

## 3.兩組樣本(獨立或相關),

以

兩個獨立常態母體平均數的假設與檢定:

第一個常態母體  $N(\mu_1, \sigma_1^2)$ 抽取樣本,  $X_i \sim N(\mu_1, \sigma_1^2), i=1,2,...n_1, X_1,...., X_{n_1}$  獨立隨機樣本。

第二個常態母體  $N(\mu_2, \sigma_2^2)$ 抽取樣本,  $Y_j \sim N(\mu_2, \sigma_2^2)$ ,  $j=1,2,...n_2, X_{21},...., X_{2n_2}$  獨立隨機樣本。  $\overline{X}_1 = \frac{X_{11} + .... + X_{1n_1}}{n_1}$ ,  $\overline{X}_2 = \frac{X_{21} + .... + X_{2n_2}}{n_2}$ 

 $\sigma_1, \sigma_2$ 未知,但是大樣本,  $n_1 \geq 30, n_2 \geq 30, \mu_1 - \mu_2$ 為例。

## Input data

input data					
X1	X2	X1	X2	X1	X2
27.13605226	7.592452695	3.927845	4.700561	19.14034	-9.16687
24.67938858	4.522286067	9.712067	-1.18115	14.67433	9.646217
1.020789764	4.199935495	15.45405	15.15994	5.814859	5.590595
17.05926471	2.26321259	0.931629	19.41747	11.89196	6.199856
1.587614591	-1.756290864	25.26773	-2.80924	7.497899	17.9293
6.124633459	3.936124941	11.20903	-21.0838	15.01318	8.562572
24.75918447	21.66616682	-4.16231	18.86818	3.798781	0.610247
14.3345909	-19.1412902	1.992077	1.154222	5.20758	-8.91721
26.73899507	7.190999529	7.403747	11.3113	6.902755	16.68535
27.13605226	7.592452695	3.927845	4.700561	19.14034	-9.16687

X1 is Normal(mu=10.000000, sigma\*sigma=100.000000),

X2 is Normal(mu=5.000000,sigma\*sigma=100.000000),

X1 is mean=10.6443201416, s.d.= 8.7477630358, variance= 76.5233581312,

skewed coefficient= 0.4968395586, kurtosis coefficient= 2.0864769286, MAD=

7.2654620198,

Q1= 3.9278446104, median= 7.7867307559, Q3= 16.2566581112, MIN= -4.1623145979, MAX= 27.1360522624, Range= 31.2983668603, Mid-Range= 11.4868688323, C.V.= 0.8218244960, sample size=30 mean= 4.3430498710, s.d.= 11.4231054960, variance= 130.4873391719,

X2 is mean= 4.3430498710, s.d.= 11.4231054960, variance= 130.4873391719, skewed coefficient= -0.3413488054, kurtosis coefficient= 2.5606425720, MAD=

8.6491099448,

 Q1=
 -1.7562908636, median=
 4.6114235279, Q3=
 13.2356204873,

 MIN=
 -21.0837533958, MAX=
 24.1821899484, Range=
 45.2659433442,

Mid-Range= 1.5492182763, C.V.= 2.6302036208, sample size=30

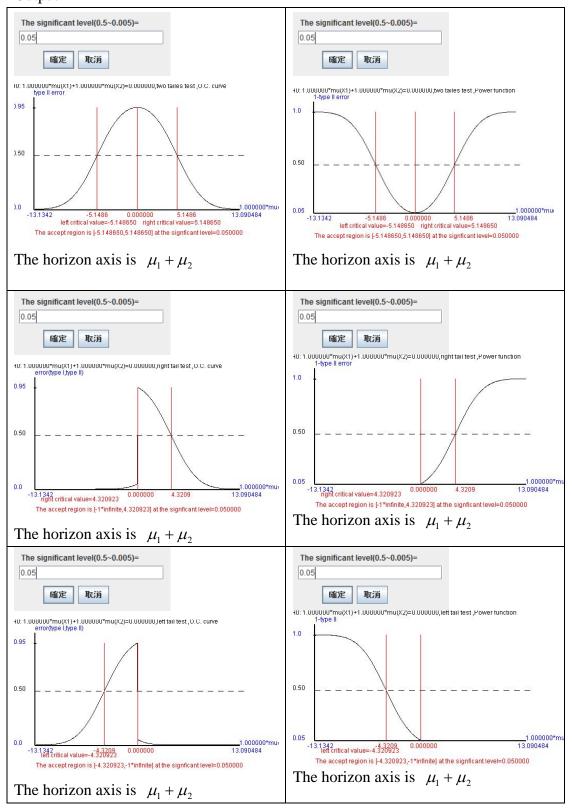


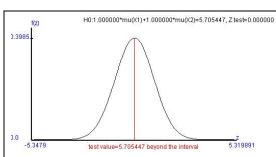
## 撰項,

四个						
The random varia	ables are X1 a	nd X2				
* Suppose two po	pulation distri	butions are the normal distribution.				
population	X1	X2				
sample size	30	30				
sample mean	10.64432	4.34305				
sample Variance	76.52336	130.48734				
sample s.d.	8.74776	11.42311				
two sample	e data	-				
~~~~ Two popu	lations are inc	lependent and random sampling data ~~~~				
1. Two population	means test w	hen the population variances are knwon.				
2. Two population	means test w	hen the population variances are unknown,				
but the sample	sizes are mor	e than 30.				
3. Two population	means test w	hen the population variances are unknown,				
but the population	on variances a	re equal and small sample sizes.				
4. Two population	means test w	hen the population variances are unknown,				
but the population	on variances a	re not equal and small sample sizes.				
5. Two population	variances tes	st when the population means are unknown,				
~~~~ Two popu	lations are de	pendent and paired sampling ~~~~~				
6. Two population	means test w	hen the population variances are unknown.				
7. Two population	correlation c	eofficient (rho) test.				
~~~~ one samp	ole data analys	is				
8. Selecting one s	ample from to	vo samples and analysis the sample data.				
9. return						
2						
	- Physical Residence	Hrs 245				
	確定	取消				
two sample pon	ulations mu	test when sigmas are unknown				
		000*mu(X2)=0.000000				
X1 sample s.d.=	8.747763, X	2 sample s.d.=11.423105				
		Missis as in the last terms of the second se				
[ X1 與 X2 檢定值	1樣本產生作	業特性曲線,檢力函數與檢定值的圖形]				
~~~~~~~	choose one	3 ~~~~~~~				
1. 雙尾檢定的作	業特性曲線					
2. 雙尾檢定的檢	力函數					
3. 右尾檢定的作						
4. 右尾檢定的檢						
5. 左尾檢定的作						
6. 左尾檢定的檢	力函數					
7. 檢定值的圖形	:					
8. 返回						
The two populati	on mues tes	st when variance unknown,H0 a*mu(X1)+b*mu(X2)=c				
a=		1				
b=		1				
U						
		0				



## Output,





The horizon axis is  $\mu_1 + \mu_2$ 

Two population means test and population standard deviations is unknown

X1 sample size=30 ,X2 sample size=30 are large samples

H0:

1.000000\*mu(X1)+1.000000\*mu(X2)=0.000000

X1 sample s.d.=8.747763, X2 sample

s.d.=11.423105

The 1.000000\*sample

mean(X1)+1.000000\*sample

mean(X2)=6.301270

the test statistic Z=5.705447,

left tail test p-value= 1.0000

right tail test p-value= 0.0000

two tailes test p-value= 0.0000

90% confidence interval for

1.000000\*mu(X1)-1.000000\*mu(X2)

[10.666447, 19.308293]

95% confidence interval for

1.000000\*mu(X1)-1.000000\*mu(X2)

[9.838720, 20.136020]

99% confidence interval for

1.000000\*mu(X1)-1.000000\*mu(X2)

[8.220211, 21.754529]