

## Session 5 : Statistical Literacy

Key Problem	Explanation
<p><b>(1) Using Raw Numbers</b></p>	<p>Raw numbers can be very misleading if</p> <ol style="list-style-type: none"> <li>1. You don't know the size of the population/group at that time Eg only 3 students failed A Level Basket Weaving this year! (It matters whether there are 5 students taking the subject or 500!)</li> <li>2. You don't know the size of the population/group at different times 'There were only two complaints about the teaching in GCSE RS this year. There were 10 complaints the year before. So teaching must be improving.' Not necessarily – if we only had a group of 5 RS students this year as opposed to the whole year group the year before when it was compulsory.</li> </ol> <p>Rates or percentages are generally better as they are not affected by the issues above – but even then we must be careful. See below...</p>
<p><b>(2) Selectivity or insufficient information</b></p>	<p>Often data is unhelpful because there just isn't enough to go on</p> <ol style="list-style-type: none"> <li>1. You might need figures for several years to work out what is happening but you are just given data for one year Eg You cannot determine whether the pass rate in A level Basket Weaving is increasing or decreasing if you only have the figures for this year</li> <li>2. You may also be given data for one place only and so cannot draw conclusions about how it compares to other places. Eg) 90% of our basket weaving students got C or above but I don't have any national data to place that in context</li> </ol> <p>Better data is data that is in context and is sufficient to justify the conclusion you wish to draw from it</p>
<p><b>(3) Not comparing like with like</b></p>	<p>One common statistical error is to either deliberately or unwittingly compare two things that are not really the same</p> <ol style="list-style-type: none"> <li>1. Make sure that the comparisons are between groups or data that is connected in time and location Eg) We cannot infer that education in the UK is better than in the USA by comparing degree outcomes in the UK now with those in the US in the 1970s. are the same</li> <li>2. Make sure the compared groups are similar in important respects. If we claim that students who do A levels are happier than those who do not, we should avoid surveying the A level students in wealthy</li> </ol>

	<p>areas and those in poorer areas who do not do A levels. Their wealth or lack of it may skew the data. We would need to find two groups who are as far as possible identical in all other respects.</p> <p>3. Also comparisons between data only make sense if key terms have the same meaning in the different statistics  Eg) A couple of years ago it was widely reported that there had been a significant increase in domestic violence incidents. However on closer inspection it emerged that the police had revised and improved its definition of what constituted domestic violence so it is more likely that the rate had always been high and that the police had put in place better systems to detect the crime.</p> <p>So it pays to look very carefully at what is being compared when conclusions are drawn based on such comparisons.</p>
<p><b>(4) Misrepresenting the data</b></p>	<p>When figures or percentages are translated into words-esp newspaper headlines- the verbal presentation of the data is often misrepresented or exaggerated. The same can happen when graphs are drawn – it is worth looking at the scale used to see whether it is accurate or exaggerated.</p>