

Re: Some Paradox on Confidence Interval on Population Parameter!

Source: <http://sci.tech--archive.net/Archive/sci.stat.math/2007-05/msg00477.html>

- *From:* "MathCraft Consulting" <mathcraft@xxxxxxxxxxxxxx>
 - *Date:* Thu, 24 May 2007 02:11:52 GMT
-

What is it you are actually trying to measure?

If you are simply measuring the Y_i on any given day *AND* if X_i is being counted without error, then Y_i is indeed your exact average failure rate. It will change, of course, each day. But, on any given day, you will have the exact average for that day. No confidence interval is involved.

On the other hand, if what you are really trying to measure is the theoretical long-term average failure rate, then each day is only a sample. Y_i is NOT a population parameter in that case, because the "population" parameter would be the average Y_i measured over the entire population of days, whatever that happened to be. If you assume that the underlying failure rate is not changing over time (at least, not over the time that you are collecting data), and that failures on one day do not depend upon failures on any other day, then you might assume that the number of failures in any given day follows a Poisson distribution, and what you are really trying to estimate is the Poisson parameter λ for the daily number of failures. You certainly have an appropriate confidence interval in that case, which will depend upon how many days you have measured.

If you have to worry about changing -- perhaps increasing -- failure rate over the time you are collecting data, you would need a different statistical model than Poisson. Also... if there is the possibility that X_i may involve error, then Y_i is again uncertain, and any confidence interval would be affected by that.

MathCraft Consulting
Dayton, Ohio

"undiscern" <undiscern@xxxxxxxxxx> wrote in message
<news:1179795706.860642.172310@xx>

Is it the traffic lights on a particular day? Or the traffic lights
on
any day? Is the

Re: Some Paradox on Confidence Interval on Population Parameter!

parameter the probability of failure on a particular day or on any day?

Thank you. But is there any differenc