

One sample t test

Purpose

SPSS one-sample t-test is used for testing whether the mean of one metric variable is equal to some hypothesized population value

Example

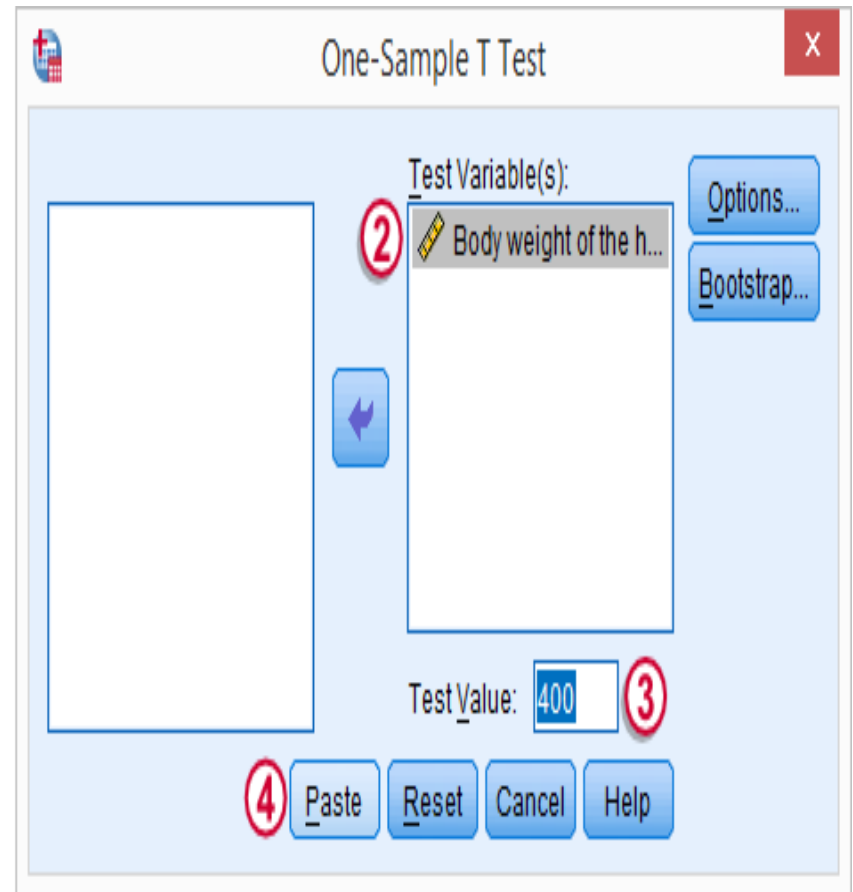
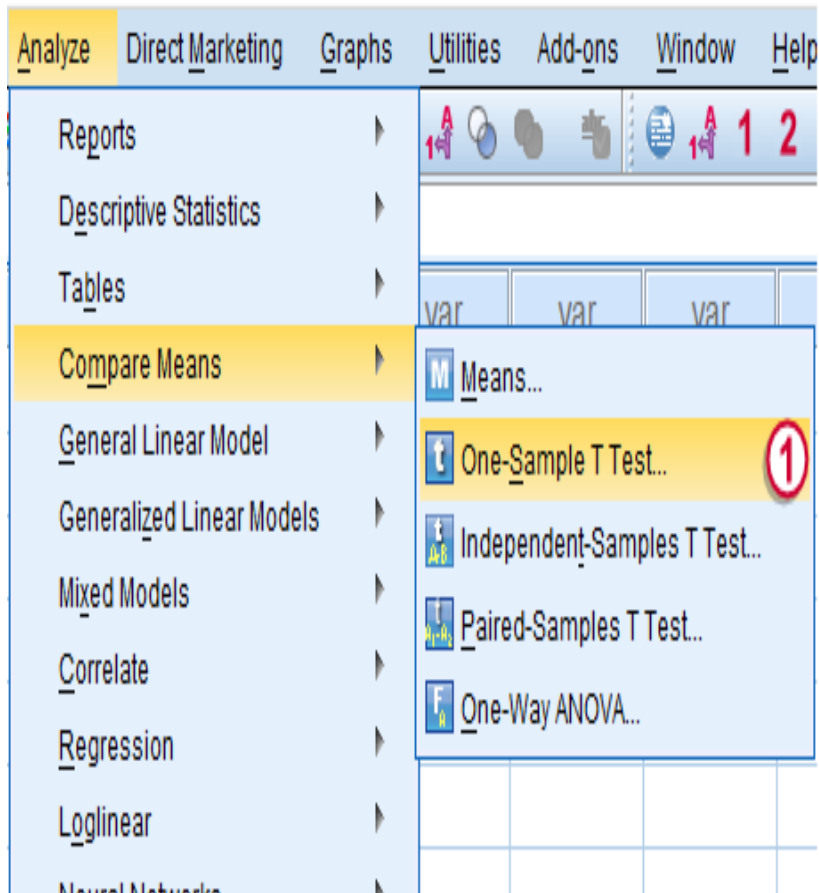
- A scientist from Greenpeace believes that herrings (a fish) in the North Sea don't grow as large as they used to.
- It's well known that - on average - herrings should weigh 400 grams.
- The scientist catches and weighs 40 herrings.

Can we conclude from these data that the average herring weighs less than 400 grams?

The question is now:

“if the average weight in the population is 400 grams, then what's the chance of finding a mean weight of only 370 grams in a sample of $n = 40$?”

Run SPSS One-Sample T-Test



SPSS One-Sample T-Test Output

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
body_weight	40	369.55	79.308	12.540

One-Sample Test

	Test Value = 400					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
body_weight	① -2.428	② 39	③ .020	④ -30.450	-55.81	-5.09

What does this mean

- The p value, denoted by “Sig. (2-tailed)” is .02;
- if the population mean is exactly 400 grams, then
- We reject the null hypothesis if $p < .05$.

Conclusion

We thus conclude that herrings do not weight 400 grams (but probably less than that).

Reporting a One-Sample T-Test

- “we found that, on average, herrings weighed less than 400 grams; $t(39) = -2.4$, $p = .020$.”
- Histogram and table

Thank you