Skew

Definition:

Definition 1:

Skew(X)

=

Ref:

According to statproofbook website.

P.S.

can be considered as a constant.

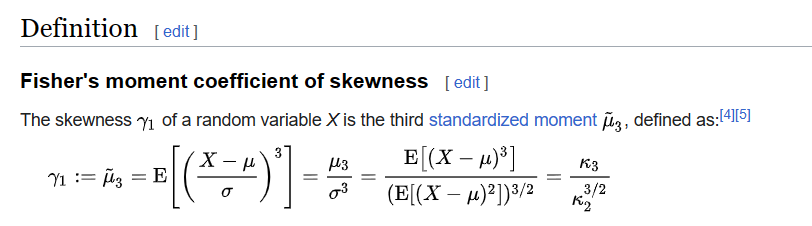
Thus, The formulas are equivalent.

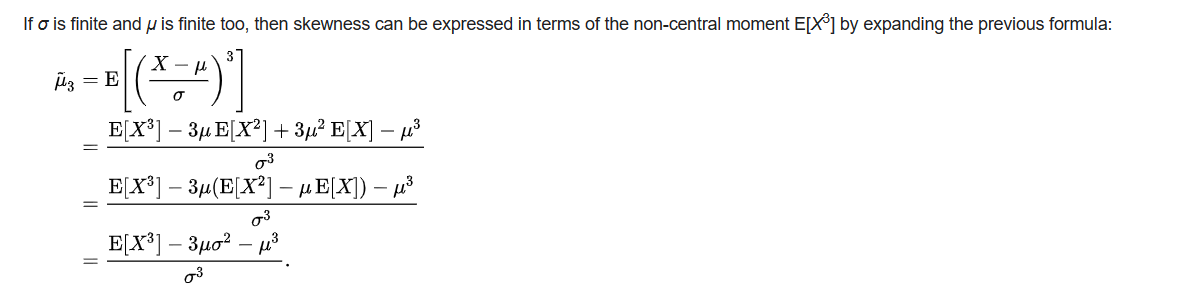
Definition 2:

where

.

is 3th standard moment.





Ref:

According to fisher’s moment discussed in Wiki.

Category:

Mode skewness:

Pearson 1th Skewness coefficient

Median skewness:

Pearson 2th Skewness coefficient

Groeneveld and Meeden’s skewness:

Distance skewness:

if

Theorem:

Theorem 1:

Partition of skewness into expected values

Claim:

Skew(X) =

Proof:

Recall about definition of skewness and variance.

Skew(X)

=

While

We can rewrite it as:

Skew(X)

=

=

=

=

=

( factoring out.)

=

Hence proved.

Ref:

About definition of skewness, see these websites:

[Skewness | The Book of Statistical Proofs (statproofbook.github.io)](https://statproofbook.github.io/D/skew)

For theorem about skewness and its proof, see these websites:

[Partition of skewness into expected values | The Book of Statistical Proofs (statproofbook.github.io)](https://statproofbook.github.io/P/skew-mean)

For category of skewness, see these websites:

[Skewness - Wikipedia](https://en.wikipedia.org/wiki/Skewness)