

3001 01 001 James Curtis Jr, 202 739 1962, jamesedwardcurtisjr@yahoo.com, 11/16/17 6:45 AM - 7:15 AM, **Statistic I.**

3002 02 002 jbstatistics, www.youtube.com/watch?v=UrOXRvG9oYE.

3003 03 003 **Discrete Probability Distributions**, Bernoulli, random variable 0 or 1, i.e., no or yes.

3004 04 004 Bernoulli, when  $n = 1$  (single Bernoulli trial), is Binomial fixed trials, random successes.

3005 05 005 Geometric, given random trials,  $p$  (1st success), Similarly, negative binomial, number of random trials needed for fixed successes, not  $= 1$ .

3006 06 006 Binomial, draws with replacement, is approximately Hypergeometric, draws without replacement, when using small sample of population.

3007 07 007 Binomial is approximately Poisson,  $n$  (number of draws) is large,  $p$  (probability of success) is small.

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3010 10 002 jbstatistics, www.youtube.com/watch?v=jmqZG6roVqU.

3011 11 003 Introduction to **Discrete Random Variables.**

3012 12 004 graph or histogram of discrete (jagged); histogram of continuous (smoothed).

3013 13 005 notation  $P(X=x)$ ,  $0 \leq p(x) \leq 1$ ,  $\sum p(x) = 1$  for all  $x$ .

3014 14 006 probability distribution, i.e., Probability of Value of  $X=2$  is 0.36, Probability of Value of  $X=1$  is 0.24x2, Probability of Value of  $X=0$  is 0.16.

3015 15 007 random, definition, 'we don't know..until we..(act)', 'value depends on chance'.

3016 16 008 random variable, definition, continuous='any value in an interval', 'infinite'.

3017 17 009 random variable, definition, discrete='countable number of possible values', 'finite', 'some' including 'decimals', 'negative values'.

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3020 20 001 James Curtis Jr, 202 739 1962, jamesedwardcurtisjr@yahoo.com, 11/16/17 3:45 PM - 5:15 PM, **Statistics II.**

3021 21 002 jbstatistics, https://www.youtube.com/watch?v=Zbw-YvELsaM.

3022 22 003 Sampling inference technique is a f(sampling distribution of a statistic). **Sampling Distribution** of a statistic = probability distribution of that statistic; distribution as a result of repeated draws from the population.

3023 23 004 i.e., Of a population of 16 students, what is the average age of a student (in months)?; the true population mean ( $\mu$ ) of 16 students is unknown.

3024 24 005 i.e., the calculation of the sample mean ( $\bar{x}$ ) of a sample of 3 students, the value of a statistic (including the sampling mean) vary from sample to sample.

3025 25 006 The closeness of sample mean ( $\bar{x}$ ) to population mean ( $\mu$ ) is important!; mathematical arguments from a sampling distribution are used to make statements about population (parameters).

3026 26 007 The histogram of sample means will closely resemble the true sampling distribution of the sampling mean; the sampling mean has a sampling distribution that is approximately normal, in most cases, not here.

3027 27 008 i.e., (16 | students with unknown ages | 'choose' 3 | students sampled randomly |) = 560 | possible samples |.  $sd(\bar{x}) = D(\bar{x} | \text{all possible samples of size 3 from this population})$ .

3028 28 009 i.e. since the samples are repeated so many times, the histogram of sampling mean will very closely resemble the true sampling distribution of  $\bar{x}$ , in this scenario.

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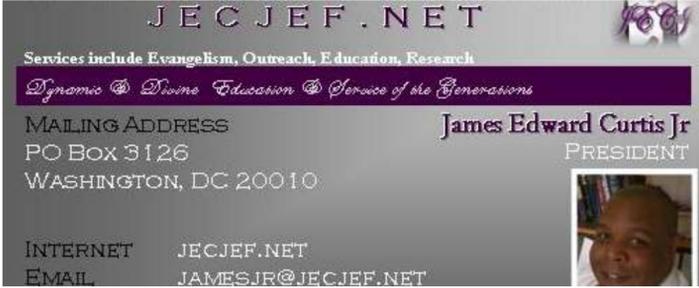
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