THE MATHEMATICAL
ASSOCIATION OF VICTORIA

MATHS TREATS

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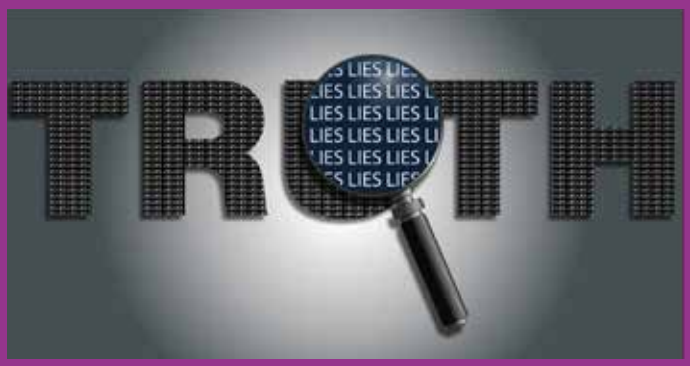
THE POSSUM

LIVING IN A POST-TRUTH WORLD?

It has recently been proposed that we are living in a post-truth world where the truth or accuracy of information isn't valued anymore. Facts are manipulated or ignored and opinions are promoted as truths. We have known for a long time that data, statistics and graphs can be used to inform or to mislead. Sometimes questionable data is disseminated accidentally through mistake or lack of skill, whilst at other times it may be intentional.

DATA QUALITY



The quality of data and statistics can be manipulated to mislead. The most glaring example is when statistics are made up or altered. Statistics can also be misleading when taken from non-representative samples. Biased questions or the order and wording of questions can encourage a certain direction for responses; or true but inappropriate measures can be used.

ACTIVITY

Look at the various information sources around you. What is the purpose of the information – to inform or persuade? What is the source of the information? How might the information be biased? Are the correct statistical measures being used? Information sources include newspapers, government reports, commercial websites, advertisements and other marketing information, political leaflets, and email spam.

GRAPHICAL REPRESENTATIONS

Graphical representations of data can be misleading if they are not labelled properly, data is missing, or the axis is manipulated. For column or scatterplot graphs, the vertical scale may not be properly numbered, the numbers may not be equally spaced, or it may not start from zero which can make any differences look larger.

ACTIVITY

Look at graphs and infographics in your everyday life such as in the media, in advertising, and on family bills. Does the graph have a title? Is the source of the data acknowledged? Are all the axes labelled? Does the scale of the axis (or axes) look appropriate? Is the message the graphical display intends to impart distorting the actual information?

REFERENCES AND FURTHER READING

EXAMPLES OF GOOD AND POOR QUALITY INFORMATION

Australian Bureau of Statistics (ABS) www.abs.gov.au

Statistics portal for market data, market research and market studies www.statista.com

Misleading graphs: Real life examples www.statisticshowto.com/misleading-graphs/

Misleading statistics examples in advertising and the news www.statisticshowto.com/misleading-statistics-examples/

19 most misleading statistics (that are technically correct) www.cracked.com/photoplasty_2052_19-ways-you-can-make-statistics-say-whatever-you-want/

How to make opinion polls say what you want. www.youtube.com/watch?v=G0ZZJXw4MTA

DATA QUALITY

Misleading statistics www.truthpizza.org/logic/stats.htm

GRAPHICAL REPRESENTATIONS

Misleading graphs (Wikipedia) https://en.wikipedia.org/wiki/Misleading_graph

Misleading graphs and statistics http://faculty.atu.edu/mfinan/2043/section31.pdf

IMAGES

Leadbeater possum - Steve Kuiter
Other images - Pixabay