Week 4: Confidence Intervals in Business

Consider when businesses might use confidence intervals to estimate values, such as in sales projections, marketing results, and so forth. Describe a business decision that could be helped with confidence intervals. Be specific! Then create a problem with numbers from which another student could calculate a confidence interval and make a decision.

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Collapse Subdiscussion

Jan 16, 2022Jan 16 at 3:07pm
Manage Discussion Entry

Dear students,

Welcome to Week 4 discussion.

Consider when businesses might use confidence intervals to estimate values, such as in sales projections, marketing results, and so forth. Describe a business decision that could be helped with confidence intervals. Be specific! Then create a problem with numbers from which another student could calculate a confidence interval and make a decision.

I look forward to reading your posts.
Please, do not forget to participate at least three different days during our week.

Conversational posts are allowed and encouraged, but they **will not count for grading purposes!**

Make sure that **THREE** of your posts for the week are Statistical in nature **AND** a direct response to the problems given above. Remember:

EACH STUDENT NEEDS TO POST A MINIMUM OF 3 TIMES PER WEEK ON 3 DIFFERENT DAYS WITH THE FIRST POST NO LATER THAN WEDNESDAY!

Best,
PM

○

Kevin Prego

Jan 23, 2022Jan 23 at 3:15am

Hi Class & Professor,

Statistics can be used in business, as well as many other industries, to estimate or forecast future events. A confidence interval is a useful tool in business statistics since it allows a company to assess the accuracy of a given estimate. Businesses must be able to determine how confident they should be in their estimates and whether or not to act on them because no estimate can be 100 percent accurate.

A confidence interval is a percentage probability that an estimated range of possible values includes the actual value being evaluated in statistics. For example, a company might estimate that each unit of a product generated by a machine uses 10 lbs. of plastic. Because the machine is unlikely to consume exactly 10 pounds per unit, a confidence interval can be used to provide a range of possibilities. According to the business, there's a 95 percent possibility that the machine utilizes between 9.85 and 10.5 pounds of plastic in each unit. In this case, the confidence interval is 95%, and the chance that the actual amount of plastic used is outside the estimated range is 5%.

Thanks,

Kevin
 (1 like)

▪

Penka Marinova

Jan 25, 2022Jan 25 at 7:06pm

Dear students,

What is the difference between "**margin of error**" and "**standard error**"?

And, do we always use the t-values for calculating the "**Margin of Error**"?

What are the other distribution's scores that we need when calculating the interval limits and in which cases we apply them?

Best,

PM

-

Kennitha Wells

Jan 25, 2022Jan 25 at 11:01pm

Manage Discussion Entry

Professor & Class,

What is the difference between "margin of error" and "standard error"?

The margin of error is the amount that is added or subtracted from a confidence interval; the standard error is the standard deviation of the sample statistics. The margin of error is determined by z-scores at a predetermined level of confidence, which is half the width of a confidence interval.

In my understanding, both measure accuracy using sample statistics. The only difference I see between the two is that the margin of error is multiplied by critical z, making it larger than the standard error.

Do we always use the t-values for calculating the "Margin of Error"?

If the population standard deviation is known, use z distribution.

What are the other distribution's scores that we need when calculating the interval limits and in which cases we apply them?

1. If the population standard deviation is not known, use t distribution where degrees of freedom = n-1 (n is the sample size)
2. If the sample size is large, then use z distribution.

(1 like)

1.

Belal Uddin

Belal Uddin

Manage Discussion Entry

I would like to expand on what my classmates said in the previous discussion post. Margin of error is a very important concept when I'm learning to run a business. It is important and predicting how much of an error that can be possible in any aspect of your business. This is very important for a project in the future productions of your business and knowing how it will run. Having an accurate margin of error allows you to account for any mistakes that can occur and be able to adapt and cover for those mistakes. Knowing your margin of error will also allow you to know what to expect (1 like)

2.

Penka Marinova

Penka Marinova

Manage Discussion Entry

Great, thank you Kennitha!

▪

Babette Mendoza

Babette Mendoza

Manage Discussion Entry

Professor,

The difference between "**margin of error**" and "**standard error"** is that the Standard Error measures the variability in the sample mean in which the sample size affects the standard error and thus the Margin of Error (MOE). The larger your sample is, the smaller the Standard Error and, therefore, the Margin of Error.

When computing the standard error as $\sigma/\sqrt{n} = 0.5/\sqrt{100} = 1.5$. Multiply this value by the z-score to obtain the margin of error: $0.05 \times 1.959 = 0.098$. Add and subtract

the margin of error from the mean value to obtain the confidence interval. In our case, the confidence interval is between 2.902 and 3.098.

Babette

(1 like)

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Leonie Smith
Leonie Smith
Jan 28, 2022Jan 28 at 10:49pm
Manage Discussion Entry

What is the difference between "**margin of error**" and "**standard error"**? The margin of error is the amount of random sampling error in the results of a survey. The margin of error is also known as the confidence interval and tells how much confidence one can have in their survey results. To find the margin of error/confidence interval the z value can be used when using the population mean. If using the sample mean, then the t value can be used to calculate the margin of error. The standard error is also called the standard error of means is the standard deviation of the sampling distribution. The standard error is used to determine the accuracy of the results.

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Jesse Simning
Jesse Simning
Jan 29, 2022Jan 29 at 10:32pm
Manage Discussion Entry

Standard error is the preciseness of of an estimate of a population mean. The margin of error measures the half-width of a confidence interval for the population mean. For the margin of error, when the sample distribution is nearly normal you can express it as a t-score or z-score. You would want to use the t-score when the population standard deviation is unknown.

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Suresh Sistla

Suresh Sistla

Jan 29, 2022Jan 29 at 11:05pm
Manage Discussion Entry

Hello Professor and class

The margin of error : Z* (s/√n) where Z value corresponds to confidence level , S is std deviation and N is sample size

it measures the half width of the confidence interval on population mean

whereas standard error measures the preciseness of population mean estimate. S/√**n**

while computing margin of error we have to use the T = values when we are not sure about the standard deviation where T distribution uses degrees of freedom.

If we know the standard deviation, Z distribution can be used

▪

Marianela Silva

Marianela Silva

Jan 29, 2022Jan 29 at 11:30pm
Manage Discussion Entry

Standard of error measures the preciseness of an estimate of a population mean and the margin error measures the half width of a cofidence interval for a population mean.

There are two ways to calculate margin of error:

1. Margin of error = Critical value x Standard deviation for the population.
2. Margin of error = Critical value x Standard error of the sample.

▪

Jessica Velez

Jessica Velez

Jan 30, 2022Jan 30 at 10:18am
Manage Discussion Entry

To calculate the margin or error (MOE) you need to know 4 values.

1. Confidence level
2. Quantile
3. Standard deviation
4. Sample size

The margin of error figure tells you that the true result may differ from the percentage figure provided, and how much more or less than the stated percentage the reality might be.

For example, if we want a 95% confidence with a margin of error of +/- 2 would mean that if we asked a certain question using a simple random sample 100 times, 95 of those times it would come out at the estimated value plus or minus 2 points. Additionally, as stated in this weeks lecture, the larger your random sample the smaller your margin of error will be. Having a sample size of larger than 30 would also provide a normal distribution.

The relationship between the two is this:

More specifically, the margin of error = critical value (whether T or Z distribution) * Standard error.

I don't think that you would always use t-values for calculating the margin of error, however I could be wrong. But I would think that it would depend on whether your trying to find a value for a sample or the population. If a sample, you would use z-values and for population you would use t-value.

SOURCE:

https://www.youtube.com/watch?v=h3_B8MWzGuI (Links

▷

to an external site.)
Read More

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Sharon Travis
Sharon Travis
Jan 30, 2022Jan 30 at 5:36pm
Manage Discussion Entry

Hello Professor.

Margin of error is the percentage of error in the outcome received from the random sampling surveys. An acceptable margin of error is usually between 4% and 8% at the 95% confidence level. The higher the percentage the survey is said not to be reliable.

The standard error is used to identify the accuracy when using standard deviation for a sample distribution. When there are more data points us to calculate the mean, the standard error tend to be smaller.

The t-value is used when the population standard deviation is not known. If the population standard deviation is known, use the z-distribution.

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Andrew Serna

Jan 30, 2022Jan 30 at 9:06pm
Manage Discussion Entry

What is the difference between "**margin of error**" and "**standard error**"?

I think the difference of the standard of error and the margin of error is that the standard of error has to deal with the population mean being as precise as possible and the margin of error has to deal with less accurate population mean and instead uses confidence intervals.

o

Jessica Velez

Jan 23, 2022Jan 23 at 2:31pm
Manage Discussion Entry

A confidence interval is the mean of your estimate plus and minus the variation in that estimate, with the confidence being another way to describe probability. In other words, the confidence interval is a range of values that you expect your estimate to fall between a certain percentage. The confidence level is the percentage of times you expect to reproduce an estimate between the upper and lower bounds of the confidence interval.

Example: A random sample of 400 people from Orlando, FL were asked about their height and it was determined that the average was 1.75 m. It is know that the heights of the population are random variables that follow a normal distribution with a variance of 0.16. Determine the interval of 95% confidence for the average heights of the population.

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Collapse SubdiscussionPenka Marinova

Penka Marinova

Jan 25, 2022Jan 25 at 7:01pm
Manage Discussion Entry

Dear students,

During our online session today we discussed the following question:

"An insurance company is interested in conducting a study to estimate the population proportion of teenagers who obtain a driving permit within 1 year of their 16th birthday. A level of confidence of 95% will be used and an error of no more than .03 is desired. There is no knowledge as to what the population proportion will be. The approximate sample size should be at least_____."

I look forward to your answers,

Best,

PM

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Collapse SubdiscussionKevin Prego

Kevin Prego

Jan 26, 2022Jan 26 at 11:21am
Manage Discussion Entry

Hi Class & Professor,

The provided estimate population proportion is p = 0.5

The critical value for the significance level α=0.05 is Z_c=1.96, which is obtained by looking into a standard normal probability table.

The following formula is used to compute the minimum sample size required to estimate the population proportion p within the required margin of error:

$$n \geq p(1-p)\left(\frac{z_c}{E}\right)^2$$

$$= 0.5 \times (1 - 0.5)\left(\frac{1.96}{0.03}\right)^2$$

$$= 1067.07$$

Therefore, the sample size needed to satisfy the condition is $n \geq 1067.07$, and since it must be an integer number, we conclude that the minimum required sample size is n = 1068

Thanks
Read More

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Penka Marinova
Penka Marinova
Jan 27, 2022Jan 27 at 7:38pm
Manage Discussion Entry

Thank you Kevin!

-

Collapse SubdiscussionTahani Abdelkhalig
Tahani Abdelkhalig
Jan 26, 2022Jan 26 at 2:15pm
Manage Discussion Entry

Hello Professor,

the first thing we have to put in our mind is there is no knowledge as to what the population proportion will be, which means is the population is 50%. I used the week 4 calculator.

Minimum Sample Size p

Confidence Level	95%
Proportion	50%
Error	0.03
z-Value	1.959964
Minimum Sample Size	1068

[Read More](#)

(1 like)

Penka Marinova

Penka Marinova

Jan 27, 2022Jan 27 at 7:39pm

Great, thank you
Tahani! (1 like)

■

Trista Rigot (*She/Her*)

Jan 26, 2022Jan 26 at 6:20pm

Hello class,

I found the answer using this weeks course resource Excel file.

Minimum Sample Size p

Confidence Level	95%
Proportion	0.5
Error	0.03
z-Value	1.959964
Minimum Sample Size	1068

(1 like)

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Penka Marinova

Penka Marinova

Jan 27, 2022Jan 27 at 7:39pm

Thank you Trista!

■

Hunter Mowery

Hunter Mowery

Jan 28, 2022Jan 28 at 10:40pm

Professor and Class,

The answer to this question is as follows:

Minimum Sample Size μ

Confidence Level	95%
StDev	50
Error	0.03
z-Value	1.959964
Minimum Sample Size	10670719

[Read More](#)

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[Jessica Velez](#)
Jessica Velez

Jan 29, 2022Jan 29 at 5:28pm
[Manage Discussion Entry](#)

According to this weeks lesson/lecture when the population proportion is unknown then the rule is that we assume it is 0.50. Having said that using the minimum sample size p calculation in this weeks Excel sheet I plug in the given values.

CL = 95%

Proportion = 0.50

Error = .03

The approximate sample size should be at least 1068

Z-value = 1.96

-

[Jesse Simning](#)
Jesse Simning

Jan 30, 2022Jan 30 at 1:26pm
[Manage Discussion Entry](#)

Minimum Sample Size

Confidence level: 95%

Proportion: 50%

Error: 0.03

Z value: 1.959964

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[Sharon Travis](#)
Sharon Travis

Jan 30, 2022Jan 30 at 7:35pm
[Manage Discussion Entry](#)

Hello Professor,

The approximate sample size should be at least 1068. I used the excel calculator.

Minimum Sample Size p

Confidence Level	95%
Proportion	0.5
Error	0.03
z-Value	1.959964
Minimum Sample Size	1068

[Read More](#)

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[Collapse SubdiscussionKatina Carter](#)
Katina Carter

Jan 25, 2022Jan 25 at 8:04pm
[Manage Discussion Entry](#)

Professor and Class,

It would seem to me that many business decisions can come from confidence intervals. A lot of these decisions I had no idea could be determined by confidence intervals. Here's one:

A couple years ago, I participated in a survey panel for Little Caesar's pizza. They were trying out different pizza toppings and price values. One was a chicken pickle pizza. It was pretty good. They asked us to write down how much we would pay for it. I'm used to Little Caesar's being around $5.00, so I put $6. I don't know all of the other price values, but let's suppose the mean was 9 bucks with a standard deviation of 2 dollars. What would the price range be if they wanted a 90% confidence level, if they sampled 30 people with these results?

(1 like)

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Jonathan Hidalgo

Jan 26, 2022Jan 26 at 9:26pm
Manage Discussion Entry

Hi Katina,

I think I'm missing some information below

Confidence Level	90%	(decimal)	
n	30		
Mean	9		
StDev	2	NOTE:	
Use t or z?	t	If sample standard deviation is known, use	
		If population standard deviation is known,	
SE	0.365148	(Stdev / sqrt(n))	
t-value	1.699127	(critical value of z)	
Margin of Error	0.620433		
Lower Limit	8.379567		
Upper Limit	9.620433		

Read More
(1 like)

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Katina Carter
Katina Carter

Jan 27, 2022Jan 27 at 8:58am
Manage Discussion Entry

Jonathan,

You, my friend, are a genius. *Never* doubt yourself. Ha ha. I know it's more about doubting *me*, but still... That's what I got when I plugged in the numbers. Oh, yours

doesn't show the upper and lower limits! But everything else is right, so the unseen bottom has to be right as well! (1 like)

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Penka Marinova
Penka Marinova
Jan 27, 2022Jan 27 at 7:41pm
Manage Discussion Entry

Looks good Jonathan!
 (1 like)

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Collapse SubdiscussionAlejandra Valencia
Alejandra Valencia
Jan 26, 2022Jan 26 at 11:58pm
Manage Discussion Entry

Hello Class,

Confidence Intervals gives the percentage probability an estimated range of possible values and also includes the actual value being estimated. An example can be when a business wants to estimate a machine using 10 lbs. of plastic for each unit of a product created. Since the machine cannot expect to use exactly 10 lbs. per unit, a confidence interval can be created in order to give a range of possibilities. The company may predict that there is a 95% chance that the machine uses on average between 9.87 and 10.6 lbs. of plastic per unit. The confidence interval in this example is 95% and the likelihood that the actual amount of plastic used is outside the estimated range is 5%.

I found the below math problem to be helpful and one that I worked on to get extra practice.

300 hundred eggs were randomly chosen from a gravid female salmon and individually weighed. The mean weight was 0.978 g with a standard deviation of 0.042. Find the 95% confidence interval for the mean weight of the salmon eggs (because it is a large n, use the standard normal distribution).

Answer:

(0.973g,0.9827g)

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Katina Carter

Jan 28, 2022Jan 28 at 10:40pm

Hi Alejandra,

I don't know If I'm the only one, but it feels like using Excel is cheating! I typed in the info and Poof! I got the answer, same as

Confidence Level	95%
n	300
Mean	0.978
StDev	0.042
Use t or z?	t
SE	0.00
t-value	1.97
Margin of Error	0.00
Lower Limit	0.97
Upper Limit	0.98

yours!

Answer= 0.97-0.98

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Jonathan Pagan

Jan 30, 2022Jan 30 at 10am

Business, like many other fields, can benefit from the use of statistics in estimating or predicting future events. An important tool for business statistics is a confidence interval, which helps a business evaluate the reliability of a particular estimate. Because no estimate can be 100 percent reliable, businesses must be able to know how confident they should be in their estimates and whether or not to act on them.

In statistics, a confidence interval gives the percentage probability that an estimated range of possible values in fact includes the actual value being estimated. For example, a business might estimate that a machine uses 10 lbs. of plastic

for each unit of a product created. Because the machine cannot be expected to use precisely 10 lbs. per unit, a confidence interval can be created to give a range of possibilities. The company might predict that there is a 95 percent chance that the machine uses on average between 9.85 and 10.5 lbs. of plastic per unit. The confidence interval in this example is 95 percent, and the likelihood that the actual amount of plastic used is outside the estimated range is 5 percent.

- ○

Marianela Silva
Marianela Silva
Jan 27, 2022Jan 27 at 6:19pm
Manage Discussion Entry

A confidence interval is a range of values that contains a mean of the population. It is presented in %, the larger the sample the more likely we are to get a more accurate result. Investors can take samples of stocks and determine confidence interval to find the average return for the stocks in a particular sector and can use this information to compare stock among the different sectors.

If we select 100 small cap stocks with an average return of 8% and we assume they have a normal distribution with a standard deviation of 2%. What is the 95% confidence interval for the average return of these stocks?

- ○

Collapse SubdiscussionPenka Marinova
Penka Marinova
Jan 27, 2022Jan 27 at 7:47pm
Manage Discussion Entry

Dear students,

After watching the Live Lecture under "Media Gallery" and using the week 4 resources try to answer the following questions:

1) In a sample of 51 temperature readings taken from the freezer of a restaurant, the mean is 29.7 degrees and the population standard deviation is 2.7 degrees. What would be the 88% confidence interval for the temperatures in the freezer?

2) Determine the minimum sample size required when you want to be 85% confident that the sample mean is within *two units* of the population mean. Assume a population standard deviation of 4.3 in a normally distributed population.

I look forward to checking your answers,

Best,

PM

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Trista Rigot
Trista Rigot (*She/Her*)

Jan 28, 2022Jan 28 at 8:18am
Manage Discussion Entry

Good morning class and Professor.

Here is my answer using this weeks Excel sheet from the course resources.

1) In a sample of 51 temperature readings taken from the freezer of a restaurant, the mean is 29.7 degrees and the population standard deviation is 2.7 degrees. What would be the 88% confidence interval for the temperatures in the freezer?

2) Determine the minimum sample size required when you want to be 85% confident that the sample mean is within **two units** of the population mean. Assume a population standard deviation of 4.3 in a normally distributed population.

1.

Confidence Interval for μ		
Confidence Level	88%	(decimal)
n	51	
Mean	29.7	
StDev	2.7	NOTE:
Use t or z?	z	sample standard deviation is known, use t.
		If population standard deviation is known, use z.
SE	0.378076	(Stdev / sqrt(n))
z-value	1.554774	(critical value of z)
Margin of Error	0.587822	
Lower Limit	29.112178	
Upper Limit	30.287822	

2.

Minimum Sample Size μ		
Confidence Level	85%	
StDev	4.3	
Error	2	
z-Value	1.439531	
Minimum Sample Size	10	

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 (1 like)

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Ashley Tuchfarber
Ashley Tuchfarber

1) In a sample of 51 temperature readings taken from the freezer of a restaurant, the mean is 29.7 degrees and the population standard deviation is 2.7 degrees. What would be the 88% confidence interval for the temperatures in the freezer?

Confidence Level	88%
n	51
Mean	29.7
StDev	2.7
Use t or z?	t
SE	0.378076
t-value	1.581805
Margin of Error	0.598042
Lower Limit	29.101958
Upper Limit	30.298042

2) Determine the minimum sample size required when you want to be 85% confident that the sample mean is within *two units* of the population mean. Assume a population standard deviation of
4.3 in a normally distributed population.

Confidence Level	85%
StDev	4.3
Error	2
z-Value	1.439531
Minimum Sample Size	10

 (1 like)

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Hunter Mowery
Jan 28, 2022Jan 28 at 10:44pm
Manage Discussion Entry

Professor,

Here are the answers I got when using the calculator for week 4:

1.)

Confidence Interval for μ

Confidence Level	88%	(decimal)
n	51	
Mean	29.7	
StDev	2.7	NOTE:
Use t or z?	z	If sample standard deviation is known, use t.
		If population standard deviation is known, use z.
SE	0.378076	(Stdev / sqrt(n))
z-value	1.554774	(critical value of z)
Margin of Error	0.587822	
Lower Limit	29.112178	
Upper Limit	30.287822	

2.)

Minimum Sample Size μ

Confidence Level	83%
StDev	4.3
Error	2
z-Value	1.372204
Minimum Sample Size	9

Read More
 (1 like)

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Katina Carter

Katina Carter

Jan 28, 2022Jan 28 at 11:01pm
Manage Discussion Entry

Professor,

1) 88% confidence interval is 29.11-30.29.

Confidence Interval for μ

Confidence Level	88%
n	51
Mean	29.7
StDev	2.7
Use t or z?	z
SE	0.38
z-value	1.55
Margin of Error	0.59
Lower Limit	29.11
Upper Limit	30.29

2) 85% confidence that the sample mean is within 2 units(?) of the population mean requires a minimum of 10.

Minimum Sample Size μ

Confidence Level	85%
StDev	4.3
Error	2
z-Value	1.439531
Minimum Sample Size	10

(1 like)

▪

Tina Miller

Tina Miller

Jan 29, 2022Jan 29 at 3:32pm
Manage Discussion Entry

Hello Professor and Class,

1. Lower limit 29.11 and upper 30.29

Confidence Interval for μ

Confidence Level	88%	(decimal)
n	51	
Mean	29.7	
StDev	2.7	NOTE:
Use t or z?	Z	If sample standard
		If population stand
SE	0.38	(Stdev / sqrt(n))
Z-value	1.55	(critical value of z)
Margin of Error	0.59	
Lower Limit	29.11	
Upper Limit	30.29	

2. Minimum sample size is 10.

Minimum Sample Size μ	
Confidence Level	85%
StDev	4.3
Error	2
z-Value	1.439531
Minimum Sample Size	10

Read More
 (1 like)

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Collapse SubdiscussionJessica Velez

Jessica Velez

Jan 29, 2022Jan 29 at 5:40pm

Manage Discussion Entry

Hello class and Professor,

For question one I am going to use the Confidence Interval for mu calculation in this week Excel Calculations spreadsheet. With the give values from question 1, I plug them into the appropriate cells.

CL= 88%

n = 51

Mean = 29.7

StDev = 2.7

Because this question gives us the "population standard deviation" I am going to use "z".

The 88% confidence intervals for the temperatures in the freezer are 29.11, 30.29

For question 2 I am going to use the minimum sample size mu.

CL=85%

StDev = 4.3

Error = 2

Minimum sample size = 10

Read More
 (1 like)

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[Penka Marinova](#)

[Penka Marinova](#)

Jan 30, 2022Jan 30 at 12:06pm
[Manage Discussion Entry](#)

Great job on answering the two questions!

- •

[Collapse SubdiscussionCorey Wilson](#)

[Corey Wilson](#)

Jan 30, 2022Jan 30 at 3:56pm
[Manage Discussion Entry](#)

1) In a sample of 51 temperature readings taken from the freezer of a restaurant, the mean is 29.7 degrees and the population standard deviation is 2.7 degrees. What would be the 88% confidence interval for the temperatures in the freezer?

Confidence Interval =29.11-30.29

2) Determine the minimum sample size required when you want to be 85% confident that the sample mean is within **two units** of the population mean. Assume a population standard deviation of
4.3 in a normally distributed population.

Minimum Sample Size= 10

Confidence Interval for μ

Confidence Level	88%	(decimal)
n	51	
Mean	29.7	
StDev	2.7	NOTE:
Use t or z?	z	If sample standard deviation is known, use t.
		If population standard deviation is known, use z.
SE	0.378076	(Stdev / sqrt(n))
z-value	1.554774	(critical value of z)
Margin of Error	0.587822	
Lower Limit	29.112178	
Upper Limit	30.287822	

Minimum Sample Size μ

Confidence Level	85%
StDev	4.3
Error	2
z-Value	1.439531
Minimum Sample Size	10

Read More

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Chavalier Jenkins
Chavalier_Jenkins
Jan 30, 2022Jan 30 at 11:58pm
Manage Discussion Entry

Hello Corey,

Determining the sample size is really crucial for accurate and statistically significant results. A study that is too large will probably waste resources and could expose more participants to the risks associated with the study. A small sample size will affect the accuracy or significance of a result, and might lead to poor decisions. Thus an appropriate determination of the sample size used in a study is a crucial step in the design of a study.

▪

Esther La Colombe Ngo Mbogmal Rosais

Jan 23, 2022Jan 23 at 11:06am

Manage Discussion Entry

Hello everyone

Business, like many other fields, can benefit from the use of statistics in estimating or predicting future events. An important tool for business statistics is a confidence interval, which helps a business evaluate the reliability of a particular estimate. Because no estimate can be 100 % reliable, businesses must be able to know how confident they should be in their estimates and whether or not to act on them.

Data were collected on random specimens of Yellowfin tuna from 1991 and 2010. For the sample of 231 specimens of Yellowfin tuna, the average mercury level was found to be 0.354 ppm and the standard deviation of mercury level to be 0.231 ppm. The data are not strongly skewed.
Find the 95% confidence interval for the average mercury level. Round to three decimal places.

Edited by Esther La Colombe Ngo Mbogmal Rosais on Jan 24 at 4:26am

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Belal Uddin

Belal Uddin

Jan 24, 2022Jan 24 at 8:01pm

Manage Discussion Entry

When managing a business, there are many parts and aspects of the company that you want to take into consideration. This includes a financial part and a major part in forecasting future events for the business. I feel that statistics plays a major role in business because you have to keep track of things that occurred and also make predictions based off of those statistics and data for the future as well.Statistics can also help with the confidence interval which is very important for businesses to make decisions as they need to know how confident or not they are about it.

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Kennitha Wells

Jan 25, 2022Jan 25 at 7:58am

Hello Esther,

The 95% confidence interval for the average mercury level is: 0.324 to 0.383. I have used the week 4 calculator to solve this equation.

Confidence Level	95%
n	231
Mean	0.354
StDev	0.231
Use t or z?	t
SE	0.015199
t-value	1.970332
Margin of Error	0.029946
Lower Limit	0.324054
Upper Limit	0.383946

Edited by Kennitha Wells on Jan 25 at 9:27pm
 (1 like)

-

Esther La Colombe Ngo Mbogmal Rosais

Esther La Colombe Ngo Mbogmal Rosais

Jan 26, 2022Jan 26 at 4:09pm

Yes 0.3240 - 0.3839 is a Great answer! thx Kennitha

-

Collapse SubdiscussionJohn MacDonald

John MacDonald

Jan 24, 2022Jan 24 at 11:13am

Professor and class,

A confidence interval is a range of values above and below the statistic's mean that may also include an unknown parameter for the population. For random samples, the confidence interval would identify the level of probability would result in the actual population parameter.

Confidence intervals are widely utilized by organizations to conduct market research. When consumer feedback is needed to evaluate a new product or changes to an existing product, a certain number of consumers are surveyed. Consumer surveys can provide the data to determine if the organizations estimates were correct and to proceed on the product launch.

Example:

A used car dealer is not selling as many per month as the dealer directly across the street from them. They reviewed the last 50 cars that sold to determine how long the car was on hand before it sold. The sample mean is 11.5 days, with a standard deviation of 3.5 days. Determine the 95% confidence interval for the number of days on hand before being sold.

o

Jonathan Hidalgo
Jonathan Hidalgo
Jan 29, 2022Jan 29 at 8:55pm
Manage Discussion Entry

Hi John,

I want to say this is the answer for example you provided:

Confidence Interval for μ

Confidence Level	95%	(decimal)
n	50	
Mean	11.5	
StDev	3.5	NOTE:
Use t or z?	t	If sample standard deviation is known, use t.
		If population standard deviation is known, use
SE	1.414214	(Stdev / sqrt(n))
t-value	2.009575	(critical value of z)
Margin of Error	2.841969	
Lower Limit	8.658031	
Upper Limit	14.341969	

Edited by [Jonathan Hidalgo](#) on Jan 29 at 8:56pm
[Read More](#)

- ▪

[Collapse SubdiscussionKennitha Wells](#)

Kennitha Wells

Jan 24, 2022Jan 24 at 2:22pm
[Manage Discussion Entry](#)

Hello Professor & Class,

Generally, a confidence interval measures the probability of a parameter falling between two specified values. It is the probability that a value will fall between the upper and lower bound of a probability distribution.

Example

Suppose 250 randomly selected people are surveyed to determine if they own a tablet. Of the 250 surveyed, 98 reported owning a tablet. Using a 95% confidence level, compute a confidence interval estimate for the proportion of people who own tablets.

Edited by [Kennitha Wells](#) on Jan 24 at 2:22pm

- ○

[Collapse SubdiscussionEsther La Colombe Ngo Mbogmal Rosais](#)

Esther La Colombe Ngo Mbogmal Rosais

Jan 24, 2022Jan 24 at 5:34pm
[Manage Discussion Entry](#)

Given that, A) Point estimate = sample proportion = = x / n = 98 / 250 = 0.392 1 - = 1 - 0.392 = 0.608 Z/2 = Z0.025 = 1.96 Margin of error = E = Z / 2 * ((…

The confidence interval is 0.3315, 0.4525

- ▪

[Kennitha Wells](#)

Kennitha Wells

Jan 26, 2022Jan 26 at 8:52pm
[Manage Discussion Entry](#)

Yes Esther good job!

- ○

Tahani Abdelkhalig

Jan 25, 2022Jan 25 at 12:46pm

Manage Discussion Entry

Hello Kennitha,

Using the week 4 calculator, At the 95% confidence level, there are 0.33 to 0.45 people owning tablets.

Confidence Interval for p

Confidence Level	95%
n	250
Number of Successes	98
OR	
Sample Proportion	
Sample Proportion	0.39200
SE	0.030876
z	1.959964
Margin of Error	0.060516
Lower Limit	0.331484
Upper Limit	0.452516

Read More

-

Tahani Abdelkhalig
Tahani Abdelkhalig

Jan 26, 2022Jan 26 at 2:30pm

Manage Discussion Entry

(1 like)

-
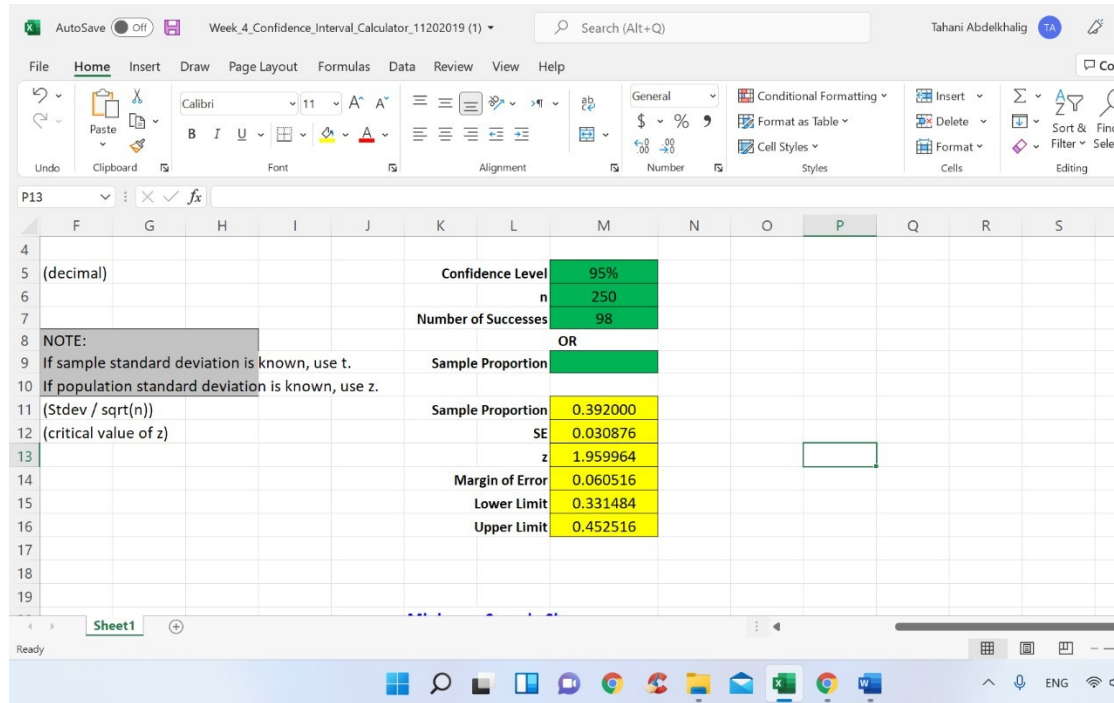
Collapse SubdiscussionKennitha Wells
Kennitha Wells

Jan 26, 2022Jan 26 at 8:53pm
Manage Discussion Entry

Tahani,

That's correct :)
(1 like)

-

Tahani Abdelkhalig
Tahani Abdelkhalig

Jan 26, 2022Jan 26 at 9:21pm
Manage Discussion Entry
Thanks kennitha,

Get Outlook for Android (Links to an external site.)

From: Kennitha Wells <notifications@instructure.com>
Sent: Wednesday, January 26, 2022 10:53:12 PM

To: sudan401@outlook.com <sudan401@outlook.com>
Subject: Kennitha Wells replied to Week 4: Confidence Intervals
in Business, Applied Managerial Statistics - 10458

Kennitha Wells

Kennitha Wells replied to Week 4: Confidence Intervals in Business, Applied
Statistics - 10458:

Tahani,

   That's correct :)

Join the conversation using the link below, or comment by replying to this me
allowed, if you need to include an attachment, please log in to Canvas and re
discussion.

CANVAS

Click here to join the conversation | Update your notification settings

Read More

o

Abdullah Jubaer
Abdullah Jubaer
Jan 29, 2022Jan 29 at 7:58am
Manage Discussion Entry

Hi Kennitha and class,

An interval estimate (confidence interval) is a range of values within
which the analyst can declare, with some confidence, the population
parameter lies. Confidence intervals can be two-sided or one-sided.
How are confidence intervals constructed?

On many occasions estimating the population mean is useful in
business analytics. For example, the manager of human resources in a
company might want to estimate the average number of days of work

an employee misses per year because of illness. If the firm has thousands of employees, direct calculation of a population mean such as this may be practically impossible. Instead, a random sample of employees can be taken, and the sample mean number of sick days can be used to estimate the population mean. Suppose another company developed a new process for prolonging the shelf life of a loaf of bread. The company wants to be able to date each loaf for freshness, but company officials do not know exactly how long the bread will stay fresh. By taking a random sample and determining the sample mean shelf life, they can estimate the average shelf life for the population of bread.

As the cellular telephone industry has grown and matured, it is apparent that the use of texting has increased dramatically. Suppose a large cellular phone company in wanting to meet the needs of cell phone users hires a business analytics company to estimate the average number of texts used per month by Americans in the 35-to-54-years-of-age category. The analytics company studies the phone records of 85 randomly sampled Americans in the 35-to-54-years-of-age category and computes a sample monthly mean of 1300 texts. This mean, which is a statistic, is used to estimate the population mean, which is a parameter. If the cellular phone company uses the sample mean of 1300 texts as an estimate for the population mean, the same sample mean is used as a point estimate.

Reference: https://education.wiley.com/player/index.html#/res;url=https:%2F%2Feducation.wiley.com%2Fcontent%2FBlack_Business_Statistics_10e%2Febook%2Fepub%2F9781119591351%2FOPS%2Fc08.xhtml%23c08-sec-0003 (Links to an external site.)

Read More
 (1 like)

o

Ashley Tuchfarber
Ashley Tuchfarber
Jan 30, 2022Jan 30 at 5:24pm
Manage Discussion Entry
A confidence interval shows the amount of uncertainty. Confidence intervals with a margin of error tell you how confident you can be the results are what you expect (https://www.statisticshowto.com/ (Links to an external site.)). When there is no information on the sample, you must use the t distribution to find the confidence interval. Confidence

intervals are very important in business and are often used in market research to help make decisions. Confidence intervals are also used in risk management and budget forecasting.

Reference: https://www.statisticshowto.com/probability-and-statistics/confidence-interval/

.

[Collapse SubdiscussionMaurice Woods](#)

Maurice Woods

Jan 24, 2022Jan 24 at 3:33pm
[Manage Discussion Entry](#)

Good afternoon Professor/class,

In statistics, [confidence intervals (Links to an external site.)](#) are used to represent a range of values that is likely to contain a [population parameter (Links to an external site.)](#) with a certain level of confidence.

The following general formula is used to calculate confidence intervals:

Confidence Interval = (point estimate) +/- (critical value)*(standard error)

This formula creates an interval with a lower bound and an upper bound, which likely contains a population parameter with a certain level of confidence.

Confidence Interval = [lower bound, upper bound]

Confidence intervals are often used by marketing departments within companies to determine if some new advertising technique, method, tactic, etc. produces significantly higher revenue.

For example, a marketing team at a grocery retailer may run two different advertising campaigns at 20 different stores each during one quarter and measure the average sales produced by each campaign at each store at the end of the quarter.

They could then use the sample mean and sample standard deviation of sales from each campaign to construct a confidence interval for the difference between mean sales. This will tell the marketing team if there is any meaningful difference in sales that occurs as a result of the two campaigns. Zach. (2021, May 5). *4 examples of confidence intervals in real life*. Statology. Retrieved January 24, 2022, from [https://www.statology.org/confidence- interval-real-life-example/ (Links to an external site.)](#)

Edited by [Maurice Woods](#) on Jan 24 at 3:35pm
[Read More](#)
 (1 like)

○

Belal Uddin
Belal Uddin
Jan 25, 2022Jan 25 at 7:45pm
Manage Discussion Entry

I would like to add onto what my classmate said. A conference that rule is exactly what it says it is it is an interval which means that there is an upper limb in the lower limit. Does upper limb and lower then we can help businesses to establish the range of values or whatever it is that they are trying to calculate and their confidence to stay in that range.
Businesses need to use it to six on a daily basis to help them establish different statuses and their projections. It helps and give a sense of data to back up any decisions that they make.

▪

Amber Hornbeck
Amber Hornbeck
Jan 24, 2022Jan 24 at 3:43pm
Manage Discussion Entry

Hello Professor & Class,

A confidence interval, in statistics, provides the percentage of probability that an estimated range of possible values did in fact include the actual value being estimated. This can be an important tools for all businesses when considering how to manage raw goods utilized to create a new product, market research, risk management, and even budget forecasting.

One example that I enjoyed reading about was found in the Small Business Chronicle.

A small business might estimate that a machine uses 10 lbs. of plastic for each unit of a product created. Because the machine cannot be expected to use precisely 10 lbs. per unit, a confidence interval can be created to give a range of possibilities. The company might predict that there is a 95 percent chance that the machine uses on average between 9.85 and 10.5 lbs. of plastic per unit. The confidence interval in this example is 95 percent, and the likelihood that the actual amount of plastic used is outside the estimated range is 5 percent. (Richards 2016)

Richards, L. (2016, October 26). How the confidence interval affects business. Small Business - Chron.com. Retrieved January 24, 2022, from https://smallbusiness.chron.com/confidence-interval-affects-business-22021.html (Links to an external site.)

-

Douglas R.B. Bunna

Jan 24, 2022Jan 24 at 3:51pm
Manage Discussion Entry

A confidence interval is a range of estimates for an unknown parameter. Oftentimes it is defined by an upper and lower bound interval or it may occasionally have only one-side. The confidence level represents the level of frequency that the data meet the parameter.

- ○

Babette Mendoza
Babette Mendoza

Jan 29, 2022Jan 29 at 11:07pm
Manage Discussion Entry

Douglas,

In addition to your post, the confidence interval does not reflect the variability in the unknown parameter. Instead, it reflects the amount of random error in the sample and provides a range of values likely to include the unknown parameter. It also displays the probability of a parameter falling between two values around the mean. It also measures the degree of uncertainty or certainty in a sampling method.

Babette

-

Tina Miller

Jan 24, 2022Jan 24 at 7:16pm
Manage Discussion Entry

Hello Professor and Class,
Consider when businesses might use confidence intervals to estimate values, such as in sales projections, marketing results, and so forth. Describe a business decision that could be helped with confidence intervals. Be specific! Then create a problem with numbers from which another student could calculate a confidence interval and make a decision.

Confidence intervals is the percentage probability that the population mean is located. Ninety-five percent is the most widely used confidence interval. It means that it is probable that 95 randomly picked samples will be within the population mean and 5 will not.

This could be useful in the food industry to determine average food prices across the nation. It could be used to adjust the sales price for a nationwide company to be in tune with current pricing or to figure out when to have a sale on chicken wings.

If chicken wing prices are currently $3.99 lb at my local grocery store. It would not be economical to find out what the price is at 1000 stores across the country, but we could do a sample of 80 stores. The standard deviation is $2.00 lb. Construct a 98% confidence interval to estimate the average price of chicken wings across the 1000 stores across the country.

o

[Abdullah Jubaer](#)

Abdullah Jubaer

Jan 25, 2022Jan 25 at 3:50pm

[Manage Discussion Entry](#)

Hello Tina and class,

When we talk about confidence interval we deal with sample. So, I thought we should discuss why we use sample instead of enter population. The main reason we use sample because a sample provides a reasonable means for gathering useful decision-making information. Some time it is impossible and costly to get information from entire population. Not only cost effective the sample also save time. Offen time accessing the population is impossible, that case the sample is the only option. The research process is sometimes destructive, the sample can save product.

If obtaining the outcomes of a study is a matter of urgency, sampling can produce results more quickly. With the volatility of the marketplace and the constant barrage of new competition and new ideas, sampling has a strong advantage over a census in terms of research turnaround time, particularly now in the era of big data and business analytics.

Let's consider this example, suppose a 8-minute telephone interview is conducted as part of a survey. Conducting such interviews with a sample of 100 customers is substantially less expensive and time-consuming than taking a census of 100,000 customers.

Reference: CHAPTER 7: Sampling and Sampling Distributions
https://devry.vitalsource.com/reader/books/9781119591351/epubcfi/6/ [30%5B %3Bvnd.vst.idref%3DAc07%5D!/4 (Links to an external site.)](#)

-

Byungho Kim

Jan 25, 2022Jan 25 at 8:30am

Hi Professor

Business has a benefit to use of statistics in estimating and predicting future events. A confidence interval is an important tool for business to evaluate the reliability of a particular estimate. In Statistics, a confidence interval gives the percentage probability that an estimated range of possible values in fact includes the actual value being estimated.

-

Weitang Shao

Jan 25, 2022Jan 25 at 2:02pm

In statistics, a confidence interval gives the percentage probability that an estimated range of possible values in fact includes the actual value being estimated. For example, a business might estimate that a machine uses 10 lbs. of plastic for each unit of a product created. Because the machine cannot be expected to use precisely 10 lbs. per unit, a confidence interval can be created to give a range of possibilities. The company might predict that there is a 95 percent chance that the machine uses on average between 9.85 and 10.5 lbs. of plastic per unit. The confidence interval in this example is 95 percent, and the likelihood that the actual amount of plastic used is outside the estimated range is 5 percent.

-

Babette Mendoza

Jan 30, 2022Jan 30 at 6:50pm

Weitang,

In addition to your post, collecting data to use in statistics, or summarizing the data, is only an advantage in business if it's used as a logical approach. For example, statistics can be used to determine if the company's sales levels for the last few products launched to its projected sales levels. A company may also use statistics in market

research and product development, using different surveys, such as random samples of consumers, to gauge the market for a proposed product by conducting surveys to determine sufficient demand among target consumers. Survey results might justify spending on developing the product. A product launch decision might also include a break-even analysis, such as finding out what percentage of consumers must try a new product for it to be successful.

Babette

-

Amber Hornbeck

Jan 25, 2022Jan 25 at 4:31pm
Manage Discussion Entry

Example problem: Estimating population mean using the z statistic

Verizon Wireless would like to estimate the population monthly mean number of texts in the 25-36 year-old age category.

- From a sample of 70 phone bills it is determined that the sample mean is 900 text messages.

- Using this sample mean, a confidence interval can be calculated within which the researcher is relatively confident that the actual population mean is located.

- Suppose from previous research the population standard deviation is know to be about 140.

- Our confidence level is 90%.

What is the confidence interval?

o

Amber Hornbeck

Amber Hornbeck

Jan 30, 2022Jan 30 at 8:16am
Manage Discussion Entry

Hello, I am following up to the problem I had posted with the solution listed below. The interval would be 872.48 to 927.52.

Confidence Interval for μ

Confidence Level	90%	(decimal)
n	70	
Mean	900	
StDev	140	NOTE:
Use t or z?	z	If sample standard deviation is known, use t.
		If population standard deviation is known, use z.
SE	16.733201	(Stdev / sqrt(n))
z-value	1.644854	(critical value of z)
Margin of Error	27.523666	
Lower Limit	872.476334	
Upper Limit	927.523666	

Edited by Amber Hornbeck on Jan 30 at 8:17am
Read More

o

Corey Wilson

Corey Wilson

Jan 30, 2022Jan 30 at 3:58pm
Manage Discussion Entry

Amber,

The confidence interval would be 872.48-927.52

Confidence Interval for μ

Confidence Level	90%	(decimal)
n	70	
Mean	900	
StDev	140	NOTE:
Use t or z?	z	If sample standard deviation is known, use t.
		If population standard deviation is known, use z.
SE	16.733201	(Stdev / sqrt(n))
z-value	1.644854	(critical value of z)
Margin of Error	27.523666	
Lower Limit	872.476334	
Upper Limit	927.523666	

Minimum Sample Size μ

■

Joe Naseef

Jan 25, 2022Jan 25 at 4:55pm

A business might estimate that a machine uses 10 lbs. of plastic for each unit of a product created. Because the machine cannot be expected to use precisely 10 lbs. per unit, a confidence interval can be created to give a range of possibilities. The company might predict that there is a 95 percent chance that the machine uses on average between 9.85 and 10.5 lbs. of plastic per unit. The confidence interval in this example is 95 percent, and the likelihood that the actual amount of plastic used is outside the estimated range is 5 percent.

- •

Jesse Simning

Jan 25, 2022Jan 25 at 6:47pm

Confidence intervals are very important for companies.   They want to make sure that their projections are pretty accurate for sales projections so they aren't producing too much and wasting money. It is also important in budgeting. You want to make sure revenue forecasts and costs as well are accurate so you don't run into financial trouble.

Example: 300 chicken eggs were randomly taken and weighed. The average weight was 50 with a standard deviation of 9. What is the 95% confidence interval?

- ○

John MacDonald

Jan 29, 2022Jan 29 at 6:11pm

Jesse,

Using the excel calculator, the 95% confidence interval will fall between 49-51.

Confidence Interval for μ		
Confidence Level	95%	(decimal)
n	300	
Mean	50	
StDev	9	NOTE:
Use t or z?	z	If sample standard deviation is known, use t.
		If population standard deviation is known, use z.
SE	0.519615	(Stdev / sqrt(n))
z-value	1.959964	(critical value of z)
Margin of Error	1.018427	
Lower Limit	48.98	
Upper Limit	51.02	

•

[Collapse SubdiscussionPenka Marinova](#)

Penka Marinova

[Manage Discussion Entry](#)

Dear students,

During our online session today we discussed the following question:

"An insurance company is interested in conducting a study to estimate the population proportion of teenagers who obtain a driving permit within 1 year of their 16th birthday. A level of confidence of 95% will be used and an error of no more than .03 is desired. There is no knowledge as to what the population proportion will be. The approximate sample size should be at least_____."

I look forward to your answers,

Best,

PM

○

[Xiong Huang](#)

Xiong Huang

[Manage Discussion Entry](#)

"An insurance company is interested in conducting a study to estimate the population proportion of teenagers who obtain a driving permit within 1 year of their 16th birthday. A level of confidence of 95% will be used and an error of no more than .03 is desired. There is no knowledge as to what the population proportion will be. The approximate sample size should be at least 1068."

When population proportion is unknown, we take 0.5 as the default.

Minimum Sample Size p		
Confidence Level	95%	
Proportion	0.5	
Error	0.03	
z-Value	1.959964	
Minimum Sample Size	1068	

○

Maurice Woods
Maurice Woods
Jan 26, 2022Jan 26 at 7:18am
Manage Discussion Entry

"An insurance company is interested in conducting a study to estimate the population proportion of teenagers who obtain a driving permit within 1 year of their 16th birthday. A level of confidence of 95% will be used and an error of no more than .03 is desired. There is no knowledge as to what the population proportion will be. The approximate sample size should be at least_____."

I too came up with the same as Xiong.

Minimum Sample Size p		
Confidence Level	95%	
Proportion	0.5	
Error	0.03	
z-Value	1.959964	
Minimum Sample Size	1068	

○

Ashley Tuchfarber
Ashley Tuchfarber
Jan 26, 2022Jan 26 at 2:01pm
Manage Discussion Entry

"An insurance company is interested in conducting a study to estimate the population proportion of teenagers who obtain a driving permit within 1 year of their 16th birthday. A level of confidence of 95% will be

used and an error of no more than .03 is desired. There is no knowledge as to what the population proportion will be. The approximate sample size should be at least_____."

Confidence Level- 95%

Proportion-0.5

Error- 0.03

Z-value-

1.959964

The approximate sample size should be at least **1068.**

○

[Esther La Colombe Ngo Mbogmal Rosais](#)
Esther La Colombe Ngo Mbogmal Rosais
Jan 26, 2022Jan 26 at 4:26pm
[Manage Discussion Entry](#)

Confidence Level- 95%

Proportion-0.5

Error- 0.03

Z-value **1.9599**

Minimum sample size **1068.**
 (1 like)

○

[Weitang Shao](#)
Weitang Shao
Jan 27, 2022Jan 27 at 7:52am
[Manage Discussion Entry](#)

My answer is the same with others

Minimum Sample Size p

Confidence Level	95%
Proportion	0.5
Error	0.03

z-Value	1.959964
Minimum Sample Size	1068

The minimum sample size is 1068
Read More
 (1 like)

○

[Trista Rigot](#)
Trista Rigot (*She/Her*)
Jan 27, 2022Jan 27 at 8:11am
Manage Discussion Entry

Good morning class,

This is my answer from the above question. "An insurance company is interested in conducting a study to estimate the population proportion of teenagers who obtain a driving permit within 1 year of their 16th birthday. A level of confidence of 95% will be used and an error of no more than .03 is desired. There is no knowledge as to what the population proportion will be. The approximate sample size should be at least_____."

I used this weeks course resource Excel sheet.

Minimum Sample Size p

Confidence Level	95%
Proportion	0.5
Error	0.03
z-Value	1.959964
Minimum Sample Size	1068

Read More
 (1 like)

○

Collapse SubdiscussionPenka Marinova
Penka Marinova
Jan 27, 2022Jan 27 at 7:46pm
Manage Discussion Entry

Dear students,

Great job on the discussion's questions this week.

Let's see the difference:

"Calculate the 90% and 95% confidence intervals of the following data set assuming this is sample data. Describe your process as well as the difference in the intervals.

 5 6 3 3 4 2 7 8 9 2 5 4   3   11 21   31 22 27 28 14 ."

Best,

PM

-

Xiong Huang

Xiong Huang

Jan 27, 2022Jan 27 at 9:54pm

Manage Discussion Entry

"Calculate the 90% and 95% confidence intervals of the following data set assuming this is sample data. Describe your process as well as the difference in the intervals.

 5 6 3 3 4 2 7 8 9 2 5 4   3   11 21   31 22 27 28 14 ."

Firstly use the sample date to get the Mean and Sample Standard Deviation.

Mean=10.75

Sample Standard Deviation= 9.601946

Sample size= 20

Data		
5	**Mean**	10.750000
6	**Median**	6.500000
3	**Mode**	3.000000
3	**Variance**	92.197368
4	**Sample Standard Deviation**	9.601946
2	**Range**	29.0000
7	**Count (n)**	20
8	**Min**	2.000000
9	**Quartile 1**	3.750000
2	**Median**	6.500000
5	**Quartile3**	15.750000
4	**Max**	31.000000
3	**Interquartile Range (IQR)**	12.000000
11	**Population Standard Deviation**	9.358819
21		
31		
22		
27		
28		
14		

90% confidence intervals is 7.04 – 14.46

Confidence Interval for μ

Confidence Level	90%	(decimal)
n	20	
Mean	10.75	
StDev	9.601946	NOTE:
Use t or z?	t	If sample standard deviation is known, use t.
		If population standard deviation is known, use z.
SE	2.147060	(Stdev / sqrt(n))
t-value	1.729133	(critical value of z)
Margin of Error	3.712553	
Lower Limit	7.037447	
Upper Limit	14.462553	

95% confidence intervals is 6.26 – 15.24

Confidence Interval for μ

Confidence Level	95%	(decimal)
n	20	
Mean	10.75	
StDev	9.601946	NOTE:
Use t or z?	t	If sample standard deviation is known, use t.
		If population standard deviation is known, use z.
SE	2.147060	(Stdev / sqrt(n))
t-value	2.093024	(critical value of z)
Margin of Error	4.493849	
Lower Limit	6.256151	
Upper Limit	15.243849	

Read More
(1 like)

▪

Kevin Prego
Kevin Prego
Jan 29, 2022Jan 29 at 3:23am
Manage Discussion Entry

We need to construct the 90% confidence interval for the population mean μ. The following information is provided:

Sample Mean $\bar{X}$ =	10.75
Sample Standard Deviation (s) =	9.601946075
Sample Size (n) =	20

The critical value for α=0.1 and df=n−1=19 degrees of freedom is tc =1.729. The corresponding confidence interval is computed as shown below:

$$CI = \left(\bar{X} - t_c \times \frac{s}{\sqrt{n}}, \bar{X} + t_c \times \frac{s}{\sqrt{n}} \right)$$

$$= \left(10.75 - 1.729\frac{9.602}{\sqrt{20}}, 10.75 + 1.729\frac{9.602}{\sqrt{20}} \right)$$

$$= (7.037, 14.463)$$

Therefore, based on the data provided, the 90% confidence interval for the population mean is 7.037<μ<14.463, which indicates that we are 90% confident that the true population mean μ is contained by the interval (7.037, 14.463).

Similarly, for 95% the same method is used, and we get the following results:

Therefore, based on the data provided, the 95% confidence interval for the population mean is 6.256<μ<15.244, which indicates that we are 95% confident that the true population mean μ is contained by the interval (6.256, 15.244)

As we observed the 95% Confidence interval is wider as compared to the 90% confidence interval which is due to the increase in the level of significance.
[Read More](#)
 (1 like)

-

[Tahani Abdelkhalig](#)
Tahani Abdelkhalig
   Jan 29, 2022Jan 29 at 4:16pm
[Manage Discussion Entry](#)

Hello All,

[At the 95.docx](#)
 (1 like)

-

[Collapse SubdiscussionJessica Velez](#)
Jessica Velez
   Jan 29, 2022Jan 29 at 5:51pm
[Manage Discussion Entry](#)

Using the descriptive statistics option in Excel, it gave me all the missing information that I needed for this question such as:

Mean = 10.75

Count (AKA sample size) =

20 Sample StDev = 9.60

Population StDev = 9.36.

If I want to find the confidence intervals of 90% and 95% I would plug that into the confidence interval for mu calculation in Excel.

CL = 90%

n=20

Mean = 10.75

StDev = 9.60 (using sample)

Because I am using the sample standard deviation I will plug in "t"

90% confidence intervals are 7.04, 14.46.

CL = 95%

n = 20

Mean = 10.75

StDev = 9.60

Again using 't'

95% confidence intervals are 6.26, 15.24

[Read More]

 (1 like)

-

Penka Marinova
Penka Marinova
Jan 30, 2022Jan 30 at 11:59am
Manage Discussion Entry

Thank you everyone for answering this question! So, it looks like when the confidence level goes up the confidence interval widens.

Best,

PM

-

Tina Miller
Tina Miller
Jan 30, 2022Jan 30 at 5:36pm
Manage Discussion Entry

Hello Professor and Class,

My first step is to use the formula from week 1 to obtain the mean (10.8), standard deviation (9.6) and n= 20

Data		
5	Mean	10.8
6	Median	6.5
3	Mode	3.0
3	Variance	92.2
4	Standard Deviation	9.6
2	Range	29.0
7	Count (n)	20.0
8	Min	2.0
9	Quartile 1	3.8
2	Median	6.5
5	Quartile3	15.8
4	Max	31.0
3	Interquartile Range (IQR)	12.0
11		
21		
31		
22		
27		
28		
14		

Step 2: Enter the information in the confidence interval equation from week 4 using t because we have the population standard deviation. For 95% confidence level the lower limit is 6.31 and upper is 15.29 rounding two decimal places.

Confidence Interval for μ

Confidence Level	95%	(decimal)
n	20	
Mean	10.8	
StDev	9.6	NOTE:
Use t or z?	t	If sample standa
		If population sta
SE	2.146625	(Stdev / sqrt(n))
t-value	2.093024	(critical value of
Margin of Error	4.492938	
Lower Limit	6.307062	
Upper Limit	15.292938	

Step 3: For 90% confidence level the lower limit is 7.08 and upper is 14.51 rounding two decimal places.

Confidence Interval for μ

Confidence Level	90%	(decimal)
n	20	
Mean	10.8	
StDev	9.6	NOTE:
Use t or z?	t	If sample st
		If populatio
SE	2.146625	(Stdev / sqr
t-value	1.729133	(critical valu
Margin of Error	3.711800	
Lower Limit	7.088200	
Upper Limit	14.511800	

Read More

▪

Alexandria Walker

Alexandria Walker

Jan 30, 2022Jan 30 at 8:12pm
Manage Discussion Entry

M = sample mean
Z = Z statistic determined by confidence level
s_M = standard error = $\sqrt{(s^2/n)}$

90%:

M = 10.75
Z = 1.64
$s_M = \sqrt{(9.602^2/20)}$ = 2.15

$\mu = M \pm Z(s_M)$
μ = 10.75 ± 1.64*2.15
μ = 10.75 ± 3.5316

(μ) falls between 7.2184 and 14.2816

95%

M = 10.75
Z = 1.96
$s_M = \sqrt{(9.602^2/20)}$ = 2.15

$\mu = M \pm Z(s_M)$
μ = 10.75 ± 1.96*2.15
μ = 10.75 ± 4.2082

(μ) falls between 6.5418 and 14.9582

- ○

Katina Carter

Jan 29, 2022Jan 29 at 11:11am
[Manage Discussion Entry](#)

Professor,

I think the minimum sample size has to be **1068**. Since no actual proportion is given, I assumed it was 50%.

Minimum Sample Size p

Confidence Level	95%	
Proportion	0.5	
Error	0.03	
z-Value	1.959964	
Minimum Sample Size	1068	

(1 like)

- ■

Penka Marinova
Penka Marinova

Jan 30, 2022Jan 30 at 11:55am
[Manage Discussion Entry](#)

Great job Katina!

- ○

Suresh Sistla
Suresh Sistla

Jan 30, 2022Jan 30 at 3:54pm
[Manage Discussion Entry](#)

Hello professor/ class

Level of confidence = 95%

Error = 0.03

Population proportion was not provided. So it can be 50%

Using week 4 calculator

Minimum Sample Size p

Confidence Level	95%
Proportion	0.5
Error	0.03
z-Value	1.959964
Minimum Sample Size	**1068**

[Read More](#)

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[Weitang Shao](#)
Weitang Shao
Jan 26, 2022Jan 26 at 2:52am
[Manage Discussion Entry](#)

Confidence levels refer to the concept that evaluates the reliability of estimates. This concept helps to ensure that estimates attained and used are highly reliable within the business. Therefore, business decision-making is influenced and affected by the concept of interval levels. Since, at times, businesses rely on probability to inform their future actions, confidence intervals help to ensure that their conduct is informed by the most viable and reliable estimates, as the confidence intervals infer. Therefore, confidence intervals can be quite helpful in projecting their sales, marketing outcomes, and other aspects that rely on trends. Confidence levels are used in business primarily in cases and situations where information is limited. Hudson, Fielding, and Ramsay (2019) show that gaps and inconsistencies justify the use of this concept. Therefore, the estimates generate trends that will define and inform the best approaches towards attaining desirable outcomes. For instance, sales projections rely on confidence levels when there are many inconsistencies in the data used to generate forecasts. Since there are many inconsistencies in the generated data, these gaps have to be filled and addressed with estimates. In such a scenario, confidence levels ensure that only reliable estimates are adopted. In so doing, the forecast made is more

accurate due to high consistency. Kotsantonis and Serafeim (2019) insist that data gaps can be challenging decision-making. Thus, justifying the use of this concept in business. An example of a business decision that could be helped with confidence levels pertains to a company considering investing in new production processes. The company lacks accurate and consistent data that showcases its future financial position. Confidence intervals can help assess estimates and recommend the most viable alternative towards attaining their goal. The example above features estimates of a population. The values can help ascertain the confidence levels for the featured data and underlying trends.

Example:

The table below highlights the population proportion of a group of individuals. Calculate a 95% confidence interval for the true population proportion.

1.8	0.4641	0.4649	0.4656	0.4664	0.4671	0.4678	0.4686	0.4693	0.4699	0.4706
1.9	0.4713	0.4719	0.4726	0.4732	0.4738	0.4744	0.4750	0.4756	0.4761	0.4767
2.0	0.4772	0.4778	0.4783	0.4788	0.4793	0.4798	0.4803	0.4808	0.4812	0.4817

[Read More](#)
 (1 like)

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[Andrew Serna](#)
[Andrew Serna](#)
Jan 26, 2022Jan 26 at 7:05am
[Manage Discussion Entry](#)

A situation that business might use confidence interval would be to predict sales for the next quarter based on the data they have previously collected. They could decide to expand or downsize based on the confidence interval of 95%.

-

[Hunter Mowery](#)
[Hunter Mowery](#)
Jan 26, 2022Jan 26 at 12:46pm
[Manage Discussion Entry](#)

Professor and Class,

A confidence interval is a range of values that describes the uncertainty surrounding an estimate. A confidence interval is also itself an estimate. It is made using a model of how sampling, interviewing, measuring, and modeling

contributes to uncertainty about the relation between the true value of the quantity we are estimating and our estimate of that value. Confidence intervals are an important reminder of the limitations of the estimates.

Example: What is the average age of Robbery victims in NY last year?

- Randomly sample 100 police reports of New York robberies last year. So, *n* = 100.
- Record the ages of the victims, add them all up all, and divide by 100 to get the mean. Let's say the mean age, in this case, is 34.25 years.
- Utilizing a 95% CL, which has a standard z value of 1.96, calculate the standard deviation. With a mean of 34.25 and a standard deviation of 10, a margin of error of 8 is calculated with the CI formula.
- Your CI is 34.35 ± 8, or 26.35 to 42.35.
- You can now say with 95% confidence, that if the true average age of all Chicago robbery victims last year was known, it
would fall between 26.35 and 42.35 years of age.

(1 like)

○

[Kristapher Guillen](#)

Kristapher Guillen

Jan 26, 2022Jan 26 at 2:30pm
Manage Discussion Entry

Hello class,

A business might use a confidence interval to check the accuracy of an estimate they have received. Without confidence intervals they would have to just trust that the estimate is right.

In a business scenario a manager might be 95 percent certain that 45 to 55 percent of their customers are in a certain age range. A confidence interval can help them confirm or deny that.
(1 like)

○

Collapse SubdiscussionCorey Wilson

Corey Wilson

Jan 26, 2022Jan 26 at 6:04pm
Manage Discussion Entry

A confidence interval is a range between the two endpoints that surround an estimate data point. As mentioned in the prompt, businesses could use these intervals in sales projections or marketing results. However, other areas they could use these intervals are demographic information, salary ranges, labor

force information, etc.

For example, suppose a Disc Golf company wants to explore the possibility of opening a manufacturing plant to produce disc golf discs in the United States and want to know what a fair salary would be for their employees who work on the production line of the factory. Using a statistics from US Bureau of Labor Statistics, the company discovers that the average salary for production workers in the United States is $38,480. The company then finds the salary of 40 production workers in random manufacturing companies in throughout the United States and learns the standard deviation of the salaries is $925. Assuming these salaries are normally distributed, using a 99% confidence interval, what is the population variance for salaries of production workers in the United States?
 (1 like)

■

John MacDonald
John MacDonald
Jan 27, 2022Jan 27 at 12:07pm
Manage Discussion Entry

Corey,

 A good example and I think the variances salary would be between $38, 094 - $38,886 using the week 4 calculator.

Confidence Interval for μ			
Confidence Level	99%	(decimal)	
n	40		
Mean	38490		
StDev	925	NOTE:	
Use t or z?	t	If sample standard deviation is known, use t.	
		If population standard deviation is known, use z.	
SE	146.26	(Stdev / sqrt(n))	
t-value	2.71	(critical value of z)	
Margin of Error	396.05		
Lower Limit	38093.95		
Upper Limit	38886.05		

(2 likes)

○

Jonathan Pagan
Jonathan Pagan
Jan 26, 2022Jan 26 at 6:18pm
Manage Discussion Entry

Consider a video game provider that markets publications in a community. The market for publications changed over the period. We know that on

average, 200 publications are sold regularly. The standard deviation is 10. Now, the company partner requires to determine how many publications seems he/she has to write and keep in his/her register each day, such that he/she satisfies the requirement of the town 95% of the time. The buyer doesn't want to print anymore because the price per newspaper - if not sold - is high-priced related to the advantage per newspaper)
Calculate the required amount of publications to be printed every day.

○

[Xiong Huang](#)
Xiong Huang

Jan 26, 2022Jan 26 at 9:17pm
[Manage Discussion Entry](#)

The statistic is everywhere in our work and life. I currently work as an auditor; confidence level is the base that we determine the sample size for audit. The sample's confidence level refers to the reliability the auditor places on the sample results. Confidence levels of 90 percent to 99 percent are common. A 95 percent confidence level means the auditor assumes the risk that five out of 100 samples will not reflect the true values in the population.

The Institute of Internal Auditors notes that confidence levels usually range between 90 and 99 percent. The term confidence level here refers to an auditor's degree of the requirement that the sample will reflect the true values in the population. The higher the confidence level required, the larger the sample size.

○

[Collapse SubdiscussionSharon Travis](#)
Sharon Travis

Jan 26, 2022Jan 26 at 9:27pm
[Manage Discussion Entry](#)

Hello Professor,

Data is very important in the business world. I run reports for different functional areas and leaders in organization. During one of teachable moments, my managers asked me did I review the reports and I said yes. I always review the data for accuracy until he asked me what does the data tell me. That one question made not only review for accuracy, but how can I tell the story with the data. My organization used statistic data to understand trends, types, business growth, and compliance. The confidence interval is used for the marketing research and forecasting to determine future sales and future finances. Statistics give the organization a visual picture of the data and company's finance positions. Knowing the data helps the organization make smart business decisions on company growth.
 (1 like)

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  [Kristapher Guillen](#)
  # [Kristapher Guillen](#)
  Jan 28, 2022Jan 28 at 2:13pm
  [Manage Discussion Entry](#)

  Hey there,

  I like what you said about the important of stats in business decisions. Stats and data are the building blocks on which decisions and estimates are made of. When it comes to estimates validating them is done with confidence intervals. It's all connected.

- [Collapse SubdiscussionRebecca Santana](#)
  # [Rebecca Santana](#)
  Jan 27, 2022Jan 27 at 9:37am
  [Manage Discussion Entry](#)

  What is the difference between "**margin of error**" and "**standard error**"?

  The **margin** of error is the amount added and subtracted in a confidence interval. The standard error is the standard deviation of the sample statistics if we could take many samples of the same

  And, do we always use the t-values for calculating the "**Margin of Error**"?

  For calculating margins of error, you need to know the critical value and sample standard error. This is because it's calculated using those two pieces of information. The formula goes like this: margin of error = critical value * sample standard error.
   (1 like)

  -
    [Maurice Woods](#)
    # [Maurice Woods](#)
    Jan 29, 2022Jan 29 at 9:38am
    [Manage Discussion Entry](#)

    Great definition you have given Rebecca on margin and standard of errors. I also found a good example of the two with a nice breakdown.

    The margin of error tells you the **range of values** above and below a [confidence interval (Links to an external site.)](#).
    A poll might report that a certain candidate is going to win an election with 51 percent of the vote; The [confidence level (Links to an external site.)](#) is 95 percent and the error is 4 percent. Let's say the poll was repeated using the same techniques. The pollsters would expect the

results to be within 4 percent of the stated result (51 percent) 95 percent of the time. In other words, 95 percent of the time they would expect the results to be between:

- 51 – 4 = 47 percent and
- 51 + 4 = 55 percent.

The margin of error can be calculated in two ways, depending on whether you have [parameters (Links to an external site.)](#)from a population or [statistics (Links to an external site.)](#)from a sample:

- Margin of error = Critical value x [Standard deviation (Links to an external site.)](#) for the population.
- Margin of error = Critical value x [Standard error (Links to an external site.)](#) of the sample.

[https://youtu.be/VGCUpzoz6IM (Links to an external site.)](https://youtu.be/VGCUpzoz6IM)

Margin of error: Definition, how to calculate in easy steps. Statistics How To. (2021, November 20). Retrieved January 29, 2022, from [https://www.statisticshowto.com/probability-and-statistics/hypothesis-testing/margin-of-error/ (Links to an external site.)](https://www.statisticshowto.com/probability-and-statistics/hypothesis-testing/margin-of-error/)

Edited by **Maurice Woods** on Jan 29 at 9:39am
[Read More](#)
 (1 like)

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[Collapse Subdiscussion](#)Jordon Miller
Jordon Miller

Jan 27, 2022Jan 27 at 11:40pm
[Manage Discussion Entry](#)

Hello Professor & Class,

Consider when businesses might use confidence intervals to estimate values, such as in sales projections, marketing results, and so forth. Describe a business decision that could be helped with confidence intervals. Be specific! Then create a problem with numbers from which another student could calculate a confidence interval and make a decision.

Confidence intervals are an incredibly helpful tool when it comes to business planning and marketing research. They tell a business the probability that an estimated value falls into the range of estimated values in the form of a percent. In other words, confidence intervals aid in the evaluation of the reliability of a specific estimate. In business, there is a great deal of risk with a competitive market. One key to a successful company is being able to stay innovative and change with the times.

Example Question:

A company is thinking about incorporating a way to allow its customers to pay using cryptocurrency as a means of innovating. A survey was conducted with 300 randomly selected participants to determine if they use any cryptocurrency and 72 of those participants responded that they did. Using a 95% confidence interval, calculate a confidence interval for the proportion of people that use cryptocurrency.
 (1 like)

-

Corey Wilson
Corey Wilson
Jan 29, 2022Jan 29 at 10:26am
Manage Discussion Entry

Hello Jordon,

Using the confidence interval for p calculator, the answer is 0.19-0.29.

Confidence Interval for p

Confidence Level	95%
n	300
Number of Successes	72

OR

Sample Proportion	

Sample Proportion	0.240000
SE	0.024658
z	1.959964
Margin of Error	0.048328
Lower Limit	0.191672
Upper Limit	0.288328

Read More

(1 like)

▪

[Kristapher Guillen](#)

Kristapher Guillen

Jan 29, 2022Jan 29 at 1:45pm
Manage Discussion Entry

Hey there,

Great definition of confidence interval. I would add that confidence intervals allow a business to see whether estimates are accurate or not.

○

Collapse SubdiscussionRoren Aitcheson

Roren Aitcheson

Jan 28, 2022Jan 28 at 10:17am
Manage Discussion Entry

Statistics can be used in business, as well as many other industries, to estimate or forecast future events. A confidence interval is a useful tool in

business statistics since it allows a company to assess the accuracy of a given estimate. Businesses must be able to determine how confident they should be in their estimates and whether or not to act on them because no estimate can be 100 percent accurate. A confidence interval is a percentage probability that an estimated range of possible values includes the actual value being evaluated in statistics.
 (1 like)

-

Chavalier Jenkins

Chavalier Jenkins

Jan 30, 2022Jan 30 at 11:53pm
Manage Discussion Entry

Hello Roren,

Thank you for your contribution to this week's discussion question. The confidence interval can be an excellent way for businesses to determine risks. An example that I just discussed is looking a future sales projections based on existing data from previous years. A business can be 90% confident that their sales will fall between 8 million and 10 million but then this leaves them with about 10% of uncertainty. With this information, the business will determine how confident they are about their projections and how their operations can affect the outcome or the "risk."

o

Suresh Sistla

Suresh Sistla

Jan 28, 2022Jan 28 at 11:25pm
Manage Discussion Entry

Hello Professor and Class

A confidence interval provides probability in percentages that indicates range of possible values and includes actual value that is being estimated

Example : Estimating number of faulty bulbs out of the total buls manufactured can be given by the confidence interval. The company may predict that 95% chance that for every 10,000 bulbs manufactured 1000 bulbs could go damaged or faulty.

Market research is another example where confidence intervals are used. A company analyse the customer data base, sales record and estaimate future sales . By using confidence interval one can predict what future sales likely to be.

Problem :

A representative sample of students enrolled in online sections of STAT 200 was surveyed. Each student was asked if they considered themselves to be an adult learner: yes or no. A) Write an interpretation of the confidence interval. B) Is there evidence that the proportion of all students enrolled in online sections of STAT 200 who consider themselves to be adult learners is different from 85%? Explain why or why not.

Reference :https://study.com/academy/answer/a-representative-sample-of-students-enrolled-in-online-sections-of-stat-200-was-surveyed-each-student-was-asked-if-they-considered-themselves-to-be-an-adult-learner-yes-or-no-a-write-an-interpretation-of-the-confidence-interval-b-is-there-evidence-t.html
  (1 like)

-

[Alexandria Walker](#)
[Alexandria Walker](#)
Jan 29, 2022Jan 29 at 2:49pm
[Manage Discussion Entry](#)

confidence intervals- the probability that a parameter will fall between a pair of values around the mean-measure the degree of uncertainty or certainty in a sampling method

Businesses can benefit from using statistical methods because it can help them predict future events. Confident intervals can help a business evaluate the reliability of a particular estimate and whether or not they should act on it. For example, a factory estimates that a machine uses 20lbs of materials. That machine can not use exactly 20lbs of material, so a confidence interval can be used to create a range of possibilities. The factory can estimate that the machine uses about 18.5 lbs- 21lbs of materials 98% of the time. The confidence interval is 98 and the actual amount of materials used is outside the estimated range is 2%.

  (1 like)

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[Collapse SubdiscussionAndrew Serna](#)
[Andrew Serna](#)
Jan 29, 2022Jan 29 at 9:16pm
[Manage Discussion Entry](#)

A researcher wants to estimate the percent of the population that uses the Internet to stay informed on world news issues. The researcher wants to estimate the population proportion with a 88% level of confidence. He estimates from previous studies that at least 70% of the population stays informed on world issues through the Internet. He also wants the error to be no more than .08. The sample size should be at least_____.

(1 like)

-

[Abdullah Jubaer](#)
Abdullah Jubaer
Jan 30, 2022Jan 30 at 9:49am
[Manage Discussion Entry](#)

Hello Andrew and class,

Two important concept in confidence interval:

Z distribution: When the Sample Size Is Small the Population Mean can be stated using the *z* statistic. But the problem with that is if the population can be assumed to be normally distributed, even if the sample size is small, the *z* distribution can be used. Also, if the population standard deviation is unknown and the sample size is small, the *z* distribution cannot be used. We can use a computer to Construct *z* Confidence Intervals for the Mean. Both Minitab and Excel can be used to construct confidence intervals. Excel gives the margin of error as well as the interval.

T distribution: Alternative of *z* distribution is the *t* Distribution

The *t* distribution is a series of distributions because every sample size has a different distribution. Underlying assumption is that the population is normally distributed. If this assumption cannot be made, non-parametric techniques should be used.

Reference: Chapter 7 PowerPoint
 (1 like)

-

[Corey Wilson](#)
Corey Wilson
Jan 30, 2022Jan 30 at 4:04pm
[Manage Discussion Entry](#)

Andrew,

The sample size should be at least 80.

Minimum Sample Size p	
Confidence Level	88%
Proportion	0.7
Error	0.08
z-Value	1.554774
Minimum Sample Size	80

○

[Penka Marinova](#)

Penka Marinova

Jan 30, 2022Jan 30 at 11:53am

[Manage Discussion Entry](#)

Dear class.

Thank you for participating in our weekly discussion!

This week's material is challenging, it is the beginning of the inferential statistics, which is by nature more complicated than the other topics we've covered. You will meet even bigger challenges next week, so keep up the good work.

Best,

PM
 (1 like)

○

[Chavalier Jenkins](#)

Chavalier Jenkins

Jan 30, 2022Jan 30 at 11:41pm

[Manage Discussion Entry](#)

Hello Class and Professor,

The Confidence Interval (CI) concept is defined as the probability or the interval to which a specific population parameter will fall between a set of values for a certain proportion of time. By definition, we can see that the CI can be an excellent tool in defining or analyzing uncertainty. Therefore, a business situation that can really use the confidence interval is the analysis of risks and budgets. For risk management, business find it nearly impossible to manage or predict a future event with 100 percent accuracy. Therefore, with confidence interval analysis, businesses can manage risks to minimize the

effects it has to their success or performance. For example, a company, through existing data can be 95% confident that the sales in the next fiscal year will be between 5 million and 6 million units–this leaves the company with 5% chance that the sales might fall outside the 5 to 6 million intervals. Therefore, by understanding how likely a given risk is to occur, the management can manage risks or non-occurrence accordingly. The same can also be said for budgeting when companies are looking to maintain a maximum and minimum budget limit in projects to avoid financial trouble.