

PASW (SPSS)/Excel Workshop 3 – S2, 2010 – Answers

Useful places to look for help by assignment question

<i>Assignment question number</i>	<i>Worked Examples question number</i>	<i>Lecture Workbook page number</i>
Q1	Q11	
Q2	Q13	
Q3		Section C readings and example on pg 8, Ch 9
Q4	} Q12 & 15 <i>OR</i> Q14 & 17	
Q5		
Q6	Q18	
Q7	Q16	

Also, don't forget where else you can get assignment help! They are:

- The STATS 10x **forum**: www.stat.auckland.ac.nz/forum/10x
- **Statistics Assistance Area** – ask a tutor or your neighbour
- **Statistics Computer Lab** – ask a lab demonstrator or your neighbour
- Your **lecturer's office hours!** See Cecil for details – if they don't suit you, email or call them to book a time.

Downloading the Excel Test and Confidence Interval Calculators

Question 13 [Chapter 9] (similar to Question 3, Assignment 3)

- (a) State the sampling situation for the difference between the proportion of NZPI senior planners and the proportion of NZPI members who are located in Auckland. **Situation (c)**
- (b) **By hand**, test to see if there is a difference between the proportion of NZPI members who are senior planners and the proportion who are managers. Interpret your results. **Situation (b)**

To check our 'by hand' working, let's use the Excel spreadsheet provided on Cecil and on Leila's website (www.stat.auckland.ac.nz/~leila):

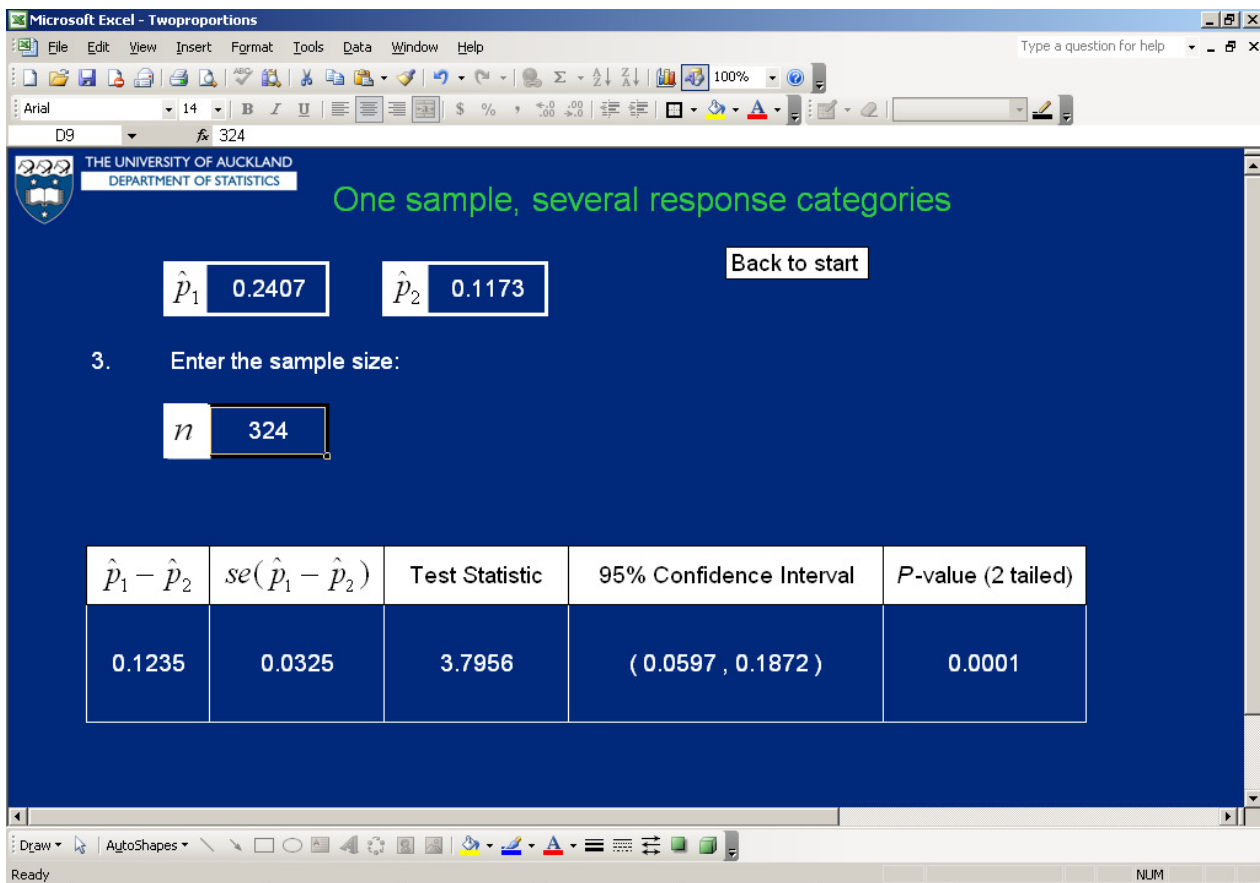
Step 1: Download Two proportions.xls from whichever source suits you best.

Step 2: Enter the two relevant proportions

Step 3: Click on the correct sampling situation

Step 4: Enter the sample size(s)

Step 5: Check your working using the spreadsheet like the example given below!



Microsoft Excel - Two proportions

File Edit View Insert Format Tools Data Window Help

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One sample, several response categories

Back to start

\hat{p}_1 0.2407 \hat{p}_2 0.1173

3. Enter the sample size:

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$\hat{p}_1 - \hat{p}_2$	$se(\hat{p}_1 - \hat{p}_2)$	Test Statistic	95% Confidence Interval	P-value (2 tailed)
0.1235	0.0325	3.7956	(0.0597 , 0.1872)	0.0001

Ready NUM

PASW (SPSS)

In Assignment 3 of STATS 10x you will be using PASW (SPSS) to plot data and perform simple analyses. Using PASW (SPSS) to plot data was covered in the first PASW (SPSS)/Excel workshop – you can find the handout from this class here:

www.stat.auckland.ac.nz/~leila

To save you typing time, all of the data files required for this workshop can also be found on the above website and on Cecil in PASW (SPSS) format.

Paired Data Comparisons – carrying out a paired t -test and/or a sign test

Paired t -test

$$\begin{array}{c} H_0 : \mu_{diff} = 0 \\ \text{vs} \\ H_1 : \mu_{diff} \neq 0 \end{array}$$

Example: Conduct a paired data t -test for a mean difference of 0.

The head diameters of 18 N.Z. Airforce recruits were measured twice, once using cheap cardboard calipers and again using expensive and uncomfortable metal calipers.

The Sign Test

$$\begin{array}{c} H_0 : \tilde{\mu}_{diff} = 0 \\ \text{vs} \\ H_1 : \tilde{\mu}_{diff} \neq 0 \end{array}$$

Example: Conduct a sign test for a median difference of 0.

A study was designed to determine the effectiveness of a new diet. Nine people took part in the study. The weight of each person was recorded and then after three months on the diet, their weights were again recorded.

Two Independent Samples – plotting the data and carrying out a two independent samples t -test

$$H_0 : \mu_1 - \mu_2 = 0$$

vs

$$H_1 : \mu_1 - \mu_2 \neq 0$$

Example: Conduct a two independent samples t -test for no difference in the means.

A random sample of 40 cellphones of the same make and model were chosen. Half of the cellphones were randomly selected to have a nickel-cadmium battery put in them and the rest had a nickel-metal hydride battery. The talk time (in minutes) before the batteries needed to be recharged was recorded.

$$H_0 : \mu_1 = \mu_2 = \mu_3 = \mu_4$$

(i.e. all of the μ 's are the same)

vs

$$H_1 : \text{at least one of the } \mu\text{'s is different from the rest}$$

F-test for one-way ANOVA

Example: Conduct a one-way ANOVA F -test for no difference in the groups' underlying means.

Fifty students learned about the reading methods of 'mapping' and 'scanning'. The method used and increase in reading age was recorded for each student.