Re: one sample t−test −−> nonparamatric equivalent?

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Using the one−sample t−test is probably the most sensible thing.

If you want a test that is strictly non−parametric, with easy−to−state assumptions, do a sign test. Compare the count of those "below average" (both groups) to the count of the two groups above average.

If you were to elect to weight the responses differentially, such as, 2 points for each extreme, and 1 point for the moderately above/below, you are pretty much back to the one−sample t−test.

Doing anything with ranks implicitly entails scoring the groups by a rank−transform. That will result, most likely, in uneven intervals between the groups: which is hardly likely to be an improvement on the original scoring.

Also,rank procedures are not very good when there are too many ties owing to score categories like these. If you use the rank−transforms where there are numerous ties, you may be apt to see a variance estimate (for large samples) which is less accurate than the computation you would get from doing a t−test on the rank−transformed scores. −− If you want to perform with a rank transform, then do the transform and use a one−sample t−test.

But if I were a critic, I would want to see the
simple one−sample
t−test on the original data.

Richard, thank you for your message. It seems anything else than the one sample t−test will get things just complicated. I take it that the t−test assumes

1. normally distributed data

2. interval data

as to 1. I ran (with my test data) a Kolmogorov−Smirnov test to check for normality (to be able to use the t−test) and with K−S sig. = .104 I would be able to argue for normality, and consequently for the use of the one sample t−test, right?

as to 2. I actually do have a number of sources I can reference on why Likert data is sometimes treated as interval. It is just that my supervisor (who will mark my work) suggested to use non−parametric tests, because that would not have to make the interval data assumption.

My question: Is there a nonparametric test to

compare a one sample

mean to a known mean?

I did not find anything on that. My current goofy

"solution": I

experimented with SPSS and used my one sample data

and generated a

dummy variable which I set at "3" for all

respondents and then ran the

Mann−Whitney test to compare means. Of course, the

second sample has a

mean of 3 with a SD of 0. The Mann−Whitney

significance here is the

> > same (very close) to when I run a one sample t−test
> >
> > with the data, so
> >
> > I guess the result is "correct".
> >
> > I wouldn't accept it as a work−around. I don't know
> > whether it may
> > happen to result in exactly the same test−value as
> > doing a one−sample
> > t−test on rank−transformed data, but it is inferior
> > (and probably has
> > less power) if it comes out different.

OK got it. I know it is not a nice way to do...just experimented a little.

When I use the Wilcoxon signed−rank test with a 2nd (dummy) set of values all set at 3 and I get sig. = .190 in my example.

Using the Mann−Whitney test I get sig. = .222 (which feels like the better alternative, since the sample is independent, at least I think so)

Using the one sample t−test (comparing to 3) I get sig. = .211

So roughly they produce similar significance. But the Wilcoxon and Mann−Whitney are not very neat for this situation, because I do not have the 2nd sample that I need, compared to the one−sample t−test, which works somewhat fine, given the assumptions stated above.

> > Rich Ulrich

Again, thank you for your input

Anatol
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