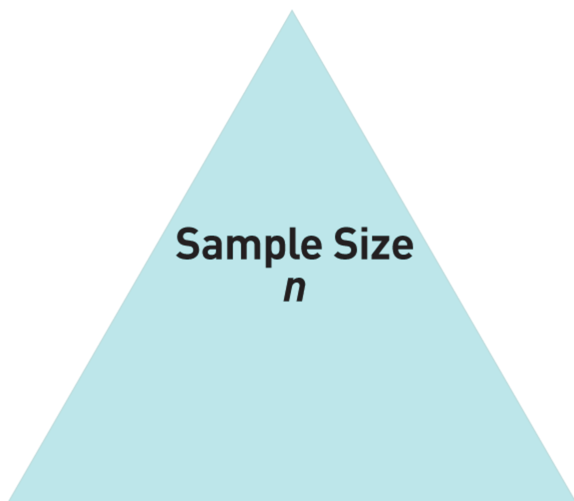
5.5 Sample Size for Continuous

MBC 638

Data Analysis and Decision Making

Sample Size Story

Know any three of these and you can calculate the fourth.



Sample size = number of elements or observations in a sample data set

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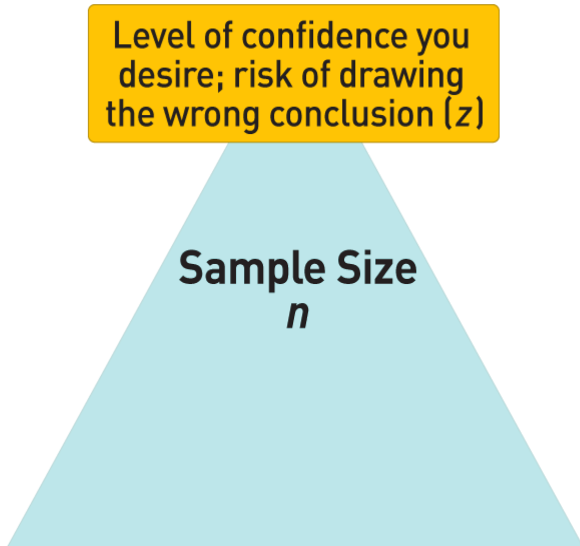

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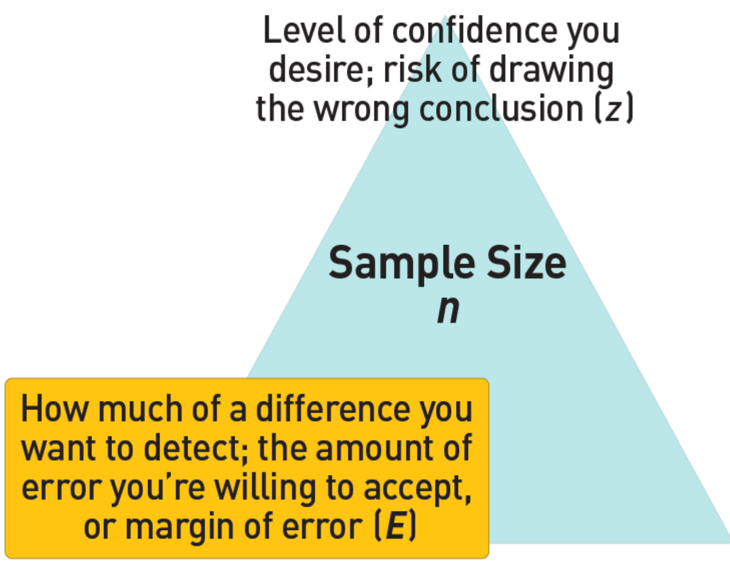
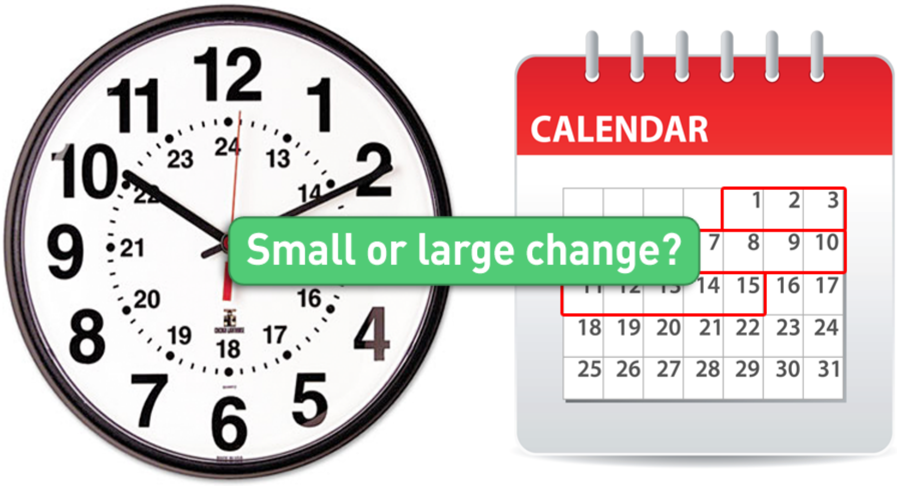



CALENDAR
1 2 3
4 5 6 7 8 9 10
11 12 13 14 15 16 17
18 19 20 21 22 23 24
25 26 27 28 29 30 31



Sample Size Story

Know any three of these and you can calculate the fourth.

Level of confidence you desire; risk of drawing the wrong conclusion (*z*)

Sample Size
n

How much of a difference you want to detect; the amount of error you're willing to accept, or margin of error (*E*)

Sample Size Story

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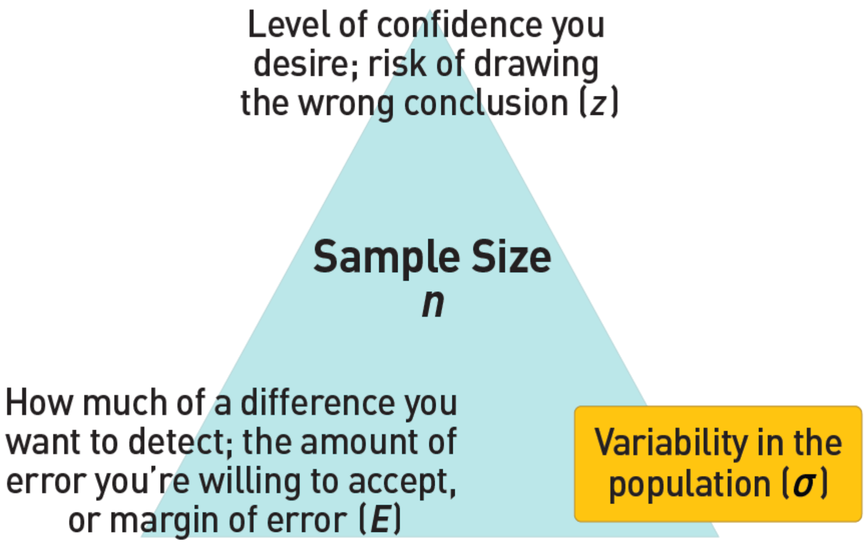

The only way to have both high confidence and a tight interval is to increase sample size.

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Use this formula to see how sample size is affected by an increase or decrease in variability, confidence, or margin of error.

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- How many samples are needed to detect a change in job completion time after a process improvement project is implemented?
  - You are okay with a margin of error of two minutes.
  - Assume you want 95% confidence.

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Example: Time to Complete Job (cont.)

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Example: Time to Complete Job (cont.)

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$$= \ 8.6 \cong 9$$

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Nine samples are needed to detect a change in the population mean.