Kapitel II

Schätztheorie

(Lösungen)

2. 1.
Wir haben:

$$n = 100, \quad \bar{x} = 54.55, \quad \sigma^2 = 0.26, \quad \alpha = 0.01 .$$

Es gilt:

$$\mu \in \left[54.55 - 2.576 \cdot \frac{\sqrt{0.26}}{\sqrt{100}},\ 54.55 + 2.576 \cdot \frac{\sqrt{0.26}}{\sqrt{100}} \right]$$

$$\approx \left[54.55 - 0.13,\ 54.55 + 0.13 \right] = \left[54.42,\ 54.68 \right]$$

2. 2.

$$n = 1500, \quad \bar{x} = 269720, \quad \sigma = 68650, \quad \alpha = 0.01.$$

$$\mu \in \left[269720 - 2.575 \cdot \frac{68650}{\sqrt{1500}},\ 269720 + 2.575 \cdot \frac{68650}{\sqrt{1500}} \right] \approx \left[265155.72,\ 274284.28 \right].$$

2. 3.

$$\bar{x} = \frac{203+195+193+193+193+188+185+184+172+170+162}{11} = \frac{2038}{11} = 185.27$$

$$s = \sqrt{\frac{1}{10}\left[(203 - 185.27)^2 + (195 - 185.27)^2 + \ldots + (162 - 185.27)^2 \right]}$$

$$= \sqrt{154.818} = 12.443$$

$$\mu \in \left[185.27 - 1.812 \cdot \frac{12.443}{\sqrt{11}},\ 185.27 + 1.812 \cdot \frac{12.443}{\sqrt{11}} \right] = \left[178.47,\ 192.07 \right]$$

2. 4.

1.

$$n = 10, \quad \bar{x} = 1600, \quad s = 250, \quad \alpha = 0.05.$$

$$\mu \in \left[1600 - 2.262 \cdot \frac{250}{\sqrt{10}},\ 1600 + 2.262 \cdot \frac{250}{\sqrt{10}} \right] \approx [1421.17,\ 1778.83].$$

2.

$$n = 10, \quad \bar{x} = 1600, \quad s = 250, \quad \alpha = 0.01.$$

$$\mu \in \left[1600 - 3.250 \cdot \frac{250}{\sqrt{10}},\ 1600 + 3.250 \cdot \frac{250}{\sqrt{10}} \right] \approx [1343.06,\ 1856.94].$$

2. 5.

1.

$$\mu \in \left[5.67 - 2.262 \cdot \frac{0.57}{\sqrt{10}},\ 5.67 + 2.262 \cdot \frac{0.57}{\sqrt{10}} \right] = [5.262,\ 6.078].$$

2.

$$5.5 \in [5.262,\ 6.078].$$

Die Behauptung ist richtig.

(Letzte Aktualisierung: 07.06.2017)