YIO STATISTICS UNIT 3: REPRESENTING DATA PART 2

Key words and definitions:

frequency – how many times something has occurred

composite bar chart – a composite bar chart, also known as a stacked bar chart, represents multiple data sets within a single bar

dual/multiple bar charts – a dual bar chart is a type of bar chart that displays two sets of data side by side for comparison

population – the total amount of people in a group being studied

histogram – a type of bar graph that represents the distribution of a set of continuous data

frequency density – the frequency of data points in relation to the width of the intervals

area – the space inside of a 2D shape; the area of a bar in a histogram represents the frequency of data points within that interval
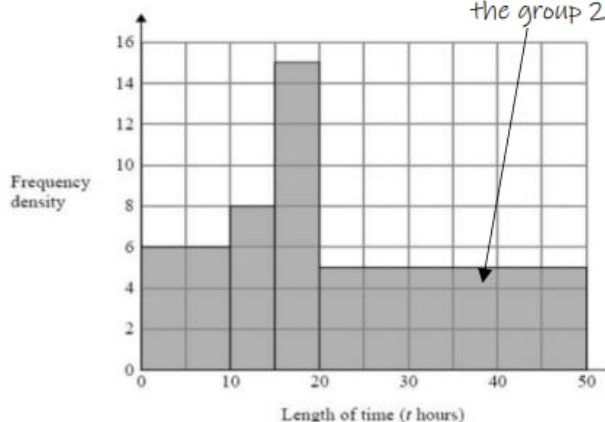
class width – the difference between the upper and lower bound of a group

Histograms

Key features:
- There are no gaps between bars and bars may be different widths
- The horizontal scale is linear and not grouped
- The vertical axis is labelled frequency density
- The frequency is represented by the area of each bar rather than the height of each bar

The area of this bar is 150 which is the frequency of the group $20 \leq t < 50$

e.g. Draw a histogram of the following data

Length of time	Frequency
$0 \leq t < 10$	60
$0 \leq t < 15$	40
$15 \leq t < 20$	75
$20 \leq t < 50$	150

First we need to calculate the frequency density

$$\text{Frequency density} = \frac{\text{Frequency}}{\text{Class width}}$$
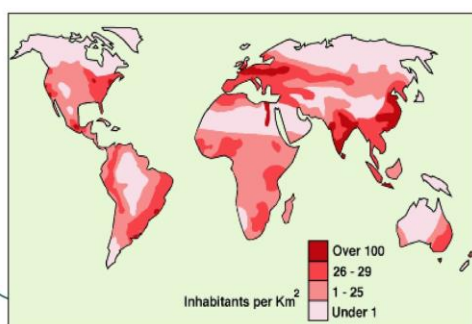
Length of time	Frequency	Frequency density
$0 \leq t < 10$	60	$60 \div 10 = 6$
$10 \leq t < 15$	40	$40 \div 5 = 8$
$15 \leq t < 20$	75	$75 \div 5 = 15$
$20 \leq t < 50$	150	$150 \div 30 = 5$

Class width is the difference between the 2 bounds so this one is $50 - 20 = 30$

Frequency density vs Length of time (t hours)

Choropleth Maps

- Uses colours or shades to show data. Used for population density, age or income.
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+ Very easy to identity spatial patterns and trends.
+ Very visual use of data over large areas.
- Unable to differentiate within a certain location. Assumes that all area has the same data.
- Suggests abrupt changes in data between areas.

E.g.: World population density

Inhabitants per Km²
- Over 100
- 26 - 29
- 1 - 25
- Under 1
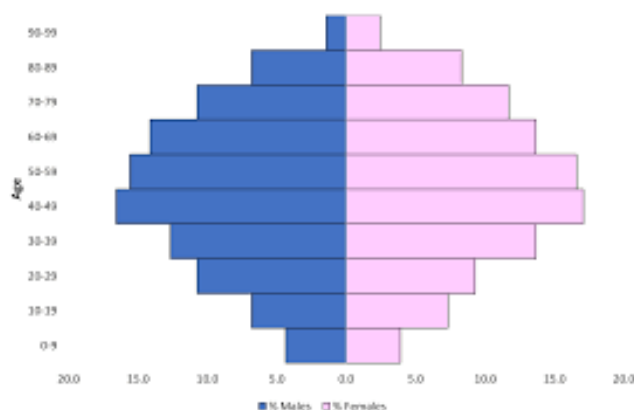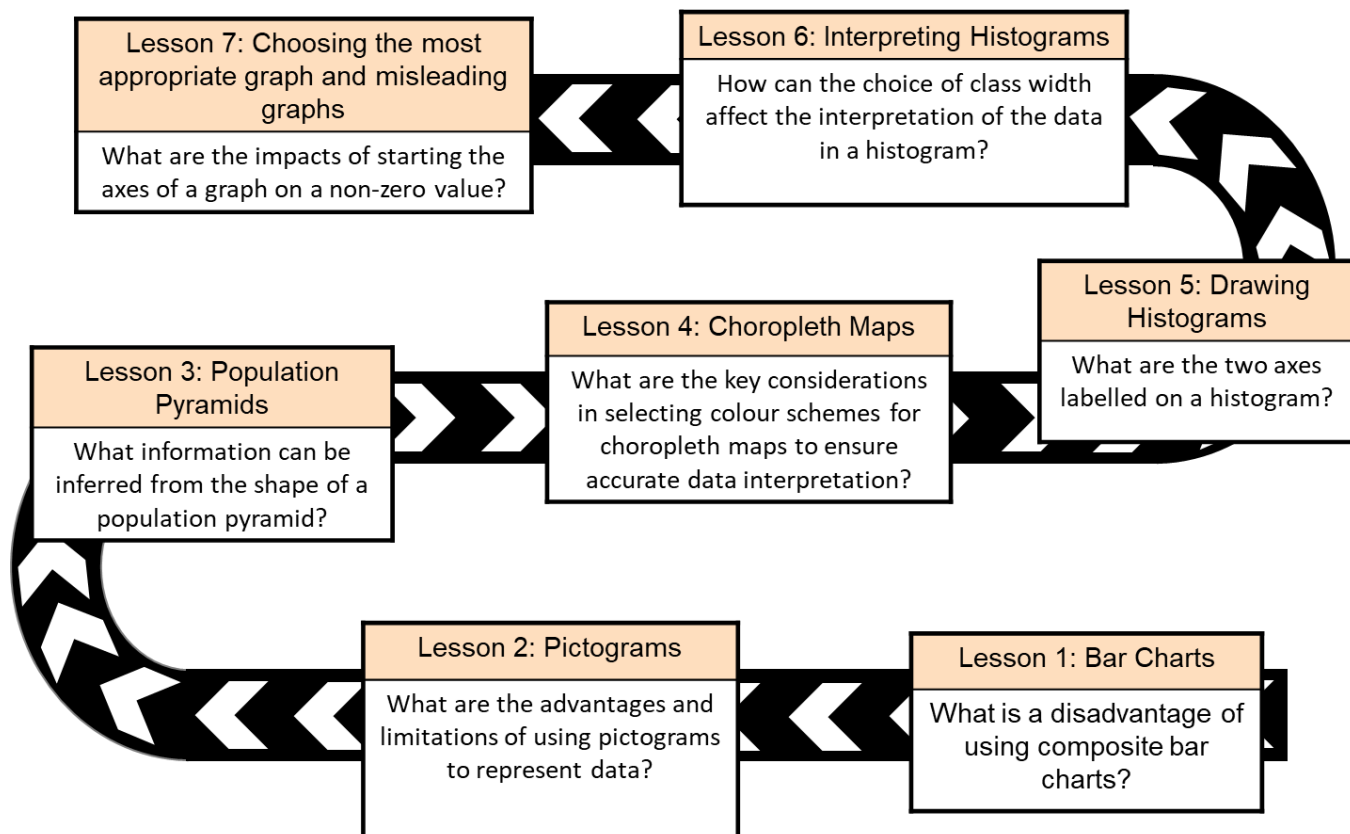
Population Pyramids

Population pyramids vary in shape depending on how developed a country is. Lower Income Countries (LICs) tend to have a wide base and narrow as the age increases, whereas, Higher Income Countries (HICs) tend to have a narrower base than LICs and a broader width towards the top.

Population Pyramid

% Males % Females

Lesson 7: Choosing the most appropriate graph and misleading graphs

What are the impacts of starting the axes of a graph on a non-zero value?

Lesson 6: Interpreting Histograms

How can the choice of class width affect the interpretation of the data in a histogram?

Lesson 5: Drawing Histograms

What are the two axes labelled on a histogram?

Lesson 3: Population Pyramids

What information can be inferred from the shape of a population pyramid?

Lesson 4: Choropleth Maps

What are the key considerations in selecting colour schemes for choropleth maps to ensure accurate data interpretation?

Lesson 2: Pictograms

What are the advantages and limitations of using pictograms to represent data?

Lesson 1: Bar Charts

What is a disadvantage of using composite bar charts?

DEFINITION	CHARACTERISTICS
ETYMOLOGY/MORPHOLOGY	
EXAMPLES	NON-EXAMPLES