

Chi Square Caveats

Math 222

The chi-square test is frequently abused in statistics. For each of the following situations, explain why it is not appropriate to use the chi-squared test.

1. Do preschool children care if their teachers are experts? Psychologists assigned a group of 48 three and four-year olds at random to be taught the name of a new toy either by an adult who claimed to be an expert on the toy, or by an adult who claimed to have never seen the toy before. The children were later asked to identify the toy from pictures by name. The number of correct responses are shown in the two way table below.

	Correct Answers				
	0	1	2	3	4
Expert adult	5	1	6	3	9
Non-expert adult	20	0	3	0	9

The psychologists who did this study carried out a chi-squared test. Explain why that test is not valid with this data.

2. A random sample of undergraduates from two different campuses were asked about their internet habits. Explain why the data from the two-way table below should not be used in a chi-squared test.

	Campus A	Campus B
Viewed a video online	640	591
Purchased a song or movie online	212	243
Downloaded a podcast	78	69
Played video games online	354	289

3. The table below shows occupations of U.S. residents who travel overseas for business reasons versus leisure reasons. Explain why you cannot use the data from the table below to carryout a chi-square test to compare the two groups.

	Leisure Travelers	Business Travelers
Professional/technical	36%	39%
Manager/executive	23%	48%
Retired	14%	3%
Student	7%	3%
Other	20%	7%
Total	100%	100%