**Sample size**

Certainly! When determining the sample size for an infinite population, we consider the level of confidence and the margin of error. Let’s break it down:

1. **Infinite Population Sample Size (SS):**
   * The formula for an infinite (unknown) population is:

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where:

* + - (SS) represents the sample size.
    - (Z) is the given Z-value (e.g., 1.96 for a 95% confidence level).
    - (p) is the percentage of the population picking a choice.
    - (C) is the confidence interval (margin of error).

1. **Finite Population Sample Size (SS):**
   * If the population is known (finite), we adjust the sample size using:

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where:

* + - (\text{{Pop}}) represents the population size.

**Example:** Suppose we have a population of 4300, a confidence level of 99%, and a confidence interval of 0.01. Let’s calculate the sample size:

1. For the infinite population:
   * Using the Z-value (2.58 for 99% confidence):

SS=0.012(2.58)2⋅0.05⋅(1−0.05)​=316

1. For the finite population:
   * Adju sting for the population size:

New SS = 316/(1 + (316 -1)/4300) = 294

[Therefore, the sample size for the finite population is 2941](https://byjus.com/sample-size-formula/). [Keep in mind that the quality of the estimate primarily depends on the sample size, not the population size2](https://math.stackexchange.com/questions/28709/sample-sizes-for-an-infinite-population). 😊

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