L5

Bayesian probability

- We cant say something for certain
  - Eg all birds dont fly
    - Young / sick birds , or birds that dont fly

Random variable

1. Discrete random variable

- When a random variable takes discrete/countable values
  - all possible outcomes are listable without missing any

2. Continuous random variable

- value of outcome of the experiment takes real values
  - as the set of real numbers is proved to be uncountable

Probability Distribution

- A table where you right all the values which the random variable takes, and the probabilities for each random variable

Expectation of the random variable

- mean of a discrete random variable p.d.

  - mean is the weighted sum of all the values of a P.D. , where the weight is the probabilities
    - (weighted average in this case, when the weight is derived from probabilities)

- $E(X) = \mu = \sum_{allx} xP(x)$

- $V(X) = \sigma^2 = \sum_{allx} (x - \mu)^2 P(x)$

- X, sales made in 3 attempts

  - X can take values 0,1,2,3

  -
X	0	1	2	3
P(X)	(4/5)^3	3*4/5*4/5*1/5	3*4/5*1/5*1/5	(1/5)^3

X	0	1	2	3
P(X)	0.512	0.384	0.096	0.008

- $E(X) = 0(.512) + 1(.384) + 2(.096) + 3(0.008)$

- $= 0.6$ - which means she makes .6 sales per call

  - doesn't actually make sense *per* call
  - but over many calls yes.

- safe to assume that the 3 events (calls) are independent i.e. one doesn't influence the other