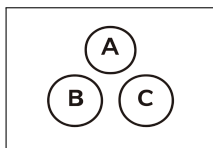


25 Discrete Distribution CDF

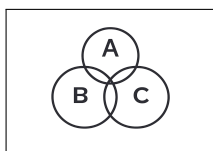
A



$$N = 5$$

$$K = 3$$

$$n = 2$$



$$P(X = k) = \binom{3}{k} \binom{2}{2-k} / \binom{5}{2} = \binom{3}{k} \binom{2}{2-k} / 10$$

$$P(X = 0) = \binom{3}{0} \binom{2}{2} / 10 = 1/10 = 0.10$$

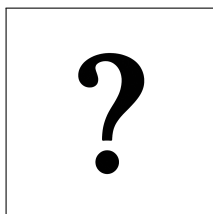
$$P(X = 1) = \binom{3}{1} \binom{2}{1} / 10 = 6/10 = 0.60$$

$$P(X = 2) = \binom{3}{2} \binom{2}{0} / 10 = 3/10 = 0.30$$

$$F(0) = 0.10$$

$$F(1) = 0.10 + 0.60 = 0.70$$

$$F(2) = 1$$



$$N = 25$$

$$K = 20$$

$$n = 3$$

$$PMF = ?$$

$$CDF = ?$$

25 Discrete Distribution CDF

A



$N = 25$
 $K = 20$
 $n = 3$
 $PMF = ?$
 $CDF = ?$

$$P(X = k) = \binom{K}{k} \binom{N-K}{n-k} / \binom{N}{n}$$

$$P(X = 0) = \binom{5}{0} \binom{20}{3} / \binom{25}{3} = \frac{1140}{2300} = 0.4957$$

$$P(X = 1) = \binom{5}{1} \binom{20}{2} / \binom{25}{3} = \frac{950}{2300} = 0.4130$$

$$P(X = 2) = \binom{5}{2} \binom{20}{1} / \binom{25}{3} = \frac{200}{2300} = 0.0869$$

$$P(X = 3) = \binom{5}{3} \binom{20}{0} / \binom{25}{3} = \frac{10}{2300} = 0.0043$$

$$F(0) = P(X = 0)$$
$$F(0) = 1140/2300 = 0.4957$$

$$F(1) = P(X \leq 1) = P(X = 0) + P(X = 1)$$
$$F(1) = 1140 + 950/2300 = 0.9087$$

$$F(2) = P(X \leq 2) = P(X = 0) + P(X = 1) + P(X = 2)$$
$$F(2) = 1140 + 950 + 200/2300 = 0.9957$$

$$F(3) = P(X \leq 3) = P(X = 0) + P(X = 1) + P(X = 2) + P(X = 3)$$
$$F(3) = 1140 + 950 + 200 + 10/2300 = 1$$