

MRes in Medical Statistics
MMB8028

School of Mathematics and Statistics

Practical session on the analysis of categorical data

1. Two dialysis treatment schedules, A and B were compared. Of the 40 patients on A, 16 had symptoms of Raynaud's phenomenon whereas only 12 of the 45 patients on B developed the same symptoms. Is there evidence that Raynaud's phenomenon is more prevalent on one of the schedules? Explore what is available under Tables from **S**tat.
2. The following data are on malocclusion in infants who have been breast-fed or bottle-fed (Yates, JRSS suppl. 1934, 1, 217-235)

	malocclusion	normal teeth
Breast-fed	4	16
Bottle-fed	1	21

Is there evidence that the malocclusion rate differs between breast and bottle fed infants? You should pay attention to the small numbers in the table.

If using the Cross Tabulation and Chi-squared... item under Tables from **S**tat it may also be useful to think of the table being written as a list of frequencies as:

Rows	Columns	Frequency
Feeding	Tooth status	
Breast	maloccluded	4
Breast	normal	16
Bottle	maloccluded	1
Bottle	normal	21

You should also explore the options available under the **Other Stats...** box.

3. Using the data in question 1, what is the odds ratio of having Raynaud's phenomenon on A relative to B? Construct a 95% confidence interval for the odds ratio (a calculator may be easier than Minitab. Remember Windows has one under accessories).
4. Open the worksheet SKIN.MTW relating to the treatment of patients with psoriasis (kindly made available by Professor P.M. Farr, Department of Dermatology, RVI). Columns contain information on the skin type of the patient (coded as 1,2,3 or 4) and on the minimum phototoxic dose (MPD), which is the dose, in Jcm⁻², of UVA radiation that is the lowest which causes discernible erythema. In some patients the maximum possible dose does not cause any erythema and these patients have a MPD of 30 recorded and are referred to as 'non-responders'. How many responders and non-responders are there in each skin type?. What is the proportion of non-responders in each skin type? Is there evidence that the response rate differs between the skin types?

{in question 4 you may find it convenient to reduce the data to a column of 0s and 1s, corresponding to patients with MPDs of 30 or less than 30. To do this investigate the Code item under **D**ata (choose Numeric to Numeric...)}