Sense about statistics

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Vancouver CoastalHealth
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Everywhere you turn, you are confronted by someone's statistics telling you about this or that problem, or solution. They come from governments, opinion polls, social research, newspapers and various organizations. The crime rate is way up; the crime rate is way down; thousands to be laid off; cancer kills new moms… the list is nigh endless. So how can we work out what to believe, and what it really means?

Statistics are everywhere and 78.6% of them are misleading! (Okay, that is not a real statistic, but it highlights the problem, doesn't it?)

It can be difficult to know what to believe, or even that there may be a problem with the information as it is presented. Making sense of statistics begins with some understanding of how they are assembled, grouped and interpreted. Providing that sort of information is a specialty of a charitable trust based in London, England called Sense About Science.

Sense About Science connects 5000 scientists and researchers with scientific bodies, policy makers, the public and the media to change public discussions about science and evidence. Their mandate is to equip people to make sense of scientific and medical claims in public discussion.

Their publication "Making Sense of Statistics" offers a concise, easily-understood explanation of how statistics are used and what you should understand when facing them. The basic idea is that while statistics can be misrepresented, they can also be used to defeat arguments. By knowing the right questions to ask we can discriminate between the proper use of statistics and their misuse.

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There are some key points to consider when citing statistics. First, they seem to have an air of precision, borrowed from mathematics, but still call on human judgement, making them subject to bias. We should know what has been counted and how so we can judge the answer against the question. Third, just like words, statistics can mean different things in different contexts. And finally, just because something is statistically significant doesn't mean it matters to society in practice.

"Making Sense" is broken into four topic areas to help readers understand the issues. It starts with the idea that if a statistic is the answer, what was the question? To understand the stat, we need to consider what choices were made when the study was designed; ask how big the sample was, how it was chosen and, in making projections or forecasts, what assumptions were used.

There are common pitfalls to understanding the statistics as presented. For example, if there is an "average" quoted, what type of average do they mean? There is more than one type! And how sure are we about the figure? Is it statistically significant? And should we care? Are the data related, or coincidental?

Finally, showing percentages and risk means little without knowing both relative and absolute values. Indeed, a 25% increase could simply be one more of something…but if only four are measured, can it mean anything? Do we know if it matters, or if we should care?

Statistics, it has been explained, can be made to say anything you want. Avoiding such 'creativity' can be as easy as knowing what questions to ask the claimants. We should all do that more often.

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