

Bar graphs

- Make of vertical columns. The height of each column represents it's value.

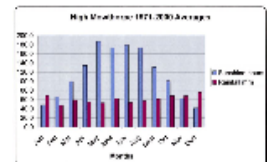
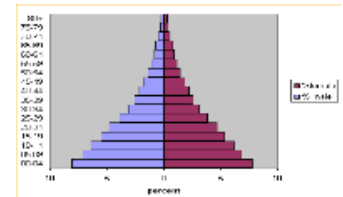
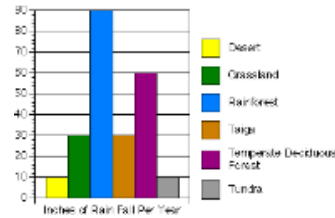
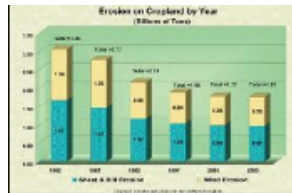
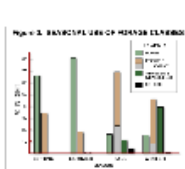
Match the type to the graph

Simple

Comparative

Compound

Divergent



What are the advantages and limitations of using Bar Graphs?

- show relationships between 2 or more variables
- show proportions
- visually attractive
- bars used combinations of qualitative and quantitative variables
- Can show positive and negative values
- Simple to construct and read
- Plotting too many bars makes it appear cluttered- less easy to interpret
- If wide range of data impact lost as it is difficult to read accurately
- Become more complicated if uneven class intervals
- Using too many or too few classes can mask important patterns in the data

For an example of the use of a simple bar graph showing percentage change (positive and negative) see p.141 Smith and Knill. For comparative bars see pages 3 and 4 Witherick. For compound bars page 33 Witherick.

Make an appropriate bar graph to show the following:

Employment structure:

Country	%primary	%secondary	%tertiary
Afghanistan	80	10	10
Brazil	20	14	66
China	43	25	32
Ethiopia	80	8	12
Germany	3	33	64
India	60	12	28
Japan	5	28	67
Russia	11	29	60
UK	2	18	80

How else could you present this data?

Examples of FAMOUS line graphs in Geography?

Climate graphs
Storm hydrograph
Demographic transition model

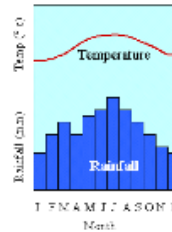
Line Graphs

Line graphs can also come in different forms - simple, comparative and compound,divergent.

Use pages 261-2 smith and Knill to make a simple, annotated sketch of each.

Activity 3 page 261 smith and Knill

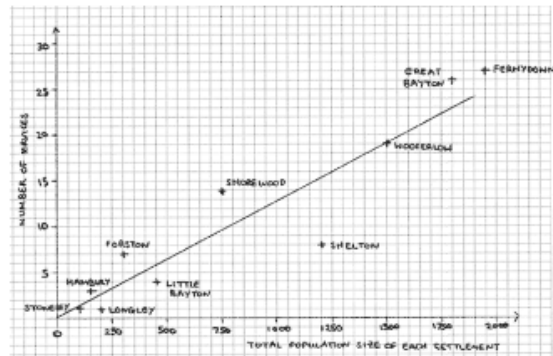
For a further example of a comparative line graphs see Witherick page 31 and 35. For a compound line graph see page 17 - practice reading this graph, describe the changing distribution of population in Mexico city using figures extracted from the graph.



Scattergraphs

Used to investigate the relationship between 2 sets of data. It is a presentation method as well as a method of analysis.

- used when data available for many locations
- enables you to identify independent and dependent variables
- shows anomalies (residuals).
- Trends indicated by best fit line
- the strength of the trend can be seen by the spacing of the points
- shows correlations - negative and positive that can be tested by spearman's Rank.



Pie Charts

-show how a total is divided up into separate components.

- visually attractive
- shows proportion of components
- shows scale
- Less than 3 segments look simplistic
- If many segments a similar size; it is hard to interpret and make comparisons.
- difficult to assess percentages



Complete the pie chart question on page 278

Proportional Circles

Circles drawn proportional to the area or volume they represent.



- visually attractive
- location shown
- provide context
- show scale
- show proportions

- Very hard to calculate
- Size may obscure location or mean less accurate positioning on maps, i.e. in cities

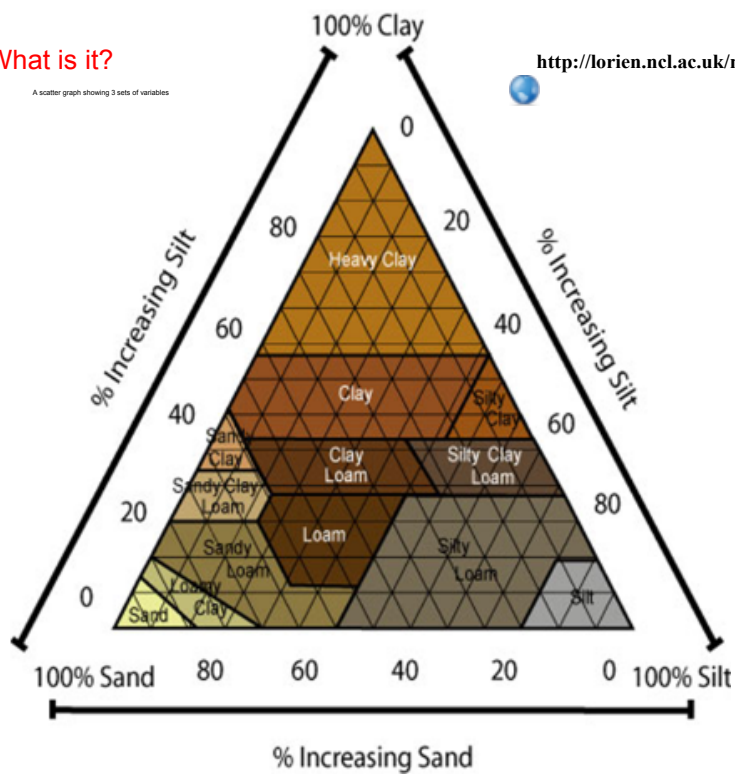
Activity 1 page 257 Smith and Knill

Triangulation Graphs

What is it?

A scatter graph showing 3 sets of variables

<http://lorien.ncl.ac.uk/ming/webnotes/sp3/triang/triplt.htm>



Try the Triangulation graph exercise on page 281 Smith and Knill

What are the advantages of this technique?

- Very useful if three components are to be compared
- Varying proportions can be seen indicating the relative importance of each
- After plotting , clusters emerge enabling classification/ identifying trends

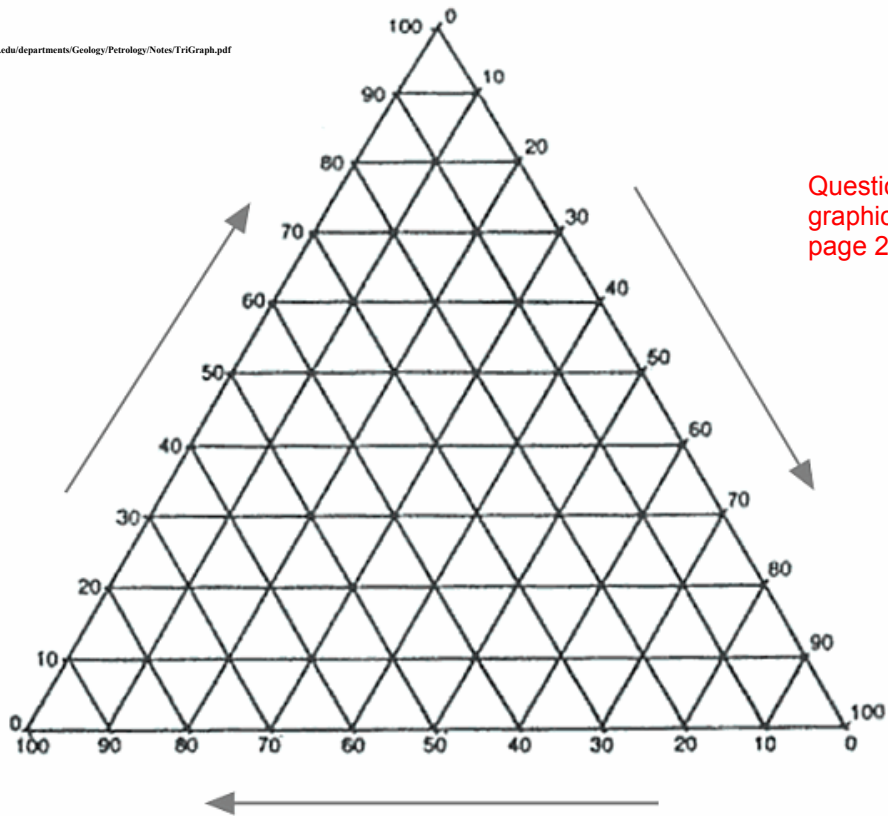
Any limitations?

- Hard to interpret
- Limited range of data- data needs to be in percentage form, plus there must be three variables.

Alternatives?

Can you make a triangulation graph from the employment data you used to make a bar graph?

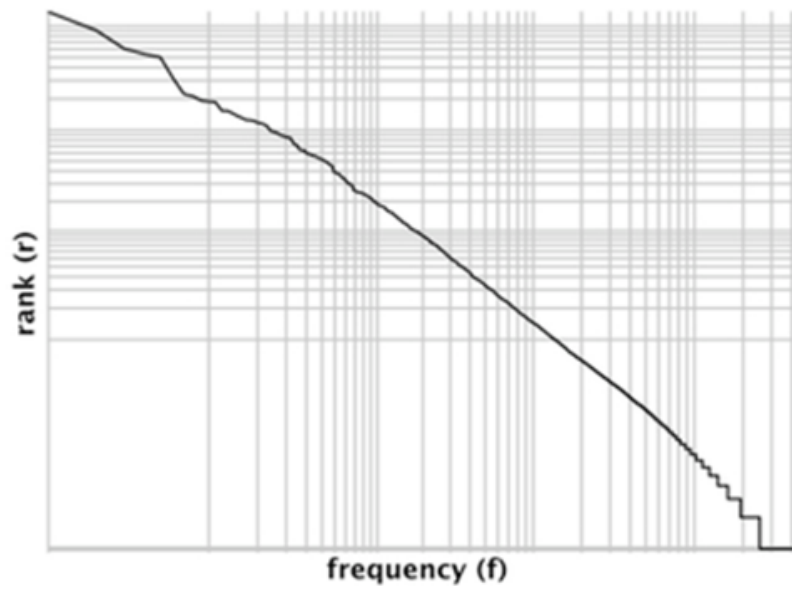
<http://www.science.smith.edu/departments/Geology/Petrology/Notes/TriGraph.pdf>



Question on
graphical Skills
page 280-1

Logarithmic Scales

Drawn as a normal arithmetic graph except that the scales are divided into a number of cycles, each representing a 10 fold increase in the range of values. The first is 1-10, the second 10-100, the third 100-1,000 and so on. Usually semi log paper is used to show changes over time.

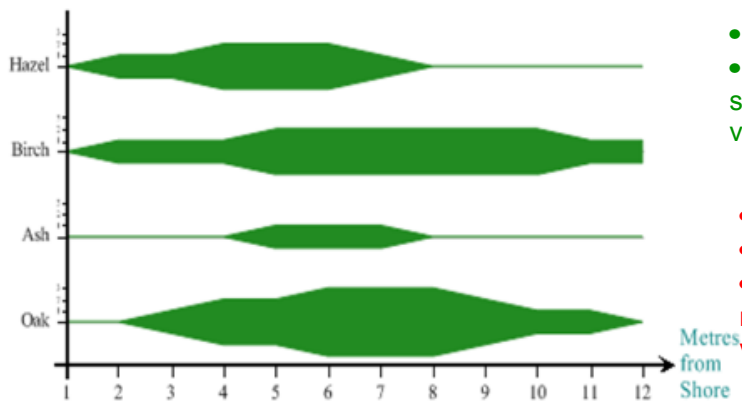


Advantages and limitations of Logarithmic graphs

- where an arithmetic graph would result in a parabolic relationship - a log graph shows a clearer straight line relationship
 - For data with a very large range of values
 - Useful for showing rate of change- a steeper line suggests a faster rate of change
-
- Easy to make errors plotting
 - Zero cannot be plotted
 - Negative and positive values cannot be displayed on the same graph.

Kite Diagrams

These are usually used to show the changes in species along a transect.



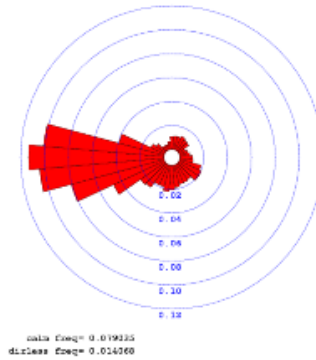
- Useful for displaying changes over distances.
- The width of the kite, representing a single species enables visual comparison of all the vegetation at one point along the transect.

- Hard to construct
- Only works with specific range of data
- For large scale studies (over several hundred metres) it may need breaking into section- losing visual impact

Radial Diagrams

For use when the variable has a directional feature e.g wind rose to show the direction and frequency of winds or the variable has a recurrent feature e.g to plot traffic or pedestrian flows over time.

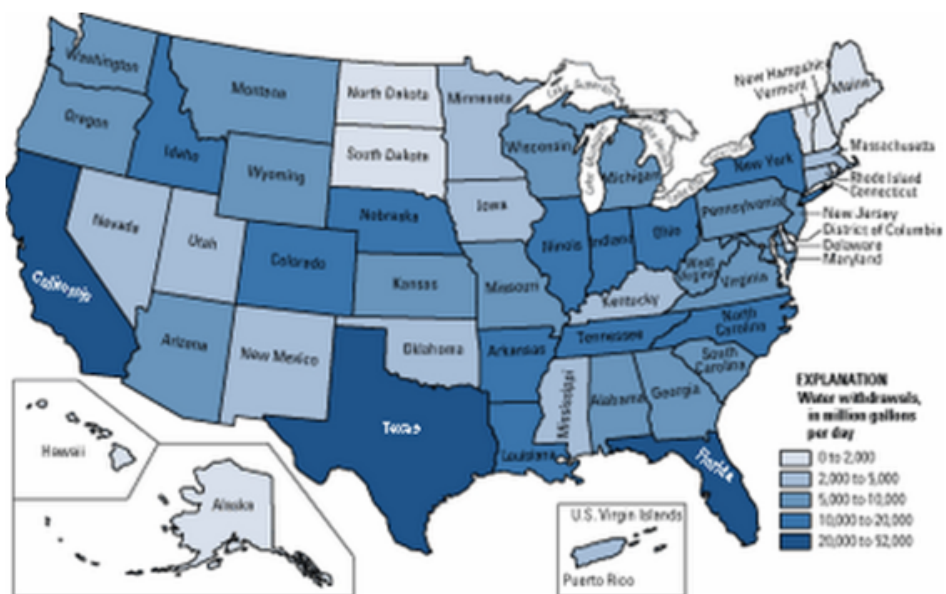
SFO 2 m winds, 1998
blue circles are frequency per 10 degrees



- Visual impact- easy to see patterns
- Spatial- directional
- Useful to show changes over time

- Hard to plot
- Useful only with specific types of data
- the variable must be continuous e.g points of a compass or repeating time sequence.

Chloropleth Maps

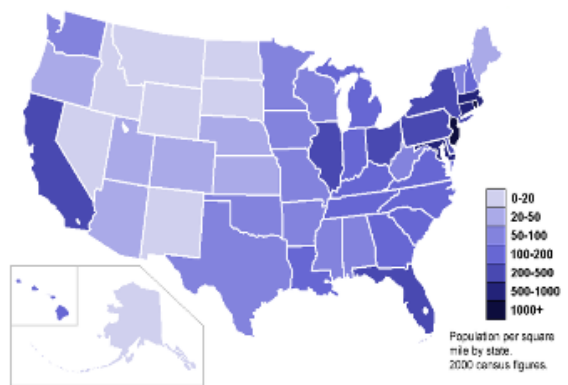


- Data values are represented by the density of shading.
- The material must be grouped into classes and class boundaries must be selected.
- Darker colours or denser shading represent higher values.

Advantages and Limitations of Choropleth maps

- visually effective – reader can see general patterns
- location shown
- provide context
- show scale
- show densities
- Easy to construct

- They do not show total values but highlight similarities and differences.
- Map assumes the whole area has the same value, but there could be important variations
- Abrupt changes in boundaries- realistically would merge, therefore are not accurate



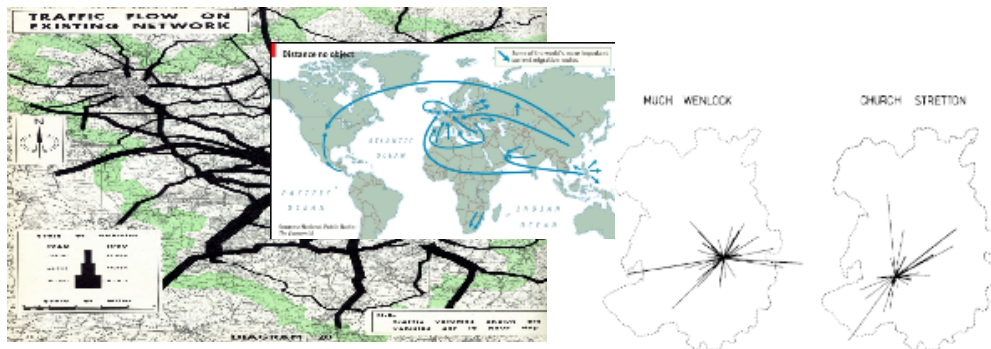
Activity 2 page 258 Smith and Knill

Complete the Map skills question on page 277

Flow lines / Desire lines / trip lines

Represent volume and direction of movement

- Flow lines** - represents the quantity of movement along an actual route.
- Desire line** - drawn directly from origin to destination
- Trip line** - make links e.g show where people shop linking towns to villages etc..



- Straight forward visual impression
- Can see sequences- e.g. how tributaries feed main rivers
- Scale / width of lines shows proportions

- In order to achieve a clear image
- Real distance is distorted
- Direction is distorted

Try the questions on desire line maps page 279 Smith and Knill

Isoline Maps

Name these different types!

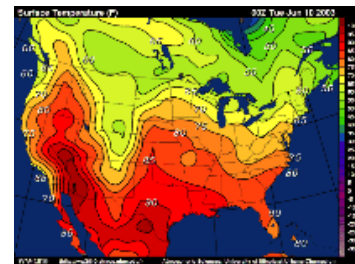
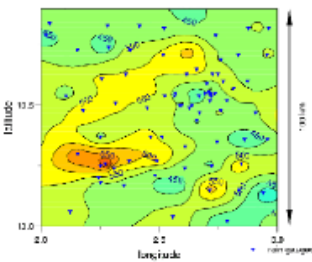
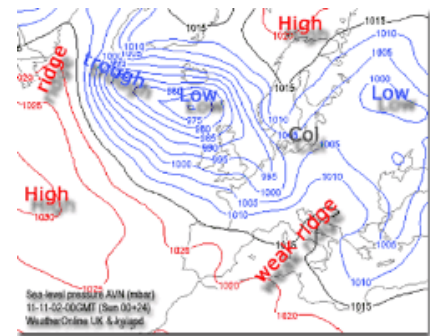
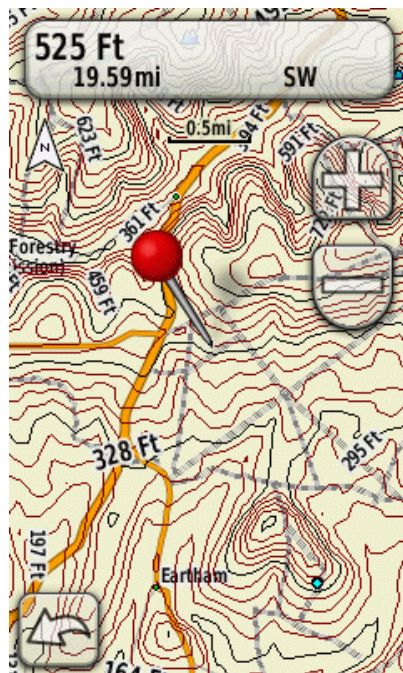
- line joins places for equal value for the chosen variable.

Contour

Isobar

Isotherm

Isohyte



Can also be used for pedestrian densities and travel times (isochrones)

Try the Isoline map skills questions on page 276 Smith and Knill

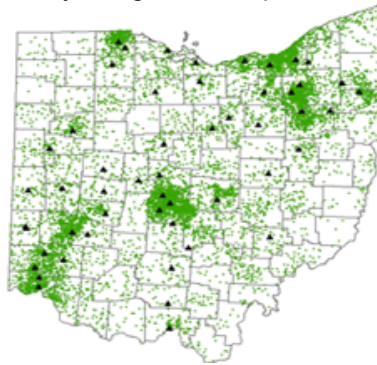
Advantages and limitations of Isoline maps

- Spatial
- Represent equal values along their length.
- Can keep point information as well for accuracy on map
- Can add colour- density shading to enhance patterns/ trends
- steep and gentle gradients can be seen

- Allow flexible interpretation of data- may be errors in the plotting
- data is collected from a sample of points which may disguise patterns

Dot Maps

Represent spatial distributions by using dots of equal size.



What advantages are there of using a dot map rather than a choropleth map?

- Spatial -show density and distribution
- Accurate- can use a scale e.g. one dot represents 10 students. They show actual numbers unlike choropleth map.
- Easy to plot
- can show a more realistic distribution than a choropleth map
- Clustering may make it impossible to plot and interpret e.g. in urban areas
- Need one consistent size of dot