

Re: Difference b/w Standard Deviation and Variance

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- *From:* "Reef Fish" <Large_Nassau_GrOuper@xxxxxxxxx>
 - *Date:* 18 Aug 2006 14:18:28 -0700
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Bruce Weaver wrote:

Reef Fish wrote:

DarkProtoman wrote:

What is the difference b/w the standard deviation and the variance (other than the way they're calculated)? Like when are they used, or when is one preferred over the other? Thanks!!!!

Good practical question!

Standard deviation is measured in the units in which the data is measured.
That's why a confidence interval is in \pm number of standard dev. units.

Sorry for jumping in several days late—I've been on vacation.

Any time is good time for anyone to jump into this DEEP pool of statistical knowledge. The trick is to crawl out of it without drowning. :-))

I fear that last statement could be confusing to intro stats students. A confidence interval is more typically described as point estimate \pm some number of *standard error* (SE) units. Of course, the SE *is* a standard deviation, but it is the SD of the sampling distribution of the statistic, not of the raw data.

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Correct on all counts, and a point well made.

I think a better way would have been for me to say that standard deviation is measured in the units of the original measures!!

Then nobody would care if I am talking about the SD of the variable X or the SD of the variable Y or the SE of the T of the SE of the residuals (ah ha! -- I call them SD). Too many second level artifacts in the statistical terminology to distinguish on standard deviation from another. I shouldn't have even mentioned confidence intervals.

Slap, slap.

So, I accept your points to revise my sentence to:

Standard deviation is measured in the units of the original measurements.

You cannot easily relate the variance to the original measurements.

That puts the emphasis on how SD and VAR are measured relative to the original units. If we are measuring the number of apples, then the SD is in units of Apples. Nobody knows what Apple-square means. Howzat?

The OP of the question sounded like someone completely new to statistics and was asking some really sensible questions that I don't have any ready-good-answers.

Then it turned out a day later he was asking how to grade a class of 7 by a normal CURVE, with mean 85 and standard deviation 15, and when I gave him what I thought was the sensible answer (more or less the same one every one else gave): "why do you want to curve your grade?" then I knew I had been hoodwinked by what I thought was his freshness of statistical thought in his question about the standard deviation. :0)

-- Reef Fish Bob.

It's more than just a preference. You can't calculate the standard deviation without calculating the variance first, by taking the square root of it.

When is a variance preferred? Can't think of a good answer right off hand.

It's used more for theoretical reasons than for practical usage. For

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example,
the sample variance is an unbiased estimate of the variance, but nobody
I know ever uses an unbiased estimate of a standard deviation in
practice.

It's used in regression and other methods in breaking down the total
variation into component parts. I am sure others will name other
"preferred" uses of it.

-- Reef Fish Bob.

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