

0.1 Parameterisations of NB1

All the Wikipedia article were accessed on 4th August 2015.

English Wikipedia

Interpretation: distribution of the number of successes, k , until r failures have occurred.

$$P_{NB}(k; r, p) = \binom{k+r-1}{k} p^k (1-p)^r, \quad E(X=k) = \frac{rp}{(1-p)}$$

- Support

– $k \in \{0, 1, 2, 3, \dots\}$ – number of **successes**

- Parameters

– $r > 0$ – number of **failures** until the experiment is stopped

– $p \in (0, 1)$ – success probability in each experiment

French Wikipedia

Interpretation: distribution of the number of failures, k , before obtaining n successes

$$P_{NB}(k; n, p) = \binom{k+n-1}{k} p^n (1-p)^k, \quad E(X=k) = \frac{n(1-p)}{p}$$

- Support

– $k \in \{0, 1, 2, 3, \dots\}$ – number of **failures**

- Parameters

– $n > 0$ – number of **successes** until the experiment is stopped (fr: *le nombre de succès attendus*)

– $p \in (0, 1)$ – success probability in each experiment (fr: *la probabilité d'un succès*)

German Wikipedia

The german Wiki page describes two alternative representations and interpolations of this distribution. We present here there one which is presented in the overview box on the right-hand side, denoted as the alternative representation.

Interpretation: distribution of the number of failures, k , before obtaining r successes. (ger.: *NB Distribution beschreibt die Anzahl, k , der Misserfolge bis zum Eintreten des r -ten Erfolgs.*)

$$P_{NB}(k; r, p) = \binom{k+r-1}{k} p^r (1-p)^k, \quad E(X=k) = \frac{r(1-p)}{p}$$

- Support

– $k \in \{0, 1, 2, 3, \dots\}$ – number of **failures** (ger: *Anzahl Misserfolge*)

- Parameters

– $r > 0$ – number of **successes** until the experiment is stopped (ger: *Anzahl Erfolge bis zum Abbruch*)

– $p \in (0, 1)$ – success probability in each experiment, (ger: *Einzel-Erfolgs-Wahrscheinlichkeit*)

$$P_{NB}(k; r, p) = \binom{k+r-1}{k} p^r (1-p)^k.$$