$\mu$ = population mean; $\sigma$ = population standard deviation; $m$ = sample median; $\bar{x}$ = sample mean; $s$ = sample standard deviation.

**Example 2.1 每月領零用金的 90%信賴區間之推測 (What is the meaning of "Measurement Reliability" ?)**

$N = 5$, $n = 2$, $x_1 = 5{,}000$, $x_2 = 4{,}600$, $x_3 = 4{,}400$, $x_4 = 5{,}800$, $x_5 = 4{,}200 \Rightarrow \mu = 4800$, $\sigma^2 = 320{,}000$, $\sigma = 565.6854$.

$\bar{x}_1 = 4800$, $\bar{x}_2 = 4700$, $\bar{x}_3 = 5400$, $\bar{x}_4 = 4600$, $\bar{x}_5 = 4500$, $\bar{x}_6 = 5200$, $\bar{x}_7 = 4400$, $\bar{x}_8 = 5100$, $\bar{x}_9 = 4300$, $\bar{x}_{10} = 5000$.

$s_1 = 282.8427$, $s_2 = 424.2647$, $s_3 = 565.6854$, $s_4 = 565.6854$, $s_5 = 141.4214$, $s_6 = 848.5281$, $s_7 = 282.8427$, $s_8 = 989.9495$, $s_9 = 141.4214$, $s_{10} = 1131.3709$.

100(1-$\alpha$/2) C.I. $\Rightarrow \bar{x} \pm t_{\alpha/2} \frac{s}{\sqrt{n}}$, if $x_i \sim N(\mu, \sigma)$, $\sigma$ is unknown. $t \sim t(n\text{-}1) \Rightarrow \alpha = 0.1$, $n\text{-}1 = 1$, $\Rightarrow t_{0.05} = 6.314$. $\Rightarrow$

90% Confidence Interval for $\mu \Rightarrow \bar{x} \pm 6.314 \frac{s}{\sqrt{2}} \Rightarrow \quad \mu = 4800$

1. 90% C.I. (3537.2001, 6062.7999)
2. 90% C.I. (2805.7972, 6594.2028)
3. 90% C.I. (5146.9183, 5653.0817)
4. 90% C.I. (2074.4001, 7125.5999)
5. 90% C.I. (3868.5998, 5131.4002)
6. 90% C.I. (1411.6301, 8988.3699)
7. 90% C.I. (3137.2001, 5662.7999)
8. 90% C.I. (680.2000, 9519.8000)
9. 90% C.I. (3668.5998, 4931.4002)
10. 90% C.I. (-51.2002, 9948.7998)