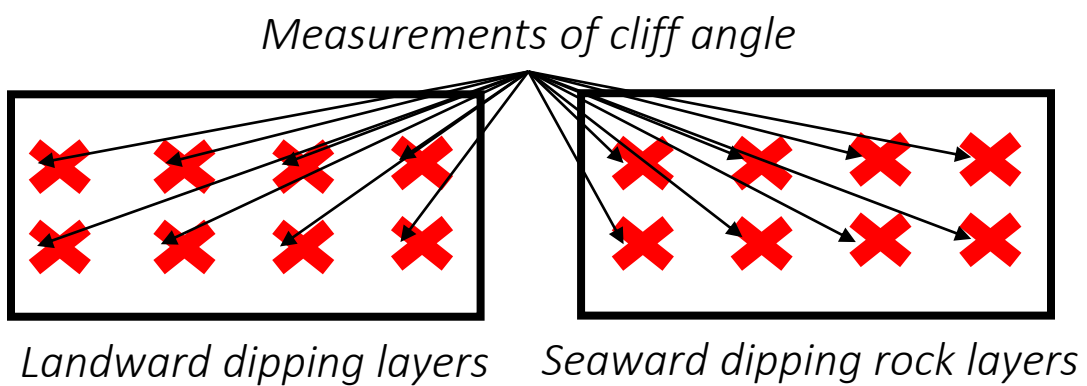
Measurements of cliff angle

Landward dipping layers   *Seaward dipping rock layers*

Data analysis

In order to answer this *comparison question* you should describe how cliff angle compares between landward and seaward dipping rocks by drawing an individual plot like the example on the right. You should also perform a [Mann-Whitney U Test](#).

Cliff angle (degrees)

Landward dipping   *Seaward dipping*

[Example RQ topics](#)   [Main menu](#)

Example research question:

How does cliff angle compare between locations with beaches and locations without beaches?

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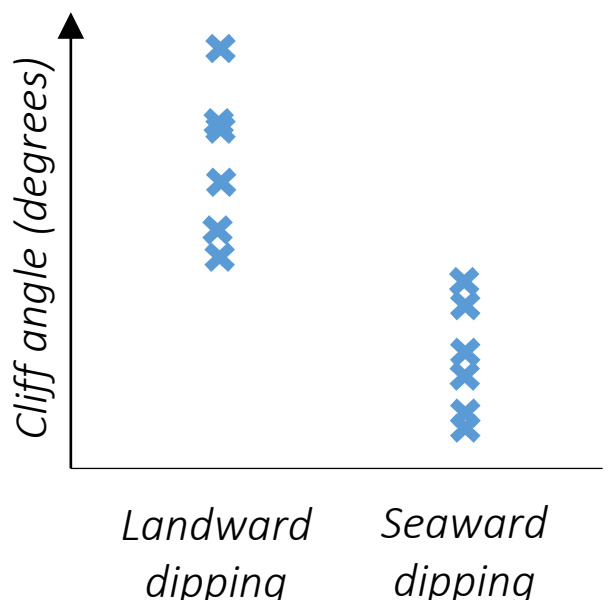
Theoretical background and hypothesis

Beaches encourage waves to break early, reducing the erosion of cliffs. Therefore the hypothesis for this question is that cliff angles would be higher at locations without beaches.

Measurement technique

Measure cliff angle by standing where you can see the side profile of the cliff and looking through a protractor.

Sampling strategy

For this *comparison question* you should take measurements of cliff angle from a selection of cliffs where beaches are present measurements from an equivalent selection of cliffs where beaches are absent.

Measurements of cliff angle
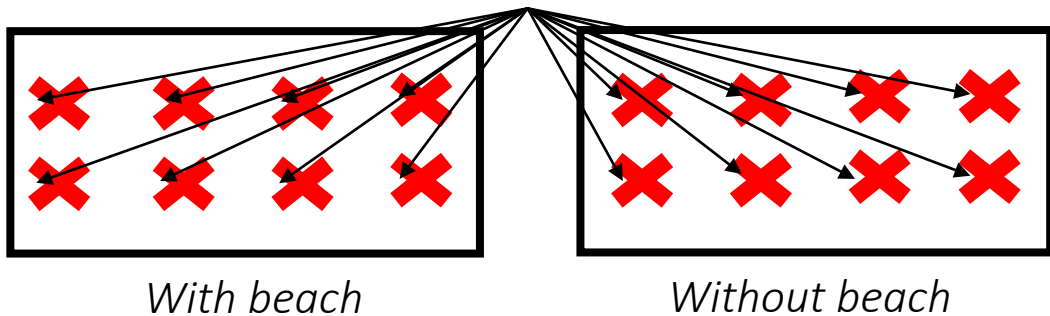
With beach   *Without beach*

Data analysis

In order to answer this *comparison question* you should describe how cliff angle compares between locations with and without beaches by drawing an individual plot like the example on the right. You should also perform a Mann-Whitney U Test.

Cliff angle (degrees)

With beach   *Without beach*
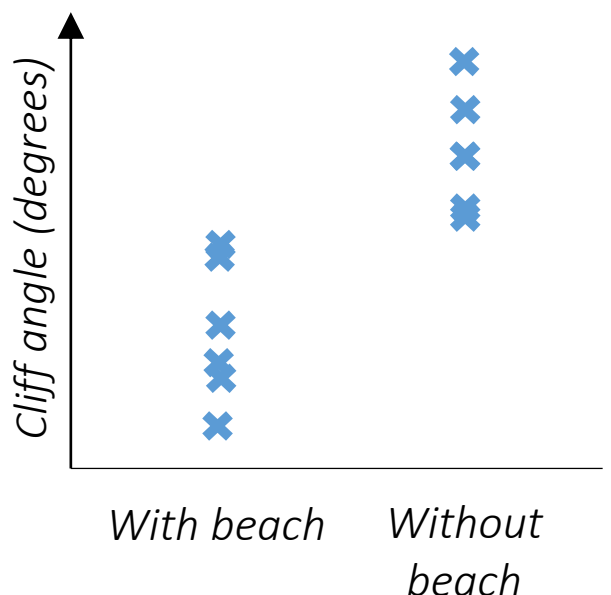
Example research questions:
Glacial systems

How does the sorting of sediment deposits assumed to be glacial compare with sediment deposits assumed to be fluvial?

How do the size of northerly facing corries compare with the size of southerly facing corries?

Example research question:

How does the sorting of sediment deposits assumed to be glacial compare with sediment deposits assumed to be fluvial?

Theoretical background and hypothesis

Glaciers transport sediment of all sizes at similar rates, whilst rivers transport fine sediment more easily than coarse sediment. Therefore the hypothesis for this question is that glacial sediment would be more poorly sorted.

Measurement technique

Measure sediment sorting of a 2mx2m area by randomly sampling 100 grains and dividing the diameter of the 90th biggest grain by the diameter of the 10th biggest grain.

Sampling strategy

For this *comparison question* you should take measurements of sediment sorting from a selection of areas of glacial sediment and measurements of sediment sorting from an equivalent selection of areas of fluvial sediment.

Measurements of sediment sorting

Glacial sediment   *Fluvial sediment*
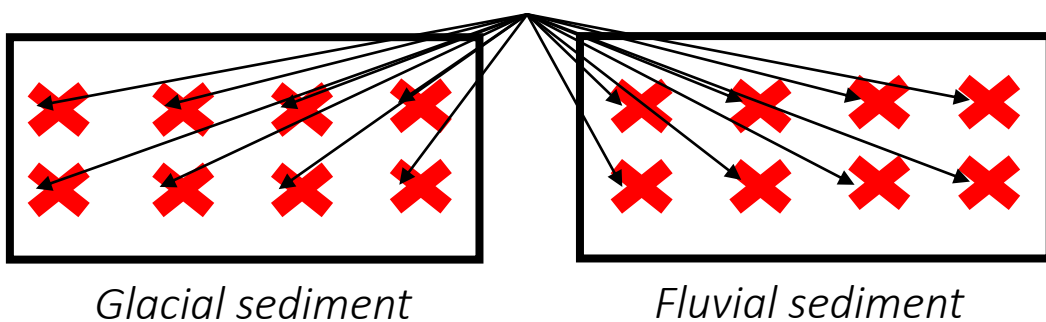
Data analysis

In order to answer this *comparison question* you should describe how sorting compares between glacial and fluvial sediments by drawing an individual plot like the example on the right. You should also perform a Mann-Whitney U Test.
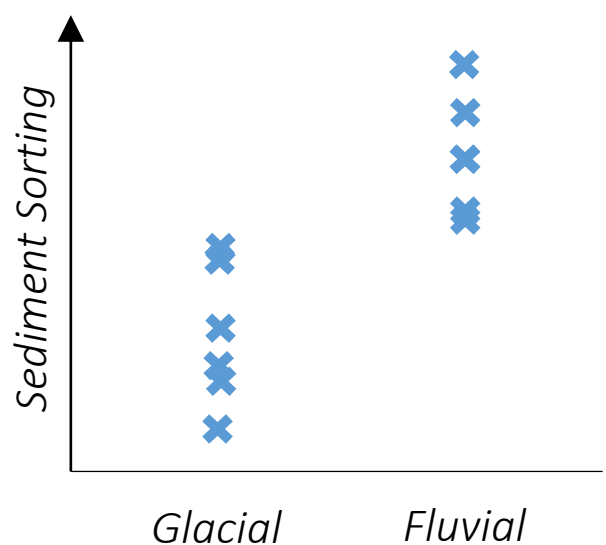
Example research question:

How do the size of northerly facing corries compare with the size of southerly facing corries?

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## Theoretical background and hypothesis

Corries that face north accumulate more ice as they are less exposed to the sun. Therefore, the hypothesis for this question is that northerly facing corries will be larger.

Measurement technique

Get a measurement of the size of the corrie by using a clinometer, a tape measure, and Pythagoras's theorem to measure the height of the corrie's back wall: Corrie back wall height = Tan(Angle) x Distance of angle measurement from base of back wall. Alternatively you could take measurements using maps.

Sampling strategy

For this *comparison question* you should take measurements from a selection of corries facing north and an equivalent selection of corries facing south..
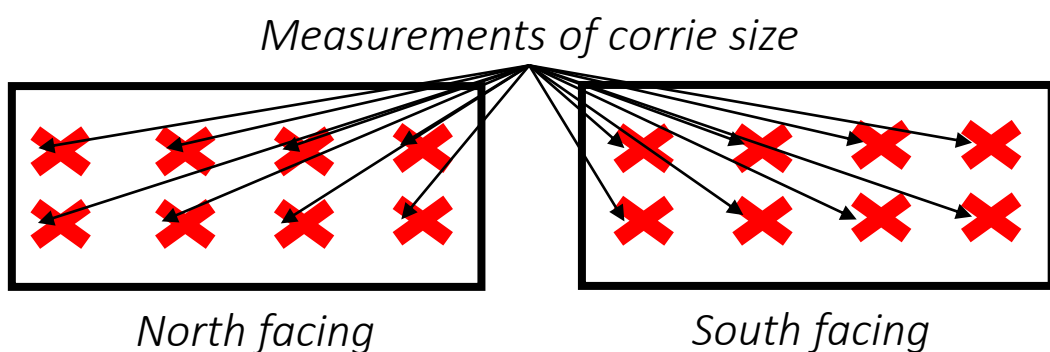
Measurements of corrie size

North facing   *South facing*

Data analysis

In order to answer this *comparison question* you should describe how cliff angle compares between locations with and without beaches by drawing an individual plot like the example on the right. You should also perform a [Mann-Whitney U Test](#).

Corrie size

North facing   *South facing*
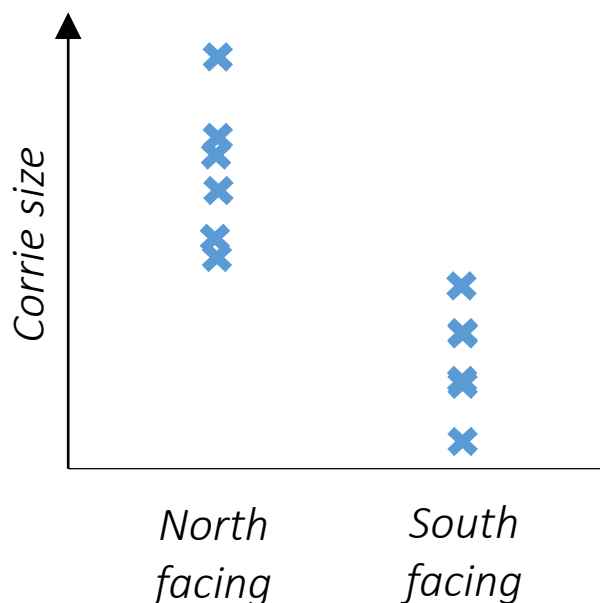
Example research questions:
Hazards

How do perceptions of flood risk compare between people in an area recently flooded and people in an area not recently flooded?

Example research question:

How do perceptions of flood risk compare between people in an area recently flooded and people in an area not recently flooded?

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Theoretical background and hypothesis

The hypothesis for this question is that people in areas that flooded more recently will have higher perceptions of flood risk.

Measurement technique

Measure an individual's perception of flood risk using a Likert Scale (1 - Very unconcerned, 2 - Quite unconcerned, 3 - Neither concerned or unconcerned, 4 - Quite concerned, 5 - Very concerned).

Sampling strategy

For this *comparison question* you should get responses froma selection of residents in an area within Flood Zone 3a that has been flooded in the last 5 years and responses from an equivalent selection of residents in an area within Flood Zone 3a that was last flooded more than 20 years ago.

*Measurements of perception of flood risk*
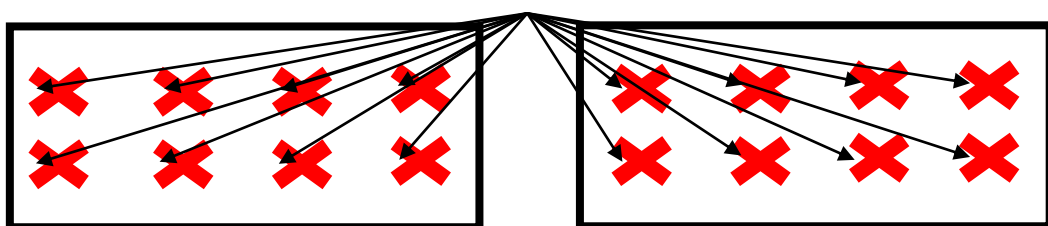
Recently flooded   *Not recently flooded*

Data analysis

In order to answer this *comparison question* you should describe how flood risk perception compares between areas recently flooded and those not recently flooded by drawing an individual plot like the example on the right. You should also perform a Mann-Whitney U Test.

Flood risk perception

Recently flooded   *Not recently flooded*
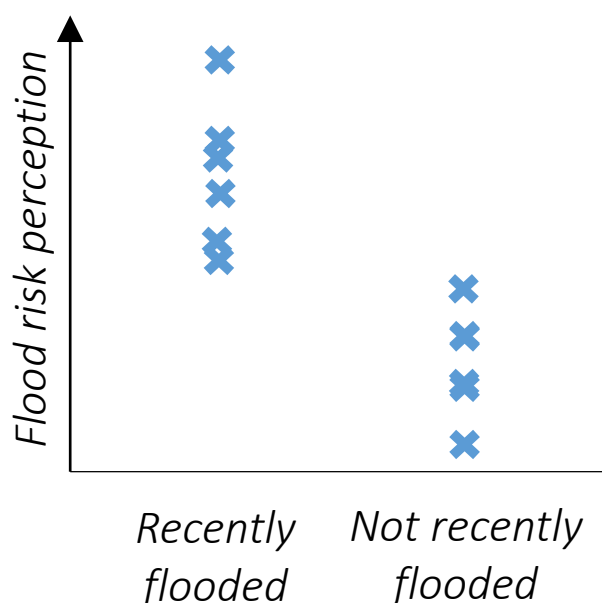
Example research questions:
Ecosystems

How does % vegetation cover relate to distance inland on a coastal dune system?

How does vegetation diversity relate to distance inland on a coastal dune system?

How does soil pH relate to distance inland on a coastal dune system?

How does soil pH relate to distance inland on a coastal dune system?

How does % vegetation cover compare between an area that experiences trampling and an area with no trampling?

How does vegetation diversity compare between an area that experiences trampling and an area with no trampling?

Example research question:

How does % vegetation cover relate to distance inland on a coastal dune system?

Theoretical background and hypothesis

Ecological succession is the gradual process by which ecosystems change and develop over time. The hypothesis would be that vegetation cover will increase with distance inland across a coastal dune due to the process of ecological succession.

Measurement technique

- Measure % vegetation cover using a gridded quadrat
- Measure distance inland using a 30m tape measure

Sampling strategy

For this *relationship question* you should use a systematic sample that takes measurements of % vegetation cover at points that are equally spaced across a wide range of different distances inland across a coastal dune system.
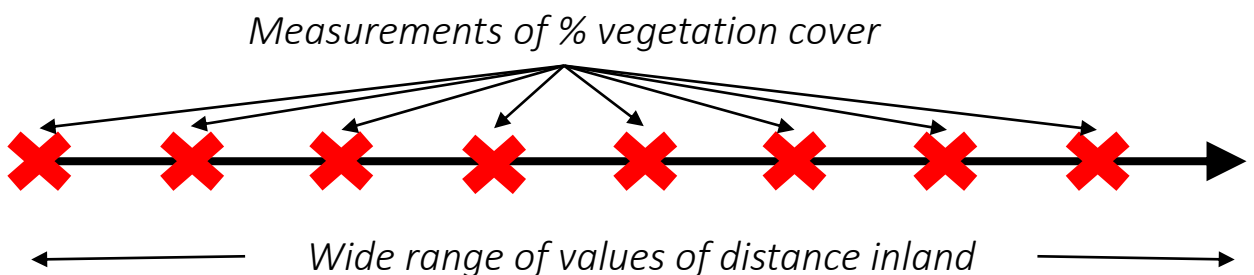
Measurements of % vegetation cover

Wide range of values of distance inland

Data analysis

In order to answer this *relationship question* you should describe how % vegetation cover relates to distance inland by drawing a scatter plot like the example on the right. You should also perform a Spearmans Rank Test.

Vegetation cover (%)
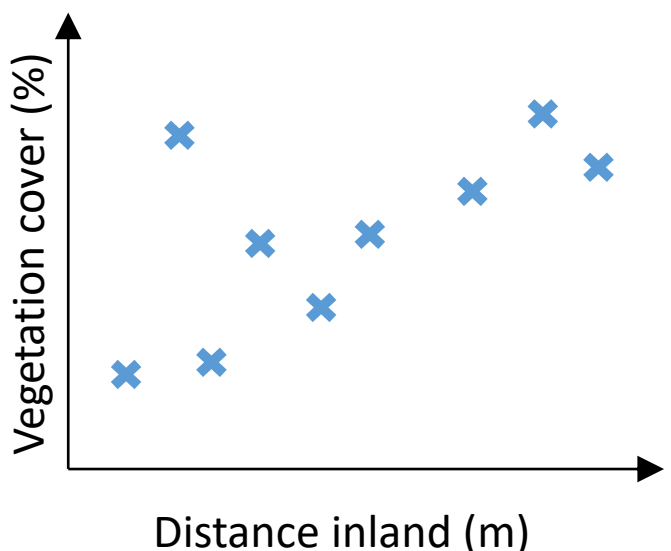
Distance inland (m)

Example research question:

How does vegetation diversity relate to distance inland on a coastal dune system?
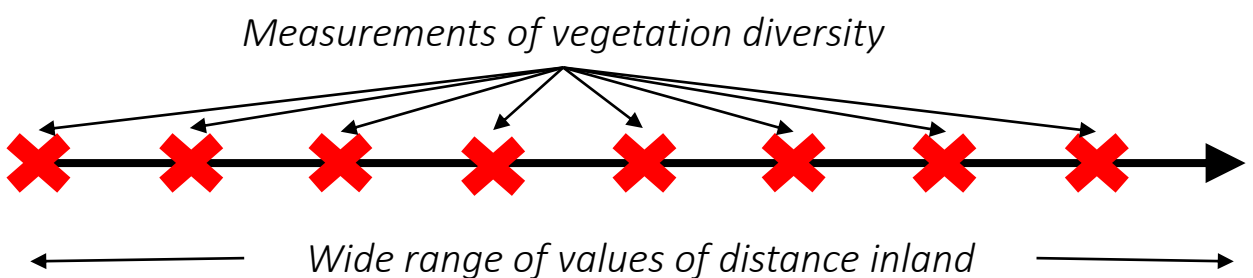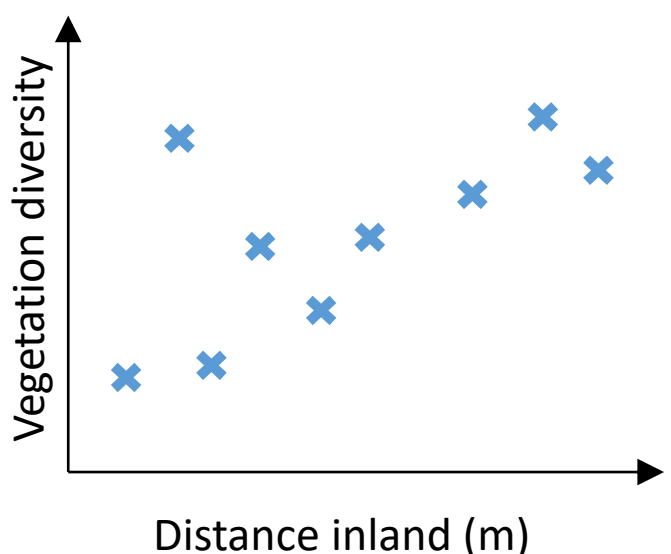
Theoretical background and hypothesis

Ecological succession is the gradual process by which ecosystems change and develop over time. The hypothesis would be that vegetation diversity will increase with distance inland across a coastal dune due to the process of ecological succession.

Measurement technique

- Measure vegetation diversity by counting the number of different vegetation species within a quadrat
- Measure distance inland using a 30m tape measure

Sampling strategy

For this *relationship question* you should use a systematic sample that takes measurements of vegetation diversity at points that are equally spaced across a wide range of distances inland across a coastal dune system.

Measurements of vegetation diversity

Wide range of values of distance inland

Data analysis

In order to answer this *relationship question* you should describe how vegetation diversity relates to distance inland by drawing a scatter plot like the example on the right. You should also perform a Spearmans Rank Test.

Example research question:
How does soil pH relate to distance inland on a coastal dune system?
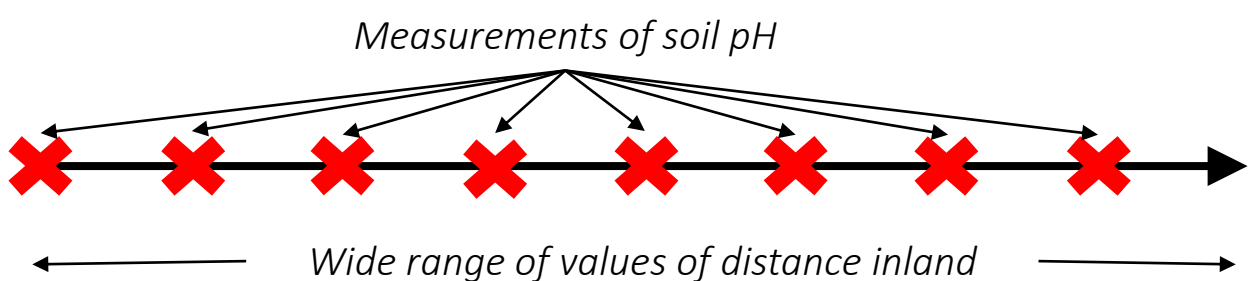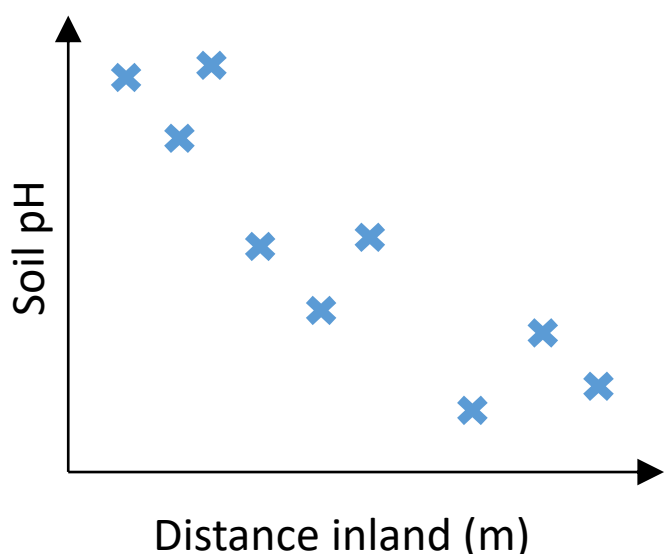
Theoretical background and hypothesis

Ecological succession is the gradual process by which ecosystems change and develop over time. The hypothesis would be that soil pH will decrease with distance inland across a coastal dune due to organic matter being added to the soil.

Measurement technique

- Measure soil pH by mixing some of the soil in water and using a pH meter.
- Measure distance inland using a 30m tape measure

Sampling strategy

For this *relationship question* you should use a systematic sample that takes measurements of soil pH at points that are equally spaced across a wide range of distances inland across a coastal dune system.

Measurements of soil pH

Wide range of values of distance inland

Data analysis

In order to answer this *relationship question* you should describe how soil pH relates to distance inland by drawing a scatter plot like the example on the right. You should also perform a Spearmans Rank Test.

Soil pH

Distance inland (m)

How does infiltration rate relate to distance inland on a coastal dune system?

Theoretical background and hypothesis

Ecological succession is the gradual process by which ecosystems change and develop over time. The hypothesis would be that infiltration rate will decrease with distance inland across a coastal dune due to organic matter being added to the soil.

Measurement technique

- Measure soil infiltration rate by measuring the time taken for a known volume of water to infiltrate down an infiltration tube
- Measure distance inland using a 30m tape measure

Sampling strategy

For this *relationship question* you should use a systematic sample that takes measurements of infiltration rate at points that are equally spaced across a wide range of distances inland across a coastal dune system.

Measurements of infiltration rate

Wide range of values of distance inland
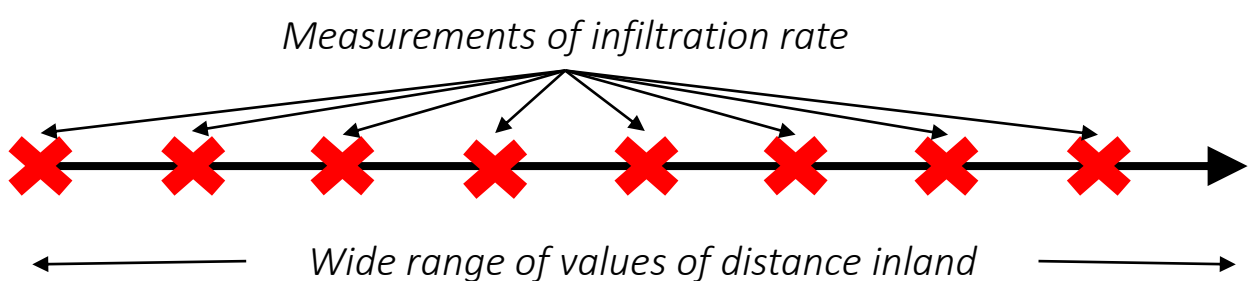
Data analysis

In order to answer this *relationship question* you should describe how infiltration rate relates to distance inland by drawing a scatter plot like the example on the right. You should also perform a Spearmans Rank Test.

Infiltration rate (ml/hour)

Distance inland (m)

Example RQ topics   Main menu
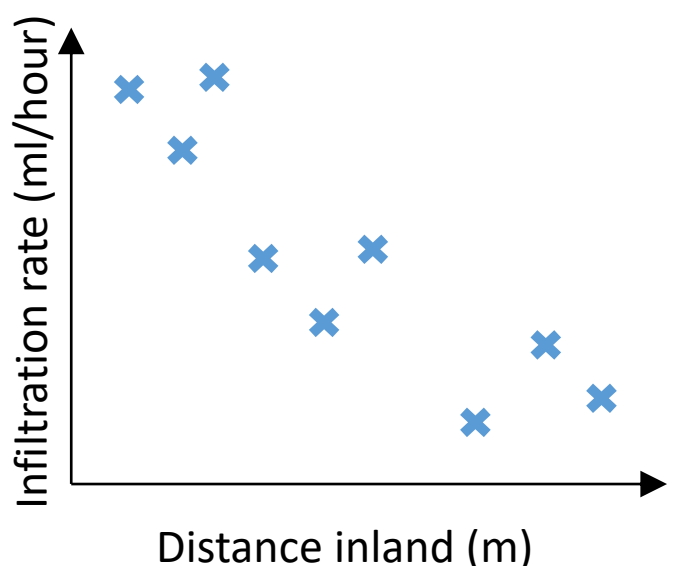
Example research question:

How does % vegetation cover compare between an area that experiences trampling and an area with no trampling?
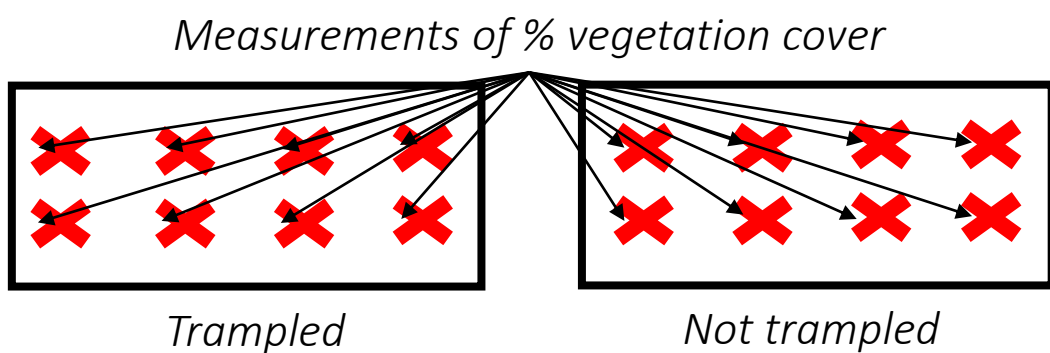
Theoretical background and hypothesis

Trampling can damage vegetation and also prevent it growing by compacting the soil. Therefore, the hypothesis for this question is that % vegetation cover will be higher in an area with no trampling.

Measurement technique
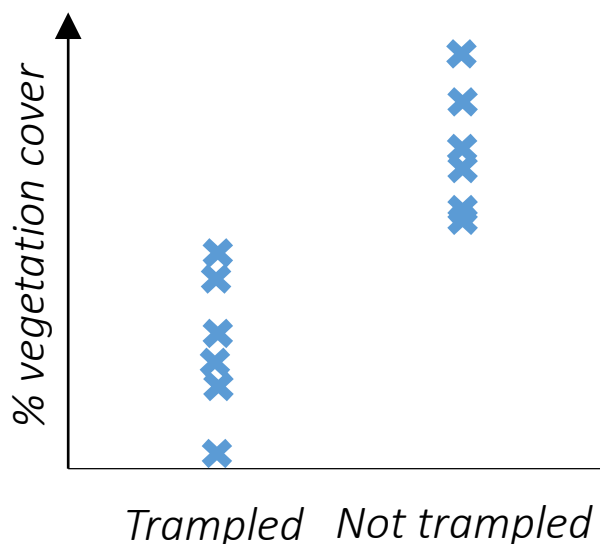
Measure % vegetation cover using a gridded quadrat

Sampling strategy

For this *comparison question* you should get measurements of % vegetation cover within an area that has been heavily trampled, and measurements of % vegetation cover within an equivalent area that has not been trampled (e.g. due to being fenced off).

Measurements of % vegetation cover

Trampled   *Not trampled*

Data analysis

In order to answer this *comparison question* you should describe how % vegetation cover compares between areas trampled and not trampled by drawing an individual plot like the example on the right. You should also perform a Mann-Whitney U Test.

Trampled   Not trampled

Example research question:

How does vegetation diversity compare between an area that experiences trampling and an area with no trampling?

Theoretical background and hypothesis

Trampling can damage vegetation and also prevent it growing by compacting the soil. Therefore, the hypothesis for this question is that vegetation diversity will be higher in an area with no trampling.

Measurement technique

Measure vegetation diversity by counting the number of different vegetation species within a quadrat.

Sampling strategy

For this *comparison question* you should get measurements of vegetation diversity within an area that has been heavily trampled, and measurements of vegetation diversity within an equivalent area that has not been trampled (e.g. due to being fenced off).
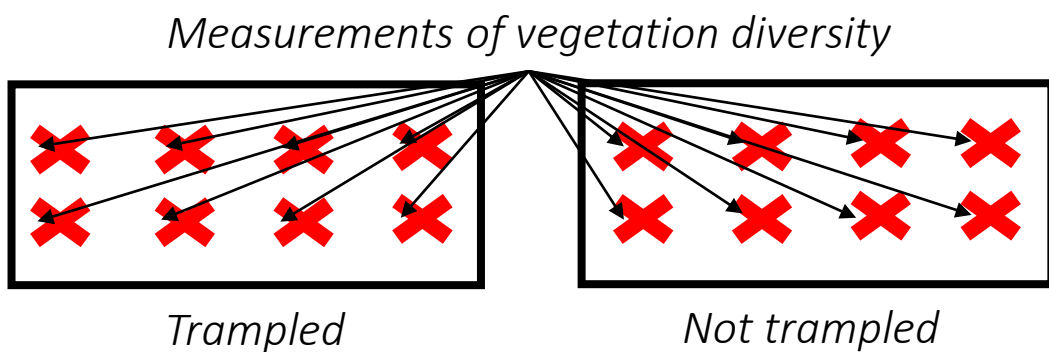
Measurements of vegetation diversity

Trampled   *Not trampled*

Data analysis

In order to answer this *comparison question* you should describe how vegetation diversity compares between areas trampled and not trampled by drawing an individual plot like the example on the right. You should also perform a Mann-Whitney U Test.
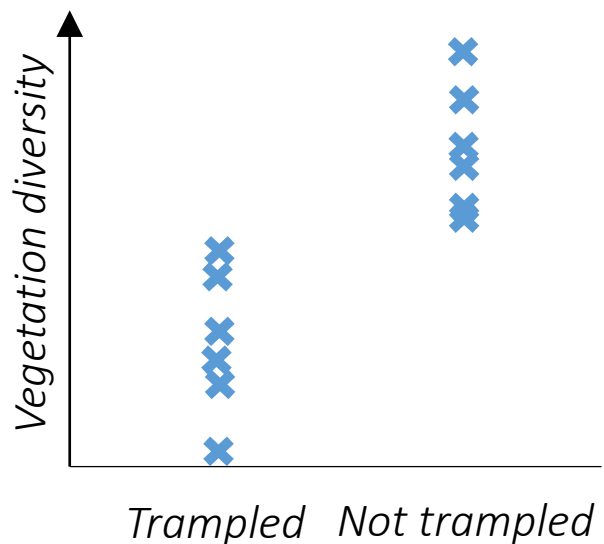
Example research questions:
Global systems

How does the proportion of high street units run by multinational companies compare between places well-connected to an international airport and places poorly connected to an international airport?

How does the proportion of people who have been abroad within the last year compare between places well-connected to an international airport and places poorly connected to an international airport?

How does the proportion of people whose first language is not English compare between places well-connected to an international airport and places poorly connected to an international airport?

How does awareness of global brands compare between teenagers and pensioners?

How does the number of countries visited compare between teenagers and pensioners (when they were an equivalent age)?

How do perceptions of immigration as a threat compare between teenagers and pensioners?

How do perceptions of climate change as a threat compare between teenagers and pensioners?

Example research question:

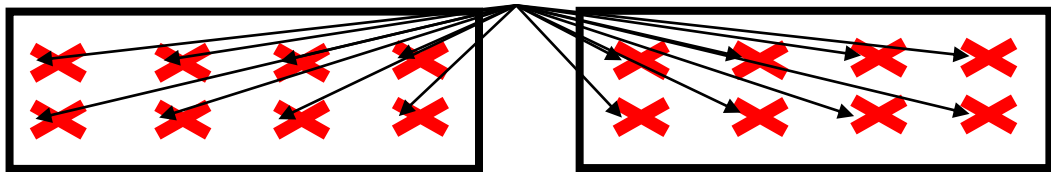How does the proportion of high street units run by multinational companies compare between places well-connected to an international airport and places poorly connected to an international airport?

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Theoretical background and hypothesis

International air travel increases the extent to which a place is connected globally. Therefore, the hypothesis for this question is that the proportion of high street units run by multinational companies will be higher in places well-connected to an international airport.

Measurement technique

Count how many of a group of 10 high street units are run by multinational companies.

Sampling strategy

For this *comparison question* you should measure the proportion of multinational-run high street units at a selection of different locations that are well-connected to an international airport and at an equivalent selection of different locations that are poorly connected to an international airport.

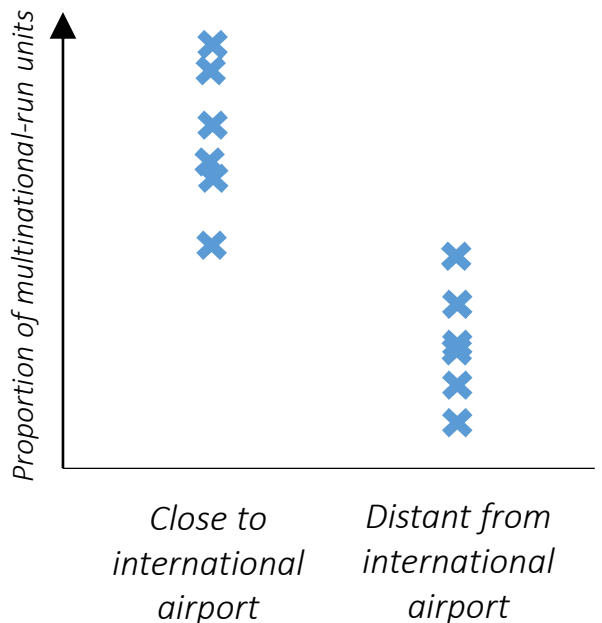*Measurements of proportion of multinational-run high street units*

Close to international airport   *Distant from international airport*

Data analysis

In order to answer this *comparison question* you should describe how the proportion of multinational-run units compares between areas close to and distant from an international airport by drawing an individual plot like the example on the right. You should also perform a Mann-Whitney U Test.

Proportion of multinational-run units

Close to international airport   *Distant from international airport*

Example RQ topics   Main menu

Example research question:

How does the proportion of people who have been abroad within the last year compare between places well-connected to an international airport and places poorly connected to an international airport?

UWE Bristol | University of the West of England

Theoretical background and hypothesis

International air travel increases the extent to which a place is connected globally. Therefore, the hypothesis for this question is that more people will have been abroad in places well-connected to an international airport

Measurement technique

Ask 10 people whether or not they have been abroad in the past year.

Sampling strategy

For this *comparison question* you should measure the proportion of people who have been abroad at a selection of different locations that are well-connected to an international airport and at an equivalent selection of different locations that are poorly connected to an international airport.
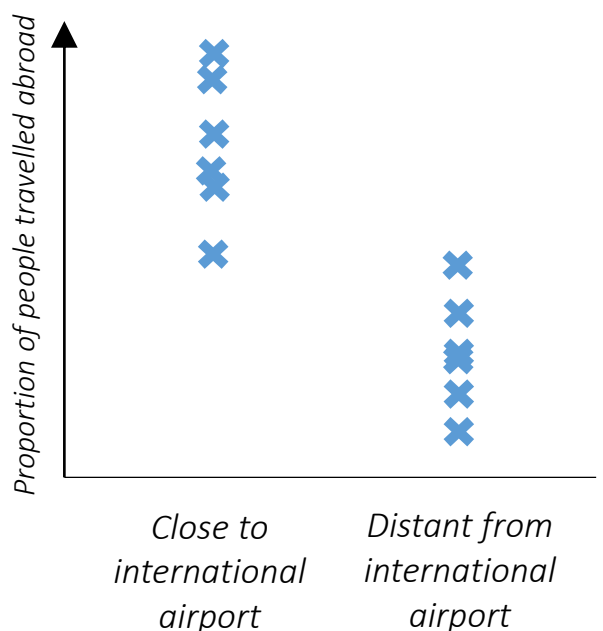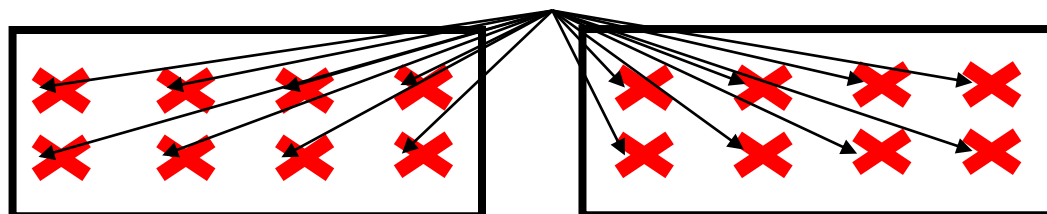
Measurements of proportion of people recently travelled abroad
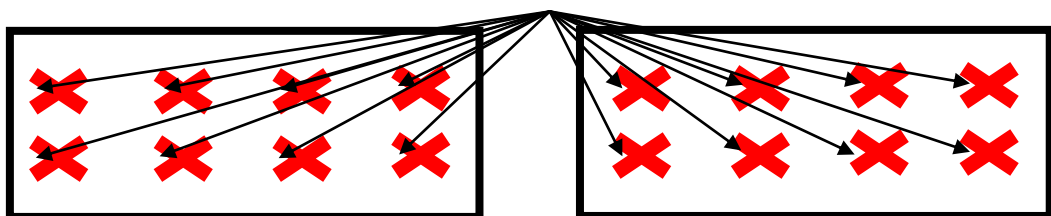
Close to international airport   Distant from international airport

Data analysis

In order to answer this *comparison question* you should describe how the proportion of people who have recently travelled abroad compares between areas close to and distant from an international airport by drawing an individual plot like the example on the right. You should also perform a Mann-Whitney U Test.

Proportion of people travelled abroad

Close to international airport   *Distant from international airport*

Example RQ topics   Main menu

Example research question:

How does the proportion of people whose first language is not English compare between places well-connected to an international airport and places poorly connected to an international airport?

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Theoretical background and hypothesis

International air travel increases the extent to which a place is connected globally. Therefore, the hypothesis for this question is that more people will have a first language other than English in places well-connected to an international airport.

Measurement technique

Ask 10 people whether or not their first language is English.

Sampling strategy

For this *comparison question* you measure the proportion of people whose first language is English at a selection of different locations that are well-connected to an international airport and at an equivalent selection of different locations that are poorly connected to an international airport.

Measurements of proportion of people whose first language is English

Close to international airport   *Distant from international airport*

Data analysis

In order to answer this *comparison question* you should describe how the proportion of people whose first language is English compares between areas close to and distant from an international airport by drawing an individual plot like the example on the right. You should also perform a [Mann-Whitney U Test](#).

Proportion of people whose first language is English

Close to international airport   *Distant from international airport*
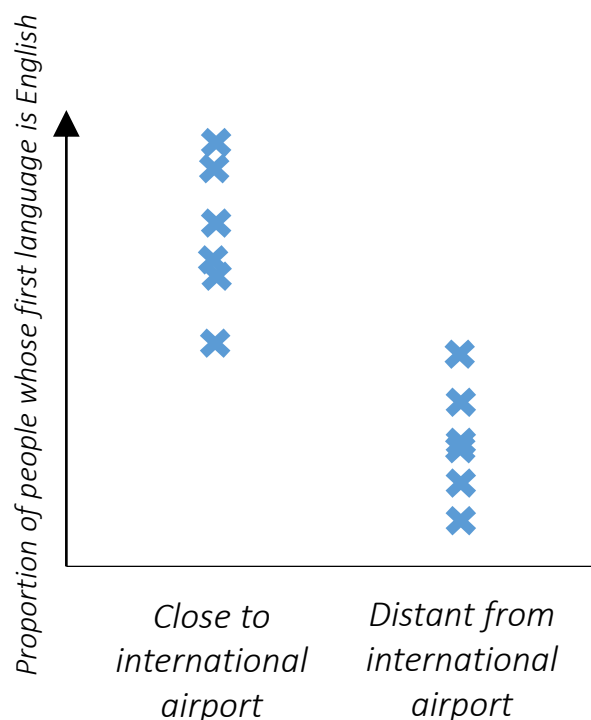
Example research question:
How does awareness of global brands compare between teenagers and pensioners?

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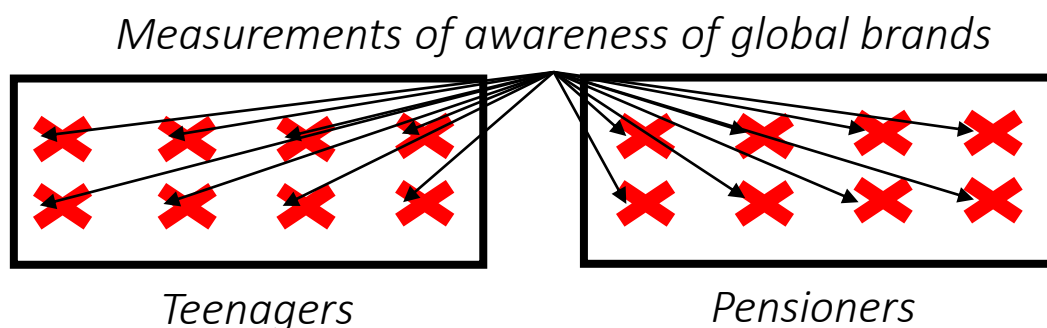
Theoretical background and hypothesis

Globalisation has occurred rapidly through modern communication and transport technology. Therefore, the hypothesis for this question is that teenagers will have a greater awareness of global brands than pensioners.

Measurement technique

Ask individuals how many of a sheet of 100 global brand logos they are familiar with.

Sampling strategy

For this *comparison question* you should measure the awareness of global brands of a selection of teenagers and an equivalent selection of pensioners.

Measurements of awareness of global brands

Teenagers   *Pensioners*

Data analysis

In order to answer this *comparison question* you should describe how global brand awareness compares between teenagers and pensioners by drawing an individual plot like the example on the right. You should also perform a Mann-Whitney U Test.

Global brand awareness

Teenagers   *Pensioners*
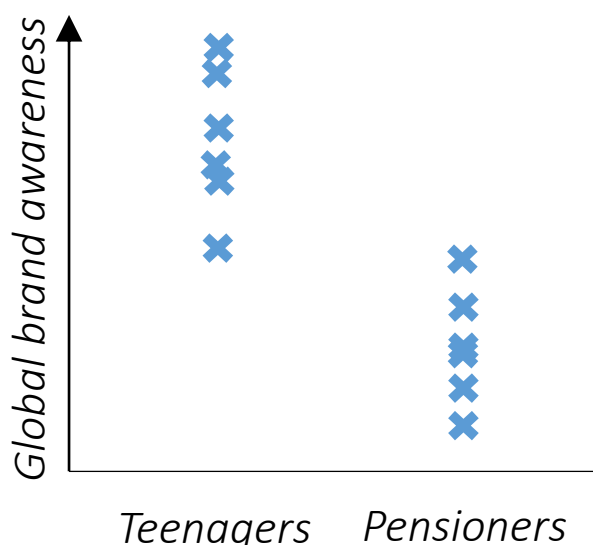
Example research question:

How does the number of countries visited compare between teenagers and pensioners (when they were an equivalent age)?
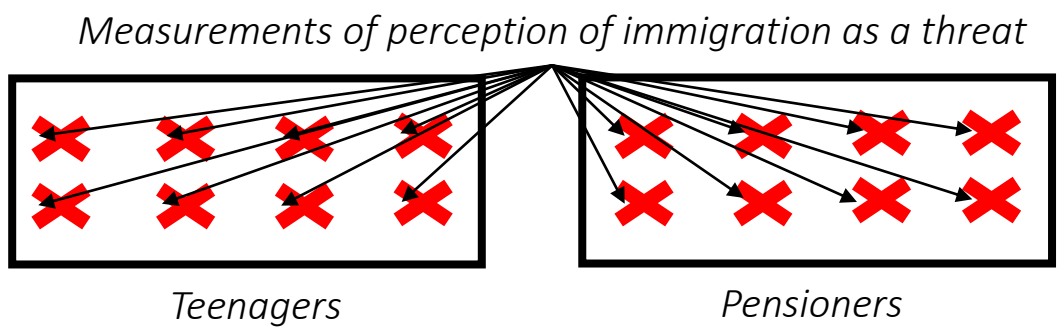
Theoretical background and hypothesis

Globalisation has occurred rapidly through modern communication and transport technology. Therefore, the hypothesis for this question is that teenagers will have visited more countries than pensioners had visited when they were an equivalent age.

Measurement technique

Ask individuals how many countries they had visited by their 16th birthday.

Sampling strategy

For this *comparison question* you should find the number of countries visited by a selection of teenagers and an equivalent selection of pensioners.

Measurements of number of countries visited

Teenagers   *Pensioners*
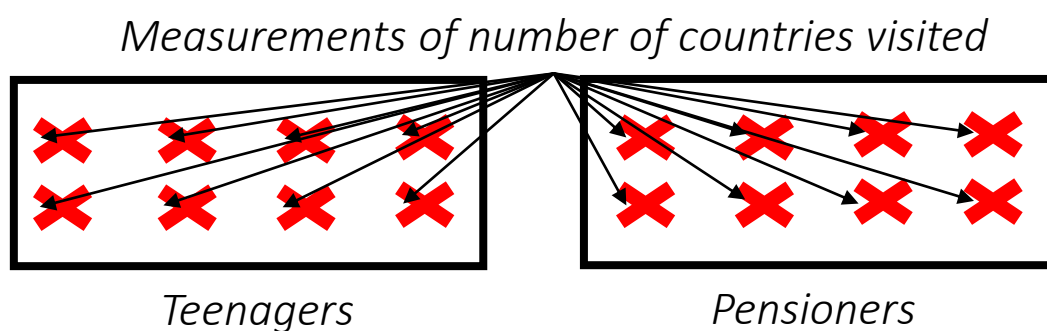
Data analysis

In order to answer this *comparison question* you should describe how the number of countries visited compares between teenagers and pensioners by drawing an individual plot like the example on the right. You should also perform a Mann-Whitney U Test.

Example research question:
How do perceptions of immigration as a threat compare between teenagers and pensioners?

UWE Bristol | University of the West of England
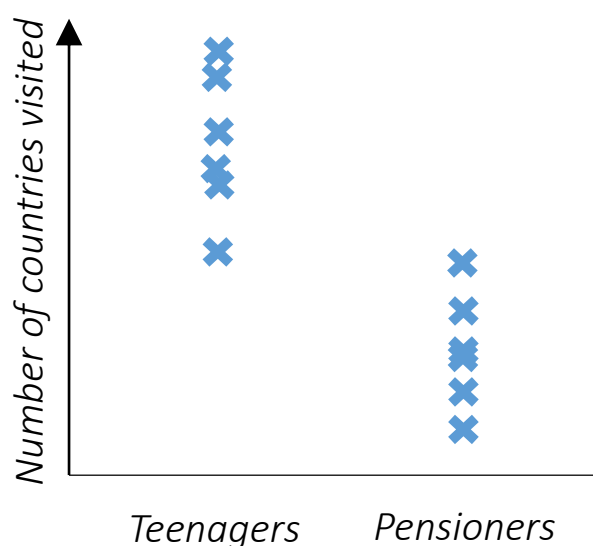
## Theoretical background and hypothesis

Globalisation has occurred rapidly through modern communication and transport technology. Therefore, the hypothesis for this question is that teenagers will perceive immigration as less of a threat than pensioners

Measurement technique

Measure an individual's perception of immigration as a threat by using a Likert Scale (1 - Very unconcerned, 2 - Quite unconcerned, 3 - Neither concerned or unconcerned, 4 - Quite concerned, 5 - Very concerned).
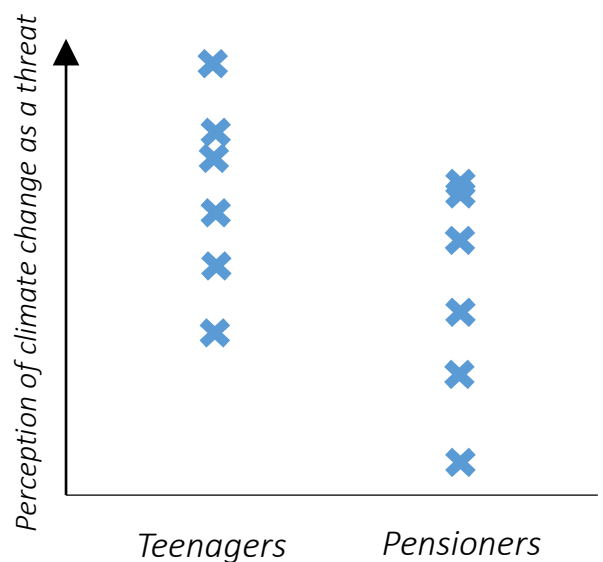
Sampling strategy

For this *comparison question* you should measure the perception of immigration as a threat of a selection of teenagers and an equivalent selection of pensioners.

Measurements of perception of immigration as a threat

Teenagers   *Pensioners*

Data analysis

In order to answer this *comparison question* you should describe how the perception of immigration as a threat compares between teenagers and pensioners by drawing an individual plot like the example on the right. You should also perform a Mann-Whitney U Test.

How do perceptions of climate change as a threat compare between teenagers and pensioners?

UWE Bristol | University of the West of England
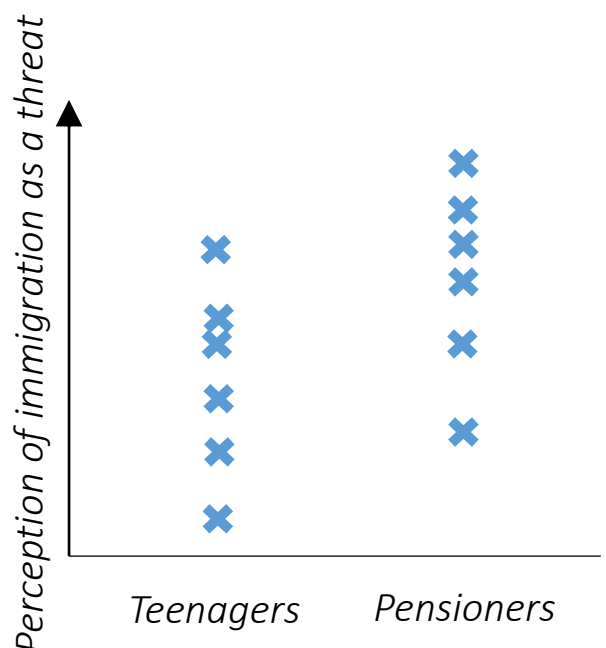
Theoretical background and hypothesis

Globalisation has occurred rapidly through modern communication and transport technology. Therefore, the hypothesis for this question is that teenagers will perceive immigration as more of a threat than pensioners

Measurement technique

Measure an individual's perception of climate change as a threat using a Likert Scale (1 - Very unconcerned, 2 - Quite unconcerned, 3 - Neither concerned or unconcerned, 4 - Quite concerned, 5 - Very concerned).

Sampling strategy

For this *comparison question* you should measure the perception of climate change as a threat of a selection of teenagers and an equivalent selection of pensioners.
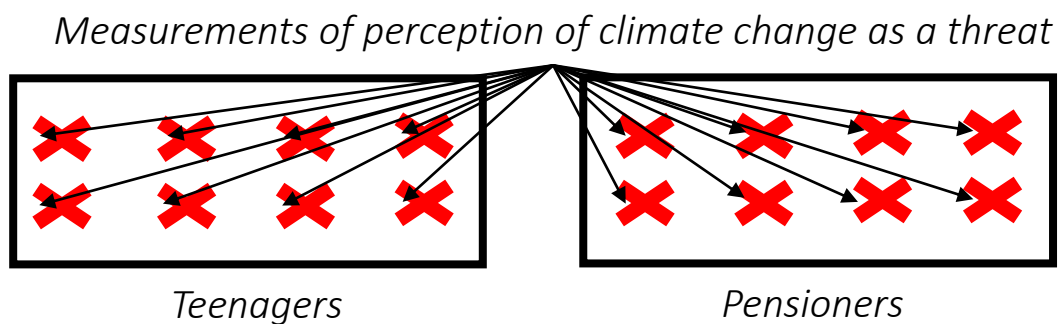
Measurements of perception of climate change as a threat

Teenagers   *Pensioners*

Data analysis

In order to answer this *comparison question* you should describe how the perception of climate change as a threat compares between teenagers and pensioners by drawing an individual plot like the example on the right. You should also perform a Mann-Whitney U Test.

Example research questions:
Changing places

To investigate how places differ, first you need to pick two places that you want to compare – you might do this by picking two places that differ in terms of the characteristics described by secondary data sources like Datashine. Then you need to pick what you want to compare between your two chosen places. Some examples include…

How does the amount of litter compare between Place A and Place B?

How do the instances of graffiti compare between Place A and Place B?

How does the building height compare between Place A and Place B?

How does the proportion of children compare between Place A and Place B?

How does the proportion of elderly people compare between Place A and Place B?

How does the proportion of ethnic minorities compare between Place A and Place B?

How do perceptions of safety compare between Place A and Place B?

How do perceptions of immigration as a threat compare between Place A and Place B?

How do perceptions of climate change as a threat compare between Place A and Place B?

How does the amount of litter compare between Place A and Place B?
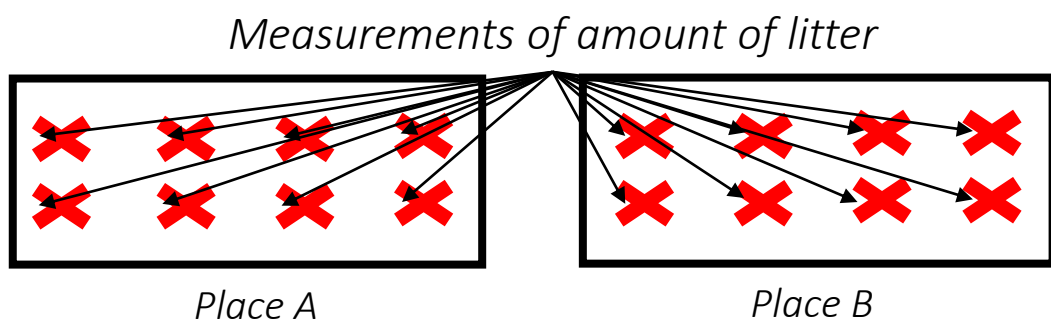
Theoretical background and hypothesis

Different places have different population densities and populations with different attitudes to litter Therefore, the hypothesis for this question is that different places will have different amounts of litter.

Measurement technique

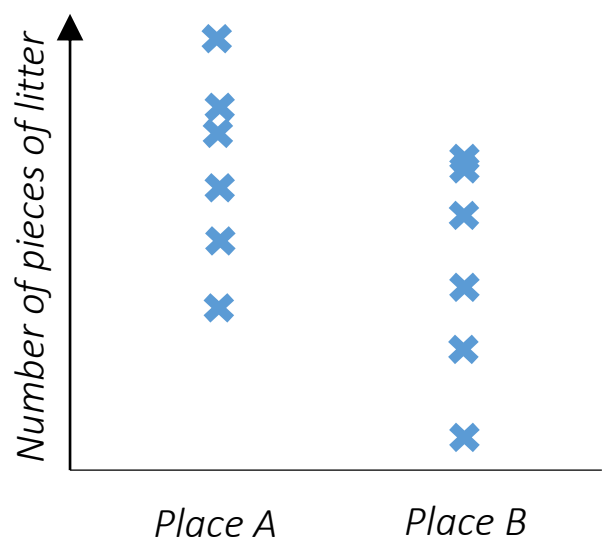Measure amount of litter by counting how many individual pieces of litter you can see along a 50m stretch of pavement.

Sampling strategy

For this *comparison question* you should survey a selection of different 50m stretches of pavement in Place A and an equivalent selection of different 50m stretches of pavement in Place B.

Measurements of amount of litter

Place A   *Place B*

Data analysis

In order to answer this *comparison question* you should describe how the amount of litter compares between Place A and Place B by drawing an individual plot like the example on the right. You should also perform a Mann-Whitney U Test.

Number of pieces of litter

Place A   *Place B*

Example research question:

How do the instances of graffiti compare between Place A and Place B?
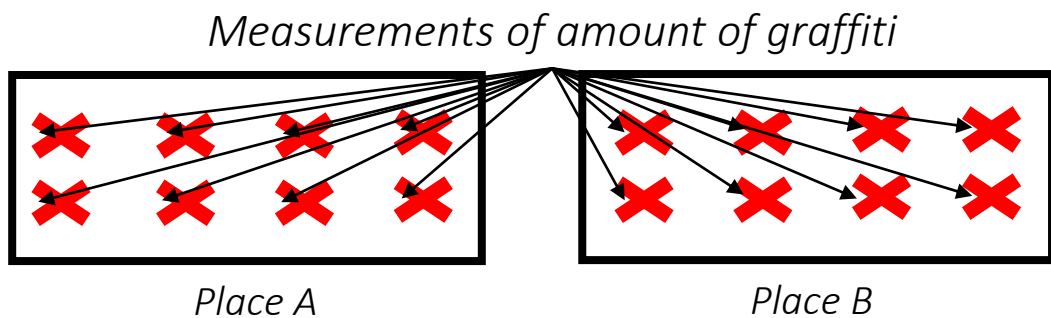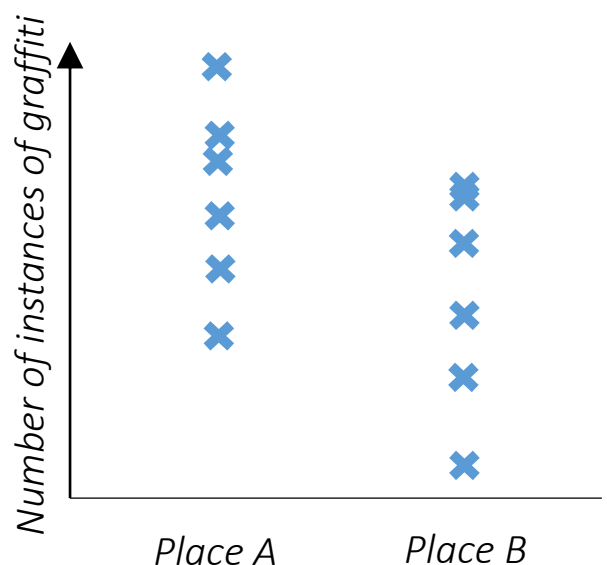
Theoretical background and hypothesis

Different places have populations with different attitudes to graffiti. Therefore, the hypothesis for this question is that different places will have different amounts of graffiti.

Measurement technique

Measure amount of graffiti by counting how many individual instances of graffiti you can see along a 50m stretch of pavement.

Sampling strategy

For this *comparison question* you should survey a selection of different 50m stretches of pavement in Place A and an equivalent selection of different 50m stretches of pavement in Place B.

Measurements of amount of graffiti

Place A   *Place B*

Data analysis

In order to answer this *comparison question* you should describe how the amount of graffiti compares between Place A and Place B by drawing an individual plot like the example on the right. You should also perform a Mann-Whitney U Test.

Number of instances of graffiti

Place A   *Place B*

Example research question:

How does the building height compare between Place A and Place B?

Theoretical background and hypothesis

Different places have different architectural histories. Therefore, the hypothesis for this question is that different places will have different building heights.

Measurement technique

Measure the height of a building using a clinometer, a tape measure, and Pythagoras's theorem: Height = Tan(Angle) x Distance of angle measurement from base of building.

Sampling strategy

For this *comparison question* you should measure the heights of a wide selection of buildings in Place A and an equivalent selection of buildings in Place B.

Measurements of building height
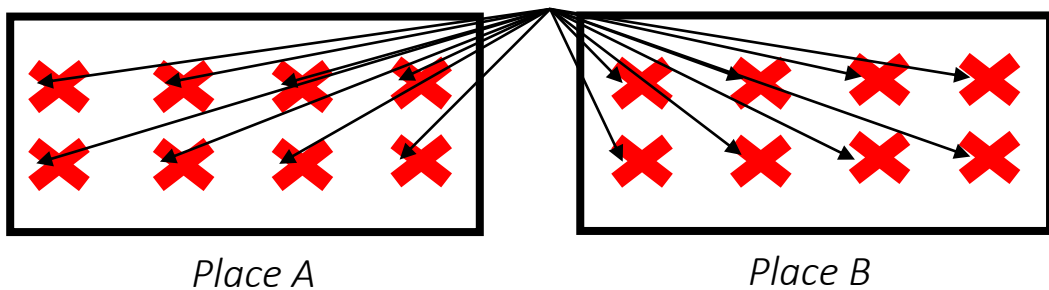
Place A   *Place B*

Data analysis

In order to answer this *comparison question* you should describe how building heights compares between Place A and Place B by drawing an individual plot like the example on the right. You should also perform a [Mann-Whitney U Test](#).

Building height (m)
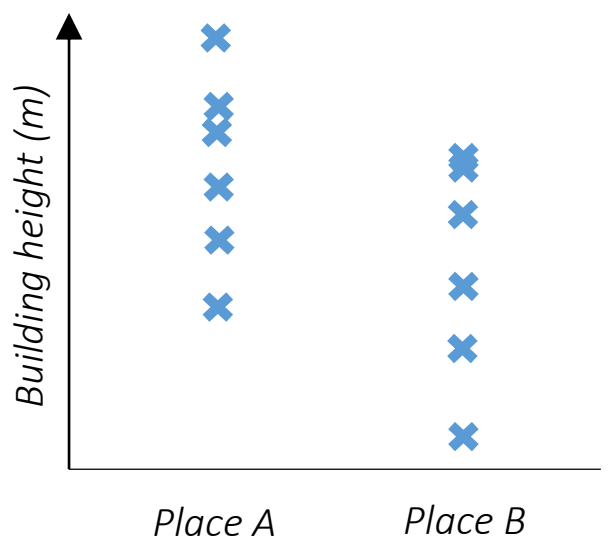
Place A   Place B

Theoretical background and hypothesis

Different places have different population demographics. Therefore, the hypothesis for this question is that different places will have different proportion of children.

Measurement technique

Measure the proportion of children by counting the number of children within the first 100 people that walk past a particular point.
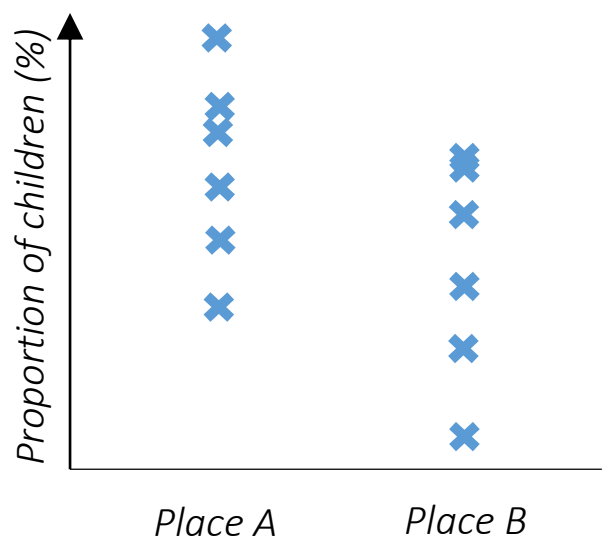
Sampling strategy

For this *comparison question* you should measure the proportion of children at a wide selection of times and places in Place A and an equivalent selection of times and places in Place B.

Measurements of proportion of children
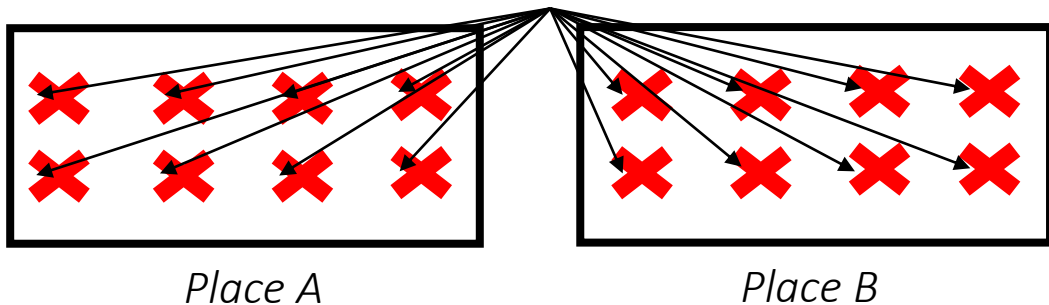
Place A   *Place B*

Data analysis

In order to answer this *comparison question* you should describe how the proportion of children compares between Place A and Place B by drawing an individual plot like the example on the right. You should also perform a Mann-Whitney U Test.

Proportion of children (%)

Place A   *Place B*

Example research question:

How does the proportion of elderly people compare between Place A and Place B?

Theoretical background and hypothesis

Different places have different population demographics. Therefore, the hypothesis for this question is that different places will have different proportion of elderly people.

Measurement technique

Measure the proportion of elderly people by counting the number of elderly people within the first 100 people that walk past a particular point.
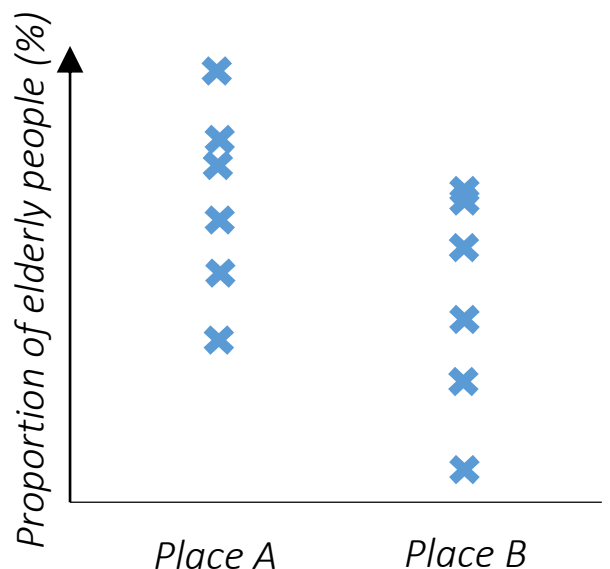
Sampling strategy

For this *comparison question* you should measure the proportion of elderly people at a wide selection of times and places in Place A and an equivalent selection of times and places in Place B.

Measurements of proportion of elderly people
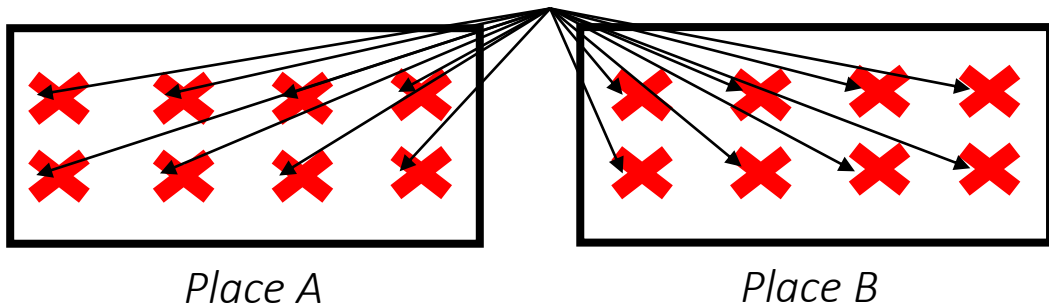
Place A   *Place B*

Data analysis

In order to answer this *comparison question* you should describe how the proportion of elderly people compares between Place A and Place B by drawing an individual plot like the example on the right. You should also perform a Mann-Whitney U Test.

Proportion of elderly people (%)

Place A   *Place B*

Example RQ topics   Main menu

Example research question:

How does the proportion of ethnic minorities compare between Place A and Place B?

Theoretical background and hypothesis

Different places have different population demographics. Therefore, the hypothesis for this question is that different places will have different proportion of ethnic minorities.

Measurement technique

Measure the proportion of ethnic minorities by counting the number of people from ethnic minorities within the first 100 people that walk past a particular point.

Sampling strategy

For this *comparison question* you should measure the proportion of ethnic minorities at a wide selection of times and places in Place A and an equivalent selection of times and places in Place B.

Measurements of proportion of ethnic minorities
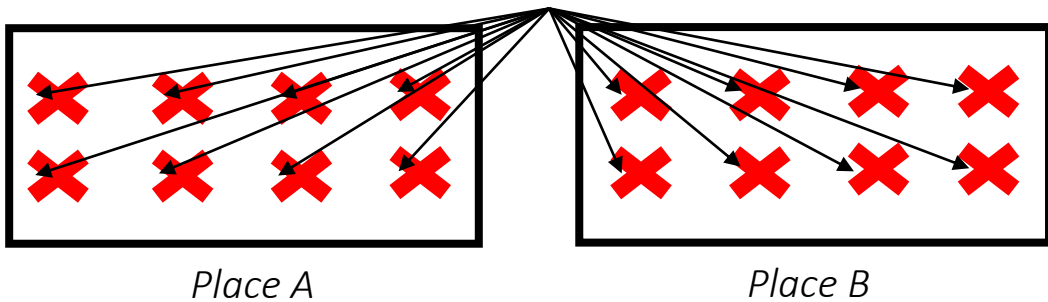
Place A   *Place B*

Data analysis

In order to answer this *comparison question* you should describe how the proportion of ethnic minorities compares between Place A and Place B by drawing an individual plot like the example on the right. You should also perform a Mann-Whitney U Test.
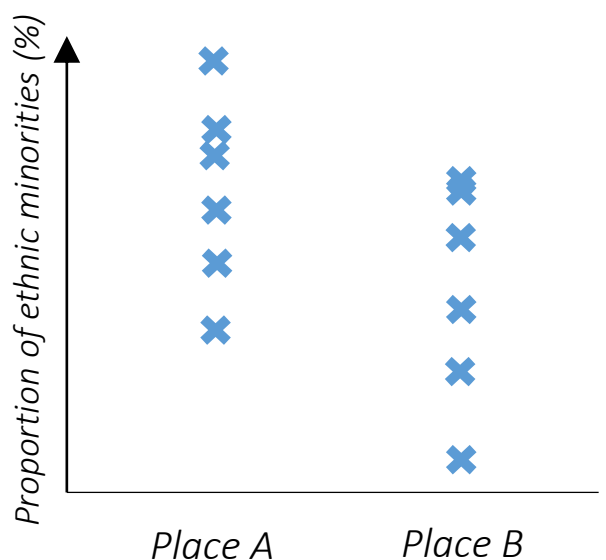
Example research question:

How do perceptions of safety compare between Place A and Place B?

Theoretical background and hypothesis

Different places have different crime rates. Therefore, the hypothesis for this question is that people living within different places will have different perceptions of how safe their area is.

Measurement technique

Measure an individual's perception of their when walking around their neighbourhood using a Likert Scale (1 - Very unconcerned, 2 - Quite unconcerned, 3 - Neither concerned or unconcerned, 4 - Quite concerned, 5 - Very concerned).
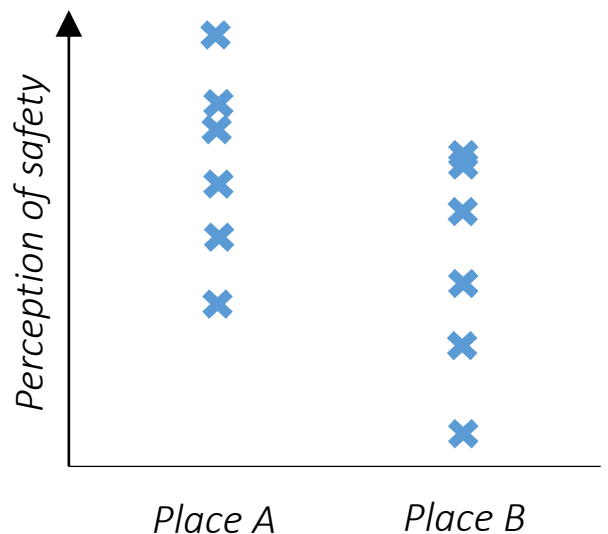
Sampling strategy

For this *comparison question* you should measure the perception of safety of a wide selection of different people in Place A and an equivalent selection of different people in Place B.

Measurements of perception of safety
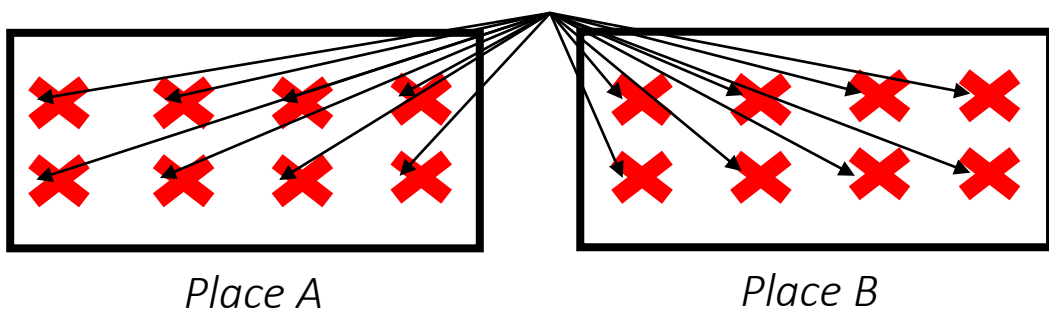
Place A   *Place B*

Data analysis

In order to answer this *comparison question* you should describe how the perception of safety compares between Place A and Place B by drawing an individual plot like the example on the right. You should also perform a Mann-Whitney U Test.

Perception of safety

Place A   Place B

Example RQ topics   Main menu

Example research question:

How do perceptions of immigration as a threat compare between Place A and Place B?

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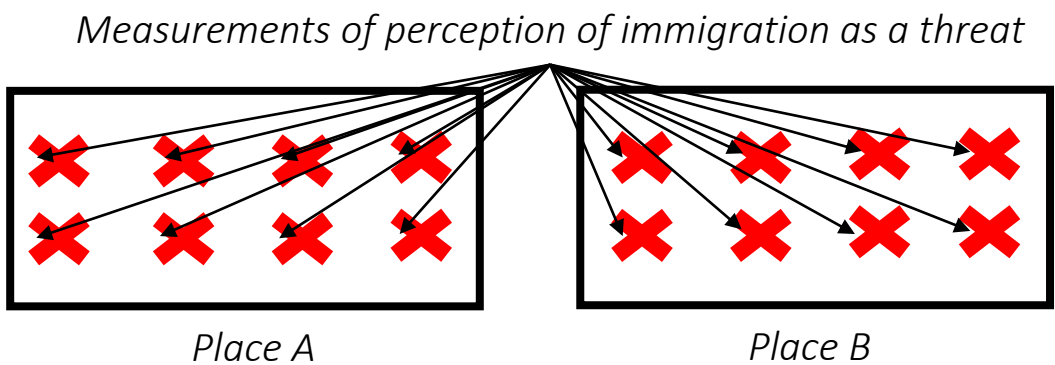
Theoretical background and hypothesis

Different places have populations with different political beliefs. Therefore, the hypothesis for this question is that people living within different places will have different perceptions of whether immigration is a threat.

Measurement technique

Measure an individual's perception of immigration as a threat using a Likert Scale (1 - Very unconcerned, 2 - Quite unconcerned, 3 - Neither concerned or unconcerned, 4 - Quite concerned, 5 - Very concerned).
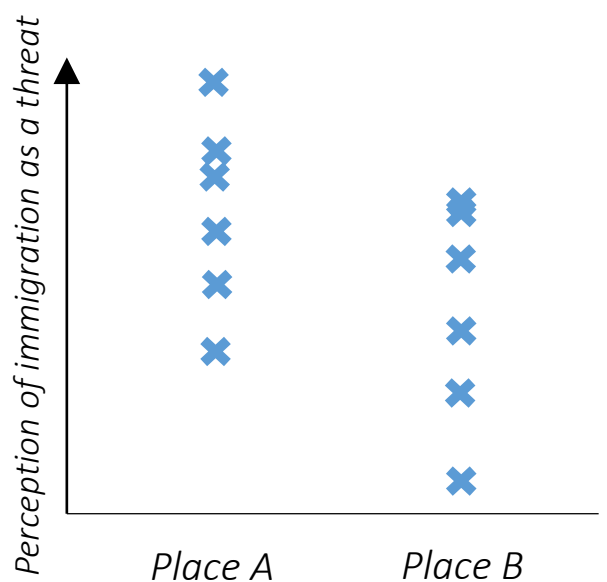
Sampling strategy

For this *comparison question* you should measure the perception of immigration as a threat of a wide selection of different people in Place A and an equivalent selection of different people in Place B.

Measurements of perception of immigration as a threat

Place A   *Place B*

Data analysis

In order to answer this *comparison question* you should describe how the perception of immigration as a threat compares between Place A and Place B by drawing an individual plot like the example on the right. You should also perform a [Mann-Whitney U Test](#).

Perception of immigration as a threat

Place A   *Place B*

Example research question:

How do perceptions of climate change as a threat compare between Place A and Place B?

Theoretical background and hypothesis

Different places have populations with different political beliefs. Therefore, the hypothesis for this question is that people living within different places will have different perceptions of whether climate change is a threat.
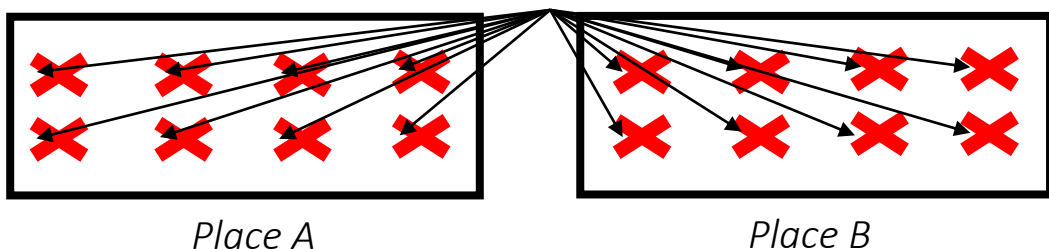
Measurement technique

Measure an individual's perception of climate change as a threat using a Likert Scale (1 - Very unconcerned, 2 - Quite unconcerned, 3 - Neither concerned or unconcerned, 4 - Quite concerned, 5 - Very concerned).
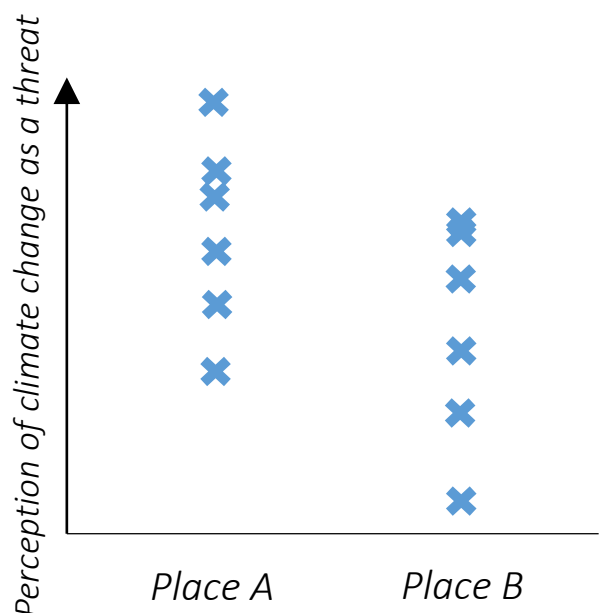
Sampling strategy

For this *comparison question* you should measure the perception of climate change as a threat of a wide selection of different people in Place A and an equivalent selection of different people in Place B.

Measurements of perception of climate change as a threat

Place A   *Place B*

Data analysis

In order to answer this *comparison question* you should describe how the perception of climate change as a threat compares between Place A and Place B by drawing an individual plot like the example on the right. You should also perform a Mann-Whitney U Test.

Perception of climate change as a threat

Place A   *Place B*

Example research questions:
Urban environments

How does building height relate to distance from the urban centre?

How does the volume of car traffic relate to distance from the urban centre?

How does the proportion of traffic made up of bicycles compare between Place A and Place B?

How does wind speed relate to distance from the urban centre?

How does windspeed compare between the urban centre and the suburbs?

How does light intensity relate to distance from the urban centre?

How does light intensity compare between the urban centre and the suburbs?

How does air temperature relate to distance from the urban centre?

How does air temperature compare between the urban centre and the suburbs?

Example research question:
How does building height relate to distance from the urban centre?
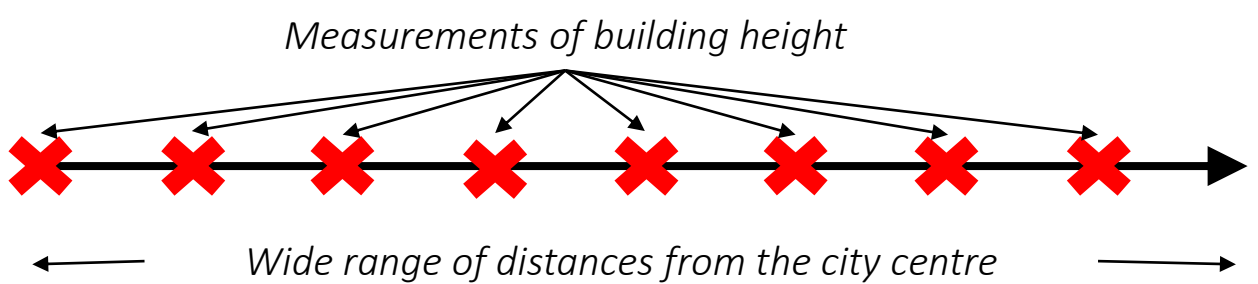
Theoretical background and hypothesis

Urban development is usually more concentrated near the city centre. Therefore, the hypothesis would be that building height will decrease with distance from the city centre.

Measurement technique

- Measure the height of a building using a clinometer, a tape measure, and Pythagoras's theorem: Height = Tan(Angle) x Distance of angle measurement from base of building.
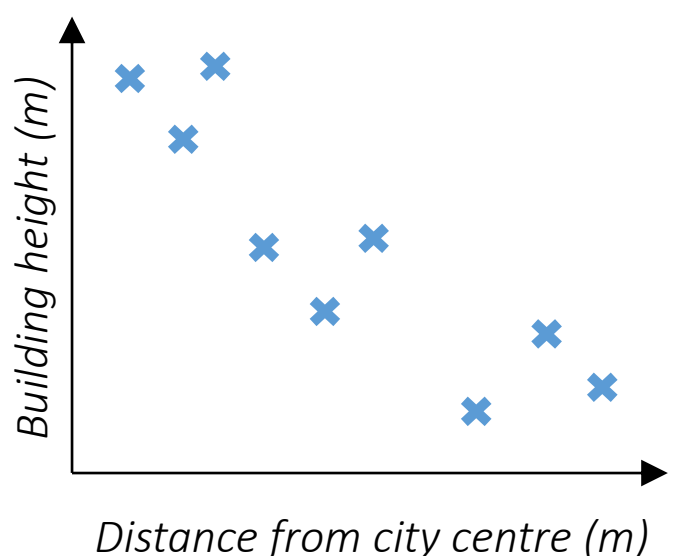- Measure distance from the city centre on a map

Sampling strategy

For this *relationship question* you should use a systematic sample that takes measurements of building height at points that are equally spaced across a wide range of distances from the city centre.

Measurements of building height

Wide range of distances from the city centre

Data analysis

In order to answer this *relationship question* you should describe how building height relates to distance from the city centre by drawing a scatter plot like the example on the right. You should also perform a Spearmans Rank Test.

Building height (m)

Distance from city centre (m)

Example research question:
How does the volume of car traffic relate to distance from the urban centre?

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## Theoretical background and hypothesis

There is usually a greater concentration of services near the city centre. Therefore, the hypothesis would be that the volume of car traffic will decrease with distance from the city centre.

Measurement technique

- Measure the volume of car traffic by counting how many cars pass a particular point over 1 minute.
- Measure distance from the city centre on a map

Sampling strategy

For this *relationship question* you should use a systematic sample that takes measurements of traffic volume at points that are equally spaced across a wide range of distances from the city centre.

Measurements of volume of car traffic

Wide range of distances from the city centre
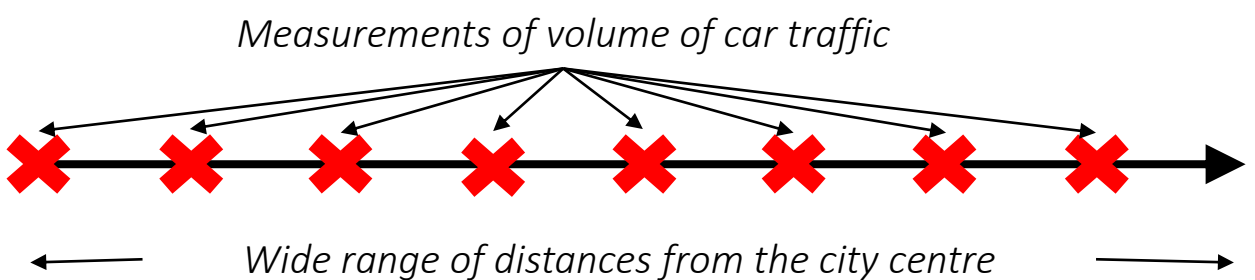
Data analysis

In order to answer this *relationship question* you should describe how traffic volume relates to distance from the city centre by drawing a scatter plot like the example on the right. You should also perform a Spearmans Rank Test.

Number of cars

Distance from city centre (m)
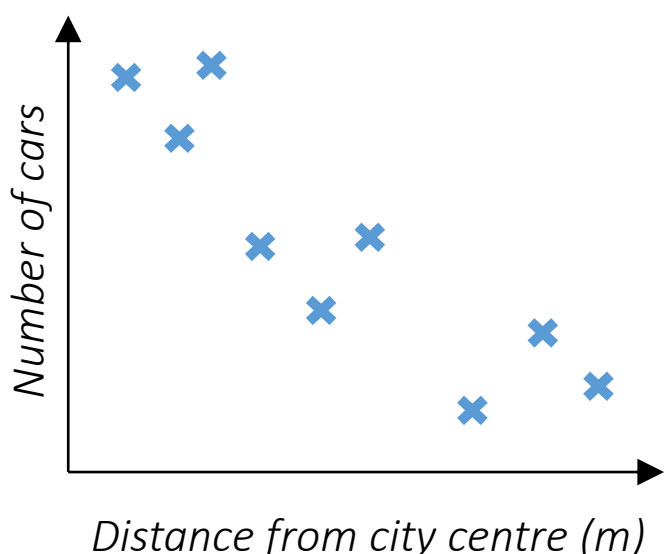
Example research question:

How does the proportion of traffic made up of bicycles compare between Place A and Place B?

Theoretical background and hypothesis

Different places have different transport policies and populations with different attitudes to cycling. Therefore, the hypothesis for this question is that different places will have different proportion of traffic made up of bicycles.

Measurement technique

Measure the proportion of bicycles by counting the number of bicycles within the first 100 vehicles that pass a particular point.

Sampling strategy

For this *comparison question* you should measure the proportion of bicycles at a wide selection of different times and places in Place A and an equivalent selection of different times and places in Place B.

Measurements of proportion of bicycles
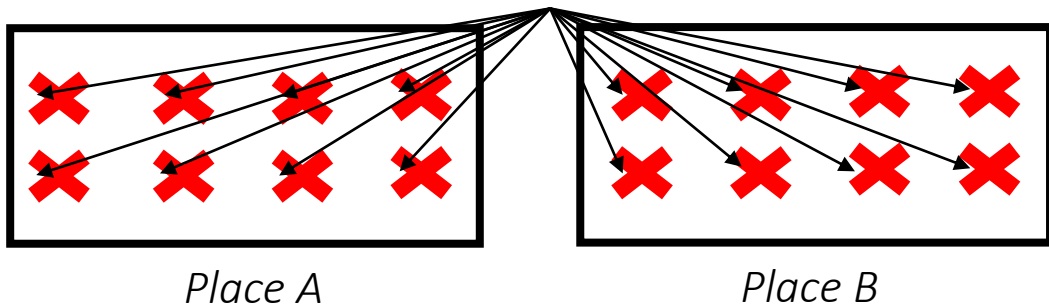
Place A   *Place B*

Data analysis

In order to answer this *comparison question* you should describe how the proportion of bicycles compares between Place A and Place B by drawing an individual plot like the example on the right. You should also perform a Mann-Whitney U Test.
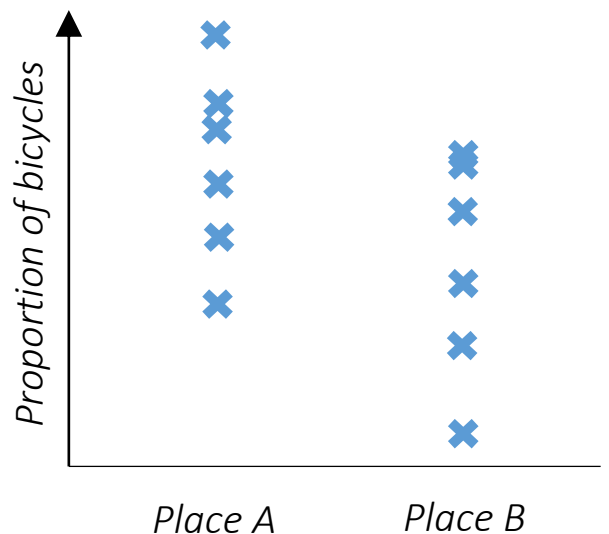
Example research question:
How does wind speed relate to distance from the urban centre?
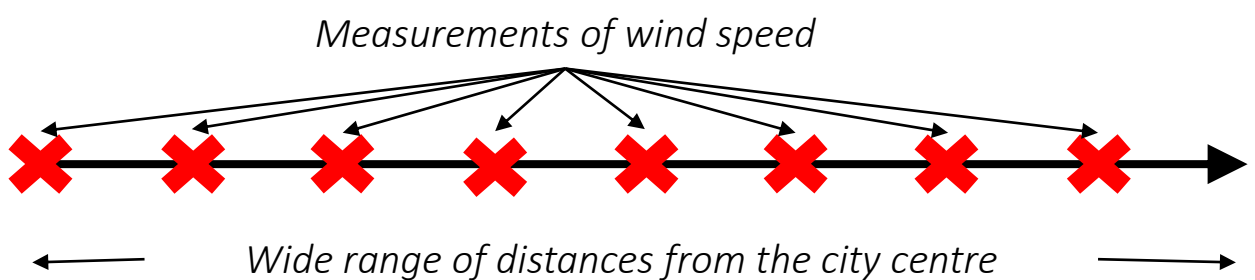
Theoretical background and hypothesis

Buildings create friction which reduces wind speed. Therefore, the hypothesis would be that wind speed will increase with distance from the city centre.

Measurement technique

- Measure wind speed using an anemometer.
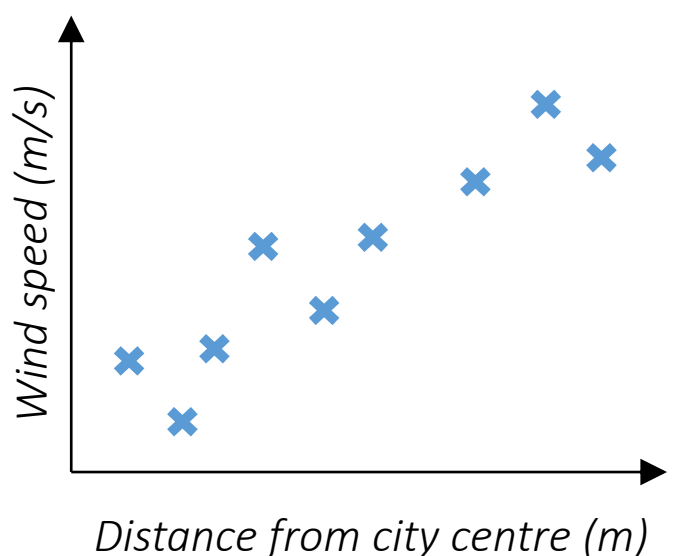- Measure distance from the city centre on a map

Sampling strategy

For this *relationship question* you should use a systematic sample that takes measurements of wind speed at points that are equally spaced across a wide range of distances from the city centre.

Measurements of wind speed

Wide range of distances from the city centre

Data analysis

In order to answer this *relationship question* you should describe how wind speed relates to distance from the city centre by drawing a scatter plot like the example on the right. You should also perform a Spearmans Rank Test.

Wind speed (m/s)

Distance from city centre (m)

Example research question:
How does wind speed compare between the urban centre and the suburbs?

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### Theoretical background and hypothesis

Buildings create friction which reduces wind speed. Therefore, the hypothesis for this question is that the urban centre will have lower wind speeds.

Measurement technique

Measure wind speed using an anemometer.

Sampling strategy

For this *comparison question* you should measure the wind speed at a wide selection of different locations in the urban centre and an equivalent selection of different locations in the suburbs.

Measurements of wind speed

Urban centre   Suburbs
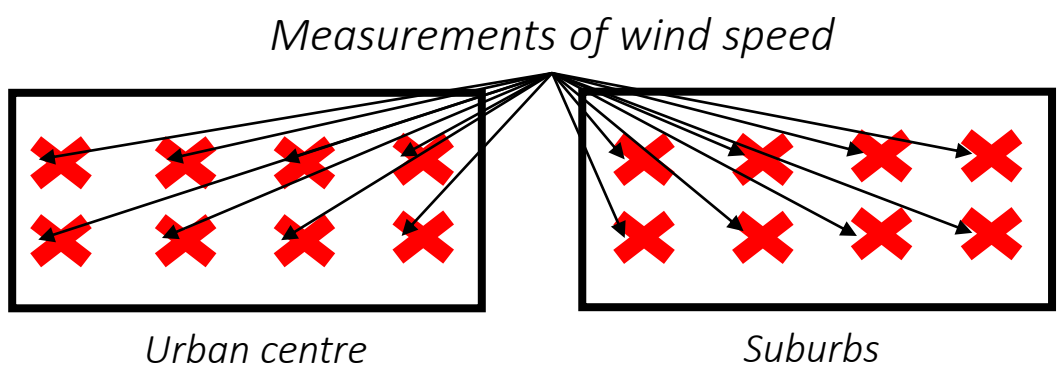
Data analysis

In order to answer this *comparison question* you should describe how the wind speed compares between the urban centre and the suburbs by drawing an individual plot like the example on the right. You should also perform a Mann-Whitney U Test.

Wind speed (m/s)

Urban centre   Suburbs
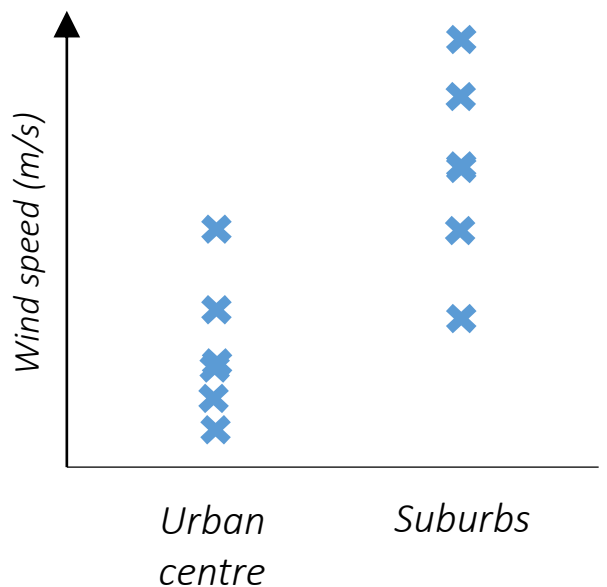
Example research question:
How does light intensity relate to distance from the urban centre?

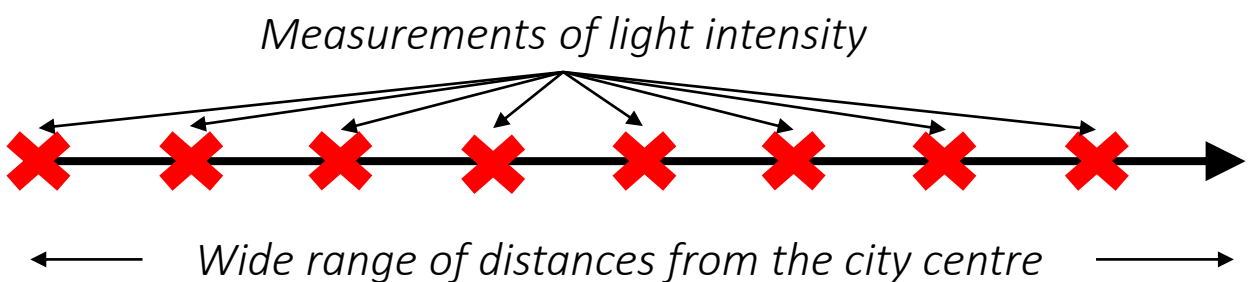### Theoretical background and hypothesis

Buildings block out the light from the sun. Therefore, the hypothesis would be that light intensity will increase with distance from the city centre.

Measurement technique

- Measure light intensity using light meter.
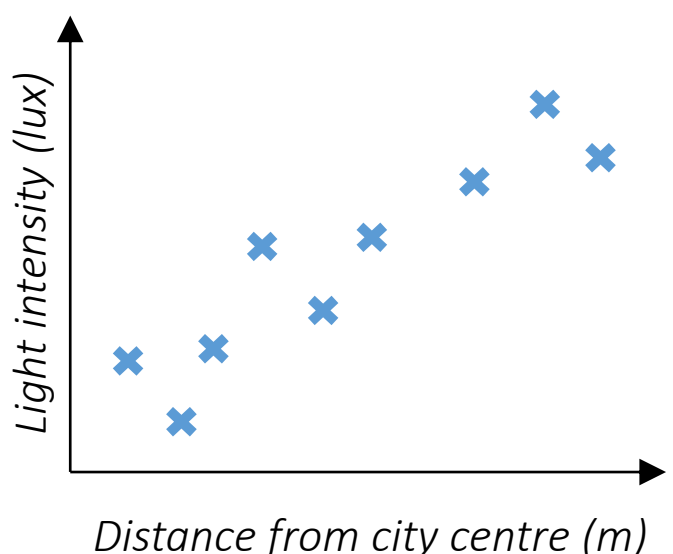- Measure distance from the city centre on a map

Sampling strategy

For this *relationship question* you should use a systematic sample that takes measurements of light intensity at points that are equally spaced across a wide range of distances from the city centre.

Measurements of light intensity

Wide range of distances from the city centre

Data analysis

In order to answer this *relationship question* you should describe how intensity relates to distance from the city centre by drawing a scatter plot like the example on the right. You should also perform a Spearmans Rank Test.

Light intensity (lux)

Distance from city centre (m)

How does light intensity compare between
the urban centre and the suburbs?

Theoretical background and hypothesis

Buildings block out the light from the sun. Therefore, the hypothesis for this question is that the urban centre will have reduced light intensity.

Measurement technique

Measure light intensity using light meter.

Sampling strategy

For this *comparison question* you should measure the light intensity at a selection of different locations in the urban centre and an equivalent selection of different locations in the suburbs.

Measurements of light intensity

Urban centre   *Suburbs*
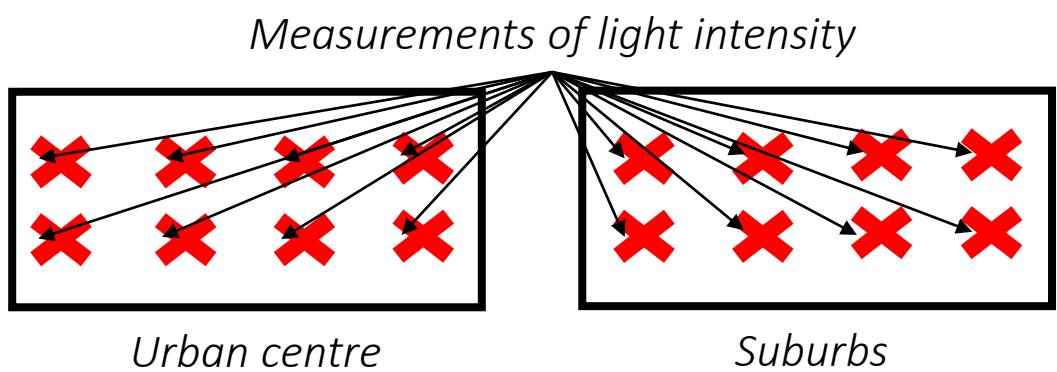
Data analysis

In order to answer this *comparison question* you should describe how the light intensity compares between the urban centre and the suburbs by drawing an individual plot like the example on the right. You should also perform a Mann-Whitney U Test.

Light intensity (lux)

Urban centre   Suburbs
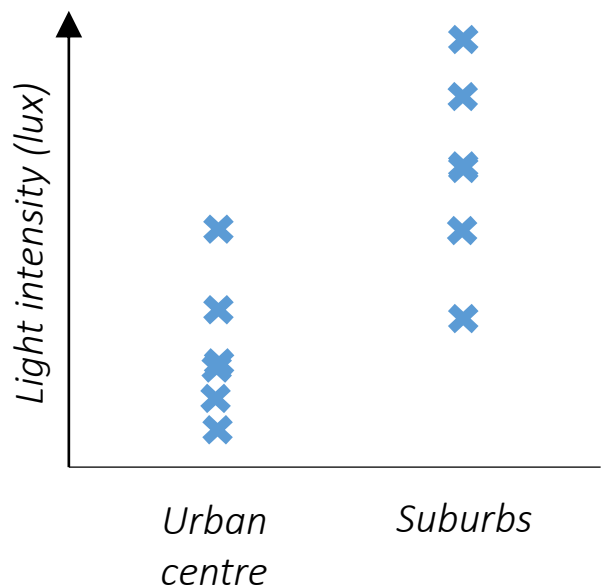
Example research question:
How does air temperature relate to distance from the urban centre?

Theoretical background and hypothesis
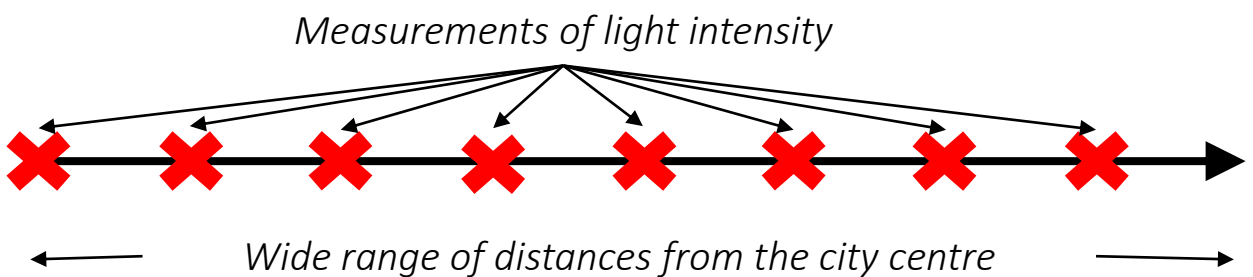
Artificial surfaces in urban areas store heat and emit it to the surround urban area. Therefore, the hypothesis would be that daytime air temperature will decrease with distance from the city centre.

Measurement technique

- Measure daytime air temperature using a thermometer.
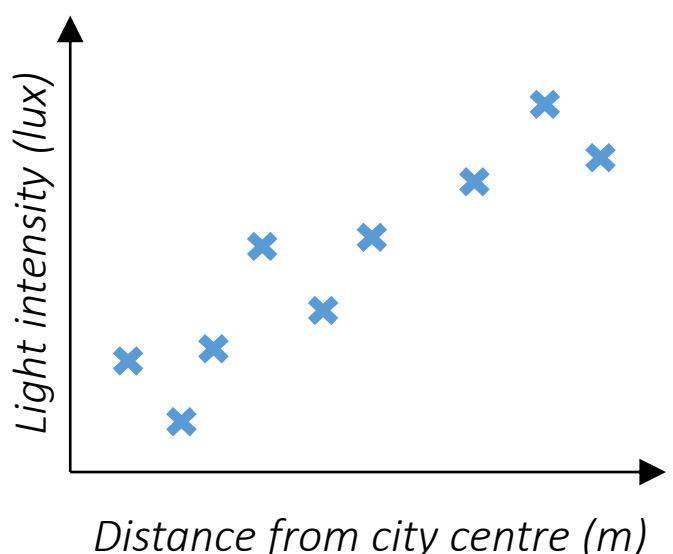- Measure distance from the city centre on a map

Sampling strategy

For this *relationship question* you should use a systematic sample that takes measurements of temperature at points that are equally spaced across a wide range of distances from the city centre.

Measurements of light intensity

Wide range of distances from the city centre

Data analysis

In order to answer this *relationship question* you should describe how intensity relates to distance from the city centre by drawing a scatter plot like the example on the right. You should also perform a Spearmans Rank Test.

Light intensity (lux)

Distance from city centre (m)

Theoretical background and hypothesis

Artificial surfaces in urban areas store heat and emit it to the surround urban area. Therefore, the hypothesis for this question is that the urban centre will have higher daytime air temperatures than the suburbs.

Measurement technique

Measure daytime air temperature using a thermometer.

Sampling strategy

For this *comparison question* you should measure the daytime air temperature at a selection of different locations in the urban centre and an equivalent selection of different locations in the suburbs.

Measurements of temperature

Urban centre   *Suburbs*
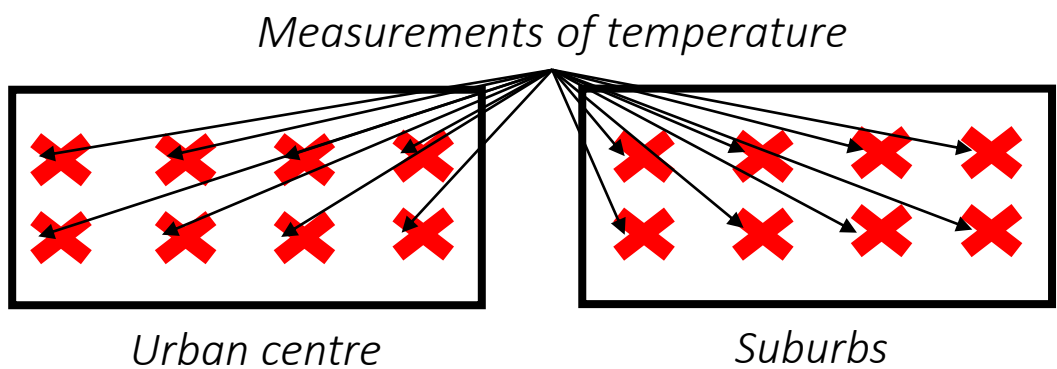
Data analysis

In order to answer this *comparison question* you should describe how the temperature compares between the urban centre and the suburbs by drawing an individual plot like the example on the right. You should also perform a Mann-Whitney U Test.
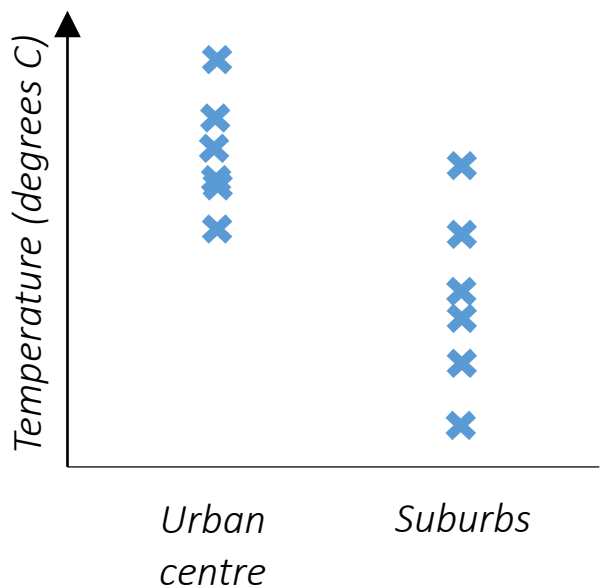
Example research questions: Population and the environment

How far do residents of an area with high life expectancy have to travel to buy fresh fruit and vegetables compared to residents of an area with low life expectancy?

How far do residents of an area with high life expectancy have to travel to their nearest pharmacy compared to residents of an area with low life expectancy?

How far do residents of an area with high life expectancy have to travel to their GP compared to residents of an area with low life expectancy?

How far do residents of an area with high life expectancy have to travel to access public green space compared to residents of an area with low life expectancy?

How far do residents of an area with high life expectancy have to travel to their nearest public swimming pool compared to residents of an area with low life expectancy?

Example research question:

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Theoretical background and hypothesis

People who have better access to fresh fruit and vegetables are likely to live more healthily. Therefore, the hypothesis for this question is that residents of the area with higher life expectancy won't have to travel as far to buy fresh fruit and vegetables.

Measurement technique

Ask someone how long it would take them to buy some fresh fruit and vegetables from their home.

Sampling strategy

For this *comparison question* you should measure the time taken to buy fresh fruit and vegetables of a selection of residents from an area with high life expectancy and an equivalent selection of residents from an area with low life expectancy.
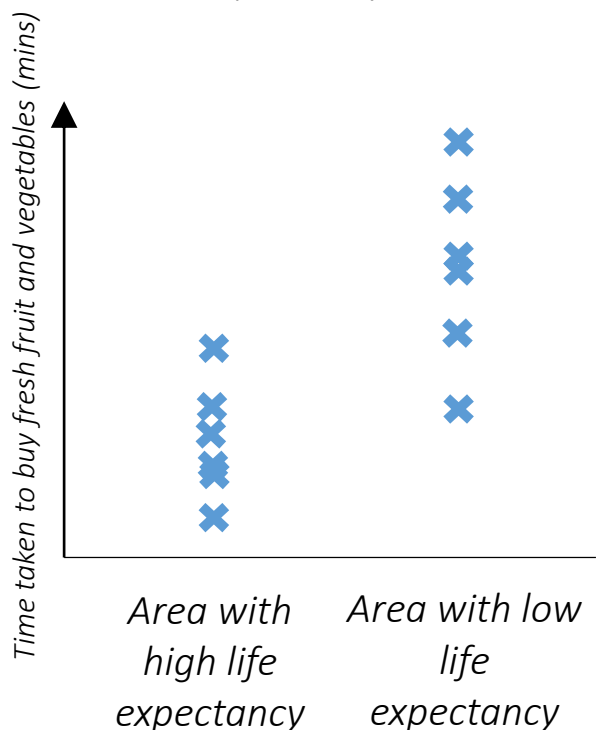
Measurements of time taken to buy fruit and vegetables
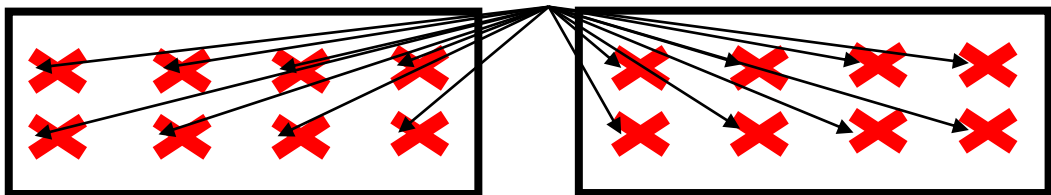
Residents of area with high life expectancy

Residents of area with low life expectancy

Data analysis

In order to answer this *comparison question* you should describe how the time taken to buy fruit and vegetables compares between the residents of areas with high and low life expectancies by drawing an individual plot like the example on the right. You should also perform a Mann-Whitney U Test.

Time taken to buy fresh fruit and vegetables (mins)

Area with high life expectancy

Area with low life expectancy

Example research question:

How far do residents of an area with high life expectancy have to travel to their nearest pharmacy compared to residents of an area with low life expectancy?

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Theoretical background and hypothesis

People who have better access to medication are likely to live longer. Therefore, the hypothesis for this question is that residents of the area with higher life expectancy won't have to travel as far to their nearest pharmacy.

Measurement technique

Ask someone how long it would take them to get to their nearest pharmacy from their home.

Sampling strategy

For this *comparison question* you should measure the time taken to get to a pharmacy of a selection of residents from an area with high life expectancy and an equivalent selection of residents from an area with low life expectancy.

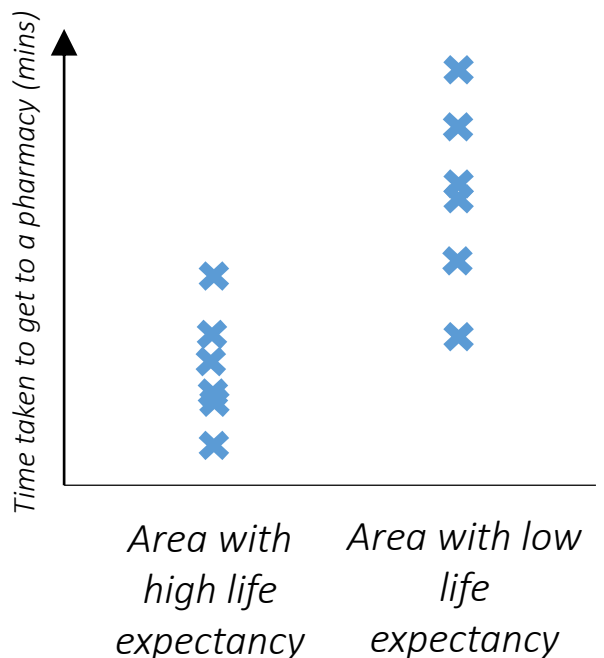*Measurements of time taken to get to a pharmacy*
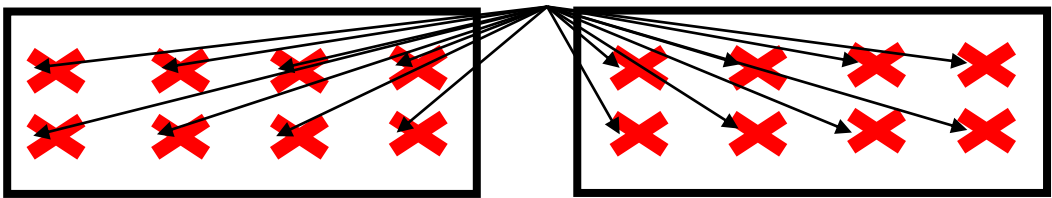
Residents of area with high life expectancy

Residents of area with low life expectancy

Data analysis

In order to answer this *comparison question* you should describe how the time taken to get to a pharmacy compares between the residents of areas with high and low life expectancies by drawing an individual plot like the example on the right. You should also perform a Mann-Whitney U Test.

Time taken to get to a pharmacy (mins)

Area with high life expectancy

Area with low life expectancy

Example RQ topics

Main menu

Example research question:

How far do residents of an area with high life expectancy have to travel to their GP compared to residents of an area with low life expectancy?

UWE Bristol | University of the West of England

Theoretical background and hypothesis

People who have better access to health care are likely to live longer. Therefore, the hypothesis for this question is that residents of the area with higher life expectancy won't have to travel as far to their GP.

Measurement technique

Ask someone how long it would take them to get to their GP from their home.

Sampling strategy

For this *comparison question* you should measure the time taken to get to their GP of a selection of residents from an area with high life expectancy and an equivalent selection of residents from an area with low life expectancy.
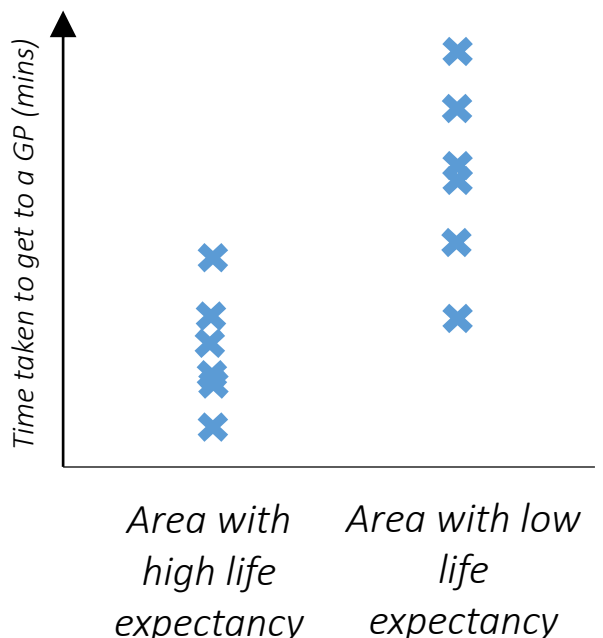
Measurements of time taken to get to a GP
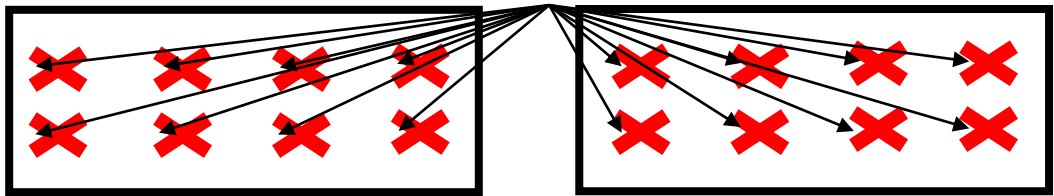
Residents of area with high life expectancy   *Residents of area with low life expectancy*

Data analysis

In order to answer this *comparison question* you should describe how the time taken to get to a GP compares between the residents of areas with high and low life expectancies by drawing an individual plot like the example on the right. You should also perform a Mann-Whitney U Test.

Time taken to get to a GP (mins)

Area with high life expectancy   *Area with low life expectancy*

Example research question:

How far do residents of an area with high life expectancy have to travel to access public green space compared to residents of an area with low life expectancy?

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Theoretical background and hypothesis

People who have better access to recreational spaces are likely to live longer. Therefore, the hypothesis for this question is that residents of the area with higher life expectancy won't have to travel as far to their nearest public green space.

Measurement technique

Ask someone how long it would take them to get to their nearest public green space from their home.

Sampling strategy

For this *comparison question* you should measure the time taken to get to their nearest public green space of a selection of residents from an area with high life expectancy and an equivalent selection of residents from an area with low life expectancy.

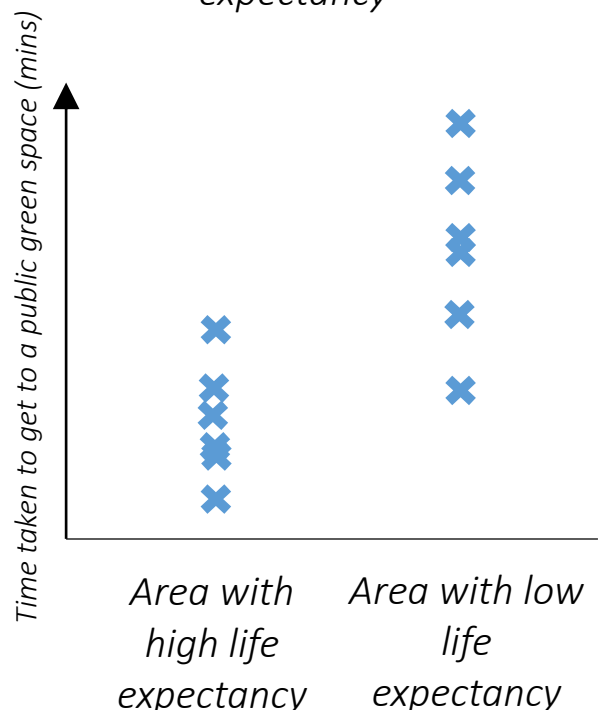Measurements of time taken to get to nearest public green space
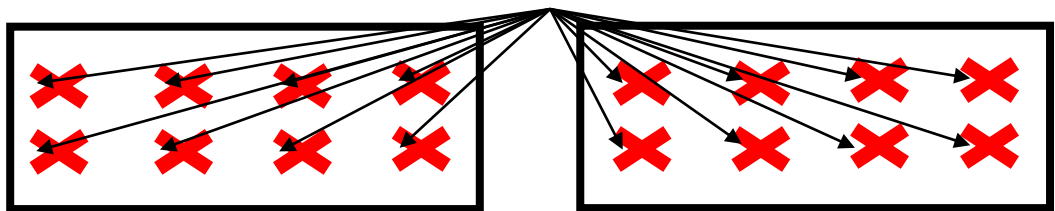
Residents of area with high life expectancy

Residents of area with low life expectancy

Data analysis

In order to answer this *comparison question* you should describe how the time taken to get to a public green space compares between the residents of areas with high and low life expectancies by drawing an individual plot like the example on the right. You should also perform a Mann-Whitney U Test.

Time taken to get to a public green space (mins)

Area with high life expectancy

Area with low life expectancy

Example RQ topics

Main menu

Example research question:

How far do residents of an area with high life expectancy have to travel to their nearest public swimming pool compared to residents of an area with low life expectancy?

UWE Bristol | University of the West of England

## Theoretical background and hypothesis

People who have better access to recreational facilities are likely to live longer. Therefore, the hypothesis for this question is that residents of the area with higher life expectancy won't have to travel as far to their nearest public swimming pool.

Measurement technique

Ask someone how long it would take them to get to their nearest public swimming pool from their home.

Sampling strategy

For this *comparison question* you should measure the time taken to get to their nearest public swimming pool of a selection of residents from an area with high life expectancy and an equivalent selection of residents from an area with low life expectancy.

Measurements of time taken to get to nearest public swimming pool

Residents of area with high life expectancy

Residents of area with low life expectancy
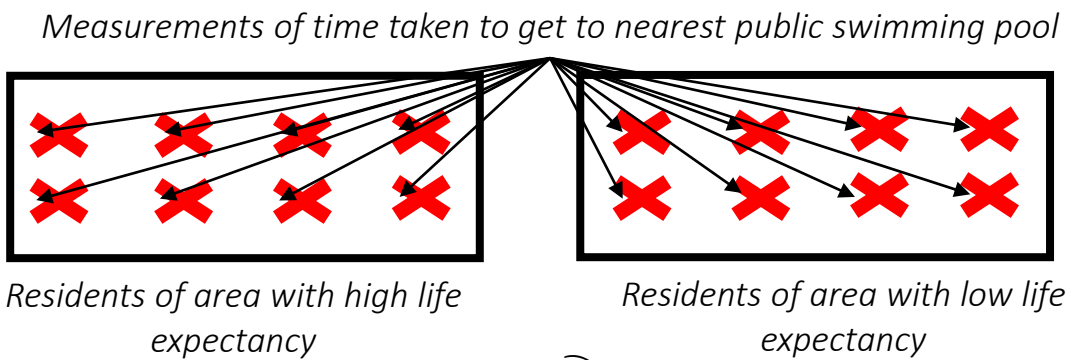
Data analysis

In order to answer this *comparison question* you should describe how the time taken to get to a public swimming pool compares between the residents of areas with high and low life expectancies by drawing an individual plot like the example on the right. You should also perform a <u>Mann-Whitney U Test</u>.

Time taken to get to a public swimming pool (mins)

Area with high life expectancy

Area with low life expectancy
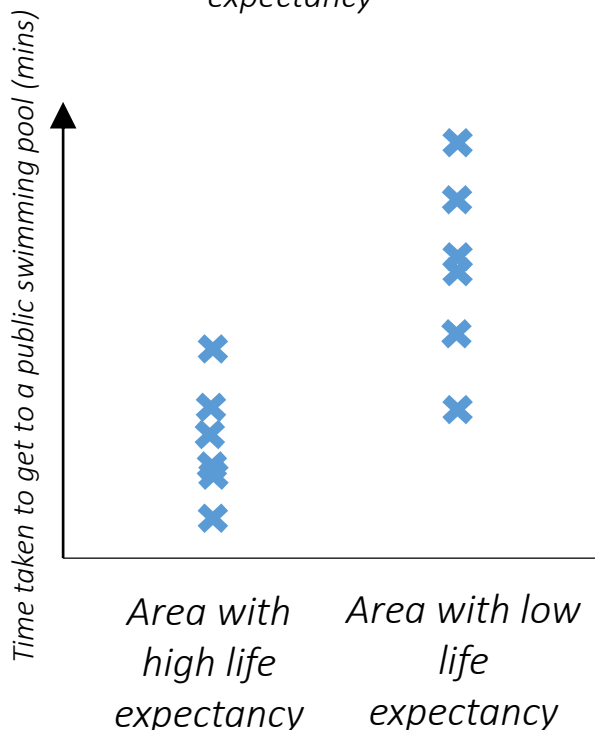
Example research questions:
Resource security

How do perceptions of the value of wind farms as an energy source compare between teenagers and pensioners?

How do perceptions of the value of solar farms as an energy source compare between teenagers and pensioners?

How do perceptions of the value of coal power stations as an energy source compare between teenagers and pensioners?

How do perceptions of the value of wind farms as an energy source compare between people living close to and far away from wind farms?

How do perceptions of the value of solar farms as an energy source compare between people living close to and far away from solar farms?

How do perceptions of the value of coal power stations as an energy source compare between people living close to and far away from coal power stations?

How do perceptions of the value of nuclear power stations as an energy source compare between people living close to and far away from nuclear power stations?

Example research question:

How do perceptions of the value of wind farms as an energy source compare between teenagers and pensioners?

Theoretical background and hypothesis

Younger people tend to have a more environmentally friendly attitude. Therefore, the hypothesis for this question is that teenagers will have a more positive perception of the value of wind farms as an energy source.
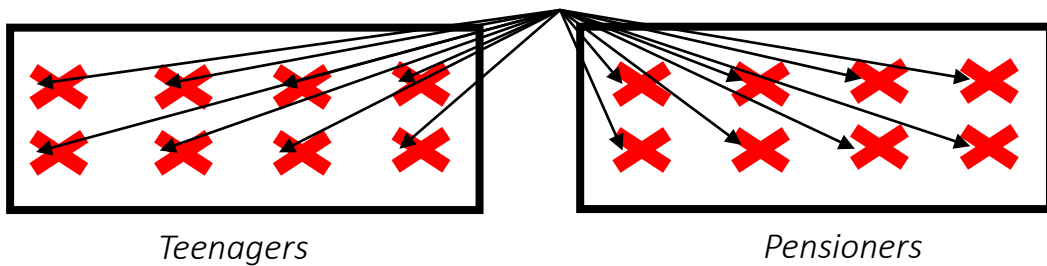
Measurement technique

Measure an individual's perception of the importance of wind farms as an energy source using a Likert Scale (1 - Very unimportant, 2 - Quite unimportant, 3 - Neither important or unimportant, 4 - Quite important, 5 - Very important).
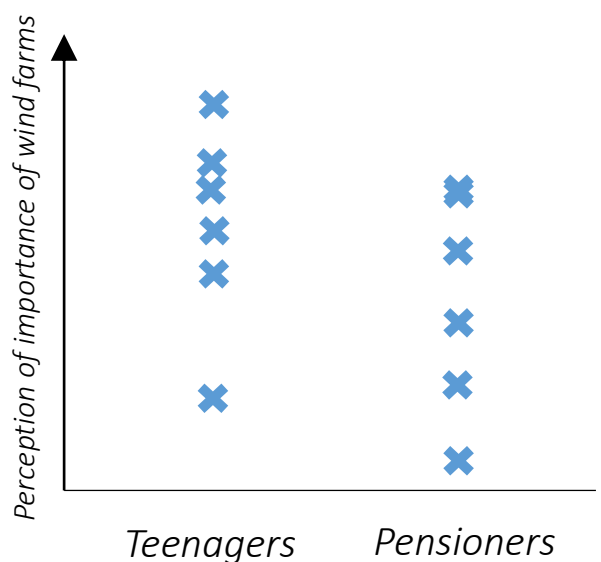
Sampling strategy

For this *comparison question* you should measure perceptions of the importance of wind farms of a selection of teenagers and an equivalent selection of pensioners.

Measurements of perception of importance of wind farms as energy source

Teenagers   *Pensioners*

Data analysis

In order to answer this *comparison question* you should describe how the perception of the importance of wind farms compares between teenagers and pensioners by drawing an individual plot like the example on the right. You should also perform a Mann-Whitney U Test.

Example RQ topics   Main menu

Example research question:

How do perceptions of the value of solar farms as an energy source compare between teenagers and pensioners?

Theoretical background and hypothesis

Younger people tend to have a more environmentally friendly attitude. Therefore, the hypothesis for this question is that teenagers will have a more positive perception of the value of solar farms as an energy source.
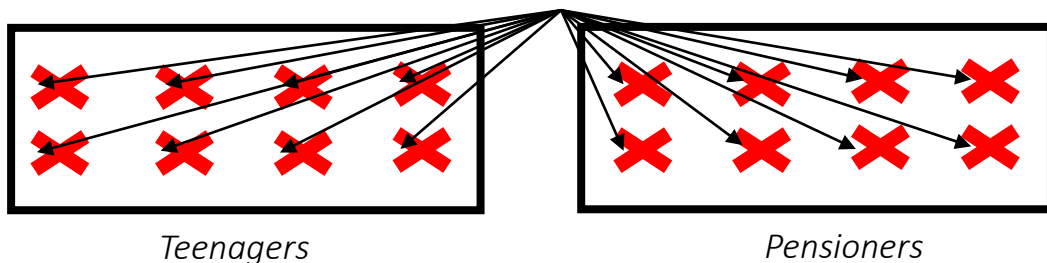
Measurement technique

Measure an individual's perception of the importance of solar farms as an energy source using a Likert Scale (1 - Very unimportant, 2 - Quite unimportant, 3 - Neither important or unimportant, 4 - Quite important, 5 - Very important).
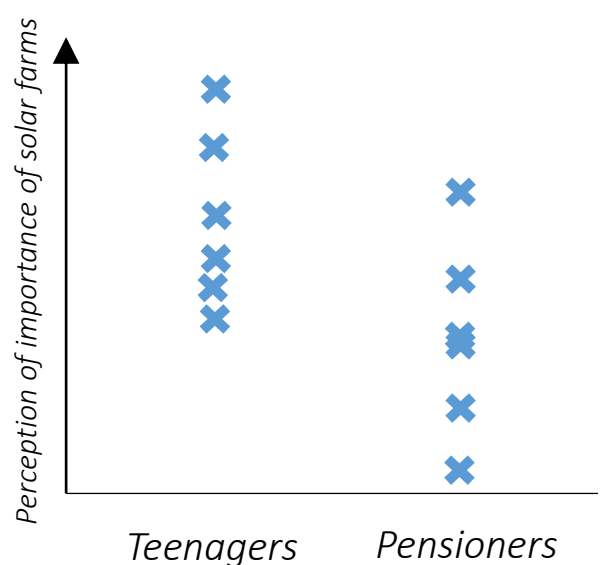
Sampling strategy

For this *comparison question* you should measure perceptions of the importance of solar farms of a selection of teenagers and an equivalent selection of pensioners.

Measurements of perception of importance of solar farms as energy source

Teenagers   Pensioners

Data analysis

In order to answer this *comparison question* you should describe how the perception of the importance of solar farms compares between teenagers and pensioners by drawing an individual plot like the example on the right. You should also perform a Mann-Whitney U Test.

Perception of importance of solar farms

Teenagers   Pensioners

Example RQ topics   Main menu

Example research question:

How do perceptions of the value of coal power stations as an energy source compare between teenagers and pensioners?

Theoretical background and hypothesis

Younger people tend to have a more environmentally friendly attitude. Therefore, the hypothesis for this question is that teenagers will have a more negative perception of the value of coal power stations as an energy source.
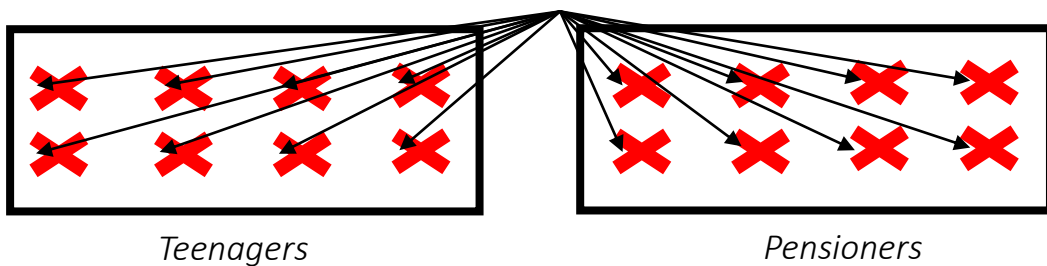
Measurement technique

Measure an individual's perception of the importance of coal power stations as an energy source using a Likert Scale (1 - Very unimportant, 2 - Quite unimportant, 3 - Neither important or unimportant, 4 - Quite important, 5 - Very important).
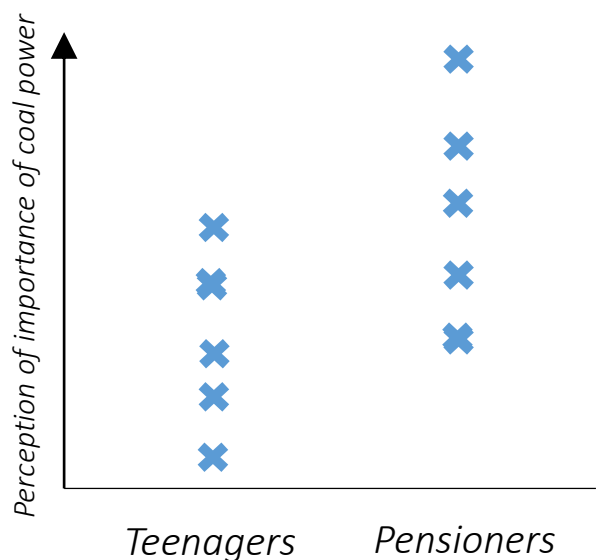
Sampling strategy

For this *comparison question* you should measure perceptions of the importance of coal power stations of a selection of teenagers and an equivalent selection of pensioners.

Measurements of perception of importance of coal power as energy source

Teenagers   *Pensioners*

Data analysis

In order to answer this *comparison question* you should describe how the perception of the importance of coal power compares between teenagers and pensioners by drawing an individual plot like the example on the right. You should also perform a Mann-Whitney U Test.

How do perceptions of the value of wind farms as an energy source compare between people living close to and far away from wind farms?

Theoretical background and hypothesis

People tend to form negative viewpoints about technology that causes a disturbance to their local neighbourhood. Therefore, the hypothesis for this question is that people living close to wind farms will have a more negative perception of their value.

Measurement technique

Measure an individual's perception of the importance of wind farms as an energy source using a Likert Scale (1 - Very unimportant, 2 - Quite unimportant, 3 - Neither important or unimportant, 4 - Quite important, 5 - Very important).

Sampling strategy

For this *comparison question* you should measure perceptions of the importance of wind farms of a selection of people who live close to one and an equivalent selection of people who live far away from any.

*Measurements of perception of importance of wind farms as energy source*
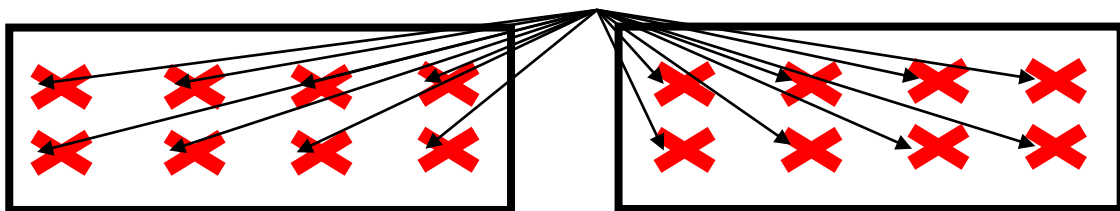
People who live close to a wind farm   *People who live far away from a wind farm*

Data analysis

In order to answer this *comparison question* you should describe how the perception of the importance of wind farms compares between people who live close by and far away by drawing an individual plot like the example on the right. You should also perform a [Mann-Whitney U Test](#).

[Example RQ topics](#)   [Main menu](#)
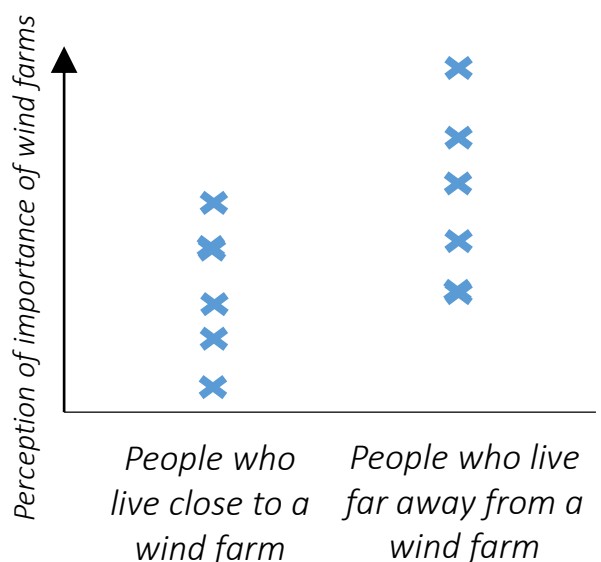
Example research question:

How do perceptions of the value of solar farms as an energy source compare between people living close to and far away from solar farms?

Theoretical background and hypothesis

People tend to form negative viewpoints about technology that causes a disturbance to their local neighbourhood. Therefore, the hypothesis for this question is that people living close to solar farms will have a more negative perception of their value.

Measurement technique

Measure an individual's perception of the importance of solar farms as an energy source using a Likert Scale (1 - Very unimportant, 2 - Quite unimportant, 3 - Neither important or unimportant, 4 - Quite important, 5 - Very important).

Sampling strategy

For this *comparison question* you should measure perceptions of the importance of solar farms of a selection of people who live close to one and an equivalent selection of people who live far away from any.

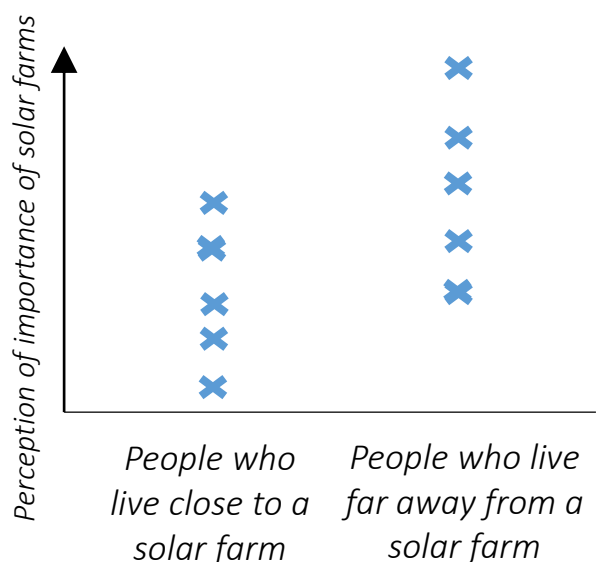*Measurements of perception of importance of solar farms as energy source*
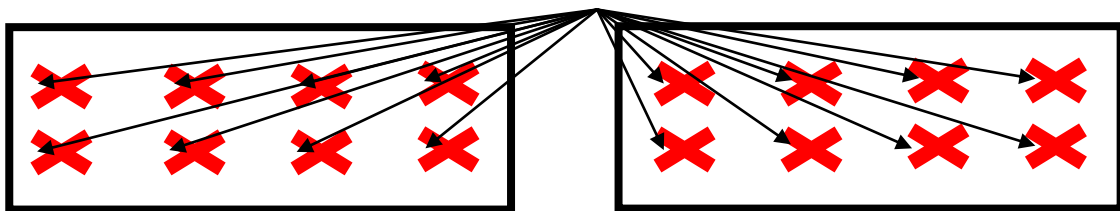
People who live close to a solar farm   *People who live far away from a solar farm*

Data analysis

In order to answer this *comparison question* you should describe how the perception of the importance of solar farms compares between people who live close by and far away by drawing an individual plot like the example on the right. You should also perform a [Mann-Whitney U Test](#).

Perception of importance of solar farms

People who live close to a solar farm   *People who live far away from a solar farm*

[Example RQ topics](#)   [Main menu](#)

Example research question:

How do perceptions of the value of coal power stations as an energy source compare between people living close to and far away from coal power stations?

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Theoretical background and hypothesis

People tend to form negative viewpoints about technology that causes a disturbance to their local neighbourhood. Therefore, the hypothesis for this question is that people living close to coal power stations will have a more negative perception of their value.

Measurement technique

Measure an individual's perception of the importance of coal power stations as an energy source using a Likert Scale (1 - Very unimportant, 2 - Quite unimportant, 3 - Neither important or unimportant, 4 - Quite important, 5 - Very important).

Sampling strategy

For this *comparison question* you should measure perceptions of the importance of coal power stations of a selection of people who live close to one and an equivalent selection of people who live far away from any.

*Measurements of perception of importance of coal power as energy source*
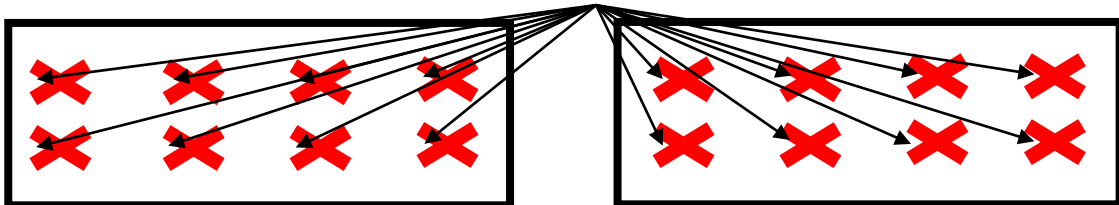
People who live close to a coal power station   *People who live far away from a coal power station*

Data analysis

In order to answer this *comparison question* you should describe how the perception of the importance of coal power compares between people who live close by and far away by drawing an individual plot like the example on the right. You should also perform a Mann-Whitney U Test.

Example RQ topics   Main menu
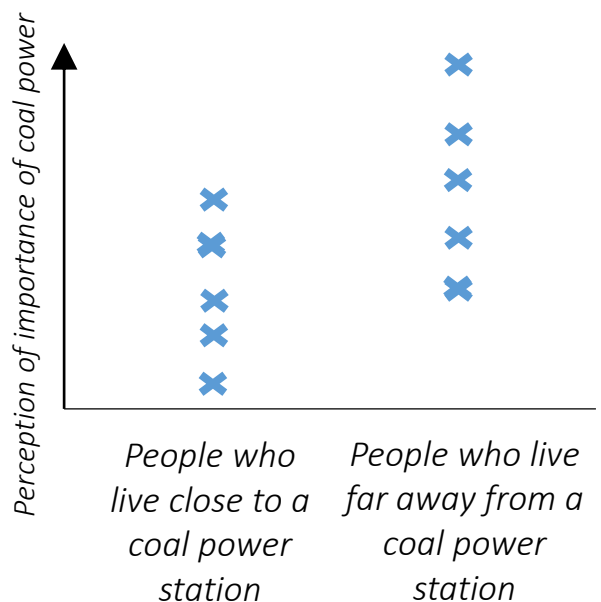
Example research question:

How do perceptions of the value of nuclear power stations as an energy source compare between people living close to and far away from nuclear power stations?

Theoretical background and hypothesis

People tend to form negative viewpoints about technology that causes a disturbance to their local neighbourhood. Therefore, the hypothesis for this question is that people living close to nuclear power stations will have a more negative perception of their value.

Measurement technique

Measure an individual's perception of the importance of nuclear power stations as an energy source using a Likert Scale (1 - Very unimportant, 2 - Quite unimportant, 3 - Neither important or unimportant, 4 - Quite important, 5 - Very important).

Sampling strategy

For this *comparison question* you should measure perceptions of the importance of nuclear power stations of a selection of people who live close to one and an equivalent selection of people who live far away from any.
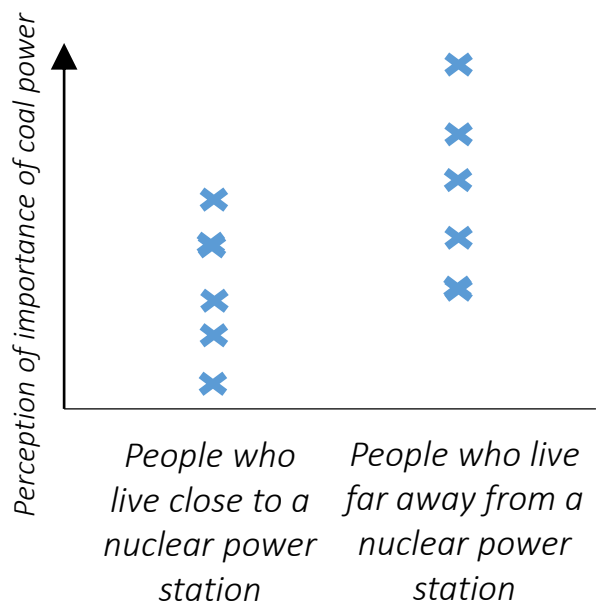
Measurements of perception of importance of nuclear power as energy source
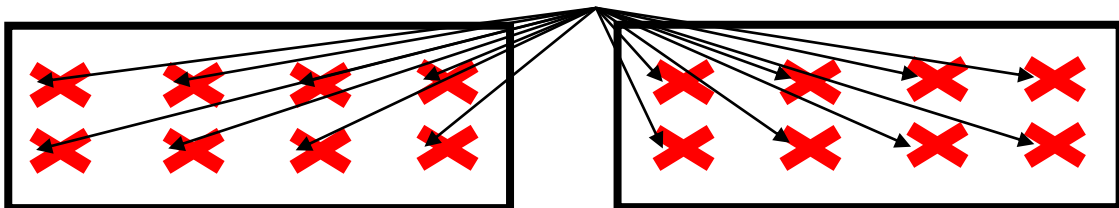
People who live close to a nuclear power station   People who live far away from a **nuclear** power station

Data analysis

In order to answer this *comparison question* you should describe how the perception of the importance of nuclear power compares between people who live close by and far away by drawing an individual plot like the example on the right. You should also perform a Mann-Whitney U Test.

Perception of importance of coal power

People who live close to a nuclear power station   People who live far away from a nuclear power station

Example RQ topics   Main menu

Good luck!