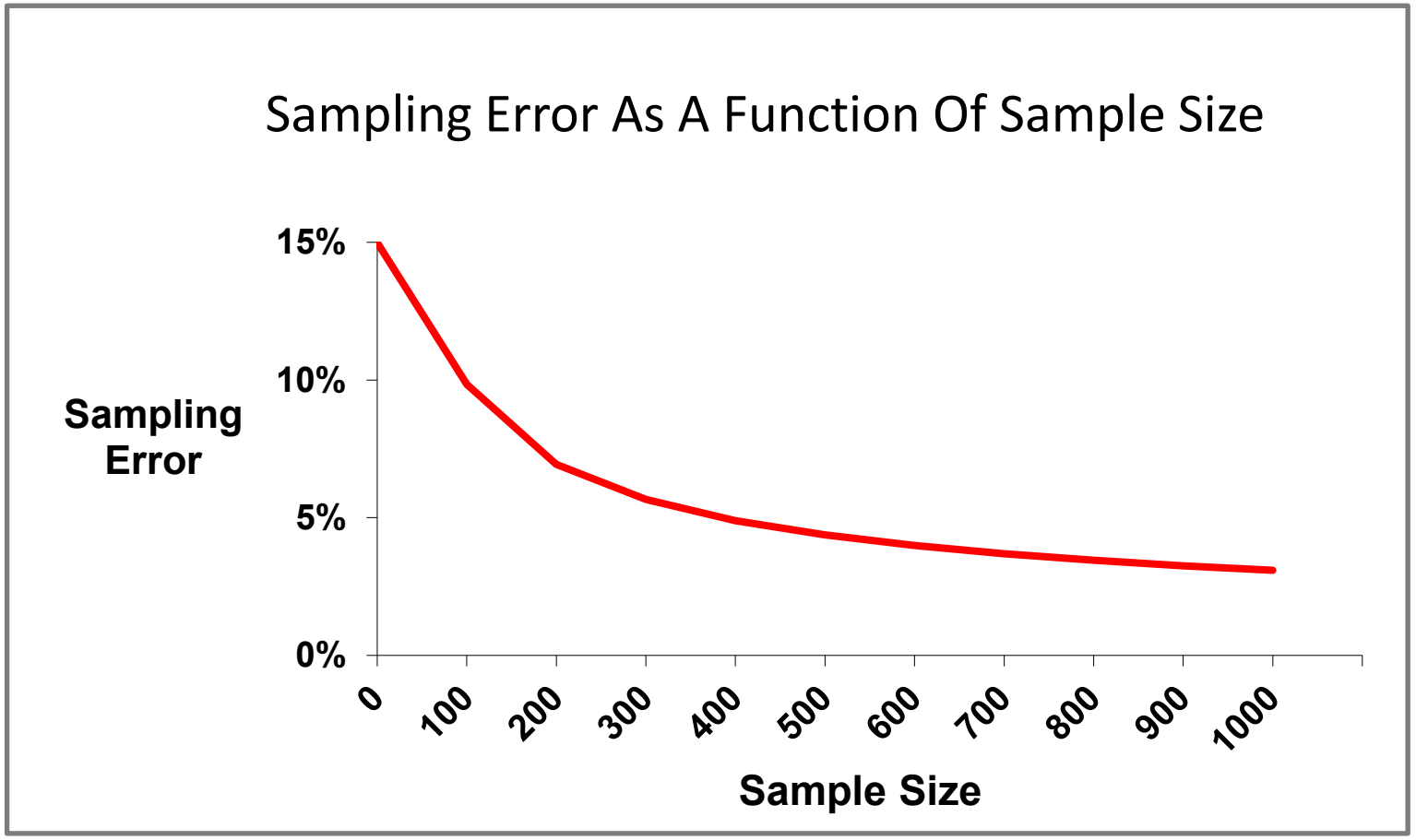
Sample Size Determination



Sample Size Determination
Statistical ERROR RANGES

At Various Percentage Levels

Size Of Sample	50%	40% or 60%	30% or 70%	20% or 80%	10% or 90%
50	14.0	13.7	12.8	11.2	8.3
75	11.4	11.1	10.4	9.1	6.8
100	9.8	9.6	9.0	7.9	5.9
150	8.0	7.8	7.3	6.4	4.8
200	6.9	6.8	6.3	5.5	4.2
250	6.2	6.1	5.7	4.9	3.7
300	5.6	5.5	5.2	4.5	3.4
400	4.9	4.8	4.5	3.9	2.9
500	4.3	4.2	4.0	3.5	2.6
600	4.0	3.9	3.6	3.2	2.4
700	3.7	3.6	3.3	2.9	2.2
800	3.4	3.3	3.1	2.7	2.0
900	3.2	3.1	2.9	2.6	1.9
1000	3.0	3.0	2.8	2.4	1.8
1500	2.5	2.4	2.2	2.0	1.5
2000	2.1	2.1	1.9	1.7	1.3

Sample Size Determination

How large is universe?

If n > 5% of universe, sampling error is reduced.

Universe Size	Sample Size For 10% Sampling Variation*
1,000,000	100
200,000	100
50,000	100
20,000	100
5,000	100
1,000	90
500	75
300	60

Note: As sample approaches universe, sampling variation approaches zero.

* 95% confidence level. Maximum variation.

** Finite Population Correction

$$\sqrt{\frac{P(1-P)}{n-1} \times \frac{Universe - Sample^{**}}{Universe}}$$