

The High Stakes World of Statistics (Part 2)

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I. Probability-The Chance Something Will Happen

- A. Experiments and Events
 - 1. Probability and Sampling
 - 2. Experiments
 - 3. Events-results of experiments
 - a. Simple Events
 - i. only one possible outcome
 - b. Compound Events
 - i. multiple possible outcomes
 - ii. compound events made up of simple events
 - c. Sample Space
- B. Probability of an Event
 - 1. Formula for Finding Probability
 - 2. Event Composition
 - a. Composition of a Simple Event
 - b. Mutually Exclusive Events
 - i. simple
 - ii. compound
 - c. Composition of Compound Events
 - i. Intersection
 - ii. Union
 - d. Complement of an Event
 - 3. Conditional Probability
 - a. Dependent Events
 - i. formula for finding conditional probability of dependent events
 - b. Independent Events

II. Distributions

- A. Random Variables
 - 1. Qualitative Random Variables
 - a. can't be expressed using numbers
 - 2. Quantitative Random Variables
 - a. can be expressed using numbers
 - b. Discreet Random Variables

- c. Continuous Random Variables
- 3. Probability Distributions
 - a. histogram
 - b. distribution curve
 - c. little x , big X
 - d. expected value (mean)
 - i. formula for expected value
 - e. deviation for a probability distribution
 - f. variance for a probability distribution
 - g. standard deviation for a probability distribution
- B. Probability Distributions for Discrete Random Variables
 - 1. Binomial Probability Distribution
 - a. characteristics of a binomial experiment
 - i. the experiment has n # of trials
 - ii. 2 possible outcomes
 - iii. probability of a success = p
probability of a failure = q
 - iv. all trials are independent
 - v. we want to observe x number of successes in n trials
 - b. binomial probability formula
 - c. mean of a binomial probability distribution
 - d. deviation of a binomial probability distribution
 - e. variance of a binomial probability distribution
 - f. standard deviation of a binomial probability distribution
 - 2. Poisson Probability Distribution
 - a. Poisson Approximation to the Binomial
 - b. Poisson Probability Formula
 - 3. Urn Model
 - a. sampling with replacement
 - b. sampling without replacement