What are five examples of outliers in real life?

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Outliers are data points that significantly deviate from the rest of the data in a given set. These extreme values can occur in various real-life scenarios, including:

1. Income Distribution: In a country with a predominantly low-income population, a small number of individuals with exceptionally high incomes can be considered outliers.

2. Sports Performance: In a competitive sports event, there may be a few athletes who achieve exceptional results, which can be considered outliers compared to the majority of participants.

3. Weather Events: In meteorology, extreme weather events such as hurricanes, tornadoes, and heatwaves can be considered outliers as they deviate significantly from the average weather patterns.

4. Stock Market: In the stock market, sudden and drastic changes in stock prices can be considered outliers, often caused by unexpected events or news.

5. Medical Data: In medical research, there may be a few individuals who exhibit unusual or extreme reactions to treatments, making them outliers in the data set. These outliers can provide valuable insights into potential medical conditions.

5 Examples of Outliers in Real Life

An outlier is a data point that lies abnormally far away from other values in a dataset.

We often define a data point to be an outlier if it is 1.5 times the interquartile range greater than the third quartile or 1.5 times the interquartile range less than the first quartile of a dataset.

Note: The interquartile range is the difference between the third quartile (75th percentile) and the first quartile (25th percentile) in a dataset.

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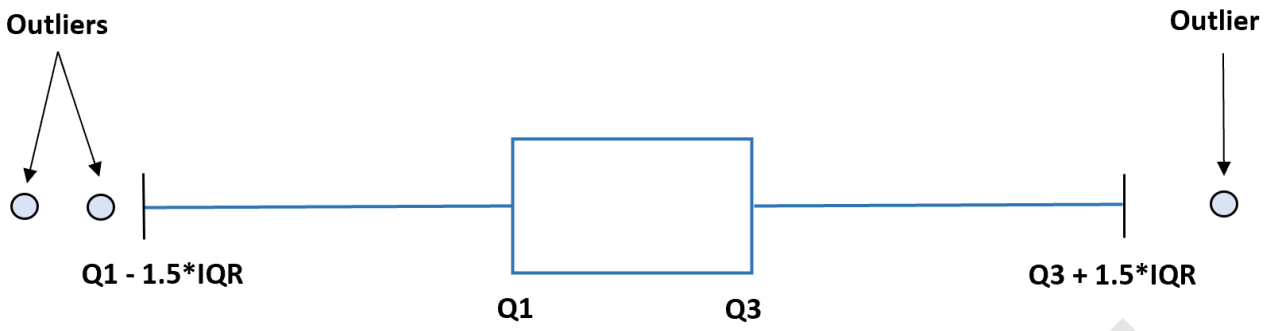

The following scenarios share examples of outliers in real life situations.

Example 1: Outliers in Income

One real-world scenario where outliers often appear is income distribution.

For example, the 25th percentile (Q1) of annual income in a certain country may be $15,000 per year and the 75th percentile (Q3) may be $120,000 per year.

The interquartile range (IQR) would be calculated as $120,000 - $15,000 = $105,000.

This means that anyone with an income outside of the following boundaries would be considered an outlier:

Lower Boundary: Q1 - 1.5*IQR = $15,000 - 1.5*$105,000 = -$142,500Upper Boundary: Q3 + 1.5*IQR = $120,000 +

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1.5*$105,000 = $277,500

Someone like Elon Musk who has a net worth in the billions of dollars would be considered an outlier in terms of annual income.

Note: The value for outliers beyond the lower boundary will not always make sense, e.g. it's not possible to earn a negative annual income.

Example 2: Outliers in Breath-Holding

Another real-world scenario where outliers often appear is breath-holding.

For example, the 25th percentile (Q1) for how long individuals can hold their breath is around 15 seconds while the 75th percentile (Q3) is around 75 seconds.

The interquartile range (IQR) would be calculated as 75 - 15 = 60.

Lower Boundary: Q1 - 1.5*IQR = 15 - 1.5*60 = -75 secondsUpper Boundary: Q3 + 1.5*IQR = 75 + 1.5*60 = 165 seconds

Any who can hold their breath for 10 minutes or longer

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would be considered outliers because they can hold their breath much longer than 165 seconds.

Example 3: Outliers in Animal Height

Another real-world scenario where outliers often appear is height of animals.

For example, the 25th percentile (Q1) of horse height is around 5 feet and the 75th percentile (Q3) is around 5.5 feet.

The interquartile range (IQR) would be calculated as 5.5 - 5 = 0.5 feet.

This means that any horse with a height outside of the following boundaries would be considered an outlier:

Lower Boundary: Q1 - 1.5*IQR = 5 - 1.5*0.5 = 4.25 feetUpper Boundary: Q3 + 1.5*IQR = 5 + 1.5*0.5 = 5.75 feet

According to the , the record for tallest horse ever is just above 7 feet. Since this is above the upper boundary of 5.75 feet, this horse would clearly be considered an outlier.

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Example 4: Outliers in Movie Ticket Sales

Another real-world scenario where outliers often appear is movie ticket sales.

For example, the 25th percentile (Q1) of gross ticket sales for movies is around $2 million and the 75th percentile (Q3) is around $15 million.

The interquartile range (IQR) would be calculated as $15 million - $2 million= $13 million.

This means that any movie with gross sales outside of the following boundaries would be considered an outlier:

Lower Boundary: Q1 - 1.5*IQR = $2 million - 1.5*$13 million = -$17.5 millionUpper Boundary: Q3 + 1.5*IQR = $15 million + 1.5*$13 million = $34.5 million

Most Star Wars movies have grossed far more than $34.5 million, which makes them outliers in terms of ticket sales.

Example 5: Outliers in Points Scored per Game

Yet another real-world field where outliers often appear

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is professional sports.

For example, the 25th percentile (Q1) of points scored by NBA players is around 5 points per game and the 75th percentile (Q3) is around 15 points per game.

The interquartile range (IQR) would be calculated as 15 - 5 = 10 points.

This means that any player who averages outside of the following boundaries would be considered an outlier:

Lower Boundary: Q1 - 1.5*IQR = 5 - 1.5*10 = -10 pointsUpper Boundary: Q3 + 1.5*IQR = 15 + 1.5*10 = 30 points

During , the highest scoring player typically averages just over 30 points per game which makes them an outlier.

Additional Resources

The following tutorials explain how to find outliers in datasets using various statistical software:

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