Qnt 561 applied business research and statistics assignment

Applied Research and Statistics QNT561 Research and Sampling Designs Shindeera Robinson June 21, 2010 Chapter 8 21. What is sampling error? Could the value of the sampling error be zero? If it were zero, what would this mean? Sampling error is the difference between the statistic estimated from a sample and the true population statistic. While we would expect the sampling error to not be zero, it is not impossible. For example if you were evaluating the ethnicities of a population and everyone in the population was Caucasian then taking any sample would give you the true proportion of 100% Caucasian.

In other words, if the sampling error is zero then the population is uniform or you were taking a perfectly representative sample 22. List the reasons for sampling. Give an example of each reason for sampling. A sample is a finite part of a statistical population whose properties are studied to gain information about the whole(Webster, 1985). When dealing with people, it can be defined as a set of respondents(people) selected from a larger population for the purpose of a survey.

A population is a group of individuals persons, objects, or items from which samples are taken for measurement for example a population of presidents or professors, books or students 34. Information from the American Institute of Insurance indicates the mean amount of life insurance per household in the United States is $110, 000. This distribution follows the normal distribution with a standard deviation of $40, 000. A. If we select a random sample of 50 households, what is the standard error of the mean? U= 110, 000 S= 40, 000 N= 50 SE = s/ sqrt (n) = 40000/ sqrt (50) = 5656. 85425

The standard error of the mean is 5656. 85425 B. What is the expected shape of the distribution of the sample mean? The expected shape of the sample mean will be the bell shaped curve, with the centered mean of 110, 000 and a standard deviation of 5656. 85 C. What is the likelihood of selecting a sample with a mean of at least $112, 000? x= 112, 000 z=(x-u)/SE = (112000-110000) / 5656. 85425 = 0. 3536 1-0. 6381 = 0. 3618 The remaining probability that we need is 0. 3618; so there is a 33% likelihood of sampling a mean of at least $112, 000 D. What is the likelihood of selecting a sample with a mean greater than $112, 000? = 100, 000 z=(x-u)/SE = (100000-110000) / 5656. 85425 = -1. 7678 1-0. 0385 = 0. 9614 The remaining probability that we need is 0. 9614; so there is a 96% likelihood of sampling a mean of at least $100, 000 E. Find the likelihood of selecting a sample with a mean of more than $100, 000 but less than $112, 000. 0. 6381 – 0. 0385 = 0. 5996 There is a 60% likelihood of sampling a mean between 100, 000 and 112, 000 Chapter 9 32. A state meat inspector in Iowa has been given the assignment of estimating the mean net weight of packages of ground chuck labeled “ 3 pounds. Of course, he realizes that the weights cannot be precisely 3 pounds. A sample of 36 packages reveals the mean weight to be 3. 01 pounds, with a standard deviation of 0. 03 pounds. mean – z*sd/sqrt(N) to mean + z*sd/sqrt(N) Z= 1. 96 N = 36 sd = 0. 03 mean = 3. 01 3. 01 – 1. 96*0. 03/sqrt(36) to 3. 01 + 1. 96*0. 03/sqrt(36) The estimated population mean is 3. 0002 to 3. 0198 34. A recent survey of 50 executives who were laid off from their previous position revealed it took a mean of 26 weeks for them to find another position. The standard deviation of the sample was 6. weeks. Construct a 95 percent confidence interval for the population mean. Is it reasonable that the population mean is 28 weeks?

Justify your answer. mean – z*sd/sqrt(N) to mean + z*sd/sqrt(N) z = 1. 96 N = 50 sd = 6. 2 mean = 26 26 – 1. 96*6. 2/sqrt(50) to 26 + 1. 96*6. 2/sqrt(50) 24. 281 to 27. 719 28 weeks is not measured inside the confidence interval. That means it is not reasonable that the population mean is 28 weeks. 46. As a condition of employment, Fashion Industries applicants must pass a drug test. Of the last 220 applicants 14 failed the test.

Develop a 99 percent confidence interval for the proportion of applicants that fail the test. Would it be reasonable to conclude that more than 10 percent of the applicants are now failing the test? In addition to the testing of applicants, Fashion Industries randomly tests its employees throughout the year. Last year in the 400 random tests conducted, 14 employees failed the test. Would it be reasonable to conclude that less than 5 percent of the employees are not able to pass the random drug test? Proportion is 14/220 = 0. 064 Confidence interval= 0. 064 +/- 2. 575*sqrt(. 64*. 936/220) = (0. 0215, 0. 1065) 28 people who failed 620 tests= 0. 0452 Critical values= 2. 575 and -2. 575 z = (0. 0452-0. 05)/sqrt(0. 05*0. 95/620)=-0. 548. 0. 548 employees and not pass the random drug test. Yes I can conclude that less than 5 percent of the employees are not able to pass the random drug test

References: Fridah, M. (n. d.). Sampling In Research. Retrieved June 21, 2010, from http://www. socialresearchmethods. net/tutorial/Mugo/tutorial. htm Lind, D. A. (2005). Statistical Techniques in Business & Economics (12 ed.). New York: The McGraw? Hill.