

Probability

probability a measure of the likelihood of an event

experiment any process resulting an observation or outcome

sample space a set of all possible outcomes of an experiment

tree diagram vs cross table vs venn diagram

probability rules

PA [0,1]

sum(PA)=1

odds in favor of an event: P(A):P(A')

complement: PA = 1-PA'

union: P(A)+P(B)+P(AB)

intersect: P(A)P(B|A)=P(B)P(A|B)

conditional event: P(A|B)=P(AB)/P(B)

independent: P(AB)=P(A)*P(B), P(A)=P(A|B), P(B)=P(B|A)

disjoin/exclusive: interrrsect is 0

example:shopper items vs gender

autoinsurance: collision protection vs involved in accident

random variables and their prob distribution

variable a quantity whose value varies from subject to subject

probability experiment an experiment with possible outcomes maybe known, but exact outcome is a random event, no certainty could be predict in advance

random variable outcome of a probability experiment is numeric

discrete random variable quantitative variable that takes a countable number of values

could you have half unit of your variable? No

continuous random variable quantitative variable that can take all the possible values in a given range

could you have half unit of your variable? Yes

discrete random variable distribution

Probability distribution of discrete random variables

table{ P(xi) [0,1] sum(P(xi)=1 X,p(xi) }

Mean/e- xpected value E(X)=sum(xi*P(xi))

variance sum((xi-mean)²*P(xi))

standard deviation expected values for how much any given data point will vary from the mean

test

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