

# ✔ Congratulations! You passed!

Grade received 100% To pass 100% or higher

Go to next item

1.

1 / 1 point



## Overview

Now that you have explored how businesses use data in the real world, you can pause for a moment and think about what you are learning. In this self-reflection, you will consider fairness and data use in three example business cases and respond to brief questions with your thoughts.

This self-reflection will help you develop insights into your own learning and prepare you to apply your knowledge of fairness practices to scenarios that represent real-life business case studies. As you answer questions—and come up with questions of your own—you will consider concepts, practices, and principles to help refine your understanding and reinforce your learning. You've done the hard work, so make sure to get the most out of it: This reflection will help your knowledge stick!

### Case Study #1

To improve the effectiveness of its teaching staff, the administration of a high school offered the opportunity for all teachers to participate in a workshop. They were not required to attend; instead, the administration encouraged teachers to sign up. Of the 43 teachers on staff, 19 chose to take the workshop.

At the end of the academic year, the administration collected data on teacher performance for all teachers on staff. The data was collected via student survey. In the survey, students were asked to rank each teacher's effectiveness on a scale of 1 (very poor) to 6 (very good).

The administration compared data on teachers who attended the workshop to data on teachers who did not. The comparison revealed that teachers who attended the workshop had an average score of 4.95, while teachers who did not attend had an average score of 4.22. The administration concluded that the workshop was a success.

## Reflection

Consider this scenario:

- What are the examples of fair or unfair practices?
- How could a data analyst correct the unfair practices?

Now, write 2-3 sentences (40-60 words) in response to each of these questions. Type your response in the text box below.

Fair practices: The administration offered the opportunity for all teachers to participate in the workshop, and they did not require any teachers to attend. This is a fair practice, as it gives all teachers the chance to improve their skills and knowledge.  
Unfair practices: The administration only collected data on teacher performance at the end of the academic year. This means that they did not have data on teacher performance before the workshop, so they cannot say for sure whether the workshop was the reason for the improvement in teacher ratings. Additionally, the data was collected via student survey, which can be subjective and biased.  
A data analyst could correct the unfair practices in this case study by collecting more data. For example, they could collect data on teacher performance at the beginning of the academic year, as well as at the end of the year. This would allow them to compare teacher performance before and after the workshop, and to get a more accurate idea of the impact of the workshop. Additionally, the data analyst could use a more objective measure of teacher performance, such as standardized test scores.

Here are some specific things a data analyst could do to correct the unfair practices in this case study:

Collect data on teacher performance at the beginning of the academic year, as well as at the end of the year.  
Use a more objective measure of teacher performance, such as standardized test scores.  
Control for other factors that could affect teacher ratings, such as the size of the class or the socioeconomic status of the students.  
Get input from a diverse group of people, including teachers, students, and parents, to ensure that the data analysis is fair and impartial.

### ✔ Correct

Great work reinforcing your learning with a thoughtful self-reflection! This is an example of unfair practice. It is tempting to conclude—as the administration did—that the workshop was a success. However, since the workshop was voluntary and not random, it is not appropriate to infer a causal relationship between attending the workshop and the higher rating.

The workshop might have been effective, but other explanations for the differences in the ratings cannot be ruled out. For example, another explanation could be that the staff volunteering for the workshop were the better, more motivated teachers. This group of teachers would be rated higher whether or not the workshop was effective.

It's also notable that there is no direct connection between student survey responses and workshop attendance. The data analyst could correct this by asking for the teachers to be selected randomly to participate in the workshop. They could also collect data that measures something more directly related to workshop attendance, such as the success of a technique the teachers learned in that workshop.

2. Case Study #2

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An automotive company tests the driving capabilities of its self-driving car prototype. They carry out the tests on various types of roadways—specifically, a race track, trail track, and dirt road.

The researchers only test the prototype during the daytime. They collect two types of data: sensor data from the car during the drives and video data of the drives from cameras on the car.

They review the data after the initial tests. The results illustrate that the new self-driving car meets the performance standards across each of the roadways. As a result, the car can progress to the next phase of testing, which will include driving in various weather conditions.

## Reflection

Consider this scenario:

- What are the examples of fair or unfair practices?
- How could a data analyst correct the unfair practices?

Now, write 2-3 sentences (40-60 words) in response to each of these questions. Type your response in the text box below.

Fair practices: The automotive company tested the self-driving car prototype on a variety of roadways, which is a fair practice. This ensures that the car can handle a variety of driving conditions. Additionally, the company collected two types of data, which is also a fair practice. This helps to ensure that the data is reliable and accurate.  
Unfair practices: The automotive company only tested the prototype during the daytime. This is an unfair practice, as it does not account for how the car would perform at night. Additionally, the company only tested the car on dry roads. This is also an unfair practice, as it does not account for how the car would perform in wet or icy conditions.

A data analyst could correct the unfair practices in this case study by recommending that the automotive company test the self-driving car prototype at night and in various weather conditions. This would help to ensure that the car is safe to operate in all conditions. Additionally, the data analyst could recommend that the company collect more data, such as data on the car's performance in different traffic conditions. This would help to ensure that the data is reliable and accurate.

Here are some specific things a data analyst could do to correct the unfair practices in this case study:

Recommend that the automotive company test the prototype at night and in various weather conditions.  
Recommend that the company collect more data, such as data on the car's performance in different traffic conditions.  
Control for other factors that could affect the car's performance, such as the type of road or the time of day.  
Get input from a diverse group of people, including engineers, drivers, and safety experts, to ensure that the testing is fair and impartial.

### ✔ Correct

Great work reinforcing your learning with a thoughtful self-reflection! This case study shows an unfair practice. While the researchers test the prototype on three different tracks, they only conduct tests during the day.

Conditions on each track may be very different during the day and night and this could change the results significantly. The data analyst should correct this by asking the test team to add in nighttime testing to get a full perspective of how the prototype performs at any time of the day on the tracks.

3. Case Study #3

1 / 1 point

An amusement park plans to add new rides to their property. First, they need to determine what kinds of new rides visitors want the park to build. In order to understand their visitors' interests, the park develops a survey.

They decide to distribute the survey near the roller coasters because the lines are long enough that visitors will have time to answer all of the questions. After collecting this survey data, they find that most of the respondents want more roller coasters at the park. They conclude that they should add more roller coasters, as most of their visitors prefer them.

## Reflection

Consider this scenario:

- What are the examples of fair or unfair practices?
- How could a data analyst correct the unfair practices?

Now, write 2-3 sentences (40-60 words) in response to each of these questions. Type your response in the text box below.

Fair practices: The amusement park developed a survey to understand their visitors' interests, which is a fair practice. This allows them to get feedback from a variety of people and to make decisions that are in the best interests of their customers.  
Unfair practices: The amusement park only distributed the survey near the roller coasters. This is an unfair practice, as it means that they are only getting feedback from people who are interested in roller coasters. This could lead them to believe that more people want roller coasters than actually do.  
A data analyst could correct the unfair practices in this case study by recommending that the amusement park distribute the survey in a variety of locations, such as near the entrance to the park, near the food court, and near the water rides. This would help to ensure that they are getting feedback from a more representative sample of visitors. Additionally, the data analyst could recommend that the amusement park use a variety of methods to collect feedback, such as online surveys, focus groups, and interviews. This would help to ensure that they are getting a well-rounded view of what their visitors want.

Here are some specific things a data analyst could do to correct the unfair practices in this case study:

Recommend that the amusement park distribute the survey in a variety of locations.  
Recommend that the amusement park use a variety of methods to collect feedback.  
Control for other factors that could affect the results of the survey, such as the time of day or the weather.  
Get input from a diverse group of people, including visitors, employees, and community members, to ensure that the survey is fair and impartial.  
By taking these steps, a data analyst can help to ensure that the amusement park gets accurate feedback from their visitors and makes decisions that are in the best interests of everyone.

### ✔ Correct

Great work reinforcing your learning with a thoughtful self-reflection! This case study contains an unfair practice. While the decision to distribute surveys in places where visitors would have time to respond makes sense, it accidentally introduces sampling bias.

The only respondents to the survey are people waiting in line for the roller coasters. This may unfairly bias survey results, because respondents might prefer roller coasters. A data analyst could reduce sampling bias by distributing the survey at the entrance and exit of the amusement park. This would avoid targeting roller coaster fans and provide results from the park's general audience.