UNDERSTANDING RELATIVE ERROR

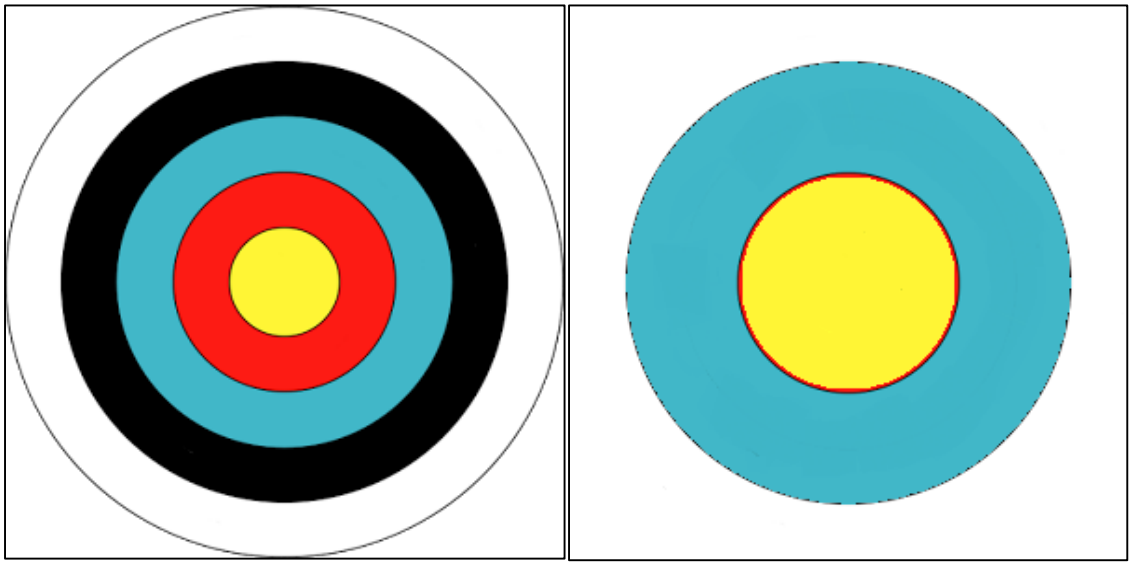
BARC India viewership data is based on a sample survey (just as it is for all such services across the world). A small representative slice of the population is sampled and the results projected for the entire universe.

Being a projection, results of all sample surveys are effectively an ESTIMATE of the actual / true value, with a range within which the actual value could fall. This range or spread is what is known as SAMPLING ERROR.

When expressed as a percentage, this is known as RELATIVE ERROR.

Understanding RELATIVE ERROR and its implication on viewership reports is critical to drawing meaningful inferences from BARC India data.

RELATIVE ERROR can best be understood by relating it to an archer's target:



LOW RELATIVE ERROR	HIGH RELATIVE ERROR

On the left is a target that represents a LOW RELATIVE ERROR output: An archer has to have a high level of accuracy to hit the Bulls Eye (the yellow circle in the centre). Also the range within which the shot will be considered accurate is small. Put another way, if an archer hits a Bulls Eye on the left target, we can safely say that she is accurate. Even without looking at the actual hit, we know that the range within which the arrow struck is a narrow one.

On the right is a target that represents HIGH RELATIVE ERROR output. An archer can hit across a big range (yellow circle) to score a Bulls Eye, viz. any hit across a much wider margin would be accepted as "accurate".

In the context of a Sample Survey, RELATIVE ERROR depends on a number of factors; the most significant of which is SAMPLE SIZE, and the relationship is INVERSE: Lower the sample size, higher would be the Relative Error, and vice versa.

Let's now understand how RELATIVE ERROR impacts viewership data, because that is the key to making meaningful sense out of BARC India's BMW reports.

For this refer to the RELATIVE ERROR grid that shows RE figures for various Rat% levels (X-axis) across an array of sample sizes (Y-axis).

CASE 1

Consider a 1 TRP (Rat%) Channel. With a sample size of 50, the grid indicates a RELATIVE ERROR of 231%. What this means is that statistically, any TRP within a range of 0 to 3.31 would be considered an acceptable audience estimate for that channel!!

Statistically that may hold water, but for a channel or a media planner, it doesn't amount to much.

To improve the accuracy level (i.e., lower the RELATIVE ERROR), let's move down the column – until we hit an RE of 52%, which translates to a narrower "acceptable" range of 0.48 to 1.52 Rat%. Slide to the left and you would see that that would require a sample size of 1000.

CASE 2

Now let's move two columns to the left in the same grid: to a 0.1 Rat% Channel. At a sample size of 1000, the RE for that channel is 164%. Which means that any Rat% ranging from 0 to 1.54 would be within the "acceptable" range, and considered as accurate.

Move to the extreme right of the grid, and you will see that a channel with higher Rat% (i.e. with a much larger audience base) achieves lower REs even with small sample sizes.

So what does this mean? Simply put:

1. For channels with a narrow audience base (e.g., Niche and/or English language channels) Ratings can vary across a very wide range on a week-to-week basis, but as long as they lie within the RELATIVE ERROR spread, they are all considered acceptable and true.

2. For such channels with low Rat% to lower their RE, they must consider a larger sample – which can be achieved, for example, by considering a larger time period.