Measures of Spread

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STDT 04 Measures of Spread

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How far from average am I?

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The amount your score is off (from average) is the **deviation**.
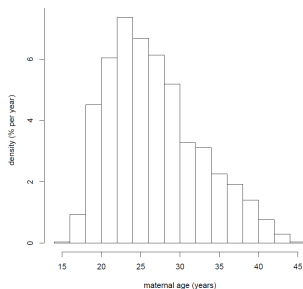
Range and interquartile range

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How far from median?

Range and interquartile range
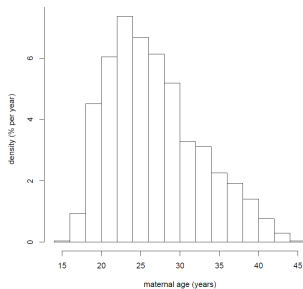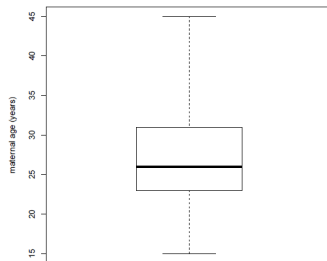
How far from median?

Maternal ages

Range and interquartile range

How far from median?

Maternal ages

Box plot

What is the typical (standard)
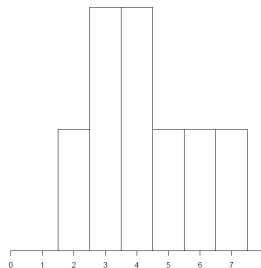deviation from average?

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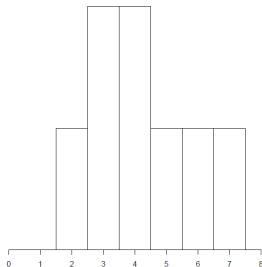
What is the typical (standard)
deviation from average?

SD = standard deviation = směrodatná odchylka
= (square) root mean square of deviations from average
= (druhá) odmocnina průměru čtverců odchylek od průměru

variance = rozptyl
= mean square of deviations from average
= průměr čtverců odchylek od průměru

Properties of SD

Why SD is so commonly used measure of spread?
SD for given distribution meausres typical distance from average.

1. It is non negative
2. It has the same units as average and the list.
3. It measures the average distance from the data to their mean (rms of the deviations of the data from their mean)
4. Chebychev inequality

Pafnuty Lvovich Chebychev (1821 - 1894)

In any list, the proportion of entries that are k or more SDs away from the average is at most $1/k^2$.

Pro jakoukoli číselnou řadu platí: podíl členů, které jsou od průměru vzdáleny alespoň k-krát SD je nejvíce $1/k^2$.

Infromation sources

https://courses.edx.org/courses/BerkeleyX/Stat_2.1x/
http://www.stat.berkeley.edu/ stark/SticiGui/Text/location.htm