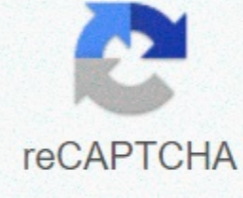




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Negative binomial probability of failure

Release: 4.6 • 5.0 • 5.1 • 5.2 • 5.3 • 5.4 • 5.5 Negative binomial distribution is a discrete probability distribution that models the number of successes that occur before the failure «r», where each independent test is successful with probability «p». Sample values are non-negative integers. 3+NegativesBinomial(3.30%) → negative integer distribution can be considered as one of three basic discrete distributions on non-negative integers, while Poisson and Binomial are the other two. If we characterize discrete distributions according to the first two moments - namely, by how the dispersion is compared to the medium - then the three distributions include a space of possibilities. For binomial distribution the variance is smaller than average, for Poisson they are the same, and for negativebinomial distribution the variance is greater than the average. By turning this around, if you're trying to decide which of the discrete distributions to use to describe an uncertain amount and all you have is the first two moments, then you can choose between these three distributions based on whether the variance is smaller, equal, or larger than average. Function parameters «r»: Number of failures before the office. «p»: Probability of success. NegativeBinomial(r, p) The probability distribution function for NegativeBinomial is: $P(X=k) = \binom{k+r-1}{k} p^k (1-p)^r$ Analytically calculates the probability of seeing «k» or less achievements at a time when r failure occurs when each independent Bernoulli attempt is likely to p» success. This is a cumulative probability function for negative subomial distributions. $P(X \geq k) = 1 - \text{BetaI}(p, k+1, r)$ where BetaI is an incomplete beta function. Inverse cumnegativeBinomial(k, r, p). This calculates the value of «k» so that the probability that the value of the sample from the distribution NegativeBinomial(r, p) has a value of «k» or less is u. Note: The identifier shortens binom so that the identifier below 20 characters in total. Examples shoplifter has a 20% change caught and convicted every time he commits a crime (hence his probability of success is 80%). A third conviction carries a prison term. How many times does he shoplifts and gets away with it before being thrown in jail is given negativebinomial(3, 80%) Some baseball player hits home runs for every 12 times he's at bat. To beat Barry Bond's record of 73 home runs in one season, how many times it would be necessary to bat would be, according to NegativeBinomial(74, 1-1/12) + 74 In this case, when we talk about negativebinomial

