

2 (8 points). A random sample of 100 drivers is taken, and two variables are measured: V = the driver has a speeding violation, and C = the driver reports using mobile phone while driving. The data is summarized in the following table. Run a test for independence with 10% significance level. Do not use the built-in `chisq.test` but rather compute the test statistic and the p -value by hand. Start by filling out the table below with expected frequencies.

O_{ij}	C	C'	Total
V	5	35	40
V'	10	50	60
Total	15	85	100

E_{ij}	C	C'	Total
V			40
V'			60
Total	15	85	100

- (a) H_0 : H_1 :
- (b) State the distribution of the test statistic:
- (c) Sketch a graph of the distribution of the test statistic, find and label the critical value(s), shade the rejection region.
- (d) Compute the test statistic and sketch it on the graph above.
- (e) Find the p -value of the test.
- (f) State the conclusion.