

Why is population shape of concern when estimating a mean? What does sample size have to do with it?

Ans.

For small samples the mean does not necessarily follow normal if the population distribution is different. Thus if the population shape is non symmetric the mean will not follow normal (Which is symmetric about mean) for small samples. Thus for small samples population shape is of concern when estimating a mean because based on the population distribution we find the distribution of the mean.

But as the sample size increases the shape of the distribution curve for mean tends towards normality or becomes symmetric. Thus as the sample size increases the shape of curve for mean moves towards symmetry and we assume normality for large samples according to central limit theorem.