

## Statistics Practical Task 1

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1. State whether the mean, median, or mode would be useful in the following scenarios:

1.1 You are doing population statistics. You are asked to give an estimate of the typical income of a single person in the country. There is one snag: wealth distribution is out of whack, and 10% of the population holds 70% of the nation's wealth.

In this case, the median will be most useful as it is not affected by outliers and better represents the typical income considering the high level of inequality.

1.2 You are running a restaurant, and you are reviewing your menu. You have a list of all orders over the last six months. You are trying to find out which item you should keep based on what customers seem to like the most.

The mode will be the best indicator of the most popular dish. Again, this is because it is the most common of all the menu items in the restaurant orders.

1.3 You have been buying electricity once a month for the first six months of the year. You are trying to budget your electricity for the rest of the year and therefore need to estimate how much you will spend for the remainder of the year.

The mean will be the most useful here as it is the average amount spent per month. This monthly average over six months becomes the total spent on electricity for the period.

1.4 You work in healthcare insurance. You are asked to provide an estimate of the typical amount of money spent on healthcare. This is taking into account the fact that there are a few people who spend a large amount of money on medical healthcare due to major issues.

The median will be most useful as it is not affected by outliers and better represents the typical household or personal healthcare spending considering the great variations among them.

2. State whether you would use variance or standard deviation to inform the following decisions:

2.1 You are choosing a new Internet provider. You find two providers with the same mean speed, but you want to have a more stable connection. You get a list of all

reported speeds over the last month and are trying to find the provider that doesn't move too much from the mean value.

Standard deviation is most useful here as it shows how much the connection speed varies from the average speed the provider offers. A more stable connection will show less deviation from the mean.

- 2.2 You are going on holiday to Mauritius. You need to find a shuttle from the airport to your hotel, but you are worried about being overcharged or undercharged (being undercharged might mean that you get unreliable transport). You get a list of all available shuttle service prices and need to find out which services, if any, are overcharging or undercharging.

Standard deviation is also of interest here as you want to find the outlier prices and exclude them from the options. These prices are too high or too low, and thus too far from the standard deviation.

## References

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