**Topics: Confidence Intervals**

1. For each of the following statements, indicate whether it is True/False. If false, explain why.
2. The sample size of the survey should at least be a fixed percentage of the population size in order to produce representative results.
3. The sampling frame is a list of every item that appears in a survey sample, including those that did not respond to questions.
4. Larger surveys convey a more accurate impression of the population than smaller surveys.

ANSWER:

1. FALSE. The results depend on the size (n) of the sample. The sample size should have desired number of obesrvations.
2. FALSE. The sampling frame is a list of all the items in the target population from which the sample is selected.
3. TRUE. Large sample size will result in less standard deviation compared to small sample size. Thus we can say larger sample is more accurate.
4. *PC Magazine* asked all of its readers to participate in a survey of their satisfaction with different brands of electronics. In the 2004 survey, which was included in an issue of the magazine that year, more than 9000 readers rated the products on a scale from 1 to 10. The magazine reported that the average rating assigned by 225 readers to a Kodak compact digital camera was 7.5. For this product, identify the following:
5. The population
6. The parameter of interest
7. The sampling frame
8. The sample size
9. The sampling design
10. Any potential sources of bias or other problems with the survey or sample

ANSWER:

1. Population = 9000
2. Rating of a Kodak compact digital camera
3. All the readers of the survey.
4. Sample size = 225
5. Response.
6. This can be very uncertain; The ones who liked can be the ones who participated the survey or it can also be possible that the ones who disliked can be who participated. Some people could also favor Kodak as a company more than others. Their responses will be mostly positive for the company so those are biased responses.
7. For each of the following statements, indicate whether it is True/False. If false, explain why.
8. If the 95% confidence interval for the average purchase of customers at a department store is $50 to $110, then $100 is a plausible value for the population mean at this level of confidence.
9. If the 95% confidence interval for the number of moviegoers who purchase concessions is 30% to 45%, this means that fewer than half of all moviegoers purchase concessions.
10. The 95% Confidence-Interval for *μ* only applies if the sample data are nearly normally distributed.

ANSWER:

1. TRUE.
2. FALSE. We don’t have enough information to assess this.
3. TRUE. Usually, the first assumption is that normal distributed data.
4. What are the chances that ?
5. ¼
6. ½
7. ¾
8. 1

ANSWER: ½ since that seems plausible assumption.

1. In January 2005, a company that monitors Internet traffic (WebSideStory) reported that its sampling revealed that the Mozilla Firefox browser launched in 2004 had grabbed a 4.6% share of the market.
2. If the sample were based on 2,000 users, could Microsoft conclude that Mozilla has a less than 5% share of the market?
3. WebSideStory claims that its sample includes all the daily Internet users. If that’s the case, then can Microsoft conclude that Mozilla has a less than 5% share of the market?

ANSWER:

1. No. There is no confidence interval. No ther data is given like mean mode median standar deviation etc.
2. Yes they can conclude that since most of the important parameters are given already.
3. A book publisher monitors the size of shipments of its textbooks to university bookstores. For a sample of texts used at various schools, the 95% confidence interval for the size of the shipment was 250 ± 45 books. Which, if any, of the following interpretations of this interval are correct?
4. All shipments are between 205 and 295 books.
5. 95% of shipments are between 205 and 295 books.
6. The procedure that produced this interval generates ranges that hold the population mean for 95% of samples.
7. If we get another sample, then we can be 95% sure that the mean of this second sample is between 205 and 295.
8. We can be 95% confident that the range 160 to 340 holds the population mean.

ANSWER:

1. INCORRECT.
2. INCORRECT.
3. INCORRECT.
4. INCORRECT.
5. CORRECT.
6. Which is shorter: a 95% *z*-interval or a 95% *t*-interval for *μ* if we know that σ =s?
7. The z-interval is shorter
8. The t-interval is shorter
9. Both are equal
10. We cannot say

ANSWER:

The correct answer is A.

Questions 8 and 9 are based on the following: To prepare a report on the economy, analysts need to estimate the percentage of businesses that plan to hire additional employees in the next 60 days.

1. How many randomly selected employers (minimum number) must we contact in order to guarantee a margin of error of no more than 4% (at 95% confidence)?
2. 600
3. 400
4. 550
5. 1000

ANSWER:

∴ n= 600.25

Therefore, minimum 600 employees need to be contacted.

1. Suppose we want the above margin of error to be based on a 98% confidence level. What sample size (minimum) must we now use?
2. 1000
3. 757
4. 848
5. 543

ANSWER: B 757