Week 3: Determining a Normal Distribution

When trying to determine probabilities, one must first assess whether the variable would have a normal distribution. Using the tools from this course, what are some methods that could be used to determine whether a variable has a normal distribution?

This topic was locked Jan 23 at 11:59pm.

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Jan 16, 2022Jan 16 at 5:45am

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Hello everyone

A normal distribution is one in which the values are evenly distributed both above and below the mean. A population has a precisely normal distribution if **the mean, mode, and median are all equal**. For the population of 3,4,5,5,5,6,7, the mean, mode, and median are all 5.

Then, histogram, normal probability plot and boxplot methods could be used to determine whether a variable has a normal distribution. The symmetric shape of histogram conclude the data are normally distributed, the data fall around the straight line in normal probability plot follow normal distribution and there is no outlier present and box and whisker equal to the median in boxplot conclude data follow normal distribution.
Reference: [https://statisticsbyjim.com/basics/normal-distribution/ (Links to an external site.)](https://statisticsbyjim.com/basics/normal-distribution/)
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Jan 18, 2022Jan 18 at 8:32pm

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Dear students,

Today, during our class discussion we found out that Q7 and Q8 from your HW this week require a little bit more attention. Let's discuss one of them here. Do not forget that you need to deal with the Standard Normal Distribution here, where the mean = 0 and the standard deviation = 1.

"A population proportion is 0.60. Suppose a random sample of 655 items is sampled randomly from this population.

a. What is the probability that the sample proportion is greater than 0.63?
b. What is the probability that the sample proportion is between 0.58 and 0.61?
c. What is the probability that the sample proportion is less than 0.51?"

I look forward to checking your answers,

Best,

PM

-

Collapse SubdiscussionEsther La Colombe Ngo Mbogmal Rosais

Esther La Colombe Ngo Mbogmal Rosais

Jan 19, 2022Jan 19 at 12:29am
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Please find the answer in the file. Thx

Hmw3.docx
(1 like)

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Penka Marinova
Penka Marinova

Jan 21, 2022Jan 21 at 6:24pm
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Great job Esther! Thank you!

I am glad you did not forget to use mu=0 and sigma=1.

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Collapse SubdiscussionAmber Hornbeck
Amber Hornbeck

Jan 20, 2022Jan 20 at 4:10pm

Hello Professor and Class,

Below are my answers to the three questions asked.

a. rounded z-score = 1.57 which equals **0.0582** as the sample portion greater than 0.63

b. rounded z-score for 0.58 = -1.05 and rounded z-score for 0.61= 0.52 so the probability between equals **0.5516**

c. rounded z-score for 0.51= -4.71 which equals **0.000** as the sample portion less than 0.51.
 (1 like)

-

Penka Marinova
Penka Marinova
Jan 21, 2022Jan 21 at 6:24pm

Great job Amber! Thank you!
 (1 like)

-

Ashley Tuchfarber
Jan 21, 2022Jan 21 at 11:24am

A population proportion is 0.60. Suppose a random sample of 655 items is sampled randomly from this population.

a. What is the probability that the sample proportion is greater than 0.63?
b. What is the probability that the sample proportion is between 0.58 and 0.61?
c. What is the probability that the sample proportion is less than 0.51?"

a.)

P=0.90, n=655

Z- score rounded= 1.57

0.0582 (Sample proportion greater than 0.63

b.) Z-score rounded: -1.05 (0.58), Z-score rounded: 0.52 (0.61)

0.5516 (proportion between 0.58 and 0.61

c.) Z-score rounded: -4.71

=0.000 (proportion less than 0.51)
 (1 like)

-

Penka Marinova
Penka Marinova
Jan 21, 2022Jan 21 at 6:28pm
Manage Discussion Entry

Great job Ashley! Thank you!

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Collapse SubdiscussionSuresh Sistla
Suresh Sistla
Jan 21, 2022Jan 21 at 9:53pm
Manage Discussion Entry

Hello Everyone

Here is what i get from my calculations for the above problem

1)Z-Score Rounded = 1.57

Sample proportion 0.0582 > 0.63

2) Z-Score Rounded for 0.58 is - 1.05 && Z Score Rounded for 0.61 is 0.52

This means the probability inbetween = 0.5516

3) Z -Score Rounded for 0.51 is -4.71 . This is equal to 0.000.

This is because the Sample portion < 0.51
 (1 like)

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Jonathan Pagan
Jonathan Pagan
Jan 22, 2022Jan 22 at 5:36pm
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The required some methods that could be used to determine whether a variable has a normal distribution are listed below:-

1. Histogram of data