The Mean: Takeaways 🖻

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Syntax

• Computing the mean of any numerical array:

```
### Pure Python ###
mean = sum(array) / len(array)

### Using numpy ###
from numpy import mean
mean_numpy = mean(array)
```

• Computing the mean of a **Series** :

```
mean = Series.mean()
```

Concepts

- We can summarize the distribution of a numerical variable by computing its **mean**.
- The mean is a single value and is the result of taking into account **equally** each value in the distribution.
- The mean is **the balance point** of a distribution the total distance of the values below the mean is equal to the total distance of the values above the mean.
- $\bullet\,$ The mean μ of a population can be defined algebraically in several equivalent ways:

$$\mu = \frac{x_1 + x_2 + \ldots + x_N}{N} = \frac{\sum_{i=1}^{N} x_i}{N} = \frac{1}{N} (\sum_{i=1}^{N} x_i)$$

ullet The mean ${\bf x}$ of a sample can be defined algebraically in several equivalent ways:

$$\bar{x} = \frac{x_1 + x_2 + \ldots + x_n}{n} = \frac{\sum_{i=1}^{n} x_i}{n} = \frac{1}{n} (\sum_{i=1}^{n} x_i)$$

- The sample mean \boldsymbol{x} is an unbiased estimator for the population mean $\boldsymbol{\mu}.$

Resources

- The Wikipedia entry on the mean.
- Useful documentation:
 - numpy.mean()
 - <u>Series.mean()</u>



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