Learning Enhancement Team

Steps into Statistics

The Mode

This guide explains the mode in statistics. It shows how to calculate it and gives guidance on when to use it appropriately.

The mode

The **mode** is defined as **the most commonly occurring value in a data set** and is one of the **descriptive statistics** for a data set. Here 'value' need not represent a number, it can also mean the name of an attribute.

Example: You asked 10 people to name their favourite fruit. The responses were:

apple   orange   orange   banana   apple
pineapple   plum   apple   strawberry   blueberry

What is the mode of these data?

As "apple" is the most common answer then the mode is apple.

Example: 11 families were asked how many children they had; the replies were 3, 4, 2, 5, 0, 0, 1, 3, 1, 1 and 2. What is the modal number of children per household?

As 1 is the most common reply, 1 child is the mode.

The mode is often described as a **measure of central tendency** along with the mean and median but this is not the case. It is true that, for numerical data, the mode often coincides with the mean, median or both but it is rarely used alone as a descriptive statistic for numerical data as the mean and median can better represent the concept of an average (see study guide: *Measurements of Central Tendency*). For data distributions which are symmetrical, the mean, median and mode are all equal to each other. The mode is the *only* descriptive statistic which relates to nominal data sets (see study guide: *Levels of Data*).

Occasionally you may get two or more equally commonly occurring values in a data set; in this case each of these attributes is the named the mode. Data sets that have two modes are called **bimodal**; data sets with more than two modes are said to be **multimodal**. If every value in a data set appears once and once only, then the data set is said to have **no mode**.

Example: You asked 10 people to name their favourite fruit. The responses were:

orange	apple	orange	pineapple	apple
banana	plum	nectarine	strawberry	blueberry

What is the mode of these data?

As "apple" and "orange" are both the most common answers (2 responses) then they are both the mode and the data are bimodal.

Example: You asked 10 people to name their favourite fruit. The responses were:

orange	apple	peach	pineapple	raspberry
banana	plum	nectarine	strawberry	blueberry

What is the mode of these data?

Each fruit only appears once and therefore the data has no mode.

Want to know more?

If you have any further questions about this topic you can make an appointment to see a **Learning Enhancement Tutor** in the **Student Support Service**, as well as speaking to your lecturer or adviser.

☎	Call:	01603 592761
💻	Ask:	ask.let@uea.ac.uk
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