

Question:

A study shows that 61 of 414 adults who grew up in a single-parent household report that they suffered at least one incident of abuse during childhood. By contrast, 74 of 501 adults who grew up in two-parent households report abuse.

- (a) Is there a difference in single-parent and two-parent households when it comes to reporting abuse? Answer this question by computing an appropriate 99% confidence interval.
- (b) What assumptions, if any, did you make to compute the interval in (a)? Do the assumptions seem reasonable?

Report:

(a)

First I calculate probability of each sample.

Single Parent sample:

$$p1=61/414=14.73\%$$

Two Parents sample:

$$p2=74/501=14.77\%$$

$$n1<-414$$

$$n2<-501$$

And then I make a function which used to calculate CI:

In this question, there is 99% confidence interval. So that  $1-\alpha=0.99$ ,  $1-\alpha/2 = 0.995$ .

The function is really similar with exercise 2-question(b), in this question we use P instead of mean. The function is shown below:

$$p1-p2+c(1,-1)*qnorm((1-0.99)/2)*sqrt(p1*(1-p1)/n1+p2*(1-p2)/n2)$$

The answer is   -0.06102961      0.06030642

From the answer we can see that this domain contains 0, so it means that there is NO different between two samples.

(b)

Because the sample size of each sample is large, so I assume both sample are normal distribution and because the size is larger than 30 so the assumption seems reasonable.