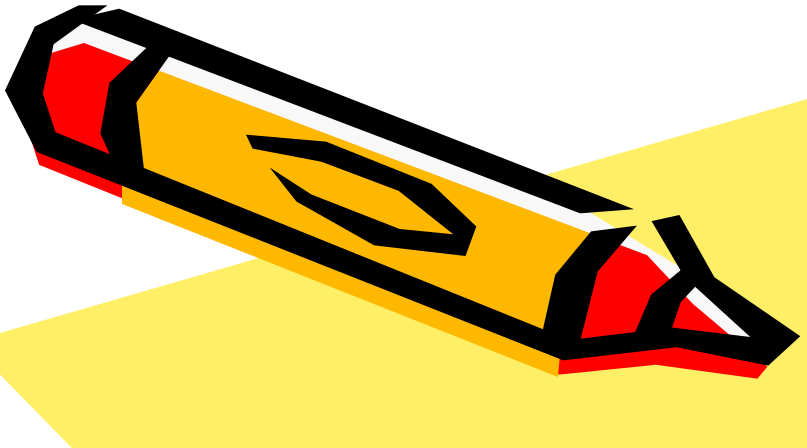

Marketing research

Part 12 – Determining the size of a sample

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Part 12 – determining the size of a sample

Sample size refers to the number of respondents in a survey rather than how these respondents are selected.

But before we begin to study this chapter, we have to understand 2 things:

1. There is **no relationship** between the size of the sample and its representativeness of the population from which it is drawn.
2. The size of the sample **affects** the **sample accuracy** of results.

But if your sample size increased twice, it doesn't mean, that the research is 2 times more accurate!

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The Confidence Interval method of determining sample size

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Part 12 – determining the size of a sample

1. Sample size and accuracy

Nonsampling error – all sources of error other than sample selection method size

Sampling error – is the difference between the sample finding and the true population value due to the fact that a sample was taken.

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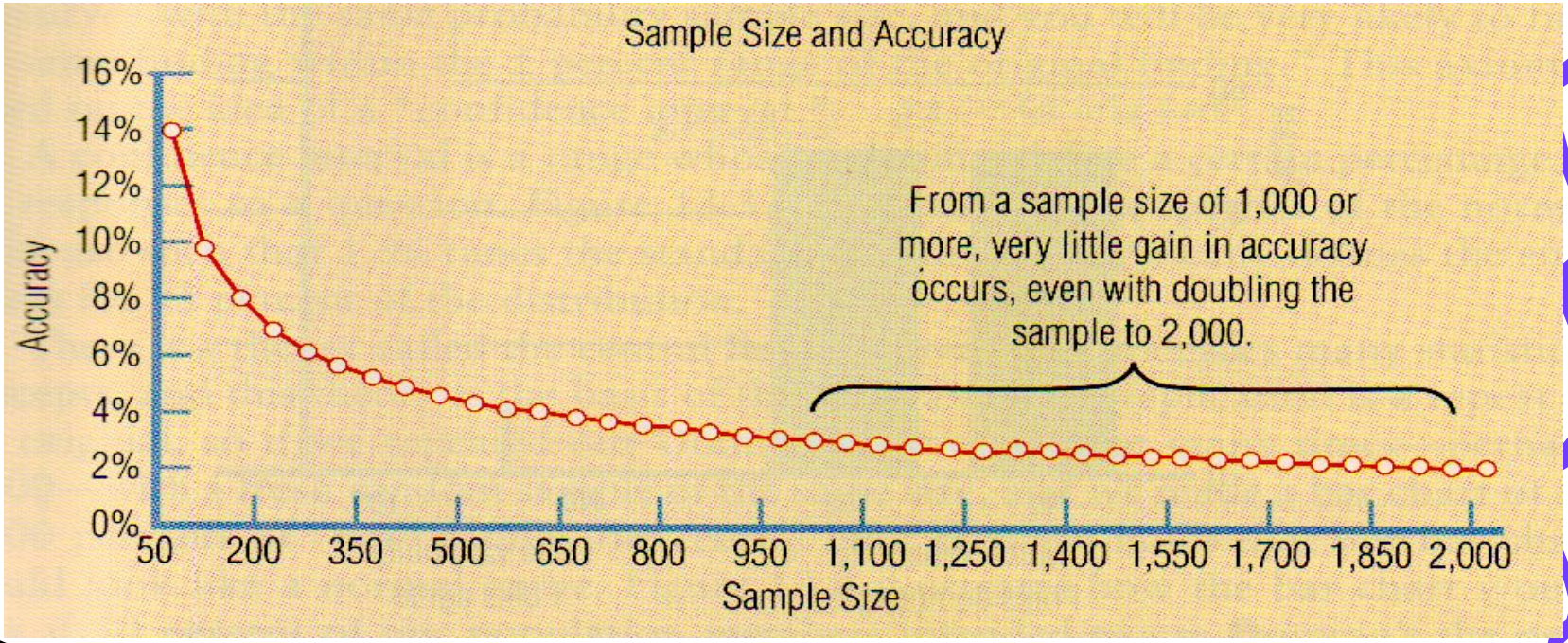
Part 12 – determining the size of a sample

2. The larger the size of the (probability) sample, the less is its sample error.



The relationship between sample size and sample error

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Part 12 – determining the size of a sample

3. *p* and *q*: The notion of Variability

Variability is defined as the amount of dissimilarity (or similarity) in respondent's answers to a particular question.

For example, we may find that question: "the next time you order pizza, will you use Domino's?"

Yes – 50%, no – 50%	Yes – 90%, no – 10%
Much variability	Low variability
p = 50%, q = (100%-50%)	p = 90%, q = (100%-90%)

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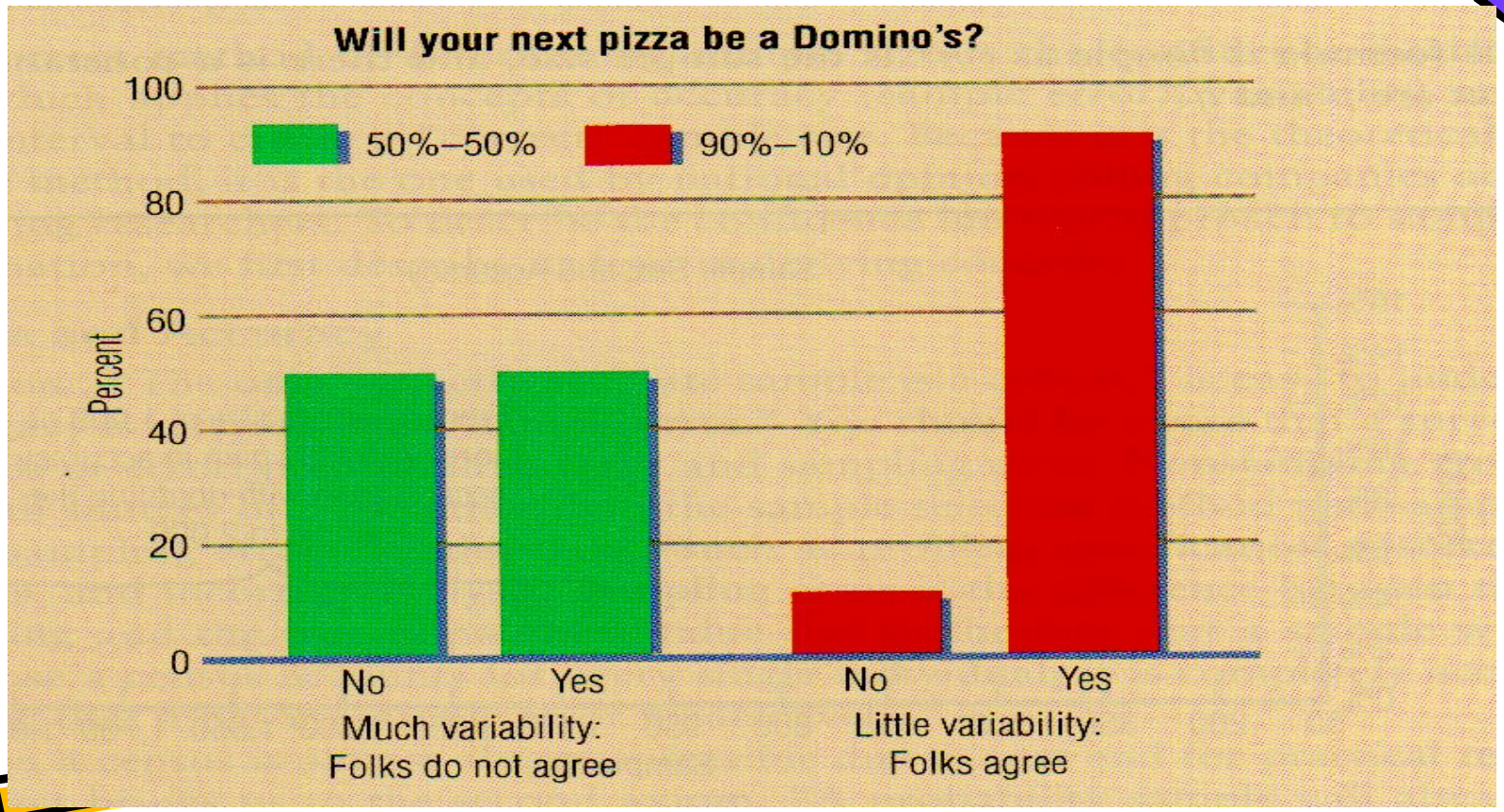

Graph of variability 50/50 – 90/10

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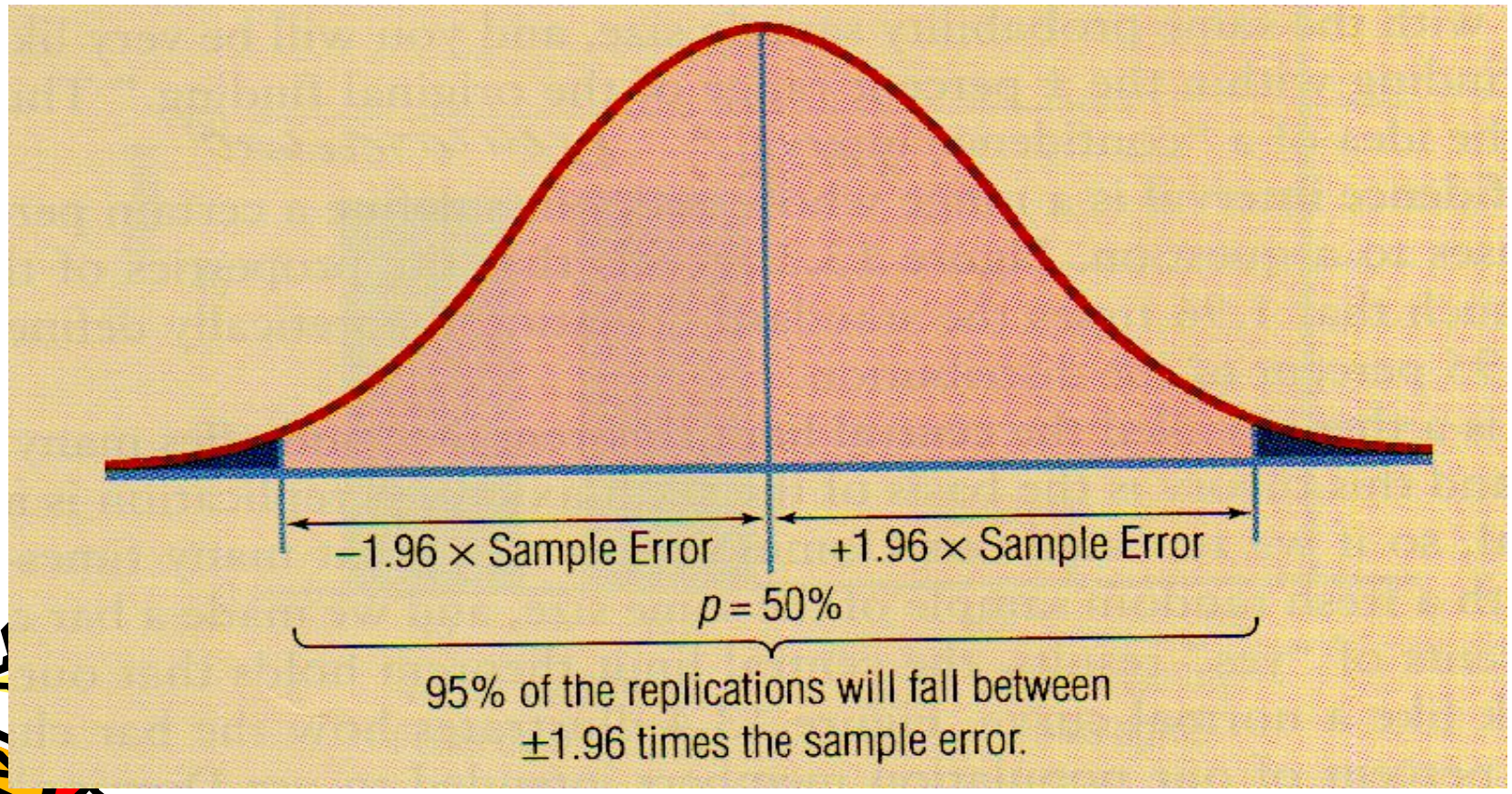
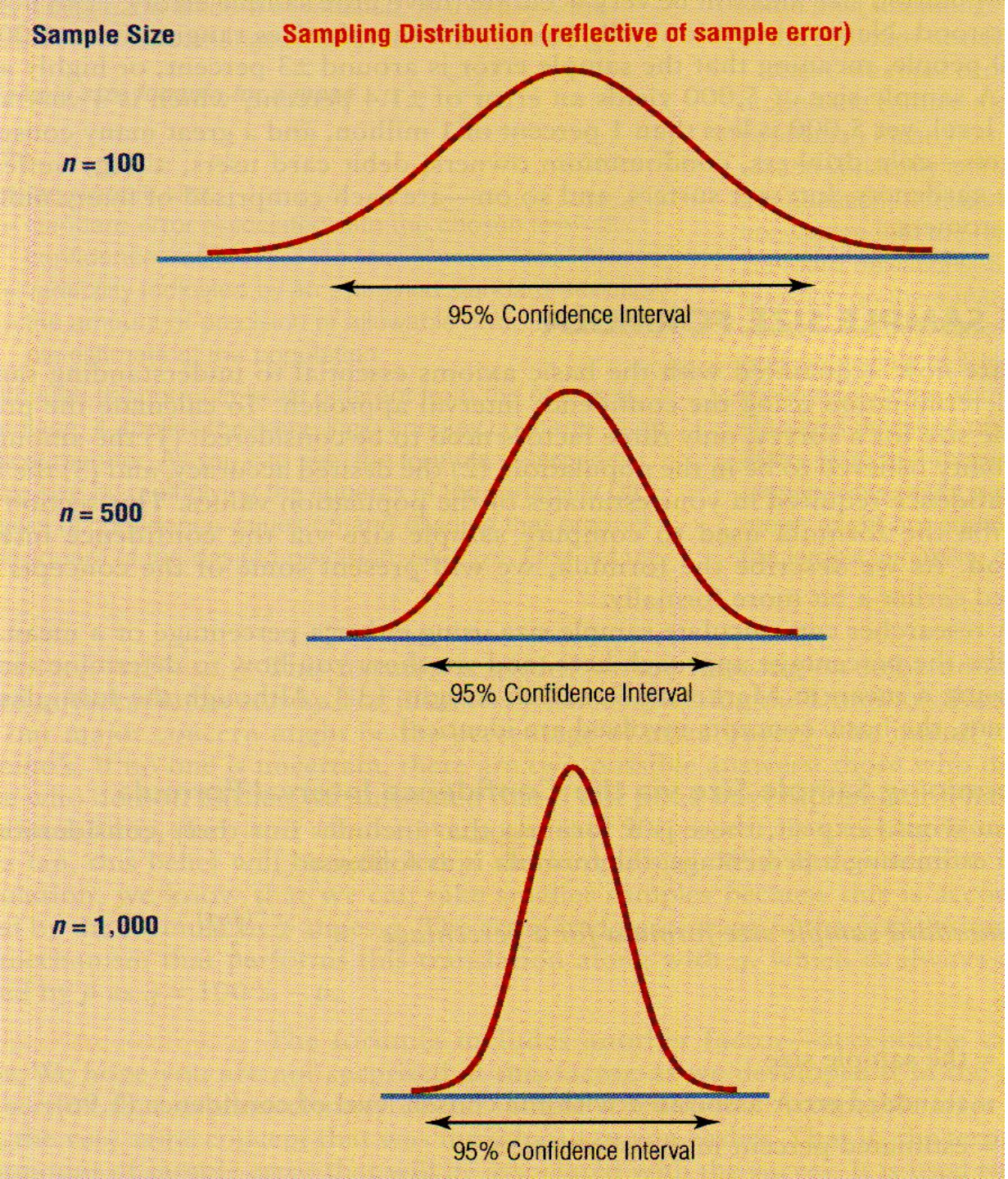
Part 12 – determining the size of a sample

4. The notion of a confidence interval





Sample error is less with larger sample sizes

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Part 12 – determining the size of a sample

5. The accuracy of a probability sample is independent of the size of the population.
6. Accuracy desired from the estimate

it is used to indicate how close your sample percentage finding will be to the true population percentage if you were to report the study many, many times.

Z	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
0.0	.0000	.0040	.0080	.0120	.0160	.0199	.0239	.0279	.0319	.0359
0.1	.0398	.0438	.0478	.0517	.0557	.0596	.0636	.0675	.0714	.0753
0.2	.0793	.0832	.0871	.0910	.0948	.0987	.1026	.1064	.1103	.1141
0.3	.1179	.1217	.1255	.1293	.1331	.1368	.1406	.1443	.1480	.1517
0.4	.1554	.1591	.1628	.1664	.1700	.1736	.1772	.1808	.1844	.1879
0.5	.1915	.1950	.1985	.2019	.2054	.2088	.2123	.2157	.2190	.2224
0.6	.2257	.2291	.2324	.2357	.2389	.2422	.2454	.2486	.2518	.2549
0.7	.2580	.2612	.2642	.2673	.2704	.2734	.2764	.2794	.2823	.2852
0.8	.2881	.2910	.2939	.2967	.2995	.3023	.3051	.3078	.3106	.3133
0.9	.3159	.3186	.3212	.3238	.3264	.3289	.3315	.3340	.3365	.3389
1.0	.3413	.3438	.3461	.3485	.3508	.3531	.3554	.3577	.3599	.3621
1.1	.3643	.3665	.3686	.3708	.3729	.3749	.3770	.3790	.3810	.3830
1.2	.3849	.3869	.3888	.3907	.3925	.3944	.3962	.3980	.3997	.4015
1.3	.4032	.4049	.4066	.4082	.4099	.4115	.4131	.4147	.4162	.4177
1.4	.4192	.4207	.4222	.4236	.4251	.4265	.4279	.4292	.4306	.4319
1.5	.4332	.4345	.4357	.4370	.4382	.4394	.4406	.4418	.4429	.4441
1.6	.4452	.4463	.4474	.4484	.4495	.4505	.4515	.4525	.4535	.4545
1.7	.4554	.4564	.4573	.4582	.4591	.4599	.4608	.4616	.4625	.4633
1.8	.4641	.4649	.4656	.4664	.4671	.4678	.4686	.4693	.4699	.4706
1.9	.4713	.4719	.4726	.4732	.4738	.4744	.4750	.4756	.4761	.4767
2.0	.4772	.4778	.4783	.4788	.4793	.4798	.4803	.4808	.4812	.4817
2.1	.4821	.4826	.4830	.4834	.4838	.4842	.4846	.4850	.4854	.4857
2.2	.4861	.4864	.4868	.4871	.4875	.4878	.4881	.4884	.4887	.4890
2.3	.4893	.4896	.4898	.4901	.4904	.4906	.4909	.4911	.4913	.4916
2.4	.4918	.4920	.4922	.4925	.4927	.4929	.4931	.4932	.4934	.4936

Marketing research
Part 12 – determining the size of a sample

(p.27. Question 9)

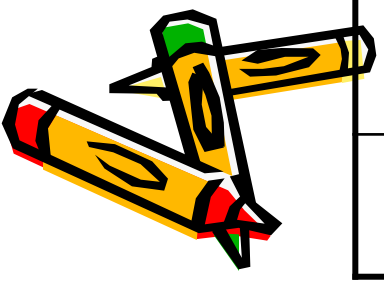
Case study

Last year, Lipton Tea Company conducted a mall-intercept study at six regional malls around the country and found that 20% of the public preferred tea over coffee as a midafternoon hot drink.

This year, Lipton wants to have a nationwide telephone survey performed with random digit dialing. What sample size should be used in this year's study in order to achieve an accuracy level of ± □2.5% at the 99% level of confidence? What about at the 95% level of confidence?

Marketing research
Part 12 – determining the size of a sample

Sample accuracy	Sample size	Sample cost
± 3,5%	784	$ 15 680
± 4%	600	$ 12 000
± 4,5%	474	$ 9 480
± 5%	384	$ 7 680
± 5,5%	317	$ 6 340
± 6%	267	$ 5 340



Marketing research Part 12 – determining the size of a sample

Here are some numbers that you can use to sharpen your computational skills for sample size determination. Crest Toothpaste is reviewing plans for its annual survey of toothpaste purchasers. With each case that follows, calculate the sample size pertaining to the key variable under consideration. Where information is missing, provide reasonable assumptions.

Case study

Key Variable	Variability	Acceptable Error	Confidence Level
Market share of Crest Toothpaste	*23% share last year*	*4%*	*95%*
Percent of people who brush their teeth per week	*Unknown*	*5%*	*99%*
How likely Crest buyers are to switch brands	*30% switched last year*	*5%*	*95%*
Percent of people who want tartar-control features in their toothpaste	*20% two years ago; 40% one year ago*	*3.5%*	*95%*
Willingness of people to adopt the toothpaste brand recommended by their family dentist	*Unknown*	*6%*	*99%*