

Tutorial 6

1. Each day at a large hospital, several hundred laboratory tests are performed. The rate at which these tests are NOT done properly (and therefore need to be redone) seems steady. In an effort to get to the root cause of these non-conformances (tests that need to be redone), the director of the lab decided to keep laboratory records over a period of one week of the laboratory tests subdivided by the shift of workers who performed the lab tests. The results were as follows.

	Shift		
Conforming	Day	Evening	Total
No	16	24	40
Yes	654	306	960
Total	670	330	1000

- (a) Which conditional proportion do you think is most informative for these data? Explain.
- (b) Compute the Chi-square statistic (using Python), then draw the conclusion.
2. During election campaigns, there have been television debates between two candidates. A researcher was interested in determining whether or not a particular debate between two candidates was effective in changing viewer's preferences for the candidates. The researcher randomly selected a sample of voters before the debate and asked them to indicate their preferences for the two candidates. The same voters were asked for their preferences for the two candidates after the television debate. The results of the survey are give as follows.

Voter's Gender	Preference before debate	Preference after TV debate	
		Candidate A	Candidate B
Male	Candidate A	67	28
	Candidate B	46	54
Female	Candidate A	58	42
	Candidate B	37	61

- (a) For each gender group, use SAS to test if the debate between two candidates was effective in changing viewers' preferences for the candidates.
- (b) Repeat question above using R and Python.