Probability Distributions

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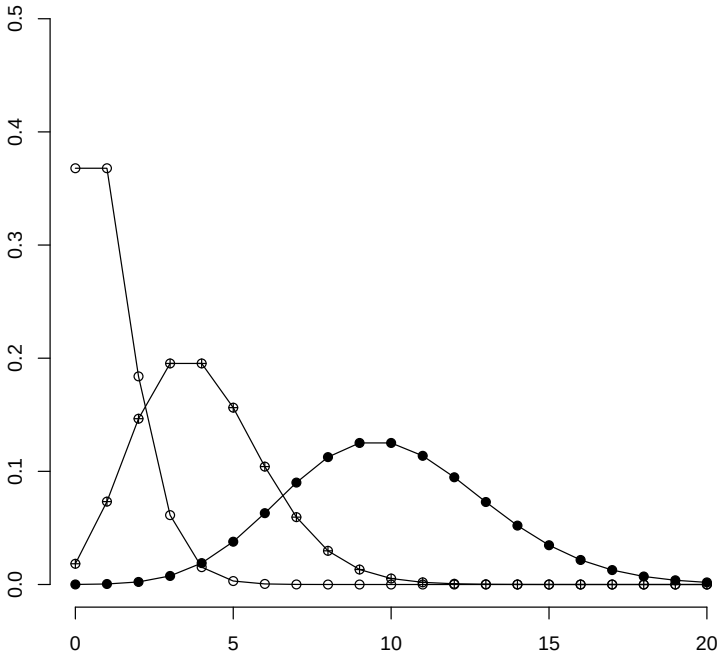
Binomial Distribution

Figure 1: Binomial Distribution



$X \sim \text{Binomial}(n, p)$

$x = 0, 1, 2, \ldots, n$

$0 < p < 1$

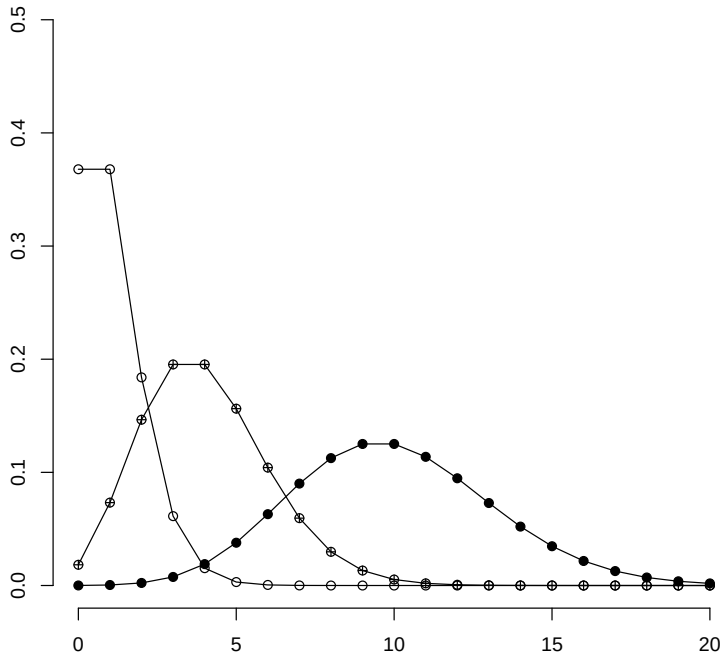
$p(x) = \binom{n}{x} p^x (1-p)^{x-1}$

$\mu = E[X] = np$

$\sigma^2 = E[(x-\mu)^2] = np(1-p)$

Poisson Distribution

Figure 2: Poisson Distribution



$X \sim \text{Poisson}(\lambda)$
$x = 0, 1, 2, \ldots$
$0 < \lambda < \infty$
$p(x) = \frac{e^{-\lambda}\lambda^x}{x!}$
$\mu = E[X] = \lambda$
$\sigma^2 = E[(x - \mu)^2] = \lambda$