



Prifysgol Cymru
Y Drindod Dewi Sant
University of Wales
Trinity Saint David

BMPF7006: Research Methods for Work-based Learning

Day 2: Review; analysis; assessment

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Transforming Education; Transforming Lives



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Aims, day 2

- Review & recap
- Discuss progress with assessment component 1; writing critical essays
- Approaches to analysing data
- assessment component 2

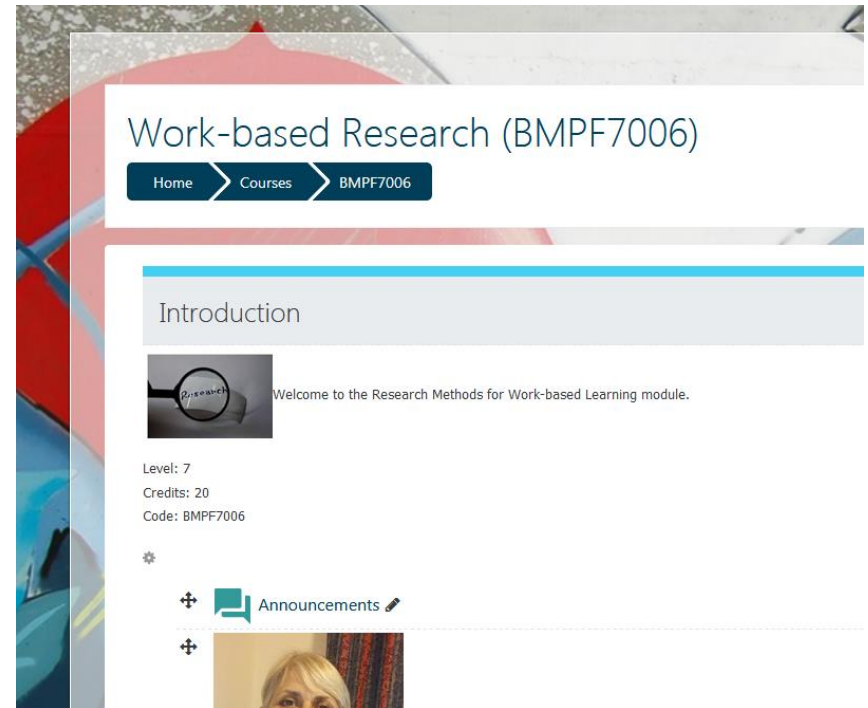
MODULE OUTCOMES

Upon the successful completion of this module, the learner should be able to demonstrate the ability to:

- critically evaluate a range of methodological approaches, research designs, and research methods appropriate to gather data from complex work-based settings, with due consideration to research ethics and issues of insider research;
- critically analyse, explain, and draw conclusions from relevant data from a work-based setting.

Reminder: Moodle

- All resources from Day 1 & Day 2 on Moodle
- Also all hand-outs, and articles, guides etc



Review 😊



- Q: What does this diagram represent?
- A: The concept of a 'research paradigm'

Ontology

- What are two key ontological positions?

Objectivism

Reality is objective, and independent of other external /social factors

Subjectivism

Reality is subjective, and cannot be considered independently of experience, viewpoints, social factors

More about 'Epistemology'

- What are two important epistemological positions?

Positivism

there is a positive, objective reality that can be observed and measured using the senses following a scientific approach ('the scientist'!)

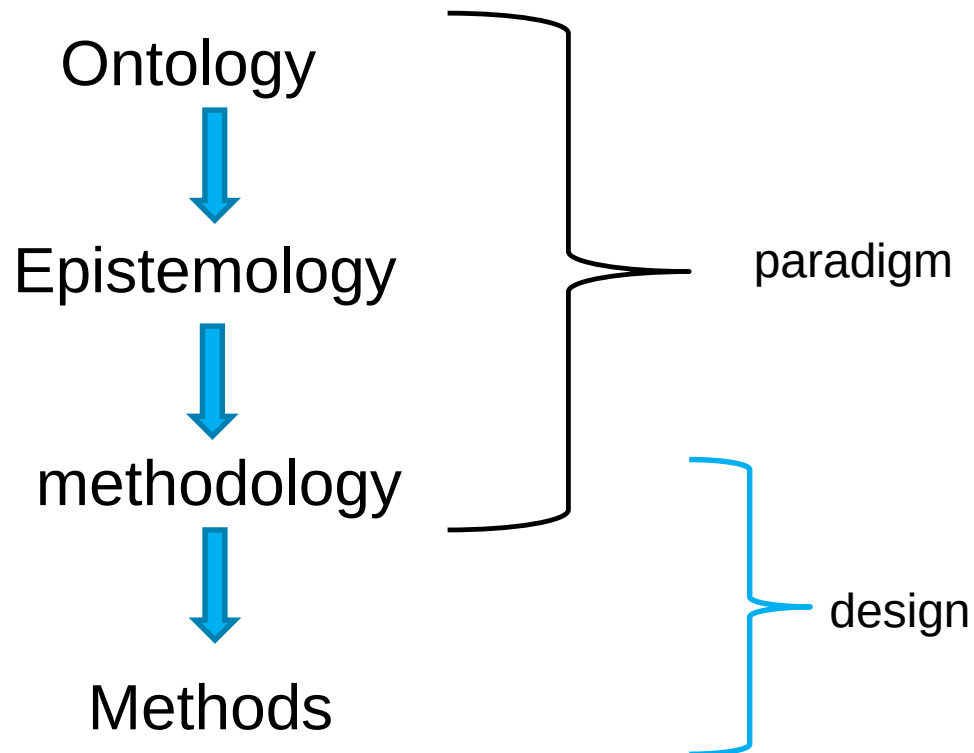
Interpretivism

people and their institutions are fundamentally different from the natural sciences, and they need to be understood and interpreted ('the detective'!)
Social factors may be important ('social constructivism')

What are two main methodological categories?

Quantitative	Qualitative
Looking for cause and effect; testing theory ('deductive')	Looking for meaning, experience; developing theory ('inductive')
Data collected is numerical, eg. measurements of height, time; numbers of people, plants etc	Data collected has 'qualities' that are predominantly not numerical eg. narratives, observations, video, case studies

Research Design



Some Research Designs

Design type	Key points
Mixed methodology	
Experiment	
Action Research	
Case Study	

Suggest some key Research Methods

Qualitative

- Interview
- Dialogue /Narrative
- Focus group
- Observation
- Case study
- Action research
- Diary/ log

Quantitative

- survey
- Structured interview
- Experiment
- Content analysis

Assessment so far

Assessment Component 1: 3000 words):

critically evaluate a range of methodological approaches, research designs, and research methods appropriate to gather data from complex work-based settings, with due consideration to research ethics and issues of insider research (50%)



[See hand-out](#)

Assessment Component 1: Guidance

Possible structure of account:

- Introduction, with explanation about philosophical background to research (covering paradigm, ontology, epistemology)
- The two main methodological approaches, (ie. qualitative & quantitative), and some key research designs (eg. case study, experiment, action research) + your critical evaluation
- Range of research methods (eg. interview, survey, focus group, observation) + your critical evaluation of them (which will usually reflect your own role & perspective)
- Explanation of the importance of ethics , & issue of insider research
- Brief conclusion, eg. summarising research designs & methods potentially useful for your future research

You may use side-headings if you find this helpful. Remember to keep to the word count (+/-10%), and use the UWTSD Harvard system for referencing.

Reminder: referencing

- Use the UWTSD **Harvard** system
- Guide on Moodle
- Example:
- Costley, C., Elliott, G., and Gibbs, P. (2010) *Work Based Research*. London: Sage.

[you do not need to have read all the references in the list provided in the Module Descriptor, and in the case of books, it's acceptable to just 'dip in' for specific topics]

Presenting and analysing the data generated by research

Examples of Data

- Observations, recordings
- Transcripts from Discussions/ dialogues/ interviews/ narratives from individuals or groups
- Case Studies: range of possibilities, eg. pictures, videos, plans, interviews, archive materials
- Measurements, Likert scale responses, % values, and other numerical responses, eg. on Excel spreadsheet



Summarising, Analysing, Presenting data

- Making the data easier to see & understand
- Finding trends and 'messages' from the data

Summarising and Analysing *qualitative* data: Thematic analysis

- Often involves 'coding' transcripts (eg. of interviews)
- look for emerging themes
- Can be done manually or using software (eg. Nvivo)

(see example)

Analysing quantitative and semi-quantitative data

- **Descriptive statistics:** summarise and describe data, eg. tables, charts (**this is the main requirement of your assignment**)
- **Inferential statistics:** inferring trends, relationships, differences, in data, eg. T tests

Key types of quantitative data

Data type	description
'Scale', or 'Interval/ratio' data	Numerical (quantitative) data with clear, fixed intervals (eg. 1,2,3).
Ordinal data	Data which can be rank ordered, but with differences that are not clear/fixed (eg. once a day; agree strongly)
Nominal data	Data which describes categories (categorical/ qualitative data) (eg. red, green, blue).

Populations and Samples

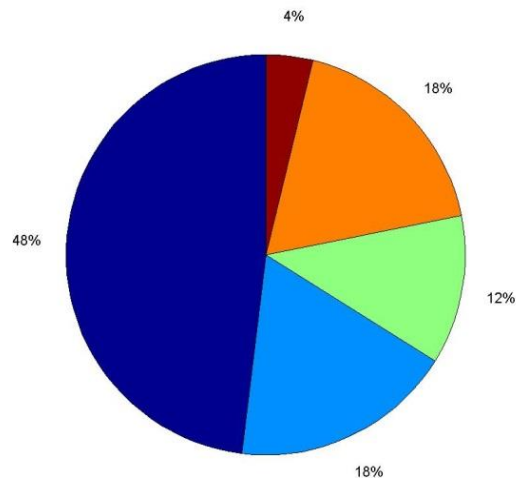
- Imagine that you wished to find out number of people doing different jobs in a factory.
- The whole factory would provide you the ‘**population**’ of jobs
- If you could only survey one department, you would only have a ‘**sample**’ (would it be a ‘random’ sample?)

Recording data: Frequency tables

Job	Frequency	Cumulative Frequency
admin	546	546
engineer	647	1193
production	269	1462
management	135	1597

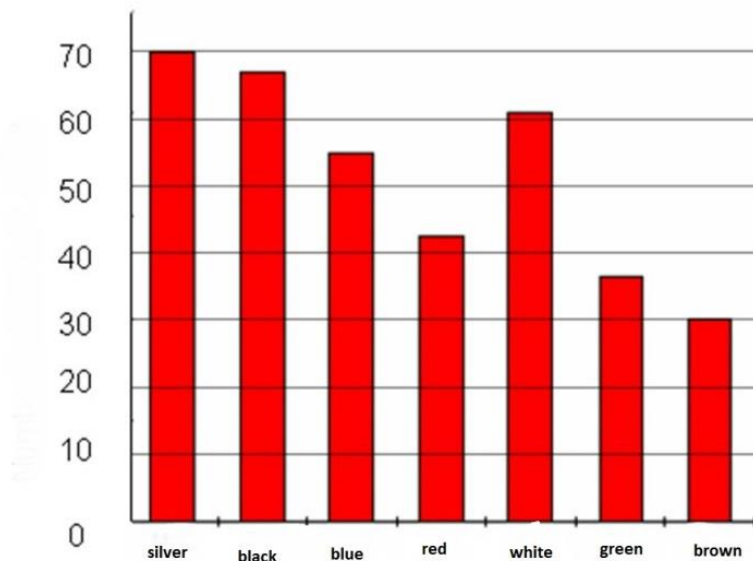
These are '**semi-quantitative**' data because one **variable** is *quantitative* (frequency), and the other (jobs) is *qualitative* (this can also be described as '**nominal**' or '**categorical**')

presenting semi-quantitative data



This is a **pie-chart**. Data is organised into categories (eg. different jobs: qualitative), with each assigned a 'piece of pie' whose size is proportional to its frequency. The whole pie (1, or 100%) corresponds to the total frequency (1597 in the previous example)

presenting semi-quantitative data (2)



- This is a vertical **bar-chart**, with *qualitative* information on the **horizontal (x) axis**, and *quantitative* information on the **vertical (y) axis**

Activity

Data sorting, counting, percentages, charts, tables (MS Excel)

presenting fully-quantitative data

- Suppose you wished to investigate how the colour intensity (say on a scale of 0-10) of a plastic product depended on the processing time
- How could these data be represented?

Results Table

Time (min)	Colour intensity (0-10 scale)			
	Trial 1	Trial 2	Trial 3	Average
5	1	0	1	
10	3	3	2	
15	4	5	6	
20	7	8	8	
25	8	8	8	

Measures of **central tendency** (ie. 'middle' values):

Mean: sum of all values divided by frequency

Mode: most common value

Median: value at the 50% frequency point

Measures of **dispersion** (spread)

Range: difference between the largest and smallest values

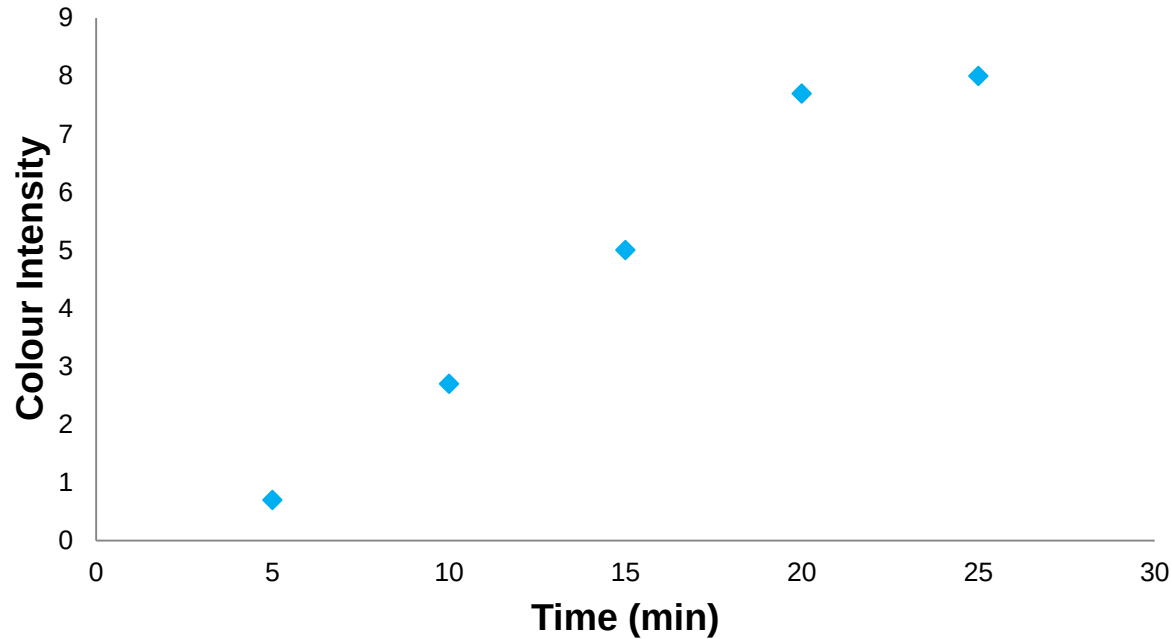
(also variance, and Standard deviation)

Table to show Summary of Results

Time (min)	Mean Colour intensity (0-10 scale)
5	0.7
10	2.7
15	5.0
20	7.7
25	8.0

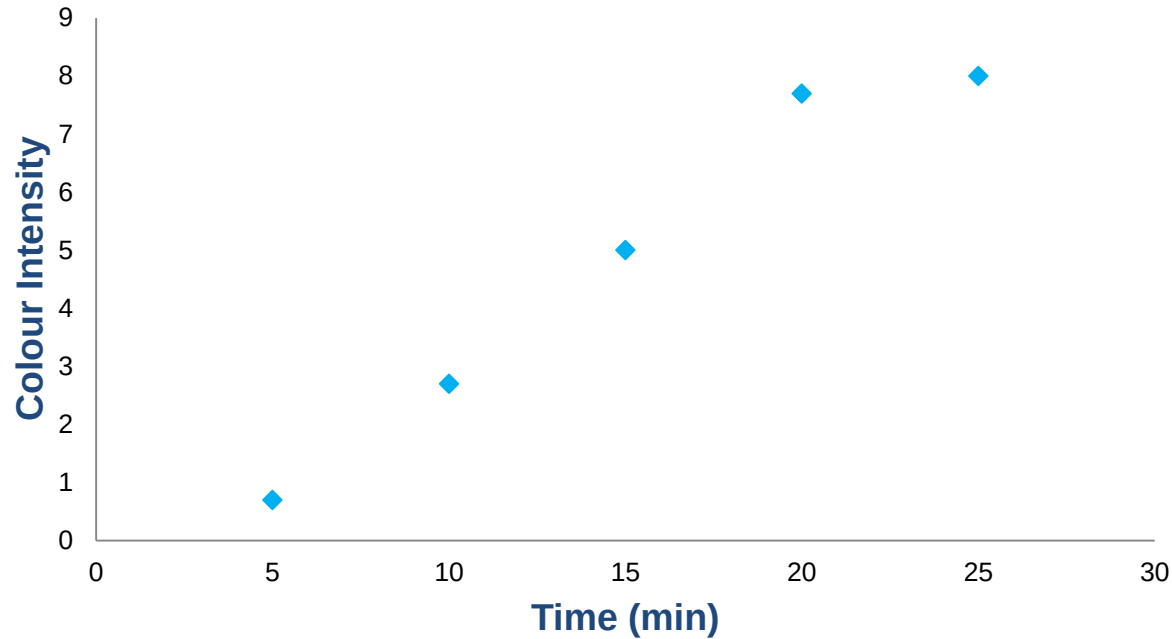
NB: It's important that every Table has a main heading, with column headings to show variables. Units should be indicated *in column headings (not in the body of the table)*

Scatter Plot to show relationship between process time and colour intensity



- The scatter plot shows the relationship between two **continuous scale variables**
- Time is the **‘independent’ variable**; colour intensity is the **‘dependent’ variable**

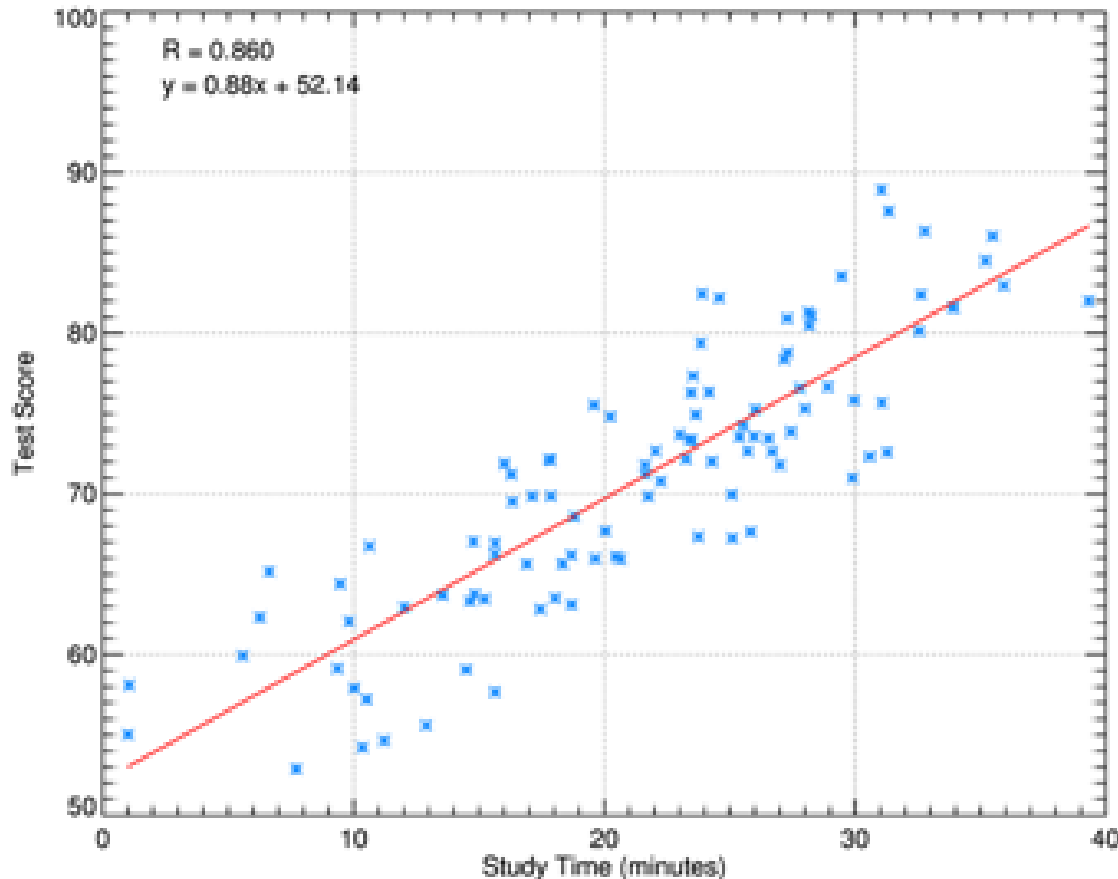
Scatter Plot to show relationship between process time and colour intensity



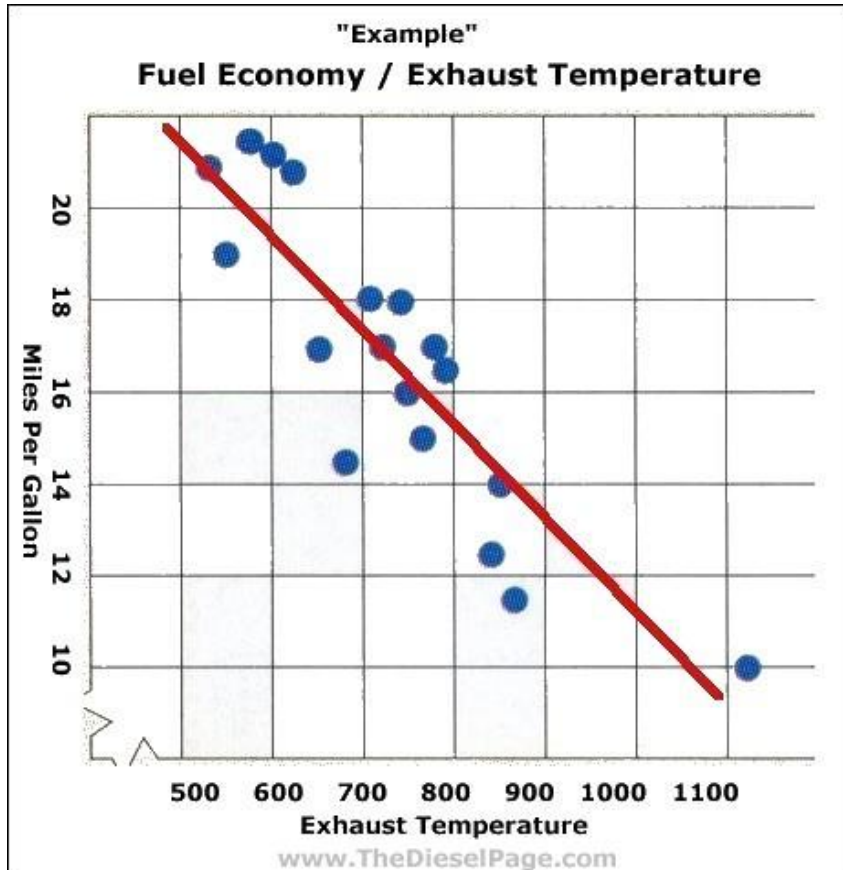
- Note that the **'independent' variable** (here, time) is always plotted on the **horizontal x axis**;
- the **'dependent' variable** (here, colour intensity), is always plotted on the **vertical y axis**

NB: It's important that every chart/graph has a heading, and labels on axes. Units should be indicated where appropriate

Another example of a scatter plot



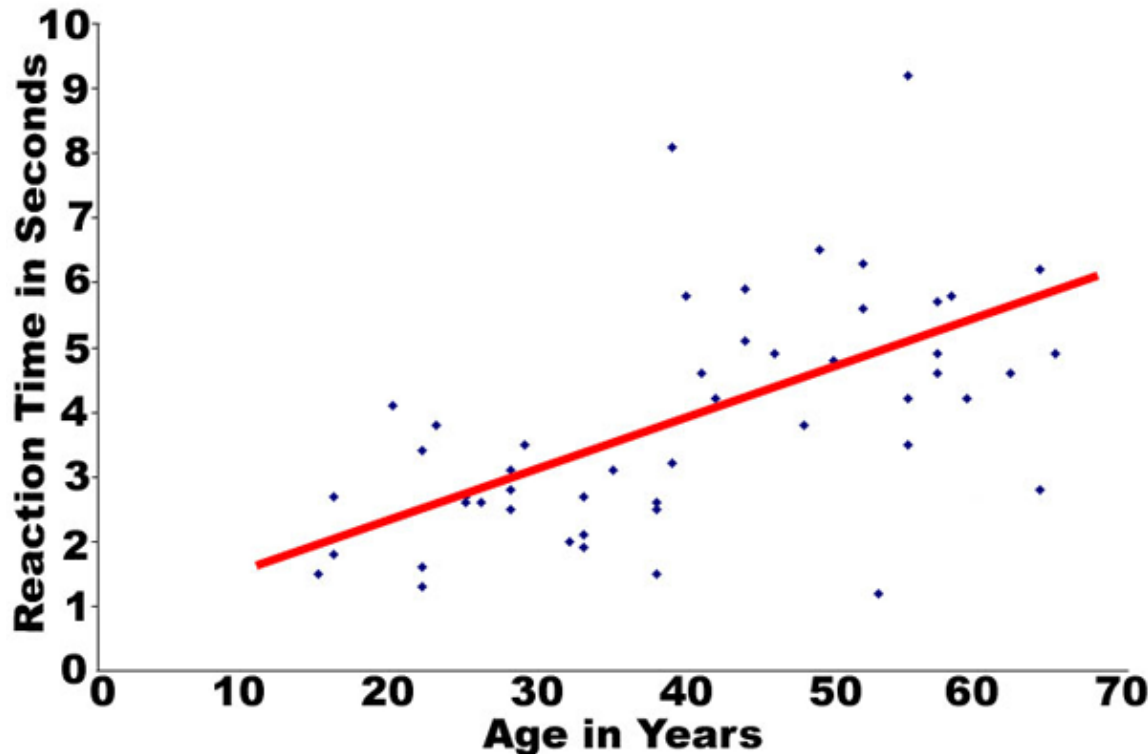
- This plot also shows a 'line of best fit' which shows the relationship more clearly
- This diagram indicates a **positive association** between the variables



- Scatter plot showing a negative association between variables

Another scatter plot example

Age and Reaction Time



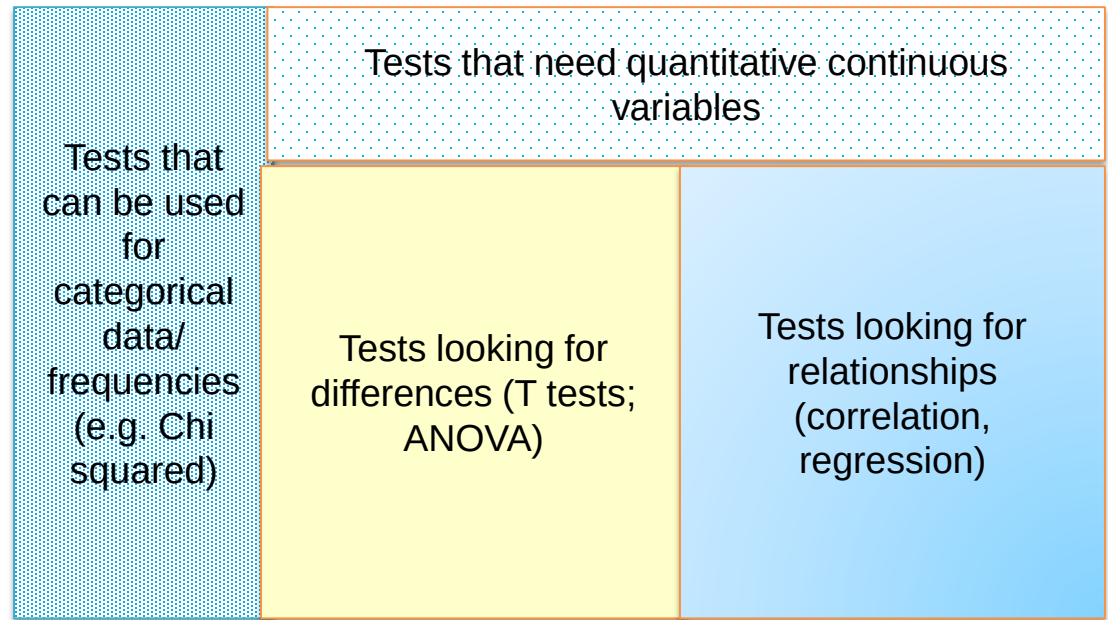
- What do the data here show?

activity

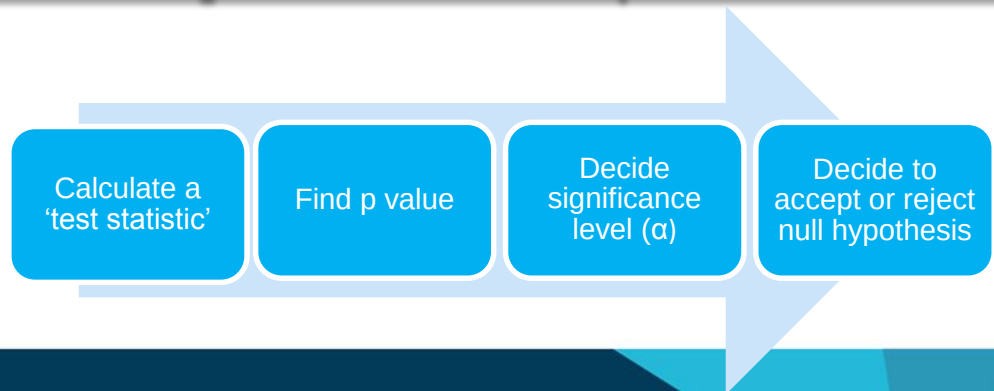
- Mean, mode, range
scatter plots in MS
Excel

A brief look at inferential statistics

Main types of statistical test:



Carrying out a statistical test:



Inferential statistics in MS Excel

- Data-analysis 'add-in'
- File, options, add-ins, analysis tool-pack
- This then displays under 'data' tab

But you **don't** need this for the assignment!

- **Assessment Component 2 (3000 words):** critically analyse, explain, and draw conclusions from relevant data from a work-based setting. (50%) [data will be provided for this]

Assessment Component 2: Guidance

Possible Approach:

- Briefly outline what the data show, and where they come from, commenting on possible Research Methods used to produce the data
- indicate the type of data present (ie. scale, ordinal, nominal)
- Analyses: this section will make up the main part of this component. Focus on forms of descriptive analysis you think would be important eg. to management. Use a side-heading to indicate each separate analysis, and comment briefly on the outcomes of each one, Remember to set out tables and charts according to accepted conventions
- Conclusion: briefly summarise the main findings of your analyses - what was interesting and/or important? How could the information help the development of the organisation?

[Note that in this component, 3000 words would be considered a maximum. You may wish to include a couple of references for this section, but this is not expected]

Timetable

To do	Date
Day 2 session	
Submit 1 st draft of assignment for feedback	
Feedback	
Final submission deadline*	12.4.19

*NB: it is **not** possible to provide extensions to deadlines

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