Day 27 of #100daysofmathandstats: Data sampling Concepts(Contd...) Long-Tailed Distributions

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Outline

- Tail
- Skew

Tail

- The long narrow portion of a frequency distribution, where relatively extreme values occur at low frequency.
- Sometimes, the distribution is highly skewed (asymmetric), such as with income data; or the distribution can be discrete, as with binomial data. Both symmetric and asymmetric distributions may have long tails.
- Long tails, and guarding against them, are widely recognized in practical work.

Derivative of Long tail Distribution

$$\lim_{x \to \infty} \frac{f(x+y)}{f(x)} = 1, \quad \text{for all } y > 0.$$

The long tailed property of distributions carries over into many derivative distributions.

If f1, f2…fn are all long tailed, then:

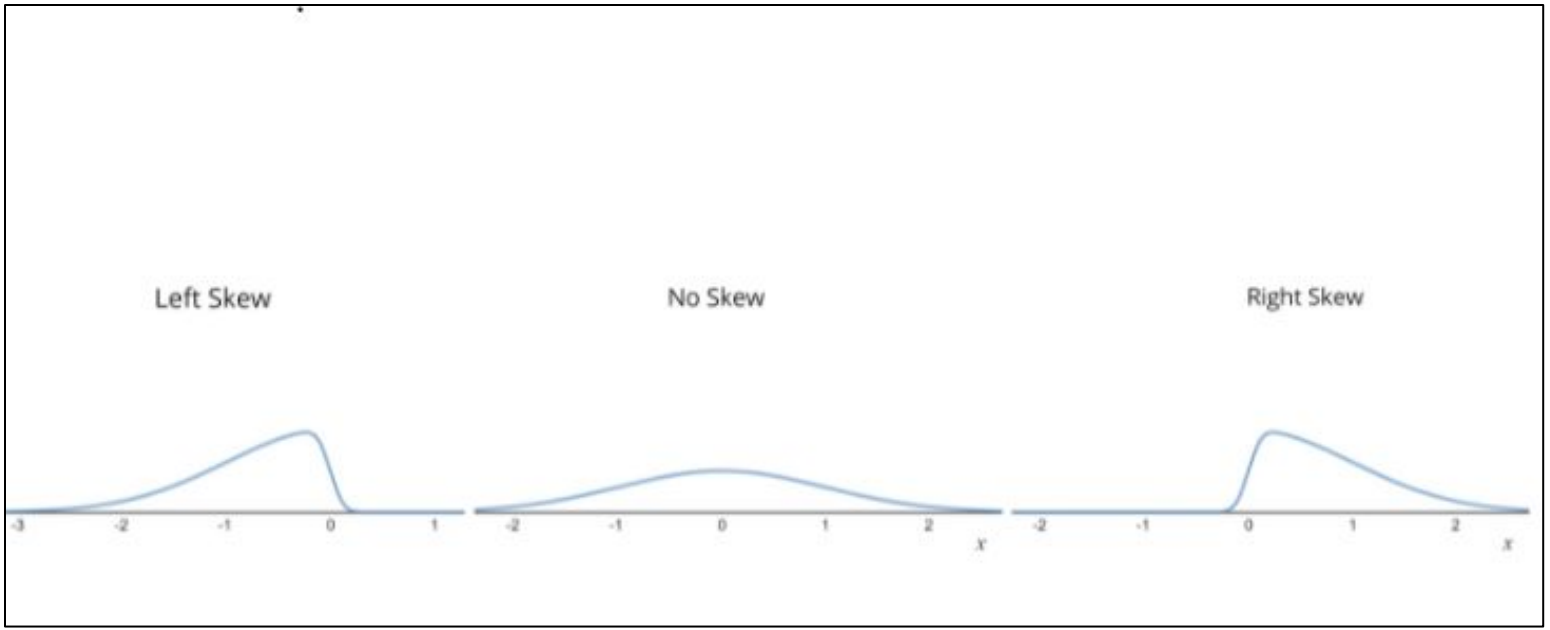
Any distribution that can be expressed as a product of these, fx= f1 · f2… · fn is also long tailed.

Applications of Long Tail Distribution

- Commerce and marketing schemes often find that there sales can best be modeled by long tail distributions.
- For instance, an internet store may have certain items with very high sales (modeled by the center of the distribution curve) and a large number of items with much lower sales (modeled by the long tail).

Skew

- Where one tail of a distribution is longer than the other.



Thank you

Github Link: https://github.com/harsh9898/100daysofstatandmath

Don’t forget to post your queries or feedbacks on the post.

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Source for some of the content: https://www.openintro.org/book/os/