

# 1 Describing one-variable data – Part 1

Name: \_\_\_\_\_ Class: \_\_\_\_\_ Date: \_\_\_\_\_

## Vocabulary 词汇

Write each word three times. 把每个单词抄写三遍。

| English            | 中文  | Write it 3 times (English) |
|--------------------|-----|----------------------------|
| mean               | 平均数 | _____                      |
| median             | 中位数 | _____                      |
| standard deviation | 标准差 | _____                      |

## Recall

You have worked with data before:

- You have found the average (mean) of a set of numbers.
- You have drawn bar charts and other graphs.
- Some data sets are more spread out than others.

This sheet lines up how to describe one set of data. Each idea has a worked example.

## New ideas

### ■ 1 The center

Two measures of the "middle" of data:

- the **mean** 平均数—the average (add up, divide by how many),
- the **median** 中位数—the middle value when the data are in order.

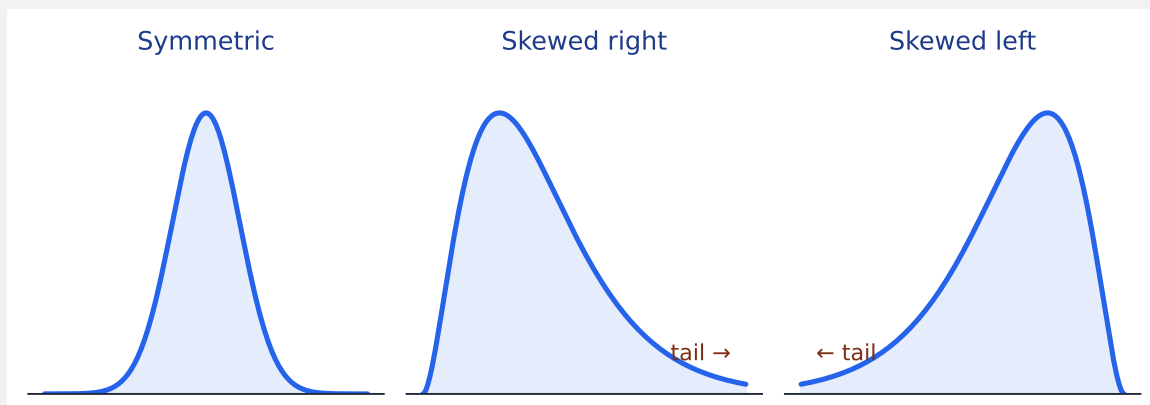
*Worked example.* For 2, 4, 4, 6, 9: mean =  $\frac{2 + 4 + 4 + 6 + 9}{5} = 5$ ; median = 4 (the middle one).

### ■ 2 The spread

How spread out the data are: the **range** (largest minus smallest) and the **standard deviation** 标准差 (a typical distance from the mean).

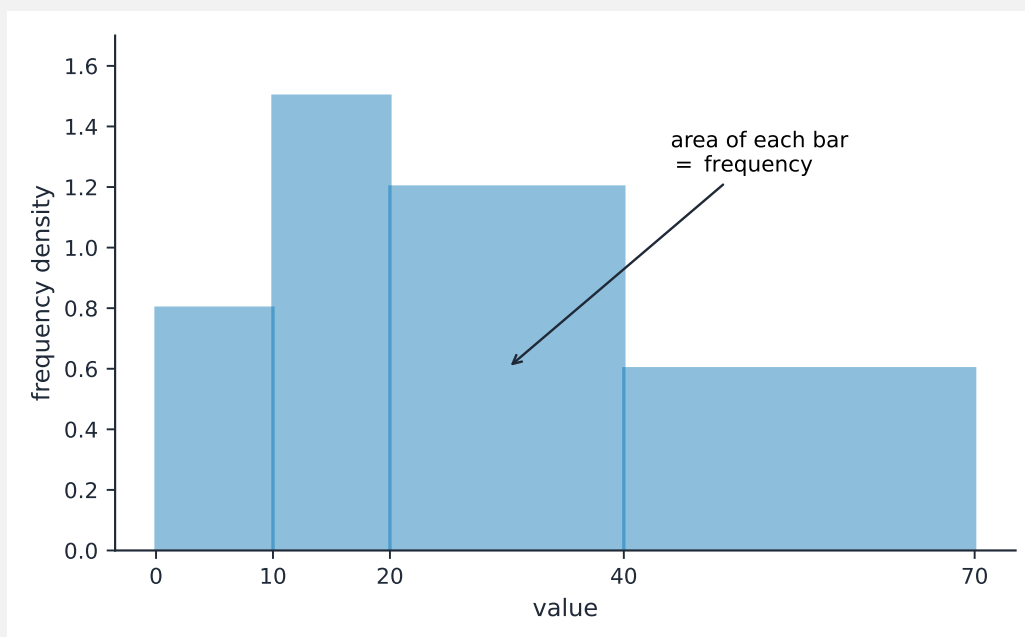
### ■ 3 The shape

Data can be **symmetric** (even on both sides) or **skewed** (a long tail one way).



### ■ 4 Pictures of data

A **histogram** shows the shape; a **box plot** shows the median and spread at a glance.



**Watch out:** the **mean** is pulled toward outliers (extreme values), but the **median** is not. For very skewed data (like incomes), the median often describes the "typical" value better.

## Practice

Try these in order. The methods are all above.

**2.1** State the difference between the mean and the median.

[2]

**2.2** Find the mean of 3, 5, 7, 9, 11.

[2]

**2.3** Find the median of 3, 5, 7, 9, 11.

[1]

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**2.4** Find the range of 3, 5, 7, 9, 11.

[1]

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**2.5** A data set has one very large outlier. State whether the mean or the median is more affected by it, and why.

[2]

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