

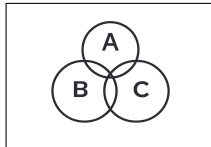
B

Hyper-geometric Random Variable

B



$$\begin{aligned}N &= 5 \\K &= 2 \\n &= 2 \\k &= 1\end{aligned}$$

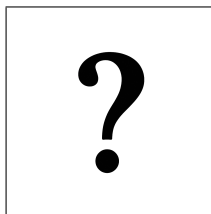


$$P(X = k) = \frac{\binom{K}{k} \binom{N-K}{n-k}}{\binom{N}{n}}$$

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

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

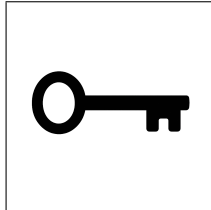
$$\text{Var}(X) = n \frac{K}{N} \left(1 - \frac{K}{N}\right) \frac{N-n}{N-1}$$



$$\begin{aligned}N &= 25 \\K &= 15 \\n &= 7 \\k &= 3 \\P(X = 3) &= ?\end{aligned}$$

B

Hyper-geometric Random Variable

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$$\begin{aligned}N &= 25 \\K &= 15 \\n &= 7 \\k &= 3 \\P(X = 3) &= ?\end{aligned}$$

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

$$P(X = 3) = \frac{\binom{15}{3} \binom{10}{4}}{\binom{25}{7}}$$

$$P(X = 3) = \frac{455 \cdot 210}{480700} = \frac{95550}{480700} \approx \boxed{0.1988}$$