

Re: random numbers from a lognormal distribution

Source: <http://sci.tech-archive.net/Archive/sci.stat.math/2005-02/0338.html>

From: Reef Fish (*Large_Nassau_Grouper_at_Yahoo.com*)

Date: 02/13/05

Date: 13 Feb 2005 10:35:21 -0800

Dave wrote:

> *On Tue, 01 Feb 2005 20:33:15 -0600, Ray Koopman wrote:*

> > *Bob Wheeler wrote:*

> > > [...]

> > > *I think he is asking how to do it himself. If X is a standard*

> *normal variate, then $U=(\log(X)-m)/s$ is lognormal with mean*

> *$\exp(m)\sqrt{w}$, where $w=\exp(s^2)$, and variance $\exp(2m)w(w-1)$.*

> >

> > *Shouldn't that be "If X is a standard normal variate then*

> *$U=\exp(X*s+m)$ is lognormal ..."?*

< snip >

The confusion arises only if you trip yourself by other statistics associated with the distribution(s).

How can there be any confusion if you simply recall that, X, by definition, has a lognormal distribution if log X is normally distributed?

Thus, if Y has ANY normal distribution, the exp(Y) is lognormal!

> *So now whenever I work with the lognormal distribution, I use the median and interquartile range as my 2 pieces of information instead of the mean and standard deviation. Try it. I like it much better.*

This addresses a different question, i.e., how do you generate a lognormal distribution with some specification about either the parent (normal) distribution or its resulting (lognormal) distribution. But the simple, GENERAL principle, is that

exp(X) is lognormal whenever X is normal.

— Bob.