


How to run a sign test in SPSS

In this example, we want to test the claim that the median number of swear words used in PG13 films at Blockbuster is greater than 20. These are the hypotheses:

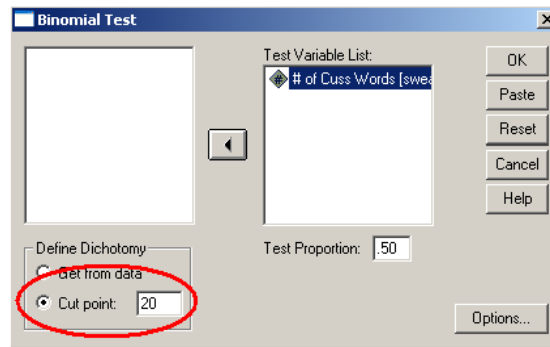
$H_a: \tilde{\mu} > 20$ $H_o: \tilde{\mu} \leq 20$ where $\tilde{\mu}$ = the true median number of swear words used per film in all the PG13 movies at Blockbuster.

The data set is called “**movieswearing**” and can be found on the class website.

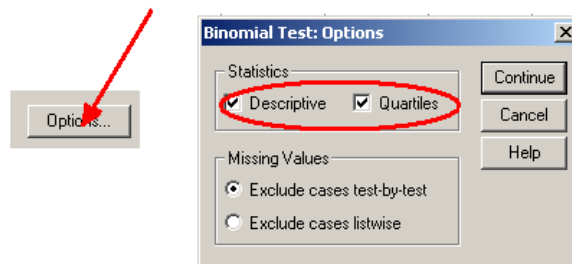
1) In SPSS: Go to Analyze → Nonparametric tests → Binomial

2) Select the variable name (in this case it's # of cuss words), then click the right arrow button, , to move it to the “Test Variable(s): List”

3) On the bottom left corner, where it says “define dichotomy”, select “cut point” and enter in the median from the null hypothesis (in this case it's 20)



To include percentiles and descriptives in the output, click the “Options” button, and then select “Descriptives” and “Percentiles”. Click “Continue” when you're done.



4) The output you get should look like this:

Binomial Test

	Category	N	Observed Prop.	Test Prop.	Asymp. Sig. (2-tailed)
# of Cuss Words	Group 1 <= 20	24	.80	.50	.002 ^a
	Group 2 > 20	6	.20		
Total		30	1.00		

a. Based on Z Approximation.

This is the p-value for $H_a: \tilde{\mu} \neq 20$ $H_o: \tilde{\mu} = 20$

To get the p-value for $H_a: \tilde{\mu} > 20$ $H_o: \tilde{\mu} \leq 20$, we need to divide this p-value by 2 and then subtract from 1 (since the sample median is 11.5 and this supports H_o – that the median is smaller or equal to 20). Therefore, the p-value is $1 - 0.002/2 = 0.999$.

Note! If we were testing $\tilde{\mu} < 20$ $H_o: \tilde{\mu} \geq 20$ the correct p-value would be $0.002/2 = 0.001$ since in this case, the sample median would support H_a .