

# Normal distribution

## Reflection

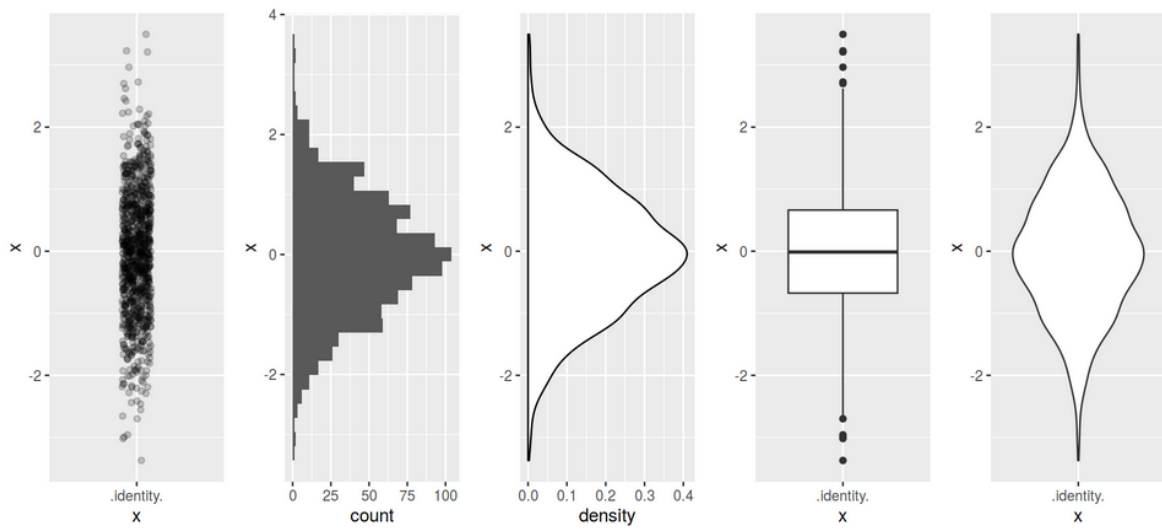
- You know how to do the basics:
- read data into R,
- count some statistics,
- create and interpret basic plots,
- describe the plots with labels, change the style, save them.

Some additions...

- *Where do I get help?*
- In [cheat sheets](#).
- *What type of graph should I choose?*
- Look in the [R Graph Gallery](#).
- *What colors should I use?*
- Look at the [Color Brewer](#).
- See section [Resources](#) at the website for more...

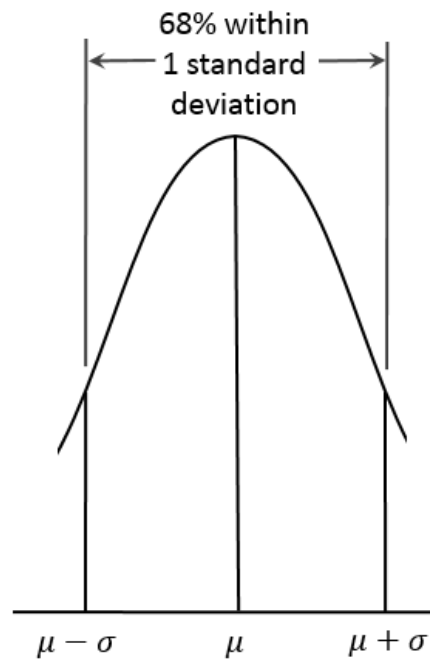
## Normal distribution

*bell-shaped curve, Gaussian distribution*



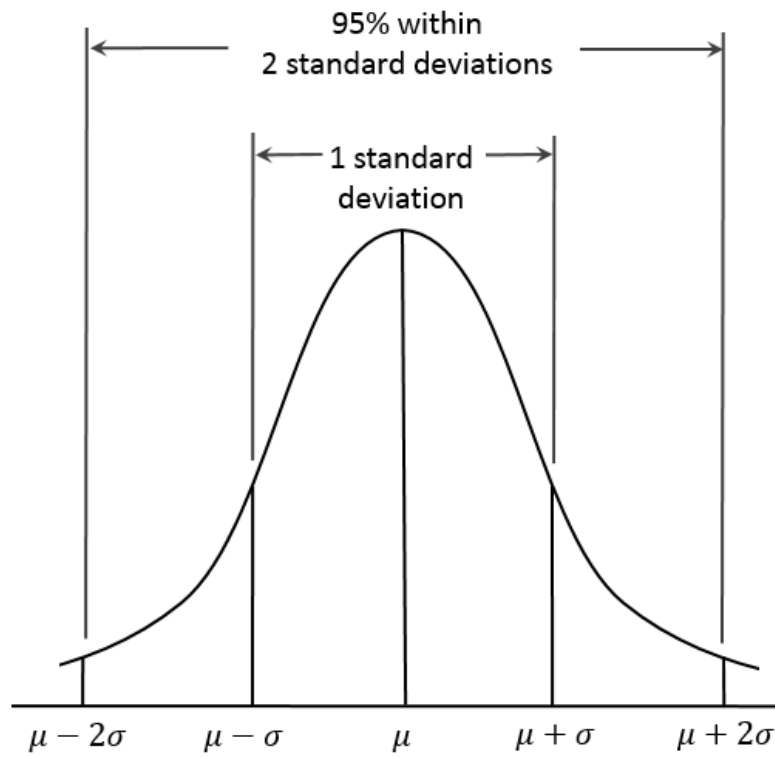
## Normal distribution

One standard deviation (*one sigma*)



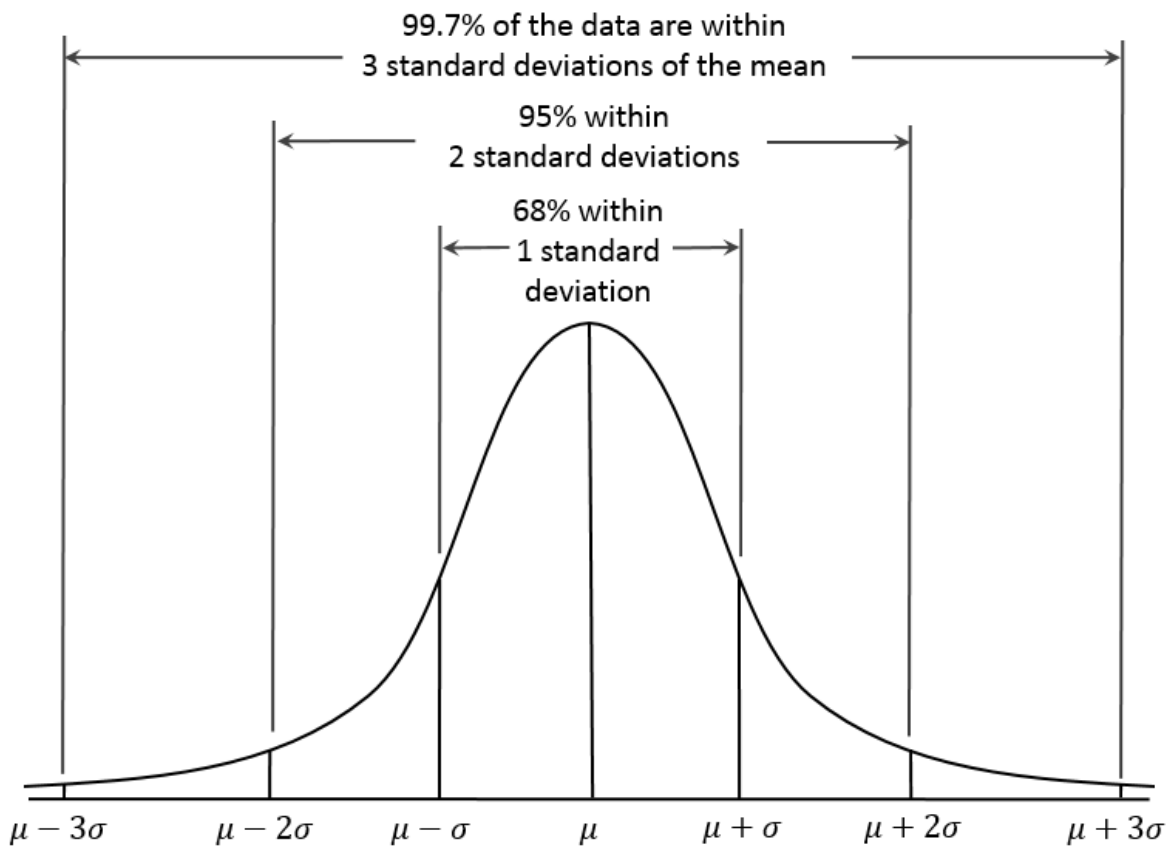
## Normal distribution

Two standard deviations (*two sigma*)



## Normal distribution

### Three standard deviations (*three sigma*)



## Is my distribution normal?

### Visual aids

- Density plot
- Q-Q plot (quantile-quantile plot)  
`qqnorm()` or `ggplot(data) + aes(sample = x) + geom_qq()`

### Statistical hypothesis test

- Shapiro-Wilk test  
`shapiro.test()`

- Kolmogorov-Smirnov normality test