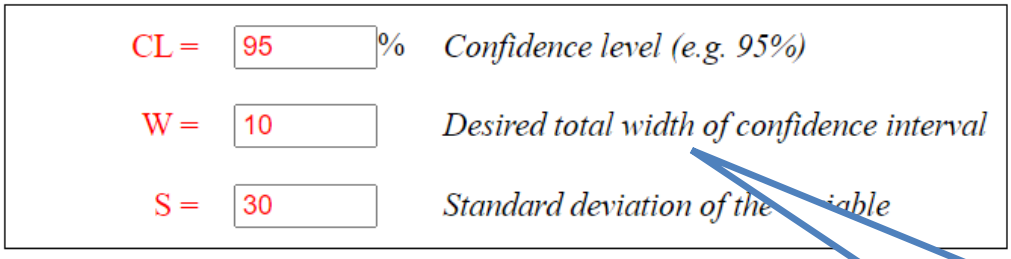
UCDAVIS HEALTH | Clinical and Translational Science Center

Precision of a Mean

Objective: Determine Sample Size Necessary for Estimating a Mean

An investigator is interested in determining the sample size necessary to estimate mean blood pressure with a sufficient level of precision. The investigator is testing a new drug for hypertension and is measuring systolic blood pressure. From previous research, the new drug typically gives a mean systolic blood pressure reading of 130 mm Hg and has a standard deviation of 30 mm Hg. The investigator wants to know how many patients records to review to have a 95% confidence interval that ranges from 125 mm Hg to 135 mm Hg. That is, a 10-point total width of confidence interval (135 – 125 = 10).

Required Information	**Inputs**
What is the desired level for the confidence interval?	95%
What is the target width of the confidence interval?	10
What is the standard deviation of the outcome?	30



Calculate

If our mean is 130 and we want a 95% confidence interval that ranges from 125 to 135 then the total width of the confidence interval will be: 135 – 125 = 10

W/S = 0.33

Standard normal deviate for $\alpha = Z_\alpha = 1.96$

Sample size = N = $4Z_\alpha^2 S^2/W^2$ = 138

We would need a sample size of n = 138 to have a 95% confidence interval that ranges from 125 mm Hg to 135 mm Hg.

Example using the UCSF Sample Size Calculators for Designing Clinical Research (https://sample-size.net/sample-size-conf-interval-mean/)