§8.1

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1、设电阻值为 $X(\Omega)$，则 $X\sim N(2.64,0.06^2)$，样本容量 $n=36$，均值 $\bar{x}=2.61$．

$\alpha=0.01$

假设 $H_0:\mu=\mu_0=2.64$，$H_1:\mu\neq\mu_0$．

$\frac{\bar{x}-\mu}{\sigma/\sqrt{n}}\sim N(0,1)$

H_0 的拒绝域：$\left\{\frac{|\bar{x}-\mu_0|}{\sigma/\sqrt{n}}>u_{1-\frac{\alpha}{2}}\right\}$

$\because \frac{|\bar{x}-\mu_0|}{\sigma/\sqrt{n}}\approx 3>u_{1-\frac{\alpha}{2}}=2.575$

$\therefore$ 拒绝 H_0

$\therefore$ 有显著性影响．

2. $X\sim N(\mu,\sigma^2)$，$\sigma=40$，$n=9$，$\bar{x}=\mu+20$．$\alpha=0.01$

假设 $H_0:\mu\leq\mu_0$，$H_1:\mu>\mu_0$．

$\because \frac{\bar{x}-\mu}{\sigma/\sqrt{n}}\sim N(0,1)$

$\therefore H_0$ 的拒绝域为 $\left\{\frac{\bar{x}-\mu_0}{\sigma/\sqrt{n}}>u_{1-\alpha}\right\}$

$\because \frac{\bar{x}-\mu_0}{\sigma/\sqrt{n}}\approx 1.5<u_{1-\alpha}=2.33$

$\therefore$ 接受 H_0

$\therefore$ 无显著提高．

3、设零件尺寸为 X，则 $X\sim N(\mu,\sigma^2)$，$\sigma^2=1.21$

样本容量 $n=6$，样本均值 $\bar{x}=\frac{1}{n}\sum_{i=1}^{n}x_i=\frac{1}{6}(32.56+29.66+31.64+30+21.87+31.03)=29.46$，$\alpha=0.05$

假设 $H_0:\mu=\mu_0=32.5$，$H_1\neq\mu_0$

$\because \frac{\bar{x}-\mu}{\sigma/\sqrt{n}}\sim N(0,1)$

$\therefore H_0$ 的拒绝域 $\left\{\frac{|\bar{x}-\mu_0|}{\sigma/\sqrt{n}}>u_{1-\frac{\alpha}{2}}\right\}$

$\because \frac{|\bar{x}-\mu_0|}{\sigma/\sqrt{n}}\approx 6.77>u_{1-\frac{\alpha}{2}}=1.96$

$\therefore$ 拒绝 H_0

$\therefore$ 不能认为