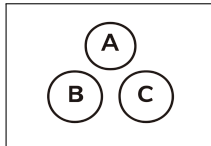


24

Discrete Distribution Hyper-geometric

D

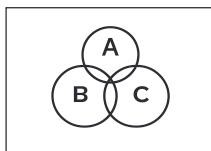


$$N = 5$$

$$K = 2$$

$$n = 2$$

$$k = 1$$

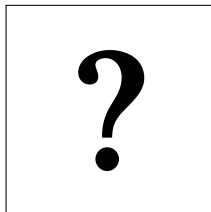


$$P(X = k) = \frac{\binom{K}{k} \binom{N-K}{n-k}}{\binom{N}{n}}$$

$$P(X = 1) = \frac{\binom{2}{1} \binom{3}{1}}{\binom{5}{2}} = \frac{2 \times 3}{10} = \frac{6}{10} = \boxed{0.6}$$

$$E[X] = n \frac{K}{N}$$

$$\text{Var}(X) = n \frac{K}{N} \left(1 - \frac{K}{N}\right) \frac{N-n}{N-1}$$



$$N = 20$$

$$K = 4$$

$$n = 10$$

$$k = 3$$

$$P(X = 3) = ?$$

24

Discrete Distribution
Hyper-geometric

D



$$N = 20$$

$$K = 4$$

$$n = 10$$

$$k = 3$$

$$P(X = 3) = ?$$

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

$$P(X = k) = \frac{\binom{4}{3} \binom{16}{7}}{\binom{20}{10}}$$

$$P(X = 3) = \frac{4 \times 11,440}{184,756}$$

$$P(X = 3) = \frac{45,760}{184,756}$$

$$P(X = 3) \approx \boxed{0.25}$$