

### Question 28

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in this margin

(a) What are the assumptions of the two-sample  $t$ -test for the comparison of the means of two populations?

The two samples are assumed to come from a normal distribution.  
The variances of the two samples are assumed to be equal.  
The populations are independently drawn.

(b) Interpret the following fragment from a SSC log-file.

```

> x
92.9 103.6 120.6 82.7 104.4 82.4
> y
98 101.6 96.3 75.1 114.7 116.7 87.1 109.2
118.5 138
> t2test(x,y)
t = -0.8934 df = 14
SP (obtained direction) = 0.1934
SP (opposite direction) = 0.1934
SP (total) = 0.3867
    
```

A two sample  $t$ -test, of the population  $\mu_x$  against the population  $\mu_y$ , using  $t_{obs} = t(n_1+n_2-2) = \frac{\bar{X}_1 - \bar{X}_2}{S_p \sqrt{1/n_1 + 1/n_2}}$

The S.P. is 0.3867. there is no reason to reject the null hypothesis that the two samples arise from the same population.

### Question 29

In a survey of attitudes towards Sunday trading, market researchers asked questions of random samples of adults drawn from the electoral registers in two UK towns. The researchers were interested in whether the proportion of adults in favour of unrestricted Sunday trading differed between the towns. They carried out an appropriate significance test, and the resulting total SP was 0.96. What conclusion should they have drawn?

Null hypothesis - no difference [2]  
Low SP - hypothesis rejected, difference evident. High SP - hypothesis accepted as in this case.

There is no difference in different towns in attitudes towards ~~unrestricted~~ Sunday trading.