

Normal Distribution

Andrey Chinnov, Sebastian Honermann, Carlos Zydorek

Case Studies
"Data Analytics"

Outline

① Introduction

- ▶ Normality as a requirement for statistical methods
- ▶ Data Set Overview

② Normality Testing

- ▶ Graphical Methods for Normality Testing
 - ★ Q-Q-Plots
 - ★ Chi-Square Plot
- ▶ Quantitative Methods for Normality Testing
 - ★ Shapiro-Wilk Test
 - ★ Pearson's Chi-Squared Test
 - ★ Kolmogorov-Smirnov Test

③ Transformation to Normality

- ▶ Box-Cox Transformation
- ▶ Transformation Results Testing

④ Summary

Normality as a requirement for statistical methods

Data Set Overview

Outline

① Introduction

- ▶ Normality as a requirement for statistical methods
- ▶ Data Set Overview

② Normality Testing

- ▶ Graphical Methods for Normality Testing
 - ★ Q-Q-Plots
 - ★ Chi-Square Plot
- ▶ Quantitative Methods for Normality Testing
 - ★ Shapiro-Wilk Test
 - ★ Pearson's Chi-Squared Test
 - ★ Kolmogorov-Smirnov Test

③ Transformation to Normality

- ▶ Box-Cox Transformation
- ▶ Transformation Results Testing

④ Summary

Graphical Methods for Normality Testing

Q-Q-Plots

Graphical Methods for Normality Testing

Chi-Square Plot

Graphical Methods for Normality Testing

Shapiro-Wilk Test

Graphical Methods for Normality Testing

Pearson's Chi-Squared Test

Graphical Methods for Normality Testing

Kolmogorov-Smirnov Test

Outline

① Introduction

- ▶ Normality as a requirement for statistical methods
- ▶ Data Set Overview

② Normality Testing

- ▶ Graphical Methods for Normality Testing
 - ★ Q-Q-Plots
 - ★ Chi-Square Plot
- ▶ Quantitative Methods for Normality Testing
 - ★ Shapiro-Wilk Test
 - ★ Pearson's Chi-Squared Test
 - ★ Kolmogorov-Smirnov Test

③ Transformation to Normality

- ▶ Box-Cox Transformation
- ▶ Transformation Results Testing

④ Summary

Box-Cox Transformation

Transformation Results Testing

Outline

① Introduction

- ▶ Normality as a requirement for statistical methods
- ▶ Data Set Overview

② Normality Testing

- ▶ Graphical Methods for Normality Testing
 - ★ Q-Q-Plots
 - ★ Chi-Square Plot
- ▶ Quantitative Methods for Normality Testing
 - ★ Shapiro-Wilk Test
 - ★ Pearson's Chi-Squared Test
 - ★ Kolmogorov-Smirnov Test

③ Transformation to Normality

- ▶ Box-Cox Transformation
- ▶ Transformation Results Testing

④ Summary

Summary