

Confidence Interval Worksheet for One Population

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On this page we will see a number of situations with related questions. In each case, this page will give the answers to those questions. Your task is to find those same answers by inspecting the given information and/or by using a calculator or computer to produce those desired values.

Case 1:

Within a really large population items either have or do not have a particular characteristic. We take a sample of size 112 of that population. Within that sample we find that we have 71 items that have that particular characteristic.

- (1) State the proportion of items in the sample with the characteristic. **(Answer: $p = 0.6339$)**
- (2) Give the best point estimate for the proportion of items in the population with the particular characteristic. **(Answer: $p = 0.6339$)**
- (3) Give the estimate of the standard deviation of sample proportions found in samples of size 112. **(Answer: $sd = 0.0455$)**
- (4) We want to find a 89.50% confidence interval for the proportion of the population with that characteristic. Since the proportions are normally distributed, we need to find a z -value that has 0.05250 as the area to the right of that z -value. Give that z -value. **(Answer: $z = 1.6211$)**
- (5) Give the margin of error. **(Answer: $moe = 0.0738$)**
- (6) Give the confidence interval. **(Answer: $CI = (0.5601, 0.7077)$)**

Case 2:

Within a really large population items either have or do not have a particular characteristic. We take a sample of size 107 of that population. Within that sample we find that we have 44 items that have that particular characteristic.

- (7) State the proportion of items in the sample with the characteristic. **(Answer: $p = 0.4112$)**
- (8) Give the best point estimate for the proportion of items in the population with the particular characteristic. **(Answer: $p = 0.4112$)**
- (9) Give the estimate of the standard deviation of sample proportions found in samples of size 107. **(Answer: $sd = 0.0476$)**
- (10) We want to find a 99.50% confidence interval for the proportion of the population with that characteristic. Since the proportions are normally distributed, we need to find a z -value that has 0.00250 as the area to the right of that z -value. Give that z -value. **(Answer: $z = 2.8070$)**
- (11) Give the margin of error. **(Answer: $moe = 0.1335$)**
- (12) Give the confidence interval. **(Answer: $CI = (0.2777, 0.5447)$)**

Case 3:

Within a really large population items either have or do not have a particular characteristic. We take a sample of size 114 of that population. Within that sample we find that we have 90 items that have that particular characteristic.

- (13) State the proportion of items in the sample with the characteristic. **(Answer: $p = 0.7895$)**
- (14) Give the best point estimate for the proportion of items in the population with the particular characteristic. **(Answer: $p = 0.7895$)**
- (15) Give the estimate of the standard deviation of sample proportions found in samples of size 114. **(Answer: $sd = 0.0382$)**
- (16) We want to find a 98.00% confidence interval for the proportion of the population with that characteristic. Since the proportions are normally distributed, we need to find a z -value that has 0.01000 as the area to the right of that z -value. Give that z -value. **(Answer: $z = 2.3263$)**
- (17) Give the margin of error. **(Answer: $moe = 0.0888$)**
- (18) Give the confidence interval. **(Answer: $CI = (0.7006, 0.8783)$)**

Case 4:

In the following table we have a sample taken from a large population. The items in that population can be classified in 6 different ways, which we have named by the values 1 through 6.

Table of sample characteristics																																			
2	3	2	6	1	2	5	4	6	4	2	3	5	6	1	4	3	6	6	2	3	4	6	2	2	4	3	1	1	1	3	3	5	2	2	
3	6	2	3	4	3	1	6	1	3	5	1	6	5	3	2	5	1	3	2	3	3	2	6	1	1	1	3	4	4	4	2	3	1	2	
6	5	2	2	3	6	2	1	3	3	5	1	1	6	1	2	3	3	4	1																

You can generate this set of data using the command **gnrnd4(373788907,4768986)**.

We are interested in making a statement about the proportion of items with the characteristic assigned the value 1.

- (19) State the sample size. **(Answer: $n = 90$)**
 (20) State the number of items in the sample with the 1 characteristic. **(Answer: $x = 18$)**
 (21) State the proportion of items in the sample with the 1 characteristic. **(Answer: $p = 0.2000$)**
 (22) Give the best point estimate for the proportion of items in the population with the particular characteristic. **(Answer: $p = 0.2000$)**
 (23) Give the estimate of the standard deviation of sample proportions found in samples of this size. **(Answer: $sd = 0.0422$)**
 (24) We want to find a 98.50% confidence interval for the proportion of the population with that characteristic. Since the proportions are normally distributed, we need to find a z -value that has 0.00750 as the area to the right of that z -value. Give that z -value. **(Answer: $z = 2.4324$)**
 (25) Give the margin of error. **(Answer: $moe = 0.1026$)**
 (26) Give the confidence interval. **(Answer: $CI = (0.0974, 0.3026)$)**

Case 5:

In the following table we have a sample taken from a large population. The items in that population can be classified in 5 different ways, which we have named by the values 1 through 5.

Table of sample characteristics																																		
1	2	5	5	3	5	2	2	3	5	3	5	5	4	1	3	1	5	1	5	5	4	1	5	2	5	5	4	2	2	5	4	5	5	3
3	5	4	4	5	1	5	4	5	1	2	4	1	4	5	1	5	5	3	1	4	4	5	4	4	5	4	5	4	1	3	3	4	2	4
1	2	1	4	2	5	1	2	5	1	3	5	5	5	3	3	1	1	3	4	3	3	4	5	1										

You can generate this set of data using the command **gnrnd4(187659407,895695)**.

We are interested in making a statement about the proportion of items with the characteristic assigned the value 1.

- (27) State the sample size. **(Answer: $n = 95$)**
 (28) State the number of items in the sample with the 1 characteristic. **(Answer: $x = 18$)**
 (29) State the proportion of items in the sample with the 1 characteristic. **(Answer: $p = 0.1895$)**
 (30) Give the best point estimate for the proportion of items in the population with the particular characteristic. **(Answer: $p = 0.1895$)**
 (31) Give the estimate of the standard deviation of sample proportions found in samples of this size. **(Answer: $sd = 0.0402$)**
 (32) We want to find a 92.25% confidence interval for the proportion of the population with that characteristic. Since the proportions are normally distributed, we need to find a z -value that has 0.03875 as the area to the right of that z -value. Give that z -value. **(Answer: $z = 1.7654$)**
 (33) Give the margin of error. **(Answer: $moe = 0.0710$)**
 (34) Give the confidence interval. **(Answer: $CI = (0.1185, 0.2605)$)**

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