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Confidence interval

- What is the confidence interval?
- What is it used for?

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What is the confidence interval?

In statistics, **parameters** of the **population**...

Sampling

...are often **estimated** based on a **sample**.

Parameters that are estimated are, for example, the **mean** or the **variance**.

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An example

You want to know the **height** of all professional **basketball players** in the **USA**.

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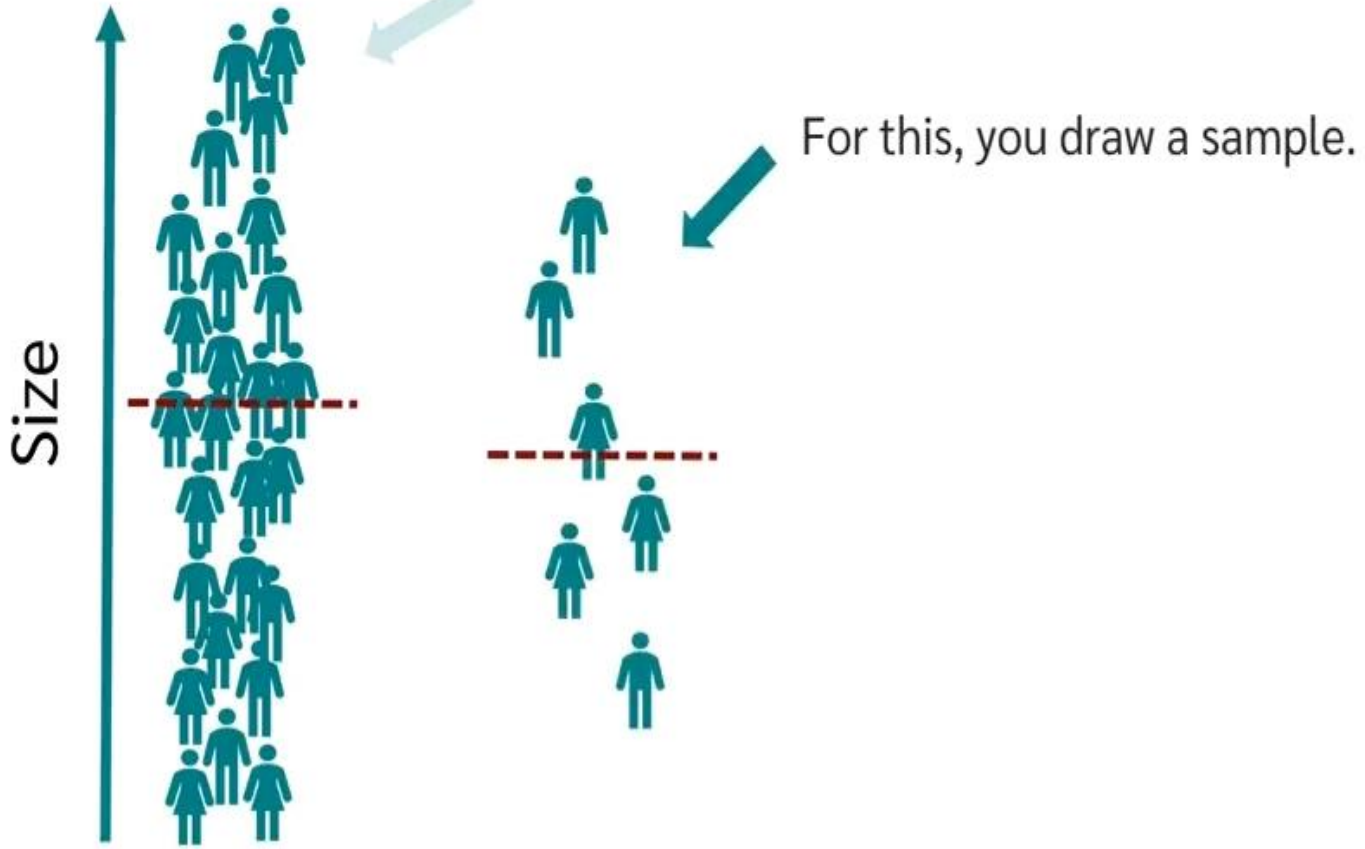
You want to know the **height** of all professional **basketball players** in the **USA**.



For this, you draw a sample.

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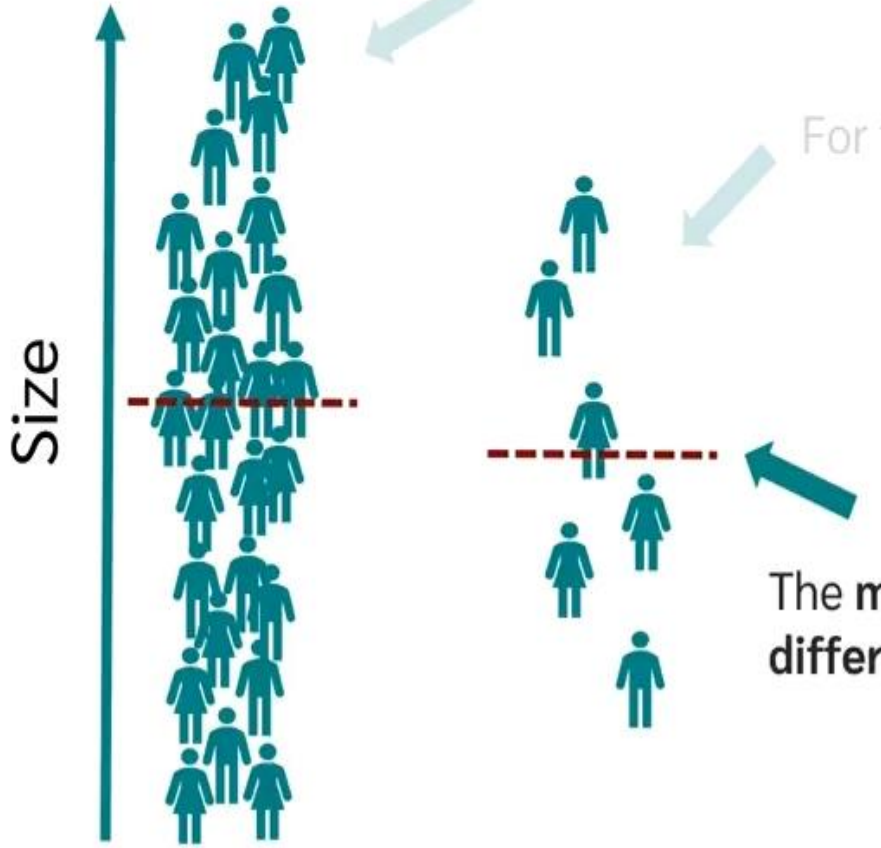
An example

You want to know the **height** of all professional **basketball players** in the **USA**.

For this, you draw a sample.



The **mean** of the sample is most likely **different** from that of the **population**.

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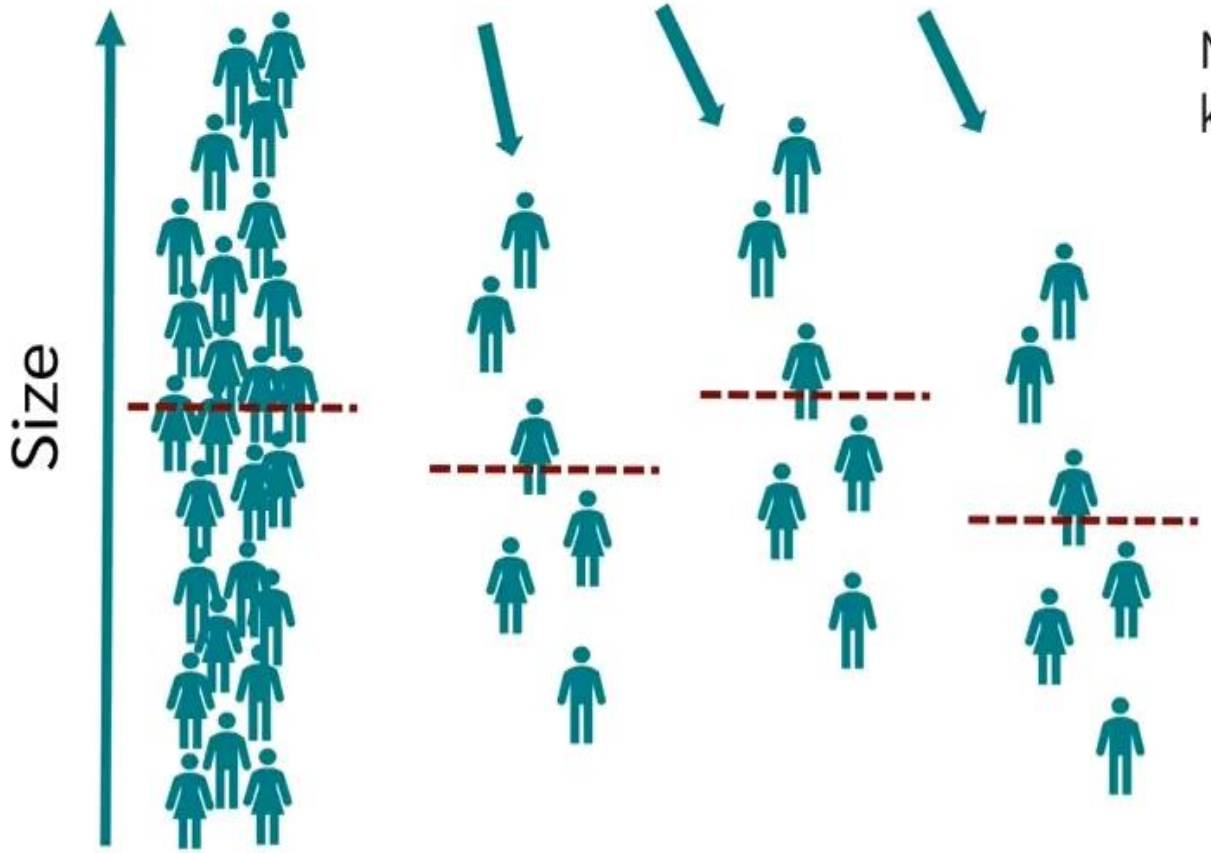
Each sampling is likely to come out with a **different mean**.



Now it is very useful to know a **range**...

...in which the **true value** will lie with a **high probability**.

This range is called the confidence interval.

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What is a high probability

For the **calculation** of the **confidence interval**...

...the **probability** with which a parameter should lie in the interval must of course be defined.

95%

The **confidence level** of **95%** or **99%** is very often used as probability.

If a **confidence interval of 95%** is given, one can be **95% sure** that the true parameter value lies within this interval.

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Where do you get the z value?

The **z-value** for the respective **confidence interval** can be read from a **table** in which the z-values for the respective confidence level are plotted.

95%

For the **confidence level** of **95%**, for example, the **z-value** is **1.96**.