For any real-valued probability distri-bution with cumulative distribution fuction F, a median is defined as any real sub number m that satisfies the inequalities

$$\int_{(-\infty, m]} dF(x) \geq \frac{1}{2} \text{ and } \int_{[m, \infty)} dF(x) \geq \frac{1}{2}$$

An equivalent phrasing uses a random variable X distributed accordi to F:

$$P(X \leq m) \geq \frac{1}{2} \text{ and } P(X \geq m) \geq \frac{1}{2}$$

Note that this definition does not require X to have an absolutely continuous distribution (which has a probability density function nor does it require a discrete one. In the former case, the inequalities can be upgraded to equal-ity: a median satisfies

$$P(X \leq m) = \int_{-\infty}^{m} f(x)\, dx = \frac{1}{2} = \int_{m}^{\infty} f(x)\, dx$$

Any probability distribution on R ha at least one median, but in pathological cases there may be mor than one median: If F is

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Notes for B.Sc. part 1st, paper 2(F

Question :- Write Notes on STANDARD ERROR OF MEDIAN ?

Answer:- Standard Error of Mean :- The standard ~~error of m~~ Providing certain assumptions are made, the standard error of median can be estimated by multiplying the standard error of the mean by a constant ;

Algebraically speaking -

SE (median) = 1.2533 x SE ( ) where

SE (median) is the standard error of the median.

SE ( ) is the standard error of the mean.

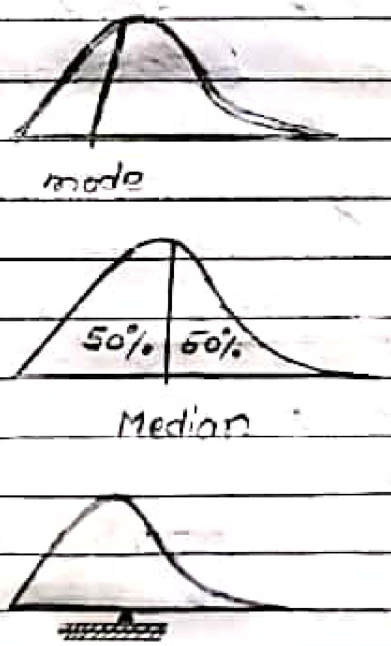
The assumptions are :

the sample size is large
the sample is drawn from a

normally distributed population

Since the median is usually only used when the data are not drawn from a normally distributed population, this rather limits the usefulness of this formula, and it is rarely used.

Probability distributions :-



Geometric visualisation of the mode, median and mean of an arbitrary probability density function.

constant 1/2 on an interval (so that f = 0 there), then any value of that interval ~~(so that)~~ is a median.

sampling distribution :-

The distribution of both the sample mean and the sample median were determined by Laplace. The distribution of function $f(x)$ is asymptotically normal with mean m and variance.

$$\frac{1}{4n f(m)^2}$$

→ See also

- Medoids which are a generalisation of the median in higher dimensions
- Central Tendency
  - Mean
  - Mode
- Absolute deviation
- Bias of an estimator
- Concentration of measure for Lipschitz functions
- Median (geometry)
- Median graph
- Median search
- Median slope
- Median voter theory
- Weighted median