

# Re: Goodness of fit measures for a distribution

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- *From:* "Reef Fish" <Large\_Nassau\_Grouper@xxxxxxxxx>
  - *Date:* 6 Apr 2005 13:42:30 -0700
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Unknown wrote:

- > Hi everyone,
- > I have a basic question regarding what are some common quantitative measures
- > for the goodness of (parametric) fit of a distribution.

But this is a different question from what you're trying to do:

- >
- > Here is what I am trying to do. I have some sample data which lets say it
- > has a lognormal distribution. I can get some hints of how it is distributed
- > from the histogram.

A histogram is the WORST you can possibly do.

Here's my unpublished "Theorem" :-):

You recognize (or best distinguish) a PERSON by his/her face and BODY; you recognize a distribution by its TAIL.

- > What I want to do, is fit a few distributions (e.g.
- > Lognormal, Beta, Gamma, inverse Gaussian etc) and find out which fits the
- > best.

You get yourself immediately into the unnecessary complication of "fitting" and what metric to use to judge "best" or departure from the fit.

The good-ole PROBABILITY PAPER plot is the idea you should use. in all probability papers, the accent is on the departure of the TAIL of the empirical distribution from the cdf of the theoretical distribution.

- > I have carried out some fits using maximum likelihood and I can plot

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the

> pdfs, or cdfs over my data to see which fits the best.

Do a PP plot or QQ plot. Just LOOK.

> However, I need some

> quantitative results (i.e. numbers).

Why? Like the drunk who uses a lampost for support rather than light?

:—)

> Just to point out that I am not really

> interested at the parameters of the distributions, but only which  
fits the

> best.

> I could do Kolmogorov–Smirnov and chi–square tests but that's as far  
as I

> know.

Chi–square is based on histograms — it's worthless.

Kolmogorov uses on ONE POINT in the difference between the empirical  
and theoretical cdfs, the point of maximum departure.

Your EYEBALLS can do an infinitely better job than that, looking at  
the plot of the entire cdfs.

>

> Would someone be able to tell me what sort of metrics I can use for  
my

> problem?

>

> Regards,

> V.Z.

You're hung up on the traditional "confirmatory data analysis", which  
sheds little or no light on your REAL problem. I am suggesting  
something along the line of John Tukey's "exploratory data analysis"  
without any of Tukey's cryptic acronyms, as the most suitable way  
of addressing your problem.

— Bob.

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