Normal Distribution

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Case Studies
"Data Analytics"

Outline

Normality as a requirement for statistical methods

Data Set Overview

Outline

Graphical Methods for Normality Testing

Q-Q-Plots

Graphical Methods for Normality Testing

Chi-Square Plot

Quantitative Methods for Normality Testing

Shapiro-Wilk Test

Quantitative Methods for Normality Testing

Pearson's Chi-Squared Test

Quantitative Methods for Normality Testing

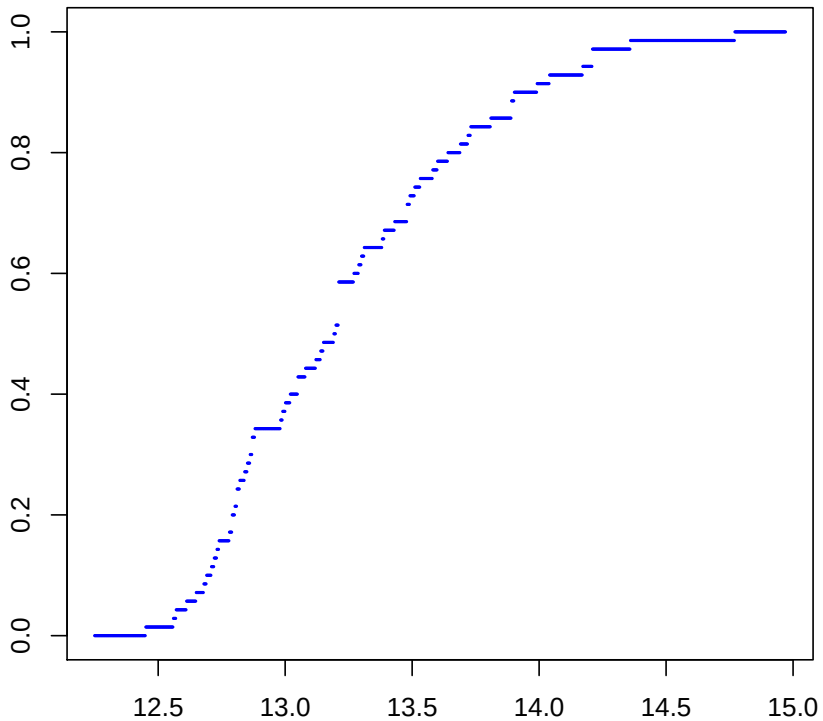
Kolmogorov-Smirnov Test

Let $x = (x_1, x_2, \ldots, x_n)$ be a sample of a given size n.

Definition

$F_n = \frac{1}{n} \sum_{i=1}^{n} \mathbb{1}_{\{x_i \leq x\}}$ - empirical c. d. f. , where $\forall x \in \mathbb{R}$

$$\mathbb{1}_{\{x_i \leq x\}}(x) = \begin{cases} 1 & \text{if } x_i \leq x \\ 0 & \text{otherwise.} \end{cases}$$



Glass Type 1, Natrium (Na)

Outline

Box-Cox Transformation

Transformation Results Testing

Outline

Summary