

Chi Squared Overview (17/6/21)

Contingency tables

Q2a [10 marks] & Q2b [11 marks]

The table below shows data that have been collected for 1000 people (in an area where there are a lot of ladders) to test the theory that walking under a ladder brings bad luck.

On a particular day, each person is asked whether they walked under a ladder, and whether they experienced bad luck that day.

Walked under ladder? Experienced Bad luck?	Yes	No	Totals
Yes	51	84	135
No	269	596	865
Totals	320	680	1000

(i) Test the hypothesis that walking under ladders brings bad luck, assuming a 5% significance level.

(ii) Discuss any practical difficulties with the data.

Goodness of Fit

Q1 [16 marks]

The number of days in a 5 day week on which a particular train is cancelled is thought to have a Binomial distribution.

Some data were supposed to have been collected over 100 weeks, in order to investigate this model. However, there is reason to believe that no such data exist, and the 'observed' frequencies in the table below were in fact made up to fit the expected distribution. Investigate this assertion at the 5% significant level.

Number of days on which the train is cancelled	0	1	2	3	4	5
'Observed' Frequencies	9	24	34	23	7	3