Psychology 6136: Two way tables tutorial

[DDAR Exercise 4.4 extended] The `Hospital` data in `vcd` gives a 3 × 3 table relating the length of stay (in years) of 132 long-term schizophrenic patients in two London mental hospitals with the frequency of visits by family and friends.

```
> data("Hospital", package="vcd")
> Hospital
                    Length of stay
Visit frequency      2-9 10-19 20+
  Regular             43    16   3
  Less than monthly    6    11  10
  Never                9    18  16
```

1. Find the row proportions for this table, i.e., the proportions of patients with differing length of stay for each value of visit frequency. What do you see there that relates to the question of independence of the table variables?

2. Carry out a χ^2 test for association between the two variables. What do you conclude?

3. Say you don't trust the asymptotic *p*-value from the test because the sample size is relatively small. See `help(chisq.test)` for how to get a Monte Carlo simulated *p*-value. Do it.

4. Use `MASS::loglm()` to carry out the standard χ^2 test [Hint: you can use `~ 1+2` for the model formula]

5. Use `assocstats()` to compute association statistics. How would you describe the strength of association here?

6. Both variables can be considered ordinal, so `CMHtest()` may be useful here. Carry out that analysis. Do any of the tests lead to different conclusions?

7. Try one or more of the following other functions for visualizing two-way contingency tables with this data: `plot(), tile(), mosaic(),` and `spineplot().` [For all except `spineplot(),` it is useful to include the argument `shade=TRUE`]. Give a simple description of the pattern of association between visits and length of stay.