More Discrete Distributions

Stub: Chapter coming soon!



Notation: $X \sim \text{Geo}(p)$

Description: Number of experiments until a success. Assumes independent experiments each

with probability of success p.

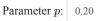
Parameters: $p \in [0,1]$, the probability that a single experiment gives a "success".

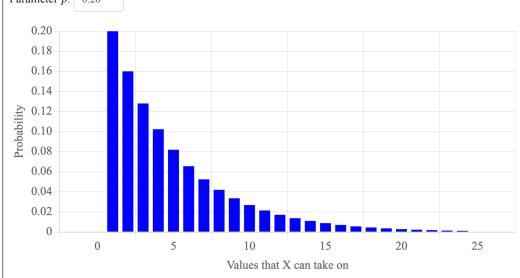
Support: $x \in \{1, \dots, \infty\}$

PMF equation: $P(X = x) = (1 - p)^{x-1}p$

Expectation: $E[X] = \frac{1}{p}$ Variance: $Var(X) = \frac{1-p}{p^2}$

PMF graph:





Negative Binomial Random Variable

Notation: $X \sim \mathrm{NegBin}(r,p)$

Number of experiments until r successes. Assumes each experiment is independent **Description:**

with probability of success p.

r > 0, the number of success we are waiting for. **Parameters:**

 $p \in [0,1]$, the probability that a single experiment gives a "success".

 $x \in \{r, \dots, \infty\}$ **Support:**

 $P(X = x) = {x-1 \choose r-1} p^r (1-p)^{x-r}$ PMF equation:

Expectation:

 $\mathrm{E}[X] = rac{r}{p} \ \mathrm{Var}(X) = rac{r \cdot (1-p)}{p^2}$ Variance:

PMF graph:

