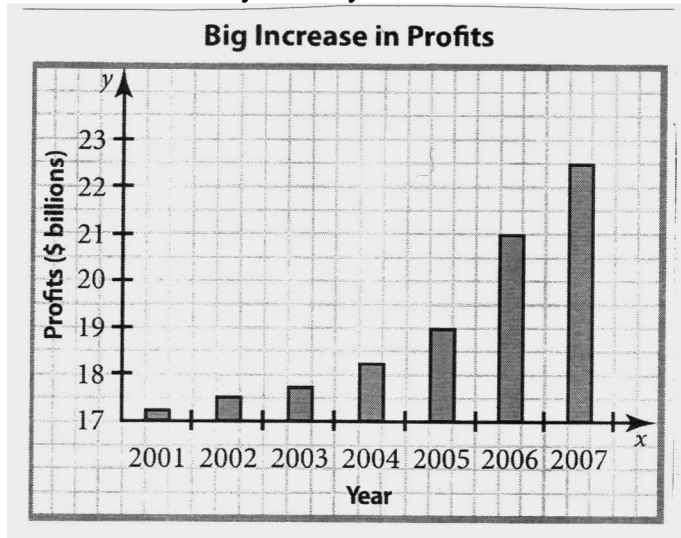


Assess the validity of conclusions presented in the media by examining sources of data to determine whether they are authoritative, reliable, unbiased, and current.

The headline for the following graph says “Big Increase in Profits”. Suggest reasons why this headline may or may not be true.



Biases in Analyzing and Reporting the Statistics

Types of Statistics

- **Descriptive**

Example – Based on the Census at school data, the average (mean) height of our class is 171 cm.

- **Inferential**

Example – Based on a sample of a grade 12 class of 20 students, the average (mean) height of students at Waterloo Oxford is 171 cm.

Critical Analysis of Statistical Claims

When analyzing statistical claims the following five questions should be asked:

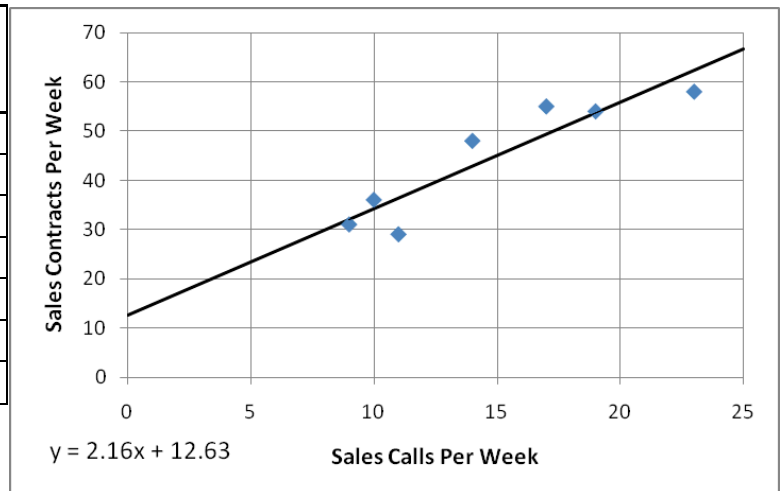
- Is there a bias in the sample?
- Is the author of the report a reliable researcher?

- What is the original source of the data?
- Is the data still relevant in today's environment?
- Was there a bias in analyzing the data?

Case Study #1

A sales manager tracked the number of sales calls made by her sales team and the resulting number of sales contracts.

Number of Sales Calls Per Week	Sales Contracts Per Week
10	36
23	58
14	48
17	55
9	31
19	54
11	29



Using linear regression she found the equation for the line of best fit to be $Y = 2.16C + 12.63$. She presented this data to the sales team and explained that the more sales calls they made, the better their sales would be. Therefore she told them to double the number of calls they made per week so that the number of sales contracts would double.

Perform a critical analysis of these conclusions:

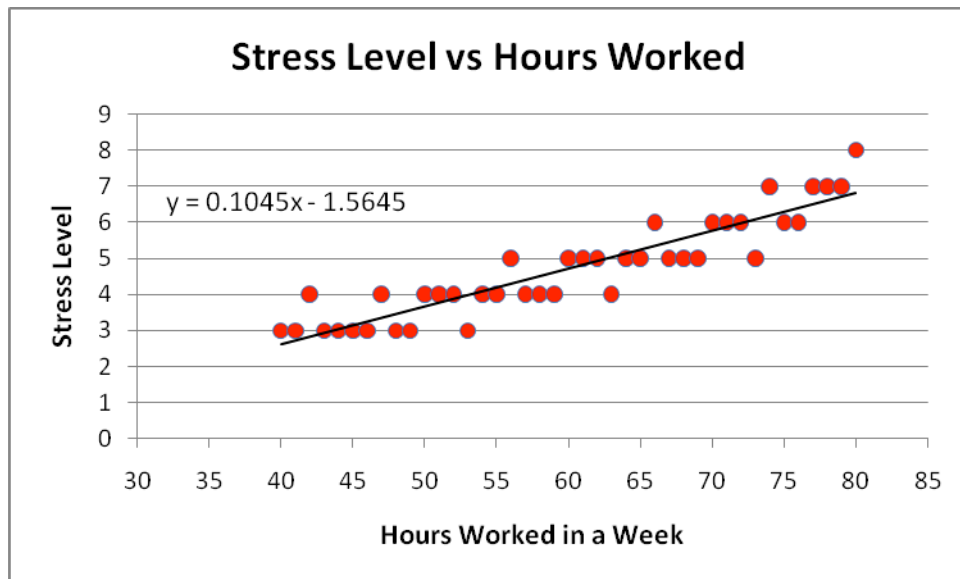
- Is there a bias in the sample?
- Is the author of the report a reliable researcher?
- What is the original source of the data?

- Is the data still relevant in today's environment?
- Was there a bias in analyzing the data?

Case Study #2

A stress management clinic in a city of 250,000 people wanted to find out whether there is a relationship between the number of hours worked in a week and job stress level.

- They hired an outside agency to collect the data.
- The agency randomly selected 2500 adults who work in the city.
- They asked them to state the number of hours they work per week and to rate their level of job stress from 1 to 10.



The clinic concluded:

There is a strong positive correlation between the number of hours people work per week and their stress level on the job. We believe that an increase in working hours is likely to cause an increase in stress level.

Is this a valid conclusion? Use the following questions to guide you in your answer.

- Is there a bias in the sample?
- Is the author of the report a reliable researcher?
- What is the original source of the data?
- Is the data still relevant in today's environment?
- Was there a bias in analyzing the data?