## Inclusive Teaching:

Offering a tailored approach in supporting students' learning in Maths 26 March at Lancaster University

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## Inclusive Teaching: Tailored Support

## Embedded classes

- Numeracy for Nursing students
- Anxiety towards Maths
- Lack of confidence
- Statistics \& Data Analysis
- Anxiety towards Stats
- Substitute the nomenclature
- Problem solving skills


## Inclusive Teaching: Tailored Support

## Embedded classes

- Numeracy for Nursing students
- Anxiety towards Maths
- Lack of confidence
- Because of bad experiences in the past
- Recent experience with mature students
- Students prepared the tasks in advance
- Blended learning - Active, independent learning
- Transfer of skills


## What is Quantitative Data?

## Research  <br> Samples Statistics <br> Quantitative <br> Method Methods <br> Skills <br> Inferential <br> Approaches Population Investigation

## Statistical problem-solving cycle

In order to carry out a research project or a statistical inquiry, often we need to complete a statistical problemsolving cycle, known as PCAI-cycle.


## Data Types



## Example of questionnaire

What data types relate to following questions?
>Q1: Which PG course are you studying?

|  | NCH | NMH | NLD | F |
| :---: | :---: | :---: | :---: | :---: |

$>$ Q2: Gender:

## Male Female

$>$ Q3: I consider myself punctual in my job:

| Strongly <br> Disagree | Disagree | Not Sure | Agree | Strongly <br> Agree |
| :--- | :--- | :--- | :--- | :--- |

$>$ Q4: How many years of working experience do you have:
Round your answer to the nearest whole number

## Example of questionnaire

What data types relate to following questions?
>Q1: Which PG course are you studying?
Nominal

$>$ Q2: Gender:

## Male Female

Binary/ Nominal
$>$ Q3: I consider myself punctual in my job:

| Strongly <br> Disagree | Disagree | Not Sure | Agree |
| :--- | :--- | :--- | :---: |
| Strongly |  |  |  |
| Agree |  |  |  |

Round your answer to the nearest whole number

## Descriptive Statistics

- Summary Statistics.

Methods represent a brief description of the values in the data set, in a meaningful way. They do not allow to draw conclusions, there are simply a way to describe our data.

- For example, there are 130 pieces of students' assignment, their lecturer may be interested in the overall performance of those students. She would also be interested in the distribution or spread of the marks. Descriptive statistics can help.
- Typically, there are two general types of statistic that are used to summarise data (measures of central tendency and measures of spread)


## Summary Statistics

Coursework marks for 60 students (out of 65)

| 9 | 35 | 35 | 11 | 22 | 12 | 12 | 38 | 15 | 17 | 28 | 18 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 19 | 20 | 21 | 22 | 11 | 23 | 23 | 54 | 25 | 25 | 26 | 26 |
| 26 | 27 | 47 | 28 | 18 | 39 | 37 | 31 | 32 | 32 | 32 | 43 |
| 44 | 10 | 37 | 10 | 37 | 37 | 30 | 34 | 29 | 41 | 42 | 33 |
| 14 | 44 | 27 | 47 | 49 | 49 | 51 | 24 | 54 | 57 | 58 | 64 |

- Find the range
- Find the mode, median and mean.
- Calculate variance and standard deviation


## Summary Statistics

Coursework marks for 60 students (are now sorted)

| 9 | 10 | 10 | 11 | 11 | 12 | 12 | 14 | 15 | 17 | 18 | 18 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 19 | 20 | 21 | 22 | 22 | 23 | 23 | 24 | 25 | 25 | 26 | 26 |
| 26 | 27 | 27 | 28 | 28 | 29 | 30 | 31 | 32 | 32 | 32 | 33 |
| 34 | 35 | 35 | 37 | 37 | 37 | 37 | 38 | 39 | 41 | 42 | 43 |
| 44 | 44 | 47 | 47 | 49 | 49 | 51 | 54 | 54 | 57 | 58 | 64 |

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| 19 | 20 | 21 | 22 | 22 | 23 | 23 | 24 | 25 | 25 | 26 | 26 |
| 26 | 27 | 27 | 28 | 28 | 29 | 30 | 31 | 32 | 32 | 32 | 33 |
| 34 | 35 | 35 | 37 | 37 | 37 | 37 | 38 | 39 | 41 | 42 | 43 |
| 44 | 44 | 47 | 47 | 49 | 49 | 51 | 54 | 54 | 57 | 58 | 64 |

- Total $=1,861$
- Mean $=1,861 / 60=31.02$.
- Variance $=183.216$, Standard Deviation $=13.5$


## Summary Statistics

Coursework marks for 60 students can be summarised below

| N | 60 | Minimum | LQ | Median | UQ | Maximum |
| :--- | ---: | :---: | :---: | :---: | :---: | :---: |
| Minimum | 9 |  | 9 | 21.5 | 29.5 | 40 |

IQR = interquartile range equals the difference between UQ and LQ. https://onlinecourses.science.psu.edu/stat500/node/11/

## Box and Whisker Diagrams

A box-plot is a good graphical representation of summary statistics. Box-plots can be used to compare two samples.


## Summary Statistics

| Data Type | Measures of central <br> tendency | Measures of <br> dispersion |
| :--- | :---: | :--- |
| Nominal | Mode |  |
| Ordinal | Mode |  |
| Scale | Median | Quartiles, IQR |
|  | Mede | Range |

