2. At a certain university, students who live in the dormitories eat at a common dining hall. Recently, some students have been complaining about the quality of the food served there. The dining hall manager decided to do a survey to estimate the proportion of students living in the dormitories who think that the quality of the food should be improved. One evening, the manager asked the first 100 students entering the dining hall to answer the following question.

| Many students believe that the food served in the dining hall needs improvement. Do you think that the quality of food served here needs improvement, even though that would increase the cost of the meal plan? |
|---|---|---|
| ___ Yes | ___ No | ___ No opinion |

(a) In this setting, explain how bias may have been introduced based on the way this convenience sample was selected and suggest how the sample could have been selected differently to avoid that bias.

The first students to enter the dining hall may enjoy the food served more than the student population. Because they may enjoy it more, they arrive earlier. To prevent this bias, each student should be allocated a number and 100 students should be chosen using a random digit generator. This way, every sample of 100 students have an equal chance of being selected.

(b) In this setting, explain how bias may have been introduced based on the way the question was worded and suggest how it could have been worded differently to avoid that bias.

The question states in the beginning that "many students" believed that the quality of food needed improvement. Through this statement, students may have a greater tendency to agree with the norm and say "yes" rather than voice their opinion. I believe that the first statement needs to be taken out as well as the latter part of the statement. The manager only wants the opinion, there is no need to state the fact that cost will increase. Thus, the question asked should be "Do you think the quality of food served here needs improvement?"
2. At a certain university, students who live in the dormitories eat at a common dining hall. Recently, some students have been complaining about the quality of the food served there. The dining hall manager decided to do a survey to estimate the proportion of students living in the dormitories who think that the quality of the food should be improved. One evening, the manager asked the first 100 students entering the dining hall to answer the following question.

   Many students believe that the food served in the dining hall needs improvement. Do you think that the quality of food served here needs improvement, even though that would increase the cost of the meal plan?
   
   ___ Yes  ___ No  ___ No opinion

(a) In this setting, explain how bias may have been introduced based on the way this convenience sample was selected and suggest how the sample could have been selected differently to avoid that bias.

   The first 100 students entering the dining hall may not be representative of all students eating at that dining hall because those students arriving early may have different tastes or characteristics from those arriving later. Instead of convenience sampling, the manager should label all the students living in the dormitories in alphabetical order, and then use a random digits table to select 100 students, thus using a simple random sample.

(b) In this setting, explain how bias may have been introduced based on the way the question was worded and suggest how it could have been worded differently to avoid that bias.

   The wording of the question provided a preconceived opinion that many students believe that the food at the dining hall needs improvement, which may affect the survey answers because the students may tend to follow the majority belief and check "yes". To avoid bias, no introductory opinion should be included, letting the students decide without any preconceptions. Therefore, the entire first sentence in the above survey question should be removed.
2. At a certain university, students who live in the dormitories eat at a common dining hall. Recently, some students have been complaining about the quality of the food served there. The dining hall manager decided to do a survey to estimate the proportion of students living in the dormitories who think that the quality of the food should be improved. One evening, the manager asked the first 100 students entering the dining hall to answer the following question.

Many students believe that the food served in the dining hall needs improvement. Do you think that the quality of food served here needs improvement, even though that would increase the cost of the meal plan?

____ Yes  ______ No  ______ No opinion

(a) In this setting, explain how bias may have been introduced based on the way this convenience sample was selected and suggest how the sample could have been selected differently to avoid that bias.

This survey can be biased because not everybody who live in the dormitories eat at the dining hall. Also, the first 100 students entering the dining hall might not be the people who live in the dormitories. To make better survey, they should give a number to all the people who live in dormitories, then by using random table, choose first 100 people, then ask them these questions.

(b) In this setting, explain how bias may have been introduced based on the way the question was worded and suggest how it could have been worded differently to avoid that bias.

The word is too biased because the way he explained in the survey question to the side of "yes". He wrote in the survey as if most of the people complains about the food. Therefore, the manager should make the survey saying, "Do you like our food in the dining hall?", instead of saying that many people are already complained about the food in the dining hall.

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