Course: Mathematics of Data Management, MDM 4U

Instructor: Mr. C. Stewart

Welcome back to ...

Pull

More on Abstraction...

Florence Nightingale, "The Passionate Statistician" (Cook, 1913)

1

2

3

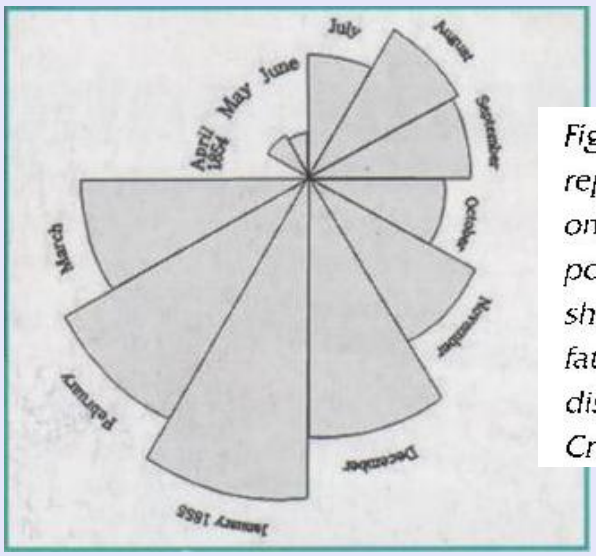
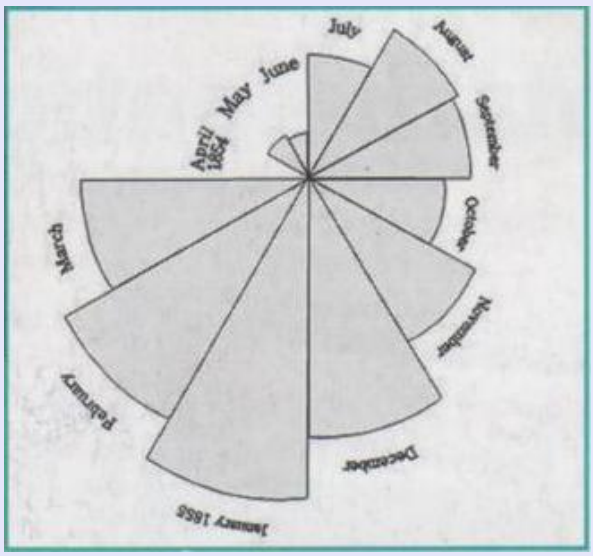


Figure 1 A partial reproduction of one of Florence's polar area charts showing military fatalities due to disease in the Crimean War.

Problem

a) What can be *implied* from the following visual representation?

b) How do you think the visual was constructed? (mathematically)



b) *How do you think the visual was constructed? mathematically?*

- similar to a pie chart
  - -in a pie chart, the radius is constant
  - -the total area is proportionally divided among categories to show thei relative frequency
  - -for example, if one category has twice as many items, then its piece of the pie chart is twice as big as any othe

- differences
  - -the circle is divided into angles or wedges; each wedge has the same size for each category
  - -radii differ, but there is still a constant of proportionality between the wedges
  - -the square root of a category's frequency determines the wedges' radii.

c) What limitations do you think statistician's, at this time, had in the construction of polar area charts?

d) If inspired, what could you *dream* of doing with this information?

More on Abstraction...

Alan Turing

- born 1912, London, England to upper, middle-class parents
- symbolic logic as an applied mathematics
- responsible for the technological developments of the 20th century
- pivotal role in deciphering German *Enigma* codes during WWII allowing German U-boat communications to be determined
- proposed that computers would rival the human brain

Bombe, designed by Alan Turing to decipher *Enigma* codes

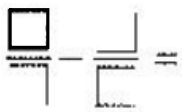
Activity: Deciphering & Encoding

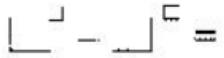
Consider the following simple *cipher*:

2	9	4
7	5	3
6	1	8

Use this cipher to evaluate the following:

2	9	4
7	5	3
6	1	8

a) 

b) 

c) 

A Final Thought...'Food' for You

d) How could you build upon or modify this form of decryption/encryption? What purpose(s) could it serve?

Attachments

Color reveal 1.galleryitem

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