

Chapter 5

Continuous Random Variables

Approximating a Binomial Distribution with a Normal Distribution

You can use a Normal Distribution as an approximation of a Binomial Distribution for large values of n

Often needed given limitation of binomial tables

Need to add a correction for continuity, because of the discrete nature of the binomial distribution

Correction is to add .5 to x when converting to standard z values

Rule of thumb: interval $\mu + 3\sigma$ should be within range of binomial random variable ($0-n$) for normal distribution to be adequate approximation

2

Approximating a Binomial Distribution with a Normal Distribution

Steps

Determine n and p for the binomial distribution

Calculate the interval $\mu \pm 3\sigma = np \pm 3\sqrt{npq}$

Express binomial probability in the form $P(x \leq a)$ or $P(x \leq b) - P(x \leq a)$

Calculate z value for each a , applying continuity correction

Sketch normal distribution, locate a 's and use table to solve

3