Likelihood, and other essentials

distributions

- Understand concept of likelihood and its role in assessing the strength of evidence for competing models.
- Understand how to derive likelihood functions for diverse models.
- Work through examples on using likelihood

Excellent review of statistical distributions can be found at:

- http://www.stats.gla.ac.uk/steps/glossary/

event.

Using the multiplication rule, gives Bayes' Theorem in its simplest form:

- Using the Law of Total Probability:
- P(A | B) = P(B | A).P(A)P(B | A).P(A) + P(B | A').P(A')

- where: P(A) = probability that event A occurs P(B) = probability that event B occurs P(A') = probability that event A does not occur P(A | B) = probability that event A occurs given that event B has occurred already P(B | A) = probability that event B occurs given that event A has occurred already P(B | A') = probability that event B occurs given that event A has not occurred already

the number of successes in a series of trials, for example, the number of 'heads' occurring
ollow a Binomial distribution with parameters n and p, written X ~ Bi(n,p) or X ~ B(n,p), if it

... p = success probability; 0 < p < 1

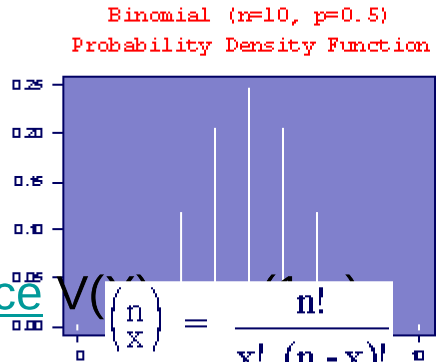
rements:

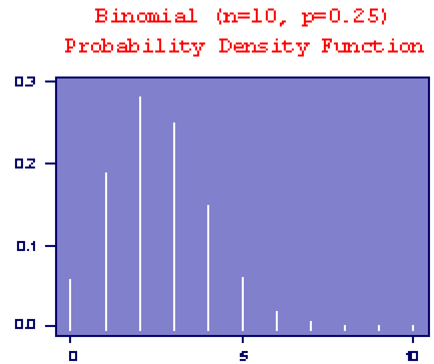
ial; success and failure;

independent;

cess.

value E(X) = np and variance V(X)





$$\binom{n}{x} = \frac{n!}{x!\,(n-x)!}$$

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

Binomial Distribution: discrete events that can take on two values (heads or tails, live or die, present or absent, etc.

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

$$\binom{n}{x} = \frac{n!}{x!\,(n-x)!}$$

mean = np

variance =np(1-p)

n = number of trials, p = probability of "success", x = number of successes.