

27) **SAMPLING FRAME** Ideally, the sampling frame in a Sample Survey should list every individual in the population, in practice, this is often difficult. Suppose that a sample of households in a community is selected at random from the telephone directory. Explain how this sampling method results in undercoverage that could lead to bias

29) Suppose you want to know the average amount of money spent by the fans attending opening day for the Cleveland Indians baseball season. You get permission from the team's management to conduct a survey at the stadium, but they will not allow you to bother the fans in the club seating or box seats (the most expensive seating). Using a computer, you randomly select 500 seats from the fans in those seats how much they spend that day

A) Provide a reason why this survey might yield a biased result.

B) Explain whether the reason you provided in (A) is a sampling error or non sampling error.

31) A survey of driver began by randomly sampling all listed residential telephone numbers in the indicted states. Of 45,956 calls to these numbers, 5029 were completed. The goal of the survey was to estimate how far people drive, on average, per day.

A) What was the rate of no response for this sample.

B) Explain how no response can lead to bias in this survey. Be sure to give the direction of the bias.

33) **Running Red Lights** The sample described in Exercise 31 produced a list of 5024 licensed drivers. The investigators then chose an SRS of 880 of these drivers to answer questions about their driving habits. One question asked was: "Recalling the last ten traffic lights you drove through, how many of them where red when you enter the intersections?" Of the 880 respondents, 171 admitted that at least one light had been red. A practical problem with this survey is that people may not give truthful answers. What is the likely direction of the bias: do you think more or fewer than 171 of the 880 respondents really ran a red light? Why?

35) **Wording Bias**. Comment on each of the following as a potential sample survey question. Is the question clear? Is it slanted toward a desired response?

(a) "Some cell phone users have developed brain cancer. Should all cell phones come with a warning label explaining the danger of using cell phones?"

(b) "Do you agree that a national system of health insurance should be favored because it would provide health insurance for everyone and would reduce administrative costs?"

(c) "In view of escalating environmental degradation and incipient resource depletion, would you favor economic incentives for recycling of resource-intensive consumer goods?"